RIVERSIDE COUNTY TRANSPORTATION COMMISSION

MEETING AGENDA

Budget and Implementation Committee

Time: 9:30 a.m.

Date: November 27, 2023

Location: BOARD ROOM
County of Riverside Administration Center
4080 Lemon St, First Floor, Riverside, CA 92501

TELECONFERENCE SITES

COUNCIL CHAMBER CONFERENCE ROOM
City of Palm Desert
73510 Fred Waring Drive, Palm Desert, CA 92260

LARGE CONFERENCE ROOM
French Valley Airport
37600 Sky Canyon Drive, Murrieta, CA 92563

COMMITTEE MEMBERS

Jeremy Smith, **Chair** / Jennifer Dain, City of Canyon Lake
Linda Molina, **Vice Chair** / Wendy Hewitt, City of Calimesa
Lloyd White / Julio Martinez, City of Beaumont
Raymond Gregory / Mark Carnevale, City of Cathedral City
Steven Hernandez / Stephanie Virgen, City of Coachella
Scott Matas / Russell Betts, City of Desert Hot Springs
Bob Magee / Natasha Johnson, City of Lake Elsinore
Ulises Cabrera / Edward Delgado, City of Moreno Valley
Cindy Warren / Ron Holliday, City of Murrieta
Jan Harnik / Kathleen Kelly, City of Palm Desert
Lisa Middleton / To Be Appointed, City of Palm Springs
Alonso Ledezma / Valerie Vandever, City of San Jacinto
James Stewart / Jessica Alexander, City of Temecula
Chuck Washington, County of Riverside, District III
Yxstian Gutierrez, County of Riverside, District V

STAFF

Anne Mayer, Executive Director
Aaron Hake, Deputy Executive Director

AREAS OF RESPONSIBILITY

Annual Budget Development and Oversight
Competitive Federal and State Grant Programs
Countywide Communications and Outreach Programs
Countywide Strategic Plan
Legislation
Public Communications and Outreach Programs
Short Range Transit Plans

RIVERSIDE COUNTY TRANSPORTATION COMMISSION
BUDGET AND IMPLEMENTATION COMMITTEE

www.rctc.org

AGENDA*

**Actions may be taken on any item listed on the agenda*

9:30 a.m.

Monday, November 27, 2023

BOARD ROOM
County of Riverside Administrative Center
4080 Lemon Street, First Floor
Riverside, California

TELECONFERENCE SITES

COUNCIL CHAMBER CONFERENCE ROOM	**LARGE CONFERENCE ROOM**
City of Palm Desert	***French Valley Airport***
73510 Fred Waring Drive, Palm Desert, California	***37600 Sky Canyon Drive, Murrieta, California***

In compliance with the Brown Act and Government Code Section 54957.5, agenda materials distributed 72 hours prior to the meeting, which are public records relating to open session agenda items, will be available for inspection by members of the public prior to the meeting at the Commission office, 4080 Lemon Street, Third Floor, Riverside, CA, and on the Commission's website, www.rctc.org.

In compliance with the Americans with Disabilities Act, Government Code Section 54954.2, and the Federal Transit Administration Title VI, please contact the Clerk of the Board at (951) 787-7141 if special assistance is needed to participate in a Commission meeting, including accessibility and translation services. Assistance is provided free of charge. Notification of at least 48 hours prior to the meeting time will assist staff in assuring reasonable arrangements can be made to provide assistance at the meeting.

1. CALL TO ORDER

2. ROLL CALL

3. PLEDGE OF ALLEGIANCE

4. PUBLIC COMMENTS – *Each individual speaker is limited to speak three (3) continuous minutes or less. The Committee may, either at the direction of the Chair or by majority vote of the Committee, waive this three minute time limitation. Depending on the number of items on the Agenda and the number of speakers, the Chair may, at his/her discretion, reduce the time of each speaker to two (2) continuous minutes. Also, the Committee may terminate public comments if such comments become repetitious. In addition, the maximum time for public comment for any individual item or topic is thirty (30) minutes. Speakers may not yield their time to others without the consent of the Chair. Any written documents to be distributed or presented to the Committee shall be submitted to the Clerk of the Board. This policy applies to Public Comments and comments on Agenda Items.*

Under the Brown Act, the Board should not take action on or discuss matters raised during public comment portion of the agenda which are not listed on the agenda. Board members may refer such matters to staff for factual information or to be placed on the subsequent agenda for consideration.

5. ADDITIONS/REVISIONS *(The Committee may add an item to the Agenda after making a finding that there is a need to take immediate action on the item and that the item came to the attention of the Committee subsequent to the posting of the agenda. An action adding an item to the agenda requires 2/3 vote of the Committee. If there are less than 2/3 of the Committee members present, adding an item to the agenda requires a unanimous vote. Added items will be placed for discussion at the end of the agenda.)*

6. CONSENT CALENDAR - *All matters on the Consent Calendar will be approved in a single motion unless a Commissioner(s) requests separate action on specific item(s). Items pulled from the Consent Calendar will be placed for discussion at the end of the agenda.*

6A. APPROVAL OF MINUTES – AUGUST 28, 2023

Page 1

6B. QUARTERLY PUBLIC ENGAGEMENT METRICS REPORT, JULY - SEPTEMBER 2023

Page 8

Overview

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Quarterly Public Engagement Metrics Report for July - September 2023.

6C. QUARTERLY REPORTING OF CONTRACT CHANGE ORDERS FOR CONSTRUCTION CONTRACTS

Page 14

Overview

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Quarterly Report of Contract Change Orders for Construction Contracts for the three months ended September 30, 2023.

6D. MONTHLY INVESTMENT REPORT

Page 16

Overview

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Monthly Investment Report for the month ended October 31, 2023.

7. TRAFFIC RELIEF PLAN PUBLIC ENGAGEMENT PROGRAM

Page 19

Overview

This item is for the Committee to recommend the Commission take the following action(s):

1) Award Agreement No. 24-15-032-00 to AlphaVu for Public Engagement Program services for an eight-month term, in an amount not to exceed $986,034; and
2) Authorize the Chair or Executive Director, pursuant to legal counsel review, to execute the agreement on behalf of the Commission.

8. SENATE BILL 125 FORMULA-BASED FUNDING FOR THE TRANSIT AND INTERCITY RAIL CAPITAL PROGRAM AND ZERO EMISSION TRANSIT CAPITAL PROGRAM

Page 56

Overview

This item is for the Committee to recommend the Commission take the following action(s):

1) Approve the funding recommendations in Attachment 1 for the Senate Bill 125 (SB 125) Formula-Based Funding for the Transit and Intercity Rail Capital Program (TIRCP) and Zero Emission Transit Capital Program (ZETCP) for Fiscal Year 2023/24;
2) Direct staff to prepare and execute funding agreements with the project sponsors to outline the project schedule and local funding commitments;
3) Authorize the Executive Director to execute the funding agreements with the project sponsors, pursuant to legal counsel review;
4) Approve an amendment to the FY 2023/24 budget to receive the first-year allocations of TIRCP and ZETCP formula funds in the amounts of $123,382,700 and $14,828,290, respectively; and
5) Approve a FY 2023/24 budget adjustment of $791,214 for expenses related to the TIRCP and ZETCP formula funds.

9. SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS CORRECTIVE ACTION FOR FEDERAL FORMULA FUNDS

Page 65

Overview

This item is for the Committee to recommend the Commission take the following action(s):

1) Approve the RCTC Procedures for the Southern California Association of Governments (SCAG) 2024 Call for Project Nominations (nomination procedures);
2) Authorize the Executive Director to submit to SCAG the project nomination list based on the nomination procedures;
3) Approve Agreement No. 24-66-041-00, a Memorandum of Understanding (MOU) with SCAG; and
4) Authorize the Chair or Executive Director, pursuant to legal counsel review, to execute the agreement on behalf of the Commission.

10. RIVERSIDE COUNTY ZERO-EMISSION BUS ROLLOUT PLANS AND FUNDING AND IMPLEMENTATION STRATEGY

Page 94

Overview

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file an update on the Riverside County Zero-Emission Bus (ZEB) Rollout Plans and Funding and Implementation Strategy (Project);
2) Direct staff to review existing transit funding policies and continue to work with the transit operators to strategize and leverage revenue sources to support the transition to zero-emission; and
3) Award sole source Agreement No. 24-62-042-00 with Center for Transportation and the Environment (CTE) for ongoing plan updates and zero-emission technical assistance for a three-year term in the amount of 150,000, plus a contingency of $15,000, for a total amount not to exceed $165,000.

11. STATE AND FEDERAL LEGISLATIVE UPDATE

Page 324

Overview

This item is for the Committee to recommend the Commission take the following action(s):

1) Adopt the Commission's 2024 State and Federal Legislative Platform; and
2) Receive and file a state and federal legislative update.

12. ITEM(S) PULLED FROM CONSENT CALENDAR AGENDA

13. EXECUTIVE DIRECTOR REPORT

14. COMMISSIONER COMMENTS

Overview

This item provides the opportunity for brief announcements or comments on items or matters of general interest.

15. ADJOURNMENT

The next Budget and Implementation Committee meeting is scheduled to be held at **9:30 a.m., January 22, 2024**.

AGENDA ITEM 6A

MINUTES

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

BUDGET AND IMPLEMENTATION COMMITTEE

Monday, August 28, 2023

MINUTES

1. CALL TO ORDER

The meeting of the Budget and Implementation Committee was called to order by Chair Jeremy Smith at 9:30 a.m. in the Board Room at the County of Riverside Administrative Center, 4080 Lemon Street, First Floor, Riverside, California 92501 and at the teleconference sites: Council Chamber Conference Room, City of Palm Desert, 73510 Fred Waring Drive, Palm Desert, California 92260, and the Large Conference Room, French Valley Airport, 37600 Sky Canyon Dr., Murrieta, California 92563.

Chair Smith announced that this meeting needed to be done by 10:45 a.m. due to a Board of Supervisors Special Meeting being held in the Board Chambers.

2. ROLL CALL

Members/Alternates Present	Members Absent
Raymond Gregory**	Ulises Cabrera
Jan Harnik**	Yxstian Gutierrez
Bob Magee	Steven Hernandez
Linda Molina	Lisa Middleton
Jeremy Smith	Scott Matas
Cindy Warren*	
James Stewart*	
Valerie Vandever	
Chuck Washington*	
Lloyd White	

*Joined the meeting at French Valley.
**Joined the meeting at Palm Desert.

3. PLEDGE OF ALLEGIANCE

Commissioner Lloyd White led the Budget and Implementation Committee in a flag salute.

4. PUBLIC COMMENTS

There were no requests to speak from the public.

5. ADDITIONS / REVISIONS

There were no additions or revisions to the agenda.

6. CONSENT CALENDAR - *All matters on the Consent Calendar will be approved in a single motion unless a Commissioner(s) requests separate action on specific item(s). Items pulled from the Consent Calendar will be placed for discussion at the end of the agenda.*

M/S/C (Molina/Vandever) to approve the following Consent Calendar item(s):

6A. APPROVAL OF MINUTES – MAY 22, 2023

6B. SINGLE SIGNATURE AUTHORITY REPORT

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Single Signature Authority report for the fourth quarter ended June 30, 2023.

6C. QUARTERLY SALES TAX ANALYSIS

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the sales tax analysis for the Quarter 1, 2023 (1Q 2023).

6D. QUARTERLY FINANCIAL STATEMENTS

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Quarterly Financial Statements for the twelve months ended June 30, 2023.

6E. MONTHLY INVESTMENT REPORT

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Monthly Investment Report for the month ended June 30, 2023.

6F. MONTHLY INVESTMENT REPORT

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Monthly Investment Report for the month ended July 31, 2023.

6G. QUARTERLY PUBLIC ENGAGEMENT METRICS REPORT, APRIL - JUNE 2023

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Quarterly Public Engagement Metrics Report for April - June 2023.

6H. STATE AND FEDERAL LEGISLATIVE UPDATE

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file a state and federal legislative update.

7. 2024 STATE TRANSPORTATION IMPROVEMENT PROGRAM FUNDING DISTRIBUTION AND DRAFT FUND ESTIMATE

Jillian Guizado, Planning and Programming Director, presented the 2024 State Transportation Improvement Program (STIP) intracounty formula distribution, highlighting the following areas:

- 2024 STIP
  - The 2024 STIP Fund Estimate (FE) was approved by the California Transportation Commission (CTC) at its August 2023 meeting
  - The FE identifies the amount of funding for each county (county share) in the state for Fiscal Years 2024/25 – 2028/29

- RCTC programs the funds following the STIP Intracounty Memorandum of Understanding
- Past STIP cycles: Measure A taxable sales
- 2024 STIP cycle: Intracounty formula distribution
- Coachella Valley (CV) Rail STIP funding
- Next steps

M/S/C (White/Vandever) for the Committee to recommend the Commission take the following action(s):

1) Approve the 2024 State Transportation Improvement Program (STIP) funding distribution among the three geographic areas in Riverside County per the adopted STIP intracounty Memorandum of Understanding (MOU).

8. CONTRACT AUTHORITY FOR ON-CALL MULTIMODAL TRANSIT/RAIL CONSULTING SERVICES

Lorelle Moe-Luna, Multimodal Services Director, provided an overview on the amendments to the agreements for the on-call multimodal transit/rail consulting services.

M/S/C (Molina/Warren) for the Committee to recommend the Commission take the following action(s):

1) Approve Amendment No. 1 to the following agreements to provide on-call multimodal transit/rail consulting services for a five-year term to extend the agreements for an additional amount of $8,000,000 and a total amount not to exceed $13,000,000:
   a) Agreement No. 23-25-002-01 to HDR Engineering, Inc.;
   b) Agreement No. 23-25-016-01 to HNTB Corporation;
   c) Agreement No. 23-25-017-01 to Jacobs Engineering Group, Inc.;
   d) Agreement No. 23-25-018-01 to Mott MacDonald Group, Inc.;
   e) Agreement No. 23-25-019-01 to STV Incorporated;
   f) Agreement No. 23-25-020-01 to WSP USA Inc.;
2) Authorize the Chair or Executive Director, pursuant to legal counsel review, to execute the agreements, on behalf of the Commission; and
3) Authorize the Executive Director, or designee, to execute task orders awarded to the consultants under the terms of the agreements.

9. FISCAL YEAR 2023/24 STATE OF GOOD REPAIR PROGRAM ALLOCATIONS

Eric DeHate, Transit Manager, presented the Fiscal Year 2023/24 State of Good Repair Program allocations, highlighting the following:

- Background information
  - State of Good Repair (SGR) established through Senate Bill 1 in 2017
  - Provides approximately $105 million statewide annually
  - Eligible projects: Maintenance, rehabilitation, and capital projects
  - Apportionments based on State Transit Assistance (STA) formulas: Public Utilities Code (PUC) 99313 (discretionary) and 99314 (non-discretionary)
  - Determined by State Controller's Office (SCO) – distributed at least twice a year (January and August)
- Recommended SGR allocations for FY 2023/24 SGR proposed project listing

Commissioner Bob Magee requested to go back to slide 3 from the presentation and clarified that SunLine Transit Agency's (SunLine) fuel cell electric bus (1) costs $1.1 million.

Eric DeHate replied yes.

Chair Smith asked if that one bus is a pilot bus or if it is an additional one.

Eric DeHate replied this will be a replacement for a compressed natural gas (CNG) bus. SunLine already has about 26 fuel cell buses so this would just be adding to SunLine's fleet as they are changing out their CNG fleet.

In response to Chair Smith's clarification there is nothing unique about this bus, Eric DeHate replied no and stated last year SunLine asked for $900,000 for another fuel cell bus and they funded the rest with a different funding source.

M/S/C (Gregory/Harnik) for the Committee to recommend the Commission take the following action(s):

1) **Approve Resolution No. 23-007, "*Resolution of the Riverside County Transportation Commission Approving the FY 2023/24 Project List for the California State of Good Repair Program*";**
2) **Approve an allocation of $4,573,788 related to Fiscal Year 2023/24 State of Good Repair (SGR) program funds to eligible Riverside County transit operators;**
3) **Approve an increase of $30,582 in the FY 2023/24 budget for SGR revenues to reflect updated SCO estimates;**
4) **Authorize the Executive Director, or designee, to review, approve and submit projects to Caltrans which are consistent with SGR program guidelines and to execute and submit required documents for the SGR program, including the Authorized Agent Form; and**
5) **Authorize the Executive Director, or designee, to approve administrative amendments to the FY 2023/24 Short Range Transit Plans (SRTPs) for incorporation of the SGR funds, as necessary.**

10. ITEM(S) PULLED FROM CONSENT CALENDAR AGENDA

There were no items pulled from the consent calendar.

11. EXECUTIVE DIRECTOR REPORT

Anne Mayer announced:

- Welcomed the Commissioners back after the Commission was dark in August.
- Highlighted that much of the approvals the Committee Members granted today are related to other people's money, which is a great example of how RCTC is doing everything they can to leverage Measure A to be able to bring primarily state funding to the table.
- The STIP allocation the target for RCTC was higher than anticipated but now they will have some difficult decisions to make in the coming months. One of the projects Jillian Guizado mentioned was the CV Rail Project, they are still waiting for the federal government to announce the Consolidated Rail Infrastructure and Safety Improvement Program (CRISI) awards as RCTC had applied for a $20 million CRISI Grant to compliment the $40 million RCTC has for the Tier 2 environmental document. In anticipation of those announcements being made the RCTC team is coming up with strategies for implementation of that next phase whether or not RCTC receive the CRISI Grant.
- They are headed to Sacramento next week for a meeting with Caltrans and the California State Transportation Agency to discuss how to proceed with the next step. There were 10 or 11 projects streamlining actions that were enacted earlier this summer as a result of the Governor's initiative related to getting money out on the table and encouraging federal funding. One of the items is the delegation of National Environmental Policy Act (NEPA) authorities to the state for specific transit projects. RCTC is going to try very hard to be one of the pilot projects for CV Rail so that they are dealing locally with their state partners on the NEPA delegation process.

12. COMMISSIONER COMMENTS

There were no comments from the Commissioners.

13. ADJOURNMENT

There being no further business for consideration by the Budget and Implementation Committee, the meeting was adjourned at 9:56 a.m.

Respectfully submitted,

Lisa Mobley
Administrative Services
Director/Clerk of the Board

AGENDA ITEM 6B

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	November 27, 2023
TO:	Budget and Implementation Committee
FROM:	Jonathan Marin, Senior Management Analyst
THROUGH:	David Knudsen, External Affairs Director
SUBJECT:	Quarterly Public Engagement Metrics Report, July - September 2023

STAFF RECOMMENDATION:

This item is for the Committee to recommend the Commission to take the following action(s):

1) Receive and file the Quarterly Public Engagement Metrics Report for July - September 2023.

BACKGROUND INFORMATION:

The Quarterly Public Engagement Metrics Report allows the Commission to monitor and gauge progress toward public engagement goals, analyze the effectiveness of its efforts, and provide transparency into how the Commission uses resources to engage with the public. This report covers the third quarter of 2023, from July to September.

The Public Affairs staff continues to measure public engagement activities through the Commission's communication channels. Staff publishes information about Commissions' achievements, project deliveries, partnerships, and investments made through Measure A on these communication channels. Commission staff actively monitors digital engagement activities to respond to comments and questions, and to assess how audiences are engage with the digital information.

The metrics provided are compared to the previous quarter, which can produce varying results based on the level of activity and other seasonal trends. For example, metrics can be significantly higher if the Commission boosts posts to raise awareness of closures or other activities.

This quarter's report includes three sets of data:

1) Metrics for RCTC's overall public engagement activities including public sentiment on social media; social media followers, engagement, and reach; email notifications; website use and access; and top pages visited.
2) Metrics for RCTC's 15/91 Express Lanes Connector Project including email activity, text messages, website sessions, and social media followers.

3) Metrics for RCTC's 71/91 Interchange Project including email activity, website sessions, and social media following.

RCTC Overall Public Engagement

1) Social Media

a. Overall public sentiment for the last quarter was generally positive. Posts highlighting the VanClub program, Metrolink discounts, and Rail Safety Month produced some of the highest levels of positive sentiment for the quarter.

b. **Facebook**: Followers during this quarter grew slightly – up 0.1%, from 13,481 to 13,491. The Facebook page had garnered 24,613 forms of engagement, such as likes, comments, and video viewing and shares, representing a 59% decrease from the second quarter's 59,959. Overall, posts reached a total of 277,261 unique users for this quarter (followers and non-followers), a 17% decrease from the previous quarter's mark of 335,824.

c. **X (formerly known as Twitter)**: During the third quarter, followers on the platform increased from 1,723 to 1,745 – representing a 1% increase. Engagement decreased 13%, from 1,120 to 975, while post impressions increased by 24%, from 15,652 to 19,337.

d. **Instagram**: A 3% increase in followers occurred during this quarter – climbing from 3,682 to 3,796. Overall engagement decreased 52%, from 16,839 to 7,966. The account reached 179,160 unique users, a significant increase of 124% from last quarter's 79,761.

e. The decrease in overall engagement from quarter-to-quarter was due in large part to the high-profile 71/91 Interchange closure that took place during the second quarter – producing elevated levels of engagement as a result of increased ad spend.

2) The Point E-Newsletter: Public Affairs staff continually develops diverse and high-quality content for publication on the official RCTC blog, ***The Point***. A collection of the month's stories is distributed as a monthly email newsletter. During the third quarter, subscribers to this newsletter decreased by 0.3%, from 6,211 to 6,191. On average, 48% of the newsletter subscribers opened the monthly ***The Point*** email, and 4.4% clicked on links to learn more. The open rate for this newsletter continues to outperform the industry (government) average of 34%.

3) Website

a. Website sessions were up 47% in the third quarter, from 85,042 to 124,781. There were 111,025 unique users, an increase of 36% compared to the previous quarter's 81,777.

b. Direct visits (keying in rctc.org) made up most web traffic at 79%. Users visiting the website through a search engine reached 17%. Referrals from external sites, such as the FasTrak, City of Corona, and Caltrans websites, made up 2% of visits.

Traffic from email and social media links each accounted for 1% of website sessions.

c. Website access by device shifted during the third quarter. 87% of website visits originated from desktop, while mobile (phones and tablets) accounted for 13%, representing a drastic increase in desktop visits from last quarter.

d. The home page (rctc.org) was the most visited page during the third quarter, followed by the project page for the 15/91 Express Lanes Connector and the 71/91 Interchange.

15/91 Express Lanes Connector Public Engagement

1) ***Emails:*** Subscribers during the past quarter totaled 3,152, a slight increase of 0.2%. The project team has received 34 email inquiries to date.
2) ***Texts:*** A total of 525 people signed up to receive text message updates, representing a 0.3% increase from the previous quarter.
3) ***Webpage:*** 4,182 visits to the project page occurred during the third quarter - totaling 42,286 visits to date.
4) ***Social Media:*** Facebook page followers increased to 3,365 compared to 3,351 last quarter. Twitter grew by 0.4% from 431 to 448 followers. Instagram followers increased 0.5% from 925 to 971 followers.

71/91 Interchange Project Public Engagement

1) ***Emails:*** Email sign-ups during the third quarter totaled 2,508, representing a 16% increase in subscribers. The project team received 9 inquiries.
2) ***Texts:*** 1,101 people registered to receive text message updates of the project – a 116% increase from the previous quarter. A text message sign-up campaign through Facebook was launched during this quarter to facilitate new sign ups.
3) ***Webpage:*** Visits to the project, construction update, and closures webpages totaled 9,798.
4) ***Social Media:*** Facebook page followers totaled 1,195 compared to second quarter's 1,025 – a 15% increase. X (formerly known as Twitter) followers grew by 25% from 108 to 135. Instagram followers increased 9% from 1,592 to 1,748 followers.

FISCAL IMPACT:

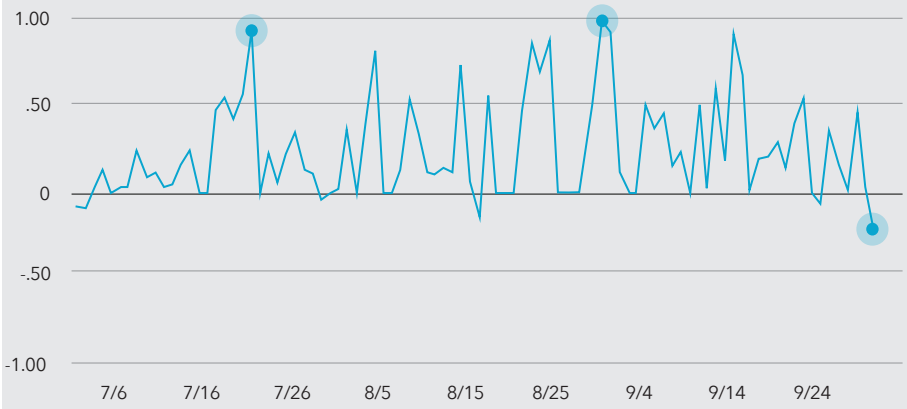
This is an informational item. There is no fiscal impact.

Attachments:
1) RCTC Overall Public Engagement Metrics
2) 15/91 Express Lanes Connector Construction Public Engagement Metrics
3) 71/91 Interchange Construction Public Engagement Metrics

Public Engagement Metrics: Q3

July - September 2023

Overall Social Media Sentiment



7/21: Positive sentiment on post promoting VanClub opportunities
8/30: Positive sentiment on back-to-school post highlighting Metrolink
9/30: Negative engagement calling for transit service to sports events

Eblasts

-0.3%

Subscribers
6,191

Average Open
48%

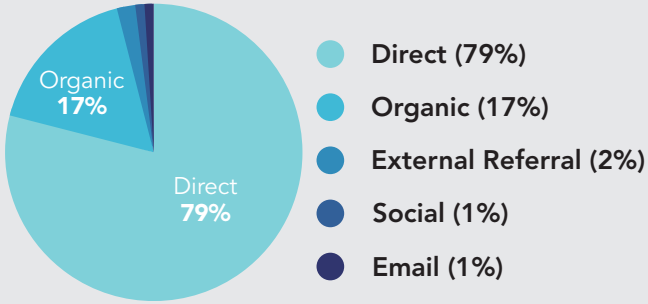
Average Click
4.4%

Web

124,781 Number of Sessions **+47%**

111,025 Number of Unique Users **+36%**

Top Channels



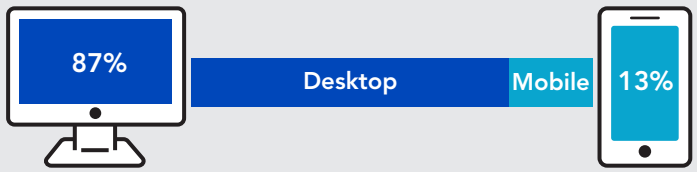
Differences

Direct visits to the website increased significantly in the third quarter. External referrals experienced a modest increase due to site links from the FasTrak, City of Corona, and Caltrans websites.

Top Pages Visited

1	Home Page
2	15/91 Express Lanes Connector Project
3	71/91 Interchange Project - Construction Updates

Desktop vs Mobile Users



Social Media

Facebook

Followers 13,491	+0.1%
Engagement 24,613	-59%
Reach 277,261	-17%

X
formerly known as Twitter

Followers 1,745	+1%
Engagement 975	-13%
Impressions 19,337	+24%

Instagram

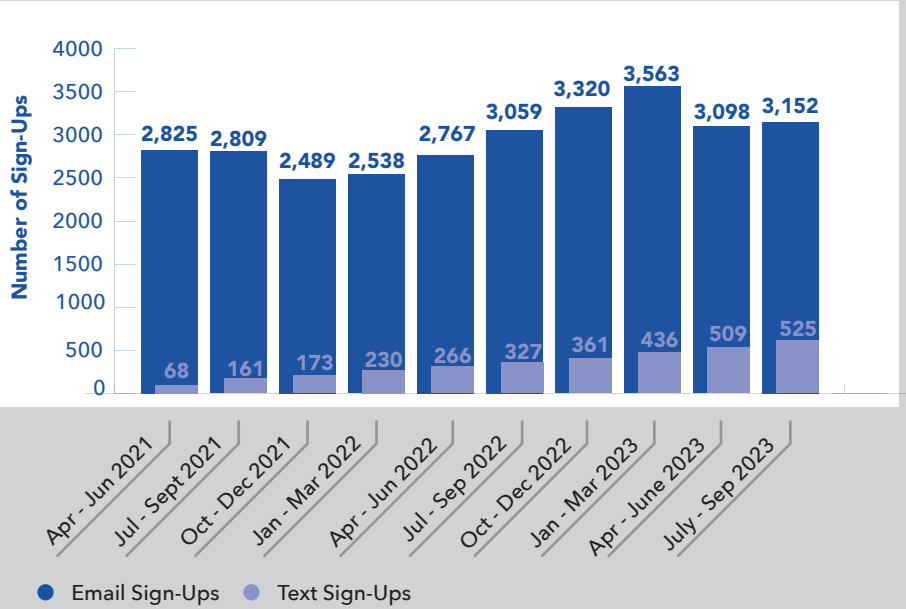
Followers 3,796	+3%
Engagement 7,966	-52%
Reach 179,160	+124%

RCTC 15/91 EXPRESS LANES CONNECTOR

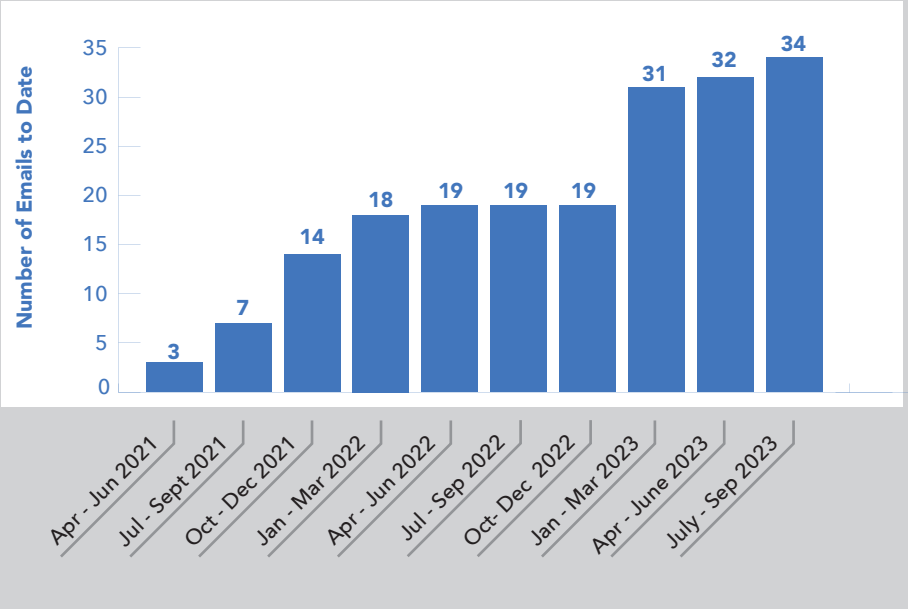
15/91 Express Lanes Connector Project
Quarterly "At-a-Glance" Metrics Report

July - September 2023

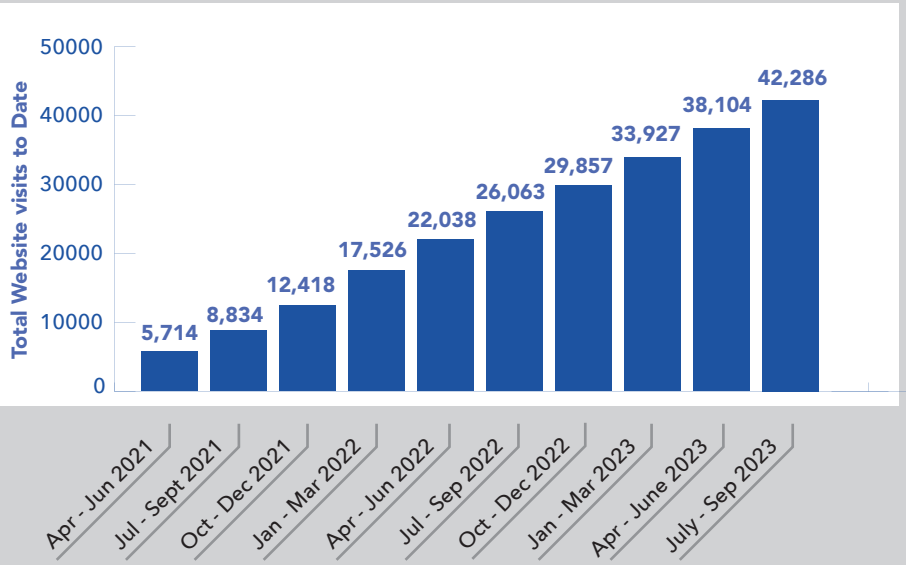
Email & Text Alert Sign-Ups



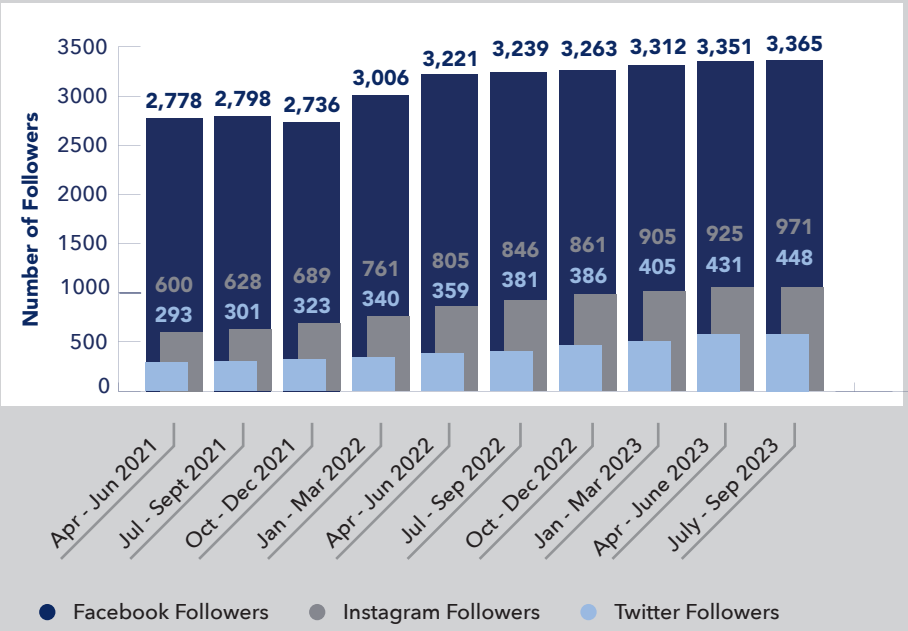
Emails to Project Team



Website Sessions



Social Media Followers



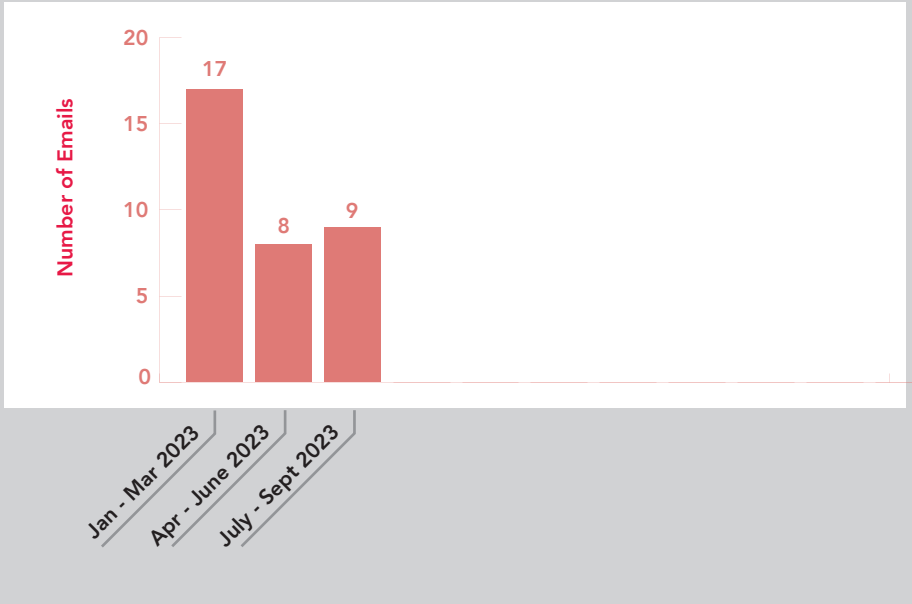
RCTC 71/91 INTERCHANGE PROJECT

71/91 Interchange Project
Quarterly "At-a-Glance" Metrics Report

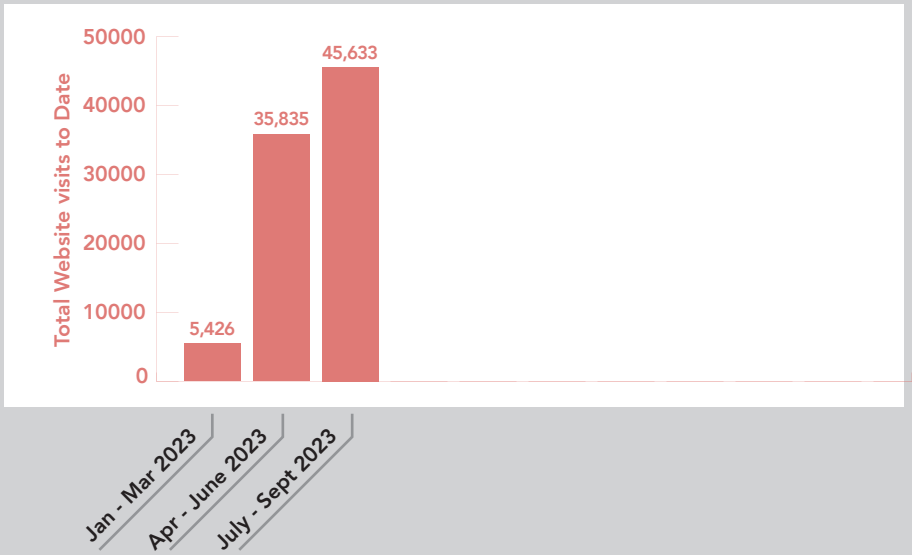
July - September 2023

Email & Text Alert Sign-Ups

Emails to Project Team

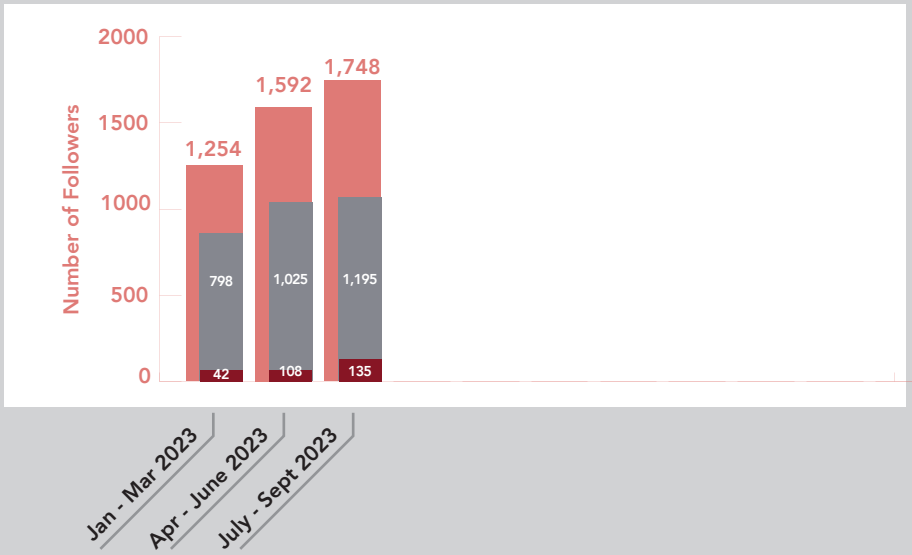


Website Sessions



Includes project, construction update, and closures pages

Social Media Follwers



AGENDA ITEM 6C

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	November 27, 2023
TO:	Budget and Implementation Committee
FROM:	John Tarascio, Construction Manager
THROUGH:	Erik Galloway, Project Delivery Director
SUBJECT:	Quarterly Reporting of Contract Change Orders for Construction Contracts

STAFF RECOMMENDATION:

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Quarterly Report of Contract Change Orders for Construction Contracts for the three months ended September 30, 2023.

BACKGROUND INFORMATION:

During the past quarter, July through September 2023, the Commission has had the following projects under construction:

1. Mid County Parkway (MCP) Placentia project
2. SR-71 / SR-91 Interchange Project
3. I-15 Railroad Canyon Interchange project
4. MVMF Platform and Track Expansion
5. SR-60 Truck Lanes Project
6. 15/91 Express Lanes Connector

DISCUSSION:

At the direction of the Executive Committee at its March 2021 meeting, a report will be filed each quarter listing the construction contract change orders that were issued in the previous quarter. The following table summarizes the Contract Change Orders that occurred in the third quarter (1st quarter of FY 2024/25).

Contractor Change Orders executed in the 3rd Quarter of CY 2023			
Project	**CCO No.**	**Description**	**Amount**
MCP Placentia Project	CCO 52	Pull Boxes only within the Gore Area	$77,543.00
	CCO 24-S1	Drainage Modifications	$15,406.40
	CCO 53	Extension of Time (TRO)	$90,200.00
	CCO 19-S1	Placing AC for Overside Drains (Small Areas)	$3,417.32
	CCO 54	DLC Cables NB on Ramp & Signal Heads	$11,950.38
	CCO 57	City Monument Signs	$3,100.00
	CCO 59	Vandalism – Electrical work on Bridge	$23,504.72
	CCO 33	Wireless Communication System	$7,207.19
	CCO 58	Replace Stolen Fence along NB On Ramp	$15,160.00
	CCO 18-S1	DS connection onto the private property	$34,257.20
	CCO 55	Additional SWPPP Inspection	$14,030.00
	CCO 45	Street Lights on RR Bridge	$220,000.00
SR-71 / SR-91 Interchange Project	CCO 1	Maintain Traffic	$250,000.00
	CCO 2	Maintain Electrical	$50,000.00
	CCO 3	SWPPP Maintenance	$97,600.00
	CCO 4	Trash Removal	$75,000.00
	CCO 5	RTN Station (Survey)	$95,000.00
	CCO 7	Environmental Bio Surveys, NRPP, and HMMP	$25,000.00
	CCO 17	Repair Existing HMA	$75,000.00
	CCO 10	Environmental Monitoring Biologist - full time	$198,587.00
	CCO 11	Truck Haul	$467,500.00
	CCO 18	Bent 3 CIDH - Differing Site Conditions	$109,256.93
	CCO 8	Stage 1A K-rail VECP	($10,710.00)
	CCO 20	Drainage Change	$53,132.38
I-15 Railroad Canyon Interchange Project	CCO 34-S1	Item Adjustments	$43,228.78
	CCO 34-S2	Item Adjustments	$4,350.00
	CCO 37	City Location 2 EVMWD Fire Hydrant Additional Work	$9,450.00
	CCO 38	RFI 3, MSE Wall change	$18,000.00
	CCO 57-S1	Fertilizer Applications, Supplemental	($2,740.00)
	CCO 88-S1	Add Freeway Markings to Railroad Canyon Rd	$7,000.00
	CCO 89-S1	Drainage Remediations	$9,000.00
	CCO 90-S1	Erosion Repair	$9,746.00
	CCO 91	Weeding in Hydroseed Area	$60,182.83
	CCO 92	Maintenance of Slopes Due to Weather Event	$17,723.79
MVMF Platform and Track Expansion	CCO 4	Ped Crossing Reconstruction	$128,624.00
	CCO 6	Ballast Depth and Gradation Modifications	$205,400.00
	CCO 8	Platform Isolation	$7,250.00
	CCO 9	Underdrain Cleanout Addition	$1,189.00
SR-60 Truck Lanes Project	CCO 91	Concrete Jacking at EB STA 735+10 to STA 735+50 (Wildlife Crossing)	$95,644.02
	CCO 89	Time Adjustment	$24,390.00
15/91 Express Lanes Connector	CCO 24	Installation of Route Shields	$90,000.00
	CCO 25	Purchase of Spare 400 AMP Service Cabinet	$17,236.00
	CCO 26	Modify Channelizer Spacing Requirement	$40,849.27
	CCO 27	DSC at Overhead Sign Foundation 7-1	$8,894.00
	CCO 28	Pavement (EB SR 91 Pothole repair)	$13,437.87
	CCO 30	TTMS Pole Height (Construction)	$17,386.00

FISCAL IMPACT:

The Contract Change Orders were executed using available contingency authorized with the construction contract for each project.

AGENDA ITEM 6D

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	November 27, 2023
TO:	Budget and Implementation Committee
FROM:	Megan Kavand, Senior Financial Analyst
THROUGH:	Sergio Vidal, Chief Financial Officer
SUBJECT:	Monthly Investment Report

STAFF RECOMMENDATION:

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file the Monthly Investment Report for the month ended October 31, 2023.

BACKGROUND INFORMATION:

The Commission's investment reports have generally reflected investments primarily concentrated in the Riverside County Pooled Investment Fund as well as investments in mutual funds for sales tax revenue bonds debt service payments.

As a result of significant project financings such as the State Route 91 Corridor Improvement Project (91 Project or 91 CIP) and the Interstate 15 Express Lanes Project (I-15 ELP), the Commission engaged MetLife Investment Management, LLC, formerly Logan Circle Partners, L.P. (MetLife), as the investment manager for the bond proceeds and other required funds. Additionally, the Commission engaged Payden & Rygel Investment Management (Payden & Rygel) to make specific investments for Commission operating funds. The Commission approved initial agreements with the investment managers in May 2013 following a competitive procurement and has extended the agreements through the annual recurring contracts process.

MetLife invested the debt proceeds and subsequent other required contributions for the 91 Project and I-15 ELP in separate accounts of the Short-Term Actively Managed Program (STAMP). The Commission completed the 91 Project financing in 2013, the I-15 ELP and 91 Project completion financing (2017 Financing) in July 2017 and the 2021 91 Project refinancing (2021 Financing) in October 2021. Consistent with financing expectations, the Commission expended all 91 Project debt proceeds and equity contributions, except for the toll revenue bonds debt service reserve, and subsequent to commencement of operations, established other required accounts. The Commission continues to expend the 2017 Financing bond proceeds on the I-15 ELP and funded required reserve accounts.

The monthly investment report for October 2023, as required by state law and Commission policy, reflects the investment activities resulting from the 91 Project, 2017 Financing,

2021 Financing and available operating cash. As of October 31, 2023, the Commission's cash and investments were comprised of the following:

CASH AND INVESTMENTS PORTFOLIO	AMOUNTS [1]
Operating	$ 866,839,317
Trust	294,720,208
Commission-managed	222,512,149
STAMP for 91 CIP	58,216,672
STAMP for 2017 Financing	29,689,188
Total	**$ 1,471,977,534**
Note: [1] Unreconciled and unaudited	

As of October 31, 2023, the Commission's cash and investments are in compliance with both the Commission's investment policy adopted on October 11, 2023, and permitted investments described in the indenture for the Commission's sales tax revenue bonds and the master indentures for the Commission's toll revenue bonds. Additionally, the Commission has adequate cash flows for the next six months.

FISCAL IMPACT:

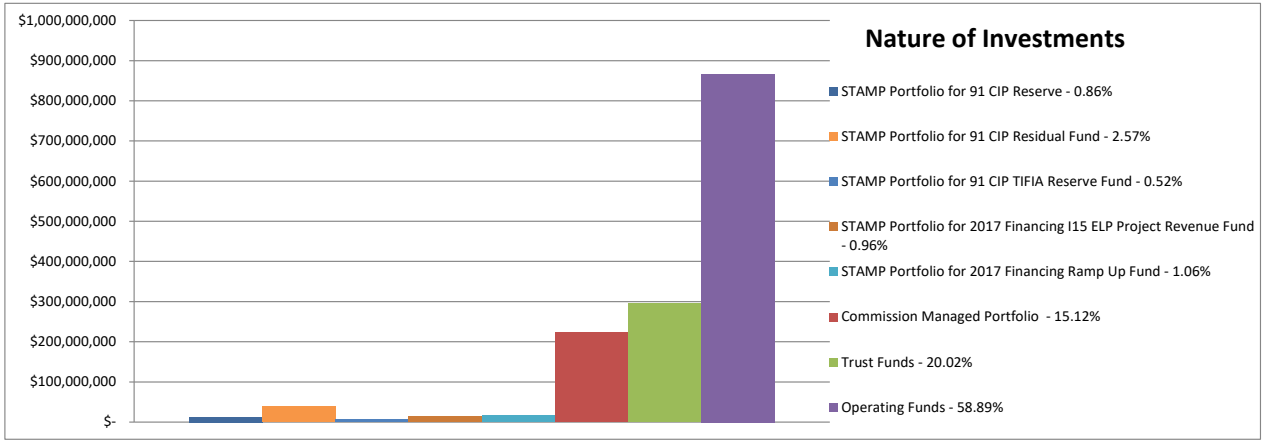
This is an information item. There is no fiscal impact.

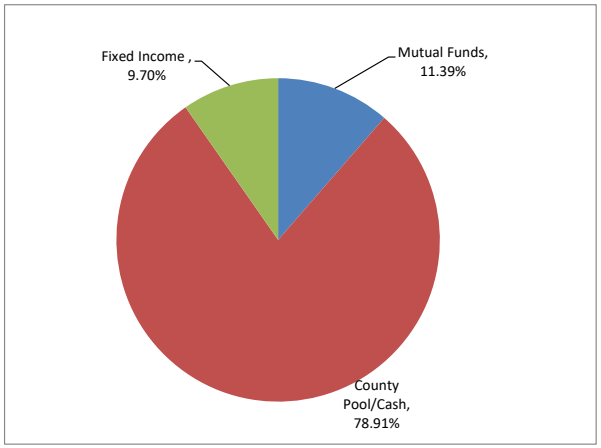
Attachment: Investment Portfolio Report

Riverside County Transportation Commission
Investment Portfolio Report
Period Ended: October 31, 2023

	STATEMENT BALANCE [1]	FINANCIAL INSTUTION	STATEMENTS	RATING MOODYS / S&P	COUPON RATE	PAR VALUE	PURCHASE DATE	MATURITY DATE	YIELD TO MATURITY	PURCHASE COST	MARKET VALUE	UNREALIZED GAIN (LOSS)
OPERATING FUNDS												
City National Bank Deposits	12,374,042	City National Bank	Available upon request	A3/BBB+	N/A				N/A			
County Treasurer's Pooled Investment Fund	854,465,275	County Treasurer	Available upon request					Available upon request				
Subtotal Operating Funds	866,839,317											
FUNDS HELD IN TRUST												
County Treasurer's Pooled Investment Fund:												
Local Transportation Fund	294,720,208	County Treasurer	Available upon request					Available upon request				
Subtotal Funds Held in Trust	294,720,208											
COMMISSION MANAGED PORTFOLIO												
US Bank Payden & Rygel Operating	54,891,665	US Bank	Available upon request					Available upon request				
First American Government Obligation Fund	167,620,484	US Bank	Available upon request	N/A	N/A				N/A			
Subtotal Commission Managed Portfolio	222,512,149											
STAMP PORTFOLIO for 91 CIP												
2013 Series A & Series B Reserve Fund	12,698,841	US Bank	Available upon request					Available upon request				
2021 Series B Reserve Fund	37,877,707	US Bank	Available upon request					Available upon request				
2021 Series C Reserve Fund	7,640,124	US Bank	Available upon request					Available upon request				
Subtotal STAMP Portfolio - 91 CIP	58,216,672											
STAMP PORTFOLIO for 2017 Financing												
Sales Tax I15 ELP Project Revenue Fund	14,070,486	US Bank	Available upon request					Available upon request				
Ramp Up Fund	15,618,701	US Bank	Available upon request					Available upon request				
Subtotal STAMP Portfolio - 2017 Financing	29,689,188											
TOTAL All Cash and Investments	**$ 1,471,977,534**											

Notes:
[1] Unreconciled and unaudited





AGENDA ITEM 7

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	November 27, 2023
TO:	Budget and Implementation Committee
FROM:	David Knudsen, External Affairs Director
THROUGH:	Aaron Hake, Deputy Executive Director
SUBJECT:	Traffic Relief Plan Public Engagement Program

STAFF RECOMMENDATION:

This item is for the Committee to recommend the Commission to take the following action(s):

1) Award Agreement No. 24-15-032-00 to AlphaVu for Public Engagement Program services for an eight-month term, in an amount not to exceed $986,034; and
2) Authorize the Chair or Executive Director, pursuant to legal counsel review, to execute the agreement on behalf of the Commission.

BACKGROUND INFORMATION:

The Commission has long valued open, transparent, and continuous communication and outreach to communities across Riverside County. Public outreach and community engagement requires the Commission to actively listen to the public, respond to their feedback, and provide factual information and education about the Commission's work.

Over the last several years, the Commission has implemented a robust public outreach effort to hear directly from Riverside County residents concerning transportation issues facing the region as well as projects and planning efforts to address congestion. In 2019, RCTC launched the #RebootMyCommute public engagement program, which generated thousands of public comments from residents, its leaders, and local stakeholder groups about the County's transportation needs. As a two-way dialog between RCTC and communities across Riverside County, the #RebootMyCommute program brought to light various priorities and preferences from Riverside County residents about all facets of transportation and needed improvements, from Coachella Valley Rail and expanded transit services to improvements to interchanges, local streets and roads, bike paths, and trail networks. These public comments, in addition to feedback collected through public opinion surveys, in-person community events, and focus group meetings, were evaluated and used to inform the Commission-adopted 2020 Traffic Relief Plan (TRP or Plan).

The TRP is a transportation infrastructure planning and funding strategy to deliver a backlog of transportation improvements and address the County's future transportation and mobility needs. While the 2020 TRP was not funded, it identifies the Commission's vision, values, and long-term transportation priorities for Riverside County.

Over the last three years, RCTC has delivered numerous projects that have benefited Riverside County residents, from the 15 Express Lanes and the Route 60 Truck Lanes to the first segment of the Mid County Parkway (I-215 Placentia Avenue Interchange), to interchanges and Metrolink station improvements. Although strides are being made by RCTC, transportation needs have only compounded as Riverside County faces continual population growth and exponential growth in goods movement on the region's roadways. At its February 2023 Commission Workshop, Commissioners discussed these issues, as well as reducing traffic congestion, supporting multimodal transportation options, increasing the use of passenger rail and bus transit, and reducing the burden of goods and freight movement on the county's transportation system. Based on this discussion, staff was directed to bring back to the Commission recommendations that would help identify strategies to fund and deliver planned projects. In addition, the Commission directed staff to evaluate the 2020 TRP and update it based on new information, including new state policies, state and federal funding opportunities, changes in project delivery costs and feasibility, and input from the County's residents.

Staff completed its evaluation of the TRP and outlined draft updates to the 2023 Projects and Funding Strategies Ad Hoc Committee (Committee) at its September meeting. Staff also indicated that a public outreach procurement would be advertised to help complete public outreach and education and collect input from residents to help finalize the updates to the TRP. On October 11, 2023, the Commission approved the Draft 2024 Traffic Relief Plan for public outreach and engagement.

Public Outreach Approach

The Public Engagement Program procurement is intended to inform the TRP and provide information to the Commission regarding a future funding strategy.

Inherent in the Public Engagement Program's design are accountability and performance management features that will ensure taxpayers' dollars are invested to achieve maximum return on investment. These features include:

- Goal-oriented work plan that keeps the consultant and staff focused on integrated outcomes, rather than independent outputs;
- Real-time, customized reporting of results of public engagements;
- Continuous improvement based on results received;
- Use of current and emerging digital communication methods to reach a large population with multiple levels of information; and
- Data privacy and security reviews throughout the program to ensure personal information of citizens who engage with the Commission are handled ethically, in compliance with the law, and in congruence with maintaining public trust.

The Public Engagement Program aims to achieve distinctive objectives apart from other communications from the Commission regarding existing projects.

Goal-Oriented Approach

Commission staff took a goal-oriented approach for this Public Engagement request for proposal (RFP). Typically, public outreach contracts are structured with requirements to complete specific tasks. In order better harness the private sector's valued creativity and state-of-the-art technological capabilities to engage the public in today's fast moving media environment, staff identified three goals with deadlines and challenged the proposers to develop best methods to achieve the goals. The goals are not rooted in increasing engagement or impressions, alone. The goals require a comprehensive approach that not only delivers the TRP to the community in a digital and grassroots fashion, but also gauges public knowledge of provisions contained in the TRP and solicits public feedback.

Development of the goals was also guided by recent experiences of the Commission and other California transportation agencies, including, but not limited, to:

- Successful and unsuccessful public engagement programs in California regarding transportation;
- Public opinion research in Riverside County;
- Previous communication activities by the Commission; and
- Existing staff and budget resources.

The three goals for the Public Engagement Program are as follows:

	Goal	Deadline
1.	Directly engage 5% of the county's total population in guiding the Commission's decisions about the county's transportation future.	July 2024
2.	Directly deliver the draft Traffic Relief Plan to 50% of the adult population of Riverside County, with the plan accessible to 100% of the population.	March 2024
3.	Conduct a public opinion survey that informs the Commission about general public support for funding the TRP (By June 1, 2024).	May 2024

Through these goals, Commission staff seeks to accomplish the following:

- Assist the Commission in finalizing policy and investment decisions with limited resources and constrained funding environment;
- Fulfill the Commission's goal of gathering public input on transportation needs;
- Increase transparency and accountability to the Commission's constituents by outlining transportation goals and potential investments; and
- Fulfill the Commission's direction to explore funding options that would be viable if the Commission chooses to seek support from County residents.

Following a competitive procurement process as discussed below, the recommendation is to award this Public Engagement Program contract to AlphaVu.

The Team: AlphaVu

AlphaVu has assembled a public engagement team with the breadth and depth of specialized skills and local experience necessary to execute a comprehensive, measurable, and meaningful public engagement program on behalf of the Commission. AlphaVu is the prime contractor and proposes a suite of sub-consultants for niche tasks to achieve the goals established by the Commission.

Team Member	Specialized Role
AlphaVu	Project management, advanced analytics and reporting, strategy, ad placement.
Arellano Associates	In-person public outreach, facilitation, public event management, and one-on-one engagement.
OPR Communications	Opinion leader outreach and nontraditional stakeholder engagement, earned media.
Hammons Strategies	Writing, content development, media relations.
Moonbeam	Moonbeam will design and produce print, graphic, video, and web elements.
FM3	Public opinion research, analysis, and strategy through surveys.

The Strategy

AlphaVu's strategy is to generate high-quality content for Riverside County residents regarding their transportation system on the information channels they use, and that match their interests. AlphaVu will capture, aggregate, and measure responses from all individuals to continually improve communications and allow staff and Commissioners to make upcoming policy and investment decisions based on direct public feedback. AlphaVu relies on proprietary computer modeling to measure public response online and present it in easy-to-read charts and graphs. Additionally, AlphaVu's software is designed to ensure the content being created by the Commission is placed in front of the intended audience at the intended time to maximize impact rather than placing sole control of content distribution at the discretion of the social media platform itself. The Commission has utilized AlphaVu's technology since 2017 to obtain feedback from Riverside County residents on transportation projects across the county. That research helped staff understand what priorities exist within the diverse sub-regions of the county. This digital engagement work is conducted in compliance with all laws of California and the United States regarding privacy and data collection.

AlphaVu's strategy also includes on-the-ground public outreach countywide. Sub-consultants Arellano Associates and OPR Communications will conduct organized and methodical outreach at community events and through one-on-one targeted stakeholder engagements. Using data collected online, the AlphaVu team will ascertain the most impactful events to attend to achieve the Commission's goals and will also help identify community influencers to whom the Commission should ensure it is listening and responding. The Public Engagement Program must

be inclusive of all Riverside County residents and stakeholders, as well. Communities representative of county diversity, environmental groups, taxpayer advocacy groups, labor, and other communities of interest will be engaged. Public opinion surveys will also be conducted during the program.

Using data gathered throughout the program, the AlphaVu team will help finalize the draft 2024 TRP that can potentially achieve support of two-thirds of Riverside County residents, which will be presented to the Commission for input by early summer 2024.

In summary, the AlphaVu strategy proposes to build a holistic real-world understanding of what residents pay attention to regarding transportation and how the Commission can be most responsive to their concerns. The AlphaVu approach goes beyond anecdotal intelligence-gathering, or use of well-established networks of people from whom we are most likely to hear from on a regular basis; instead, the approach proposes a data-driven effort to listen and speak broadly to the county's diverse constituency with whom the Commission does not interact with on a regular basis.

The evaluation panel selected AlphaVu for its sophisticated use of data and technology to reach wide and deep across Riverside County in a manner that can give the Commission assurances that its funds are being spent on engagements that are effective and can be used for actionable purposes.

Procurement Process

Staff determined the weighted factor method of source selection to be the most appropriate for this procurement, as it allows the Commission to identify the most advantageous proposal with price and other factors considered. Non-price factors included qualifications of each firm, personnel, and the ability to respond to the Commission's needs for a Public Engagement Program as set forth under the terms of RFP No. 24-15-032-00.

RFP No. 24-15-032-00 was released on September 20, 2023. The RFP was posted on the Commission's PlanetBids website, which is accessible through the Commission's website. Utilizing PlanetBids, emails were sent to 328 firms, forty of which are located in Riverside County. Through the PlanetBids site, 52 firms downloaded the RFP. Staff responded to all questions submitted by potential proposers by October 4, 2023. Five firms –AlpaVu (Washington, DC); Kleinfelder Construction Services (Riverside); McCormick-Busse DBA MBI Media (Covina); CLC Publicidad DBA Sherpa Marketing Solutions (Sherman Oaks); and Southwest Strategies (San Diego) - submitted responsive proposals prior to the 2:00 p.m. submittal deadline on October 18, 2023. Utilizing the evaluation criteria set forth in the RFP, all firms were evaluated and scored by an evaluation committee comprised of Commission and Coachella Valley Association of Governments staff.

Based on the evaluation committee's assessment of the written proposals and pursuant to the terms of the RFP, the evaluation committee shortlisted and invited two firms – AlphaVu and

Southwest Strategies – to the interview phase of the evaluation and selection process. Interviews of the shortlisted firms were conducted on November 1.

Subsequently, the evaluation committee determined AlphaVu to be the most qualified firm to provide services for the Public Engagement Program.

The overall evaluation ranking of written proposals, based on highest to lowest total evaluation score, and price are presented in the following table.

Firm	Price	Overall Ranking
AlphaVu	$986,034	1
Southwest Strategies	$975,238	2
Kleinfelder	$985,063	3
MBI Media	$908,003	4
Sherpa Marketing Solutions	$929,600	5

STAFF RECOMMENDATION

As a result of the evaluation committee's assessment of the written proposals and interviews, the evaluation committee recommends contract award to AlphaVu for a term of 8 months, in a total amount not to exceed $986,034, as this firm earned the highest total evaluation score.

The Commission's professional services agreement will be entered into with the consultant subject to any changes approved by the Executive Director and pursuant to legal counsel review. Staff oversight of the contract will maximize the effectiveness of the consultant and minimize costs to the Commission.

Financial Information						
In Fiscal Year Budget:	Yes	Year:	FY 2023/24 FY 2024/25	Amount:	$886,034 $100,000	
Source of Funds:	Measure A			Budget Adjustment:	No	
GL/Project Accounting No.:	Expenditure: 002325 65520 00000 0000 106 67 65520					
Fiscal Procedures Approved:				Date:	11/15/2023	

Attachment: Draft Agreement No. 24-15-032-00 to AlphaVu

Agreement No. 24-15-032-00

RIVERSIDE COUNTY TRANSPORTATION COMMISSION AGREEMENT FOR PUBLIC ENGAGEMENT AND OUTREACH PROGRAM WITH ALPHAVU

1. PARTIES AND DATE.

This Agreement is made and entered into this 1st day of January, 2024, by and between the RIVERSIDE COUNTY TRANSPORTATION COMMISSION ("the Commission") and ALPHAVU ("Consultant"), a Limited Liability Corporation.

2. RECITALS.

2.1 Consultant desires to perform and assume responsibility for the provision of certain professional consulting services required by Commission on the terms and conditions set forth in this Agreement. Consultant represents that it is a professional consultant, experienced in providing public engagement and outreach programs to public clients, is licensed in the State of California, and is familiar with the plans of Commission.

2.2 Commission desires to engage Consultant to render certain consulting services for the Public Engagement and Outreach Program ("Project") as set forth herein.

3. TERMS.

3.1 General Scope of Services. Consultant promises and agrees to furnish to Commission all labor materials, tools, equipment, services, and incidental and customary work necessary to fully and adequately provide professional consulting services and advice on various issues affecting the decisions of Commission regarding the Project and on other programs and matters affecting Commission, hereinafter referred to as "Services". The Services are more particularly described in Exhibit "A" attached hereto and incorporated herein by reference. All Services shall be subject to, and performed in accordance with, this Agreement, the exhibits attached hereto and incorporated herein by reference, and all applicable local, state, and federal laws, rules and regulations.

3.2 Term. The term of this Agreement shall be from the date first specified above to August 31, 2024, unless earlier terminated as provided herein. Consultant shall complete the Services within the term of this Agreement and shall meet any other established schedules and deadlines.

3.3 Schedule of Services. Consultant shall perform the Services expeditiously, within the term of this Agreement, and in accordance with the Schedule of Services set forth in Exhibit "B" attached hereto and incorporated herein by reference. Consultant represents that it has the professional and technical personnel required to perform the Services in conformance with such conditions. In order to facilitate Consultant's conformance with the Schedule, the Commission shall respond to Consultant's submittals in a timely manner. Upon request of the Commission, Consultant shall provide a more detailed schedule of anticipated performance to meet the Schedule of Services.

3.4 Independent Contractor; Control and Payment of Subordinates. The Services shall be performed by Consultant under its supervision. Consultant will determine the means, method and details of performing the Services subject to the requirements of this Agreement. Commission retains Consultant on an independent contractor basis and Consultant is not an employee of Commission. Consultant retains the right to perform similar or different services for others during the term of this Agreement. Any additional personnel performing the Services under this Agreement on behalf of Consultant shall not be employees of Commission and shall at all times be under Consultant's exclusive direction and control. Consultant shall pay all wages, salaries, and other amounts due such personnel in connection with their performance of Services under this Agreement and as required by law. Consultant shall be responsible for all reports and obligations respecting such additional personnel, including, but not limited to: social security taxes, income tax withholding, unemployment insurance, and workers' compensation insurance.

3.5 Conformance to Applicable Requirements. All work prepared by Consultant shall be subject to the approval of Commission.

3.6 Substitution of Key Personnel. Consultant has represented to Commission that certain key personnel will perform and coordinate the Services under this Agreement. Should one or more of such personnel become unavailable, Consultant may substitute other personnel of at least equal competence and experience upon written approval of Commission. In the event that Commission and Consultant cannot agree as to the substitution of key personnel, Commission shall be entitled to terminate this Agreement for cause, pursuant to provisions of Section 3.16 of this Agreement. The key personnel for performance of this Agreement are as follows: Scott G. Wilkinson; Zachary Hernandez; Justin Browning; Marshall McCraw; Richard Bernard; Adam Sonenshein; Gale Hammon; Patrick J. O'Reilly; Michael Fisher; Maddy Bogh; Maria Yanez-Forgash; Joshua Francis; Sohrab Mikanik; Ilian Ramirez; Russ Hennings.

3.7 Commission's Representative. Commission hereby designates the Executive Director, or his or her designee, to act as its representative for the performance of this Agreement ("Commission's Representative"). Commission's representative shall have the power to act on behalf of Commission for all purposes under this Agreement. Consultant shall not accept direction from any person other than Commission's Representative or his or her designee.

3.8 Consultant's Representative. Consultant hereby designates Scott G. Wilkinson, or his or her designee, to act as its representative for the performance of this Agreement ("Consultant's Representative"). Consultant's Representative shall have full authority to represent and act on behalf of the Consultant for all purposes under this Agreement. The Consultant's Representative shall supervise and direct the Services, using his or her best skill and attention, and shall be responsible for all means, methods, techniques, sequences and procedures and for the satisfactory coordination of all portions of the Services under this Agreement.

3.9 Coordination of Services. Consultant agrees to work closely with Commission staff in the performance of Services and shall be available to Commission's staff, consultants and other staff at all reasonable times.

3.10 Standard of Care; Licenses. Consultant shall perform the Services under this Agreement in a skillful and competent manner, consistent with the standard generally recognized as being employed by professionals in the same discipline in the State of California. Consultant represents and maintains that it is skilled in the professional calling necessary to perform the Services. Consultant warrants that all employees and subcontractors shall have sufficient skill and experience to perform the Services assigned to them. Finally, Consultant represents that it, its employees and subcontractors have all licenses, permits, qualifications and approvals of whatever nature that are legally required to perform the Services and that such licenses and approvals shall be maintained throughout the term of this Agreement. Consultant shall perform, at its own cost and expense and without reimbursement from Commission, any Services necessary to correct errors or omissions which are caused by the Consultant's failure to comply with the standard of care provided for herein, and shall be fully responsible to the Commission for all damages and other liabilities provided for in the indemnification provisions of this Agreement arising from the Consultant's errors and omissions.

3.11 Laws and Regulations. Consultant shall keep itself fully informed of and in compliance with all local, state and federal laws, rules and regulations in any manner affecting the performance of the Project or the Services, including all Cal/OSHA requirements, and shall give all notices required by law. Consultant shall be liable for all violations of such laws and regulations in connection with Services. If the Consultant performs any work knowing it to be contrary to such laws, rules and regulations and without giving written notice to Commission, Consultant shall be solely responsible for all costs arising therefrom. Consultant shall defend, indemnify and hold Commission, its officials, directors, officers, employees and agents free and harmless, pursuant to the indemnification provisions of this Agreement, from any claim or liability arising out of any failure or alleged failure to comply with such laws, rules or regulations.

3.12 Insurance.

3.12.1 Time for Compliance. Consultant shall not commence work under this Agreement until it has provided evidence satisfactory to the Commission that it has secured all insurance required under this section, in a form and with insurance companies acceptable to the Commission. In addition, Consultant shall not allow any subcontractor to commence work on any subcontract until it has secured all insurance required under this section.

3.12.2 Minimum Requirements. Consultant shall, at its expense, procure and maintain for the duration of the Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Agreement by the Consultant, its agents, representatives, employees or subcontractors. Consultant shall also require all of its subcontractors to procure and maintain the same insurance for the duration of the Agreement. Such insurance shall meet at least the following minimum levels of coverage:

(A) Minimum Scope of Insurance. Coverage shall be at least as broad as the latest version of the following: (1) *General Liability*: Insurance Services Office Commercial General Liability coverage (occurrence form CG 0001 or exact equivalent); (2) *Automobile Liability*: Insurance Services Office Business Auto Coverage (form CA 0001, code 1 (any auto) or exact equivalent); and (3) *Workers' Compensation and Employer's Liability*: Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance.

(B) Minimum Limits of Insurance. Consultant shall maintain limits no less than: (1) *General Liability:* $2,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with general aggregate limit is used, either the general aggregate limit shall apply separately to this Agreement/location or the general aggregate limit shall be twice the required occurrence limit; (2) *Automobile Liability:* $1,000,000 per accident for bodily injury and property damage; and (3) *if Consultant has an employees, Workers' Compensation and Employer's Liability:* Workers' Compensation limits as required by the Labor Code of the State of California. Employer's Practices Liability limits of $1,000,000 per accident.

3.12.3 Professional Liability. Consultant shall procure and maintain, and require its sub-consultants to procure and maintain, for a period of five (5) years following completion of the Project, errors and omissions liability insurance appropriate to their profession. Such insurance shall be in an amount not less than $1,000,000 per claim. This insurance shall be endorsed to include contractual liability applicable to this Agreement and shall be written on a policy form coverage specifically designed to protect against acts, errors or omissions of the Consultant. "Covered Professional Services" as designated in the policy must specifically include work performed under this Agreement. The policy must "pay on behalf of" the insured and must include a provision establishing the insurer's duty to defend.

3.12.4 Insurance Endorsements. The insurance policies shall contain the following provisions, or Consultant shall provide endorsements on forms approved by the Commission to add the following provisions to the insurance policies:

(A) General Liability.

(i) Commercial General Liability Insurance must include coverage for (1) bodily Injury and property damage; (2) personal Injury/advertising Injury; (3) premises/operations liability; (4) products/completed operations liability; (5) aggregate limits that apply per Project; (6) explosion, collapse and underground (UCX) exclusion deleted; (7) contractual liability with respect to this Agreement; (8) broad form property damage; and (9) independent consultants coverage.

(ii) The policy shall contain no endorsements or provisions limiting coverage for (1) contractual liability; (2) cross liability exclusion for claims or suits by one insured against another; or (3) contain any other exclusion contrary to this Agreement.

(iii) The policy shall give the Commission, its directors, officials, officers, employees, and agents insured status using ISO endorsement forms 20 10 10 01 and 20 37 10 01, or endorsements providing the exact same coverage.

(iv) The additional insured coverage under the policy shall be "primary and non-contributory" and will not seek contribution from the Commission's insurance or self-insurance and shall be at least as broad as CG 20 01 04 13, or endorsements providing the exact same coverage.

(B) Automobile Liability. The automobile liability policy shall be endorsed to state that: (1) the Commission, its directors, officials, officers, employees and agents shall be covered as additional insureds with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by the Consultant or for which the Consultant is responsible; and (2) the insurance coverage shall be primary insurance as respects the Commission, its directors, officials, officers, employees and agents, or if excess, shall stand in an unbroken chain of coverage excess of the Consultant's scheduled underlying coverage. Any insurance or self-insurance maintained by the Commission, its directors, officials, officers, employees and agents shall be excess of the Consultant's insurance and shall not be called upon to contribute with it in any way.

(C) Workers' Compensation and Employers Liability Coverage.

(i) Consultant certifies that he/she is aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and he/she will comply with such provisions before commencing work under this Agreement.

(ii) The insurer shall agree to waive all rights of subrogation against the Commission, its directors, officials, officers, employees and agents for losses paid under the terms of the insurance policy which arise from work performed by the Consultant.

(D) All Coverages.

(i) Defense costs shall be payable in addition to the limits set forth hereunder.

(ii) Requirements of specific coverage or limits contained in this section are not intended as a limitation on coverage, limits, or other requirement, or a waiver of any coverage normally provided by any insurance. It shall be a requirement under this Agreement that any available insurance proceeds broader than or in excess of the specified minimum insurance coverage requirements and/or limits set forth herein shall be available to the Commission, its directors, officials, officers, employees and agents as additional insureds under said policies. Furthermore, the requirements for coverage and limits shall be (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policy or proceeds available to the named insured; whichever is greater.

(iii) The limits of insurance required in this Agreement may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and non-contributory basis for the benefit of the Commission (if agreed to in a written contract or agreement) before the Commission's own insurance or self-insurance shall be called upon to protect it as a named insured. The umbrella/excess policy shall be provided on a "following form" basis with coverage at least as broad as provided on the underlying policy(ies).

(iv) Consultant shall provide the Commission at least thirty (30) days prior written notice of cancellation of any policy required by this Agreement, except that the Consultant shall provide at least ten (10) days prior written notice of cancellation of any such policy due to non-payment of premium. If any of the required coverage is cancelled or expires during the term of this Agreement, the Consultant shall deliver renewal certificate(s) including the General Liability Additional Insured Endorsement

to the Commission at least ten (10) days prior to the effective date of cancellation or expiration.

(v) The retroactive date (if any) of each policy is to be no later than the effective date of this Agreement. Consultant shall maintain such coverage continuously for a period of at least three years after the completion of the work under this Agreement. Consultant shall purchase a one (1) year extended reporting period A) if the retroactive date is advanced past the effective date of this Agreement; B) if the policy is cancelled or not renewed; or C) if the policy is replaced by another claims-made policy with a retroactive date subsequent to the effective date of this Agreement.

(vi) The foregoing requirements as to the types and limits of insurance coverage to be maintained by Consultant, and any approval of said insurance by the Commission, is not intended to and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by the Consultant pursuant to this Agreement, including but not limited to, the provisions concerning indemnification.

(vii) If at any time during the life of the Agreement, any policy of insurance required under this Agreement does not comply with these specifications or is canceled and not replaced, Commission has the right but not the duty to obtain the insurance it deems necessary and any premium paid by Commission will be promptly reimbursed by Consultant or Commission will withhold amounts sufficient to pay premium from Consultant payments. In the alternative, Commission may cancel this Agreement. The Commission may require the Consultant to provide complete copies of all insurance policies in effect for the duration of the Project.

(viii) Neither the Commission nor any of its directors, officials, officers, employees or agents shall be personally responsible for any liability arising under or by virtue of this Agreement.

Each insurance policy required by this Agreement shall be endorsed to state that:

3.12.5 Deductibles and Self-Insurance Retentions. Any deductibles or self-insured retentions must be declared to and approved by the Commission. If the Commission does not approve the deductibles or self-insured retentions as presented, Consultant shall guarantee that, at the option of the Commission, either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the Commission, its directors, officials, officers, employees and agents; or, (2) the Consultant shall procure a bond guaranteeing payment of losses and related investigation costs, claims and administrative and defense expenses.

3.12.6 Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best's rating no less than A:VIII, licensed to do business in California, and satisfactory to the Commission.

3.12.7 Verification of Coverage. Consultant shall furnish Commission with original certificates of insurance and endorsements effecting coverage required by this Agreement on forms satisfactory to the Commission. The certificates and endorsements for each insurance policy shall be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements must be received and approved by the Commission before work commences. The Commission reserves the right to require complete, certified copies of all required insurance policies, at any time.

3.12.8 Subconsultant Insurance Requirements. Consultant shall not allow any subcontractors or subconsultants to commence work on any subcontract until they have provided evidence satisfactory to the Commission that they have secured all insurance required under this section. Policies of commercial general liability insurance provided by such subcontractors or subconsultants shall be endorsed to name the Commission as an additional insured using ISO form CG 20 38 04 13 or an endorsement providing the exact same coverage. If requested by Consultant, the Commission may approve different scopes or minimum limits of insurance for particular subcontractors or subconsultants.

3.13 Safety. Consultant shall execute and maintain its work so as to avoid injury or damage to any person or property. In carrying out its Services, the Consultant shall at all times be in compliance with all applicable local, state and federal laws, rules and regulations, and shall exercise all necessary precautions for the safety of employees appropriate to the nature of the work and the conditions under which the work is to be performed. Safety precautions as applicable shall include, but shall not be limited to: (A) adequate life protection and life saving equipment and procedures; (B) instructions in accident prevention for all employees and subcontractors, such as safe walkways, scaffolds, fall protection ladders, bridges, gang planks, confined space procedures, trenching and shoring, equipment and other safety devices, equipment and wearing apparel as are necessary or lawfully required to prevent accidents or injuries; and (C) adequate facilities for the proper inspection and maintenance of all safety measures.

3.14 Fees and Payment.

3.14.1 Compensation. Consultant shall receive compensation, including authorized reimbursements, for all Services rendered under this Agreement at the rates set forth in Exhibit "C" attached hereto. The overhead rates included in the attached Exhibit “C” shall be fixed for the term of the Master Agreement, and shall not be subject to adjustment, unless required by the applicable funding source. The total compensation shall not exceed Nine Hundred Eighty-Six Thousand Thirty-Four Dollars ($986,034) without written approval of Commission's Executive Director (“Total Compensation”). Extra Work may be authorized, as described below, and if authorized, will be compensated at the rates and manner set forth in this Agreement.

3.14.2 Payment of Compensation. Consultant shall submit to Commission a monthly statement which indicates work completed and hours of Services rendered by Consultant. The statement shall describe the amount of Services and supplies

provided since the initial commencement date, or since the start of the subsequent billing periods, as appropriate, through the date of the statement. Commission shall, within 45 days of receiving such statement, review the statement and pay all approved charges thereon.

3.14.3 Reimbursement for Expenses. Consultant shall not be reimbursed for any expenses unless authorized in writing by Commission.

3.14.4 Extra Work. At any time during the term of this Agreement, Commission may request that Consultant perform Extra Work. As used herein, "Extra Work" means any work which is determined by Commission to be necessary for the proper completion of the Project, but which the parties did not reasonably anticipate would be necessary at the execution of this Agreement. Consultant shall not perform, nor be compensated for, Extra Work without written authorization from Commission's Executive Director.

3.15 Accounting Records. Consultant shall maintain complete and accurate records with respect to all costs and expenses incurred and fees charged under this Agreement. All such records shall be clearly identifiable. Consultant shall allow a representative of Commission during normal business hours to examine, audit, and make transcripts or copies of such records and any other documents created pursuant to this Agreement. Consultant shall allow inspection of all work, data, documents, proceedings, and activities related to the Agreement for a period of three (3) years from the date of final payment under this Agreement.

3.16 Termination of Agreement.

3.16.1 Grounds for Termination. Commission may, by written notice to Consultant, terminate the whole or any part of this Agreement at any time and without cause by giving written notice to Consultant of such termination, and specifying the effective date thereof. Upon termination, Consultant shall be compensated only for those services which have been fully and adequately rendered to Commission through the effective date of the termination, and Consultant shall be entitled to no further compensation. Consultant may not terminate this Agreement except for cause.

3.16.2 Effect of Termination. If this Agreement is terminated as provided herein, Commission may require Consultant to provide all finished or unfinished Documents and Data, as defined below, and other information of any kind prepared by Consultant in connection with the performance of Services under this Agreement. Consultant shall be required to provide such document and other information within fifteen (15) days of the request.

3.16.3 Additional Services. In the event this Agreement is terminated in whole or in part as provided herein, Commission may procure, upon such terms and in such manner as it may determine appropriate, services similar to those terminated.

3.17 Delivery of Notices. All notices permitted or required under this Agreement shall be given to the respective parties at the following address, or at such other address as the respective parties may provide in writing for this purpose:

CONSULTANT:	**COMMISSION**:
AlphaVu LLC	Riverside County
1100 15th Street NW	Transportation Commission
4th Floor	4080 Lemon Street, 3rd Floor
Washington, DC 20005	Riverside, CA 92501
Attn: Scott G. Wilkinson	Attn: Executive Director

Such notice shall be deemed made when personally delivered or when mailed, forty-eight (48) hours after deposit in the U.S. Mail, first class postage prepaid and addressed to the party at its applicable address. Actual notice shall be deemed adequate notice on the date actual notice occurred, regardless of the method of service.

3.18 Ownership of Materials/Confidentiality.

3.18.1 Documents & Data. This Agreement creates an exclusive and perpetual license for Commission to copy, use, modify, reuse, or sub-license any and all copyrights and designs embodied in plans, specifications, studies, drawings, estimates, materials, data and other documents or works of authorship fixed in any tangible medium of expression, including but not limited to, physical drawings or data magnetically or otherwise recorded on computer diskettes, which are prepared or caused to be prepared by Consultant under this Agreement ("Documents & Data").

Consultant shall require all subcontractors to agree in writing that Commission is granted an exclusive and perpetual license for any Documents & Data the subcontractor prepares under this Agreement.

Consultant represents and warrants that Consultant has the legal right to grant the exclusive and perpetual license for all such Documents & Data. Consultant makes no such representation and warranty in regard to Documents & Data which were prepared by design professionals other than Consultant or provided to Consultant by the Commission.

Commission shall not be limited in any way in its use of the Documents & Data at any time, provided that any such use not within the purposes intended by this Agreement shall be at Commission's sole risk.

3.18.2 Intellectual Property. In addition, Commission shall have and retain all right, title and interest (including copyright, patent, trade secret and other proprietary rights) in all plans, specifications, studies, drawings, estimates, materials, data, computer programs or software and source code, enhancements, documents, and any and all works of authorship fixed in any tangible medium or expression, including but not limited

to, physical drawings or other data magnetically or otherwise recorded on computer media ("Intellectual Property") prepared or developed by or on behalf of Consultant under this Agreement as well as any other such Intellectual Property prepared or developed by or on behalf of Consultant under this Agreement.

The Commission shall have and retain all right, title and interest in Intellectual Property developed or modified under this Agreement whether or not paid for wholly or in part by Commission, whether or not developed in conjunction with Consultant, and whether or not developed by Consultant. Consultant will execute separate written assignments of any and all rights to the above referenced Intellectual Property upon request of Commission.

Consultant shall also be responsible to obtain in writing separate written assignments from any subcontractors or agents of Consultant of any and all right to the above referenced Intellectual Property. Should Consultant, either during or following termination of this Agreement, desire to use any of the above-referenced Intellectual Property, it shall first obtain the written approval of the Commission.

All materials and documents which were developed or prepared by the Consultant for general use prior to the execution of this Agreement and which are not the copyright of any other party or publicly available and any other computer applications, shall continue to be the property of the Consultant. However, unless otherwise identified and stated prior to execution of this Agreement, Consultant represents and warrants that it has the right to grant the exclusive and perpetual license for all such Intellectual Property as provided herein.

Commission further is granted by Consultant a non-exclusive and perpetual license to copy, use, modify or sub-license any and all Intellectual Property otherwise owned by Consultant which is the basis or foundation for any derivative, collective, insurrectional, or supplemental work created under this Agreement.

3.18.3 Confidentiality. All ideas, memoranda, specifications, plans, procedures, drawings, descriptions, computer program data, input record data, written information, and other Documents and Data either created by or provided to Consultant in connection with the performance of this Agreement shall be held confidential by Consultant. Such materials shall not, without the prior written consent of Commission, be used by Consultant for any purposes other than the performance of the Services. Nor shall such materials be disclosed to any person or entity not connected with the performance of the Services or the Project. Nothing furnished to Consultant which is otherwise known to Consultant or is generally known, or has become known, to the related industry shall be deemed confidential. Consultant shall not use Commission's name or insignia, photographs of the Project, or any publicity pertaining to the Services or the Project in any magazine, trade paper, newspaper, television or radio production or other similar medium without the prior written consent of Commission.

3.18.4 Infringement Indemnification. Consultant shall defend, indemnify and hold the Commission, its directors, officials, officers, employees, volunteers and agents free and harmless, pursuant to the indemnification provisions of this Agreement, for any alleged infringement of any patent, copyright, trade secret, trade name, trademark, or any other proprietary right of any person or entity in consequence of the use on the Project by Commission of the Documents & Data, including any method, process, product, or concept specified or depicted.

3.19 Cooperation; Further Acts. The Parties shall fully cooperate with one another, and shall take any additional acts or sign any additional documents as may be necessary, appropriate or convenient to attain the purposes of this Agreement.

3.20 Attorney's Fees. If either party commences an action against the other party, either legal, administrative or otherwise, arising out of or in connection with this Agreement, the prevailing party in such litigation shall be entitled to have and recover from the losing party reasonable attorney's fees and costs of such actions.

3.21 Indemnification. To the fullest extent permitted by law, Consultant shall defend (with counsel of Commission's choosing), indemnify and hold Commission, its directors, officials, officers, employees, consultants, volunteers, and agents free and harmless from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage or injury, in law or equity, to property or persons, including wrongful death, in any manner arising out of or incident to alleged negligent acts, omissions, or willful misconduct of Consultant, its officials, officers, employees, agents, consultants, and contractors arising out of or in connection with the performance of the Services, the Project or this Agreement, including without limitation the payment of consequential damages, expert witness fees, and attorneys fees and other related costs and expenses. Consultant shall defend, at Consultant's own cost, expense and risk, any and all such aforesaid suits, actions or other legal proceedings of every kind that may be brought or instituted against Commission, its directors, officials, officers, employees, consultants, agents, or volunteers. Consultant shall pay and satisfy any judgment, award or decree that may be rendered against Commission or its directors, officials, officers, employees, consultants, agents, or volunteers, in any such suit, action or other legal proceeding. Consultant shall reimburse Commission and its directors, officials, officers, employees, consultants, agents, and/or volunteers, for any and all legal expenses and costs, including reasonable attorney's fees, incurred by each of them in connection therewith or in enforcing the indemnity herein provided. Consultant's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by Commission, its directors, officials officers, employees, consultants, agents, or volunteers.

If Consultant's obligation to defend, indemnify, and/or hold harmless arises out of Consultant's performance as a "design professional" (as that term is defined under Civil Code section 2782.8), then, and only to the extent required by Civil Code section 2782.8, which is fully incorporated herein, Consultant's indemnification obligation shall be limited to claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant, and, upon Consultant obtaining a final adjudication by

a court of competent jurisdiction, Consultant's liability for such claim, including the cost to defend, shall not exceed the Consultant's proportionate percentage of fault.

Consultant's obligations as set forth in this Section shall survive expiration or termination of this Agreement.

3.22 Entire Agreement. This Agreement contains the entire Agreement of the parties with respect to the subject matter hereof, and supersedes all prior negotiations, understandings or agreements. This Agreement may only be supplemented, amended, or modified by a writing signed by both parties.

3.23 Governing Law. This Agreement shall be governed by the laws of the State of California. Venue shall be in Riverside County.

3.24 Time of Essence. Time is of the essence for each and every provision of this Agreement.

3.25 Commission's Right to Employ Other Consultants. The Commission reserves the right to employ other consultants in connection with this Project.

3.26 Successors and Assigns. This Agreement shall be binding on the successors and assigns of the parties, and shall not be assigned by Consultant without the prior written consent of Commission.

3.27 Prohibited Interests and Conflicts.

3.27.1 Solicitation. Consultant maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Consultant, to solicit or secure this Agreement. Further, Consultant warrants that it has not paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. For breach or violation of this warranty, Commission shall have the right to rescind this Agreement without liability.

3.27.2 Conflict of Interest. For the term of this Agreement, no member, officer or employee of Commission, during the term of his or her service with Commission, shall have any direct interest in this Agreement, or obtain any present or anticipated material benefit arising therefrom.

3.27.3 Conflict of Employment. Employment by the Consultant of personnel currently on the payroll of the Commission shall not be permitted in the performance of this Agreement, even though such employment may occur outside of the employee's regular working hours or on weekends, holidays or vacation time. Further, the employment by the Consultant of personnel who have been on the Commission payroll within one year prior to the date of execution of this Agreement, where this employment is

caused by and or dependent upon the Consultant securing this or related Agreements with the Commission, is prohibited.

3.27.4 Employment Adverse to the Commission. Consultant shall notify the Commission, and shall obtain the Commission's written consent, prior to accepting work to assist with or participate in a third-party lawsuit or other legal or administrative proceeding against the Commission during the term of this Agreement.

3.28 Equal Opportunity Employment. Consultant represents that it is an equal opportunity employer and it shall not discriminate against any employee or applicant for employment because of race, religion, color, national origin, ancestry, sex or age. Such non-discrimination shall include, but not be limited to, all activities related to initial employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination. Consultant shall also comply with all relevant provisions of Commission's Disadvantaged Business Enterprise program, Affirmative Action Plan or other related Commission programs or guidelines currently in effect or hereinafter enacted.

3.29 Subcontracting. Consultant shall not subcontract any portion of the work or Services required by this Agreement, except as expressly stated herein, without prior written approval of the Commission. Subcontracts, if any, shall contain a provision making them subject to all provisions stipulated in this Agreement.

3.30 Prevailing Wages. By its execution of this Agreement, Consultant certified that it is aware of the requirements of California Labor Code Sections 1720 et seq. and 1770 et seq., as well as California Code of Regulations, Title 8, Section 16000 et seq. ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on certain "public works" and "maintenance" projects. If the Services are being performed as part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and if the total compensation is $1,000 or more, Consultant agrees to fully comply with such Prevailing Wage Laws. The Commission shall provide Consultant with a copy of the prevailing rate of per diem wages in effect at the commencement of this Agreement. Consultant shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to execute the Services available to interested parties upon request, and shall post copies at the Consultant's principal place of business and at the project site. Consultant shall defend, indemnify and hold the Commission, its elected officials, officers, employees and agents free and harmless from any claims, liabilities, costs, penalties or interest arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.

3.30.1 DIR Registration. If the Services are being performed as part of an applicable "public works" or "maintenance" project, then pursuant to Labor Code Sections 1725.5 and 1771.1, the Consultant and all subconsultants must be registered with the Department of Industrial Relations. If applicable, Consultant shall maintain registration for the duration of the Project and require the same of any subconsultants. This Project may also be subject to compliance monitoring and enforcement by the Department of

Industrial Relations. It shall be Consultant's sole responsibility to comply with all applicable registration and labor compliance requirements.

3.31 Employment of Apprentices. This Agreement shall not prevent the employment of properly indentured apprentices in accordance with the California Labor Code, and no employer or labor union shall refuse to accept otherwise qualified employees as indentured apprentices on the work performed hereunder solely on the ground of race, creed, national origin, ancestry, color or sex. Every qualified apprentice shall be paid the standard wage paid to apprentices under the regulations of the craft or trade in which he or she is employed and shall be employed only in the craft or trade to which he or she is registered.

If California Labor Code Section 1777.5 applies to the Services, Consultant and any subcontractor hereunder who employs workers in any apprenticeable craft or trade shall apply to the joint apprenticeship council administering applicable standards for a certificate approving Consultant or any sub-consultant for the employment and training of apprentices. Upon issuance of this certificate, Consultant and any sub-consultant shall employ the number of apprentices provided for therein, as well as contribute to the fund to administer the apprenticeship program in each craft or trade in the area of the work hereunder.

The parties expressly understand that the responsibility for compliance with provisions of this Section and with Sections 1777.5, 1777.6 and 1777.7 of the California Labor Code in regard to all apprenticeable occupations lies with Consultant.

3.32 No Waiver. Failure of Commission to insist on any one occasion upon strict compliance with any of the terms, covenants or conditions hereof shall not be deemed a waiver of such term, covenant or condition, nor shall any waiver or relinquishment of any rights or powers hereunder at any one time or more times be deemed a waiver or relinquishment of such other right or power at any other time or times.

3.33 Eight-Hour Law. Pursuant to the provisions of the California Labor Code, eight hours of labor shall constitute a legal day's work, and the time of service of any worker employed on the work shall be limited and restricted to eight hours during any one calendar day, and forty hours in any one calendar week, except when payment for overtime is made at not less than one and one-half the basic rate for all hours worked in excess of eight hours per day ("Eight-Hour Law"), unless Consultant or the Services are not subject to the Eight-Hour Law. Consultant shall forfeit to Commission as a penalty, $50.00 for each worker employed in the execution of this Agreement by him, or by any sub-consultant under him, for each calendar day during which such workman is required or permitted to work more than eight hours in any calendar day and forty hours in any one calendar week without such compensation for overtime violation of the provisions of the California Labor Code, unless Consultant or the Services are not subject to the Eight-Hour Law.

3.34 Subpoenas or Court Orders. Should Consultant receive a subpoena or court order related to this Agreement, the Services or the Project, Consultant shall

immediately provide written notice of the subpoena or court order to the Commission. Consultant shall not respond to any such subpoena or court order until notice to the Commission is provided as required herein, and shall cooperate with the Commission in responding to the subpoena or court order.

3.35 Survival. All rights and obligations hereunder that by their nature are to continue after any expiration or termination of this Agreement, including, but not limited to, the indemnification and confidentiality obligations, and the obligations related to receipt of subpoenas or court orders, shall survive any such expiration or termination.

3.36 No Third Party Beneficiaries. There are no intended third party beneficiaries of any right or obligation assumed by the Parties.

3.37 Labor Certification. By its signature hereunder, Consultant certifies that it is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for Workers' Compensation or to undertake self-insurance in accordance with the provisions of that Code, and agrees to comply with such provisions before commencing the performance of the Services.

3.38 Counterparts. This Agreement may be signed in counterparts, each of which shall constitute an original.

3.39 Incorporation of Recitals. The recitals set forth above are true and correct and are incorporated into this Agreement as though fully set forth herein.

3.40 Invalidity; Severability. If any portion of this Agreement is declared invalid, illegal, or otherwise unenforceable by a court of competent jurisdiction, the remaining provisions shall continue in full force and effect.

3.41 Conflicting Provisions. In the event that provisions of any attached exhibits conflict in any way with the provisions set forth in this Agreement, the language, terms and conditions contained in this Agreement shall control the actions and obligations of the Parties and the interpretation of the Parties' understanding concerning the performance of the Services.

3.42 Headings. Article and Section Headings, paragraph captions or marginal headings contained in this Agreement are for convenience only and shall have no effect in the construction or interpretation of any provision herein.

3.43 Assignment or Transfer. Consultant shall not assign, hypothecate, or transfer, either directly or by operation of law, this Agreement or any interest herein, without the prior written consent of the Commission. Any attempt to do so shall be null and void, and any assignees, hypothecates or transferees shall acquire no right or interest by reason of such attempted assignment, hypothecation or transfer.

3.44 Authority to Enter Agreement. Consultant has all requisite power and authority to conduct its business and to execute, deliver, and perform the Agreement. Each Party warrants that the individuals who have signed this Agreement have the legal power, right, and authority to make this Agreement and bind each respective Party.

3.45 Electronically Transmitted Signatures. A manually signed copy of this Agreement which is transmitted by facsimile, email or other means of electronic transmission shall be deemed to have the same legal effect as delivery of an original executed copy of this Agreement for all purposes. This Agreement may be signed using an electronic signature.

[Signatures on following page]

SIGNATURE PAGE
TO
RIVERSIDE COUNTY TRANSPORTATION COMMISSION
AGREEMENT FOR PUBLIC ENGAGEMENT AND OUTREACH PROGRAM
WITH ALPHAVU LLC

IN WITNESS WHEREOF, this Agreement was executed on the date first written above.

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

By: _____
Anne Mayer
Executive Director

CONSULTANT
ALPHAVU LLC

By: _____
Signature

_____
Name

_____
Title

Approved as to Form:

By: _____
Best Best & Krieger LLP
General Counsel

Attest:

By: _____

Its: _____

* A corporation requires the signatures of two corporate officers.

One signature shall be that of the chairman of board, the president or any vice president and the second signature (on the attest line) shall be that of the secretary, any assistant secretary, the chief financial officer or any assistant treasurer of such corporation.

If the above persons are not the intended signators, evidence of signature authority shall be provided to RCTC.

EXHIBIT "A"

SCOPE OF SERVICES

4. UNDERSTANDING AND APPROACH - HOW THE GOALS WILL BE MET

It is first necessary to establish target audiences based on RCTC's goals. According to the US Census Bureau, the adult population of Riverside County was 2,473,902 as of July, 2022, with 76% of the population being 18 years of age or older. This yields an adult population of 1,880,166. To account for the time since the census data update and to be conservative in case of any undercount, we recommend increasing the assumed adult population by 2%, yielding an estimated adult population of 1,917,770. As such, the following audience sizes correspond with each goal.

Goal	Target Audience	Deadline
Directly engage 5% of the county's adult population.	95,889	July 2024
Directly deliver the draft of the TRP to 50% of the adult population. Make the plan available to the entire adult population.	958,885	March 2024
Make the plan available to the entire adult population.	1,917,770	March 2024
Public Opinion Survey	1,050 (Random Sample)	May 2024

In order to assure the best possible return on investment for the expenditure of public funds, it is imperative that we remain laser-focused on these specific goals. We propose a highly specific, targeted method to reach these goals while maximizing the reach of information throughout the County's incredibly diverse demographic and geographic range. This means target audiences must be reached through a wide range of communications channels, as appropriate for the demographic and geographic makeup of each audience. As such, we propose the following specific methods to meet each goal.

Goal 1 – Directly engage at least 95,889 adult residents of Riverside County.

We define direct engagement as an adult resident's direct opinion relative to the Traffic Relief Plan, or a component of the TRP, via survey, written, direct observable online, or oral input. The direct engagement must represent a measurable opinion of each individual and, therefore, must exclude metrics like reach and impressions. Our outreach for direct engagements must also be targeted to receive feedback from as diverse a cross section of the County population as is possible. To accomplish these ends for Goal 1, we recommend the following channels:

Channel	Target Audience & Demographic	Target Audience Population	Estimated Response Rate (rounded)	Total Estimated Responses
Survey	Representative Sample	1,050	29%	300
Public Meetings/ Events	Key Community Stakeholder Groups			1,000
Direct Mail Responses	Residents 65 years of age	386,000	1%	3,860
Facebook/ Instagram	General population and non-English speakers	1,550,000	4%	64,000
WhatsApp/ Messenger	Spanish-speaking population	500,000	3%	15,000
Email and SMS	RCTC Contact List	10,000	3%	300
Miscellaneous Online Form/ Signup	Countywide			500
Tele-Town Halls	Countywide	122,200	9%	11,000
TOTAL				95,960

We believe this represents a conservative and appropriate pathway to achieving direct public engagement from at least 5% of the County's adult population by the target date. This will also assure we receive feedback from a demographically and geographically diverse range of residents, representing those of all ages, genders, race-ethnicities, primary languages spoken, and residential locations.

Local Partnerships

Direct, in-person contact with residents is an important element of this goal. Arellano Associates will identify and staff key community events in each region of the County over the summer months in order to distribute the TRP, and to ask residents to provide their direct input via a survey that will be available at each event.

Furthermore, in consultation with RCTC, OPR Communications will identify key community stakeholders and influencers throughout the County and will facilitate information sharing opportunities with RCTC staff. This will be an effective way to inform residents who will likely want a deeper, more detailed exchange of information about the TRP. These information sharing sessions will also incorporate earned media outlets in

the County, so the media can have detailed access to all the relevant information as well as the opportunity to ask RCTC staff questions that may support their reporting efforts.

Digital Content (Graphic Design & Video)

Strong design for printed, digital, and audio elements is absolutely critical for effective public outreach. Arellano Associates with the support of Moonbeam will design and produce all print, graphic, video, and web elements. These elements will be the 'point of the spear' for all outreach for both Goals 1 and 2, including the annual report, digital ads, video ads/content, direct mail, and website regional maps. AlphaVu's targeting and ongoing measurements will assure only the most effective, high ROI content receives continued investment, regardless of channel. AlphaVu will also deploy its targeting techniques to make sure recipient audiences remain demographically and demographically representative of the County as a whole.

This is an example of an engaging graphic design by Arellano Associates that captures attention in a competitive media landscape.

We also recognize that these outreach efforts, in the pursuit of Goals 1 and 2, will generate more public interest and requests than RCTC staff may be used to on a regular basis. As such, our team will assist any bandwidth challenges RCTC staff may have in responding to public inquiries by:

- Developing a summary of common themes in public inquiries.
- Developing draft recommended stock answers that effectively respond to these inquiries and provide access to further information, if desired.
- Post responses to these public inquiries in the appropriate channels.
- Continue to monitor, recommend responses, and post throughout the program.

Goal 2 – Directly deliver the Traffic Relief Plan to 50% of the adult population of Riverside County, with the plan accessible to 100% of the population (958,885).

Mass delivery of the TRP will be accomplished also using an all-channels approach, but with particular emphasis on direct mail and digital distribution. Again, in order to assure high return-on-investment, we recommend focusing direct mail resources on older residents, who are more likely to read and spend time with direct mail content, and digital content for younger and middle-aged residents. We also propose providing a link on the direct mail that will connect citizens to additional online information, regional maps, and to an online survey for direct public input. This will help us towards achieving both Goals 1 and 2.

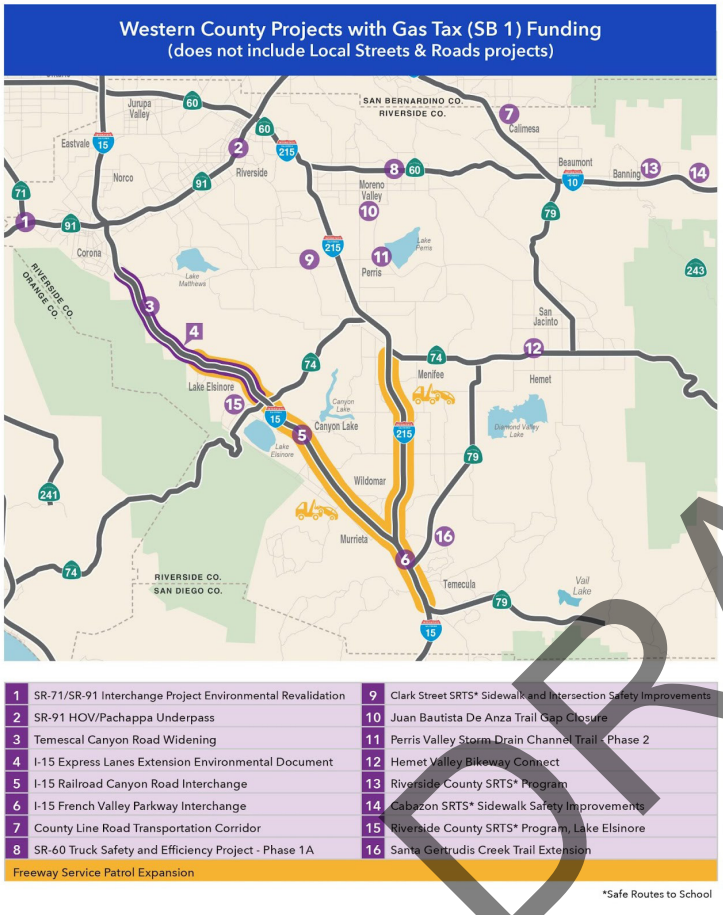
Channel	Target Audience & Demographic	Estimated Audience Capable of Reaching
Direct Mail	Residents 65 years of age +	386,000
Facebook/Instagram	Residents 18-65 years of ag and non-English speakers	775,000
WhatsApp	Spanish speaking population	100,000
YouTube/Video	Residents 18-65 years of age	500,000
Google Display	Residents 18-65 years of age	650,000
Email and SMS	RCTC Contact List	10,000

We expect there to be overlap in unique audience members between channels, which is why the sum of reach among all channels is more than the stated goal. Between all the channels above, we expect the same individual to be counted 2 to 3 (2.5) times on average.

In addition to direct receipt of the TRP by 50% of Riverside County's adult population, we also must be sure the TRP is accessible to any and every resident who wants it. As such, it's critical that we not only make the plan easily-accessible, readable, and understandable via web, but that we also assure its accessibility via non-digital modes.

TRP Web Design

We propose County regional maps be designed and posted to the TRP website. These maps will empower residents to see what projects are within the TRP so they can determine for themselves the likely impact on their daily lives near their homes and workplaces. As such, these online maps should be the following features to maximize ROI and effectiveness:



Regional maps are a critically important tool for effectively communicating the impact of transportation projects to the public.

- Each map should have its own direct link so maps can be seamlessly integrated into digital ads for hyper-local targeting.
- Residents should be able easily determine their residential or work locations relative to projects.
- Maps should allow users to filter by transportation mode, type of project, project size, and other desirable variables.
- These web features are to be designed with generally accepted standards for web accessibility in order to assure usability by every Riverside County resident regardless of ability or native language spoken.

Additional Accessibility

We recognize not every citizen has digital access or may receive mail at home. As such, we propose the following distribution methods in order to assure the TRP is available to 100% of the adult population:

- Physical copies of the TRP will be printed and mailed to every public library in the County.
- Physical copies (in English and Spanish) will be available at key community stakeholder meetings and community events.
- An audio version of the TRP will be recorded and made available for visually impaired residents. Audio can also be cut for any potential podcast or radio ads, either during the TRP outreach period or for future RCTC use.

We are confident this unified, multi-channel plan will assure both direct delivery of the TRP to 50% of adults in the County as well as availability to 100% of residents.

Digital Advertising

While the AlphaVu team will lean heavily into digital advertising in order to get TRP into the hands of as many residents as possible, it is important to note the principles which will guide this advertising:

1. We will be highly focused on return on investment (ROI). ROI will guide many of our decisions, from channel to targeting to content. We will not, for example, advertise on Tik Tok because of that platform's lack of hyper-local targeting capabilities (in addition to other policy and security concerns). Without local targeting, RCTC resources would be wasted reaching residents outside of Riverside County.
2. We will target information only to the residents for whom that information is most relevant. For example, we will target information about certain capital projects only to the residents likely to be impacted by or to benefit from those projects. This assures residents will have greater attachment to information because it is relevant to their lives while also supporting return on investment on public funds. This will also aid with RCTC's goal of this being an integrated program. RCTC's existing projects can either be tied in with these targeting and ROI measurement efforts at any time either during or after this outreach program.
3. We will measure ROI on each piece of content. This will help us focus advertising funds only on the content that is proven the most effective.

Annual Report

We do recommend and plan to create, with RCTC's guidance, an annual report. This report will, like other elements of the effort, will be a combination of elements that can be distributed via digital channels for easy understanding by the widest audience possible. We do not recommend the printing and distribution of a long annual report heavy with text. This simply will not be read by many residents. Such an extended version can be available online, but the majority of the effort will be focused on creating summary content that is appropriate for each geographic target audience.

Targeting

Mass distribution actually makes effective targeting more important, not less. In addition to traditional demographic and geographic targeting, AlphaVu has developed a new, Large Language Model (artificial intelligence) targeting system. This system ingests RCTC's public contact data (social media, email inquiries, public meetings lists, etc.), RCTC's public opinion polling research, as well as exogenous data (news, gas prices, etc) to constantly update a model of which citizens are most interested in which aspects of the TRP (specific projects, funding, etc.). This has several high-value benefits:

1. RCTC can continue to generate value from its investments in public opinion polling, both previous polling and the polling planned in this program.
2. Outreach will account for real-world factors, like gas prices, that impact the public's interest in transportation.
3. Targeting for RCTC's outreach can be updated and adjusted ***daily*** if necessary, so content is matched with the residents most interested in that content, based on extremely fresh analysis rather than targeting decisions make weeks or months previously.

Goal 3 – Conduct a public opinion survey that informs the Commission about general public support for funding the TRP (by June 1, 2024).

Similar to the most recent May/June 2023 survey, FM3 proposes to utilize a dual-mode, voter-listed sampling methodology to conduct an 18- to 20-minute survey among a random sample of 1,500 respondents. This dual-mode methodology employs two data collection methods (online and landline/cellular telephone interviews) and three contact methods (email and texting invitations, as well as telephone calls). In all, this methodology provides for a more inclusive and representative sample by allowing all likely voters to have a chance to be selected. Further, FM3 proposes to provide the survey in English and Spanish both online and by telephone.

FM3 understands the significance of these survey results, which will be used as an important data point in the RCTC Board's deliberations as to whether to place a measure on the ballot in the November 2024 General Election. Many of the questions in the survey will be tracked to past surveys we have conducted for RCTC to help provide context for the results and a better understanding of the movement in public opinion.

As RCTC is aware, previous research has found that while some opinions are homogenous across the county, some subregions differ in their transportation priorities and/or vary in the reasons they are likely to support or oppose a new transportation sales tax. Given the aforementioned findings, FM3 proposes to again oversample particular subregions in order to ensure likely November 2024 voters across the county are heard. Because of these differences, FM3 recommends that there be a few subregional specific questions. To benefit from the proposed sub-regional approach, FM3 recommends employing the same sampling plan used in the 2023 Riverside County Transportation Survey. The Table below itemizes the proposed sample size by sub-regions of Riverside County. FM3 proposes to complete 1,500 interviews, consisting of 1,050 interviews in Western Riverside County, 400 in Coachella Valley, 25 in Palos Verdes Valley and 25 in the Mountain subregion. The entire proposed sample will yield a margin of error of ±2.8% at the 95% Confidence Level. The Western Riverside sample will have a margin of error of ±3.1% and the Coachella Valley sample will yield a margin of error of ±4.9%.

Table: Sample Sizes by Subregion

Sub-Region	Cities and Zip Codes	Sample
Western Riverside Region		**1,050**
Western Subregion 1	Corona, Norco, Eastvale, Jurupa Valley; ZIP Code: 92883	240
Western Subregion 2	City of Riverside; ZIP Codes: 92504,92508, 92518	160
Western Subregion 3	Moreno Valley, Perris; ZIP Code: 92570	150
Western Subregion 4	Hemet, San Jacinto; ZIP Codes: 92582, 92583, 92544, 92581	100
Western Subregion 5	Menifee, Murrieta, Temecula, Lake Elsinore, Canyon Lake/ Wildomar; ZIP Codes: 92530, 92562, 92590, 92028, 92595, 92592	300

Sub-Region	Cities and Zip Codes	Sample
Western Subregion 6	Beaumont, Banning, Calimesa; ZIP Codes: 92223, 92220, 92230	100
Coachella Valley Region		**400**
Coachella Subregion 1	Indio, Coachella, La Quinta; ZIP Codes: 92274, 92254	160
Coachella Subregion 2	Desert Hot Springs, Palm Springs, Cathedral City; ZIP Codes: 92241, 92276, 92240, 92258	140
Coachella Subregion 3	Rancho Mirage, Indian Wells, Palm Desert	100
Palos Verde Valley Region		**25**
Mountain Subregion		**25**

The proposed sample size will again allow RCTC to test two different sales tax rates to assess current levels of support for each respective rate - given the cost of living, gas prices and the state of the labor market, just prior to Board deliberations.

SECTION 4: UNDERSTANDING AND APPROACH - SUGGESTED MODIFICATIONS TO GOALS, ADDITIONAL GOALS, WITH RATIONALE

We recommend two additional goals:

1. Positive average sentiment across all engagements – We recommend a goal of maintaining average positive sentiment on engagements with TRP content. We believe this is important because positive sentiment indicates understanding and acceptance of the content. This is not intended to dissuade negative engagements, because of course any citizen is free to disagree with the plan. However, it is also true that content that effectively and efficiently disseminates information yields positive sentiment, so we believe positive sentiment is an important indicator of strong ROI. For this reason, we recommend tracking sentiment across all engagements and maintaining positive sentiment, on average, for the lifetime of the project.
2. We recommend maintaining an average video view time of 15 seconds. Video is an incredibly important mode of communication, so we believe a goal should be attached specifically to video, to assure its dissemination is yielding a strong return on investment. As such, a video view time of 15 seconds will clearly indicate residents are engaging with and receiving good information from RCTC's investments in video.

We recommend the consideration of the modification of the timing of Goals 2 and 3:

- If it is the intent of the Commission to measure the impact of the public outreach effort on the public's understanding of the Traffic Relief Plan, we recommend the Commission consider most closely aligning the deadlines for Goals 2 and 3. Goal 2 currently requires that maximum public outreach for this Goal conclude at the end of March while the public opinion research for Goal 3 would not begin until May. Therefore, ***only if we are correct about the intent of the Commission***, we recommend that the deadline for Goals 2 and 3 be changed to more closely overlap.

SECTION 4: UNDERSTANDING AND APPROACH - CHALLENGES TO MEETING THE GOALS

Challenges to Meetings Goals

As we learned from the pandemic, uncontrollable, environmental factors can impact any program. While such factors can't be prevented, we can structure our organization and programming to be flexible and fast-reacting. As such, the AlphaVu team will maintain a flat organizational structure to assure quick and clear communications. Accounting and finances will also be very carefully maintained and monitored so that any unspent funds can be quickly returned to RCTC in case of unforeseen emergency circumstances that interrupt the program.

The only other potential challenge to meeting the goals would be a significant, unexpected change in advertising costs (mail, digital, etc.). While we think this is highly unlikely, the best approach is to maintain a portfolio approach to our outreach – using as many channels as reasonably makes sense. For example, by using both direct mail and multiple digital channels (Facebook/Instagram, YouTube, WhatsApp etc.), we can quickly move resources from one channel to another as necessary for the maximum return on investment.

We do note that we strictly adhere to the terms of service for every digital platform and we fully comply with California data privacy and security regulations. This may at times make it more difficult to count unique, non-duplicate engagements for the same resident. For this reason we recommend striving to surpass our goals to increase the likelihood unique residents and households engage with and receive our messaging. We believe the Commission's stated budget allows this.

SECTION 4: UNDERSTANDING AND APPROACH - REPORTING AND METRICS

There are four reasons why well-planned reporting is absolutely essential for the success of this program:

1. Detailed, transparent reporting is the method of accountability for reaching the stated goals.
2. Well-designed reporting allows mid-course correction if outside factors impact TRP distribution plans.
3. Reporting is essential to public transparency and measurements of return on investment.
4. Reporting helps ensure deadlines are met according to plan, without a rush for completion near the end.

Audience of Reports

We propose designing three reports, one for each of the following audiences:

1. Analysts - AlphaVu analysts and RCTC staff working on the most detailed levels of the outreach program.
2. Senior Staff – RCTC staff managing/supervising the outreach program.
3. RCTC Board and Public – RCTC's governing board and the general public.

Reports will be customized for each audience so as to assure an efficient distribution of critical information for timely and effective decision making.

Frequency of Reports

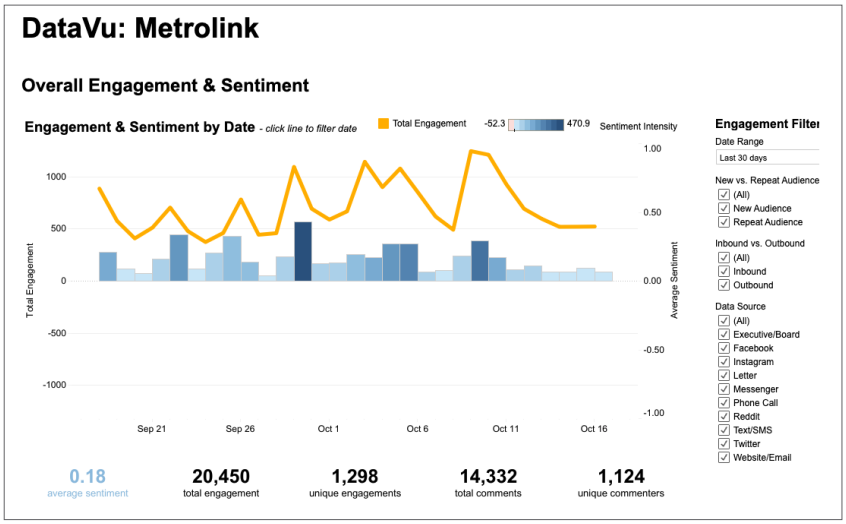
Report frequency should suit the target audience and the decision-making framework for each audience.

1. Analysts will have direct access to a web-based dashboard with detailed key metrics. This dashboard will update every 30 minutes during peak public outreach periods, and between every 1-4 hours in off periods.
2. Senior staff will receive a slightly less detailed summary report every week.
3. RCTC Board will receive an update for every monthly board meeting or committee meeting as directly by RCTC. These reports can be available to the public either by request or by posting to the RCTC website, as directed by RCTC.

Metrics

We propose the use of the following metrics and the reasoning for each:

- Direct Engagement – this is the number of unique adult Riverside County residents who express an opinion of the TRP and/or ask a question about it. These engagements can come in through any channel, including digital (likes, reactions, comments, etc.), email, web form, tele-town hall survey, telephone survey, public meeting or community event, etc. This is the key metric for measuring progress towards Goal 1.
- Distribution – this is the confirmed delivery of the TRP or summary TRP content to unique individuals. This is measured as the number of households receiving direct mail plus the digital reach and number of 15-second video views online. By reach we mean unique impressions so as not to count the same resident twice in considering digital distribution. For platforms like Google that do not provide reach and only impressions, we will count 6 impressions to equal 1 unique individual. This is the key metric for measuring progress towards Goal 2.
- Sentiment – Sentiment (positive, negative, and neutral) is a key representation of the public's understanding and acceptance of the TRP. While we cannot and should not expect all neutral or positive sentiment (some residents may object to certain aspects of the TRP), it is imperative that we capture and measure all sentiment so we can assess how receptive the public is to the plan, what questions commonly arise, and how we can continually improve our explanations of the TRP.
- Topics – The TRP encompasses many aspects, from funding to roadways and from public transit to pothole repair. We plan to measure exactly what specific topics the public discusses relative to the TRP so we can



Engagement and Sentiment are critical metrics and should be reported with the frequency appropriate for each audience,

assess which topical areas of the plan cause the greatest concern, capture the most attention, and may need additional emphasis in ongoing communications. Topics in combination with Sentiment will help us understand the public's acceptance and understanding of each specific component of the plan.

- Outside Mentions - We will track the level of organic awareness in the community outside of the direct engagement with the Commission. This involves social listening of community groups, stakeholder, and media public pages.

Content of Reports

The content of each report type will be customized for each intended audience:

- Analyst reports will contain all of the referenced metrics for the entire time period of the project. Analysts will be able to filter by any time period, down to a single day. Their reporting dashboard will also allow them to view all of the underlying data, down to the individual record, feeding into each metric. This allows analysts and staff to have the most granular access for detail analysis and problem solving.
- Senior staff will have summary reports including summary charts and analyst notes. This will give senior staff the most important analysis in a quickly and easily digestible format.
- RCTC Board reports will be provided in presentation format with summary charts and high-level notes explaining:
  - Progress towards each goal.
  - Overview of upcoming actions in the program.
  - These presentations will be first provided to RCTC staff in draft format for review in time for any necessary revisions before Board or committee meetings.

SECTION 4: UNDERSTANDING AND APPROACH - SCHEDULE

	January	February	March	April	May	June	July	August
Goal 1 (July 2024 Deadline)								
Content Creation/Revision	■	■	■	■	■			
Public Opinion Survey					■			
Public Meetings/Events/Stakeholders	■	■	■	■	■	■	■	■
Direct Mail Responses			■					
Digital Engagement (Social, Email, SMS)			■	■	■	■	■	
Tele-Town Halls				■	■			
Inquiry Response Support		■	■	■	■	■	■	■
Reporting	■	■	■	■	■	■	■	■
Goal 2 (March 2024 Deadline)								
Content Creation/Revision	■	■						
Direct Mail		■	■					
Digital Advertising		■	■					
Inquiry Response Support		■	■	■	■	■	■	■
Reporting	■	■	■	■	■	■	■	■
Goal 3 (May 2024 Deadline)								
Public Opinion Survey				■	■			
Reporting					■	■		

SECTION 4: UNDERSTANDING AND APPROACH - BUDGET AND LIMITATIONS

Here we state anticipated spends through months 3, 5, and 7. While the Detailed Pricing Proposal Form divides costs by goal, here when we view costs through the lens of monthly expenditures we must recognize that funds will be expended for the goals in overlapping months. In particular, expenditures for Goal 1 will occur during work for Goal 3, meaning funds for both goals will be focused just before the 5th month.

This explains the distribution of funds by time rather than by goal, but with the same amount accounted for in either structure.

Spend Increments (3, 5, & 7 Months)	
Jan-March (through Goal 2)	$508,236.40
April-May (Goal 3)	$387,797.60
Through Completion (Goal 1)	$90,000
TOTAL	**$986,034.00**

Limitations

Both AlphaVu and its subcontractors will at all times adhere to state laws, regulations, and rules. No team member acting on behalf of the Commission will exhort any member of the public to vote for or against any ballot measure or candidate.

EXHIBIT "B"

SCHEDULE OF SERVICES

	January	February	March	April	May	June	July	August
Goal 1 (July 2024 Deadline)								
Content Creation/Revision								
Public Opinion Survey								
Public Meetings/Events/Stakeholders								
Direct Mail Responses								
Digital Engagement (Social, Email, SMS)								
Tele-Town Halls								
Inquiry Response Support								
Reporting								
Goal 2 (March 2024 Deadline)								
Content Creation/Revision								
Direct Mail								
Digital Advertising								
Inquiry Response Support								
Reporting								
Goal 3 (May 2024 Deadline)								
Public Opinion Survey								
Reporting								

EXHIBIT "C"

COMPENSATION

PROJECT TOTALS

GOAL	GOAL DESCRIPTION	Total Estimated Hours	Total Labor	Total ODC's	Total Budget
1	Directly engage 5% of the county's total population in guiding the Commission's decisions about the county's transportation future.	942	$ 215,397.60	$ 178,000.00	$ 393,397.60
2	Directly deliver the draft Traffic Relief Plan to 50% of the adult population of Riverside County, with the plan accessible to 100% of the population.	642	$ 139,236.40	$ 369,000.00	$ 508,236.40
3	Conduct a public opinion survey that informs the Commission about general public support for funding the TRP (By June 1, 2024)	12	$ 3,400.00	$ 81,000.00	$ 84,400.00
				TOTAL PROJECT BUDGET:	$ 986,034.00

AGENDA ITEM 8

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	November 27, 2023
TO:	Budget and Implementation Committee
FROM:	Lorelle Moe-Luna, Multimodal Services Director
THROUGH:	Aaron Hake, Deputy Executive Director
SUBJECT:	Senate Bill 125 Formula-Based Funding for the Transit and Intercity Rail Capital Program and Zero Emission Transit Capital Program

STAFF RECOMMENDATION:

This item is for the Committee to recommend the Commission take the following action(s):

1) Approve the funding recommendations in Attachment 1 for the Senate Bill 125 (SB 125) Formula-Based Funding for the Transit and Intercity Rail Capital Program (TIRCP) and Zero Emission Transit Capital Program (ZETCP) for Fiscal Year 2023/24;
2) Direct staff to prepare and execute funding agreements with the project sponsors to outline the project schedule and local funding commitments;
3) Authorize the Executive Director to execute the funding agreements with the project sponsors, pursuant to legal counsel review;
4) Approve an amendment to the FY 2023/24 budget to receive the first-year allocations of TIRCP and ZETCP formula funds in the amounts of $123,382,700 and $14,828,290, respectively; and
5) Approve a FY 2023/24 budget adjustment of $791,214 for expenses related to the TIRCP and ZETCP formula funds.

BACKGROUND INFORMATION:

TIRCP was created by the state as a competitive program in 2014 to provide grants from the Greenhouse Gas Reduction Fund (GGRF) via cap-and-trade proceeds to fund transformative capital improvements that will modernize California's intercity, commuter, and urban rail systems, and bus systems, to significantly reduce emissions of greenhouse gases, vehicle miles traveled, and congestion. In 2017, SB 1 gas tax funding added a substantial increase with funds directed to the TIRCP from the Public Transportation Account. Assembly Bill 398 (AB 398) extended the Cap-and-Trade Program that supports TIRCP from 2020 through 2030. TIRCP has awarded six cycles of funding totaling over $10 billion for 132 projects throughout the state.

In July 2023, the Governor signed AB 102 and SB 125 amending the Budget Act of 2023 to appropriate about $4 billion of general fund to TIRCP over the next two years and $910 million of GGRF funding and $190 million of Public Transportation Account funding over the next four years to establish the Zero-Emission Transit Capital Program (ZETCP). This created the formula

based TIRCP and ZETCP. SB 125 guides this process and requires that the California State Transportation Agency (CalSTA) develop and administer the program to govern the distribution of the funds.

At the end of September 2023, CalSTA published the final SB 125 Formula-Based TIRCP and ZETCP Guidelines. The objectives of the program are to reduce emissions of greenhouse gases; expand and improve transit service to increase ridership; integrate the rail service of the state's various rail operations; and improve transit safety. The guidelines identify the regional transportation planning agencies (RTPAs) such as RCTC as the recipient of these funds. The guidelines give the Commission discretion to suballocate or distribute funds within their region based on local needs, existing priorities, policies, and procedures, as long as the SB 125 program requirements and goals are met.

TIRCP projects eligible to receive funding include transit operations and capital improvements, and grade separations and rail crossing improvements. ZETCP funding is only available to public transit operators already eligible to receive State Transit Assistance funds and can only be used for zero emission capital and operating expenditures.

RCTC is identified to receive about $247.1 million of TIRCP and $39.8 million of ZETCP, for a total of $286.9 million over two years and four years, respectively, as shown in Table 1.

Table 1. RCTC share of SB 125 Formula-Based TIRCP and ZETCP Funding

Fund Type	Year 1	Year 2	Year 3	Year 4	Total
TIRCP	$ 123,382,700	$ 123,693,468	n/a	n/a	**$ 247,076,168**
ZETCP	14,828,290	8,318,309	$ 8,318,309	$ 8,318,309	**39,783,217**
Total*	**$ 138,210,990**	**$ 132,011,777**	**$ 8,318,309**	**$ 8,318,309**	**$ 286,859,385**
*Maximum administrative share 1% or $2,868,594 of total.					

The guidelines require that each RTPA submit an allocation package by December 31, 2023, for at least Year 1 of funding to CalSTA for approval. To meet this deadline, staff has reviewed the CalSTA SB 125 guidelines and have aligned them with Commission-approved plans, goals, and policies from documents such as the Traffic Relief Plan and Grade Separation Priority Study to identify projects. The following categories for project selection were identified for Year 1 of TIRCP and ZETP funding:

1. Zero-emission and Transit Capital Projects – includes projects such as zero-emission infrastructure and buses, facility upgrades, and integrated passenger fare systems.
2. Passenger Rail Project Development – includes project development for the Coachella Valley Rail Project and grade separations.
3. Program Administration – includes an update for the Grade Separation Priority Study, technical assistance, and program administration.

Staff recommends that the Commission approve the list of projects in Attachment 1 for Year 1 FY 2023/24 TIRCP and ZETCP, and to direct staff to prepare and enter into agreements with the project sponsors. Staff plans to return to the Commission by the end of 2024 to award Year 2 FY 2024/25 TIRCP and ZETCP funds. Staff has also coordinated and consulted with each transit operator in the county as required in the guidelines.

Staff has emphasized to the project sponsors that their proposed projects are for the intention that the identified project phases and/or bus procurements will be completed by 2030. The Commission has the right to rescind funds if a project does not progress or complete the intended project phases within the timeframe. This will help prevent funds from being programmed onto a project indefinitely when another project that can move forward could have the opportunity for funding. Any cost savings will also be returned to the SB 125 formula program for consideration of other projects. Should these situations occur, staff will return to the Commission for approval. Additionally, staff has also encouraged project sponsors to continue seeking competitive funds to leverage this program and other formula programs and is committed to working with them to strategize and assist with future grants as appropriate.

Staff will follow normal accounting procedures like the State Transit Assistance and State of Good Repair programs which are done on a reimbursement basis.

FISCAL IMPACT:

A budget amendment for the current year is needed to receive $138,382,700 of SB 125 funds in our account, which is expected to be distributed by April 2024, and account for $791,214 of expenditures for the current year. Expenditures for projects in subsequent years will be budgeted for in the respective year's budget. Funds provided to transit operators will be included in the upcoming FY 2024/25 Short Range Transit Plans.

Financial Information						
In Fiscal Year Budget:	No	Year:	FY 2023/24	Amount:	$138,210,990 $791,214	
Source of Funds:	SB 125 TIRCP and ZETCP			Budget Adjustment:		Yes
GL/Project Accounting No.:	Budget Adjustment (Receipt of Funds) - $138,210,990 *Revenue:* 002233 000 59001 0000 243-62-59001 Transfer In ($138,210,990) *Budget Adjustment* (for expenditure during FY 2023-24) *Expenditure(s):* 002233 000 65520 0000 243-62-65520 ($191,214) 002233 000 86101 0000 243-62-86101 ($350,000) 002233 000 86101 0000 243-62-86101 ($250,000)					
Fiscal Procedures Approved:				Date:	11/15/2023	

Attachments:

1) SB 125 Formula-Based TIRCP and ZETCP Funding Recommendations for Year 1
2) City of Banning Letter Requesting Funding Assistance for Hargrave Ave Grade Separation
3) City of Beaumont Letter Requesting Funding Assistance for Pennsylvania Ave Grade Separation
4) County of Riverside Letter Requesting Funding Assistance for Broadway Grade Separation

RCTC SB 125 Formula-Based TIRCP and ZETCP Funding Recommendations for Year 1

Project Type	TIRCP/ZETCP Year 1 - FY24
Zero Emission and Transit Capital Projects *	
Riverside Transit Agency	$ 14,828,290
SunLine Transit Agency	16,000,000
Palo Verde Valley Transit Agency	16,010,000
City of Corona Transit	12,400,000
City of Banning Transit	2,489,413
City of Beaumont Transit	10,300,000
City of Riverside Transit	5,392,073
Passenger Rail Project Development	
RCTC - Coachella Valley Rail Tier 2 Environmental	40,000,000
City of Banning - Hargrave Ave Grade Separation	5,000,000
City of Beaumont - Pennsylvania Ave Grade Separation	5,000,000
County of Riverside - Broadway Grade Separation	10,000,000
Program Administration	
Grade Separation Study Update, Technical Assistance, Program Administration	791,214
Total	**$ 138,210,990**

* Includes projects such as zero-emission infrastructure & buses, facility upgrades, and integrated passenger fare systems.

City of Banning

November 14, 2023

Anne Mayer
Executive Director
Riverside County Transportation Commission
4080 Lemon Street, 3rd Floor
Riverside, CA 92502

Re: SB 125 TIRCP Funding Request for the Hargrave Street Grade Separation

Mrs. Mayer,

The purpose of this letter is to respectfully request that the Riverside County Transportation Commission (RCTC) consider allocating $5,000,000 of SB 125 – Transit and Intercity Rail Capital Program (TIRCP) funds to the Hargrave Grade Separation Project (Project).

The City of Banning is situated along a regionally significant goods movement corridor along I-10 and the Union Pacific Railroad (UPRR). Hargrave Street is an existing north-south arterial road which crosses under the elevated I-10 and crosses the UPRR tracks at-grade. The UPRR trains and truck traffic hauling goods from ports through the Banning Pass area has increased in recent years, and vehicle wait time at the crossing is a growing concern. Approximately 34 trains pass through the crossing every 24 hours. New passenger rail route expansions between Los Angeles and the Coachella Valley (i.e. Coachella Valley-San Gorgonio Pass Rail) will increase that number.

RCTC listed the Project as a top priority in two important planning documents, the 2012 Grade Separation Study and the 2017 Grade Separation Study Update. The 2017 update prioritized 46 at-grade crossings using accident rates, existing and future vehicle delay, vehicle emissions from idling, horn noise impacts on residential areas, adjacency to existing grade separations, and local priority. The 46 at-grade crossings were grouped in priority categories of 1 through 5, where 1 represented the highest priority level and 5 the lowest. The Project is listed as a Number 1, highest priority grade separation.

The Project was also identified, after significant public engagement, as a priority project and added to RCTC's Traffic Relief Plan 2020.

Elimination of the Hargrave Street at-grade railroad crossing will provide substantial benefits to the local community and the region. Those benefits result from eliminating at-grade safety risks, reducing traffic congestion onto local streets and stacking onto the I-10, eliminating idling and reducing greenhouse gas emissions, eliminating noise pollution

caused from train horns, ensuring timely emergency response for local residents and partnering agencies, eliminating impacts on connectivity and mobility, and increase accessibility to economic opportunities.

With the assistance of a support letter from RCTC, the City of Banning was recently awarded $2,800,000 in U.S. DOT Railroad Crossing Elimination Program funds. Additionally, the Western Riverside Council of Governments (WRCOG) has allocated $1,750,000 in Transportation Uniform Mitigation Fee (TUMF) funding and the City has set aside $500,000 in local impact fee funding.

With RCTC's continued support of this critical project by the allocation of the requested TIRCP funds, the City is ensured that funding is available to complete the design, environmental and right-of-way phases resulting in a shovel ready project. Remaining funds allocated to the Project will be programmed to the construction phase.

We hope that RCTC agrees that the Hargrave Grade Separation project is significant to not only the City of Banning, but also to the region and state. If you have any questions, please do not hesitate to contact me at 951-922-3130 or at avela@banningca.gov.

Sincerely,

Art Vela, P.E.
Director of Public Works

CITY OF BEAUMONT
550 E. 6th Street, Beaumont, CA 92223
Phone (951) 769-8520 Fax (951) 769-8526
BeaumontCa.gov

November 14, 2023

Anne Mayer
Executive Director
Riverside County Transportation Commission
4080 Lemon St., 3rd Floor
Riverside, CA 92502

SUBJECT: FUNDING REQUEST FOR PENNSLYVANIA AVENUE/UPPR GRADE SEPARATION

Ms. Mayer:

I am writing to formally request additional funding support for the crucial **Pennsylvania Avenue/UPRR Grade Separation** project in Beaumont. This project is paramount to our community, addressing both safety concerns and traffic efficiency in a thoughtful strategic manner.

The **Pennsylvania Avenue/UPRR Grade Separation** will enhance traffic flow, reduce congestion, and, most importantly, improve safety for all commuters traveling throughout Beaumont and the Pass Area. The construction will eliminate the existing at-grade Union Pacific Railroad (UPRR) crossing at Pennsylvania Avenue by constructing a new underpass. The existing at-grade crossing was constructed in the early 1950s, before the I-10 Pennsylvania Interchange. Due to ongoing train stop incidents which create long traffic delays and heavy congestion, the city continues to be at high risk for train-pedestrian and vehicle collisions, with approximately 41 trains and 12,000 vehicles passing daily, according to the March 2012 RCTC Grade Separation Priority Update Study.

The project is currently budgeted for $8,678,556 and is funded entirely with local funds. The city contracted with IDC Consulting Engineers, Inc., and Moffatt & Nichol to perform the design and environmental reports, respectively. The design is approximately 30% complete, and approximately $6M is available for construction. The estimated total construction cost is approximately $72M, and the city is committed to aggressively pursuing local, regional, state, and federal funding to see this project through completion.

We kindly request RCTC's consideration and support for funding the **Pennsylvania Avenue/UPRR Grade Separation**. If you would like to discuss the project further or have questions, please feel free to contact me directly at 951.769.8520, ext. 330 or egibbs@beaumontca.gov.

Sincerely,

Elizabeth Gibbs
City Manager

COUNTY OF RIVERSIDE
TRANSPORTATION AND LAND MANAGEMENT AGENCY

Mark Lancaster
Director of Transportation

Mojahed Salama, P.E.
Deputy for Transportation/Capital Projects

Russell Williams
Deputy for Transportation/Planning and Development

Transportation Department

November 17, 2023

Riverside County Transportation Commission (RCTC)
4080 Lemon St 3rd Floor
Riverside, CA 92501

RE: Funding Assistance Request - Broadway Street Grade Separation

Dear Ms. Mayer,

The County of Riverside would like to request $10 million of funding assistance from the Riverside County Transportation Commission (RCTC) under the SB 125 Formula-Based TIRCP Program to initiate the environmental document for the Broadway Street Grade Separation Project in Cabazon. The Broadway Street Grade Separation was identified in RCTC's 2017 Grade Separation Priority Study.

Since the study was completed, the Federal Rail Administration (FRA) have allowed freight trains to be longer, sometimes up to three miles in length causing safety issues and significant delays at at-grade crossings. At times, when the trains are stopped in the Cabazon area, both the Main Street and Apache Trail at-grade crossings are blocked, isolating the community of Cabazon with no alternative routes for emergency vehicles and residents. For these reasons, the County is prioritizing the Broadway Grade Separation and will also commit local funds to pursue environmental and design. This will enable us to leverage local funds and become more competitive when we seek construction funding.

The County also wishes to partner with RCTC and other local partners on future funding programs such as TIRCP-Competitive for construction. We appreciate your consideration for this request and if you have questions, please contact me at 951-955-6740 or at my email address, mlancaster@rivco.org.

Sincerely,

Mark Lancaster
Director of Transportation
County of Riverside

4080 Lemon Street, 8th Floor · Riverside, CA 92501 · (951) 955-6740
P.O. Box 1090 · Riverside, CA 92502-1090 · FAX (951) 955-3198

AGENDA ITEM 9

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	November 27, 2023
TO:	Budget and Implementation Committee
FROM:	Jillian Guizado, Planning and Programming Director
THROUGH:	Aaron Hake, Deputy Executive Director
SUBJECT:	Southern California Association of Governments Corrective Action for Federal Formula Funds

STAFF RECOMMENDATION:

This item is for the Committee to recommend the Commission take the following action(s):

1) Approve the RCTC Procedures for the Southern California Association of Governments (SCAG) 2024 Call for Project Nominations (nomination procedures);
2) Authorize the Executive Director to submit to SCAG the project nomination list based on the nomination procedures;
3) Approve Agreement No. 24-66-041-00, a Memorandum of Understanding (MOU) with SCAG; and
4) Authorize the Chair or Executive Director, pursuant to legal counsel review, to execute the agreement on behalf of the Commission.

BACKGROUND INFORMATION:

As part of the review of the 2021 Federal Statewide Transportation Improvement Program (FTIP), the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) issued a Corrective Action dated April 15, 2021, to the California Department of Transportation (Caltrans) regarding the administration and oversight of the Congestion Mitigation and Air Quality (CMAQ) and Surface Transportation Block Grant (STBG) federal formula funding programs. This was followed by a Corrective Action issued to SCAG on August 15, 2022, as part of its 2022 Federal Certification Review. Caltrans and SCAG were given until June 30, 2023, to demonstrate policies and procedures that comply with federal regulations for the administration of these programs.

STBG Funds

STBG funds provide flexible funding to address state and local transportation needs. Federal transportation authorization bills use the term sub-allocation to refer to funds apportioned to states by formula for use in specific areas within the state. The sub-allocated funds are divided into three categories and must be used in the areas described: urbanized areas with a population over 200,000; urban areas with a population of 5,001 to 200,000; and areas with a population of 5,000 or less. The federal metropolitan planning and statewide and non-metropolitan planning

requirements lay out the basic provisions related to STBG project selection. For urbanized areas with a population over 200,000, projects are to be selected from the approved FTIP by the Metropolitan Planning Organization (MPO) in consultation with the state and any affected public transportation operator. Projects on the National Highway System are to be selected from the approved FTIP by the state in cooperation with the affected MPO. FTIP procedures that distribute STBG funds to individual jurisdictions by pre-determined percentages or formulas are inconsistent with the legislative provisions requiring the MPO to consult with the state and the public transportation operator to develop the FTIP.

FHWA and FTA have determined SCAG's process for programming STBG funds is inconsistent with federal regulations for the following reasons:

- STBG funds are sub-allocated to the County Transportation Commissions (CTCs) using a population formula, and
- The CTCs prioritize and select projects for STBG funding without the involvement of SCAG.

It is important to note that SCAG's process for programming STBG funds was consistent with state statute which dictates that where CTCs have been created by state law, all STBG funds would be apportioned by the MPO to the CTCs based on relative population. Through this requirement, the Commission has received formula apportionments of STBG funds in the amount of approximately $30 million annually.

CMAQ Funds

CMAQ funds are for transportation projects or programs that will contribute to the attainment or maintenance of the National Ambient Air Quality Standards (NAAQS) for ozone (O3), carbon monoxide (CO), and particulate matter (PM): both PM10 and PM2.5. Each CMAQ project must meet three basic criteria: it must be a transportation project; it must generate an emissions reduction; and it must be in or benefit a nonattainment or maintenance area. To ensure projects deemed most effective in reducing motor vehicle emissions and congestion are programmed for early implementation, the MPOs, states, and transit operators should develop CMAQ project selection processes in accordance with the federal metropolitan or statewide planning process. The selection process should involve state and local transportation and air quality agencies. As part of the selection process, MPOs and the state should evaluate the cost-effectiveness of the projects and give priority consideration to those that will create the greatest emissions reductions for the least cost, especially in those areas designated as being in nonattainment or maintenance for PM2.5. This selection process allows states and local agencies to present a case for selecting eligible projects that will best use CMAQ funding to meet the requirements and advance the goals of the Clean Air Act. States and MPOs should fulfill this responsibility so that nonattainment and maintenance areas can make good-faith efforts to attain and maintain the NAAQS by the prescribed deadlines.

FHWA and FTA have determined that SCAG's process for programming CMAQ funds is inconsistent with federal regulations for the following reason:

- The CTCs prioritize and select projects for CMAQ funding without the involvement of SCAG.

CMAQ funds have traditionally been apportioned to CTCs based on a formula that factored in O3 and CO weighted attainment status.

Compliance Action Plan

SCAG convened a working group with representatives of each CTC in the SCAG region to develop a methodology for programming STBG and CMAQ funds to be in compliance with the federal corrective action. The SCAG Regional Council approved a Compliance Action Plan in February 2023, and received confirmation from FHWA and FTA in April 2023, that the plan addresses the Corrective Action. The Compliance Action Plan indicates that SCAG will regularly conduct a call for project nominations in which the SCAG region CTCs will nominate projects for SCAG's consideration. SCAG will then evaluate and select projects to receive federal formula funding which will subsequently be programmed in the FTIP. The SCAG Regional Council approved the STBG/CMAQ Program Guidelines on June 1, 2023, included in this item as Attachment 1.

For STBG funds, SCAG has identified programming targets for each county based on performance output of the regional travel demand model and pavement condition. Under this methodology, the Commission's target share of STBG funds is 11.8 percent. For CMAQ funds, the programming targets will be based on the pre-existing formula distribution of O3 and CO attainment status. The Commission's target share of CMAQ funds is 12.7 percent. Performance-based nomination targets will only guide the nomination submittals from each county, it is not a guarantee of funding, nor a maximum of funding that can be received. Each CTC is to define its own process for identifying projects to be nominated with a minimum obligation of engaging with eligible federal formula funding recipients.

Carbon Reduction Program

In November 2021, Congress passed and the President signed the Infrastructure Investment and Jobs Act (IIJA). The IIJA continued the STBG and CMAQ federal formula funding programs and created another federal formula funding program: Carbon Reduction Program (CRP). CRP funds are similar to CMAQ funds as they are designated for projects that reduce transportation emissions from on-road highway sources. California has determined CRP funds are subject to the federal Corrective Action and is requiring that project selection and programming of the funds be performed by SCAG. As such, SCAG anticipates adopting Carbon Reduction Program Guidelines in December 2023, to include CRP funding in the SCAG 2024 Call for Project Nominations. See Attachment 2 for SCAG's draft CRP Guidelines.

DISCUSSION:

Most recently, the Commission selected projects for STBG and CMAQ funding based on needs in the Commission's adopted 2019-2029 Western Riverside County Highway Delivery Plan, a policy

which was adopted by the Commission on July 10, 2019. Federal formula funding in the Coachella Valley was requested by the Coachella Valley Association of Governments (CVAG) on a project-by-project basis with sub-regional fair share distribution considered. In March 2023, the Commission approved programming $26 million of STBG funds on the Interstate 10/Monroe Street Interchange Project as requested by CVAG which covered the Coachella Valley fair share of STBG funds through Fiscal Year 2026 at that time. Additionally in March 2023, the Commission approved an MOU with CVAG committing both agencies to program federal formula dollars equitably between Western County and Coachella Valley. Consistent with this MOU, CVAG added $21.3 million of CMAQ funds to its Coachella Valley Signal Synchronization Phase 2 project in July 2023 when construction phase bids came in high. This also covered the Coachella Valley fair share of CMAQ funds through FY 2026 at that time.

As a result of the Corrective Action and pursuant to SCAG's Compliance Action Plan, SCAG anticipates issuing a Call for Project Nominations on January 4, 2024. Riverside County's estimated target share of the $275 million available in the SCAG 2024 Call for Project Nominations is merely $33 million. The Commission must develop a new approach for prioritizing Riverside County projects to be nominated in the SCAG call.

Nomination Procedures

Staff is recommending approval of the attached nomination procedures (Attachment 3) for the SCAG 2024 Call for Project Nominations. The nomination procedures were developed recognizing the complexity of utilizing federal dollars on transportation projects. Federalized transportation projects require extensive collaboration and multiple levels of approval from Caltrans to attain project environmental clearance, meet Caltrans and FHWA project delivery requirements to utilize the federal dollars, and ensure federal funds are approved and spent on time and in accordance with federal regulations. Failure to meet these federal funding requirements will result in loss of federal dollars for the region and will provide an opportunity for other CTCs to access these funds. Prior to SCAG's Compliance Action Plan, the Commission had the authority to easily move federal funding within projects to mitigate this risk. Due to the Corrective Action, the Commission no longer has this authority and flexibility. With federal funding at risk, staff is recommending the following approach to ensure federal funds remain in the region.

Part A – Initial Screening: Eligible agencies, including cities, the county, transit operators, and Tribal Governments, will submit an intake form describing the project, project schedule and funding, and indicating which regional plan the project is in. Applicable plans include: the Commission's adopted 2019-2029 Western Riverside County Highway Delivery Plan, CVAG's Transportation Project Prioritization Study (TPPS), the Western Riverside Council of Governments' Transportation Uniform Mitigation Fee Nexus Study and adopted zero emission transition plans. Projects in one of these plans will advance either as highly recommended or recommended. Projects not in one of these plans have the option of advancing on the contingency list.

Part B – Invitation to Apply: Based on Part A, nominating agencies will be notified of their project's designated priority (highly recommended, recommended, or contingency list) and invited to submit a full nomination application. Nominations will be submitted to Commission staff for review and feedback prior to being finalized. Staff is recommending the Executive Director be authorized to submit the project nomination list to SCAG.

SCAG will evaluate and score all project nomination applications submitted by the six CTCs within the SCAG region per SCAG's adopted guidelines (Attachments 1 and 2). SCAG staff will score projects based on the following criteria: CTC prioritization, ability to support the goals and policies of SCAG's Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), equity considerations, and air quality improvements. SCAG staff anticipates submitting the recommended list of projects totaling $275 million to the SCAG Regional Council for approval on June 6, 2024.

MOU between SCAG and SCAG Region CTCs

As SCAG and the region's CTCs embark on this new process for programming federal formula funds, staff recommends entering into Agreement No. 24-66-041-00 (Attachment 4). This is a MOU with SCAG and the other SCAG region CTCs to describe the reasons for the change in how federal formula funds are distributed and what each party's responsibilities will be. Staff for all CTCs in the SCAG region and SCAG have agreed to the language of the MOU. All SCAG region CTC governing boards will be considering adoption of this MOU. This agreement will not impact the commitment outlined in the March 2023 RCTC-CVAG MOU that was referenced above.

FISCAL IMPACT:

While this item has no fiscal impact to the Commission's adopted FY 2023/24 budget, the policy behind this item presents significant funding challenges to Commission-led projects in the future. Traditionally, the Commission has received a steady level of STBG and CMAQ funding every year and had the flexibility to program or increase federal formula funding to advance priority projects by pairing it with locally generated funds from sources like Measure A and TUMF. Now, the Commission no longer has this consistent level of funding on-hand and must wait for SCAG to conduct a Call for Project Nominations, at the same time competing with neighboring CTCs for the same dollars.

Attachments:
1) SCAG STBG/CMAQ Program Guidelines
2) Draft SCAG CRP Guidelines
3) RCTC Procedures for SCAG's 2024 Call for Project Nominations
4) Agreement No. 24-66-041-00 between SCAG and SCAG Region CTCs

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

STBG/CMAQ

PROGRAM GUIDELINES

CONTENTS

STBG/CMAQ PROGRAM OVERVIEW

The Congestion Mitigation and Air Quality Improvement program (CMAQ) and Surface Transportation Block Grant program (STBG) Program Guidelines, scheduled for adoption by the SCAG Regional Council (RC) on June 1, 2023, establishes the framework for project selection and investing of CMAQ and STBG funds within the SCAG region in accordance with 23 CFR § 450.332(c) et al. While the program guidelines focus on CMAQ and STBG project selection for Fiscal Year (FY) 2025 through FY 2028, the guidelines are effective June 30, 2023, and any new project or new project phase to be programmed in the Federal Transportation Improvement Program (FTIP) with CMAQ and/or STBG funds after this date will be subject to the SCAG selection process. These guidelines address joint Federal Highway Administration's (FHWA) and Federal Transit Administration (FTA) compliance findings focused on the delegation of project selection authority for the CMAQ program and the suballocation and administration of the STBG program.

BACKGROUND

Planning and programming actions for federal formula funded projects and programs are guided by the SCAG RC-approved Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) – known as Connect SoCal 2020 and Connect SoCal 2024 (expected to be adopted by the SCAG RC in April 2024), the 2023 FTIP, the 2025 FTIP (expected to adopted by the SCAG RC in September 2024), and Federal Performance-Based Planning and Programming and Transportation Performance Management requirements.

The RTP/SCS provides the long-term vision and goals for how the SCAG region will build and support transformative transportation projects and initiatives. SCAG's RTP/SCS demonstrates how transportation projects and programs in the six-county SCAG region conform to the State of California and federal air quality mandates for funding eligibility. It identifies strategies to reduce regional greenhouse gas (GHG) emissions and criteria air pollutant (CAP) emissions.

The FTIP is the document prepared by a metropolitan planning organization (MPO) that lists projects to be funded with federal, state, and local funds for the next four-year period. The FTIP is a key component in the process by which the RTP/SCS is implemented. It does so by providing an orderly allocation of federal, state, and local funds for use in planning and building specific projects. The FTIP is required to advance the RTP/SCS by programming the projects contained in the RTP/SCS, in accordance with federal and state requirements. These include specific requirements for scheduling of projects, funding, and the timely implementation of transportation control measures to help reduce air pollution.

Federal Transportation Performance Management Targets, adopted by the SCAG RC, provide near and mid-term anticipated outcomes for the transportation network. These inform and are informed, by planning and programming actions.

FUNDING AVAILABILITY

Prior to initiating a call for project nominations, SCAG will evaluate the availability of STBG and CMAQ funding. SCAG reserves the right to set aside up to 2.5 percent of the annual obligational authority for CMAQ and STBG funds apportioned to the SCAG region to support regional planning priorities that are led by SCAG and/or in partnership with the County Transportation Commissions (CTCs) (i.e., eligible planning activities that advance implementation of the RTP/SCS and performance-based planning and

programming in the SCAG region). Use of the funds included in the set aside will be documented in the annual SCAG Overall Work Program and FTIP, as appropriate. The balance of CMAQ and STBG funding is available to projects through a competitive call for project nominations process that is administered and selected by SCAG in coordination with the SCAG region's six CTCs. SCAG is responsible for the development of the call for project nominations process, oversight, and final project selection. As outlined in the STBG/CMAQ Compliance Action Plan, SCAG has established performance-based nomination targets to guide the nomination submittals from each county within the SCAG region. The targets do not represent a guaranteed funding level, a nomination floor, or a nomination ceiling.

County	CMAQ Target Percentage	STBG Target Percentage
Imperial	0.6%	1.2%
Los Angeles	54.8%	53.3%
Orange	17.3%	17.1%
Riverside	12.7%	11.8%
San Bernardino	11.3%	12.2%
Ventura	3.3%	4.3%

ELIGIBLE APPLICANTS

In general, SCAG cities, counties, transit agencies, federally recognized Tribal governments, and CTCs are eligible to apply for CMAQ and STBG funds. Each CTC is responsible for coordination and submission of project nominations to SCAG from eligible entities from their respective counties. SCAG encourages CTCs to coordinate with SCAG and other affected CTCs on project nominations for multi-county projects and to support multi-county agency projects such the California Department of Transportation (Caltrans), the Los Angeles-San Diego-San Luis Obispo Rail Corridor Agency, and the Southern California Regional Rail Authority (Metrolink).

PUBLIC OUTREACH & STAKEHOLDER ENGAGEMENT

Stakeholder engagement is essential in all SCAG programs. SCAG requires each CTC to engage relevant stakeholders from their respective county to maximize project impact and further collaborative policy goals.

CTCs are required to demonstrate countywide outreach and engagement with stakeholders and the public to solicit project ideas. CTCs should make every effort to follow current best practices related to virtual and in-person public participation, outreach, and engagement. SCAG strongly encourages each CTC to outreach and engage with historically disadvantaged communities (Priority Equity Communities) within their respective counties.

CTCs must document their public outreach and stakeholder engagement process and demonstrate how it meets the program guidelines. This can include a CTC conducting a call for project nominations.

PROJECT SELECTION PROCESS

SCAG will conduct a call for project nominations, provide guidance, identify available funding, perform project evaluations, develop a list of prioritized projects, and conduct the SCAG board review and approval process.

CTCs will solicit and submit project nomination applications including conducting and documenting their outreach processes, screening applicants and projects for program eligibility, and conducting initial evaluation and prioritization of projects from their respective county. CTCs will develop individual project nomination application materials for submission to SCAG and establish processes for their county's project nominations, consistent with the overall program guidelines and subject to consultation and concurrence by SCAG staff.

After completing the initial project screening and evaluations, the CTCs will submit prioritized project nominations and required documentation to SCAG by the deadline established by SCAG. Prioritized nomination lists must be approved by the CTC's CEO (and/or governing board) prior to submission to SCAG.

CTC INITIAL SCREENING

At minimum, CTCs must incorporate the following regional criteria into their project nomination evaluations:

1. Eligibility: CTCs will screen potential implementing agencies and projects for eligibility with federal and regional requirements. Projects must be eligible for STBG and/or CMAQ funds, as detailed in 23 USC Sec. 133, 149, et al.

2. Alignment: CTCs should evaluate projects for alignment with relevant federal and regional plans and policies. CTCs should prioritize projects that:

   - Implement SCAG's adopted RTP/SCS, including future adopted Plan policies and strategies;
   - Advance Connect SoCal Performance Measures including Federal Transportation Performance Management Goals for safety, asset management, environmental sustainability and system performance, as detailed in 23 USC Sec. 105(b) and 49 USC Sec. 5301(b)(3);
   - Demonstrate direct and/or indirect benefits that positively impact Priority Equity Communities. (CTCs should aim to ensure that at least 40 percent of funding requested by projects countywide positively impact Priority Equity Communities).

3. Community/Stakeholder Engagement: CTCs should prioritize project nomination applications with demonstrated community support from Priority Equity Communities. Community support may be determined through a variety of means, including (but not limited to):

   - Responses to public outreach, including comments received at public meetings or hearings, feedback from community workshops, survey responses, etc.; and/or
   - Endorsement by a Community-Based Organization (CBO) representing Priority Equity Communities.

4. Deliverability and Readiness: CTCs should evaluate potential implementing agencies and projects for deliverability issues. CTCs should consider if potential implementing agencies have sufficient capacity and technical expertise to meet deadlines. CTCs should encourage projects with demonstrated readiness within the programming period.

SCAG encourages CTCs to work with SCAG staff on the development of the CTC project evaluation criteria. CTC project evaluation criteria must receive concurrence from SCAG staff and approval by the CTC CEO (and/or governing board) prior to issuing the call for nominations activities (or documented equivalent process) in their respective county. CTCs may develop separate evaluation frameworks by project type, but each such framework must meet the requirements of this section.

PROJECT NOMINATIONS

After completing initial project screening and evaluations, CTCs shall submit project nominations and associated documentation to SCAG for regional evaluation and project selection. Nomination lists must be approved by the CTC CEO (and/or governing board) prior to submission to SCAG. Project nomination packets must include the following elements, including project applications identifying the requested source(s) of funding:

1. Nomination List: list of eligible candidate projects for STBG and/or CMAQ funds prioritized according to the evaluation criteria developed by the CTC and approved by SCAG staff.
2. CEO Approval: letter from the CTC's CEO approving the project nomination list.
3. Outreach Documentation: materials verifying CTC compliance with outreach requirements.
4. Compliance Checklists: completed checklists and supporting documentation affirming compliance with requirements for both the CTC and each potential implementing agency with a project on the nomination list, including emissions benefit analysis for candidate CMAQ projects. Checklists should be completed by the CTC and must be signed by a signatory authority for the agency concerned.

REGIONAL PROJECT EVALUATION

SCAG staff will form a review committee composed of a multidisciplinary group of staff members. The review committee will conduct the regional project evaluation process to review the nomination packets provided by the CTCs and develop a recommended list of projects for adoption by the SCAG RC. This process will consist of the following steps:

1. Confirm Eligibility: SCAG staff will review submitted documentation to ensure CTC, potential implementing agency, and project compliance with applicable federal and regional policies. Screening will include a review to ensure consistency with adopted RTP/SCS. Any issues identified will be communicated to CTC staff, and projects with unresolved issues will be excluded from further consideration.
2. Scoring Criteria: Eligible projects can achieve up to 110 points for projects submitted for potential CMAQ funding and up to 100 points for projects submitted for STBG funding. The review committee will score projects using the following rubric:

SCORING CRITERIA	POSSIBLE POINTS
CTC Prioritization: Relative CTC project prioritization	50 Points
Regional Priorities: Project implements SCAG's adopted RTP/SCS, including future adopted Plan policies and strategies	20 Points
Performance Measures: Project demonstrates support for Connect SoCal Performance Measures (including but not limited to Federal Transportation Performance Management Goals): • Location Efficiency, • Mobility and Accessibility, • Safety and Public Health, • Environmental Quality, • Economic Opportunity, • Investment Effectiveness, • Transportation System Sustainability, and • Environmental Justice	20 Points
Equity: Project demonstrates direct and/or indirect benefit that positively impact Priority Equity Communities	10 Points
Air Quality Improvements: For CMAQ-eligible projects, expected criteria air pollutant (CAP) emissions reductions and relative cost effectiveness of projects in reducing CAP emissions in the SCAG region Air Basins	10 Points

The review committee will score each project using the following criteria:

CTC Prioritization:

- Prioritized in the CTC list as Highly Recommended — 50 points
- Prioritized in the CTC list as Recommended — 40 points
- Prioritized in the CTC Contingency List — 20 points

Regional Priorities

- Aligns with 3 or more Regional Priorities — 20 points
- Aligns with 1 to 2 Regional Priorities — 10 points
- Does not align a Regional Priority — 0 points

Performance Measures

- Supports 6 or more Performance Measures — 20 points
- Supports 4 to 5 Performance Measure — 10 points
- Supports 2 to 3 Performance Measures — 5 points
- Supports less than 2 Performance Measures — 0 points

Equity

- Demonstrates direct positive benefit to Priority Equity Communities — 10 points
- Demonstrated indirect positive benefits to Priority Equity Communities — 5 points
- Does not demonstrate positive benefits to Priority Equity Communities — 0 points

Air Quality Improvements

- Demonstrates cost effectiveness in reducing CAP emissions — 10 points
- Estimates CAP emission reduction benefits — 5 points
- Does not address CAP emission reduction benefits — 0 points

3. Project Ranking Process: Candidate projects will be ranked according to their average review committee score. To ensure that high performing air quality improvement projects are prioritized for CMAQ funding, SCAG staff will first develop a recommended list of eligible projects for CMAQ funding using the comprehensive rubric rankings as well as projects identified as seeking CMAQ funding. (All eligible projects scored with a maximum possible score of 110 points and ranked from highest to lowest score.) In developing this list, SCAG will consider if project elements may not be eligible for CMAQ funds and should be considered for STBG funding.

   All remaining projects, including CMAQ-eligible projects not recommended for funding using this first method, will then be ranked with the air quality improvement portion of the rubric score excluded. (All remaining projects scored with a maximum possible score of 100 points and ranked from highest to lowest score). The latter rankings will be used by SCAG staff to develop a recommended list of projects for STBG funding.

   Once the lists are developed, they will be shared with the Air Quality Districts to obtain input on the projects selected for potential CMAQ funding. This will fulfill SCAG's requirement to involve the local air quality districts. SCAG may also consult with Caltrans and others as applicable.

4. Program Balancing: Candidate projects will be initially prioritized according to their ranking as described above. However, to achieve programmatic investment thresholds, and ensure a balanced program of projects, SCAG staff may adjust project prioritization based on the following factors:

   - Ensuring that at least 40 percent of funding positively benefit Priority Equity Communities,
   - County targets (as detailed in the SCAG RC-approved STBG/CMAQ Compliance Action Plan),
   - Relative STBG and/or CMAQ availability, and
   - Overall program balancing for a variety of project types, equitable investments, and regional diversity.

   Project scores will be converted into recommendation categories (i.e., Highly Recommended, Recommended, Contingency List, and Not Recommended) prior to publishing the recommended program of projects. To achieve an overall Highly Recommended determination, projects must

achieve a score of at least 90 points. To achieve an overall Recommended determination, projects must achieve a score of at least 75 and less than 90 points. To be considered for the Contingency List, projects must achieve a score of at least 70 points. Depending on availability of CMAQ and STBG funds, projects may move between the Recommended list and the Contingency List. Using this process, SCAG staff will develop a draft program of recommended (Highly Recommended and Recommended) and Contingency List projects for SCAG RC adoption. Projects that achieve a score of less than 70 will be determined to be Not Recommended.

5. Program Approval: The SCAG RC will consider the recommended CMAQ and STBG projects. Projects approved by the SCAG RC for funding will be eligible for programming into the FTIP.

   If high scoring projects (Highly Recommended and Recommended) are not selected due to funding constraints, they will be prioritized for future funding opportunities as additional programming capacity becomes available for CMAQ and/or STBG programs prior to the next scheduled call for project nominations process. Contingency List projects will be considered after high scoring projects for future funding opportunities if additional programming capacity becomes available for CMAQ and/or STBG programs prior to the next scheduled call for project nominations process.

APPROVED PROJECTS, FEDERAL PROGRAMMING, MONITORING, AND FTIP MANAGEMENT

Projects approved by the SCAG RC for funding will be programmed in the FTIP consistent with adopted FTIP Guidelines. Approved projects that meet eligibility for transfer to the FTA should consult the FTIP Guidelines. To ensure the timely use of federal funds, SCAG will collaborate with Caltrans, CTCs, local jurisdictions, and transit operators to enhance FTIP Guideline policies and procedures to ensure federal funding requirements and deadlines are met and funds are not lost to the region. Additionally, SCAG will prepare and submit annual obligation plans to Caltrans, monitor federal fund obligations, overall federal funding levels, and apportionment and Obligation Authority (OA) balances.

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SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

FY23-FY26 CARBON REDUCTION PROGRAM

GUIDELINES

CONTENTS

CARBON REDUCTION PROGRAM OVERVIEW

The federal Carbon Reduction Program (CRP) Guidelines, establishes the policy framework for project selection and investment of federal funds in accordance with the State of California's Carbon Reduction Strategy. CRP funding is made available by the Bipartisan Infrastructure Law (BIL), enacted as the Infrastructure Investment and Jobs Act (IIJA), which provides funds for projects designed to reduce transportation emissions.

SCAG is in a unique position to utilize this resource and build upon the REAP 2.0 funded County Transportation Commission Partnership Program efforts, allowing for broader planning and implementation investments, including those which focus on reducing transportation emissions. As part of its implementation of CRP, SCAG will use 65 percent of the regional CRP share to issue a Call for Project Nominations to support transformative projects as described below.

BACKGROUND

The United States is committed to a whole-of government approach to reducing economy-wide net greenhouse gas (GHG) emissions by 2030. The BIL provides resources to help funding recipients advance this goal in the transportation sector. In addition, the BIL makes historic investments to improve the resilience of transportation infrastructure, helping communities prepare for hazards such as wildfires, floods, storms, and droughts exacerbated by climate change.

The CRP encourages the advancement of projects that address climate change and sustainability. In particular, SCAG encourages projects that implement the region's Regional Transportation Plan/Sustainability Communities Strategy (RTP/SCS, known as Connect SoCal). In alignment with SCAG's Racial Equity Early Action Plan, projects that facilitate the consistent integration of equity are strongly encouraged.

FUNDING AVAILABILITY

The CRP program is authorized from FY22 through FY26. For the FY22 apportionments totaling $33.6 million, SCAG coordinated with the CTCs to expedite and select a program of projects approved by the Regional Council on April 6, 2023. The SCAG region's allocation of CRP funds is estimated to be approximately $141 million from FY23 through FY26. For FY23-FY26, SCAG will solicit project nominations from the CTCs using a Call for Project Nominations process to program up to an estimated approximately $92 million. This represents 65 percent of the SCAG region's apportionments. SCAG will direct the remaining estimated up to approximately $49 million to SCAG's regional initiatives, to identify, evaluate, and award funding for regional and/or local pilots and partnership projects that achieve regional transportation goals and further the objectives of Connect SoCal. Actual programming may be lower to reflect the latest apportionments as reported by Caltrans.

CRP funds are contract authority, reimbursed from the Highway Account of the Highway Trust Fund. CRP funds are available for obligation for a period of 3 years after the last day of the fiscal year for which the funds are authorized. Thus, CRP funds are available for obligation for up to 4 years.

FEDERAL FISCAL YEAR	2023	2024	2025	2026
OBLIGATION DEADLINE	9/30/2026	9/30/2027	9/30/2028	9/30/2029
EXPENDITURE DEADLINE	9/30/2031	9/30/2032	9/30/2033	9/30/2034

ELIGIBLE APPLICANTS

In general, SCAG cities, counties, transit agencies, federally recognized Tribal governments, and CTCs are eligible to apply for CRP funds. Each CTC is responsible for coordination and submission of project nominations to SCAG from eligible entities from their respective counties. SCAG encourages CTCs to coordinate with SCAG and other affected CTCs on project nominations for multi-county projects and to support multi-county agency projects such the California Department of Transportation (Caltrans), the Los Angeles-San Diego-San Luis Obispo Rail Corridor Agency (LOSSAN), and the Southern California Regional Rail Authority (Metrolink).

PUBLIC OUTREACH AND STAKEHOLDER ENGAGEMENT

Stakeholder engagement is essential in all SCAG programs. SCAG requires each CTC to engage relevant stakeholders to maximize project impact and further collaborative policy goals.

CTCs are required to demonstrate countywide outreach and engagement with stakeholders and the public to solicit project ideas. CTCs should follow current best practices related to virtual and in-person public participation, outreach, and engagement. SCAG encourages each CTC to outreach and engage with historically disadvantaged communities (Priority Equity Communities) within their respective counties. CTCs must document their public outreach and stakeholder engagement process and demonstrate how it meets the program guidelines. This can include a CTC conducting a call for project nominations.

ELIGIBILE PROJECT USES

SCAG's CRP guidelines prioritize projects that aspire to transform Southern California's mobility opportunities, especially with respect to Connect SoCal, the region's adopted Regional Transportation Plan (RTP) and Sustainable Community Strategy (SCS). Applicants are encouraged to review strategies included within Connect SoCal to align project applications with regional planning priorities and concepts. Funds shall be used for implementation efforts that can demonstrate a reduction in transportation emissions over the project's lifecycle. Of critical importance to SCAG is to demonstrate GHG emission reduction to meet our climate commitments, particularly in ways that advance equity and improve underlying social and public health vulnerabilities.

Funds may be spent on projects at any phase, helping to close a critical transportation funding gap for pre-construction needs. As with most federal funds, CRP requires a non-federal match. While the non-federal share requirement depends on the type of project, most projects must have a minimum 11.47 percent non-federal funding match. Due to the limited balance of toll credits statewide, toll credits may not be used as funding match for CRP.

CRP funding may be used on a wide range of projects that support the reduction of transportation emissions. In accordance with California's Carbon Reduction Strategy, applicants should nominate projects that support the state's three Carbon Reduction Program pillars: 1) transit and passenger rail 2) active transportation, 3) zero emission vehicles and infrastructure, and conversion of existing highway

lanes to price managed lanes. For more information, please refer to the Federal CRP Implementation Guidance.

All proposed uses will be required to meet the state and program requirements. Projects must demonstrate a reduction in transportation emissions. Please contact SCAG with any questions regarding funding eligibility.

PROJECT SELECTION PROCESS

SCAG will conduct a Call for Project Nominations, provide guidance, perform project evaluations, develop a list of selected projects, and conduct the SCAG board review and approval process.

CTCs will solicit and submit project applications including conducting and documenting their outreach processes, screening applicants and projects for program eligibility, and conducting initial evaluation and prioritization of projects from their respective county. CTCs will develop individual project application materials for submission to SCAG and establish processes for their county's project nominations, consistent with the overall program guidelines and subject to consultation and concurrence by SCAG staff.

One application is required per project and entities may submit multiple project applications. **Applicants must complete and submit their application by March 29, 2024, at 5:00 p.m. Program timelines are subject to change.**

CALL FOR PROJECTS SCHEDULE

The following schedule outlines important dates for the CRP Call for Projects. **Program timelines are subject to change.**

CRP (FY23-FY26) CALL MILESTONES	DATE
CALL FOR APPLICATIONS OPENS	January 4, 2024
APPLICATION WORKSHOP	TBD
CALL FOR APPLICATIONS SUBMISSION DEADLINE	March 29, 2024
REGIONAL COUNCIL APPROVAL	July 11, 2024

REGIONAL PROJECT EVALUATION

SCAG staff will form a review committee composed of a multidisciplinary group of staff members. The review committee will conduct the regional project evaluation process to review the project submittals provided by the CTCs and develop a recommended list of projects for adoption by the SCAG RC. This process will consist of the following steps:

1. Confirm Eligibility: SCAG staff will review submitted documentation to ensure compliance with applicable federal, state, and regional policies. Screening will include a review to ensure consistency with adopted RTP/SCS. Any issues identified will be communicated to CTC staff, and projects with unresolved issues will be excluded from further consideration.

2. Scoring Criteria: Eligible projects can achieve up to 100 points. The review committee will score projects using the following rubric:

SCORING CRITERIA	POSSIBLE POINTS
CTC Prioritization: Relative CTC project prioritization	Up to 25 Points
Regional Priorities: Project implements SCAG's adopted RTP/SCS, including future adopted Plan policies and strategies	Up to 20 Points
Performance Measures: Project demonstrates support for Connect SoCal Performance Measures (including but not limited to Federal Transportation Performance Management Goals): • Location Efficiency, • Mobility and Accessibility, • Safety and Public Health, • Environmental Quality, • Economic Opportunity, • Investment Effectiveness, • Transportation System Sustainability, and • Environmental Justice	Up to 15 Points
Equity: Project demonstrates direct and/or indirect benefit that positively impact Priority Equity Communities	Up to 15 Points
Carbon Reduction: Expected carbon reduction and relative cost effectiveness of projects in reducing carbon emissions in the SCAG region	Up to 25 Points

The review committee will score each project using the following criteria:

CTC Prioritization	
• **Prioritized in the CTC list as Highly Recommended**	25 points
• **Prioritized in the CTC list as Recommended**	15 points
• **Prioritized in the CTC Contingency List**	5 points
Regional Priorities	
• **Aligns with 3 or more Regional Priorities**	20 points
• **Aligns with 1 to 2 Regional Priorities**	10 points
• **Does not align a Regional Priority**	0 points
Performance Measures	
• **Supports 6 or more Performance Measures**	15 points
• **Supports 4 or 5 Performance Measures**	10 points
• **Supports 2 or 3 Performance Measures**	5 points
• **Supports less than 2 Performance Measures**	0 points
Equity	
• **Demonstrates direct positive benefit to Priority Equity Communities**	15 points
• **Demonstrates indirect positive benefit to Priority Equity Communities**	10 points
• **Does not demonstrate positive benefits to Priority Equity Communities**	0 points
Carbon Reduction	
• **Demonstrates cost effectiveness in reducing transportation emissions**	25 points
• **Estimates transportation emission reduction benefits**	15 points
• **Does not address transportation emission reduction benefits**	0 points

3. Project Ranking Process: Projects will be ranked according to their average review committee score. SCAG staff will develop a recommended list of eligible projects for CRP funding using the comprehensive rubric rankings. All eligible projects scored with a maximum possible score of 100 points and ranked from highest to lowest score. In developing this list, SCAG will consider if project elements may not be eligible for CRP funds.

4. Program Balancing: Candidate projects will be initially prioritized according to their ranking as described above. However, to achieve programmatic investment thresholds, and ensure a balanced program of projects, SCAG staff may adjust project prioritization based on the following factors:

   - Ensuring that at least 40 percent of funding positively benefit Priority Equity Communities and meet Justice 40 requirements, and
   - Overall program balancing for a variety of project types, equitable investments, and regional diversity.

   Project scores will be converted into recommendation categories (i.e., Highly Recommended, Recommended, Contingency List, and Not Recommended) prior to publishing the recommended program of projects. To achieve an overall Highly Recommended determination, projects must achieve a score of at least 85 points. To achieve an overall Recommended determination, projects must achieve a score of at least 70 and less than 85 points. To be considered for the Contingency List, projects must achieve a score of at least 65 points. Using this process, SCAG staff will develop a draft program of recommended (Highly Recommended and Recommended) and Contingency List projects for SCAG RC adoption. Projects that achieve a score of less than 65 will be determined to be Not Recommended.

5. Program Approval: The SCAG RC will consider the recommended CRP projects.

APPROVED PROJECTS AND MONITORING

To ensure the timely use of federal funds, SCAG will collaborate with Caltrans and CTCs to enhance Guideline policies and procedures to ensure federal funding requirements and deadlines are met and funds are not lost to the region. Once SCAG selects projects, CTCs will be required to submit a Project Alignment Confirmation Form to SCAG for transmittal to Caltrans. Additionally, SCAG will prepare and submit annual obligation plans to Caltrans, monitor federal fund obligations, overall federal funding levels, and apportionment and Obligation Authority (OA) balances. Program completion is based on statutory provisions and SCAG expects all selected projects to be completed in a timely manner and requires that applicants coordinate internal resources to ensure timely completion of the projects.

CONTACT INFORMATION

Questions regarding the Carbon Reduction Program application process should be directed to:

Kate Kigongo
Department Manager, Partnerships for Innovative Deployment
Telephone: (213) 236-1808
Email: kigongo@scag.ca.gov

Questions regarding eligibility, programming, and obligation of CRP funding should be directed to:

Heidi Busslinger
Principal Planner, Federal Transportation Improvement Program
Telephone: (213) 236-1541
Email: busslinger@scag.ca.gov

RCTC PROCEDURES FOR SCAG'S 2024 CALL FOR PROJECT NOMINATIONS

The Southern California Association of Governments (SCAG) intends to issue a SCAG Region Carbon Reduction Program (CRP) & Congestion Mitigation and Air Quality (CMAQ)/Surface Transportation Block Grant (STBG) Call for Project Nominations on January 4, 2024, with a closing date of March 29, 2024. Projects are anticipated to be approved by the SCAG Regional Council on June 6, 2024, and to be programmed in the Federal Transportation Improvement Program (FTIP) in July 2024.
The SCAG guidelines require county transportation commissions (CTCs) to perform an initial project screening and evaluation, then submit project nominations to SCAG for regional evaluation and project selection. This document describes the Riverside County Transportation Commission's (RCTC) nomination procedures for SCAG's 2024 Call for Project Nominations.

PART A – INITIAL SCREENING

In the SCAG region, an estimated $275 million is available for fiscal years (FY) 2022/23 through 2025/26 across the three programs: CRP ($88 million), STBG ($130 million), and CMAQ ($57 million). This funding is available due to increased funding for California called out in the federal Infrastructure Investment and Jobs Act (IIJA). Riverside County's target is roughly 12 percent or $33 million. SCAG anticipates that under subsequent SCAG Call for Project Nominations, considerably more funding will be available for programming. This nomination procedure is written recognizing the very limited funding in the 2024 Call for Project Nominations. Should future calls include substantially more funding, RCTC's intention is to revisit this procedure.

<u>Screening Criteria</u>:

In the SCAG Call for Project Nominations, the respective CTC ranks each project based on the following:

Highly Recommended – 50 Points for STBG/CMAQ; 25 points for CRP
Recommended – 40 Points for STBG/CMAQ; 15 points for CRP
Contingency List – 20 Points for STBG/CMAQ; 5 points for CRP

RCTC's methodology for screening and ranking projects will be:

Highly Recommended – Regional Priorities

- Projects in Groups 1 and 2 of the RCTC 10-Year Delivery Plan

Recommended – Regionally Significant

- Projects in Group 3 of the RCTC 10-Year Delivery Plan
- Projects in the Coachella Valley Association of Governments Transportation Project Prioritization Study
- Projects on the backbone network in the Western Riverside Council of Governments Transportation Uniform Mitigation Fee Nexus Study
- Projects in an adopted zero emission transition plan

Contingency List – Local Priorities

- Projects that are not identified in any of the above-referenced plans or studies

Screened projects that are highly recommended or recommended will be invited to prepare a full SCAG nomination application. Sponsors of projects that are on RCTC's contingency list may still prepare a nomination application.

Outreach:

All outreach activities will be documented for reporting to SCAG as required.

1. After RCTC board approval, issue call for nominations countywide to all eligible recipients including local agencies, transit agencies, and Tribal Governments via email
    a. RCTC Programming staff will host a minimum of two office hours
    b. RCTC Programming staff will offer 30-minute consultations with interested eligible recipients
2. Present the call for nominations and associated office hours and consultation opportunities to RCTC Technical Advisory Committee (TAC) and RCTC Multimodal Bi-Monthly Roundtable Meeting with transit operators
3. Work with RCTC Community Affairs Manager to connect with Tribal Governments

PART B – INVITATION TO APPLY

Screened projects that are highly recommended or recommended will be invited to prepare a full SCAG nomination application. Nominators of projects that are on the contingency list may still submit a nomination application. All nomination applications will be submitted to RCTC for submittal to SCAG.

SCHEDULE

November 20	RCTC TAC presentation
November 27	RCTC Budget and Implementation Committee presentation
December 12	Bi-Monthly Roundtable presentation
December 13	RCTC Commission presentation/open call for nominations
January 4	SCAG opens Call for Project Nominations
January 12	RCTC call for nominations closes
February 7	RCTC to notify nominators of recommendation category
March 13	Nominators to submit full project nominations to RCTC for review
March 20	RCTC to provide feedback on nominations for nominators to incorporate
March 27	Final project nominations due to RCTC
March 28	RCTC to submit all Riverside County project nominations to SCAG
March 29	SCAG Call for Project Nominations closes
April – May	SCAG evaluates nominations based on SCAG's adopted STBG/CMAQ and CRP Guidelines
June 6	SCAG Regional Council adopts project lists

MEMORANDUM OF UNDERSTANDING BETWEEN THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS AND THE SCAG REGION COUNTY TRANSPORTATION COMMISSIONS

This Memorandum of Understanding ("MOU"), is entered into by and between the **Southern California Association of Governments** ("SCAG") and **Imperial County Transportation Commission**, **Los Angeles County Metropolitan Transportation Authority**, **Orange County Transportation Authority**, **Riverside County Transportation Commission**, **San Bernardino County Transportation Authority**, **Ventura County Transportation Commission** (collectively, the "CTCs") to cooperatively determine their mutual responsibilities in carrying out the metropolitan transportation planning and programming responsibilities addressed in the Federal Highway Administration ("FHWA") and the Federal Transit Administration ("FTA") Fiscal Year 2022 SCAG Certification Review and December 16, 2022 approval of the California 2023 Federal Statewide Transportation Improvement Program ("FSTIP"). SCAG and the CTCs are individually referred to herein as Party and collectively referred to herein as "Parties."

RECITALS

WHEREAS, SCAG is a Joint Powers Agency and the federally designated Metropolitan Planning Organization ("MPO") for the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura, primarily responsible for the development of a Regional Transportation Plan/Sustainable Communities Strategy ("RTP/SCS") for the counties;

WHEREAS, in federal fiscal year 2022, the SCAG region received $576 million in federal Surface Transportation Block Grant ("STBG"), Congestion Mitigation and Air Quality ("CMAQ"), and Carbon Reduction Program ("CRP") funds and expects a similar amount annually in each subsequent year;

WHEREAS, to maximize and ensure that those funds continue to flow to the SCAG region, SCAG must address FHWA and FTA Federal Planning Findings ("FPF") issued in conjunction with the approval of the FSTIP in accordance with 23 CFR 450.220(b);

WHEREAS, the FPF verifies that the development of the FSTIP is consistent with the provisions of both the Statewide and Metropolitan transportation planning requirements and documents FHWA and FTA's recommendations for statewide and metropolitan transportation planning improvements;

WHEREAS, FHWA and FTA issued the Fiscal Year 2022 SCAG Certification Review and approval of the FSTIP on December 16, 2022;

WHEREAS, SCAG adopted STBG and CMAQ guidelines that address the specific findings for the SCAG region, including replacing the historic federal transportation funding suballocations by population or mode to cities and counties with a performance-based approach, modifying the eligibility screening conducted for compliance with Federal program guidance and regulations,

and modifying the project selection process so federally funded transportation projects are selected by SCAG as the MPO;

WHEREAS, SCAG has developed a project selection process for STBG/CMAQ funded projects and is developing a project selection process for CRP funded projects that builds and improves on performance-based planning a programming process; and

WHEREAS, the Parties seek to enter into this MOU to address the administrative and statutory requirements outlined in the December 16, 2022 FHWA/FTA approval of the 2023 FSTIP.

NOW THEREFORE, THE PARTIES AGREE AS FOLLOWS:

1. **Recitals**

   The Recitals are incorporated herein by this reference and made a part of the provisions of this MOU.

2. **Term**

   The Term of this MOU shall begin on the Effective Date of the MOU and continue in full force until such Party withdraws from this MOU pursuant to Section 7 below or this MOU is terminated by SCAG upon thirty (30) days prior written notice.

3. **Responsibilities of the Parties**

   a. SCAG's Responsibilities:

      i. Determines the availability of STBG, CMAQ, and CRP funding.

      ii. Initiate a regional solicitation for project nominations, as applicable.

      iii. Evaluate project nominations against program criteria and recommend a list of projects for SCAG Regional Council approval.

      iv. Collaborate with Caltrans, CTCs, local jurisdictions, and transit operators to enhance FTIP Guideline policies and procedures to ensure federal funding requirements and deadlines are met and funds are not lost to the region.

      v. Prepare and submit annual obligation plans to Caltrans.

      vi. Monitor and report federal fund obligations, overall federal funding levels, and apportionment and Obligation Authority (OA) balances.

      vii. Engage in loans with other regions as deemed necessary.

      viii. Collaborate on project guideline updates as deemed necessary.

b. CTC's Responsibilities:

i. Assist in the process by outreaching to eligible project sponsors, conducting an initial screening against the selection criteria, and identifying county-level project priorities.

ii. Collaborate with SCAG to assist SCAG with enhancing FTIP Guideline policies and procedures to ensure federal funding requirements and deadlines are met and funds are not lost to the region.

iii. Coordinate with project sponsors to provide information to SCAG as needed for OA tracking and reporting in order to ensure OA delivery for the region.

iv. Assist project sponsors with the oversight of the obligation process and inactive project list for projects within the county.

4. Amendments

No alteration or deviation of the terms of this MOU shall be valid unless made in writing in the form of an MOU amendment and properly executed by the Parties.

5. Indemnification

A Party and its officers shall not be responsible for any damage or liability occurring by reason of anything done or omitted to be done by another Party under or in connection with any work, authority or jurisdiction delegated to that other party under this MOU. It is understood and agreed that each Party shall fully defend, indemnify and save harmless the other Parties, their officers, and employees from all claims, suits or actions of every name, kind and description brought for or on account of any damage or injury occurring by reason of anything done or omitted to be done by the indemnifying Party under or in connection with any work, authority or jurisdiction delegated to the indemnifying Party under this MOU.

6. Independent Contractor

The Parties shall be independent contractors in the performance of this MOU, and not officers, employees, contractors, or agents of each other. The Parties shall maintain sole and exclusive control over their personnel, agents, consultants, and operations.

7. Termination of MOU

A Party may terminate this MOU at any time by giving written notice to the other Parties of such termination at least thirty (30) calendar days before the effective date of such termination. Should one of the CTCs provide written notice to terminate, the remaining CTCs and SCAG may amend the MOU to remove the terminating CTC.

8. Execution

This MOU, or any amendment related thereto, may be executed in multiple counterparts, each of which shall be deemed to be an original, but all of which shall constitute one and the same agreement. The signature page of this MOU or any amendment may be executed by way of a manual or authorized digital signature. Delivery of an executed counterpart of a signature page to this MOU or an amendment by electronic transmission scanned pages shall be deemed effective as a delivery of a manually or digitally executed counterpart to this MOU or any amendment.

9. Effective Date

This MOU shall be effective as of the last date in which the document is executed by the Parties.

10. Entire MOU

This MOU, comprised of these terms and conditions and any properly executed amendments, represents and contains the entire agreement of the Parties with respect to the matters set forth herein. This MOU supersedes any and all prior negotiations, discussions and, if any, previous agreements between the Parties.

11. Authority

The person executing this MOU on behalf of the Parties warrant that they are duly authorized to execute this MOU on behalf of said Parties, and that by doing so the Parties are formally bound to the provisions of this MOU.

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their duly authorized representatives as of the dates indicated below:

Southern California Association of Governments

By: _____ _____
Kome Ajise, Executive Officer Date

Imperial County Transportation Commission

By: _____ _____
David Aguirre, Executive Director Date

Los Angeles County Metropolitan Transportation Authority

By: _____ _____
Stephanie N. Wiggins, Chief Executive Officer Date

Orange County Transportation Authority

By: _____ _____
Darrell E. Johnson, Chief Executive Officer Date

Riverside County Transportation Authority

By: _____ _____
Anne Mayer, Executive Director Date

San Bernardino County Transportation Authority

By: _____ _____
Raymond W. Wolfe, Executive Director Date

Ventura County Transportation Commission

By: _____ _____
Martin R. Erickson, Executive Director Date

AGENDA ITEM 10

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	November 27, 2023
TO:	Budget and Implementation Committee
FROM:	Eric DeHate, Transit Manager
THROUGH:	Lorelle Moe-Luna, Multimodal Services Director
SUBJECT:	Riverside County Zero-Emission Bus Rollout Plans and Funding and Implementation Strategy

STAFF RECOMMENDATION:

This item is for the Committee to recommend the Commission take the following action(s):

1) Receive and file an update on the Riverside County Zero-Emission Bus (ZEB) Rollout Plans and Funding and Implementation Strategy (Project);
2) Direct staff to review existing transit funding policies and continue to work with the transit operators to strategize and leverage revenue sources to support the transition to zero-emission; and
3) Award sole source Agreement No. 24-62-042-00 with Center for Transportation and the Environment (CTE) for ongoing plan updates and zero-emission technical assistance for a three-year term in the amount of 150,000, plus a contingency of $15,000, for a total amount not to exceed $165,000.

BACKGROUND AND DISCUSSION:

The California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) regulation in December 2018. Per the regulation, all California public transit (bus) operators are required to gradually transition to a 100-percent zero-emission fleet by 2040. The rule sets a purchasing target, as shown in Table 1, for ZEBs of 25 percent beginning in 2023 for large transit operators and 2026 for small operators, and 100 percent by 2029 for all bus purchases.

Table 1: ICT Purchasing Requirements for Large and Small Transit Operators

Starting January 1	ZEB Percentage of Total New Bus Purchases	Starting January 1	ZEB Percentage of Total New Bus Purchases
Large Transit Operators Purchasing Rule		Small Transit Operators Purchasing Rule	
2023	25%	2026	25%
2026	50%	2029	100%
2029	100%		

The completion of the ZEB rollout plans will allow CARB to assess the financial impacts of the regulation on transit agencies and plan for future funding assistance opportunities to aid all agencies to reach the goal by 2040.

In April of 2022, the Commission awarded a contract to CTE to complete the Project. The Project includes two main tasks: 1) completion of ICT ZEB Rollout Plans for the smaller transit agencies in Riverside County (County), which include the cities of Banning, Beaumont, Corona, and Riverside and the Palo Verde Valley Transit Agency (PVVTA), and 2) an analysis of the total overall funding needs countywide.

The key activities for the Project included:

- A review of the existing conditions including any relevant demographics, service area characteristics, existing fleet sizes and conditions, location and status of charging and maintenance infrastructure in the project area.
- Stakeholder engagement with public utilities, municipalities, and any private properties owners who will be directly impacted by the implementation of ZEB infrastructure such as charging facilities and utility work related to charging infrastructure.
- Development of a detailed capital and operating financial analysis comparing the purchase of ZEBs to the purchase of existing CNG or gasoline buses for the preparation of a longer-term implementation financial strategy for an 18-year period from Fiscal Years 2022 to 2040.
- Development of final ZEB rollout reports based on existing conditions and financial analysis.
- Approval of final ICT ZEB Rollout Plans by the transit agencies' boards and submission to CARB.
- Development of an 18-year long-term funding analysis for complete transition to zero-emission including procurement and purchasing of zero-emission vehicles to meet regulation deadlines.

Each of the smaller transit agencies were able to submit their required ICT ZEB rollout plans (Attachments 1 – 5) by the required June 30, 2023, deadline. The rollout plans analyzed two technologies, battery electric buses (BEB) and fuel cell electric buses (FCEB). Table 2 is a summary of the technology selected for the smaller agencies.

Table 2: Small Transit Operator Technology Selection

Agency	Technology Selected
Banning	BEB fleet
Beaumont	Mixed BEB/FCEB fleet
Corona	Mixed BEB/FCEB fleet
Riverside	Mixed BEB/FCEB fleet
PVVTA	FCEB fleet

If needed, the transit agencies may revise their plans in the future should they choose to select a different technology.

Countywide Funding and Implementation Strategy

As part of the 18-year long-term implementation financial strategy, CTE also incorporated the zero-emission needs identified in Riverside Transit Agency's (RTA) and SunLine Transit Agency's (SunLine) ICT rollout plans to provide a countywide summary of the total impact of the CARB purchasing rule for Riverside County. RTA's board selected FCEB fleet as the preferred technology and SunLine's board selected a mixed BEB/FCEB fleet. The vast majority of SunLine's fleet will need to be FCEB due to the service area and range limitations of BEB.

The core component of transitioning to zero-emission is to reduce greenhouse gas emissions. The 18-year transition to zero-emission is projected to save about 132.1 million pounds of greenhouse gas emissions, which equates to removing approximately 13,335 gas powered vehicles from the roads.

It is estimated that the minimum cost to transition all transit operators to zero-emission technology will be about $608.2 million more than the current fleet and operating configurations. This includes approximately $48.7 million more for ongoing operating costs and $560.0 million more for capital outlay and rolling stock needed through 2040. Table 3 summarizes the projected additional zero-emission costs for operations and capital by bus operator.

Table 3: Additional Costs for Zero-Emission Transition from FY 2022 through 2040

Agency	Additional Operating Costs for ZE	Additional Capital Costs for ZE	Total Costs for ZE Transition
Banning	$ 1,403,000	$ 11,091,000	$ 12,494,000
Beaumont	2,504,000	22,140,000	24,644,000
Corona	2,783,000	31,924,000	34,707,000
Riverside	6,354,000	22,883,000	29,237,000
RTA*	35,271,000	322,312,000	357,583,000
SunLine**	-	129,648,000	129,648,000
PVVTA	32,000	19,522,000	19,954,000
Total	**$ 48,747,000**	**$ 559,520,000**	**$ 608,267,000**

*Additional costs may be needed for maintenance and warranties.
**Operational impacts were not included in their ICT rollout plan.

Other costs for workforce development, charging management systems and additional project management staff were not included in the analysis as they are unknown at this time. As the plans are revised, the funding analysis will also be updated.

Funding Gap Analysis

As the regional transportation planning agency and county transportation commission, the Commission provides allocations of federal, state and local funds to all of the transit operators in the County and has a vested interest to support and strategize how existing revenue sources can be leveraged to facilitate this transition. As part of this role, staff has projected the amount of funding over the zero-emission transition period to gauge the amount of revenue resources available. Over the 18-year transition period, the Commission is expected to receive approximately $4.9 billion in formula funding for bus operators. Table 4 below summarizes the funding expected between FY 2022 to 2040.

Table 4: Source and Anticipated Revenues from FY 2022 to 2040

Source of Funds*	Anticipated Revenues*
Federal**	$ 920,182,000
State**	3,471,714,000
Local	482,730,000
Total	**$ 4,874,626,000**

*Excludes other transit revenues for rail and commuter assistance.
**Includes competitive funds already awarded.

Over the same period, baseline ongoing operating and capital costs will require approximately $4.1 billion for operations and $562.8 million for capital, for a total of about $4.6 billion. Operating costs include ongoing salaries and benefits for staff, insurance, ongoing preventative maintenance costs for facilities, bus shelters and support vehicles, ITS, and security. Capital costs include support vehicles, bus shelters, ITS upgrades and components, bus shelters and other capital costs. This excludes increased service and associated capital support. Table 5 illustrates the projected need by bus operator over the same 18-year period.

Table 5: Projected Ongoing Operating and Capital Costs from FY 2022 to 2040

Agency	Ongoing Operating Costs	Ongoing Capital Costs	Total Ongoing Operating and Capital Costs
Banning	$ 50,312,000	$ 19,813,000	$ 70,125,000
Beaumont	68,459,000	29,237,000	97,696,000
Corona	80,580,000	16,416,000	96,996,000
Riverside	112,852,000	29,189,000	142,041,000
RTA	2,566,160,000	226,033,000	2,792,193,000
SunLine	1,129,932,000	230,571,000	1,360,503,000
PVVTA	42,153,000	11,540,000	53,693,000
Total	**$ 4,050,448,000**	**$ 562,799,000**	**$ 4,613,247,000**

Table 6 includes the ongoing operating and capital costs with all of the additional zero-emission costs provided by CTE. This includes approximately $4.1 billion in operating costs and $1.1 billion in capital costs for a total of $5.2 billion over the 18-year transition period.

Table 6: Projected Ongoing and Additional ZE Costs from FY 2022 to 2040

Type of Costs	Operating Costs	Capital Costs	Total Projected Costs
Ongoing Costs	$ 4,050,448,000	$ 562,799,000	$ 4,613,247,000
Additional ZE Costs	48,747,000	59,520,000	608,267,000
Total	**$ 4,099,195,000**	**$ 1,122,319,000**	**$ 5,221,514,000**

When comparing the anticipated revenues and the combination of ongoing costs and additional zero-emission costs, it is expected that projected costs will exceed the anticipated revenues by approximately $346.9 million over the 18-year transition period, as shown in Table 7.

Table 7: Revenues and Projected Costs from FY 2022 to 2040

Revenues/Projected Costs	Estimated Total
Anticipated Revenues	$ 4,874,626,000
Total Projected Costs	5,221,514,000
Under/(over) Revenues	**$ (346,888,000)**

Next Steps

This analysis serves as a roadmap for the transit operators to guide them to reach their ICT goals. However, the roadmap shows that traditional formula funds the Commission receives and provides is not sufficient on its own to fund the transit needs of our operators. This will require transit operators to seek additional federal and state competitive grants to ensure their ICT plan is fully funded. RTA and SunLine have been proactive in applying for federal and state competitive grants and have received about $70 million for zero-emission projects already.

The projected shortfall only considers transitioning to zero-emission and does not include any expansion of services. As operators consider adding more frequency or routes, those may include additional capital and operating expenses. More funding will be needed to support these new planned services. Staff will work with the operators to understand their long-term plans and update the financial strategy as needed.

Staff will continue to work with the transit operators to strategize how formula funding can be best leveraged with competitive state and federal programs and review existing funding policies to assess how they might be improved to address the funding needs for zero emission transition and growth for more service. This may also include advocating for the transit operators on a legislative level to seek additional funding.

CTE Sole Source Contract Award

Staff recommends approval of Agreement No. 24-62-042-00 for the award of a sole source contract to CTE for the next three years to utilize their services to update the funding and implementation analysis as well as provide technical assistance to Commission staff and transit operators. The total agreement is for a not to exceed amount of $165,000, which includes $150,000 over three years and a contingency of $15,000. This is based on CTE's hourly rates which are consistent with its current contract.

CTE has the knowledge and expertise to advise on implementation strategies as the technology continues to mature and state and federal policies evolve. In addition, CTE has developed a strong understanding of the local needs and challenges that the transit operators face and has developed relationships with each that it would also be a cost savings to the transit operators for the Commission to extent their involvement in this Project. The original scope of the Project did not include an on-call task option; therefore, a sole source contract is needed.

FISCAL IMPACT:

There is no fiscal impact for receiving an update on the ZEB rollout plans and funding analysis at this time. The first three years of the 18-year transition period have already been approved by the Commission through the Short-Range Transit Plan process. The funding needs over the remaining 15-year period for each operator will be considered in the annual SRTP process.

Sufficient funding is included in the approved budget to utilize CTE's services for the remainder of FY 2023/24. The contract will be on an as-needed basis and future expenditures will be included in future budget years.

Financial Information					
In Fiscal Year Budget:	Yes N/A	Year:	FY 2023/24 FY 2024/25+	Amount:	$25,000 $140,000
Source of Funds:	Local Transportation Funds (LTF)			Budget Adjustment:	No N/A
GL/Project Accounting No.:	622305 65520 00000 0000 106 62 65520				
Fiscal Procedures Approved:				Date:	11/14/2023

Attachments:
1) City of Banning's ICT Rollout Plan
2) City of Beaumont's ICT Rollout Plan
3) City of Corona's ICT Rollout Plan

4) City of Riverside's ICT Rollout Plan
5) PVVTA's ICT Rollout Plan

Zero-Emission Bus Rollout Plan

Prepared by Banning Connect Transit Service with support from the Center for Transportation and the Environment, Arcadis IBI Group, and the Riverside County Transportation Commission

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List of Abbreviations

ADA: Americans with Disabilities Act

A&E: Architecture and Engineering

BEB: Battery Electric Bus

CA: California

CARB: California Air Resources Board

CNG: Compressed Natural Gas

COVID/COVID-19: Coronavirus Disease 2019 (SARS-CoV-2)

CTE: Center for Transportation and the Environment

DAC: Disadvantaged Community

FCEB: Fuel Cell Electric Bus

HVAC: Heating, Ventilation, and Air Conditioning

ICE: Internal Combustion Engine

ICT: Innovative Clean Transit

kW: Kilowatt

kWh: Kilowatt-Hour

MW: Megawatt

OEM: Original Equipment Manufacturer

PM: Particulate Matter

PPI: Producer Price Index

CPI: Consumer Price Index

RFP: Request for Proposals

SCE: Southern California Edison (SoCal Edison)

TDA: Transportation Development Act

VTT: Verification of Transit Training

ZEB: Zero-Emission Bus

A glossary of useful terms can also be found in Appendix B - Glossary

Executive Summary

Banning Connect Transit Service (Banning Connect) provides public transit services in and around the City of Banning, a suburban community located east of Riverside and southeast of San Bernardino in Riverside County. Banning Connect operates three fixed routes during the weekdays, two (2) fixed routes on the weekends, and Dial-A-Ride (DAR) service. Banning Connect's fleet, as of 2022, consists of four (4) Compressed Natural Gas (CNG) transit buses, three (3) CNG cutaways, and two (2) gasoline cutaways. Riverside County Transportation Commission (RCTC) awarded a contract to the Center for Transportation and the Environment (CTE) to perform a zero-emission bus (ZEB) transition study to create a plan for a 100% zero-emission fleet by 2040 on behalf of transit agencies and municipal transportation services in the cities of Banning, Beaumont, Corona and Riverside and the Palo Verde Valley Transit Agency to comply with the Innovative Clean Transit (ICT) regulation enacted by the California Air Resources Board (CARB). This report will focus on Banning Connect's transition plan to zero-emission technology.

Banning Connect's Rollout Plan achieves a zero-emission bus fleet in line with the 2040 target of the ICT Regulation. To achieve this goal, Banning Connect will replace all CNG and gasoline buses with ZEBs when the vehicles reach the end of their 12-year useful life. By 2040, all 9 of the agency's buses are expected to be battery electric buses (BEBs). The last of the agency's gasoline buses will reach end of life in 2025 and the last of the CNG buses will reach end of life in 2039.

Banning Connect's entire fixed-route and DAR transit fleet operates out of 176 East Lincoln Street, known by the city as the Corporation Yard. The facility houses Banning's slow-fill CNG fueling station, its five maintenance bays, an outside vehicle wash bay, and its administrative facilities. In their SRTP, Banning Connect has listed plans to replace its current slow-fill CNG station, which is well beyond its useful life, in addition to including a public dispenser to the fueling station. Banning Connect plans to install charging infrastructure at this location to support their BEB fleet. Banning Connect's customer service operations are centered at the City of Banning Community Services Center at 789 North San Gorgonio Avenue, where riders can purchase bus passes, get bus schedules, and complete ADA applications.

Banning Connect's bus service provides transportation opportunities to Disadvantaged Communities (DACs) and moving toward zero-emission buses will help improve the health of DACs and non-DACs alike. The agency will build upon an existing training structure for bus maintenance and operators to provide the necessary battery-electric bus (BEB) specific training that will be required for the agency to own and operate BEBs. The agency estimates that pursuing a ZEB fleet in place of a CNG and gasoline fleet will cost an additional $5M in bus costs and infrastructure alone between 2022 and 2040, which will require significantly more funding opportunities. Banning Connect plans to pursue funding opportunities at the federal, state, and local levels to help fill this funding gap.

A

Transit Agency Information

Banning Connect Profile

History

The City of Banning ("Banning") is strategically located astride Interstate 10 between the Inland Empire and the Coachella Valley in the San Gorgonio Pass. The City, incorporated in 1913, has a rich and colorful history.

Initially Banning served as a stagecoach and railroad stop between the Arizona territories and Los Angeles. This history has contributed to the present-day spirit of pioneer resourcefulness and "can do" attitude that is so prevalent in the community.

Banning has provided public transportation service since April 1973, which expanded to two routes in September 1985. The current transit system comprises three fixed-route services and a Dial-a-Ride system that is limited to seniors (60 + years of age) and persons with disabilities, including riders certified under the Americans with Disabilities Act (ADA). The newest of the three fixed routes, the Cabazon service, which began in July 1995, extends from Banning east to the unincorporated area of Cabazon. This route was extended in January 2000 to provide a route deviation to serve a remote residential area in eastern Cabazon.

The Banning transit system serves several areas, including the commercial and residential areas of Banning and Cabazon, as well as the commercial areas of the Morongo Indian Reservation and limited commercial areas in the City of Beaumont ("Beaumont"). Banning transit services cover approximately 35 square miles in the pass area with routes connecting to regional services.

Within the service area, population is mixed with areas of both high and low densities. The current routes have been planned by taking advantage of this knowledge, allowing the system to operate more efficiently.

There is significant growth happening in Banning with the development of two large specific plan development projects and several industrial developments. It is anticipated that the growth will provide additional opportunities that will benefit the Banning Connect Transit Service.

Service Area and Bus Service

Banning Connect Transit Service (Banning Connect) provides public transit services in and around the City of Banning, a suburban community located east of Riverside and southeast of San Bernardino in Riverside County. Banning Connect provides service along three fixed routes during the weekdays and two fixed routes on the weekends[1]. As of July 2022, the transit agency's bus fleet consists of four (4) 32-ft. and 33.5-ft. CNG transit buses, including two (2) ElDorado National E-Z Rider II CNG buses and two (2) ElDorado National XHF CNG buses, and two (2) 32-ft ElDorado Bus CNG cutaways . Banning Connect's fixed route service connects the cities of Banning, Cabazon, Beaumont, and the Morongo Indian Reservation, covering an area of approximately 35 square miles. The Cities of Banning and Beaumont have executed an Interagency Service Agreement, which allows each city's transit service to operate within both cities, allowing Banning residents to access Beaumont's commercial area. Banning

[1] Short Range Transit Plan, City of Banning

also has a Memorandum of Understanding with the Morongo Band of Mission Indians which allows bus stops within their property, including the Casino Morongo and the town of Cabazon. Within the City of Banning, bus routes provide service to the San Gorgonio Hospital, Mid-County Courthouse, Banning Library, Banning High School, Mount San Jacinto College and Hemmerling Elementary School.

In addition to fixed-route service, Banning Connect provides dial-a-ride (DAR) service. This service is provided for Seniors 60 and older; persons with disabilities; and persons certified under the Americans with Disability Act (ADA). The DAR service is primarily used for medical appointments, workshop programs, and shopping areas. Unlike fixed-route service, the DAR service does not run a set route, and so a single vehicle may provide trips both within and outside of a DAC during a single day. As of July 2022, Banning's paratransit fleet consists of one (1) Glaval CNG cutaway, one (1) El Dorado gas cutaway, and one (1) Starcraft Bus gas cutaway. Banning Connect's service map is illustrated in **Figure 1.**

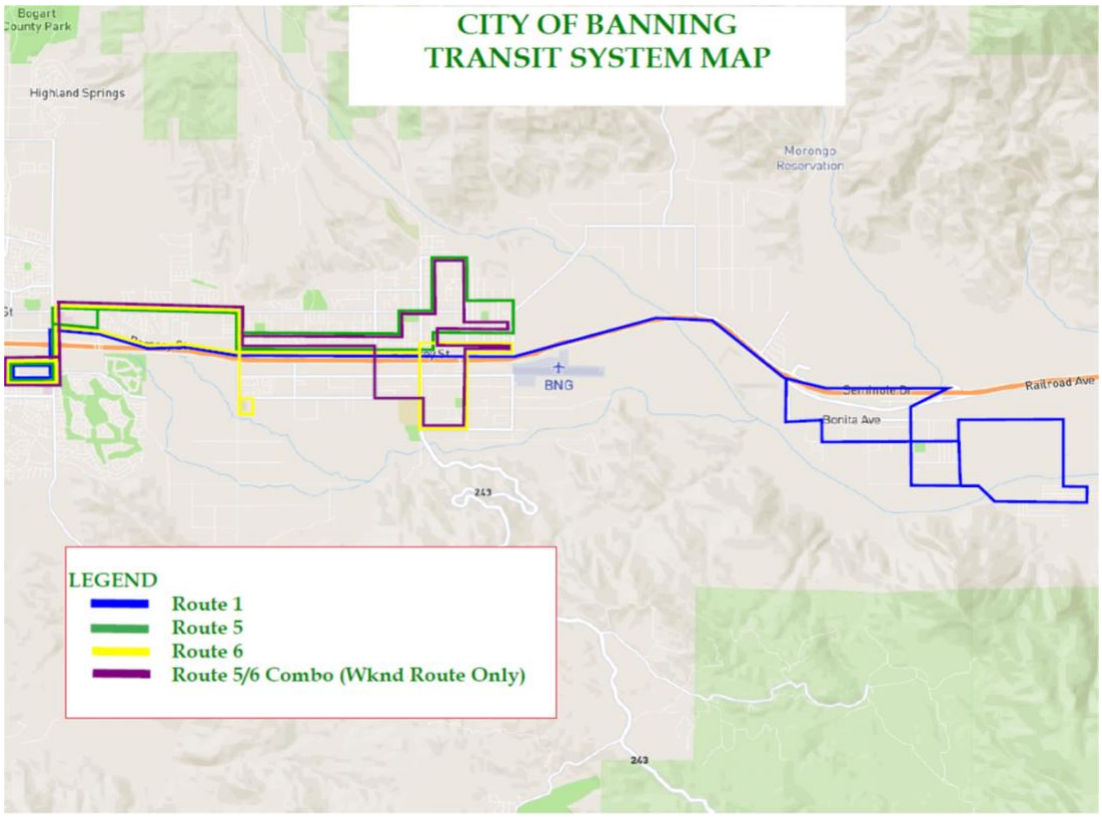

Figure 1 – Banning Connect Service Area

Ridership

Banning Connect had a total of 87,624 passengers in the 2020/2021 fiscal year for both fixed route and DAR services and 49,612 in the third quarter of the 2021/2022 fiscal year. Based on this ridership data, Banning Connect staff estimated a total of 65,898 passengers in the 2022/2023 fiscal year, with 63,245 on fixed route services and 2,653 on DAR services.

The Banning transit system has seen a slight downward trend in ridership since 2016. An increase in ridership was realized in the first quarter of the 2019/2020 fiscal year resulting from the new Interagency Services Agreement with the City of Beaumont, but later drastically dropped due to COVID-19. In the 2021/2022 fiscal year, final numbers are projected to be lower, by about 50% as compared to pre-pandemic numbers. While the reduction in ridership carried into the beginning of FY 2022/2023, ridership trends are now beginning to increase, indicating a potential return to near pre-pandemic ridership levels.

Banning Connect staff will continue to monitor key performance metrics throughout the year in order to identify underperforming routes and trips and make adjustments as necessary. Additionally, staff plans to develop a Comprehensive Operational Analysis (COA) once ridership numbers normalize to pre-Covid-19 numbers, hopefully in FY 2023/2024. One goal of the COA will be to develop a plan for improving Banning Connect's routes to make them more efficient so the agency can continue to meet the needs of Banning's riders. Banning Connect also plans to increase ridership by participating in community events and raising awareness on the benefits of public transit. This will include agency staff attending senior community meetings, highlighting new routes in articles of local papers, partnering with nearby transit agencies to provide training to passengers in the area, and more.

Banning Connect Basic Information

Transit Agency's Name:

Banning Connect Transit Service

Mailing Address:

Banning Connect Transit Service

176 East Lincoln Street

Banning, CA 92220

Transit Agency's Air Districts:

Banning Connect is part of the South Coast Air Quality Management District (SCAQMD).

Transit Agency's Air Basin:

South Coast Air Quality Management District is part of the South Coast Air Basin.[2]

Total number of buses in Annual Maximum Service:

The maximum number of active buses operating fixed route and DAR services out of the Corporation Yard is nine (9).

Urbanized Area:

Banning, CA. Banning is 23 square miles of land area with 1,282 people per square mile living within that area.

Population of Urbanized Area:

Over 29,000 residents[3]

[2] https://www.rcrcd.org/south-coast-air-quality-management-district-scaqmd

[3] Short Range Transit Plan, City of Banning

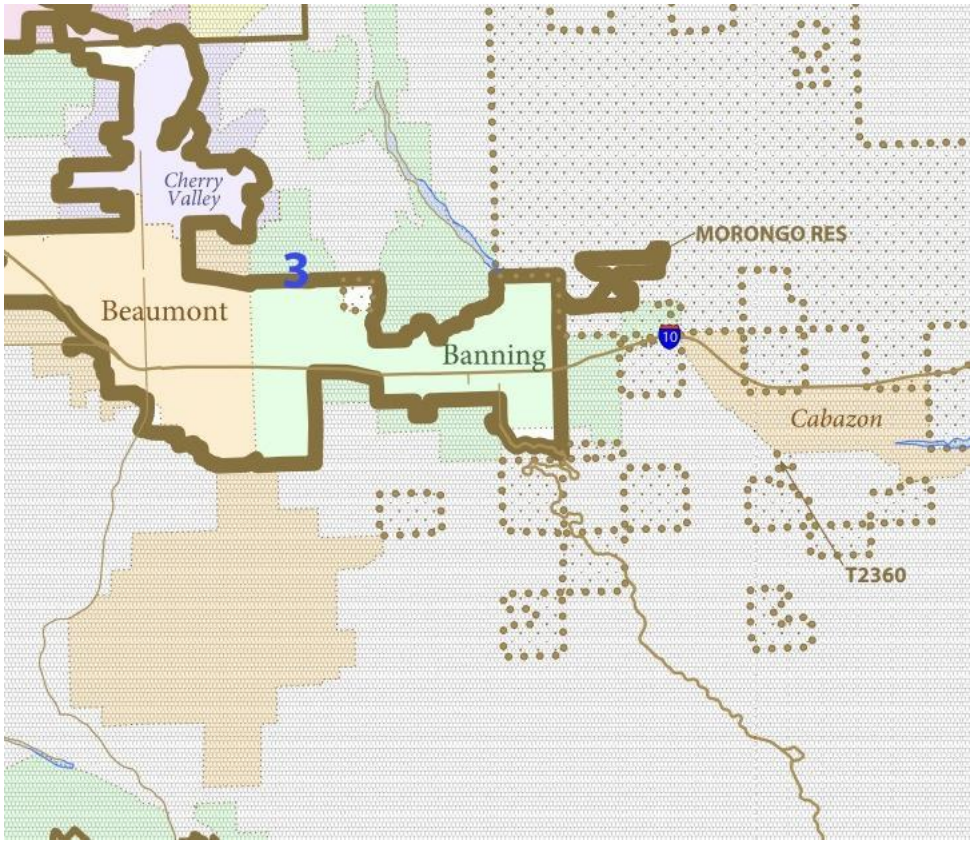

Figure 2 – City of Banning Urbanized and Rural Map[4][5]

Contact Information for Inquiries on the Banning Connect ICT Rollout Plan:

Stephanie Sirls, Transit Manager, Banning Connect Transit Service

176 East Lincoln Street

Banning, CA 92220

Tel: (951) 922-3243

ssirls@banningca.gov

Is your transit agency part of a Joint Group? No

[4] https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua75340_riverside--san_bernardino_ca/DC10UA75340_000.pdf

[5] Solid brown lines represent the boundaries of the urbanized area

Fleet Facility

Banning Connect's entire fixed-route and DAR transit fleet operates out of 176 East Lincoln Street, known by the city as the Corporation Yard. The facility houses Banning's slow-fill CNG fueling station, its five maintenance bays, an outside vehicle wash bay, and its administrative facilities. In their Short-Range Transit Plan (SRTP), Banning Connect has listed plans to replace its current slow-fill CNG station, which is well beyond its useful life, in addition to including a public dispenser to the fueling station. Banning Connect's customer service operations are centered at the City of Banning Community Services Center at 789 North San Gorgonio Avenue, where riders can purchase bus passes, get bus schedules, and complete ADA applications. A map of the Corporation Yard is shown in **Figure 3** and a map of the Community Services Center is shown in **Figure 4** to understand the locations of Banning Connect's properties in relation to one another, as well as to routes and service areas. These facilities offer a starting point for the consideration of viable locations for BEB charging infrastructure.

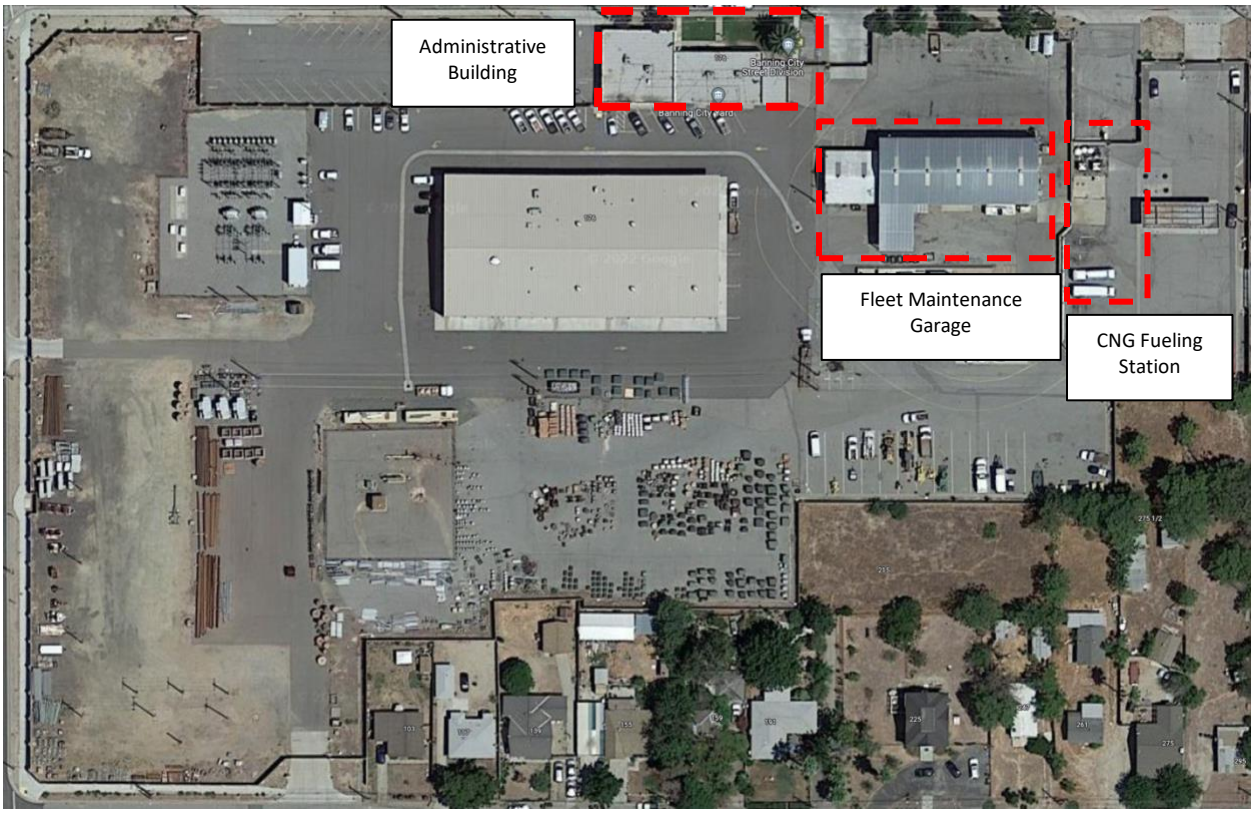

Figure 3 – Banning Connect Fueling, Administrative, and Storage Facility Overview

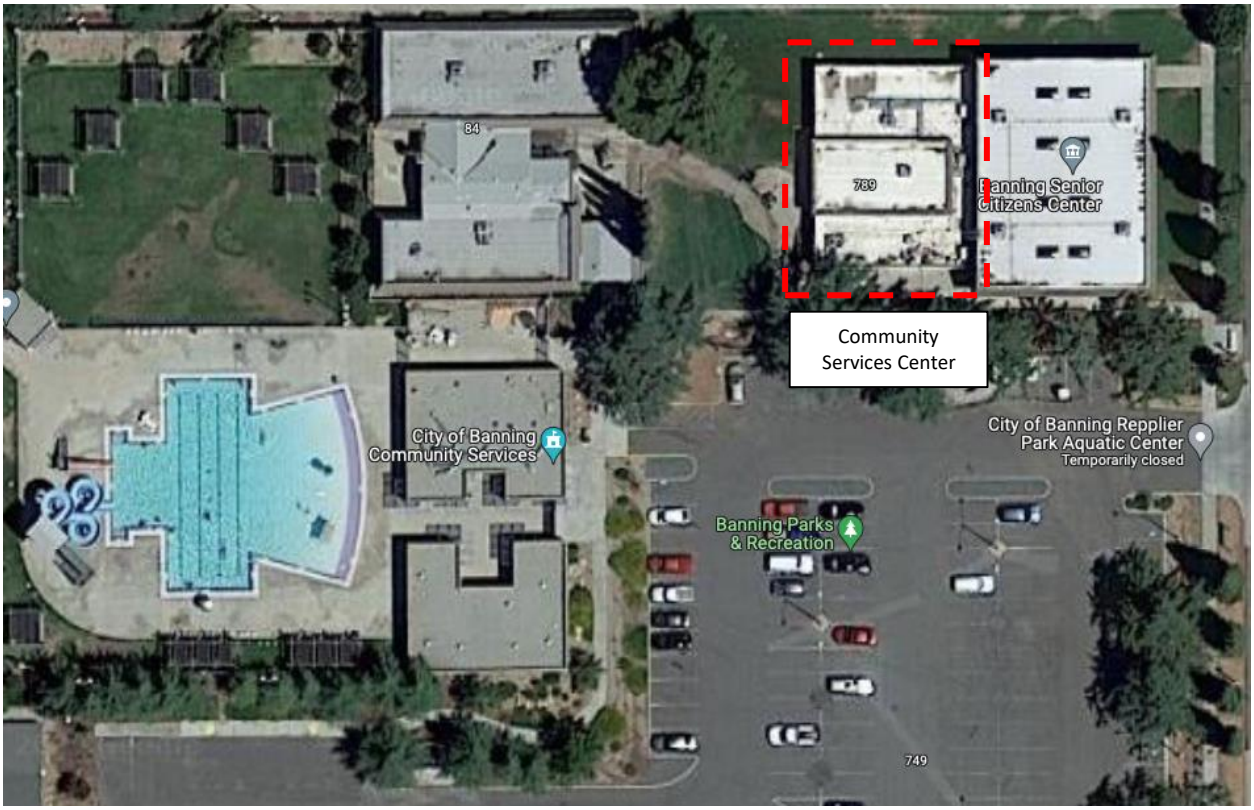

Figure 4 – Banning Connect Community Services Facility Overview

Banning Connect's Sustainability Goals

Per their Clean & Green Report from June 2008[6], the City of Banning has dedicated themselves to sustainability; "maximizing energy efficiency; optimizing resource use while minimizing negative environmental impacts; minimizing waste production and pollution; capturing the benefits of natural processes while minimizing damage from natural events; and meeting the economic and social needs of all its people in a manner that does not degrade or destroy the productivity of its natural and man-made systems." The report details the City's commitment to improving the region's air quality, transit, and transportation issues through its Clean Fuel Fleet Program, City Rideshare Programs, etc. The Banning Electric Utility Department offers several rebates and incentives to its residential and commercial communities; however, it does not currently have any programs specific to electric vehicles (EVs). The utility's portfolio consists of 53.9% eligible renewable energy, with a greenhouse gas emissions intensity of 313 lbs. CO_2e/MWh.

California's plan to address public health, air quality and climate protection goals includes the Innovative Clean Transit (ICT) regulation, which aims to reduce greenhouse gas (GHG), nitrogen oxide (NOx), and diesel particulate emissions, with which Banning Connect will be compliant at the conclusion of this project. To accomplish its sustainability goals, Banning Connect is working to replace its CNG and gas fleet with 100% zero-emission vehicles by 2040 in accordance with ICT regulations.

Banning Connect has developed a plan to transition to a fully zero emission bus (ZEB) fleet composed of battery electric buses by 2040, in accordance with the Innovative Clean Transit (ICT) regulation, requiring all California transit agencies to follow zero-emission procurement guidelines with the goal of achieving 100% zero-emission fleets by 2040. Banning Connect has committed to purchasing zero emission buses, demonstrating the agency's commitment to reducing emissions. Banning Connect has worked with CTE to select a plan that prioritizes local

[6] https://www.ci.banning.ca.us/DocumentCenter/View/557/Banning_Clean--Green-Report?bidId=

needs and conditions, namely considering resilience, redundancy, and emergency response adaptation options. Banning Connect's transition to a fully ZEB fleet will ultimately benefit communities through cleaner air, greater independence from fossil fuels, and more environmental sustainability.

B

Rollout Plan General Information

Overview of the Innovative Clean Transit Regulation

On December 14, 2018, CARB enacted the Innovative Clean Transit (ICT) regulation, setting a goal for California public transit agencies to have zero-emission bus fleets by 2040. The regulation specifies the percentage of new bus procurements that must be zero-emission buses for each year of the transition period (2023–2040). The annual percentages for Small Transit agencies are as follows:

ICT Zero-Emission Bus Purchase Requirements for Small Agencies:

January 1, 2026 - 25% of all new bus purchases must be zero-emission

January 1, 2027 - 25% of all new bus purchases must be zero-emission

January 1, 2028 - 25% of all new bus purchases must be zero-emission

January 1, 2029+ - 100% of all new bus purchases must be zero-emission

March 2021-March 2050 – Annual compliance report due to CARB

This purchasing schedule guides agency procurements to realize the goal of zero-emission fleets in 2040 while avoiding any early retirement of vehicles that have not reached the end of their 12-year useful life. Agencies have the opportunity to request waivers that allow purchase deferrals in the event of economic hardship or if zero-emission technology cannot meet the service requirements of a given route. These concessions recognize that zero-emission technologies may cost more than current internal combustion engine (ICE) technologies on a vehicle lifecycle basis and that zero-emission technology may not currently be able to meet all service requirements.

Banning Connect's Rollout Plan General Information

Rollout Plan's Approval Date: May 23, 2023

Resolution No: 2023-91

Is a copy of the approved resolution attached to the Rollout Plan? Yes

Contact for Rollout Plan follow-up questions:
Stephanie Sirls, Transit Manager, Banning Connect Transit Service

176 East Lincoln Street

Banning, CA 92220

Tel: (951) 922-3243

ssirls@banningca.gov

Who created the Rollout Plan?
This Rollout Plan was created by the City of Banning, with assistance from the Center for Transportation and the Environment (CTE) and the Riverside County Transportation Commission (RCTC).

This document, the ICT Rollout Plan, contains the information for Banning Connect's zero-emission fleet transition trajectory as requested by the ICT Regulation. It is intended to outline the high-level plan for implementing the

transition. The Rollout Plan provides estimated timelines based on information on bus purchases, infrastructure upgrades, workforce training, and other developments and expenses that were available at the time of writing.

Additional Agency Resources

Banning Connect agency website: https://banningca.gov/

C

Technology Portfolio

ZEB Transition Technology Selection

Based on outcomes of the zero-emission fleet transition planning study completed by CTE, Banning Connect plans to transition its fleet to battery electric buses. By 2040, Banning Connect expects to operate a fully battery electric fleet of 9 transit vehicles.

A BEB-only fleet scenario will allow Banning Connect to focus on implementing one zero-emission propulsion technology as opposed to a mixed technology zero-emission fleet as well as avoid the higher fuel cost of hydrogen for a mixed-fleet or FCEB-only fleet. This plan also summarizes the charging infrastructure costs needed to support a fleet of 9 BEBs.

Local Developments and Regional Market

California has become a global leader for zero-emission buses, as well as the zero-emission fuel and fueling infrastructure required to support these vehicles. California is home to four bus OEMs that manufacture zero-emission buses, all having experience in building BEB technology in particular.

The state legislature has fostered growth in zero-emission fuels through the state's Low-Carbon Fuel Standard (LCFS) program, which incentivizes the consumption of fuels with a lower carbon intensity than traditional combustion fuels and through funding opportunities offered by CARB and CEC. The state's electrical utility companies have also supported the transition to ZEB technology by offering incentive programs for heavy duty EV charging infrastructure and service upgrades. California BEB deployments represent 37% of the nation's BEB deployments. [7]

Three of the major BEB OEMs manufacture buses in California with two manufacturing sites located in Southern California. Nearby agencies such as Long Beach Transit, LA Metro, and Foothill California have some of the most mature BEB deployments in the country. This year, the FTA also awarded battery-electric bus and charging infrastructure projects under the FY2022 Low-No Emission Vehicle Program. In Los Angeles County, Los Angeles County Metropolitan Transportation Authority (LA Metro) was awarded $104.2 million, and the City of Gardena was awarded $2.22 million to procure battery-electric buses and charging equipment. In Riverside County, Sunline Transit Agency was awarded an additional $7.15 million to procure battery electric buses and charging stations, and in Orange County, Orange County Transportation Authority (OCTA) was awarded $2.51 million to purchase zero-emission buses to improve air quality and paratransit service.

[7] CALSTART. 2021. THE ADVANCED TECHNOLOGY TRANSIT BUS INDEX: A NORTH AMERICAN ZEB INVENTORY REPORT. https://calstart.org/wp-content/uploads/2022/01/2021-ZIO-ZEB-Final-Report_1.3.21.pdf

ZEB Transition Planning Methodology

Banning Connect's ICT Rollout Plan was created in combination with Banning Connect's Existing Conditions Report and the Riverside County ZEB Financial Strategy Plan, utilizing CTE's ZEB Transition Planning Methodology. CTE's methodology consists of a series of assessments that enable transit agencies to understand what resources and decisions are necessary to convert their fleets to zero-emission technologies. The results of the assessments help the agency decide on a step-by-step process to achieve its transition goals. These assessments consist of data collection, analysis, and modeling outcome reporting stages. These stages are sequential and build upon findings in previous steps. The assessment steps specific to Banning Connect's Rollout Plan are outlined below:

1. Planning and Initiation
2. Requirements Analysis & Data Collection
3. Service Assessment
4. Fleet Assessment
5. Fuel Assessment
6. Maintenance Assessment
7. Facilities Assessment
8. Total Cost of Ownership Assessment
9. Policy Assessment
10. Partnership Assessment

For **Requirements Analysis & Data Collection,** CTE collects data on the agency's fleet, routes and blocks, operational data (e.g., mileage and fuel consumption), and maintenance costs. Using this data, CTE establishes service requirements to constrain the analyses in later assessments and produce agency-specific outputs for the zero-emission fleet transition plan.

The **Service Assessment** phase initiates the technical analysis phase of the study. Using information collected in the Data Collection phase, CTE evaluates the feasibility of using zero-emission buses to provide service to the agency's routes and blocks over the transition plan timeframe from 2022 to 2040. Results from the Service Assessment are used to guide ZEB procurement plans in the Fleet Assessment and to determine energy requirements in the Fuel Assessment.

The **Fleet Assessment** projects a timeline for the replacement of existing buses with ZEBs that is consistent with Banning Connect's existing fleet replacement plan and known procurements. This assessment also includes a projection of fleet capital costs over the transition timeline and is optimized to meet state mandates or agency goals, such as minimizing costs or maximizing service levels.

The **Fuel Assessment** merges the results of the Service Assessment and Fleet Assessment to determine annual fuel requirements and associated costs. The Fuel Assessment calculates energy costs through the full transition timeline for each fleet scenario, including the agency's existing CNG and gasoline buses. To more accurately estimate battery electric bus (BEB) charging costs, a focused Charging Analysis is performed to simulate daily system-wide energy use. As older technologies are phased out in later years of the transition, the Fuel Assessment calculates the changing fuel requirements as the fleet transitions to ZEBs. The Fuel Assessment also provides a total fuel cost over the transition timeline.

The **Maintenance Assessment** calculates all projected fleet maintenance costs over the transition timeline. Maintenance costs are calculated for each fleet scenario and include costs of maintaining existing fossil-fuel buses that remain in the fleet and maintenance costs of new BEBs.

The **Facilities Assessment** determines the infrastructure necessary to support the projected zero-emission fleet composition over the transition period based on results from the Fleet Assessment and Fuel Assessment. This assessment evaluates the required quantities of charging infrastructure and/or hydrogen fueling station projects and calculates the costs of infrastructure procurement and installation sequenced over the transition timeline.

The **Total Cost of Ownership Assessment** compiles results from the previous assessment stages to provide a comprehensive view of all fleet transition costs, organized by scenario, over the transition timeline.

The **Policy Assessment** considers the policies and legislation that impact the relevant technologies.

The **Partnership Assessment** describes the partnership of the agency with the utility or alternative fuel provider.

Requirements Analysis & Data Collection

The Requirements Analysis and Data Collection stage begins by compiling operational data from Banning Connect regarding its current fleet and operations and establishing service requirements to constrain the analyses in later assessments. CTE requested data such as fleet composition, fuel consumption and cost, maintenance costs, and annual mileage to use as the basis for analyses. CTE conducted a screening-level analysis of Banning Connect's routes by determining their average speed and grades, and classified them as fast or slow and flat or hilly. CTE used these to model the energy efficiencies for each of Banning Connect's routes. The calculated efficiencies were then used in the Service Assessment to determine the energy requirements of Banning Connect's service.

CTE evaluated BEBs and FCEBs to support Banning Connect's technology selection. The range of FCEBs, however, does not have the same level of sensitivity to environmental and operating conditions as BEBs. After collecting route and operational data, CTE determined that Banning Connect's longest block is 307 miles long. Based on observed performance, CTE estimates FCEBs are able to complete any block under 350 total miles, which means that FCEB technology already has the capability to meet Banning Connect's service requirements. Although FCEBs were determined to have the capability of serving all of the agency's routes, Banning Connect was interested in exploring BEB-only service scenarios, so it was necessary to determine how much of Banning Connect's service could feasibly be served by depot-only charged BEBs in order to develop a set of ZEB transition scenarios that would allow the agency to make an informed decision on what technology or technologies would be most suitable to the agency's needs.

The energy efficiency and range of BEBs are primarily driven by bus specifications, such as on-board energy storage capacity and vehicle weight. Both metrics are affected by environmental and operating variables including the route profile (e.g., distance, dwell time, acceleration, sustained top speed over distance, average speed, and traffic conditions), topography (e.g., grades), climate (e.g., temperature), driver behavior, and operational conditions such as passenger loads and auxiliary loads. As such, BEB efficiency and range can vary dramatically from one agency to another or even from one service day to another. It was therefore critical for Banning Connect to determine efficiency and range estimates based on an accurate representation of its operating conditions.

To understand BEB performance on Banning Connect's routes, CTE modeled the impact of variations in passenger load, accessory load, and battery degradation on bus performance, fuel efficiency, and range. CTE ran models with different energy demands that represented *nominal* and *strenuous* conditions. Nominal loading conditions assume average passenger loads and moderate temperature over the course of the day, which places low demands on the motor and heating, ventilation, and air conditioning (HVAC) system. Strenuous loading conditions assume high or maximum passenger loading and near maximum output of the HVAC system. This nominal/strenuous approach offers a range of operating efficiencies to use for estimating average annual energy use (nominal) or planning minimum service demands (strenuous). Route modeling ultimately provides an average energy use per mile (kilowatt-hour/mile [kWh/mi]) for each route, bus size, and load case.

In addition to loading conditions, CTE modeled the impact of battery degradation on a BEB's ability to complete a block. The range of a battery electric bus is reduced over time due to battery degradation. A BEB may be able to service a given block with beginning-of-life batteries, while later it may be unable to complete the entire block at some point in the future as batteries near their end-of-life or derated capacity (typically considered 70-80% of available service energy).

Service Assessment

The Service Assessment focused on evaluating the feasibility of BEBs in Banning Connect's service area. The efficiencies calculated in the Requirements Analysis & Data Collection stage were used to estimate the energy

requirements of Banning Connect's service. The main focus of the Service Assessment is called the block analysis, which determines if generic battery electric technology can meet the service requirements of a block based on range limitations, weather conditions, levels of battery degradation and route specific requirements. The Transit Research Board's Transit Cooperative Research Program defines a block as "the work assignment for only a single vehicle for a single service workday".[8] A block is usually comprised of several trips on various routes. The energy needed to complete a block is compared to the available energy of the bus assigned to service the block. If the bus's usable onboard energy exceeds the energy required by the block, then the conclusion is that the BEB can successfully operate on that block.

The Service Assessment projects the performance of a BEB that is charged overnight at the depot and operates on Banning Connect's service schedule at the time of the plan's writing. The results are used to determine when along the transition timeline a fleet of overnight depot-charged BEBs can feasibly serve Banning Connect's territory or if another zero-emission technology is required to maintain service. This information can then be used to inform the scale and timing of BEB procurements in the Fleet Assessment.

Modeling & Procurement Assumptions

CTE and Banning Connect defined the following assumptions and requirements used throughout the study as follows. The Service Assessment energy profile assumed a 5% improvement in battery capacity every year with a starting battery capacity of 440 kWh for a 35' bus and 580 kWh for a 40' bus, which were the average battery capacities seen in commercially-available buses in 2022. Electric cutaways are modeled to have a battery capacity of 120 kWh and were assumed to have the same 5% rate of improvement in battery capacity every year.

This analysis also assumes Banning Connect will maintain blocks in a similar distribution of distance, relative speeds, and elevation changes to pre-COVID-19 service because buses will continue to serve similar locations within the service area and general topography remains constant even if specific routes and schedules change.

Fleet size and vehicle length distribution do not change over time. The analysis assumed that buses reaching the end of their useful life would be replaced with vehicles of the same size. Total fleet size remains the same over the transition period. Buses are assumed to operate for a 12-year service life and cutaways for a 5- or 7-year service life.

Usable on-board energy is assumed to be that of a mid-life battery (10% degraded) with a reserve at both the high and low end of the battery's charge potential. As previously discussed, battery age affects range, so a mid-life battery was assumed as the average capacity of the battery's service life. Charging batteries to 100% or dropping the charge below 10% also degrades the batteries over time, which is why the analysis assumes that the top and bottom portions of the battery are unusable.

CTE accounts for battery degradation over the transition period with the assumption that Banning Connect can rotate the ZEBs to battery capacity to block energy requirements. As the zero-emission fleet transition progresses, older buses can be moved to shorter, less demanding blocks and newer buses can be assigned to longer, more demanding blocks to account for battery degradation in BEBs over time. Banning Connect can rotate the fleet to meet demand, assuming there is a steady procurement of BEBs each year to match service requirements. CTE accounts for this variability in battery age by using a mid-life usable battery capacity to determine block feasibility.

Fixed Route Results

The Service Assessment determines the timeline for when Banning Connect's service may become achievable by BEBs on a single depot charge. The block analysis determines when, or if, a full transition to BEBs may be feasible. Banning Connect and CTE can then use these results to inform ZEB procurement decisions in the Fleet Assessment. Results from this analysis are also used to determine the specific energy requirements and fuel consumption of the

[8] TRB's Transit Cooperative Research Program. 2014. TCRP Report 30: Transit Scheduling: Basic and Advanced Manuals (Part B). https://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_30-b.pdf

fleet over time. These values are then used in the Fuel Assessment to estimate the costs to operate the transitioning fleet.

While routes and block schedules are unlikely to remain the same over the course of the transition period, these projections assume the blocks will maintain a similar distribution to current service because Banning Connect will continue to serve similar destinations within the city. This core assumption affects energy use estimates and block achievability in each year.

The results of Banning Connect's Service Assessment for fixed route service can be seen below in **Figure 5.** Based on CTE's analysis, 0% of Banning Connect's blocks could be served by a single charge of a depot-only BEB with a 440-kWh battery and, with the assumed 5% improvement every year, 33% of Banning Connect's blocks could be served by this technology by 2036, which means that Banning Connect's service is not feasible with depot-only charged BEBs within the transition period. However, service can be conducted with the addition of on-route charging.

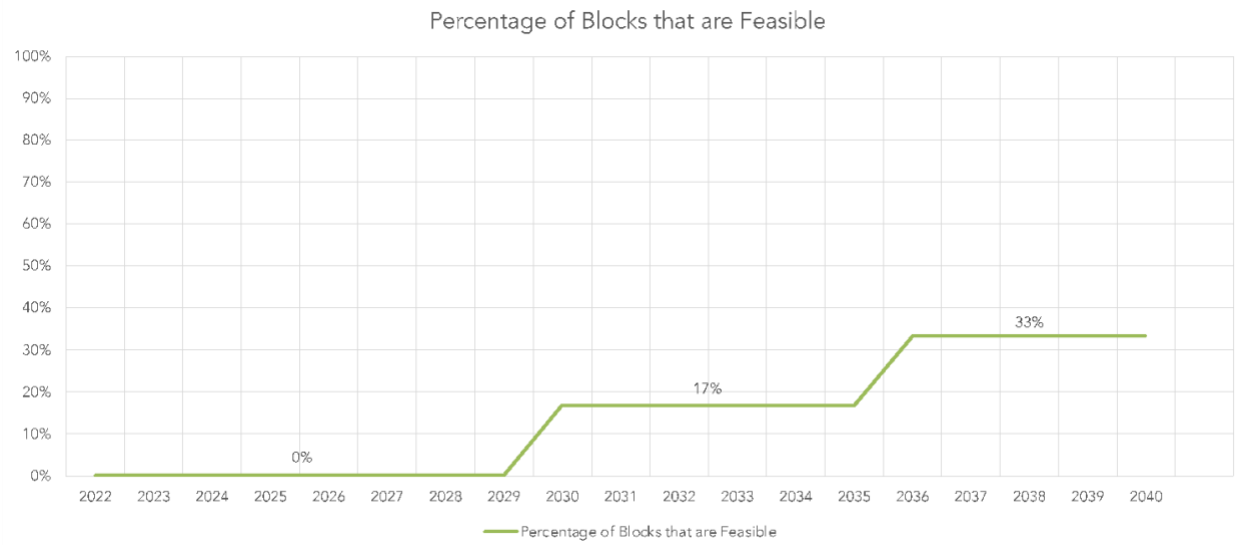

Figure 5 – BEB Block Achievability by Year

DAR Results

CTE's modeling also included an analysis for battery electric cutaway vehicles using Banning Connect's paratransit operational data, the results of which are shown below in **Figure 6.** It is estimated that Banning Connect's paratransit service vehicles operate at an average daily distance of 70 miles per vehicle per day and a maximum of 104 miles per vehicle per day. CTE modeled the electric cutaway performance by calculating the energy demand for each service day and comparing to the usable capacity of a market-representative battery-electric cutaway (99 kWh). It was found that the average service day from 2022 would be feasible, given currently available battery capacity, while Banning Connect's more strenuous days upwards of 75 miles and requiring more than 99 kWh of usable energy would be infeasible. The average service day is similarly feasible in 2030 and 2040. Assuming that the projected battery improvements continue, in 2030, service days of up to 91 miles or 120 kWh will be feasible, while the agency's maximum DAR mileage of 104 miles is expected to only be feasible in 2040.

Based on the results of the analysis, up until 2040, battery-electric cutaways would require some form of opportunity charging throughout the day to complete their service. Pantograph and inductive charging have not yet been demonstrated to be feasible for electric cutaways, so this option was not considered. Demand response service is run sporadically throughout the day, with vehicles typically returning to the depot after completing their assignments. Based on this service pattern, it was assumed that battery-electric cutaways could be charged throughout the day when they return to the depot which would allow them to complete all of Banning Connect's service.

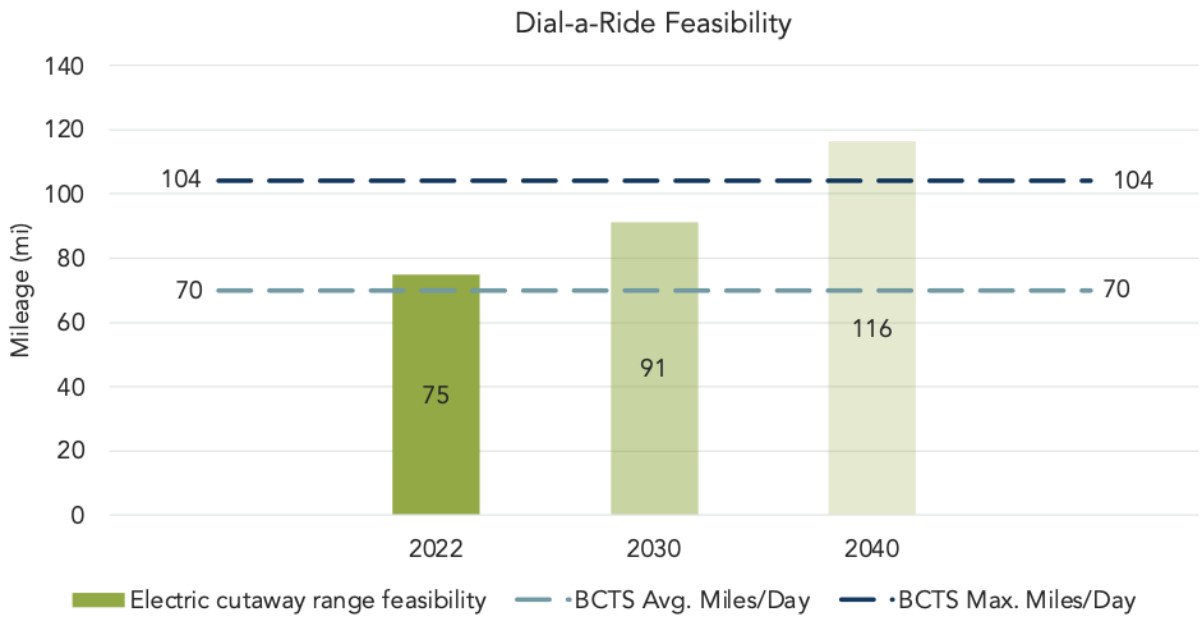

Figure 6 – Dial-a-Ride Service Feasibility by Year

Description of ZEB Technology Solutions Considered

For this study, CTE developed 3 scenarios to compare to a baseline scenario and analyze the feasibility and cost effectiveness of implementing each bus technology as well as the co-implementation of both technologies. The scenarios are referred to by the following titles and described, in detail, below. A baseline scenario was developed to represent the typical "business-as-usual" case with retention of ICE buses for cost comparison purposes.

0. Baseline (current technology)
1. BEB Only
2. Mixed Fleet – FCEB & BEBs
3. FCEB Only

In the **BEB Fleet Transition**, BEBs are purchased and deployed only on blocks that are within a BEB's achievable range as determined by CTE's modeling. If depot-charged BEBs are not capable of meeting a transit agency's daily service requirements, on-route charging is utilized on fixed-routes and returning to the depot for midday opportunity charging is used on DAR service to sustain energy on-board. Based on CTE's modeling, all of Banning Connect's blocks are fully achievable using BEB technology by 2040.

In the **Mixed Fleet Transition,** FCEBs supplement a primarily BEB fleet to make up a fully ZEB fleet. Although there may be some exceptions, due to the higher range capacity of FCEBs, BEBs will be used for DAR service and FCEBs will be used for fixed route service. The costs for infrastructure and installation of two different charging and fueling infrastructures are taken into account. FCEBs and hydrogen fuel, however, are more expensive than BEBs and electricity, so this scenario allows Banning Connect to assign the less expensive BEB technology where possible and supplement service with FCEBs as needed in support of resilience and redundancy adaptation measures.

Finally, the **FCEB Fleet Transition** was developed to examine the costs for hydrogen fueling and transitioning to a 100% FCEB fleet. A fully FCEB fleet avoids the need to install two types of fueling infrastructure by eliminating the need for depot charging equipment. Fleets composed entirely of fuel cell electric buses also offer the benefit of scalability compared to battery electric technologies. Adding FCEBs to a fleet does not necessitate large complementary infrastructure upgrades. Despite this benefit, the cost of FCEBs and hydrogen fuel are still more expensive than BEBs and electricity at current market prices.

When considering the various scenarios, this study can be used to develop an understanding of the range of costs that may be expected for Banning Connect's ZEB transition, but ultimately, can only provide an estimate. Furthermore, this study aims to provide an overview of the myriad considerations the agency must take into account in selecting a transition scenario that go beyond cost, such as space requirements, safety implications, and operational changes that may differ between scenarios.

D

Current Bus Fleet Composition and Future Bus Purchases

Fleet Assessment Methodology

The Fleet Assessment projects a timeline for the replacement of existing buses with ZEBs. The timeline is consistent with Banning Connect's fleet replacement plan that is based on the 12-year service life of transit buses and large cutaways and 7-year service life for smaller cutaways. This assessment also includes a projection of fleet capital costs over the transition timeline.

ZEB Cost Assumptions

CTE and Banning Connect developed cost assumptions for future bus purchases. Key assumptions for bus costs for the Banning Connect Transition Plan are as follows:

- CNG and gasoline vehicle prices were provided by Banning Connect and are inclusive of costs for configurable options and taxes.
- All gas cutaways were scheduled to be replaced by CNG cutaways in the baseline scenario and replacements were priced accordingly.
- Capital vehicle costs are derived from the 2022 California, Washington and New Mexico State Contracts plus the annual PPI (2%) and tax (7.75%).
- Costs for retrofits or bus conversions are not included. Procurements assume new vehicle costs.

Table 1 – Fleet Assessment Cost Assumption

	Fuel Type	
Length	CNG/Gasoline	Electric
Cutaway (26'-32')	$250,000	$298,188
35' (32'-35')	$550,000	$985,531

Description of Banning Connect's Current Fleet

Banning Connect's current service and fleet composition provide the baseline for evaluating the costs of transitioning to a zero-emission fleet. Banning Connect staff provided the following key data on current service:

- Fleet composition by powertrain and fuel
- Routes and blocks
- Mileage and fuel consumption
- Maintenance costs

Fleet

As of 2022, the Banning Connect bus fleet includes 1 CNG and 2 gasoline cutaways used for DAR paratransit service and 4 CNG buses and 2 CNG cutaways used for fixed-route service. Bus services, including fueling and maintenance, operate out of one depot in Banning, CA. Customer service operations are performed at a separate facility in Banning, CA.

Routes and Blocks

Banning Connect's 2022 service consists of 5 fixed routes run on 6 blocks, 2 run on weekends and 3 run on weekdays. Blocks range in distance from 134 miles to 307 miles. Buses pull out as early as 5:00 AM and return as late as 10:15 PM. Banning Connect's service connects the cities of Banning, Cabazon, Beaumont, and the Morongo Indian Reservation.

Current Mileage and Fuel Consumption

Annual mileage of the fleet:
251,800 miles

Banning Connect's ZEB Transition Plan assumes that the amount of service miles will remain the same.

Annual fuel consumption:
71,307 GGE of CNG and gasoline

Fleet average efficiency:
6.8 miles per GGE

BANNING CONNECT current fuel expense:
$90,453 per year

Average fuel costs:
$1.27 per GGE

Maintenance Costs

Average maintenance costs per mile by vehicle type are estimated in **Table 2**. Buses also undergo one overhaul at midlife summarized in **Table 3.** These costs were utilized to project transition maintenance costs.

Table 2 – Labor and Materials Cost Assumptions

Vehicle Type	Estimate (Per Mile)
Gas Cutaway	$ 0.35
CNG Cutaway	$ 0.35
30'/35'/40' CNG Bus	$ 0.38
Battery Electric Cutaway	$0.32
30'/35'/40' Battery Electric Bus	$0.34

Table 3 – Midlife Overhaul Cost Assumptions

Vehicle Type	Overhaul (FC/Transmission) Cost Per vehicle life	Battery Warranty Cost Per vehicle life
Gas Cutaway	$0	$0
CNG Cutaway	$0	$0
30'/35'/40' CNG Bus	$30,000	$0
Battery Electric Cutaway	$0	$24,000
30'/35' 40' Battery Electric Bus	$0	$75,000

Zero-Emission Bus Procurement Plan and Schedule

Banning Connect will provide service with a fleet made up entirely of depot-charged BEBs, while using on-route charging when able, as this vehicle composition will be sufficient for meeting the agency's service demands.

Banning Connect's fleet transition strategy is to replace each compressed natural gas (CNG) and gasoline bus with a BEB as they reach the end of their 12-year useful life beginning in 2028. Banning Connect's two CNG cutaways that are used for fixed route service are modeled as buses for the purpose of this analysis as they will need to be replaced with 35' BEBs in order to maintain the same passenger capacity**. Figure 7** below provides the number of each bus type that will be purchased each year through 2040 with this replacement strategy and the total cost of that procurement.

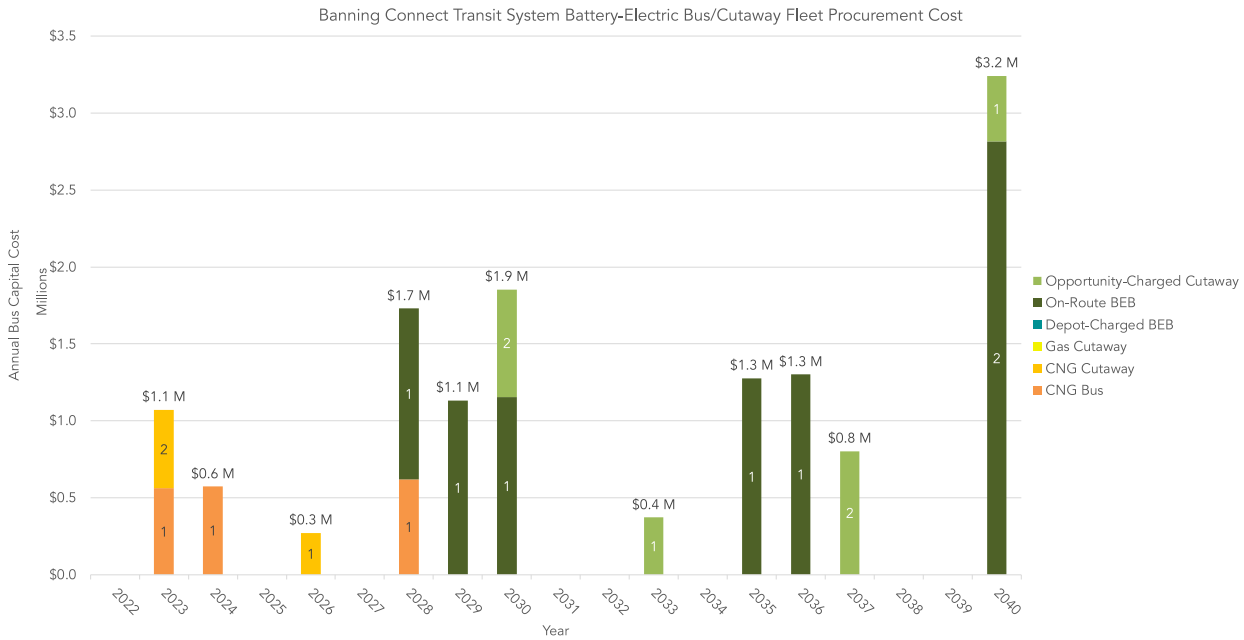

Figure 7 – Projected Fleet Procurements for Zero Emission Transition

Figure 8 demonstrates the annual composition of Banning Connect's fleet through 2040. By 2040, Banning Connect's bus fleet will consist entirely of BEBs. The fleet will remain the same size throughout the transition period.

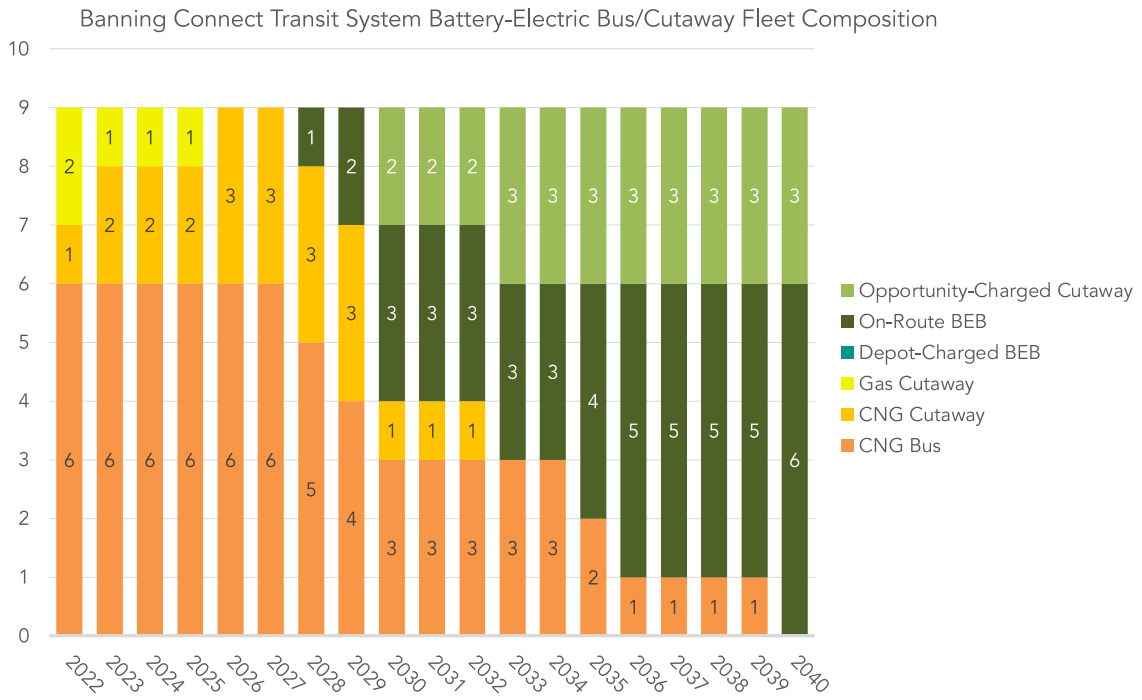

Figure 8 – Annual Fleet Composition, Zero Emission Transition

As seen in **Table 4,** the capital investment required for purchasing ZEBs is significantly higher than for CNG and Gasoline buses. This highlights the importance of staying vigilant in the search for funding opportunities to help fill this gap.

Table 4 – Banning Connect Bus Capital Investment to transition to a 100% ZEB fleet by 2040

	CNG/Gas Baseline*	ZEB Incremental Costs	Total Investment
Bus Capital Costs	$9M	$5M	$14M

*Represents the capital costs that would have been incurred in the absence of the ICT Regulation

Additional Considerations

When purchasing ZEBs, the process may differ slightly from the process Banning Connect currently uses to purchase vehicles. First, when contracting with ZEB manufacturers, Banning Connect should ensure expectations are clear between the bus OEM and the agency. As with CNG and gasoline purchases the agreement should be clear regarding the bus configurations, technical capabilities, build and acceptance process, production timing with infrastructure, warranties, training, and other contract requirements. Additionally, by developing and negotiating specification language collaboratively with the bus vendor(s), Banning Connect can work with the vendor(s) to customize the bus to their needs as much as is appropriate, help advance the industry based on agency requirements and recommended advancements, ensure the acceptance and payment process is fully clarified ahead of time, fully document the planned capabilities of the bus to ensure accountability, and generally preempt any unmet expectations. Special attention should be given in defining the technical capabilities of the vehicle, since defining these for ZEBs may differ from ICE buses.

When developing RFPs and contracting for ZEB procurements, Banning Connect should specify the source of funding for the vehicle purchases to ensure grant compliance, outline data access requirements, define the price and payment terms, establish a delivery timeline, and outline acceptance and performance requirements. Banning Connect should test the buses upon delivery for expected performance in range, acceleration, gradeability, highway performance, and maneuverability. Any such performance requirements must be included in the

technical specification portion of the RFP and contract to be binding for the OEM. Defining technical specifications for ZEBs will also differ slightly from their current CNG and gasoline vehicles since they will need to include requirements for battery performance. It is also recommended that Banning Connect purchase an extended battery warranty for the vehicles, which should be specified in the RFP and contract.

Banning Connect will also be able to apply for additional funding for these vehicles through zero-emission vehicle specific funding opportunities, which are discussed further in **Section H: Available Funding Opportunities.**

E

Facilities and Infrastructure Modifications

Banning Connect Facility Configuration and Depot Layout

Depot Address:
176 East Lincoln Street, Banning, CA 92220

Electric Utility:
Banning Electric

Located in a NOx Exempt Area?
No

Bus Parking Capacity:
9+

Current Vehicle Types Supported:
Banning Connect's depot currently supports fueling and maintenance of CNG and gasoline buses and cutaways.

Propulsion Types That Will be Supported at Completion of ZEB Transition:
Battery electric propulsion

Facilities Assessment Methodology

BEB deployments such as Banning Connect's require installation of charging stations and improvements to existing electrical infrastructure. Planning and design work, including development of detailed electrical and construction drawings required for permitting, is also necessary once specific charging equipment has been selected.

Building off of the fleet procurement schedule that was outlaid in the Fleet Assessment, CTE then uses industry average pricing to develop infrastructure scenarios that estimate the cost of building out the infrastructure necessary to support a full fleet transition to ZEBs. This plan assumes that infrastructure projects will be completed prior to each bus delivery. To project the costs of fueling infrastructure, CTE used industry pricing provided by A&E subcontractors and an infrastructure build timeline based on the procurement timeline. This plan assumes that infrastructure projects will be completed prior to each bus delivery. These projects are described in detail below.

Infrastructure Upgrade Requirements to Support Zero-Emission Buses

Description of Depot-Charging Infrastructure Considered

In the BEB-only scenario, charging infrastructure is required to service a total of three (3) battery electric cutaways and four (4) battery electric buses to support a completely zero-emission bus fleet by 2040. The total cost for battery electric fueling infrastructure is approximately $2M.

BEB Charging Infrastructure Summary

In order to support the BEB portion of the fleet, Banning Connect will need to work with a contractor to conduct detailed infrastructure planning, purchase chargers and dispensers, and add service capacity to their site. The estimated infrastructure costs for these technology & infrastructure expenses are as follows:

- **INFRASTRUCTURE PLANNING.** Building charging infrastructure requires planning at the depot. This assessment assumes that a planning project costs $200,000 and occurs only once per depot. The total cost of planning projects for Banning Connect's single depot is estimated at $200,000.
- **DISPENSERS AND CHARGERS.** Banning Connect's BEB charging depot will consist of five chargers with two dispensers per charger and one on-route charger. Prices are estimated at $170,000 for a 150kW charger with two dispensers. One transit bus per charger can charge at a time, and two cutaways can charge simultaneously at one charger, each charging at 75kW. On-Route charging equipment was also estimated to cost around $900,000 per station for design and equipment.
- **ELECTRIC SERVICE UPGRADE.** Banning Connect requires an estimated 1 MW of additional electricity capacity by 2040 to accommodate charging for 9 BEVs. To meet the growing demand for electricity, the depot will need to upgrade its system to at least 1 MW of capacity by 2027. This is estimated to cost around $200,000 over the transition period.
- **INFLATION FACTOR.** 5.4% inflation is added on all project costs per the CPI. 3% inflation is added on all maintenance costs per industry standards. All costs listed above are in 2022 dollars, projects occurring after 2022 are inflated per the inflation factor.

The estimated total BEB infrastructure cost for the BEB scenario is shown below in **Figure 9.** totaling to approximately $2 M over the transition period.

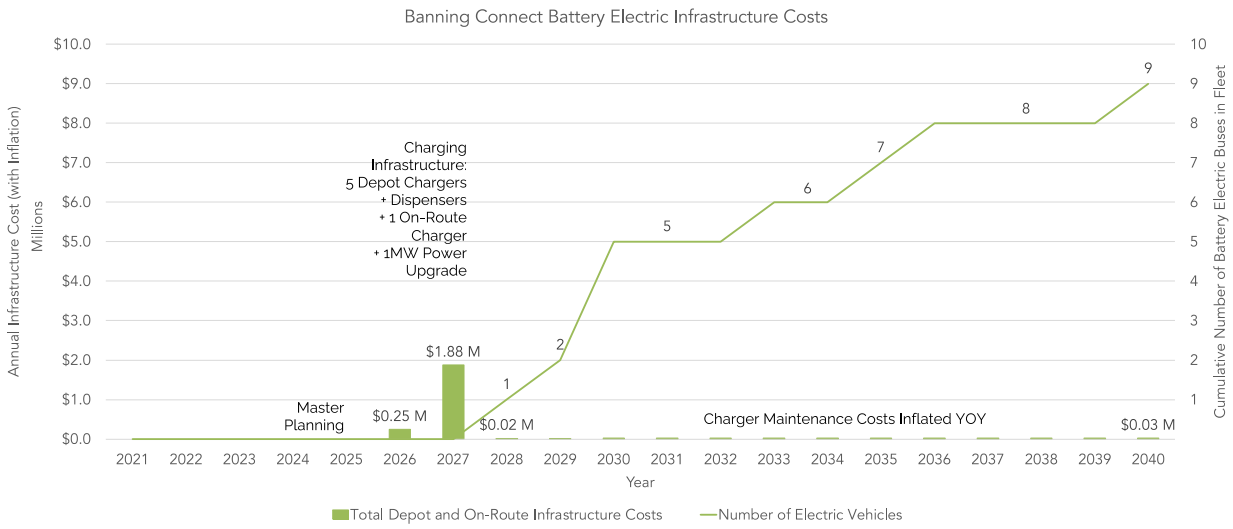

Figure 9 – Infrastructure Project and Costs, ZEB Transition

Utility Partnership Review

The City is sharing proposed planning documents to help Banning Electric understand future loads so that any required grid infrastructure improvements can be addressed prior to implementation. The City's discussion of short- and long-term fleet goals with Banning Electric will ensure that Banning Electric can properly plan grid-side electrical infrastructure upgrades to the City's Corporation Yard, and that the City can adequately upgrade equipment to support battery electric buses. Once the infrastructure upgrade needs are established, the City will incorporate the design and construction timelines into the overall transition plan timeline. The City recognizes

Banning Electric as a critical partner in electrification and will continue to partner with Banning Electric after the planning stages so that charge management strategies and fleet expansion efforts can be coordinated effectively.

F

Providing Service in Disadvantaged Communities

Providing Zero-Emission Service to DACs

In California, CARB defines disadvantaged communities (DACs) as communities that are both socioeconomically disadvantaged and environmentally disadvantaged due to local air quality. Lower income neighborhoods are often exposed to greater vehicle pollution levels due to proximity to freeways and the ports, which puts these communities at greater risk of health issues associated with tailpipe emissions.[9] ZEBs will reduce energy consumption, harmful emissions, and direct carbon emissions within the disadvantaged communities Banning Connect serves. The City of Banning includes one census tract designated as a DAC. Banning's fixed routes that are in and pass through DACs, along with their stops are shown in **Figure 10** below.

Environmental impacts, both from climate change and from local pollutants, disproportionately affect transit riders. For instance, poor air quality from tailpipe emissions and extreme heat harm riders waiting for buses at roadside stops. The transition to zero-emission technology will benefit the region by reducing fine particulate pollution and improving overall air quality. In turn, the fleet transition will support better public health outcomes for residents in DACs served by the selected routes.

Public transit has the potential to improve social equity by providing mobility options to low-income residents lacking access to a personal vehicle and helping to meet their daily needs. In California, transit use is closely correlated with car-less households as they are five times more likely to use public transit than households with at least one vehicle.[10] Although 21% of Californians in a zero-vehicle household are vehicle free by choice, 79% do not have a vehicle due to financial limitations. Many low-income people therefore rely solely on public transportation for their mobility needs.[11] Banning Connect's current fleet of fixed route and DAR CNG and gasoline buses consume 71,308 Gasoline Gallons Equivalent (GGE) of fuel per year, operating for approximately 251,800 miles per year. Moving Banning Connect's fleet to zero-emission technology will help alleviate the pollution from tailpipe emissions, which will improve the health of communities impacted by NOx and particulate matter emissions and all local communities.

Access to quality transit services provides residents with a means of transportation to go to work, to attend school, to access health care services, and run errands. By purchasing new vehicles and decreasing the overall age of its fleet, Banning Connect is also able to improve service reliability and therefore maintain the capacity to serve low-income and disadvantaged populations. Replacing CNG and diesel gasoline vehicles with zero-emission vehicles

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[9] Reichmuth, David. 2019. Inequitable Exposure to Air Pollution from Vehicles in California. Cambridge, MA: Union of Concerned Scientists. https://www.ucsusa.org/resources/inequitable-exposure-air-pollution-vehicles-california-2019

[10] Grengs, Joe; Levine, Jonathan; and Shen, Qingyun. (2013). Evaluating transportation equity: An inter-metropolitan comparison of regional accessibility and urban form. FTA Report No. 0066. For the Federal Transit Administration

[11] Paul, J & Taylor, BD. 2021. Who Lives in Transit Friendly Neighborhoods? An Analysis of California Neighborhoods Over Time. Transportation Research Interdisciplinary Perspectives. 10 (2001) 100341. https://reader.elsevier.com/reader/sd/pii/S2590198221000488?token=CABB49E7FF438A88A19D1137A2B1851806514EF576E9A2D9462D3FAF1F6283574907562519709F8AD53DEC3CF95ACF27&originRegion=us-east-1&originCreation=20220216190930

will also benefit these populations by improving local air quality and reducing exposure to harmful emissions from CNG and gasoline exhaust.

Map of Disadvantaged Communities served by Banning Connect

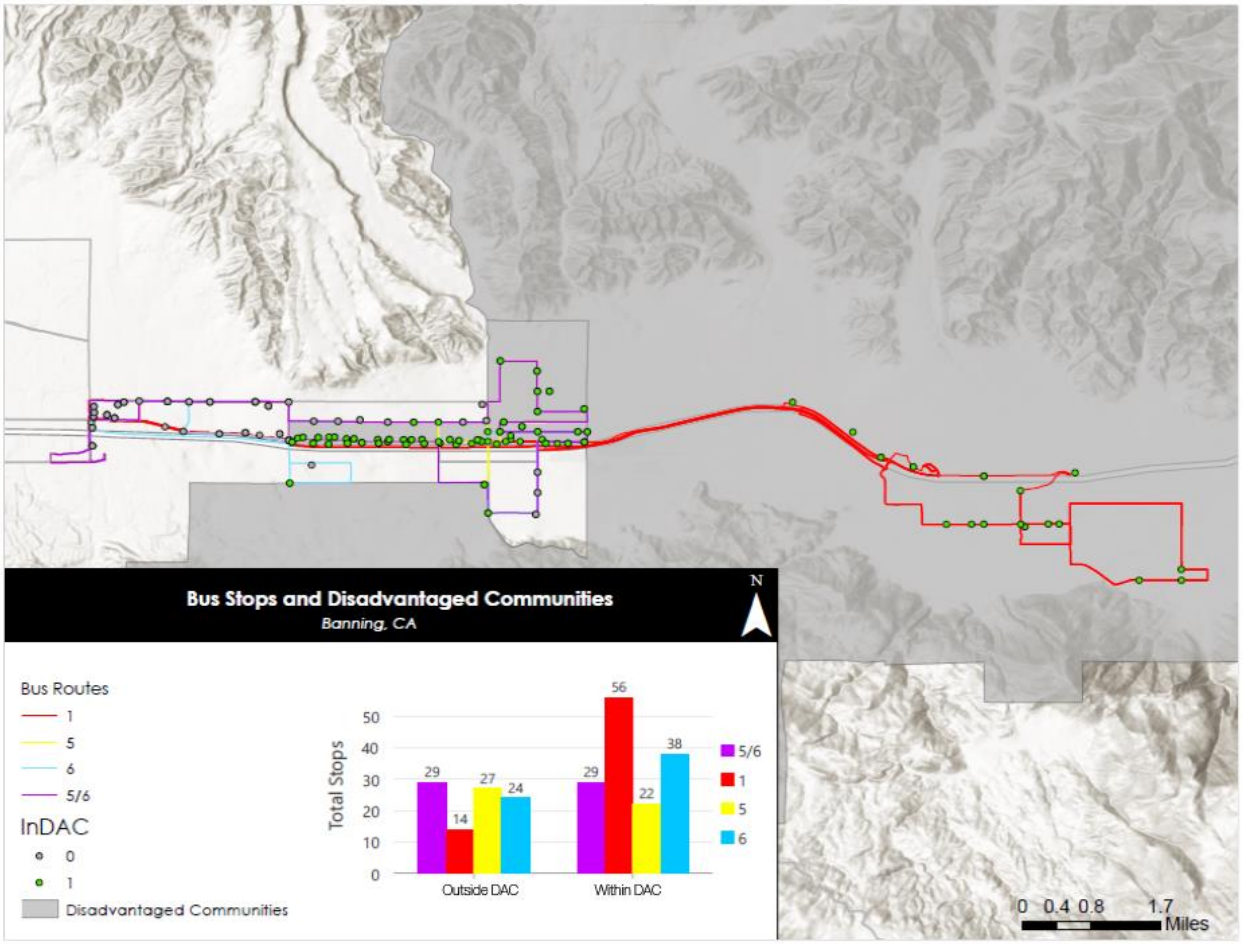

Figure 10 – Banning Connect Disadvantaged Communities Service Map

Emissions Reductions for DACs

Greenhouse gasses (GHG) are the compounds primarily responsible for atmospheric warming and include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The effects of greenhouse gasses are not localized to the immediate area where the emissions are produced. Regardless of their point of origin, greenhouse gasses contribute to overall global warming and climate change.

Criteria pollutants include carbon monoxide (CO), nitrogen oxides (NOx), particulate matter under 10 and 2.5 microns (PM_{10} and $PM_{2.5}$), volatile organic compounds (VOC), and sulfur oxides (SO_X). These pollutants are considered harmful to human health because they are linked to cardiovascular issues, respiratory complications, or other adverse health effects.[12] These compounds are also commonly responsible for acid rain and smog. Criteria

[12] Institute of Medicine. Toward Environmental Justice: Research, Education, and Health Policy Needs. Washington, DC: National Academy Press, 1999; O'Neill MS, et al. Health, wealth, and air pollution: Advancing theory and methods. Environ Health Perspect. 2003; 111: 1861-1870; Finkelstein et al. Relation between income, air pollution and mortality: A cohort study.

pollutants cause economic, environmental, and health effects locally where they are emitted. CARB defines DACs in part as disadvantaged by poor air quality because polluting industries or freight routes have often been cited in these communities. The resulting decrease in air quality has led to poorer health and quality of life outcomes for residents. Banning Connect's operational Well-to-Wheel criteria emissions are summarized in **Table 5.**

Table 5 – Annual Vehicle Operation Pollutants by Fuel Type

Overall Annual Vehicle Operation Pollutants (lbs.)								
Bus Group	**CO**	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**PM10 TBW**	**PM2.5 TBW**
CNG	10,444	382.6	3.8	3.5	40.6	3.8	48.2	6.2
Gas	908	7.2	0.7	0.6	16.0	0.5	4.7	0.6

The transportation sector is the largest contributor to greenhouse gas emissions in the United States, accounting for more than 30% of total emissions, and within this sector, 25% of these emissions come from the medium- and heavy-duty markets, yet these markets account for less than 5% of the total number of vehicles. Electrifying these vehicles can have an outsized impact on pollution, fossil-fuel dependency, and climate change. ZEBs are four times more fuel efficient than comparable new Internal Combustion Engine (ICE) buses. Better fuel efficiency means less waste when converting the potential energy in the fuel to motive power. Less waste not only means less pollution, it results in more efficient use of natural resources. By transitioning to ZEBs from CNG and gasoline buses, Banning Connect's zero-emission fleet will produce fewer carbon emissions and fewer harmful pollutants from the vehicle tailpipes. Considering DACs experience significantly more pollution from harmful emissions, communities disadvantaged by pollution served by Banning Connect's fleet will therefore directly benefit from the reduced tailpipe emissions of ZEBs compared to ICE buses.

Estimated Ridership in DACs

As shown in **Figure 10**, of all the fixed-route stops, 73 (67%) are located within DACs. In addition, much of the DAR service area provided for Seniors 60 and older; persons with disabilities; and persons certified under the Americans with Disability Act (ADA) falls within DAC zones, but specific trips may start and/or end outside of DAC-designated areas. This includes ADA services within three-quarters of a mile of fixed-route service. Unlike fixed-route service, the DAR service does not run a set route, and so a single vehicle may provide trips both within and outside of a DAC during a single day.

CMAJ. 2003; 169: 397-402; Zeka A, Zanobetti A, Schwartz J. Short term effects of particulate matter on cause specific mortality: effects of lags and modification by city characteristics. Occup Environ Med. 2006; 62: 718-725.

G

Workforce Training

Banning Connect's Current Training Program

Operator, Dispatcher and Mechanic Training

Banning Connect staff works closely with the OEM providing vehicles to ensure all mechanics, service employees, and bus operators complete necessary training prior to deploying a new vehicle type and that these staff undergo refresher training annually and as needed. Management stays abreast of regulatory requirements and ensures that associated training takes place during annual VTT training or sooner. Banning Connect staff also brings up any issues or questions they may have about their training with their respective trainers.

Banning Connect's ZEB Training Plan

OEM Training

Banning Connect plans to take advantage of trainings from the bus manufacturers and station suppliers, including maintenance and operations training, station operations and fueling safety, first responder training and other trainings that may be offered by the technology providers. OEM trainings provide critical information on operations and maintenance aspects specific to the equipment model procured. Additionally, many procurement contracts include train-the-trainer courses through which small numbers of agency staff are trained and subsequently train agency colleagues. This method provides a cost-efficient opportunity to provide widespread agency training on new equipment and technologies.

Bus and Fueling Operations and Maintenance

The transition to a zero-emission fleet will have significant effects on Banning Connect's workforce. Meaningful investment is required to upskill maintenance staff and bus operators trained in ICE vehicle maintenance and ICE fueling infrastructure.

Banning Connect training staff will work closely with the OEM providing vehicles to ensure all mechanics, service employees, and bus operators complete necessary training prior to deploying ZEB technology and that these staff undergo refresher training annually and as needed. Banning Connect staff will also be able to bring up any issues or questions they may have about their training with their trainers. Additionally, trainers will observe classes periodically to determine if any staff would benefit from further training.

ZEB Training Programs

Several early ZEB adopters have created learning centers for other agencies embarking on their ZEB transition journeys. One such agency is SunLine Transit Agency, which provides service to the Coachella Valley and hosts the West Coast Center of Excellence in Zero Emission Technology (CoEZET). The Center of Excellence supports transit agency adoption, zero-emission commercialization and investment in workforce training. Similarly, AC Transit

offers training courses covering hybrid and zero-emission technologies through their ZEB University program. Banning Connect plans to take advantage of these trainings offered by experienced agencies.

There are several transit agencies within and around Riverside County that have successfully begun their transition to zero-emission technology. In the region, Omintrans, a public transit agency serving the San Bernardino Valley recently received $9.3 million from the Federal Transit Administration (FTA) under the FY2022 Low-No Emission Vehicle Program to develop hydrogen refueling infrastructure and launch a workforce development program. These agencies can serve a resource for Banning Connect to use when implementing zero-emission technology and supporting programs into their services.

H

Potential Funding Sources

Available Funding Opportunities

Federal

Banning Connect is ineligible for most federal funds apart from Federal Highway Administration Funds (FHWA). Banning is planning to pursue funding opportunities administered by the Federal Highway Administration such as the following:

- Federal Highway Administration (FHWA)
    - Congestion Mitigation and Air Quality Improvement Program through SCAG
    - Surface Transportation Block Grant Program through SCAG
    - Carbon Reduction Program

State

CCTS will also seek funding from state resources through grant opportunities including but not limited to Senate Bill 1 State of Good Repair (SGR), Transit and Intercity Rail Capital Program (TIRCP), Low Carbon Transit Operations Program (LCTOP) funding, the California Energy Commission's Clean Transportation Program as well as Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) for bus purchases when available.

Annual Reliable Funding

- Administered by California Department of Transportation (Caltrans)
    - Transportation Development Act Funds
        - Local Transportation Funds
        - State Transit Assistance (STA)
    - State of Good Repair (SB 1 funds)
    - Low Carbon Transit Operations Program (LCTOP)

Future Funding Opportunities

- California Air Resources Board (CARB)
    - Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
    - State Volkswagen Settlement Mitigation
    - Carl Moyer Memorial Air Quality Standards Attainment Program
    - Cap-and-Trade Funding
    - Low Carbon Fuel Standard (LCFS)
- California Transportation Commission (CTC)
    - State Transportation Improvement Program (STIP)
    - Solution for Congested Corridor Programs (SCCP)
    - Local Partnership Program (LPP)
- California Department of Transportation (Caltrans)
    - Transit and Intercity Rail Capital Program
    - Transportation Development Credits
    - New Employment Credit

- California Energy Commission

Local

Additionally, Banning Connect will pursue local funding opportunities to support zero-emission bus deployment. While the aforementioned funding opportunities are mentioned by name, Banning Connect will not be limited to these sources and will regularly assess opportunities for fiscal support for the ZEB program.

Legislation Supporting the Zero-Emission Transition

Policies and regulations supporting the transition to zero-emission are proliferating as the efforts to decarbonize the transportation sector expand. The city of Banning is monitoring the implementation of relevant policies and legislation. With the passage of the *Bipartisan Infrastructure Law* and issuance of *Executive Order 14008: Tackling the Climate Crisis at Home and Abroad*, the federal government has set a renewed focus on zero-emission transit. Riverside County's goal to deploy zero-emission vehicles supports the federal administration's priorities of renewing transit systems, reducing Greenhouse Gas emissions from public transportation, equity, creation of good paying jobs, and connecting communities. State legislation such as the Innovative Clean Transit Regulation further supports the replacement of fossil-fuel vehicles on the roads of California. Moreover, on August 25, 2022, the CARB approved the Advanced Clean Cars II Rule, requiring all new vehicles sold in California to be zero-emission vehicles (ZEVs) by 2035.

I

Start-up and Scale-up Challenges

Financial Challenges

Challenges can arise with any new propulsion technology, its corresponding infrastructure, or in training operators and maintenance staff. Nearly all transit agencies must contend with the cost barriers posed by zero-emission technologies. The current market cost of ZEBs is between $980,000 and $1,310,000, which is about $320,000 to $650,000 more costly than traditional ICE buses. The predicted costs of zero-emission cutaways are between $300,000 and $370,000, which is about $120,000 and $200,000 more costly than traditional ICE cutaways.

Additionally, the necessary infrastructure to support these buses adds to the financial burden of transitioning to a ZEB fleet, as outlined below in **Table 6** showing the cost of the transition to BEB-only fleet. Banning Connect will seek financial support to cover the cost of their BEBs from the resources discussed in Section H.

Table 6 – Incremental Cost of ZEB Transition

Incremental cost of ZEB Transition			
	CNG/Gas Baseline*	BEB Incremental Costs	BEB Transition Scenario Costs
Bus Capital Expense	$9M	$5M	$14M
Fueling Infrastructure	$0	$2M	$2M
Total	$9M	$7M	$16M

*Represents the capital costs that would have been incurred in the absence of the ICT Regulation

As seen in **Table 6**, the costs of required fueling infrastructure and fueling operations for ZEB technologies pose another hurdle for transit agencies transitioning to zero-emission service. Continued financial support at the local, state and federal level to offset the capital cost of this new infrastructure is imperative. For alternative fuels such as hydrogen, financial support from state and federal grant opportunities for green hydrogen supply chains and increasing economies of scale on the production side will ultimately benefit transit agencies deploying and planning for BEBs.

CARB can support Banning Connect by ensuring continued funding for the incremental cost of zero-emission buses and fueling infrastructure. Funding opportunities should emphasize proper transition and deployment planning and should not preclude hiring consultants to ensure best practices and successful deployments.

Limitations of Current Technology

Beyond cost barriers, transit agencies must also ensure that available zero-emission technologies can meet basic service requirements of the agency's duty cycles. The applicability of specific zero-emission technologies will vary widely among service areas and agencies. As such, it is critical that transit agencies in need of technical and planning support have access to these resources to avoid failed deployment efforts. Support in the form of technical consultants and experienced zero-emission transit planners will be critical to turning Rollout Plans into successful deployments and tangible emissions reductions.

In addition to the uncertainty of technology improvements, there are other risks to consider in trying to estimate costs over the 18-year transition period. Although current BEB range limitations may be improved over time as a result of advancements in battery energy capacity and more efficient components, battery degradation may re-

introduce range limitations, which is a cost and performance risk to an all-BEB fleet over time. While this can be mitigated by on-route charging, there may be emergency scenarios where the buses are expected to perform off-route or atypical service. In these emergency scenarios that require use of BEBs, agencies may face challenges performing emergency response roles expected of them in support of fire and police operations. Furthermore, fleetwide energy service requirements, power redundancy, and resilience may be difficult to achieve at any given depot in an all-BEB scenario. Although FCEBs may not be subject to these same limitations, higher capital equipment costs and availability of hydrogen may constrain FCEB solutions. RCTC, Banning Connect, CTE and Arcadis IBI Group will expand upon challenge mitigation and adaptation in the Riverside County ZEB Implementation & Financial Strategy Plan.

Appendix A – Approved Board Resolution

Appendix B – Glossary

Auxiliary Energy: Energy consumed (usually as a by time measure, such as "x"kW/hour) to operate all support systems for non-drivetrain demands, such as HVAC and interior lighting.

Battery Electric Bus: Zero-emission bus that uses onboard battery packs to power all bus systems.

Battery Nameplate Capacity: The maximum rated output of a battery under specific conditions designated by the manufacturer. Battery nameplate capacity is commonly expressed in kWh and is usually indicated on a nameplate physically attached to the battery.

Block: Refers to a vehicle schedule, the daily assignment for an individual bus. One or more runs can work a block. A driver schedule is known as a "run."

Charging Equipment: The equipment that encompasses all the components needed to convert, control and transfer electricity from the grid to the vehicle for the purpose of charging batteries. May include chargers, controllers, couplers, transformers, ventilation, etc.

Depot Charging: Centralized BEB charging at a transit agency's garage, maintenance facility, or transit center. With depot charging, BEBs are not limited to specific routes, but must be taken out of service to charge.

Energy: Quantity of work, measured in kWh for ZEBs.

Energy Efficiency: Metric to evaluate the performance of ZEBs. Defined in kWh/mi for BEBs, mi/kg of hydrogen for FCEBs, or miles per diesel gallon equivalent for any bus type.

Fuel Cell Electric Bus: Zero-emission bus that utilizes onboard hydrogen storage, a fuel cell system, and batteries. The fuel cell uses hydrogen to produce electricity, with the waste products of heat and water. The electricity powers the batteries, which powers the bus.

Greenhouse Gas Emissions: Zero-emission buses have no harmful emissions that result from diesel combustion. Common GHGs associated with diesel combustion include carbon dioxide (CO2), carbon monoxide (CO), nitrous oxides (NOx), volatile organic compounds (VOCs), and particulate matter (PM). These emissions negatively impact air quality and contribute to climate change impacts.

Hydrogen Fueling Station: The location that houses the hydrogen production (if produced onsite), storage, compression, and dispensing equipment to support fuel cell electric buses.

On-route Charging: BEB charging while on the route. With proper planning, on-route charged BEBs can operate indefinitely, and one charger can charge multiple buses.

Operating Range: Driving range of a vehicle using only power from its electric battery pack to travel a given driving cycle.

Route Modeling: A cost-effective method to assess the operational requirements of ZEBs by estimating the energy consumption on various routes using specific bus specifications and route features.

Useful Life: FTA definition of the amount of time a transit vehicle can be expected to operate based on vehicle size and seating capacity. The useful life defined for transit buses is 12-years. For cutaways, the useful life is 7 years.

Validation Procedure: to confirm that the actual bus performance is in line with expected performance. Results of validation testing can be used to refine bus modeling parameters and to inform deployment plans. Results of validation testing are typically not grounds for acceptance or non-acceptance of a bus.

Zero-Emission Vehicle: A vehicle that emits no tailpipe emissions from the onboard source of power. This is used to reference battery-electric and fuel cell electric vehicles, exclusively, in this report.

Well-to-wheel Emissions: Quantity of greenhouse gas, criteria pollutants, and/or other harmful emissions that includes emissions from energy use and emissions from vehicle operation. For BEBs, well-to-wheel emissions would take into account the carbon intensity of the grid used to charge the buses. For FCEBs, well-to-wheel emissions would take into account the energy to produce, transport, and deliver the hydrogen to the vehicle

RESOLUTION 2023-91

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BANNING, CALIFORNIA, APPROVING THE ZERO-EMISSION BUS ROLLOUT PLAN AND AUTHORIZING THE SUBMISSION OF SAID PLAN TO THE CALIFORNIA AIR RESOURCES BOARD (CARB) AS REQUIRED BY THE INNOVATIVE CLEAN TRANSIT REGULATION

WHEREAS, in 2018, California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) Regulation, which requires public transit agencies to gradually transition to a 100 percent Zero Emission Bus (ZEB) fleet with a goal for full transition by 2040; and

WHEREAS, each transit agency must adopt and submit to CARB a ZEB Rollout Plan describing how the Agency will transition to a zero-emission fleet; and

WHEREAS, the City of Banning's ZEB Rollout Plan must be submitted to CARB by July 1, 2023; and

WHEREAS, per the requirements of the OCT, the Rollout Plan includes required information from the following sections:

Section A: Transit Agency Information
Section B: Rollout Plan General Information
Section C: Technology Portfolio
Section D: Current Bus Fleet Composition and Future Bus Purchases
Section E: Facilities and Infrastructure Modifications
Section F: Providing Service in Disadvantaged Communities
Section G: Workforce Training
Section H: Potential Funding Sources; and

WHEREAS, the Rollout Plan is a living document intended to guide the Agency's conversion to a ZEB fleet and may be updated based on changes in vehicle technology, fleet size and operating requirements; and

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Banning as follows:

SECTION 1. City Council hereby approves the City of Banning's Zero-Emission Rollout Plan and authorizes it's submittal to CARB.

SECTION 2. The City Clerk shall certify the adoption of this Resolution and shall cause a certified resolution to be filed in the book of original resolutions.

PASSED, APPROVED AND ADOPTED this 23rd day of May 2023.

Alberto Sanchez, Mayor
City of Banning

ATTEST:

Caroline Patton, Deputy City Clerk
City of Banning

APPROVED AS TO FORM AND LEGAL CONTENT:

Serita Young, City Attorney

CERTIFICATION:

I, Caroline Patton, Deputy City Clerk of the City of Banning, California, do hereby certify that the foregoing Resolution 2023-91, was duly adopted by the City Council of the City of Banning, California, at a regular meeting thereof held on the 23rd day of May 2023 by the following vote, to wit:

AYES: Flynn, Sanchez, and Wallace.

NOES:

ABSENT: Gonzales and Minjares.

ABSTAIN:

Caroline Patton, Deputy City Clerk
City of Banning, California

ATTACHMENT 2

Zero-Emission Bus Rollout Plan

Prepared by the City of Beaumont Transit System with support from the Center for Transportation and the Environment, Arcadis IBI Group, and the Riverside County Transportation Commission

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List of Abbreviations

ADA: Americans with Disabilities Act

A&E: Architecture and Engineering

BEB: Battery Electric Bus

CA: California

CARB: California Air Resources Board

CNG: Compressed Natural Gas

COVID/COVID-19: Coronavirus Disease 2019 (SARS-CoV-2)

CTE: Center for Transportation and the Environment

DAC: Disadvantaged Community

FCEB: Fuel Cell Electric Bus

HVAC: Heating, Ventilation, and Air Conditioning

ICE: Internal Combustion Engine

ICT: Innovative Clean Transit

kW: Kilowatt

kWh: Kilowatt-Hour

MW: Megawatt

OEM: Original Equipment Manufacturer

PM: Particulate Matter

PPI: Producer Price Index

CPI: Consumer Price Index

RFP: Request for Proposals

SCE: Southern California Edison (SoCal Edison)

TDA: Transportation Development Act

VTT: Verification of Transit Training

ZEB: Zero-Emission Bus

A glossary of useful terms can also be found in Appendix B - Glossary

Executive Summary

The City of Beaumont Transit System (Beaumont Transit) provides public transit services for the community in and around the City of Beaumont in Riverside County, operating six (6) fixed routes, two (2) commuter links, and paratransit services also known as Dial-a-Ride (DAR). Beaumont Transit's fleet as of 2023 consists of seven (7) gasoline cutaway vehicles, nine (9) CNG cutaway vehicles, one (1) CNG 32-ft. bus, three (3) CNG 40-ft. buses, and two (2) battery-electric van-style cutaways. Riverside County Transportation Commission (RCTC) awarded a contract to the Center for Transportation and the Environment (CTE) to perform a zero-emission bus (ZEB) transition study to create a plan for a 100% zero-emission fleet by 2040 on behalf of transit agencies and municipal transportation services in the cities of Banning, Beaumont, Corona and Riverside and the Palo Verde Valley Transit Agency to comply with the Innovative Clean Transit (ICT) regulation enacted by the California Air Resources Board (CARB). This report will focus on Beaumont Transit's transition plan to a zero-emission fleet composed of a mixture of fuel cell electric buses (FCEBs) and battery electric buses (BEBs).

Beaumont Transit's Rollout Plan achieves a zero-emission bus fleet in line with the 2040 target of the ICT Regulation. To achieve this goal, Beaumont Transit will replace all CNG and gas vehicles with ZEBs when the vehicles reach the end of their 7- or 12-year useful life. By 2040, 19 of the agency's vehicles are expected to be FCEBs and 3 will be BEBs. The last of the agency's CNG buses will reach end of life in 2039.

Beaumont Transit's administrative services, dispatch, and operations are located in the heart of downtown Beaumont at the Beaumont Civic Center, 550 E 6th Street, Building D. Beaumont Transit's entire fleet of operations is domiciled at the Beaumont Civic Center. However, with the assistance of municipal departments, Beaumont Transit is in the process of developing a 6-acre plot of land, next to the city's Wastewater Treatment Plant. The property is expected to house an administrative operations facility, a vehicle maintenance facility, and a CNG Fueling Station. The fleet maintenance operations are currently located at 550 California Avenue, less than 1 mile from the administrative building. Beaumont Transit plans to install both charging and hydrogen fueling infrastructure at this location to support their mixed fleet.

Beaumont Transit's bus service provides transportation opportunities to Disadvantaged Communities (DACs) and moving toward zero-emission buses will help improve the health of DACs and non-DACs alike. The agency will build upon an existing training structure for bus maintenance and operators to provide the necessary battery-electric bus (BEB) and fuel cell electric bus (FCEB) specific training that will be required for the agency to own and operate BEBs and FCEBs. The agency estimates that pursuing a ZEB fleet in place of a compressed natural gas (CNG) fleet will cost an additional $14M in bus costs and infrastructure alone between 2021 and 2040, which will require significantly more funding opportunities. Beaumont Transit plans to pursue funding opportunities at the federal, state, and local levels to help fill this funding gap.

A

Transit Agency Information

Beaumont Transit Profile

Service Area and Bus Service

The City of Beaumont operates public transit services in and around the city of Beaumont, a suburban community located southeast of Riverside in Riverside County. The City of Beaumont operates a system that provides services on five (5) fixed routes, two (2) commuter links, and paratransit services on weekdays, and one fixed route, one commuter link and paratransit services on Saturdays. The current bus fleet consists of 22 total vehicles, including six (6) gasoline cutaway vehicles, nine (9) CNG cutaway vehicles, one (1) CNG 32-ft. bus, and three (3) CNG 40-ft. buses. The transit system provides fixed-route, commuter link, and paratransit services to passengers across 50 square miles and extends from the City of Beaumont to Redlands, San Bernardino, the Loma Linda VA Hospital, Casino Morongo, the Desert Hills Premium Outlets, and parts of unincorporated Riverside County, also known as Cherry Valley. Services provide connections to other regional transportation providers such as Banning Connect, Riverside Transit Agency (RTA), the Sunline Transit Agency, Victor Valley Transit Agency (VVTA), Mountain Transit, and Metrolink from three central locations: the Beaumont Walmart, the Redlands Transit Center, and the San Bernardino Transit Center.

The agency also provides DAR service, a specialized, reservation-based, ADA-compliant paratransit service. Beaumont provides curb-to-curb transportation services to qualified individuals certified under the Americans with Disabilities Act (ADA)that live in the City of Beaumont and parts of Cherry Valley. Additionally, DAR service is provided to persons who live within ¾-of-a-mile from a fixed-route stop traveling to a destination also within an area of ¾-of-a-mile from a fixed-route stop. Unlike fixed-route service, the DAR service does not run a set route, and so a single vehicle may provide trips both within and outside of a DAC during a single day. The paratransit fleet consists of one (1) gas cutaway and two (2) battery-electric van-style cutaways. Beaumont Transit's service map is illustrated in **Figure 1.**

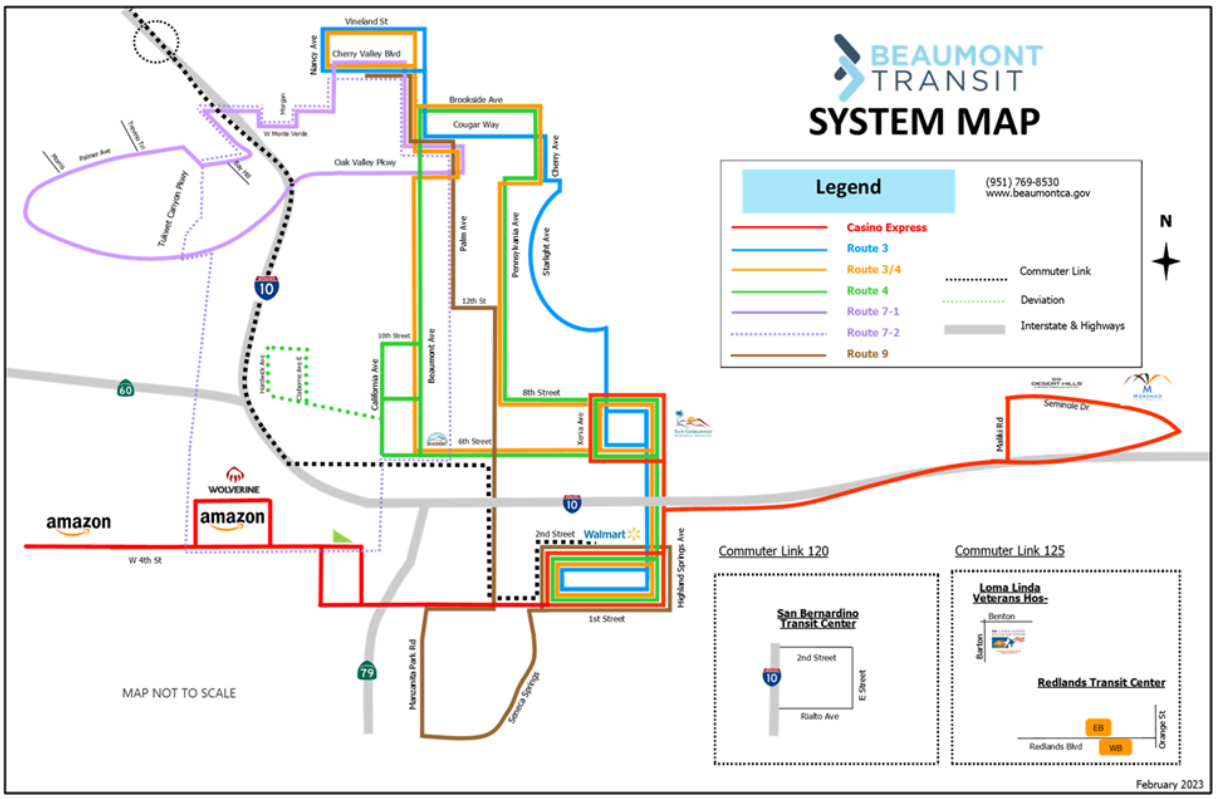

Figure 1 – Beaumont Transit Service Area

Ridership

Due to the pandemic, Beaumont Transit's system-wide ridership reached a low in FY 21 and ended the year with 39,201 passenger trips. This is a 69% decline when compared to FY 19's 203,660 passenger trips. In FY 22, passenger boardings increased by 75% accounting for 68,457 passenger trips. In FY 23, Beaumont projects passenger trips will reach 87,054, which represents 43% of FY 19. As services have returned to pre-pandemic levels, it is anticipated that ridership will continue to recover in the coming years.

City of Beaumont Transit System Basic Information

Transit Agency's Name:

City of Beaumont Transit System

Mailing Address:

City of Beaumont Transit System

550 E. 6th Street

Beaumont, CA 92223

Transit Agency's Air Districts:

City of Beaumont Transit System is part of the South Coast Air Quality Management District (SCAQMD).

Transit Agency's Air Basin:

South Coast Air Quality Management District is part of the South Coast Air Basin.

Total number of buses in Annual Maximum Service:

The maximum number of active buses operating fixed route and DAR services out of the Corporation Yard is twenty-two (22). The fleet is composed of four (4) low floor transit buses and eighteen (18) cutaways.

Urbanized Area:

Beaumont, CA. Beaumont is 30.32 square miles of land area with 1,823 people per square mile living within that area.[1]

Population of Urbanized Area:

Over 55,280 residents[1]

[1] https://www.census.gov/quickfacts/fact/table/beaumontcitycalifornia/RHI52522 1

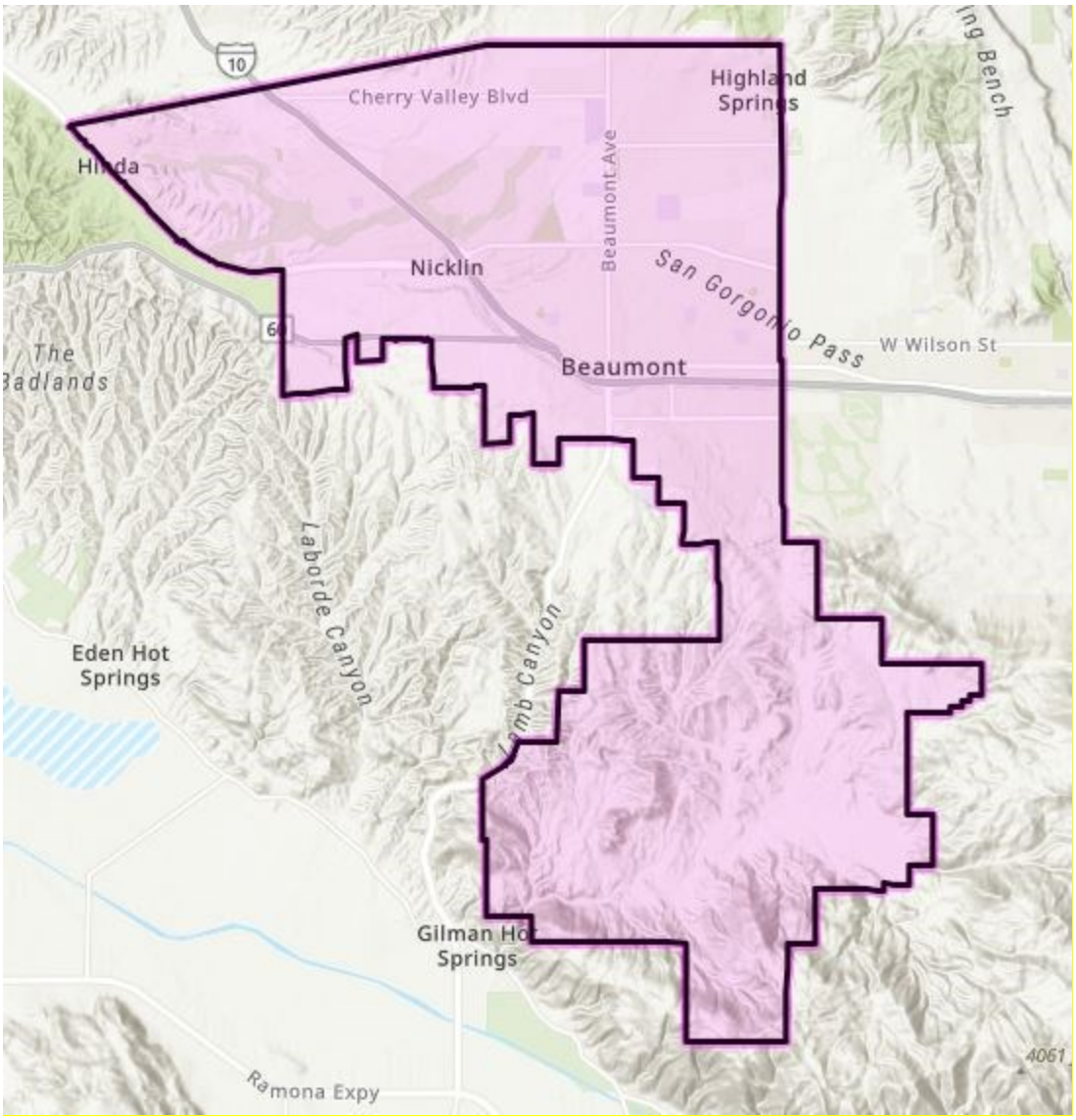

Figure 2 – City of Beaumont Urbanized and Rural Map

Contact Information for Inquiries on the City of Beaumont Transit System ICT Rollout Plan:

Kari Mendoza Administrative Services Director, City of Beaumont Transit System

550 E. 6th Street

Beaumont, CA 92223

Tel: 951-769-8530

karim@beaumontca.gov

Is your transit agency part of a Joint Group? No

Fleet Facility

Administrative services, dispatch, and operations for Beaumont Transit are located in the heart of downtown Beaumont at the Beaumont Civic Center, 550 E 6th Street, Building D. Beaumont Transit's entire fleet of operations is domiciled at the Beaumont Civic Center, however, Beaumont Transit along with Public Works is in the process of developing a 6-acre plot of land, next to the city's Wastewater Treatment Plant, into an operations and maintenance facility for transit. The fleet maintenance operations are located at 550 California Avenue, less than 1 mile from the administrative building. Beaumont Transit does not presently own a CNG fueling station, but is in the process of developing a CNG fueling station for both slow-fill transit buses as well as fast-fill public infrastructure on the parcel located on the corner of 4th Street and Veile Avenue in Beaumont. A map of Beaumont Transit's administrative, maintenance, and planned fueling facilities are provided below in **Figure 3**, **Figure 4**, and **Figure 5** to better understand the locations of Beaumont Transit's properties in relation to one another, as well as to routes and service areas. These facilities offer a starting point for the consideration of viable locations for zero-emission fueling infrastructure, chargers, and/or a hydrogen fueling station.

Figure 3 – Administrative Facility Overview

Figure 4 – Maintenance Operations Facility

Figure 5 – Planned CNG Fueling and Operations Facility

City of Beaumont Transit Service Sustainability Goals

The City of Beaumont is committed to providing a more livable, equitable, and economically vibrant community through the incorporation of energy efficiency features and reduction of greenhouse gas (GHG) emissions. According to the City of Beaumont's Roadmap to Greenhouse Gas Reductions Report on all city vehicles from October 2015, 14% of Beaumont's municipal GHG emissions come from their municipal and transit vehicle fleet, thus decarbonizing their transit vehicles will be of paramount importance to reach their emission reductions goals for 2030 (160,501 metric tons of CO2 equivalents).

Beaumont Transit has developed a plan to transition to a fully zero emission bus (ZEB) fleet composed of battery electric and fuel cell electric buses by 2040, in accordance with the Innovative Clean Transit (ICT) regulation, requiring all California transit agencies to follow zero-emission procurement guidelines with the goal of achieving 100% zero-emission fleets by 2040. Beaumont Transit has committed to purchasing zero emission buses, demonstrating the agency's commitment to reducing emissions. Beaumont Transit's transition to a fully ZEB fleet will ultimately benefit communities through cleaner air, greater independence from fossil fuels, and more environmental sustainability.

B

Rollout Plan General Information

Overview of the Innovative Clean Transit Regulation

On December 14, 2018, CARB enacted the Innovative Clean Transit (ICT) regulation, setting a goal for California public transit agencies to have zero-emission bus fleets by 2040. The regulation specifies the percentage of new bus procurements that must be zero-emission buses for each year of the transition period (2023–2040). The annual percentages for Small Transit agencies are as follows:

ICT Zero-Emission Bus Purchase Requirements for Small Agencies:

January 1, 2026 - 25% of all new bus purchases must be zero-emission

January 1, 2027 - 25% of all new bus purchases must be zero-emission

January 1, 2028 - 25% of all new bus purchases must be zero-emission

January 1, 2029+ - 100% of all new bus purchases must be zero-emission

March 2021-March 2050 – Annual compliance report due to CARB

This purchasing schedule guides agency procurements to realize the goal of zero-emission fleets in 2040 while avoiding any early retirement of vehicles that have not reached the end of their 12-year or 7-year useful life. Agencies have the opportunity to request waivers that allow purchase deferrals in the event of economic hardship or if zero-emission technology cannot meet the service requirements of a given route. These concessions recognize that zero-emission technologies may cost more than current internal combustion engine (ICE) technologies on a vehicle lifecycle basis and that zero-emission technology may not currently be able to meet all service requirements.

City of Beaumont Transit System Rollout Plan General Information

Rollout Plan's Approval Date: 6/6/2023

Resolution No: 2023-16

Is a copy of the approved resolution attached to the Rollout Plan? Yes

Contact for Rollout Plan follow-up questions:
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karim@beaumontca.gov

Who created the Rollout Plan?
This Rollout Plan was created by the City of Beaumont Transit System with assistance from the Center for Transportation and the Environment (CTE) and the Riverside County Transportation Commission (RCTC).

This document, the ICT Rollout Plan, contains the information for Beaumont Transit's zero-emission fleet transition trajectory as requested by the ICT Regulation. It is intended to outline the high-level plan for implementing the transition. The Rollout Plan provides estimated timelines based on information on bus purchases, infrastructure upgrades, workforce training, and other developments and expenses that were available at the time of writing.

Additional Agency Resources

City of Beaumont Transit System agency website:

https://www.beaumontca.gov/90/Transit

C

Technology Portfolio

ZEB Transition Technology Selection

Based on outcomes of the zero-emission fleet transition planning study completed by CTE, Beaumont Transit plans to transition its fleet to a mix of battery electric cutaways and fuel cell electric buses and cutaways. By 2040, Beaumont Transit expects to operate a fully zero-emission fleet of 22 transit vehicles.

A mixed technology zero-emission fleet scenario provides a better range of options than a BEB-only fleet while mitigating the higher fuel cost of a FECB-only fleet. A mixed technology zero-emission fleet also offers resilience by allowing service to continue should either fuel (electricity or hydrogen) become temporarily unavailable. This plan summarizes the charging and hydrogen infrastructure costs needed to support a fleet of 3 battery electric cutaways and 15 fuel cell cutaways, and 4 fuel cell buses.

Local Developments and Regional Market

California has become a global leader for zero-emission buses, as well as the zero-emission fuel and fueling infrastructure required to support these vehicles. California is home to four bus OEMs that manufacture zero-emission buses. Although three of these OEMs do not currently build FCEBs, growing demand for this vehicle technology will likely encourage these manufacturers to enter the market.

The state legislature has fostered growth in zero-emission fuels through the state's Low-Carbon Fuel Standard (LCFS) program, which incentivizes the consumption of fuels with a lower carbon intensity than traditional combustion fuels and through funding opportunities offered by CARB and CEC. The state's electrical utility companies have also supported the transition to ZEB technology by offering incentive programs for heavy duty EV charging infrastructure and service upgrades. California BEB deployments represent 37% of the nation's BEB deployments. [2]

California also has one of the most mature hydrogen fueling networks in the nation. The state's hydrogen market has developed to support the growing number of fuel cell electric vehicles on the roads in the state. California has four medium-and-heavy-duty fueling stations in operation and four more in development. Additionally, the number of hydrogen production and distribution centers is growing to meet increased hydrogen demand as it gains popularity as a transportation fuel. California FCEB deployments represent 75% of the nation's FCEB deployments.[6]

ZEB Transition Planning Methodology

Beaumont Transit's ICT Rollout Plan was created in combination with Beaumont Transit's Existing Conditions Report and the Riverside County ZEB Financial Strategy Plan, utilizing CTE's ZEB Transition Planning Methodology. CTE's methodology consists of a series of assessments that enable transit agencies to understand what resources and decisions are necessary to convert their fleets to zero-emission technologies. The results of the assessments

[2] CALSTART. 2021. THE ADVANCED TECHNOLOGY TRANSIT BUS INDEX: A NORTH AMERICAN ZEB INVENTORY REPORT. https://calstart.org/wp-content/uploads/2022/01/2021-ZIO-ZEB-Final-Report_1.3.21.pdf

help the agency decide on a step-by-step process to achieve its transition goals. These assessments consist of data collection, analysis, and modeling outcome reporting stages. These stages are sequential and build upon findings in previous steps. The assessment steps specific to Beaumont Transit's Rollout Plan are outlined below:

1. Planning and Initiation
2. Requirements Analysis & Data Collection
3. Service Assessment
4. Fleet Assessment
5. Fuel Assessment
6. Maintenance Assessment
7. Facilities Assessment
8. Total Cost of Ownership Assessment
9. Policy Assessment
10. Partnership Assessment

For **Requirements Analysis & Data Collection,** CTE collects data on the agency's fleet, routes and blocks, operational data (e.g., mileage and fuel consumption), and maintenance costs. Using this data, CTE establishes service requirements to constrain the analyses in later assessments and produce agency-specific outputs for the zero-emission fleet transition plan.

The **Service Assessment** phase initiates the technical analysis phase of the study. Using information collected in the Data Collection phase, CTE evaluates the feasibility of using zero-emission buses to provide service to the agency's routes and blocks over the transition plan timeframe from 2022 to 2040. Results from the Service Assessment are used to guide ZEB procurement plans in the Fleet Assessment and to determine energy requirements in the Fuel Assessment.

The **Fleet Assessment** projects a timeline for the replacement of existing buses with ZEBs that is consistent with Beaumont Transit's existing fleet replacement plan and known procurements. This assessment also includes a projection of fleet capital costs over the transition timeline and is optimized to meet state mandates or agency goals, such as minimizing costs or maximizing service levels.

The **Fuel Assessment** merges the results of the Service Assessment and Fleet Assessment to determine annual fuel requirements and associated costs. The Fuel Assessment calculates energy costs through the full transition timeline for each fleet scenario, including the agency's existing ICE buses. To more accurately estimate battery electric bus (BEB) charging costs, a focused Charging Analysis is performed to simulate daily system-wide energy use. As older technologies are phased out in later years of the transition, the Fuel Assessment calculates the changing fuel requirements as the fleet transitions to ZEBs. The Fuel Assessment also provides a total fuel cost over the transition timeline.

The **Maintenance Assessment** calculates all projected fleet maintenance costs over the transition timeline. Maintenance costs are calculated for each fleet scenario and include costs of maintaining existing fossil-fuel buses that remain in the fleet and maintenance costs of new BEBs and FCEBs.

The **Facilities Assessment** determines the infrastructure necessary to support the projected zero-emission fleet composition over the transition period based on results from the Fleet Assessment and Fuel Assessment. This assessment evaluates the required quantities of charging infrastructure and/or hydrogen fueling station projects and calculates the costs of infrastructure procurement and installation sequenced over the transition timeline.

The **Total Cost of Ownership Assessment** compiles results from the previous assessment stages to provide a comprehensive view of all fleet transition costs, organized by scenario, over the transition timeline.

The **Policy Assessment** considers the policies and legislation that impact the relevant technologies.

The **Partnership Assessment** describes the partnership of the agency with the utility or alternative fuel provider.

Requirements Analysis & Data Collection

The Requirements Analysis and Data Collection stage begins by compiling operational data from Beaumont Transit regarding its current fleet and operations and establishing service requirements to constrain the analyses in later assessments. CTE requested data such as fleet composition, fuel consumption and cost, maintenance costs, and annual mileage to use as the basis for analyses. CTE conducted a screening-level analysis of Beaumont Transit's routes by determining their average speed and grades, and classified them as fast or slow and flat or hilly. CTE used these classifications to model the energy efficiencies for each of Beaumont Transit's routes. The calculated efficiencies were then used in the Service Assessment to determine the energy requirements of Beaumont Transit's service.

CTE evaluated BEBs and FCEBs to support Beaumont Transit's technology selection. After collecting route and operational data, CTE determined that Beaumont Transit's longest block is 172 miles long. Based on observed performance, CTE estimates FCEBs are able to complete any block under 350 total miles, which means that FCEB technology already has the capability to meet service requirements. Although FCEBs were determined to have the capability of serving all of Beaumont Transit's routes, Beaumont Transit was interested in exploring BEB and FCEB service scenarios, so it was necessary to determine how much of Beaumont Transit's service could feasibly be served by depot-only charged BEBs in order to develop a set of ZEB transition scenarios that would allow the agency to make an informed decision on what technology or technologies would be most suitable to the agency's needs.

The energy efficiency and range of BEBs are primarily driven by bus specifications, such as on-board energy storage capacity and vehicle weight. Both metrics are affected by environmental and operating variables including the route profile (e.g., distance, dwell time, acceleration, sustained top speed over distance, average speed, and traffic conditions), topography (e.g., grades), climate (e.g., temperature), driver behavior, and operational conditions such as passenger loads and auxiliary loads. As such, BEB efficiency and range can vary dramatically from one agency to another or even from one service day to another. It was therefore critical for Beaumont Transit to determine efficiency and range estimates based on an accurate representation of its operating conditions.

To understand BEB performance on Beaumont Transit's routes, CTE modeled the impact of variations in passenger load, accessory load, and battery degradation on bus performance, fuel efficiency, and range. CTE ran models with different energy demands that represented *nominal* and *strenuous* conditions. Nominal loading conditions assume average passenger loads and moderate temperature over the course of the day, which places low demands on the motor and heating, ventilation, and air conditioning (HVAC) system. Strenuous loading conditions assume high or maximum passenger loading and near maximum output of the HVAC system. This nominal/strenuous approach offers a range of operating efficiencies to use for estimating average annual energy use (nominal) or planning minimum service demands (strenuous). Route modeling ultimately provides an average energy use per mile (kilowatt-hour/mile [kWh/mi]) for each route, bus size, and load case.

In addition to loading conditions, CTE modeled the impact of battery degradation on a BEB's ability to complete a block. The range of a battery electric bus is reduced over time due to battery degradation. A BEB may be able to service a given block with beginning-of-life batteries, while later it may be unable to complete the entire block at some point in the future as batteries near their end-of-life or derated capacity (typically considered 70-80% of available service energy).

Service Assessment

Given the conclusion that FCEBs could meet the range requirements for Beaumont Transit's service, the Service Assessment focused on evaluating the feasibility of BEBs in Beaumont Transit's service area. The efficiencies calculated in the Requirements Analysis & Data Collection stage were used to estimate the energy requirements of Beaumont Transit's service. The main focus of the Service Assessment is called the block analysis, which determines if generic battery electric technology can meet the service requirements of a block based on range limitations, weather conditions, levels of battery degradation and route specific requirements. The Transit Research Board's Transit Cooperative Research Program defines a block as "the work assignment for only a single

vehicle for a single service workday".[3] A block usually comprises several trips on various routes. The energy needed to complete a block is compared to the available energy of the bus assigned to service the block. If the bus's usable onboard energy exceeds the energy required by the block, then the conclusion is that the BEB can successfully operate on that block.

The Service Assessment projects the performance of a BEB that is charged overnight at the depot and operates on Beaumont Transit's service schedule at the time of the plan's writing. The results are used to determine when along the transition timeline a fleet of overnight depot-charged BEBs can feasibly serve Beaumont Transit's territory or whether another zero-emission technology is required to maintain service. This information can then be used to inform the scale and timing of BEB procurements in the Fleet Assessment.

Modeling & Procurement Assumptions

CTE and Beaumont Transit defined the following assumptions and requirements used throughout the study:

The Service Assessment energy profile assumed a 5% improvement in battery capacity every year with a starting battery capacity of 450 kWh for a 35' bus, and 580kWh for a 40' bus, which represent analogous ZEBs suitable for Beaumont Transit' transit vehicles and is an average of battery capacities seen in commercially available buses of the same size and passenger capacity in 2022. Electric cutaways are modeled to have a battery capacity of 120 kWh and were assumed to have the same 5% rate of improvement in battery capacity every year.

This analysis also assumed Beaumont Transit will maintain blocks in a similar distribution of distance, relative speeds, and elevation changes to pre-COVID-19 service because buses will continue to serve similar locations within the service area and general topography remains constant even if specific routes and schedules change.

Fleet size and vehicle length distribution do not change over time. The analysis assumed that buses reaching the end of their useful life would be replaced with vehicles of the same size. Total fleet size remains the same over the transition period.

Buses are assumed to operate for a 12-year service life. Cutaways are assumed to operate for a 7-year service life.

Usable on-board energy is assumed to be that of a mid-life battery (10% degraded) with a reserve at both the high and low end of the battery's charge potential. As previously discussed, battery age affects range, so a mid-life battery was assumed as the average capacity of the battery's service life. Charging batteries to 100% or dropping the charge below 10% also degrades the batteries over time, which is why the analysis assumes that the top and bottom portions of the battery are unusable.

CTE accounts for battery degradation over the transition period with the assumption that Beaumont Transit can rotate the ZEBs to battery capacity to block energy requirements. As the zero-emission fleet transition progresses, older buses can be moved to shorter, less demanding blocks and newer buses can be assigned to longer, more demanding blocks to account for battery degradation in BEBs over time. Beaumont Transit can rotate the fleet to meet demand, assuming there is a steady procurement of BEBs each year to match service requirements. CTE accounts for this variability in battery age by using a mid-life usable battery capacity to determine block feasibility.

Results

The Service Assessment determines the timeline for when Beaumont Transit's service may become achievable by BEBs and battery electric cutaways on a single depot charge. Coupled with the FCEB range-to-block length comparison, the block analysis determines when, or if, a full transition to BEBs or FCEBs may be feasible. Beaumont Transit and CTE can then use these results to inform ZEB procurement decisions in the Fleet Assessment. Results from this analysis are also used to determine the specific energy requirements and fuel consumption of the fleet over time. These values are then used in the Fuel Assessment to estimate the costs to operate the transitioning fleet.

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[3] TRB's Transit Cooperative Research Program. 2014. TCRP Report 30: Transit Scheduling: Basic and Advanced Manuals (Part B). https://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_30-b.pdf

While routes and block schedules are unlikely to remain the same over the course of the transition period, these projections assume the blocks will maintain a similar distribution to current service because Beaumont Transit will continue to serve similar destinations within the city. This core assumption affects energy use estimates and block achievability in each year.

The results of Beaumont Transit's Service Assessment for fixed route service can be seen below in **Figure 6**. Based on CTE's analysis, 20% of Beaumont Transit's blocks could be served by a single charge of a depot-only BEB and, with the assumed 5% improvement every year, only 25% of Beaumont Transit's blocks could be served by this technology by 2040, which means that Beaumont Transit's service is not feasible with depot-only charged BEBs within the transition period. However, service can be conducted with the addition of on-route charging.

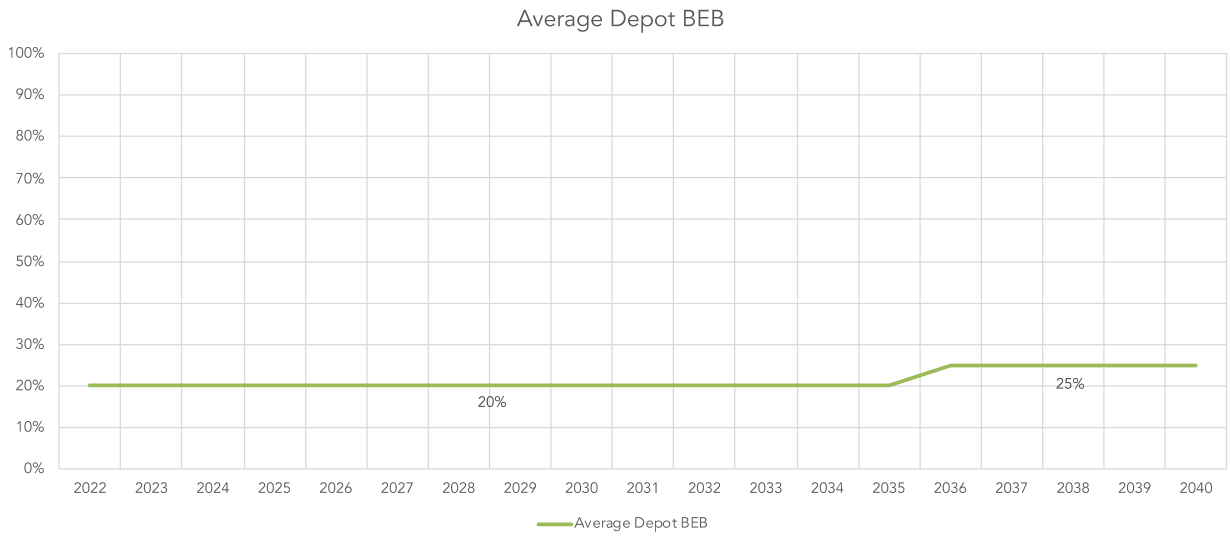

Figure 6 – BEB Block Achievability Percentage by Year

As noted previously, FCEBs are assumed to be able to complete any block under 350 total miles and Beaumont Transit's longest block is 172 miles long, which means that FCEB technology already has the capability to meet Beaumont Transit's service requirements.

Paratransit Modeling

CTE's modeling also included an analysis for battery electric cutaway vehicles using Beaumont Transit's paratransit operational data. Beaumont Transit operates their DAR program from 8:00 AM to 5:00PM on the weekdays and between 8:00 AM and 5:00 PM on weekends. The on-demand nature of the DAR service made it impractical to categorize the trips into discrete blocks along with the fixed route service. Instead, CTE assumed that the cutaway vehicle averaged 74 miles on weekdays, although the exact distribution of trip distances each day may vary. CTE also assumed that the service days could be classified as flat and low speed, mimicking the speed and topography of similar fixed routes. CTE modeled the electric cutaway performance and found that the average service day is not feasible in 2022, but will be feasible by 2030. While the average service day will be feasible by 2030, due to the variable nature of the demand response service, any single given day could be infeasible with an overnight charged battery electric cutaway.

Based on the results of the analysis, battery-electric cutaways would require some form of opportunity charging throughout the day to complete their service. Pantograph and inductive charging have not yet been demonstrated to be feasible for electric cutaways, so this option was not considered. Demand response service is run sporadically throughout the day, with vehicles typically returning to the depot after completing their assignments. Based on this service pattern, it was assumed that battery-electric cutaways could be charged throughout the day when they return to the depot which would allow them to complete all of Beaumont Transit's service.

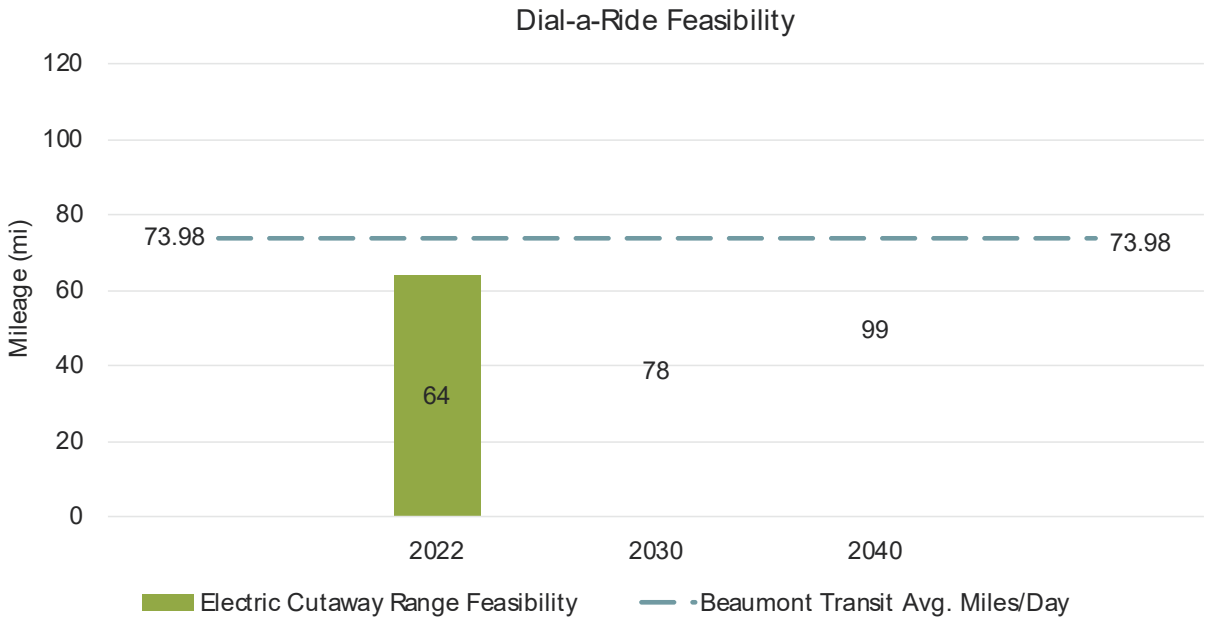

Figure 7 – Battery Electric Paratransit Service Assessment

Description of ZEB Technology Solutions Considered

For this study, CTE developed 2 scenarios to compare to a baseline scenario and analyze the feasibility and cost effectiveness of implementing each technology as well as the co-implementation of both technologies. The scenarios are referred to by the following titles and described, in detail, below. A baseline scenario was developed to represent the typical "business-as-usual" case with retention of ICE cutaways for cost comparison purposes. A battery-electric only scenario was not considered beyond the initial analyses because it is unfeasible with currently available technology.

0. Baseline (current technology)
1. Mixed Fleet – FCEB & BEBs
2. FCEB Only

In the **Mixed Fleet Transition,** battery electric cutaways supplement a primarily fuel cell fleet to make up a fully ZEB fleet. Battery electric cutaways will be used for DAR service and fuel cell cutaways and buses will be used for fixed route service. The costs for infrastructure and installation of two different charging and fueling infrastructures are taken into account. Currently, FCEBs and hydrogen fuel, are more expensive than BEBs and electricity, however, this scenario allows Beaumont Transit to assign the less expensive BEB technology where possible while performing the majority of their service with FCEBs to support resilience and redundancy adaptation measures.

The **FCEB Fleet Transition** was developed to examine the costs for hydrogen fueling and transitioning to a 100% FCEB fleet. A fully FCEB fleet avoids the need to install two types of fueling infrastructure by eliminating the need for depot charging equipment. Fleets composed entirely of fuel cell electric buses also offer the benefit of scalability compared to battery electric technologies. Adding FCEBs to a fleet does not necessitate large complementary infrastructure upgrades. Despite this benefit, the cost of FCEBs and hydrogen fuel are still more expensive than BEBs and electricity at current market prices.

When considering the various scenarios, this study can be used to develop an understanding of the range of costs that may be expected for Beaumont Transit's ZEB transition, but ultimately, can only provide an estimate. Furthermore, this study aims to provide an overview of the myriad considerations the agency must take into

account in selecting a transition scenario that go beyond cost, such as space requirements, safety implications, and operational changes that may differ between scenarios.

D

Current Bus Fleet Composition and Future Bus Purchases

Fleet Assessment Methodology

The Fleet Assessment projects a timeline for the replacement of existing buses with ZEBs. The timeline is consistent with Beaumont Transit's fleet replacement plan that is based on the 12-year service life of transit buses and larger cutaways and 7-year service life of cutaways. This assessment also includes a projection of fleet capital costs over the transition timeline.

ZEB Cost Assumptions

CTE and Beaumont Transit developed cost assumptions for future bus purchases. Key assumptions for bus costs for the Beaumont Transit Transition Plan are as follows:

- CNG vehicle prices were provided by Beaumont Transit and are inclusive of costs for configurable options and taxes.
- Capital vehicle costs are derived from the 2022 California, Washington and New Mexico State Contracts plus the annual PPI (2%) and tax (7.75%). Fuel Cell Cutaway pricing is a price estimation due to lack of market information.
- Costs for retrofits or bus conversions are not included. Procurements assume new vehicle costs.

Table 1 – Fleet Assessment Cost Assumption

	Fuel Type			
Length	CNG	Gasoline	Electric	Fuel Cell
Cutaway	$302,888	$247,872	$298,188	$372,694*
35'	$689,670	-	$985,531	$1,315,306*
40'	$682,149	-	$1,052,390	$1,315,306

*Bus size not currently available for this technology

Description of Beaumont Transit's Current Fleet

Beaumont Transit's current service and fleet composition provide the baseline for evaluating the costs of transitioning to a zero-emission fleet. Beaumont Transit staff provided the following key data on current service:

- Fleet composition by powertrain and fuel
- Routes and blocks
- Mileage and fuel consumption
- Maintenance costs

Fleet

As of 2022, the Beaumont Transit bus fleet includes two (2) electric cutaways and one (1) gas cutaway used for DAR paratransit service, six (6) gas cutaways, nine (9) CNG cutaways, one (1) 32' CNG bus, and three (3) 40' CNG buses used for fixed route service. Bus services operate out of one depot in Beaumont, CA. Beaumont Transit is in the process of developing a new operations and maintenance facility for their transit fleet, as well as a CNG fueling station.

Routes and Blocks

In FY 23, Beaumont Transit's services are mostly offered on weekdays with five fixed routes, two commuter links, and paratransit services. On Saturday, one fixed route, one commuter link and paratransit services are in operation. Blocks range in distance from 23 miles to 172 miles. Buses pull out as early as 5:15 AM and return as late as 7:00 PM. Beaumont Transit's service runs within the boundaries of the City of Beaumont, the neighboring Cherry Valley, the commercial areas of Cabazon including Casino Morongo and the Desert Hills Premium Outlet Malls, Redlands, the Loma Linda VA Hospital, and San Bernardino with connections to other regional transportation providers such as Banning Connect, Riverside Transit Agency (RTA), Sunline Transit Agency (STA), Metrolink, Omnitrans, Victor Valley Transit Agency (VVTA), and Mountain Transit.

Current Mileage and Fuel Consumption

Annual mileage of the fleet:
390,226 miles

Beaumont Transit's ZEB Transition Plan assumes that the amount of service miles will remain the same.

Annual fuel consumption:
69,643 GGE of CNG, gasoline, and electricity

Fleet average efficiency:
5.60 miles per GGE

Beaumont Transit's current fuel expense:
$218,915 per year

Average fuel costs:
$0.56 per GGE

Maintenance Costs

Average maintenance costs per mile by vehicle type are estimated in **Table 2**. Buses also undergo one overhaul at midlife summarized in **Table 3**. These costs were utilized to project transition maintenance costs.

Table 2 – Labor and Materials Cost Assumptions

Vehicle Type	Estimate (Per Mile)
Gas Cutaway	$ 0.35
CNG Cutaway	$ 0.35
30'/35'/40' CNG Bus	$ 0.38
Battery Electric Cutaway	$ 0.32
30'/35'/40' Battery Electric Bus	$ 0.34
Fuel Cell Electric Cutaway	$ 0.51
30'/35'/40' Fuel Cell Electric Bus	$ 0.56

Table 3 – Midlife Overhaul Cost Assumptions

Vehicle Type	Overhaul (FC/Transmission) Cost Per vehicle life	Battery Warranty Cost Per vehicle life
Gas Cutaway	$0	$0
CNG Cutaway	$0	$0
30'/35'/40' CNG Bus	$30,000	$0
Battery Electric Cutaway	$0	$24,000
30'/35' 40' Battery Electric Bus	$0	$75,000
30'/35'/40' Fuel Cell Electric Bus	$40,000	$17,000
Fuel Cell Electric Cutaway	$0	$10,000

Zero-Emission Bus Procurement Plan and Schedule

Beaumont Transit will provide demand response service with a fleet of three (3) depot-charged and opportunity-charged battery electric cutaways. Fixed route service will be performed by fifteen (15) fuel cell cutaways, one (1)

35’ FCEB and three (3) 40’ FCEBs. This technology combination will be sufficient for meeting the agency’s service demands. Beaumont Transit’s fleet transition strategy is to replace each compressed natural gas (CNG) bus and cutaway with battery electric cutaways and fuel cell buses and cutaways as they reach the end of their minimum service life beginning in 2028. **Figure 8** below provides the number of each bus type that will be purchased each year through 2040 with this replacement strategy and the total cost of that procurement.

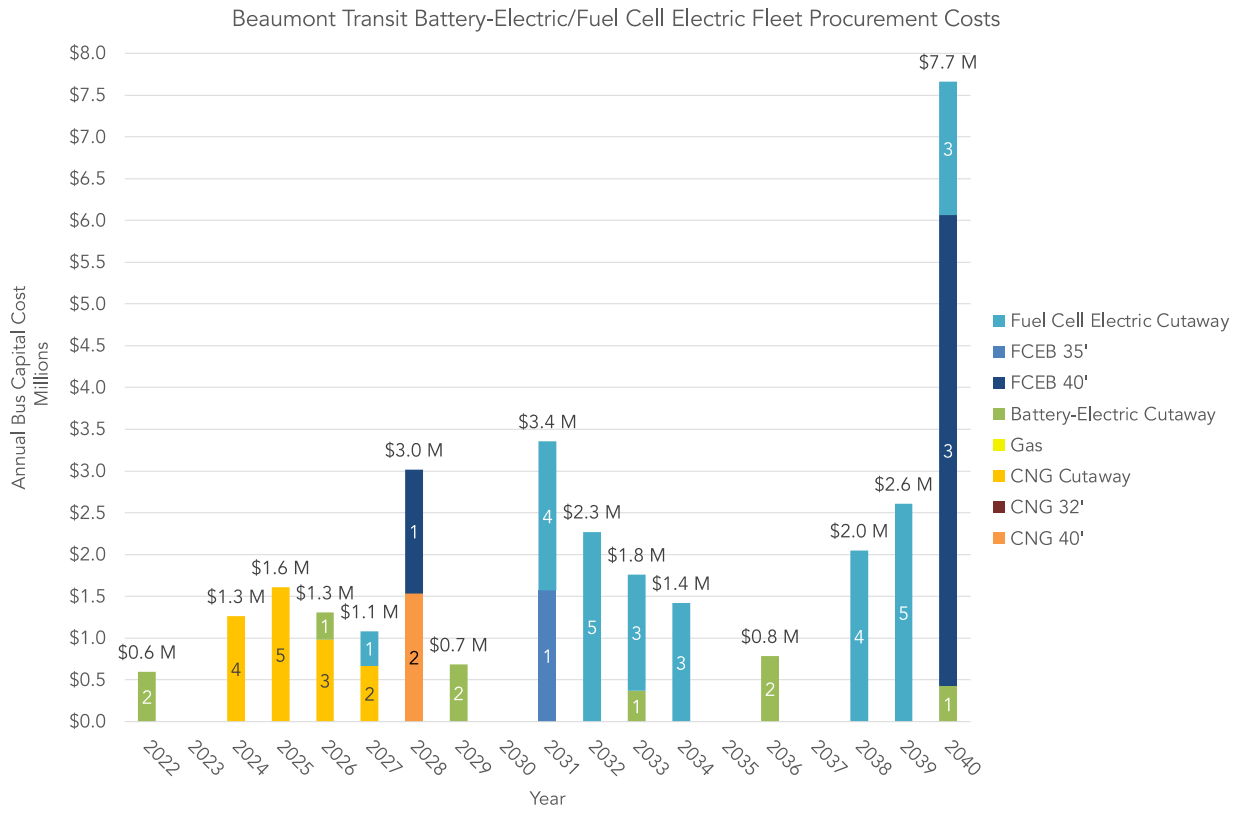

Figure 8 – Projected Bus Procurements for ZEB Transition

Figure 9 demonstrates the annual composition of Beaumont Transit’s fleet through 2040. By 2040, Beaumont Transit’s fleet will consist entirely of battery electric and fuel cell vehicles. The fleet will remain the same size throughout the transition period.

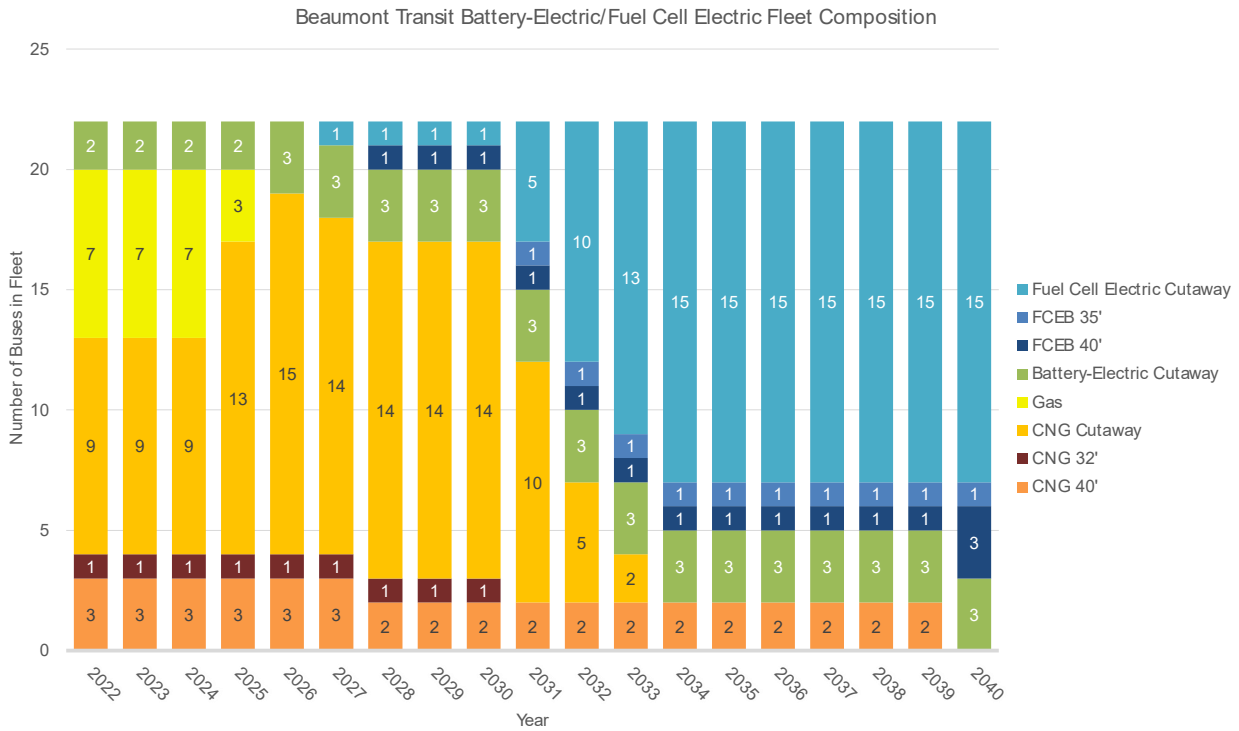

Figure 9 – Annual Fleet Composition, ZEB Transition

As seen in **Table 4,** the capital investment required for purchasing ZEBs is significantly higher than for CNG buses. This highlights the importance of staying vigilant in the search for funding opportunities to help fill this gap.

Table 4 – Beaumont Transit Bus Capital Investment to Transition to a 100% ZEB Fleet by 2040

	CNG Baseline*	ZEB Incremental Costs	Total Investment
Bus Capital Costs	$25M	$6M	$31M

*Represents the capital costs that would have been incurred in the absence of the ICT Regulation

Additional Considerations

When purchasing ZEBs, the process may differ slightly from the process Beaumont Transit currently uses to purchase vehicles. First, when contracting with ZEB manufacturers, Beaumont Transit should ensure expectations are clear between the bus OEM and the agency. As with CNG purchases the agreement should be clear regarding the bus configurations, technical capabilities, build and acceptance process, production timing with infrastructure, warranties, training, and other contract requirements. Additionally, by developing and negotiating specification language collaboratively with the bus vendor(s), Beaumont Transit can work with the vendor(s) to customize the bus to their needs as much as is appropriate, help advance the industry based on agency requirements and recommended advancements, ensure the acceptance and payment process is fully clarified ahead of time, fully document the planned capabilities of the bus to ensure accountability, and generally preempt any unmet expectations. Special attention should be given in defining the technical capabilities of the vehicle, since defining these for ZEBs may differ from ICE buses.

When developing RFPs and contracting for ZEB procurements, Beaumont Transit should specify the source of funding for the vehicle purchases to ensure grant compliance, outline data access requirements, define the price and payment terms, establish a delivery timeline, and outline acceptance and performance requirements. Beaumont Transit should test the buses upon delivery for expected performance in range, acceleration, gradeability, highway performance, and maneuverability. Any such performance requirements must be included in the technical specification portion of the RFP and contract to be binding for the OEM. Defining technical specifications for ZEBs will also differ slightly from their current CNG vehicles since they will need to include requirements for hydrogen fuel cell and battery performance. It is also recommended that Beaumont Transit purchase an extended battery warranty for the vehicles, which should be specified in the RFP and contract.

FCEB procurement will also differ from ICE procurements since there are fewer OEMs presently manufacturing these vehicles, although this is expected to change with increasing demand. Beaumont Transit will also be able to apply for additional funding for these vehicles through zero-emission vehicle specific funding opportunities, which are discussed further in which are discussed further in **Section H**
Potential Funding Sources.

E

Facilities and Infrastructure Modifications

Beaumont Transit Facility Configuration and Depot Layout

Current Depot Address:
550 E 6th Street, Building D, Beaumont, CA, 92223

Electric Utility:
Southern California Edison (SCE)

Located in a NOx Exempt Area?
No

Bus Parking Capacity:
20+

Current Vehicle Types Supported:
Beaumont Transit's depot currently houses gasoline, CNG, and battery-electric buses and cutaways, but only battery-electric vehicles are fueled here. All other vehicles are fueled off site.

Propulsion Types That Will be Supported at Completion of ZEB Transition:
Battery electric propulsion will be supported at this depot.

Beaumont's Planned Depot APN No.:
417-110-018

Electric Utility:
Southern California Edison (SCE)

Located in a NOx Exempt Area?
No

Bus Parking Capacity:
22+

Current Vehicle Types Supported:
Beaumont Transit's planned depot is expected to support CNG, battery-electric, and hydrogen buses and cutaways.

Propulsion Types That Will be Supported at Completion of ZEB Transition:
Battery electric and hydrogen fuel cell electric propulsion.

Facilities Assessment Methodology

Mixed fleet BEB and FCEB deployments such as Beaumont Transit's require installation of charging stations and improvements to existing electrical infrastructure as well as hydrogen fueling infrastructure. FCEB deployments require installation of a fueling station and may require improvements such as upgrades to the switchgear or utility service connections. Planning and design work, including development of detailed electrical and construction drawings required for permitting, is also necessary once specific charging equipment has been selected.

Building off of the fleet procurement schedule that was outlined in the Fleet Assessment, CTE then uses industry average pricing to develop infrastructure scenarios that estimate the cost of building out the infrastructure necessary to support a full fleet transition to ZEBs. This plan assumes that infrastructure projects will be completed prior to each bus delivery. To project the costs of fueling infrastructure, CTE used industry pricing provided by A&E subcontractors and an infrastructure build timeline based on the procurement timeline. This plan assumes that infrastructure projects will be completed prior to each bus delivery. These projects are described in detail below.

Infrastructure Upgrade Requirements to Support Zero-Emission Buses

Description of Depot-Charging Infrastructure Considered

With Beaumont Transit's mixed technology fleet, charging infrastructure is required to service a total of three battery electric cutaways along with hydrogen fueling infrastructure for 15 fuel cell cutaways and 4 FCEBs to support a completely zero-emission bus fleet by 2040. Because there are separate costs associated with each type of ZEB technology, the facilities assessment for this scenario is broken down by each fuel type. The total cost for mixed fleet fueling infrastructure is approximately $10.5 M.

BEB Charging Infrastructure Summary

In order to support the battery electric portion of the fleet, Beaumont Transit will need to work with a contractor to conduct detailed infrastructure planning, purchase chargers and dispensers, and add service capacity to their site. The estimated infrastructure costs for these technology & infrastructure expenses are as follows:

- **INFRASTRUCTURE PLANNING.** Building charging infrastructure requires planning at the depot. This assessment assumes that a planning project costs $200,000 and occurs only once per depot. The total cost of planning projects for Beaumont Transit's single depot is estimated at $200,000.
- **DISPENSERS AND CHARGERS.** Beaumont Transit's charging depot will consist of two chargers with two dispensers per charger. Prices are estimated at $170,00 for a 150kW charger with two dispensers.
- **ELECTRIC SERVICE UPGRADE.** Beaumont Transit requires an estimated 1 MW of additional electricity capacity by 2040 to accommodate charging for three battery electric cutaways. To meet the growing demand for electricity, the depot will need to upgrade its system to at least 1 MW of capacity by 2025. This is estimated to cost around $200,000 over the transition period.
- **INFLATION FACTOR.** 5.4% inflation is added on all planning, procurement, and construction costs per the CPI. 3% inflation is added on all maintenance costs per Riverside's maintenance cost assumptions. All costs listed above are in 2022 dollars, projects occurring after 2022 are inflated per the inflation factor.

The estimated total BEB infrastructure costs for the Mixed Fleet scenario with shared hydrogen infrastructure is shown below in **Figure 10**. The costs for charging equipment totals to approximately $1M over the transition period.

FCEB Fueling Infrastructure Summary

In addition to BEB charging, hydrogen fueling is required to support the Mixed Fleet. Like BEB infrastructure, a FCEB infrastructure deployment will also require hiring an infrastructure planning contractor. A storage capacity project, a fueling infrastructure capital project will also be necessary to allow Beaumont Transit to fuel their hydrogen fuel cell vehicles on site. Infrastructure is assumed to be built out in one project that will conclude prior to the first FCEB deployment in 2027. The estimated infrastructure costs for these technology & infrastructure expenses are as follows:

- **INFRASTRUCTURE PLANNING.** Building hydrogen infrastructure requires planning at the depot. This assessment assumes that a planning project costs $200,000 and occurs only once per depot. The total cost of planning projects for Beaumont Transit's single depot will be approximately $200,000.

- **MAINTENANCE BAY UPGRADES.** Beaumont Transit requires two upgrades to their maintenance bays. Each maintenance bay upgrade from CNG to Hydrogen is expected to cost $14,000. The total cost for the four maintenance bays is estimated to be $28,000.
- **HYDROGEN FUELING INFRASTRUCTURE.** Beaumont Transit's fueling solutions were decided based on fuel consumption needs and approximately right-sized. Hydrogen infrastructure maintenance and operations are covered in the price of fuel in the fuel assessment.
- **INFLATION FACTOR.** 5.4% inflation is added on all project costs per the CPI. All costs listed above are in 2022 dollars, projects occurring after 2022 are inflated per the inflation factor.

Figure 10 shows the estimated infrastructure costs for the fuel cell technology, totaling to approximately $9.5 M.

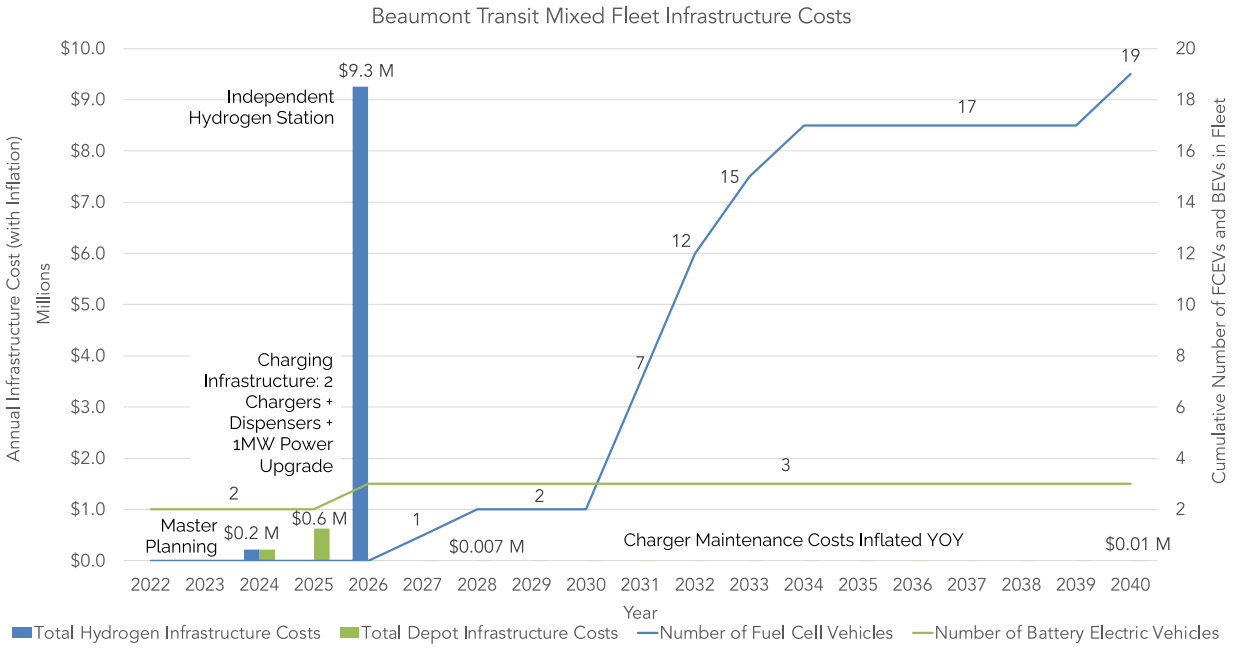

Figure 10 – Infrastructure Projects and Costs, ZEB Transition

Utility Partnership Review

Southern California Edison (SCE) the electricity provider, or utility, for the City of Beaumont offers the Charge Ready Transport [4](CRT) program that supports both California's greenhouse gas (GHG)-reduction goal and local air-quality requirements. The Program assists customers with transitioning to cleaner fuels by reducing their cost for the purchase and installation of required battery-electric vehicle (EV) charging infrastructure, as well as providing rebates to offset the cost of charging stations for certain eligible customers[5].

Primarily, the CRT program offers low- to no-cost electrical system upgrades to support the installation of EV charging equipment for qualifying vehicles – heavy-duty vehicles weighing 6000+ lbs. In addition, participants that will be acquiring school buses or transit buses within SCE territory are also eligible for a rebate against the purchase of charging equipment. Programs like this will benefit Beaumont Transit significantly in the financial sector of their transition to zero-emission technology.

The City is sharing proposed planning documents to help SCE understand future loads so that any required grid infrastructure improvements can be addressed prior to implementation. The City's discussion of short and long-term fleet goals with SCE will ensure that SCE can properly plan grid-side electrical infrastructure upgrades, and that the City can adequately support battery electric buses at the new City Yard. The City recognizes SCE as a

[4] https://crt.sce.com/program-details

[5] Charge Ready Transport, Quick Reference Guide

critical partner in electrification and will continue to partner with SCE after the planning stages so that charge management strategies and fleet expansion efforts can be coordinated effectively. The City's current relationship with SCE is cooperative.

Further, the City understands establishing and maintaining a partnership with the alternative fuel provider is critical to successfully deploying zero-emission vehicles and maintaining operations. Hydrogen fueling requires a plan for infrastructure installation, delivery, storage, dispensing, and upgrades to maintenance facilities. While fueling operations for hydrogen may require fewer operational changes than electric bus charging, understanding the local hydrogen supply market can be its own challenge. To overcome this challenge, the City proposes a competitive bidding process for a design-build project to determine the appropriate station size and to select the most appropriate fueling technology at the best value.

F

Providing Service in Disadvantaged Communities

Providing Zero-Emission Service to DACs

In California, CARB defines disadvantaged communities (DACs) as communities that are both socioeconomically disadvantaged and environmentally disadvantaged due to local air quality. Lower income neighborhoods are often exposed to greater vehicle pollution levels due to proximity to freeways and the ports, which puts these communities at greater risk of health issues associated with tailpipe emissions.[6] ZEBs will reduce energy consumption, harmful emissions, and direct carbon emissions within the disadvantaged communities Beaumont Transit serves. The City of Beaumont includes 4 different census tracts designated as DACs. Beaumont Transit's fixed routes that are in and pass through DACs, along with their stops are shown in **Figure 11** below.

Environmental impacts, both from climate change and from local pollutants, disproportionately affect transit riders. For instance, poor air quality from tailpipe emissions and extreme heat harm riders waiting for buses at roadside stops. The transition to zero-emission technology will benefit the region by reducing fine particulate pollution and improving overall air quality. In turn, the fleet transition will support better public health outcomes for residents in DACs served by the selected routes.

Public transit has the potential to improve social equity by providing mobility options to low-income residents lacking access to a personal vehicle and helping to meet their daily needs. In California, transit use is closely correlated with car-less households as they are five times more likely to use public transit than households with at least one vehicle.[7] Although 21% of Californians in a zero-vehicle household are vehicle free by choice, 79% do not have a vehicle due to financial limitations. Many low-income people therefore rely solely on public transportation for their mobility needs.[8] Beaumont Transit's current fleet of fixed route and DAR CNG and gasoline buses consume 69,643 Gasoline Gallons Equivalent (GGE) of fuel per year, operating for approximately 390,226 miles per year. Moving Beaumont Transit's fleet to zero-emission technology will help alleviate the pollution from tailpipe emissions, which will improve the health of communities impacted by NOx and particulate matter emissions and all local communities.

Access to quality transit services provides residents with a means of transportation to go to work, to attend school, to access health care services, and run errands. By purchasing new vehicles and decreasing the overall age of its fleet, Beaumont Transit is also able to improve service reliability and therefore maintain the capacity to serve low-income and disadvantaged populations. Replacing diesel vehicles with zero-emission vehicles will also benefit these populations by improving local air quality and reducing exposure to harmful emissions from diesel exhaust.

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[6] Reichmuth, David. 2019. Inequitable Exposure to Air Pollution from Vehicles in California. Cambridge, MA: Union of Concerned Scientists. https://www.ucsusa.org/resources/inequitable-exposure-air-pollution-vehicles-california-2019

[7] Grengs, Joe; Levine, Jonathan; and Shen, Qingyun. (2013). Evaluating transportation equity: An inter-metropolitan comparison of regional accessibility and urban form. FTA Report No. 0066. For the Federal Transit Administration

[8] Paul, J & Taylor, BD. 2021. Who Lives in Transit Friendly Neighborhoods? An Analysis of California Neighborhoods Over Time. Transportation Research Interdisciplinary Perspectives. 10 (2001) 100341. https://reader.elsevier.com/reader/sd/pii/S2590198221000488?token=CABB49E7FF438A88A19D1137A2B1851806514EF576E9A2D9462D3FAF1F6283574907562519709F8AD53DEC3CF95ACF27&originRegion=us-east-1&originCreation=20220216190930

Map of Disadvantaged Communities served by Beaumont Transit

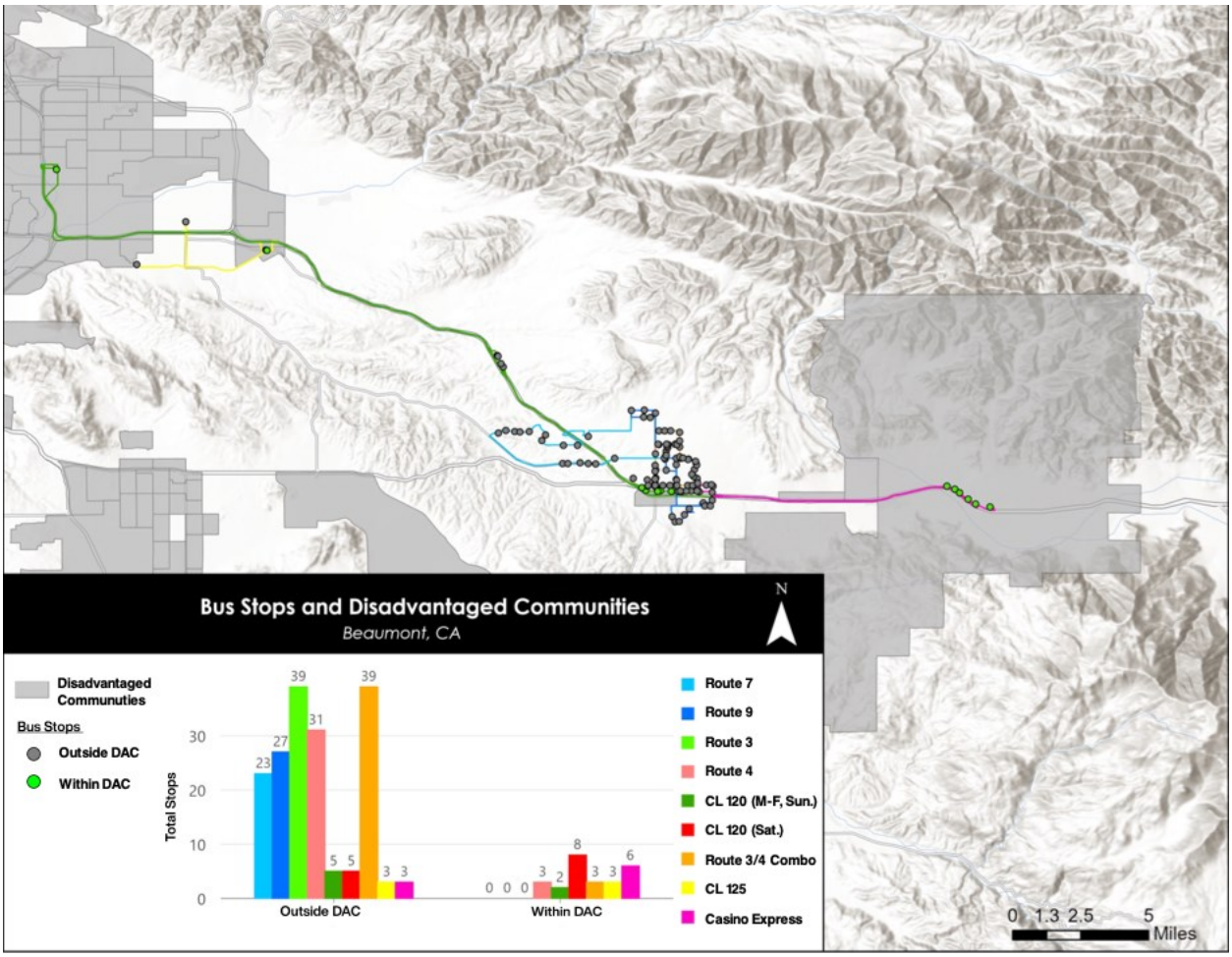

Figure 11 – Beaumont Transit Disadvantaged Communities Service Map

Emissions Reductions for DACs

Greenhouse gasses (GHG) are the compounds primarily responsible for atmospheric warming and include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The effects of greenhouse gasses are not localized to the immediate area where the emissions are produced. Regardless of their point of origin, greenhouse gasses contribute to overall global warming and climate change.

Criteria pollutants include carbon monoxide (CO), nitrogen oxides (NOx), particulate matter under 10 and 2.5 microns (PM_{10} and $PM_{2.5}$), volatile organic compounds (VOC), and sulfur oxides (SO_X). These pollutants are considered harmful to human health because they are linked to cardiovascular issues, respiratory complications, or other adverse health effects.[9] These compounds are also commonly responsible for acid rain and smog. Criteria pollutants cause economic, environmental, and health effects locally where they are emitted. CARB defines DACs

[9] Institute of Medicine. Toward Environmental Justice: Research, Education, and Health Policy Needs. Washington, DC: National Academy Press, 1999; O'Neill MS, et al. Health, wealth, and air pollution: Advancing theory and methods. Environ Health Perspect. 2003; 111: 1861-1870; Finkelstein et al. Relation between income, air pollution and mortality: A cohort study. CMAJ. 2003; 169: 397-402; Zeka A, Zanobetti A, Schwartz J. Short term effects of particulate matter on cause specific mortality: effects of lags and modification by city characteristics. Occup Environ Med. 2006; 62: 718-725.

in part as disadvantaged by poor air quality because polluting industries or freight routes have often been cited in these communities. The resulting decrease in air quality has led to poorer health and quality of life outcomes for residents. Beaumont Transit's operational Well-to-Wheel criteria emissions are summarized in **Table 5.**

Table 5 – Annual Vehicle Operation Pollutants by Fuel Type

Overall Annual Vehicle Operation Pollutants (lbs.)								
Bus Group	**CO**	**NOx**	**PM10**	**PM2.5**	**VOC**	**SOx**	**PM10 TBW**	**PM2.5 TBW**
CNG	10354.33	196.72	2.61	2.54	29.25	3.22	55.46	7.09
Gas	6301.84	38.52	3.55	2.93	101.26	2.38	24.21	3.11
Electric	0	0	0	0	0	0	0.36	0.05

The transportation sector is the largest contributor to greenhouse gas emissions in the United States, accounting for more than 30% of total emissions, and within this sector, 25% of these emissions come from the medium- and heavy-duty markets, yet these markets account for less than 5% of the total number of vehicles. Electrifying these vehicles can have an outsized impact on pollution, fossil-fuel dependency, and climate change. ZEBs are four times more fuel efficient than comparable new diesel buses. Better fuel efficiency means less waste when converting the potential energy in the fuel to motive power. Less waste not only means less pollution, it results in more efficient use of natural resources. By transitioning to ZEBs from CNG buses, Beaumont Transit's zero-emission fleet will produce fewer carbon emissions and fewer harmful pollutants from the vehicle tailpipes. Considering DACs experience significantly more pollution from harmful emissions, communities disadvantaged by pollution served by Beaumont Transit's fleet will therefore directly benefit from the reduced tailpipe emissions of ZEBs compared to ICE buses.

Estimated Ridership in DACs

As shown in Figure 10, 18 (15%) of the fixed-route stops are located within DACs. In terms of route length, 41 miles (20%) of Beaumont Transit's service miles are within DACs.

In addition, much of the DAR service area, provided to persons with disabilities certified under the Americans with Disabilities Act (ADA), falls within DAC zones, but specific trips may start and/or end outside of DAC's. These areas include many sites within the City of Beaumont and the nearby community of Cherry Valley. This service is provided to those within three-quarters of a mile of fixed-route service. Unlike fixed-route service, the DAR service does not run a set route, and a single vehicle may provide trips both within and outside of DAC's during a single day.

G

Workforce Training

Beaumont Transit Current Training Program

Beaumont Transit staff works closely with the OEM providing vehicles to ensure all mechanics, service employees, and bus operators complete necessary training prior to deploying a new vehicle type and that these staff undergo refresher training annually and as needed. Management stays abreast of regulatory requirements and ensures that associated training takes place during annual VTT training or sooner. Beaumont Transit staff also brings up any issues or questions they may have about their training with their respective trainers.

Beaumont Transit ZEB Training Plan

OEM Training

Beaumont Transit plans to take advantage of training opportunities from the bus manufacturers and station suppliers, including maintenance and operations training, station operations and fueling safety, first responder training and other training that may be offered by the technology providers. OEM training provides critical information on operations and maintenance aspects specific to the equipment model procured. Additionally, many procurement contracts include train-the-trainer courses through which small numbers of agency staff are trained and subsequently train agency colleagues. This method provides a cost-efficient opportunity to provide widespread agency training on new equipment and technologies.

Bus and Fueling Operations and Maintenance

The transition to a zero-emission fleet will have significant effects on Beaumont Transit's workforce. Meaningful investment is required to upskill maintenance staff and bus operators trained in ICE vehicle maintenance and ICE fueling infrastructure.

Beaumont Transit's training staff will work closely with the OEM providing vehicles to ensure all mechanics, service employees, and bus operators complete necessary training prior to deploying ZEB technology and that these staff undergo refresher training annually and as needed. Beaumont Transit's staff will also be able to bring up any issues or questions they may have about their training with their trainers. Additionally, trainers will observe classes periodically to determine if any staff would benefit from further training.

ZEB Training Programs

Several early ZEB adopters have created learning centers for other agencies embarking on their ZEB transition journeys. One such agency is SunLine Transit Agency, which provides service to the Coachella Valley and hosts the West Coast Center of Excellence in Zero Emission Technology (CoEZET). The Center of Excellence supports transit agency adoption, zero-emission commercialization, and investment in workforce training. Beaumont Transit plans to take advantage of regional training opportunities offered by experienced agencies.

There are several transit agencies within and around Riverside County that have successfully begun their transition to zero-emission technology. California has at least seven heavy-duty and transit-operated fueling stations in

operation and at least four more in development[10]. Additionally, the number of hydrogen production and distribution centers is growing to meet increased hydrogen demand as it gains popularity as a transportation fuel. At present, there are two heavy-duty, transit-operated hydrogen fueling stations in the neighboring San Bernardino and Orange counties within 40 miles of Beaumont, and two planned transit-operated hydrogen fueling stations in Los Angeles County and Pomona within 30 miles of Beaumont Transit. In addition, private hydrogen fueling stations by First Element Fuels and Stratosfuel within 80 miles of Beaumont, CA are in development and should be commissioned before the end of the fleet transition timeline.

In the region, Omintrans, a public transit agency serving the San Bernardino Valley recently received $9.3 million from the Federal Transit Administration (FTA) under the FY2022 Low-No Emission Vehicle Program to develop hydrogen refueling infrastructure and launch a workforce development program. Similarly, Sunline Transit Agency has received $7.8 million to upgrade their liquid hydrogen refueling infrastructure. Riverside Transit Agency has also received $5.2 million to procure hydrogen fuel cell buses. The presence of hydrogen fueling infrastructure projects, especially in the counties of Riverside and San Bernardino, demonstrates the feasibility of fuel cell electric technology for transit in the region. These agencies can serve as a resource for Beaumont Transit to use when implementing zero-emission technology and supporting programs into their services.

[10] Hydrogen Refueling Stations in California, California Energy Commission: https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics/hydrogen-refueling

H

Potential Funding Sources

Available Funding Opportunities

Federal

Beaumont is ineligible for most federal funds apart from Federal Highway Administration Funds (FHWA). Beaumont is planning to pursue funding opportunities administered by the Federal Highway Administration such as the following:

- Federal Highway Administration (FHWA)
    - Congestion Mitigation and Air Quality Improvement Program through SCAG
    - Surface Transportation Block Grant Program through SCAG
    - Carbon Reduction Program

State

CCTS will also seek funding from state resources through grant opportunities including but not limited to Senate Bill 1 State of Good Repair (SGR), Transit and Intercity Rail Capital Program (TIRCP), Low Carbon Transit Operations Program (LCTOP) funding, the California Energy Commission's Clean Transportation Program as well as Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) for bus purchases when available.

Annual Reliable Funding

- Administered by California Department of Transportation (Caltrans)
    - Transportation Development Act Funds
        - Local Transportation Funds
        - State Transit Assistance (STA)
    - State of Good Repair (SB 1 funds)
    - Low Carbon Transit Operations Program (LCTOP)

Future Funding Opportunities

- California Air Resources Board (CARB)
    - Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
    - State Volkswagen Settlement Mitigation
    - Carl Moyer Memorial Air Quality Standards Attainment Program
    - Cap-and-Trade Funding
    - Low Carbon Fuel Standard (LCFS)
- California Transportation Commission (CTC)
    - State Transportation Improvement Program (STIP)
    - Solution for Congested Corridor Programs (SCCP)
    - Local Partnership Program (LPP)
- California Department of Transportation (Caltrans)
    - Transit and Intercity Rail Capital Program
    - Transportation Development Credits
    - New Employment Credit
- California Energy Commission

Local

Additionally, Beaumont Transit will pursue local funding opportunities to support zero-emission bus deployment. While the aforementioned funding opportunities are mentioned by name, Beaumont Transit will not be limited to these sources and will regularly assess opportunities for fiscal support for the ZEB program.

Legislation Supporting the Zero-Emission Transition

Policies and regulations supporting the transition to zero-emission are proliferating as the efforts to decarbonize the transportation sector expand. Beaumont Transit is monitoring the implementation of relevant policies and legislation. With the passage of the *Bipartisan Infrastructure Law* and issuance of *Executive Order 14008: Tackling the Climate Crisis at Home and Abroad*, the federal government has set a renewed focus on zero-emission transit. Riverside County's goal to deploy zero-emission vehicles supports the federal administration's priorities of renewing transit systems, reducing Greenhouse Gas emissions from public transportation, equity, creation of good paying jobs, and connecting communities. State legislation such as the Innovative Clean Transit Regulation further supports the replacement of fossil-fuel vehicles on the roads of California. Moreover, on August 25, 2022, the CARB approved the Advanced Clean Cars II Rule, requiring all new vehicles sold in California to be zero-emission vehicles (ZEVs) by 2035.

I

Start-up and Scale-up Challenges

Financial Challenges

Challenges can arise with any new propulsion technology, its corresponding infrastructure, or in training operators and maintenance staff. Nearly all transit agencies must contend with the cost barriers posed by zero-emission technologies. The current market cost of ZEBs is between $980,000 and $1,310,000, which is about $320,000 to $650,000 more costly than traditional CNG buses. The predicted costs of zero-emission cutaways are between $300,000 and $370,000, which is about $120,000 to $200,000 more than their ICE counterparts.

Additionally, the necessary infrastructure to support these buses adds to the financial burden of transitioning to a ZEB fleet, as outlined below in **Table 6**, showing the cost of the transition. Beaumont Transit will seek financial support to cover the cost of their FCEBs from the resources discussed in Section H.

Table 6 – Incremental Cost of ZEB Transition

Incremental cost of ZEB Transition			
	CNG Baseline*	ZEB Incremental Costs	ZEB Transition Scenario Costs
Bus Capital Expense	$25M	$6M	$31M
Fueling Infrastructure	$0	$10M	$10M
Total	$25M	$16M	$41M

*Represents the capital costs that would have been incurred in the absence of the ICT Regulation

As seen in **Table 6,** the costs of required fueling infrastructure and fueling operations for ZEB technologies pose another hurdle for transit agencies transitioning to zero-emission service. Continued financial support at the local, state and federal level to offset the capital cost of this new infrastructure is imperative. For alternative fuels such as hydrogen, financial support from state and federal grant opportunities for green hydrogen supply chains and increasing economies of scale on the production side will ultimately benefit transit agencies deploying and planning for FCEBs and BEBs.

CARB can support Beaumont Transit by ensuring continued funding for the incremental cost of zero-emission buses and fueling infrastructure. Funding opportunities should emphasize proper transition and deployment planning and should not preclude hiring consultants to ensure best practices and successful deployments. The price and availability of hydrogen, both renewable and not, continue to be challenges that can be allayed by legislation subsidizing and encouraging renewable fuel production.

Limitations of Current Technology

Beyond cost barriers, transit agencies must also ensure that available zero-emission technologies can meet basic service requirements of the agency's duty cycles. The applicability of specific zero-emission technologies will vary widely among service areas and agencies. As such, it is critical that transit agencies in need of technical and planning support have access to these resources to avoid failed deployment efforts. Support in the form of technical consultants and experienced zero-emission transit planners will be critical to turning Rollout Plans into successful deployments and tangible emissions reductions.

In addition to the uncertainty of technology improvements, there are other risks to consider in trying to estimate costs over the 18-year transition period. Although current BEB range limitations may be improved over time as a result of advancements in battery energy capacity and more efficient components, battery degradation may re-introduce range limitations, which is a cost and performance risk to an all-BEB fleet over time. While this can be mitigated by on-route charging, there may be emergency scenarios where the buses are expected to perform off-route or atypical service. In these emergency scenarios that require use of BEBs, agencies may face challenges performing emergency response roles expected of them in support of fire and police operations. Furthermore, fleetwide energy service requirements, power redundancy, and resilience may be difficult to achieve at any given depot in an all-BEB scenario. Although FCEBs may not be subject to these same limitations, higher capital equipment costs and availability of hydrogen may constrain FCEB solutions. RCTC, Beaumont Transit, CTE and Arcadis IBI Group will expand upon challenge mitigation and adaptation in the Riverside County ZEB Implementation & Financial Strategy Plan.

Appendix A – Approved Board Resolution

RESOLUTION NO. 2023-16

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BEAUMONT APPROVING THE ZERO EMISSION BUS (ZEB) ROLLOUT PLAN AND AUTHORIZING THE SUBMISSION OF THE PLAN TO THE CALIFORNIA AIR RESOURCES BOARD (CARB) AS REQUIRED BY THE INNOVATIVE CLEAN TRANSIT (ICT) REGULATION

WHEREAS, per California Code of Regulations Title 13, Division 3, Chapter 1, Article 4.3, Part 2023.1 (d) Each transit agency's governing body must approve the Rollout Plan through the adoption of a resolution.

WHEREAS, the Rollout Plan is a living document intended to guide the agency's transition to a ZEB fleet and may be updated based on changes in vehicle technology, fleet size, and operating requirements.

WHEREAS, the City of Beaumont Transit is a small transit agency which operates less than 100 buses in annual maximum service in the South Coast Air Basin.

WHEREAS, per the ICT regulation adopted by CARB, small transit agencies are required to submit an approved ZEB Rollout Plan and a copy of the Resolution to the Executive Officer by July 1st, 2023.

WHEREAS, the ICT regulation sets the goal of achieving a 100% ZEB fleet by 2040, and per the requirements; beginning in 2026, 25% of annual bus purchases for small transit agencies must be zero-emission, and beginning in 2029, 100% of annual bus purchases must be zero-emission.

WHEREAS, per the ICT regulation, the Rollout Plan includes required information from the following sections:

Section A: Transit Agency Information
Section B: Rollout Plan General Information
Section C: Technology Portfolio
Section D: Current Bus Fleet Composition
Section E: Facilities and Infrastructure Modifications
Section F: Providing Service in Disadvantaged Communities
Section G: Workforce Training
Section H: Potential Funding Sources

1

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Beaumont hereby adopts the Zero-Emission Bus Rollout Plan as a guide for the implementation of ZEB technology and approves it for submission to CARB.

PASSED, APPROVED AND ADOPTED this 6th day of June 2023.

AYES: White, Voigt, Lara, Fenn, Martinez

NOES:

ABSTAIN:

ABSENT:

By: _____
Julio Martinez III, Mayor

ATTEST:

Nicole Wheelwright
DEPUTY CITY CLERK

By: _____

Appendix B – Glossary

Auxiliary Energy: Energy consumed (usually as a by time measure, such as "x"kW/hour) to operate all support systems for non-drivetrain demands, such as HVAC and interior lighting.

Battery Electric Bus: Zero-emission bus that uses onboard battery packs to power all bus systems.

Battery Nameplate Capacity: The maximum rated output of a battery under specific conditions designated by the manufacturer. Battery nameplate capacity is commonly expressed in kWh and is usually indicated on a nameplate physically attached to the battery.

Block: Refers to a vehicle schedule, the daily assignment for an individual bus. One or more runs can work a block. A driver schedule is known as a "run."

Charging Equipment: The equipment that encompasses all the components needed to convert, control and transfer electricity from the grid to the vehicle for the purpose of charging batteries. May include chargers, controllers, couplers, transformers, ventilation, etc.

Depot Charging: Centralized BEB charging at a transit agency's garage, maintenance facility, or transit center. With depot charging, BEBs are not limited to specific routes, but must be taken out of service to charge.

Energy: Quantity of work, measured in kWh for ZEBs.

Energy Efficiency: Metric to evaluate the performance of ZEBs. Defined in kWh/mi for BEBs, mi/kg of hydrogen for FCEBs, or miles per diesel gallon equivalent for any bus type.

Fuel Cell Electric Bus: Zero-emission bus that utilizes onboard hydrogen storage, a fuel cell system, and batteries. The fuel cell uses hydrogen to produce electricity, with the waste products of heat and water. The electricity powers the batteries, which powers the bus.

Greenhouse Gas Emissions: Zero-emission buses have no harmful emissions that result from diesel combustion. Common GHGs associated with diesel combustion include carbon dioxide (CO2), carbon monoxide (CO), nitrous oxides (NOx), volatile organic compounds (VOCs), and particulate matter (PM). These emissions negatively impact air quality and contribute to climate change impacts.

Hydrogen Fueling Station: The location that houses the hydrogen production (if produced onsite), storage, compression, and dispensing equipment to support fuel cell electric buses.

On-route Charging: BEB charging while on the route. With proper planning, on-route charged BEBs can operate indefinitely, and one charger can charge multiple buses.

Operating Range: Driving range of a vehicle using only power from its electric battery pack to travel a given driving cycle.

Route Modeling: A cost-effective method to assess the operational requirements of ZEBs by estimating the energy consumption on various routes using specific bus specifications and route features.

Useful Life: FTA definition of the amount of time a transit vehicle can be expected to operate based on vehicle size and seating capacity. The useful life defined for transit buses is 12-years. For cutaways, the useful life is 7 years.

Validation Procedure: to confirm that the actual bus performance is in line with expected performance. Results of validation testing can be used to refine bus modeling parameters and to inform deployment plans. Results of validation testing are typically not grounds for acceptance or non-acceptance of a bus.

Zero-Emission Vehicle: A vehicle that emits no tailpipe emissions from the onboard source of power. This is used to reference battery-electric and fuel cell electric vehicles, exclusively, in this report.

Well-to-wheel Emissions: Quantity of greenhouse gas, criteria pollutants, and/or other harmful emissions that includes emissions from energy use and emissions from vehicle operation. For BEBs, well-to-wheel emissions would take into account the carbon intensity of the grid used to charge the buses. For FCEBs, well-to-wheel emissions would take into account the energy to produce, transport, and deliver the hydrogen to the vehicle

ATTACHMENT 3

Zero-Emission Bus Rollout Plan

Prepared by City of Corona Transit Service with support from the Center for Transportation and the Environment, Arcadis IBI Group, and the Riverside County Transportation Commission

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List of Abbreviations

ADA: Americans with Disabilities Act

A&E: Architecture and Engineering

BEB: Battery Electric Bus

CA: California

CARB: California Air Resources Board

CNG: Compressed Natural Gas

COVID/COVID-19: Coronavirus Disease 2019 (SARS-CoV-2)

CTE: Center for Transportation and the Environment

DAC: Disadvantaged Community

FCEB: Fuel Cell Electric Bus

HVAC: Heating, Ventilation, and Air Conditioning

ICE: Internal Combustion Engine

ICT: Innovative Clean Transit

kW: Kilowatt

kWh: Kilowatt-Hour

MW: Megawatt

OEM: Original Equipment Manufacturer

PM: Particulate Matter

PPI: Producer Price Index

CPI: Consumer Price Index

RFP: Request for Proposals

SCE: Southern California Edison (SoCal Edison)

TDA: Transportation Development Act

VTT: Verification of Transit Training

ZEB: Zero-Emission Bus

A glossary of useful terms can also be found in Appendix B - Glossary

Executive Summary

City of Corona Transit Service (CCTS) provides public transit services for the community in and around the city of Corona in Riverside County, operating two fixed routes in the city, as well as Dial-A-Ride (DAR) service. CCTS transit fleet as of 2022 consists of seven (7) Compressed Natural Gas (CNG) low-floor buses and thirteen (13) CNG cutaways. Riverside County Transportation Commission (RCTC) awarded a contract to the Center for Transportation and the Environment (CTE) to perform a zero-emission bus (ZEB) transition study to create a plan for a 100% zero-emission fleet by 2040 on behalf of transit agencies and municipal transportation services in the cities of Banning, Beaumont, Corona and Riverside and the Palo Verde Valley Transit Agency to comply with the Innovative Clean Transit (ICT) regulation enacted by the California Air Resources Board (CARB). This report will focus on CCTS transition plan to zero-emission technology.

CCTS's Rollout Plan achieves a zero-emission bus fleet in line with the 2040 target of the ICT Regulation. To achieve this goal, CCTS will replace all CNG buses with ZEBs when the vehicles reach the end of their useful life. By 2040, 13 of the agency's buses are expected to be BEBs and 7 will be FCEBs. The last of the agency's CNG buses will reach end of life in 2039.

CCTS entire transit fleet operates out of 735 Public Safety Way, termed the Corporation Yard, and is operated and dispatched by a transit operator contractor, MV Transportation. Maintenance is also performed independently by the contractor at an offsite facility located at 1930 S. Rochester Ave., in Ontario, CA, approximately 13 miles from the administrative building and bus garage. The City of Corona owns and operates a public CNG fueling station at 430 Cota Street; however, the transit fleet primarily fuels overnight at the slow-fill CNG fueling station located within the Corporation Yard at 740 Public Safety Way. CCTS plans to install both charging and hydrogen fueling infrastructure at this location to support their proposed mixed fleet.

CCTS bus service provides transportation opportunities to Disadvantaged Communities (DACs) and moving toward zero-emission buses will help improve the health of DACs and non-DACs alike. The agency will build upon an existing training structure for bus maintenance and operators to provide the necessary battery-electric bus (BEB) and fuel cell electric bus (FCEB) specific training that will be required for the agency to own and operate BEBs and FCEBs. The agency estimates that pursuing a ZEB fleet in place of a compressed natural gas (CNG) fleet will cost an additional $14M in bus costs and infrastructure alone between 2021 and 2040, which will require significantly more funding sources. CCTS plans to pursue funding opportunities at the federal, state, and local levels to help fill this funding gap.

A

Transit Agency Information

CCTS Profile

On January 19, 1977, Corona City Council approved the name for the Corona Dial-A-Ride (demand response public transportation) and approved an Agreement with DAVE Systems to operate the Corona Dial-A-Ride. The Corona Dial-A-Ride began service in 1977 serving the general public, seniors, and people with disabilities within its service area that includes Corona and neighboring Riverside County area, like Coronita, El Cerrito, Home Gardens, including some satellite locations located within the City of Norco.

On February 2001 Corona launched the Corona Cruiser (deviated fixed route shuttle service) with two routes (Route 1 (A, Blue, bisecting Corona from east to west) and Route 2 (B, Red), serving the southwest quadrant of Corona) and in July 2001 Corona implemented Route 3 (C, Green, traveling along Hidden Valley Parkway/Norco/northwest part of Corona).

In 2004 the Corona Cruiser evolved to operate with two (2) fixed routes dubbed the Blue and Red Line, these route alignments have been slightly modified overtime but continue to serve Corona in current times; in addition to serving Corona the Corona Cruiser serves portions of El Cerrito, Home Gardens, and Norco.

On January 2, 2018, the Corona Dial-A-Ride was restructured to serve seniors (age 60 and over), persons with disabilities, and persons certified under the Americans With Disability Act of 1990 (ADA), the Corona Dial-A-Ride Service Area remained the same.

Currently, the Blue Line serves the McKinley Street retail area, travels onto Magnolia Avenue and Main Street to the River Road Area. The Red Line connects the residential areas of central Corona with commercial areas along Sixth Street, Ontario Avenue/California Avenue, and the Cajalco Rd. and Temescal Canyon Rd. retail area.

Service Area and Bus Service

City of Corona Transit Service (CCTS) public transit services in and around the city of Corona, a suburban community located southeast of Los Angeles in Riverside County. The City of Corona operates a system that provides services on two fixed routes in the city, Red Line, and Blue Line. The current bus fleet consists of seven (7) 32-ft. El Dorado National EZ Rider Compressed Natural Gas (CNG) low-floor buses. Corona's bus routes connect with Riverside Transit Agency regional bus routes, North Main Metrolink Station, and Park and Ride Lots. The Red Line also provides extended service to the Dos Lagos shopping center on Saturdays. Both the Red Line and the Blue Line have a service frequency of 60-70 minutes. The transit system transports passengers to Corona City Hall, Corona Public Library, major shopping centers and hospitals, the Senior Center, and more.

In addition to fixed-route service, Corona Transit provides dial-a-ride (DAR) service. This service is provided for Seniors 60 and older; persons with disabilities; and persons certified under the Americans with Disability Act (ADA). Service is provided within the City of Corona and adjacent unincorporated communities of Coronita, El Cerrito, and Home Gardens, as well as several satellite locations. This includes ADA services within three-quarters of a mile of fixed-route service. Unlike fixed-route service, the DAR service does not run a set route, and so a single vehicle may provide trips both within and outside of a DAC during a single day. The paratransit fleet consists of eleven (11) 25-ft. Glaval Universal E450 CNG cutaways and two (2) 26-ft. El Dorado Aerotech 240 CNG cutaways. CCTS service map is illustrated in **Figure 1.**

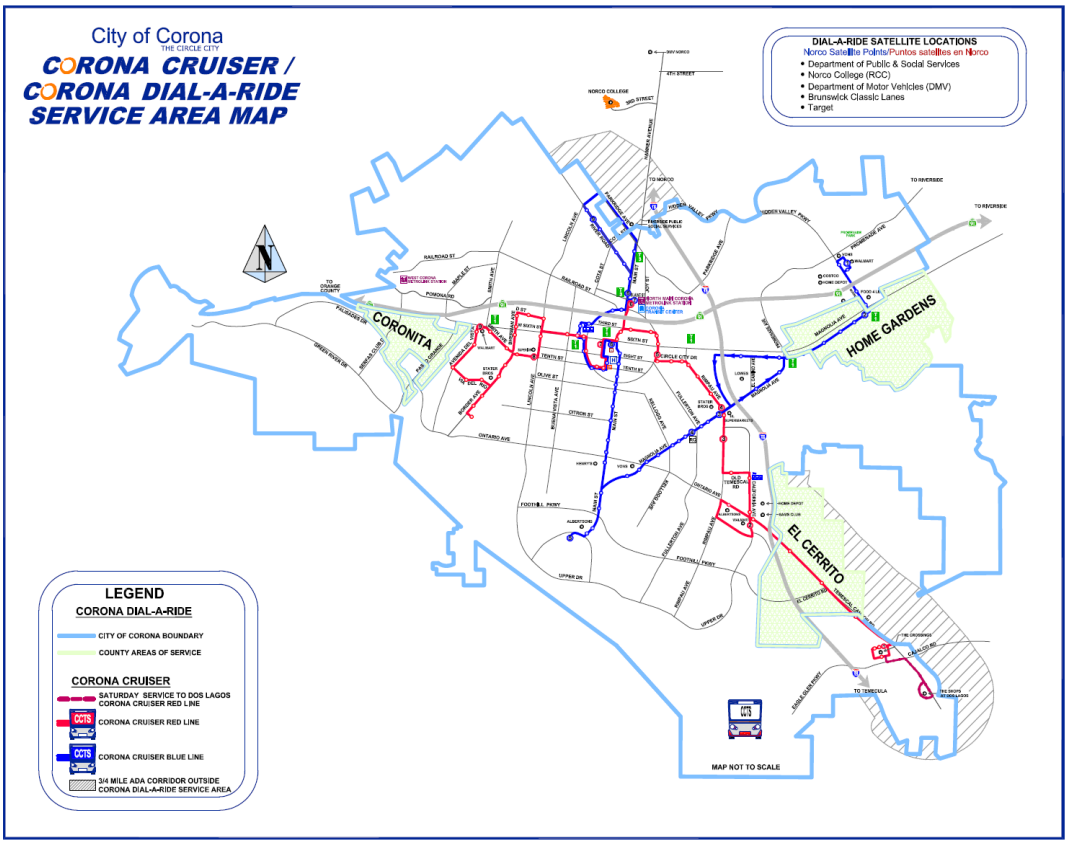

Figure 1 – CCTS Service Area

Ridership

Based on CCTS data of total ridership from July 2021 through the month of March 2022, staff estimated that there were a total of 111,257 unlinked passenger trips (UPT) throughout the year, with DAR services having 20,684 UPT and fixed route services having 90,573 UPT. In the 2020/2021 Fiscal Year, there were a total of 90,031 UPT, with DAR services having 13,386 UPT and fixed route services having 76,645. CCTS anticipates that annual ridership in the 2022/2023 Fiscal Year will be 153,283 passengers, with DAR passenger trips increasing by 62% and fixed routes by 22%. Per the CCTS Comprehensive Operations Analysis (COA), the agency is pursuing several service changes including extending fixed route services to areas in and surrounding Corona that are not currently being served, adding an additional bus to service the fixed routes, and opening DAR services to the general public.

CCTS Basic Information

Transit Agency's Name:

City of Corona Transit Service

Mailing Address: City of Corona Transit Service

735 Public Safety Way,

Corona, CA 92880

Transit Agency's Air Districts:

CCTS is part of the South Coast Air Quality Management District (SCAQMD).

Transit Agency's Air Basin:

Mojave Desert Air Quality Management District is part of the South Coast Air Basin.[1]

Total number of buses in Annual Maximum Service:

The maximum number of active buses operating fixed route and DAR services out of the Corporation Yard is ten (10). The fleet is composed of seven (7) low floor transit buses and thirteen (13) cutaways.

Urbanized Area:

Corona, CA. Corona is 39.2 square miles of land area with 3,934 people per square mile living within that area.[2]

Population of Urbanized Area:

Over 160,000 residents[3]

[1] https://www.rcrcd.org/south-coast-air-quality-management-district-scaqmd

[2] https://www.census.gov/quickfacts/fact/table/coronacitycalifornia/RHI525221#RHI525221

[3] https://www.coronaca.gov/about-us

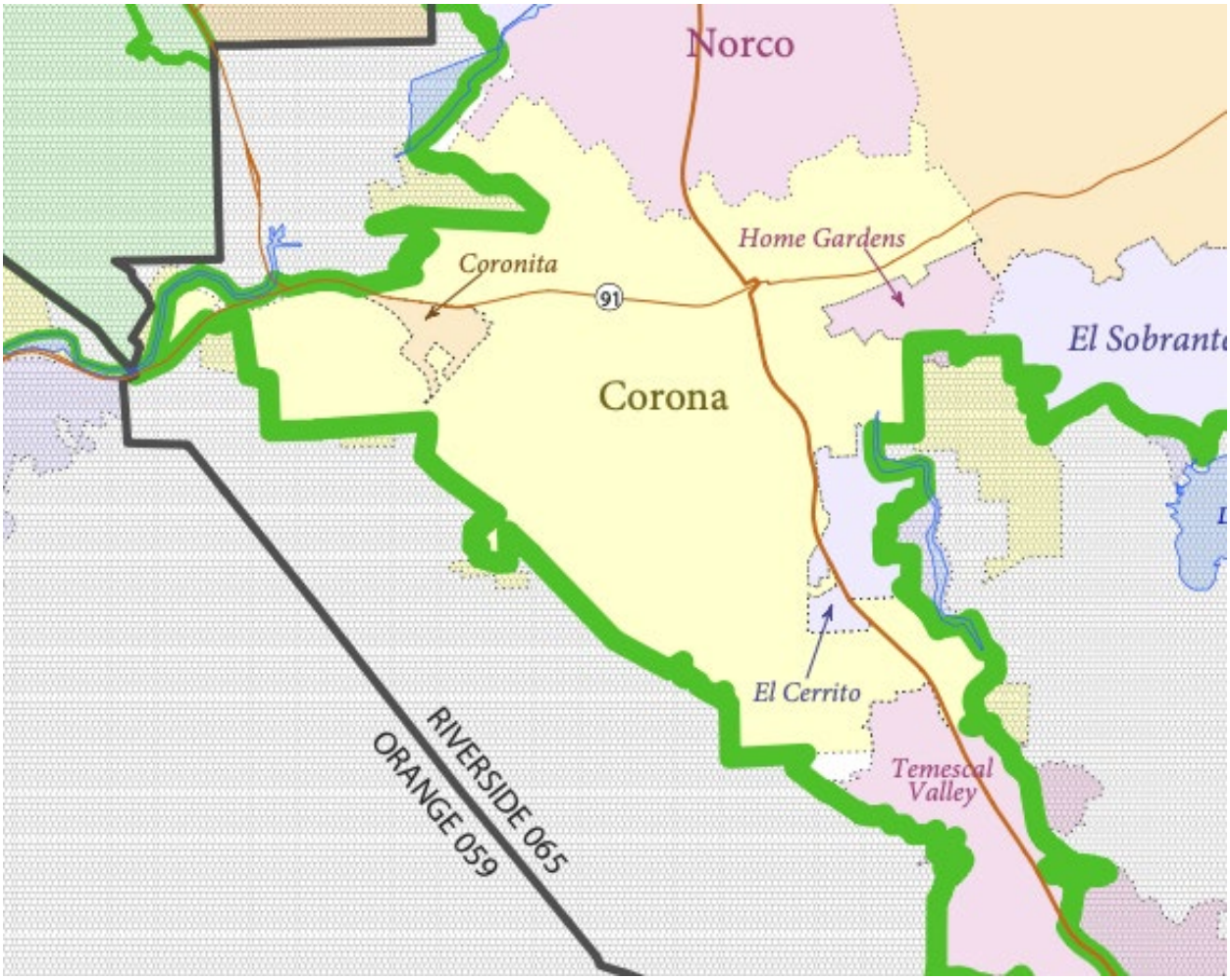

Figure 2 – City of Corona Urbanized and Rural Map[4][5]

Contact Information for Inquiries on the CCTS ICT Rollout Plan:

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Corona, CA 92880

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Sudesh.Paul@CoronaCA.gov

Is your transit agency part of a Joint Group? No

[4] https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua75340_riverside--san_bernardino_ca/DC10UA75340_000.pdf

[5] Solid Green lines represent the boundaries of the urbanized area

Fleet Facility

CCTS's entire transit fleet operates out of 735 Public Safety Way, termed the Corporation Yard, and is operated and dispatched by a transit operator contractor, MV Transportation. Maintenance is also performed independently by the contractor at an offsite facility located at 1930 S. Rochester Ave., in Ontario, CA, approximately 13 miles from the administrative building and bus garage. The City owns and operates a public CNG fueling station at 430 Cota Street; however, the transit fleet primarily fuels overnight at the slow-fill CNG fueling station located within the Corporation Yard at 740 Public Safety Way. A map of the facilities and fueling locations are provided below, in **Figure 3** and **Figure 4** to understand the locations of CCTS properties in relation to one another, as well as to routes and service areas.

Figure 3 – CCTS Administrative and Maintenance Facility

Figure 4 – Fueling Facility Overview

CCTS Sustainability Goals

The City of Corona Transit Service desires to maintain a sustainable public transportation program that offers multiple transit options that are essential to ensuring uninterrupted mobility services to the community. CCTS is dedicated to sustainability and defines sustainability as the ability of the current generation to meet its needs without compromising the ability of future generations to meet their needs. California's plan to address public health, air quality and climate protection goals includes the Innovative Clean Transit (ICT) regulation, which aims to reduce greenhouse gas (GHG), nitrogen oxide (NOx), and diesel particulate emissions, with which, CCTS will be compliant at the conclusion of this project. To accomplish its sustainability goals, CCTS is working to replace its CNG fleet with 100% zero-emission vehicles by 2040 in accordance with ICT regulations.

CCTS has developed a plan to transition to a fully zero emission bus (ZEB) fleet composed of battery electric and fuel cell electric buses by 2040, in accordance with the Innovative Clean Transit (ICT) regulation, requiring all California transit agencies to follow zero-emission procurement guidelines with the goal of achieving 100% zero-emission fleets by 2040. CCTS has committed to purchasing zero emission buses, demonstrating the agency's commitment to reducing emissions. CCTS transition to a fully ZEB fleet will ultimately benefit communities through cleaner air, greater independence from fossil fuels, and more environmental sustainability.

B

Rollout Plan General Information

Overview of the Innovative Clean Transit Regulation

On December 14, 2018, CARB enacted the Innovative Clean Transit (ICT) regulation, setting a goal for California public transit agencies to have zero-emission bus fleets by 2040. The regulation specifies the percentage of new bus procurements that must be zero-emission buses for each year of the transition period (2023–2040). The annual percentages for Small Transit agencies are as follows:

ICT Zero-Emission Bus Purchase Requirements for Small Agencies:

January 1, 2026 - 25% of all new bus purchases must be zero-emission

January 1, 2027 - 25% of all new bus purchases must be zero-emission

January 1, 2028 - 25% of all new bus purchases must be zero-emission

January 1, 2029+ - 100% of all new bus purchases must be zero-emission

March 2021-March 2050 – Annual compliance report due to CARB

This purchasing schedule guides agency procurements to realize the goal of zero-emission fleets in 2040 while avoiding any early retirement of vehicles that have not reached the end of their useful life (12 years for buses providing Fixed Route service and 5 years for the DAR cutaways). Agencies have the opportunity to request waivers that allow purchase deferrals in the event of economic hardship or if zero-emission technology cannot meet the service requirements of a given route. These concessions recognize that zero-emission technologies may cost more than current internal combustion engine (ICE) technologies on a vehicle lifecycle basis and that zero-emission technology may not currently be able to meet all service requirements.

CCTS Rollout Plan General Information

Rollout Plan's Approval Date: June 7, 2023

Resolution No: 2023-046

Is a copy of the approved resolution attached to the Rollout Plan? Yes

Contact for Rollout Plan follow-up questions:
Sudesh Paul, Transportation Planning Supervisor, City of Corona Transit Service

735 Public Safety Way,

Corona, CA 92880

Tel: (951) 279-3763

Sudesh.Paul@CoronaCA.gov

Who created the Rollout Plan?
This Rollout Plan was created by the City of Corona, with assistance from the Center for Transportation and the Environment (CTE) and the Riverside County Transportation Commission (RCTC).

This document, the ICT Rollout Plan, contains the information for CCTS zero-emission fleet transition trajectory as requested by the ICT Regulation. It is intended to outline the high-level plan for implementing the transition. The Rollout Plan provides estimated timelines based on information on bus purchases, infrastructure upgrades, workforce training, and other developments and expenses that were available at the time of writing.

Additional Agency Resources

CCTS agency website: https://www.coronaca.gov/transit

C

Technology Portfolio

ZEB Transition Technology Selection

Based on outcomes of the zero-emission fleet transition planning study completed by CTE, CCTS plans to transition its fleet to a mix of battery electric cutaways and fuel cell electric buses. By 2040, CCTS expects to operate a fully zero-emission fleet of 20 transit vehicles.

A mixed zero-emission technology fleet scenario provides a better range of options than a BEB-only fleet while mitigating the higher fuel cost of a FECB-only fleet. A mixed technology zero-emission fleet also offers resilience by allowing service to continue should either fuel (electricity or hydrogen) become temporarily unavailable. This plan summarizes the charging and hydrogen infrastructure costs needed to support a fleet of 20 buses.

Local Developments and Regional Market

California has become a global leader for zero-emission buses, as well as the zero-emission fuel and fueling infrastructure required to support these vehicles. California is home to four bus OEMs that manufacture zero-emission buses. Although three of these OEMs do not currently build FCEBs, growing demand for this vehicle technology may encourage these manufacturers to enter the market.

The state legislature has fostered growth in zero-emission fuels through the state's Low-Carbon Fuel Standard (LCFS) program, which incentivizes the consumption of fuels with a lower carbon intensity than traditional combustion fuels and through funding opportunities offered by CARB and CEC. The state's electrical utility companies have also supported the transition to ZEB technology by offering incentive programs for heavy duty EV charging infrastructure and service upgrades. California BEB deployments represent 37% of the nation's BEB deployments. [6]

California also has one of the most mature hydrogen fueling networks in the nation. The state's hydrogen market has developed to support the growing number of fuel cell electric vehicles on the roads in the state. California has four medium-and-heavy-duty fueling stations in operation and four more in development. Additionally, the number of hydrogen production and distribution centers is growing to meet increased hydrogen demand as it gains popularity as a transportation fuel. California FCEB deployments represent 75% of the nation's FCEB deployments.[6]

ZEB Transition Planning Methodology

CCTS's ICT Rollout Plan was created in combination with CCTS Existing Conditions Report and the Riverside County ZEB Financial Strategy Plan, utilizing CTE's ZEB Transition Planning Methodology. CTE's methodology consists of a series of assessments that enable transit agencies to understand what resources and decisions are necessary to convert their fleets to zero-emission technologies. The results of the assessments help the agency decide on a

[6] CALSTART. 2021. THE ADVANCED TECHNOLOGY TRANSIT BUS INDEX: A NORTH AMERICAN ZEB INVENTORY REPORT. https://calstart.org/wp-content/uploads/2022/01/2021-ZIO-ZEB-Final-Report_1.3.21.pdf

step-by-step process to achieve its transition goals. These assessments consist of data collection, analysis, and modeling outcome reporting stages. These stages are sequential and build upon findings in previous steps. The assessment steps specific to CCTS's Rollout Plan are outlined below:

1. Planning and Initiation
2. Requirements Analysis & Data Collection
3. Service Assessment
4. Fleet Assessment
5. Fuel Assessment
6. Maintenance Assessment
7. Facilities Assessment
8. Total Cost of Ownership Assessment
9. Policy Assessment
10. Partnership Assessment

For **Requirements Analysis & Data Collection,** CTE collects data on the agency's fleet, routes and blocks, operational data (e.g., mileage and fuel consumption), and maintenance costs. Using this data, CTE establishes service requirements to constrain the analyses in later assessments and produce agency-specific outputs for the zero-emission fleet transition plan.

The **Service Assessment** phase initiates the technical analysis phase of the study. Using information collected in the Data Collection phase, CTE evaluates the feasibility of using zero-emission buses to provide service to the agency's routes and blocks over the transition plan timeframe from 2022 to 2040. Results from the Service Assessment are used to guide ZEB procurement plans in the Fleet Assessment and to determine energy requirements in the Fuel Assessment.

The **Fleet Assessment** projects a timeline for the replacement of existing buses with ZEBs that is consistent with CCTS existing fleet replacement plan and known procurements. This assessment also includes a projection of fleet capital costs over the transition timeline and is optimized to meet state mandates or agency goals, such as minimizing costs or maximizing service levels.

The **Fuel Assessment** merges the results of the Service Assessment and Fleet Assessment to determine annual fuel requirements and associated costs. The Fuel Assessment calculates energy costs through the full transition timeline for each fleet scenario, including the agency's existing ICE buses. To more accurately estimate battery electric bus (BEB) charging costs, a focused Charging Analysis is performed to simulate daily system-wide energy use. As older technologies are phased out in later years of the transition, the Fuel Assessment calculates the changing fuel requirements as the fleet transitions to ZEBs. The Fuel Assessment also provides a total fuel cost over the transition timeline.

The **Maintenance Assessment** calculates all projected fleet maintenance costs over the transition timeline. Maintenance costs are calculated for each fleet scenario and include costs of maintaining existing fossil-fuel buses that remain in the fleet and maintenance costs of new BEBs and FCEBs.

The **Facilities Assessment** determines the infrastructure necessary to support the projected zero-emission fleet composition over the transition period based on results from the Fleet Assessment and Fuel Assessment. This assessment evaluates the required quantities of charging infrastructure and/or hydrogen fueling station projects and calculates the costs of infrastructure procurement and installation sequenced over the transition timeline.

The **Total Cost of Ownership Assessment** compiles results from the previous assessment stages to provide a comprehensive view of all fleet transition costs, organized by scenario, over the transition timeline.

The **Policy Assessment** considers the policies and legislation that impact the relevant technologies.

The **Partnership Assessment** describes the partnership of the agency with the utility or alternative fuel provider.

Requirements Analysis & Data Collection

The Requirements Analysis and Data Collection stage begins by compiling operational data from CCTS regarding its current fleet and operations and establishing service requirements to constrain the analyses in later assessments. CTE requested data such as fleet composition, fuel consumption and cost, maintenance costs, and annual mileage to use as the basis for analyses. CTE conducted a screening-level analysis of CCTS routes by determining their average speed and grades, and classified them as fast or slow and flat or hilly. CTE used these classifications to model the energy efficiencies for each of CCTS routes. The calculated efficiencies were then used in the Service Assessment to determine the energy requirements of CCTS service.

CTE evaluated BEBs and FCEBs to support CCTS technology selection. After collecting route and operational data, CTE determined that CCTS longest block is 183 miles long. Based on observed performance, CTE estimates FCEBs are able to complete any block under 350 total miles, which means that FCEB technology already has the capability to meet service requirements. Although FCEBs were determined to have the capability of serving all of CCTS routes, CCTS was interested in exploring BEB and FCEB service scenarios, so it was necessary to determine how much of CCTS service could feasibly be served by depot-only charged BEBs in order to develop a set of ZEB transition scenarios that would allow the agency to make an informed decision on what technology or technologies would be most suitable to the agency's needs.

The energy efficiency and range of BEBs are primarily driven by bus specifications, such as on-board energy storage capacity and vehicle weight. Both metrics are affected by environmental and operating variables including the route profile (e.g., distance, dwell time, acceleration, sustained top speed over distance, average speed, and traffic conditions), topography (e.g., grades), climate (e.g., temperature), driver's bus operational behavior, and vehicle operational conditions such as passenger loads and auxiliary loads. As such, BEB efficiency and range can vary dramatically from one agency to another or even from one service day to another. It was therefore critical for CCTS to determine efficiency and range estimates based on an accurate representation of its operating conditions.

To understand BEB performance on CCTS routes, CTE modeled the impact of variations in passenger load, accessory load, and battery degradation on bus performance, fuel efficiency, and range. CTE ran models with different energy demands that represented *nominal* and *strenuous* conditions. Nominal loading conditions assume average passenger loads and moderate temperature over the course of the day, which places low demands on the motor and heating, ventilation, and air conditioning (HVAC) system. Strenuous loading conditions assume high or maximum passenger loading and near maximum output of the HVAC system. This nominal/strenuous approach offers a range of operating efficiencies to use for estimating average annual energy use (nominal) or planning minimum service demands (strenuous). Route modeling ultimately provides an average energy use per mile (kilowatt-hour/mile [kWh/mi]) for each route, bus size, and load case.

In addition to loading conditions, CTE modeled the impact of battery degradation on a BEB's ability to complete a block. The range of a battery electric bus is reduced over time due to battery degradation. A BEB may be able to service a given block with beginning-of-life batteries, while later it may be unable to complete the entire block at some point in the future as batteries near their end-of-life or derated capacity (typically considered 70-80% of available service energy).

Service Assessment

Given the conclusion that FCEBs could meet the range requirements for CCTS service, the Service Assessment focused on evaluating the feasibility of BEBs in CCTS service area. The efficiencies calculated in the Requirements Analysis & Data Collection stage were used to estimate the energy requirements of CCTS service. The main focus of the Service Assessment is called the block analysis, which determines if generic battery electric technology can meet the service requirements of a block based on range limitations, weather conditions, levels of battery degradation and route specific requirements. The Transit Research Board's Transit Cooperative Research Program defines a block as "the work assignment for only a single vehicle for a single service workday".[7] A block is usually

[7] TRB's Transit Cooperative Research Program. 2014. TCRP Report 30: Transit Scheduling: Basic and Advanced Manuals (Part B). https://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_30-b.pdf

comprised of several trips on various routes. The energy needed to complete a block is compared to the available energy of the bus assigned to service the block. If the bus's usable onboard energy exceeds the energy required by the block, then the conclusion is that the BEB can successfully operate on that block.

The Service Assessment projects the performance of a BEB that is charged overnight at the depot and operates on CCTS service schedule at the time of the plan's writing. The results are used to determine when along the transition timeline a fleet of overnight depot-charged BEBs can feasibly serve CCTS territory or if another zero-emission technology is required to maintain service. This information can then be used to inform the scale and timing of BEB procurements in the Fleet Assessment.

Modeling & Procurement Assumptions

CTE and CCTS defined the following assumptions and requirements used throughout the study:

The Service Assessment energy profile assumed a 5% improvement in battery capacity every year with a starting battery capacity of 450 kWh for a 35' bus which represents an analogous ZEB suitable for CCTS transit vehicles and is an average of battery capacities seen in commercially-available buses of the same size and passenger capacity in 2022. Electric cutaways are modeled to have a battery capacity of 120 kWh and were assumed to have the same 5% rate of improvement in battery capacity every year.

This analysis also assumed CCTS will maintain blocks in a similar distribution of distance, relative speeds, and elevation changes to pre-COVID-19 service because buses will continue to serve similar locations within the service area and general topography remains constant even if specific routes and schedules change.

Fleet size and vehicle length distribution do not change over time. The analysis assumed that buses reaching the end of their useful life would be replaced with vehicles of the same size. Total fleet size remains the same over the transition period.

Buses are assumed to operate for a twelve-year service life. Cutaways are assumed to operate for a five or seven-year service life.

Usable on-board energy is assumed to be that of a mid-life battery (10% degraded) with a reserve at both the high and low end of the battery's charge potential. As previously discussed, battery age affects range, so a mid-life battery was assumed as the average capacity of the battery's service life. Charging batteries to 100% or dropping the charge below 10% also degrades the batteries over time, which is why the analysis assumes that the top and bottom portions of the battery are unusable.

CTE accounts for battery degradation over the transition period with the assumption that CCTS can rotate the ZEBs to battery capacity to block energy requirements. As the zero-emission fleet transition progresses, older buses can be moved to shorter, less demanding blocks and newer buses can be assigned to longer, more demanding blocks to account for battery degradation in BEBs over time. CCTS can rotate the fleet to meet demand, assuming there is a steady procurement of BEBs each year to match service requirements. CTE accounts for this variability in battery age by using a mid-life usable battery capacity to determine block feasibility.

Results

The Service Assessment determines the timeline for when CCTS service may become achievable by BEBs on a single depot charge. Coupled with the FCEB range-to-block length comparison, the block analysis determines when, or if, a full transition to BEBs or FCEBs may be feasible. CCTS and CTE can then use these results to inform ZEB procurement decisions in the Fleet Assessment. Results from this analysis are also used to determine the specific energy requirements and fuel consumption of the fleet over time. These values are then used in the Fuel Assessment to estimate the costs to operate the transitioning fleet.

While routes and block schedules are unlikely to remain the same over the course of the transition period, these projections assume the blocks will maintain a similar distribution to current service because CCTS will continue to serve similar destinations within the city. This core assumption affects energy use estimates and block achievability in each year.

The results of CCTS Service Assessment for fixed route service can be seen below in **Figure 5**. Based on CTE's analysis, 0% of CCTS blocks could be served by a single charge of a depot-only BEB with a 450-kWh battery and, with the assumed 5% improvement every year, 50% of CCTS blocks could be served by this technology by 2034, which means that CCTS service is not feasible with depot-only charged BEBs within the transition period. However, service can be conducted with the addition of on-route charging.

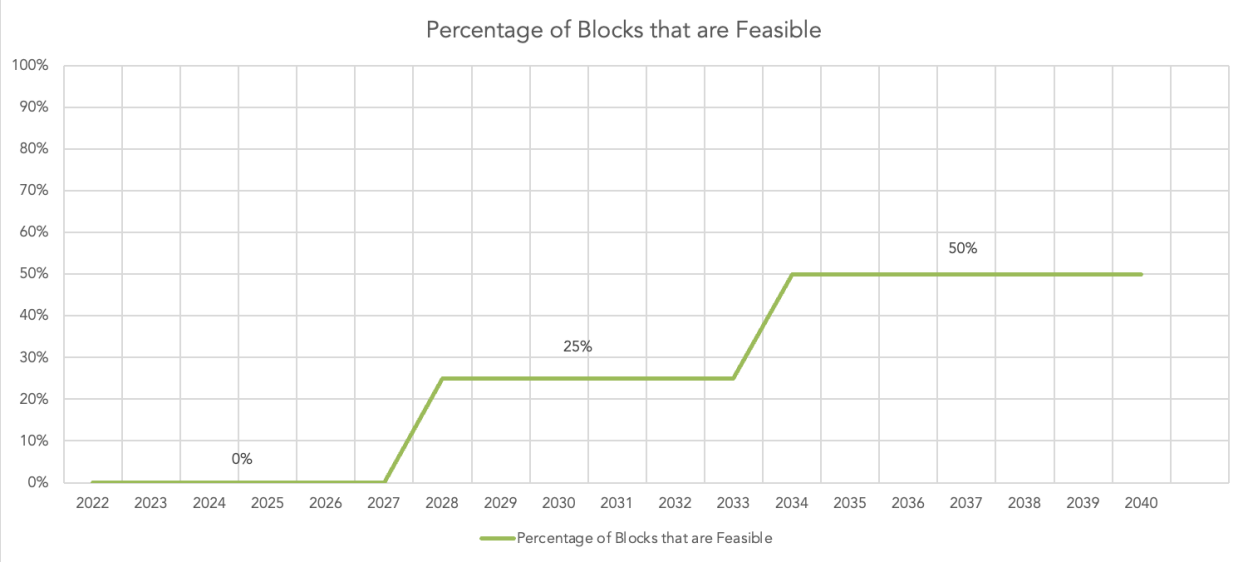

Figure 5 – BEB Block Achievability Percentage by Year

As noted previously, FCEBs are assumed to be able to complete any block under 350 total miles and CCTS longest block is 183 miles long, which means that FCEB technology already has the capability to meet CCTS service requirements.

Cutaway Modeling

CTE's modeling also included an analysis for battery electric cutaway vehicles using CCTS paratransit operational data. CCTS paratransit service operates between 16 and 159 miles per vehicle per day, with an average daily distance of 78 miles. CTE modeled the electric cutaway performance and found that approximately 49% of CCTS service is feasible with overnight depot-only charged cutaways in 2022. By 2040, CTE's modeling estimates that 91% of CCTS daily service will be feasible, which means that CCTS service is not feasible with overnight depot-only charged cutaways within the transition period.

Based on the results of the analysis, battery-electric cutaways would require some form of opportunity charging throughout the day to complete their service. Pantograph and inductive charging have not yet been demonstrated to be feasible for electric cutaways, so this option was not considered. Demand response service is run sporadically throughout the day, with vehicles typically returning to the depot after completing their assignments. Based on this service pattern, it was assumed that battery-electric cutaways could be charged throughout the day when they return to the depot which would allow them to complete all of CCTS service.

Description of ZEB Technology Solutions Considered

For this study, CTE developed three scenarios to compare to a baseline scenario and analyze the feasibility and cost effectiveness of implementing each bus technology as well as the co-implementation of both technologies. The scenarios are referred to by the following titles and described, in detail, below. A baseline scenario was developed to represent the typical "business-as-usual" case with retention of ICE buses for cost comparison purposes.

0. Baseline (current technology)
1. BEB Only
2. Mixed Fleet – FCEB & BEBs
3. FCEB Only

In the **BEB Fleet Transition**, BEBs are purchased and deployed only on blocks that are within a BEB's achievable range as determined by CTE's modeling. If depot-charged BEBs are not capable of meeting a transit agency's daily service requirements, on-route charging is utilized on fixed-routes and returning to the depot for midday opportunity charging is used on DAR service to sustain energy on-board. Based on CTE's modeling, all of CCTS blocks are fully achievable using BEB technology by 2040.

In the **Mixed Fleet Transition,** FCEBs supplement a primarily BEB fleet to make up a fully ZEB fleet. Although there may be some exceptions, due to the higher range capacity of FCEBs, BEBs will be used for DAR service and FCEBs will be used for fixed route service. The costs for infrastructure and installation of two different charging and fueling infrastructures are taken into account. FCEBs and hydrogen fuel, however, are more expensive than BEBs and electricity, so this scenario allows CCTS to assign the less expensive BEB technology where possible and supplement service with FCEBs as needed in support of resilience and redundancy adaptation measures.

Finally, the **FCEB Fleet Transition** was developed to examine the costs for hydrogen fueling and transitioning to a 100% FCEB fleet. A fully FCEB fleet avoids the need to install two types of fueling infrastructure by eliminating the need for depot charging equipment. Fleets comprised entirely of fuel cell electric buses also offer the benefit of scalability compared to battery electric technologies. Adding FCEBs to a fleet does not necessitate large complementary infrastructure upgrades. Despite this benefit, the cost of FCEBs and hydrogen fuel are still more expensive than BEBs and electricity at current market prices.

When considering the various scenarios, this study can be used to develop an understanding of the range of costs that may be expected for CCTS ZEB transition, but ultimately, can only provide an estimate. Furthermore, this study aims to provide an overview of the myriad considerations the agency must take into account in selecting a transition scenario that go beyond cost, such as space requirements, safety implications, and operational changes that may differ between scenarios.

D

Current Bus Fleet Composition and Future Bus Purchases

Fleet Assessment Methodology

The Fleet Assessment projects a timeline for the replacement of existing buses with ZEBs. The timeline is consistent with CCTS fleet replacement plan that is based on the twelve-year service life of transit buses and larger cutaways and five-year service life of van-style cutaways. This assessment also includes a projection of fleet capital costs over the transition timeline.

ZEB Cost Assumptions

CTE and CCTS developed cost assumptions for future bus purchases. Key assumptions for bus costs for the CCTS Transition Plan are as follows:

- CNG vehicle prices were provided by CCTS and are inclusive of costs for configurable options and taxes.
- Capital vehicle costs are derived from the 2022 California, Washington and New Mexico State Contracts plus the annual PPI (2%) and tax (8.75%). Fuel Cell Cutaway pricing is a price estimation due to lack of market information.
- Costs for retrofits or bus conversions are not included. Procurements assume new vehicle costs.

Table 1- Fleet Assessment Cost Assumption

	Fuel Type		
Length	CNG	Electric	Fuel Cell
Cutaway	$172,766	$300,955	$376,153*
35'	$658,037	$994,678	$1,327,513*

*Bus size not currently available for this technology

Description of CCTS Current Fleet

CCTS current service and fleet composition provide the baseline for evaluating the costs of transitioning to a zero-emission fleet. CCTS staff provided the following key data on current service:

- Fleet composition by powertrain and fuel
- Routes and blocks
- Mileage and fuel consumption
- Maintenance costs

Fleet

As of 2022, the CCTS bus fleet includes thirteen (13) CNG cutaways used for DAR paratransit service and seven (7) CNG low-floor buses used for fixed-route service. Bus services operate out of one depot in Corona, CA. Operations, maintenance, and fueling functions are performed at an offsite facility in Ontario, CA.

Routes and Blocks

CCTS 2022 service consists of four fixed routes run on four blocks, two run on weekends and two run on weekdays. Blocks range in distance from 101 miles to 183 miles. Buses pull out as early as 6:25 AM and return as late as 7:20 PM. CCTS service runs within the boundaries of the City of Corona, as well as the unincorporated communities of Coronita, El Cerrito, and Home Gardens.

Current Mileage and Fuel Consumption

Annual mileage of the fleet:
318,150 miles

CCTS ZEB Transition Plan assumes that the amount of service miles will remain the same.

Annual fuel consumption:

74,126 GGE of CNG

Fleet average efficiency:

6.8 miles per GGE for Cutaways

3.2 miles per GGE for Low-floor Buses

CCTS current fuel expense:
$132,630 per year

Average fuel costs:
$1.79 per GGE of CNG

Maintenance Costs

Average maintenance costs per mile by vehicle type are estimated in **Table 2** Buses also undergo one overhaul at midlife summarized in **Table 3**. These costs were utilized to project transition maintenance costs.

Table 2 – Labor and Materials Cost Assumptions

Vehicle Type (Cutaways and Low-floor Buses)	Estimate (Per Mile)
Gas Cutaway	$ 0.35
CNG Cutaway	$ 0.35
30'/35'/40' CNG Bus	$ 0.38
Battery Electric Cutaway	$0.32
30'/35'/40' Battery Electric Bus	$0.34
Fuel Cell Electric Cutaway	$0.51
30'/35'/40' Fuel Cell Electric Bus	$0.56

Table 3 – Midlife Overhaul Cost Assumptions

Vehicle Type	Overhaul (FC/Transmission) Cost Per vehicle life	Battery Warranty Cost Per vehicle life
Gas Cutaway	$0	$0
CNG Cutaway	$0	$0
30'/35'/40' CNG Bus	$30,000	$0
Battery Electric Cutaway	$0	$24,000
30'/35' 40' Battery Electric Bus	$0	$75,000
30'/35'/40' Fuel Cell Electric Bus	$40,000	$17,000
Fuel Cell Electric Cutaway	$0	$10,000

Zero-Emission Bus Procurement Plan and Schedule

CCTS will provide demand response service with a fleet of thirteen (13) depot-charged and opportunity-charged battery electric cutaways. Fixed route service will be performed by seven (7) FCEBs. This technology combination will be sufficient for meeting the agency's service demands. CCTS fleet transition strategy is to replace each compressed natural gas (CNG) bus with battery electric cutaways and FCEBs as they reach the end of their minimum service life beginning in 2028. **Figure 6** below provides the number of each bus type that will be purchased each year through 2040 with this replacement strategy and the total cost of that procurement.

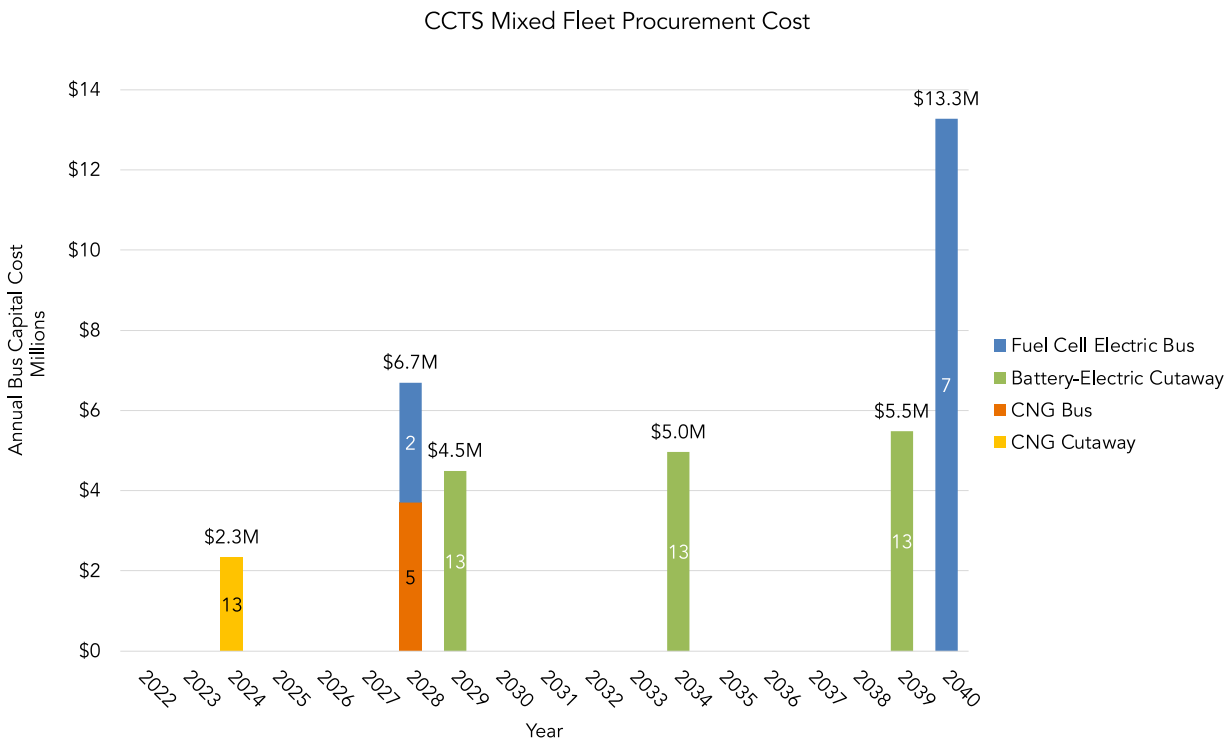

Figure 6 – Projected Bus Procurements for ZEB Transition

Figure 7 demonstrates the annual composition of CCTS fleet through 2040. By 2040, CCTS bus fleet will consist entirely of BEB and FCEBs. The fleet will remain the same size throughout the transition period.

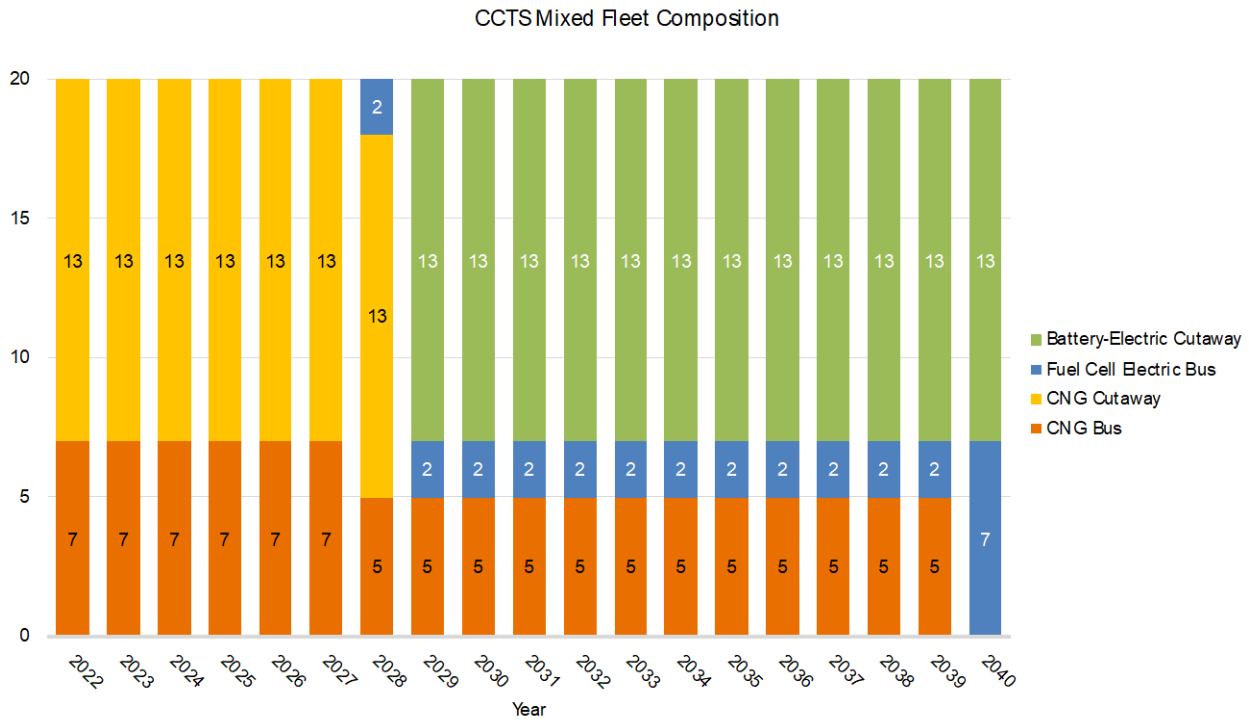

Figure 7 – Annual Fleet Composition, ZEB Transition

As seen in **Table 4** the capital investment required for purchasing ZEBs is significantly higher than for CNG buses. This highlights the importance of staying vigilant in the search for funding opportunities to help fill this gap.

Table 4 – CCTS Bus Capital Investment to Transition to a 100% ZEB fleet by 2040

	CNG Baseline*	ZEB Incremental Costs	Total Investment
Bus Capital Costs	$23M	$14M	$37M

*Represents the capital costs that would have been incurred in the absence of the ICT Regulation

Additional Considerations

When purchasing ZEBs, the process may differ slightly from the process CCTS currently uses to purchase vehicles. First, when contracting with ZEB manufacturers, CCTS should ensure expectations are clear between the bus OEM and the agency. As with CNG purchases the agreement should be clear regarding the bus configurations, technical capabilities, build and acceptance process, production timing with infrastructure, warranties, training, and other contract requirements. Additionally, by developing and negotiating specification language collaboratively with the bus vendor(s), CCTS can work with the vendor(s) to customize the bus to their needs as much as is appropriate, help advance the industry based on agency requirements and recommended advancements, ensure the acceptance and payment process is fully clarified ahead of time, fully document the planned capabilities of the bus to ensure accountability, and generally preempt any unmet expectations. Special attention should be given in defining the technical capabilities of the vehicle, since defining these for ZEBs may differ from ICE buses.

When developing RFPs and contracting for ZEB procurements, CCTS should specify the source of funding for the vehicle purchases to ensure grant compliance, outline data access requirements, define the price and payment terms, establish a delivery timeline, and outline acceptance and performance requirements. CCTS should test the buses upon delivery for expected performance in range, acceleration, gradeability, highway performance, and maneuverability. Any such performance requirements must be included in the technical specification portion of the RFP and contract to be binding for the OEM. Defining technical specifications for ZEBs will also differ slightly

from their current CNG vehicles since they will need to include requirements for hydrogen fuel cell and battery performance. It is also recommended that CCTS purchase an extended battery warranty for the vehicles, which should be specified in the RFP and contract.

FCEB procurement will also differ from ICE procurements since there are fewer OEMs presently manufacturing these vehicles, although this is expected to change with increasing demand. CCTS will also be able to apply for additional funding for these vehicles through zero-emission vehicle specific funding opportunities, which are discussed further in which are discussed further in **Section H: Potential Funding Sources.**

E

Facilities and Infrastructure Modifications

CCTS Facility Configuration and Depot Layout

Depot Address:
735 Public Safety Way, Corona, CA 92880

Electric Utility:
Southern California Edison (SCE)

Located in a NOx Exempt Area?
No

Bus Parking Capacity:
20+

Current Vehicle Types Supported:
CCTS depot currently supports fueling and maintenance of CNG buses and cutaways.

Propulsion Types That Will be Supported at Completion of ZEB Transition:
Battery electric and hydrogen fuel cell electric propulsion

Facilities Assessment Methodology

Mixed fleet BEB and FCEB deployments such as CCTS require installation of charging stations and improvements to existing electrical infrastructure as well as hydrogen fueling infrastructure. FCEB deployments require installation of a fueling station and may require improvements such as upgrades to the switchgear or utility service connections. Planning and design work, including development of detailed electrical and construction drawings required for permitting, is also necessary once specific charging equipment has been selected.

Building off of the fleet procurement schedule that was outlined in the Fleet Assessment, CTE then uses industry average pricing to develop infrastructure scenarios that estimate the cost of building out the infrastructure necessary to support a full fleet transition to ZEBs. This plan assumes that infrastructure projects will be completed prior to each bus delivery. To project the costs of fueling infrastructure, CTE used industry pricing provided by A&E subcontractors and an infrastructure build timeline based on the procurement timeline. This plan assumes that infrastructure projects will be completed prior to each bus delivery. These projects are described in detail below.

Infrastructure Upgrade Requirements to Support Zero-Emission Buses

Description of Depot-Charging Infrastructure Considered

With Corona's mixed technology fleet, charging infrastructure is required to service a total of 13 battery electric cutaways along with hydrogen fueling infrastructure for seven (7) FCEBs to support a completely zero-emission bus fleet by 2040. Because there are separate costs associated with each type of ZEB technology, the facilities assessment for this scenario is broken down by each fuel type. In addition, CCTS has the opportunity to share hydrogen infrastructure with a neighboring transit operator in the City of Riverside, Riverside Connect, to decrease

overall costs, but can implement independent hydrogen infrastructure if more desirable. The total cost for mixed fleet fueling infrastructure with shared hydrogen infrastructure is approximately $9.8 M and the scenario with independent hydrogen infrastructure is approximately $13.2 M.

BEB Charging Infrastructure Summary

In order to support the BEB portion of the fleet, CCTS will need to work with a contractor to conduct detailed infrastructure planning, purchase chargers and dispensers, and add service capacity to their site. The estimated infrastructure costs for these technology & infrastructure expenses are as follows:

- **Infrastructure planning.** Building charging infrastructure requires planning at the depot. This assessment assumes that a planning project costs $200,000 and occurs only once per depot. The total cost of planning projects for CCTS single depot is estimated at $200,000.
- **Dispensers and Chargers.** CCTS BEB charging depot will consist of seven chargers with two dispensers per charger. Prices are estimated at $170,00 for a 150kW charger with two dispensers.
- **Electric Service Upgrade.** CCTS requires an estimated 1 MW of additional electricity capacity by 2040 to accommodate charging for 13 BEBs. To meet the growing demand for electricity, the depot will need to upgrade its system to at least 1 MW of capacity by 2027. This is estimated to cost around $200,000 over the transition period.
- **Inflation Factor.** 5.4% inflation is added on all planning, procurement, and construction costs per the CPI. 3% inflation is added on all maintenance costs per Riverside's maintenance cost assumptions. All costs listed above are in 2022 dollars, projects occurring after 2022 are inflated per the inflation factor.

The estimated total BEB infrastructure costs for the Mixed Fleet scenario with shared hydrogen infrastructure is shown below in **Figure 8** and with independent hydrogen in **Figure 9**. The costs for charging equipment will stay the same whether CCTS shares hydrogen fueling infrastructure with Riverside Connect or not and totals approximately $2M over the transition period.

FCEB Fueling Infrastructure Summary

In addition to BEB charging, hydrogen fueling is required to support the Mixed Fleet. Like BEB infrastructure, a FCEB infrastructure deployment will also require hiring an infrastructure planning contractor. A storage capacity project, a fueling infrastructure capital project will also be necessary to allow CCTS to fuel their hydrogen fuel cell vehicles on site. Because CCTS contracts some maintenance services out, maintenance bay upgrades are not included as a cost to CCTS but are required for the contractor to safely maintain the new FCEB fleet. Infrastructure is assumed to be built out in one project that will conclude prior to the first FCEB deployment in 2028. The estimated infrastructure costs for these technology & infrastructure expenses are as follows:

- **Infrastructure planning.** Building hydrogen infrastructure requires planning at the depot. This assessment assumes that a planning project costs $200,000 and occurs only once per depot. The total cost of planning projects for CCTS single depot will be approximately $200,000.
- **Maintenance bay upgrades.** Maintenance bay upgrades are not included in CCTS costs.
- **Hydrogen Fueling infrastructure.** CCTS fueling solutions were decided based on fuel consumption needs and approximately right-sized. Hydrogen infrastructure maintenance and operations are covered in the price of fuel in the fuel assessment. CCTS has the option of implementing an independent hydrogen fueling station or utilizing a shared hydrogen station with Riverside Connect.
- **Inflation Factor.** 5.4% inflation is added on all project costs per the CPI. All costs listed above are in 2022 dollars, projects occurring after 2022 are inflated per the inflation factor.

Figure 8 shows the estimated infrastructure costs for the FCEB technology with shared hydrogen infrastructure, totaling to approximately $6.5 M and **Figure 9** shows the estimated infrastructure costs for the FCEB technology with independent hydrogen infrastructure, totaling to approximately $10 M.

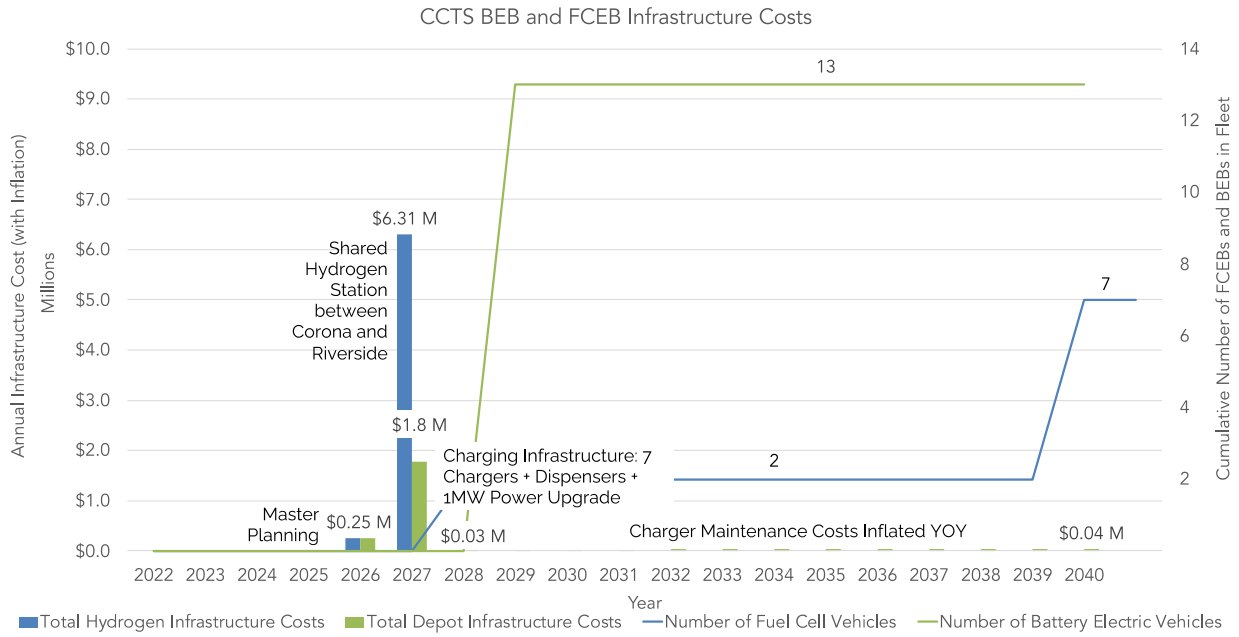

Figure 8 – Infrastructure Projects & Costs, ZEB Transition with Shared Hydrogen Infrastructure

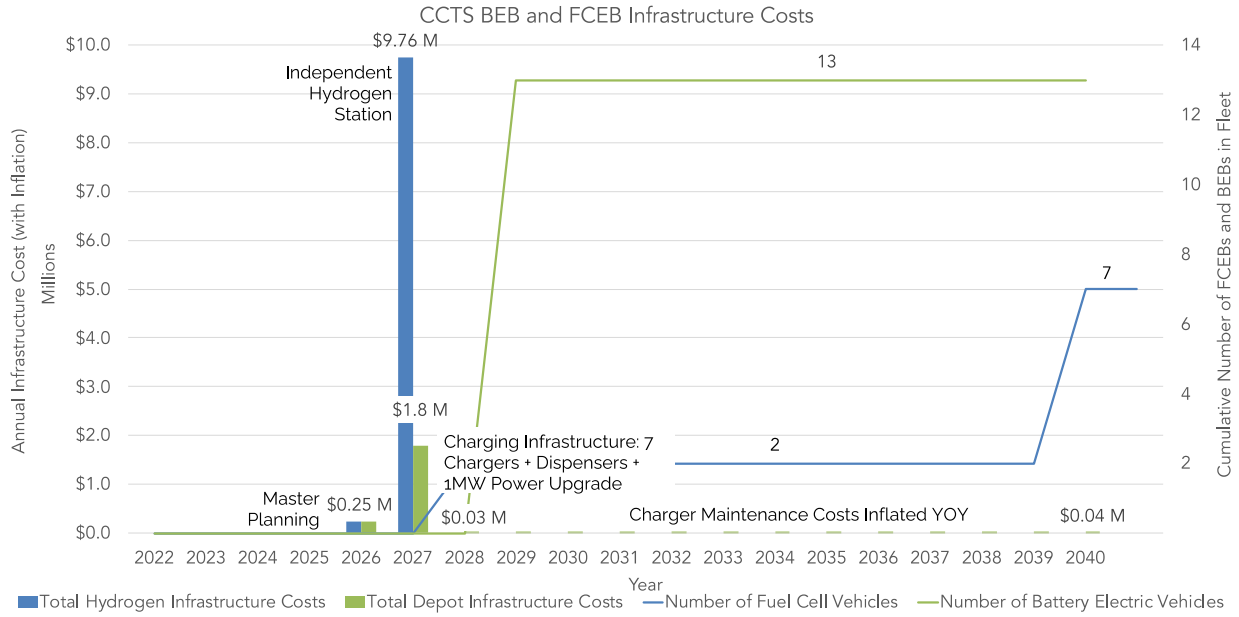

Figure 9 – Infrastructure Projects & Costs, ZEB Transition with Independent Hydrogen Infrastructure

Utility Partnership Review

The City of Corona is working with the Utility provider, Southern California Edison (SCE) who currently serves the Corporation yard where the buses are stored and charged. SCE has been active in sharing information related to its EV rates and incentives offered and the City is aware that taking advantage of these benefits and ensuring a successful battery electric bus deployment requires close, ongoing coordination with SCE.

SCE offers the Charge Ready Transport [8](CRT) program that supports both California's greenhouse gas (GHG)-reduction goal and local air-quality requirements. The Program assists customers with transitioning to cleaner fuels by reducing their cost for the purchase and installation of required battery-electric vehicle (EV) charging infrastructure, as well as providing rebates to offset the cost of charging stations for certain eligible customers[9].

Primarily, the CRT program offers low- to no-cost electrical system upgrades to support the installation of EV charging equipment for qualifying vehicles – heavy-duty vehicles weighing 6000+ lbs. In addition, participants that will be acquiring school buses or transit buses within SCE territory are also eligible for a rebate against the purchase of charging equipment. Programs like this will benefit CCTS significantly in the financial sector of their transition to zero-emission technology.

The City is sharing proposed planning documents to help SCE understand future loads so that any required grid infrastructure improvements can be addressed prior to implementation. The City's discussion of short- and long-term fleet goals with SCE will ensure that SCE can properly plan grid-side electrical infrastructure upgrades to the City's Corporation Yard, and that the City can adequately upgrade equipment to support battery electric buses. Once the infrastructure upgrade needs are established, the City will incorporate the design and construction timelines into the overall transition plan timeline. The City recognizes SCE as a critical partner in electrification and will continue to partner with SCE after the planning stages so that charge management strategies and fleet expansion efforts can be coordinated effectively. The City's current relationship with SCE is excellent and cooperative, the City of Corona serves a small portion of the City with electric service and meets regularly with SCE to discuss and address issues of concern.

Further, the City understands establishing and maintaining a partnership with the alternative fuel provider is critical to successfully deploying zero-emission vehicles and maintaining operations. Hydrogen fueling requires a plan for infrastructure installation, delivery, storage, dispensing, and upgrades to maintenance facilities. While fueling operations for hydrogen may require fewer operational changes than electric bus charging, understanding the local hydrogen supply market can be its own challenge. To overcome this challenge, the City may consider a competitive bid process for a design/build project as a reasonable approach to determining the appropriately sized station and selecting the most appropriate fueling technology at the best price.

[8] https://crt.sce.com/program-details

[9] Charge Ready Transport, Quick Reference Guide

F

Providing Service in Disadvantaged Communities

Providing Zero-Emission Service to DACs

In California, CARB defines disadvantaged communities (DACs) as communities that are both socioeconomically disadvantaged and environmentally disadvantaged due to local air quality. Lower income neighborhoods are often exposed to greater vehicle pollution levels due to proximity to freeways and the ports, which puts these communities at greater risk of health issues associated with tailpipe emissions.[10] ZEBs will reduce energy consumption, harmful emissions, and direct carbon emissions within the disadvantaged communities CCTS serves. The City of Corona includes 10 different census tracts designated as DACs. Corona's fixed routes that are in and pass through DACs, along with their stops are shown in **Figure 10** below.

Environmental impacts, both from climate change and from local pollutants, disproportionately affect transit riders. For instance, poor air quality from tailpipe emissions and extreme heat harm riders waiting for buses at roadside stops. The transition to zero-emission technology will benefit the region by reducing fine particulate pollution and improving overall air quality. In turn, the fleet transition will support better public health outcomes for residents in DACs served by the selected routes.

Public transit has the potential to improve social equity by providing mobility options to low-income residents lacking access to a personal vehicle and helping to meet their daily needs. In California, transit use is closely correlated with car-less households as they are five times more likely to use public transit than households with at least one vehicle.[11] Although 21% of Californians in a zero-vehicle household are vehicle free by choice, 79% do not have a vehicle due to financial limitations. Many low-income people therefore rely solely on public transportation for their mobility needs.[12] CCTS current fleet of fixed route and DAR CNG buses consume 74,126 Gasoline Gallons Equivalent (GGE) of fuel per year, operating for approximately 318,150 miles per year. Moving CCTS fleet to zero-emission technology will help alleviate the pollution from tailpipe emissions, which will improve the health of communities impacted by NOx and particulate matter emissions and all local communities.

Access to quality transit services provides residents with a means of transportation to go to work, to attend school, to access health care services, and run errands. By purchasing new vehicles and decreasing the overall age of its fleet, CCTS is also able to improve service reliability and therefore maintain the capacity to serve low-income and disadvantaged populations. Replacing diesel vehicles with zero-emission vehicles will also benefit these populations by improving local air quality and reducing exposure to harmful emissions from diesel exhaust.

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[10] Reichmuth, David. 2019. Inequitable Exposure to Air Pollution from Vehicles in California. Cambridge, MA: Union of Concerned Scientists. https://www.ucsusa.org/resources/inequitable-exposure-air-pollution-vehicles-california-2019

[11] Grengs, Joe; Levine, Jonathan; and Shen, Qingyun. (2013). Evaluating transportation equity: An inter-metropolitan comparison of regional accessibility and urban form. FTA Report No. 0066. For the Federal Transit Administration

[12] Paul, J & Taylor, BD. 2021. Who Lives in Transit Friendly Neighborhoods? An Analysis of California Neighborhoods Over Time. Transportation Research Interdisciplinary Perspectives. 10 (2001) 100341. https://reader.elsevier.com/reader/sd/pii/S2590198221000488?token=CABB49E7FF438A88A19D1137A2B1851806514EF576E9A2D9462D3FAF1F6283574907562519709F8AD53DEC3CF95ACF27&originRegion=us-east-1&originCreation=20220216190930

Map of Disadvantaged Communities served by CCTS

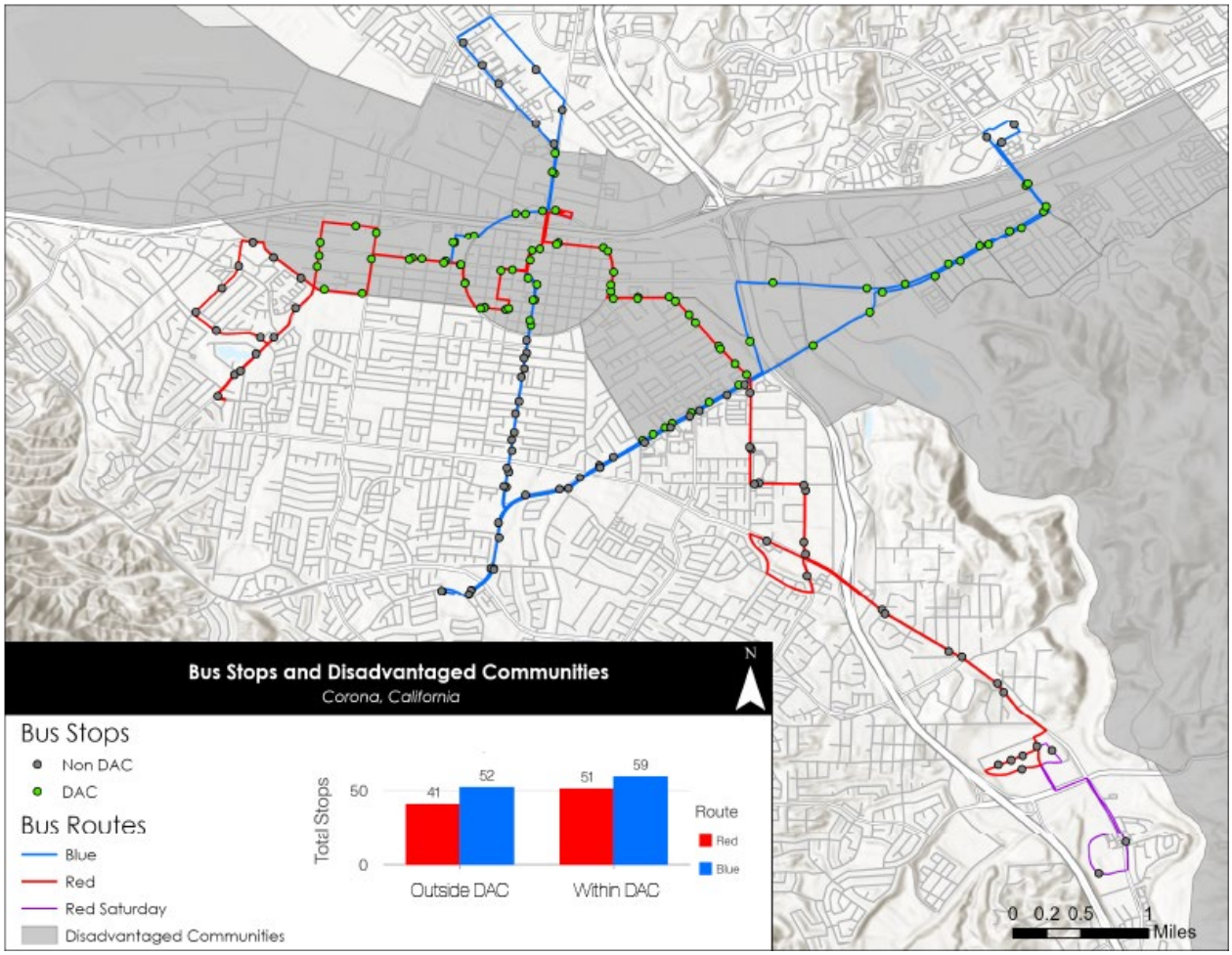

Figure 10 – CCTS Disadvantaged Communities Service Map

Emissions Reductions for DACs

Greenhouse gasses (GHG) are the compounds primarily responsible for atmospheric warming and include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The effects of greenhouse gasses are not localized to the immediate area where the emissions are produced. Regardless of their point of origin, greenhouse gasses contribute to overall global warming and climate change.

Criteria pollutants include carbon monoxide (CO), nitrogen oxides (NOx), particulate matter under 10 and 2.5 microns (PM_{10} and $PM_{2.5}$), volatile organic compounds (VOC), and sulfur oxides (SO_X). These pollutants are considered harmful to human health because they are linked to cardiovascular issues, respiratory complications, or other adverse health effects.[13] These compounds are also commonly responsible for acid rain and smog. Criteria pollutants cause economic, environmental, and health effects locally where they are emitted. CARB defines DACs

[13] Institute of Medicine. Toward Environmental Justice: Research, Education, and Health Policy Needs. Washington, DC: National Academy Press, 1999; O'Neill MS, et al. Health, wealth, and air pollution: Advancing theory and methods. Environ Health Perspect. 2003; 111: 1861-1870; Finkelstein et al. Relation between income, air pollution and mortality: A cohort study. CMAJ. 2003; 169: 397-402; Zeka A, Zanobetti A, Schwartz J. Short term effects of particulate matter on cause specific mortality: effects of lags and modification by city characteristics. Occup Environ Med. 2006; 62: 718-725.

in part as disadvantaged by poor air quality because polluting industries or freight routes have often been cited in these communities. The resulting decrease in air quality has led to poorer health and quality of life outcomes for residents. CCTS operational Well-to-Wheel criteria emissions are summarized in **Table 5.**

Table 5 – Annual Vehicle Operation Pollutants by Fuel Type

Overall Annual Vehicle Operation Pollutants (lbs.)								
Bus Group	CO	NOx	PM10	PM2.5	VOC	SOx	PM10 TBW	PM2.5 TBW
CNG	13,477.13	80.56	2.49	2.49	28.69	4.92	71.54	9.12

The transportation sector is the largest contributor to greenhouse gas emissions in the United States, accounting for more than 30% of total emissions, and within this sector, 25% of these emissions come from the medium- and heavy-duty markets, yet these markets account for less than 5% of the total number of vehicles. Electrifying these vehicles can have an outsized impact on pollution, fossil-fuel dependency, and climate change. ZEBs are four times more fuel efficient than comparable new diesel buses. Better fuel efficiency means less waste when converting the potential energy in the fuel to motive power. Less waste not only means less pollution, it results in more efficient use of natural resources. By transitioning to ZEBs from diesel buses, CCTS zero-emission fleet will produce fewer carbon emissions and fewer harmful pollutants from the vehicle tailpipes. Considering DACs experience significantly more pollution from harmful emissions, communities disadvantaged by pollution served by CCTS fleet will therefore directly benefit from the reduced tailpipe emissions of ZEBs compared to ICE buses.

Estimated Ridership in DACs

As shown in Figure 10, 110 (54%) of the fixed-route stops are located within DACs. By line, 55% of the Red Line stops and 53% of the Blue Line stops fall within DACs. In terms of route length, 9 miles (40%) of the Red Line and 14 miles (59%) of the Blue Line lie within DACs.

In addition, much of the DAR service area provided for Seniors 60 and older; persons with disabilities; and persons certified under the Americans with Disability Act (ADA) falls within DAC zones, but specific trips may start and/or end outside of DAC-designated areas. These areas include many sites within the City of Corona and adjacent unincorporated communities of Coronita, El Cerrito, and Home Gardens, as well as several satellite locations. This includes ADA services within three-quarters of a mile of fixed-route service. Unlike fixed-route service, the DAR service does not run a set route, and so a single vehicle may provide trips both within and outside of a DAC during a single day.

G

Workforce Training

CCTS Current Training Program

City of Corona's transit services (CCTS) are contracted out which includes dispatching, operations, and maintenance of the vehicles and bus stops. The transit contractor is responsible for all training pertaining to the operations of CCTS. While the city may coordinate/arrange the training necessary for the operation of the service, the contractor is ultimately responsible for ensuring their staff is up-to-date based on their core responsibilities. Contractor staff includes administration (general managers and safety managers), dispatchers, drivers, and maintenance staff (maintenance manager, mechanics, and utility workers). The contractor must adapt to changes in service levels, policies and procedures, and introduction to new technologies and adopt any and all changes into its' driver training program.

Operator Training

The transit contractor is responsible for all training of drivers including City's service policies, passenger fares and overview of the City's fleet. The contractor is responsible for the provision of qualified training staff to conduct behind-the-wheel driver training and other training determined by the contractor or the City. Hands-on training on the bus and bus-related equipment are required to ensure safe vehicle operations. The contractor is required to provide ongoing training and prepare all drivers assigned to the City's contract in a manner that conforms to all local, state, and federal laws.

Mechanics Training

The mechanics assigned to the City's contract must meet the requirements for vehicle maintenance as outlined in the scope of work. They must have knowledge of the city's fleet in order to perform complete, reliable, and safe inspections and repairs. They must be able to diagnose, repair, and maintain the vehicles listed in the City's revenue vehicle fleet. The contractor must comply with regulations pertaining to licensing and operations and maintenance of vehicles as contained in the California Vehicle Code, California Administrative Code, Title 13, and The Federal Motor Carrier Safety Regulations.

Dispatchers and Supervisors Training

Dispatchers are required to schedule and assign drivers and vehicles in accordance with the service hours schedule and scheduled trips for each day. The dispatchers are trained to assist drivers while they are in service and monitor the performance of the scheduled trips. They are trained to handle unanticipated service demands, passenger and/or vehicle accidents, and road calls in accordance with the City's policies and procedures which are outlined in detail in the scope of work. Further, the contract requires the transit contractor to provide a Safety and Training Supervisor who is licensed and certified to conduct classroom training of all drivers as well as behind-the-wheel driver training and other trainings determined necessary by the Contractor or the City

CCTS ZEB Training Plan

OEM Training

CCTS plans to take advantage of trainings from the bus manufacturers and station suppliers, including maintenance and operations training, station operations and fueling safety, first responder training and other trainings that may be offered by the technology providers. OEM trainings provide critical information on operations and maintenance aspects specific to the equipment model procured. Additionally, many procurement contracts include train-the-trainer courses through which small numbers of agency staff are trained and subsequently train agency colleagues. This method provides a cost-efficient opportunity to provide widespread agency training on new equipment and technologies.

Bus and Fueling Operations and Maintenance

The transition to a zero-emission fleet will have significant effects on CCTS workforce. Meaningful investment is required to upskill maintenance staff and bus operators trained in ICE vehicle maintenance and ICE fueling infrastructure.

CCTS training staff will work closely with the OEM providing vehicles to ensure all mechanics, service employees, and bus operators complete necessary training prior to deploying ZEB technology and that these staff undergo refresher training annually and as needed. CCTS staff will also be able to bring up any issues or questions they may have about their training with their trainers. Additionally, trainers will observe classes periodically to determine if any staff would benefit from further training.

ZEB Training Programs

Several early ZEB adopters have created learning centers for other agencies embarking on their ZEB transition journeys. One such agency is SunLine Transit Agency, which provides service to the Coachella Valley and hosts the West Coast Center of Excellence in Zero Emission Technology (CoEZET). The Center of Excellence supports transit agency adoption, zero-emission commercialization and investment in workforce training. Similarly, AC Transit offers training courses covering hybrid and zero-emission technologies through their ZEB University program. CCTS plans to take advantage of these trainings offered by experienced agencies.

There are several transit agencies within and around Riverside County that have successfully begun their transition to zero-emission technology. California has at least seven heavy-duty and transit-operated fueling stations in operation and at least four more in development[14]. Additionally, the number of hydrogen production and distribution centers is growing to meet increased hydrogen demand as it gains popularity as a transportation fuel. At present, there are two heavy-duty, transit-operated hydrogen fueling stations in the neighboring San Bernadino and Orange counties within 40 miles of CCTS, and two planned transit-operated hydrogen fueling stations in Los Angeles County and Pomona within 30 miles of CCTS. In addition, private hydrogen fueling stations by First Element Fuels and Stratosfuel within 80 miles of Corona, CA are in development and should be commissioned before the end of the fleet transition timeline.

In the region, Omintrans, a public transit agency serving the San Bernadino Valley recently received $9.3 million from the Federal Transit Administration (FTA) under the FY2022 Low-No Emission Vehicle Program to develop hydrogen refueling infrastructure and launch a workforce development program. Similarly, Sunline Transit Agency has received $7.8 million to upgrade their liquid hydrogen refueling infrastructure. Riverside Transit Agency has also received $5.2 million to procure hydrogen fuel cell buses. The presence of hydrogen fueling infrastructure projects, especially in the counties of Riverside and San Bernadino, demonstrates the feasibility of fuel cell electric

[14] Hydrogen Refueling Stations in California, California Energy Commission: https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics/hydrogen-refueling

technology for transit in the region. These agencies can serve as a resource for CCTS to use when implementing zero-emission technology and supporting programs into their services.

H

Potential Funding Sources

Available Funding Opportunities

Federal

CCTS is exploring federal grants through the following funding programs: Federal Transit Administration's (FTA) Urbanized Area Formula program; discretionary grant programs such as the Bus and Bus Facilities (B&BF) program, Low or No Emission Vehicle Deployment Program (Low-No), and Better Utilizing Investments to Leverage Development (BUILD) grant; and other available federal discretionary grant programs.

Annual Reliable Funding

- Federal Transportation Administration (FTA)
    - Urbanized Area Formula program
    - State of Good Repair Grants
    - Bus and Bus Facilities Formula grants

Future Funding Opportunities

- United States Department of Transportation (USDOT)
    - Better Utilizing Investments to Leverage Development (BUILD) Grants
- Federal Transportation Administration (FTA)
    - Bus and Bus Facilities Discretionary Grant
    - State of Good Repair Grants
    - Capital Investment Grants – New Starts
    - Capital Investment Grants – Small Starts
    - Low-or No-Emission Vehicle Grant
    - Metropolitan & Statewide Planning and Non-Metropolitan Transportation Planning
- Federal Highway Administration (FHWA)
    - Congestion Mitigation and Air Quality Improvement Program through SCAG
    - Surface Transportation Block Grant Program through SCAG
    - Carbon Reduction Program
- Environmental Protection Agency (EPA)
    - Environmental Justice Collaborative Program-Solving Cooperative Agreement Program

State

CCTS will also seek funding from state resources through grant opportunities including but not limited to Senate Bill 1 State of Good Repair (SGR), Transit and Intercity Rail Capital Program (TIRCP), Low Carbon Transit Operations Program (LCTOP) funding, the California Energy Commission's Clean Transportation Program as well as Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) for bus purchases when available.

Annual Reliable Funding

- Administered by California Department of Transportation (Caltrans)
    - Transportation Development Act Funds
        - Local Transportation Funds

        - State Transit Assistance (STA)
    - State of Good Repair (SB 1 funds)
    - Low Carbon Transit Operations Program (LCTOP)

Future Funding Opportunities

- California Air Resources Board (CARB)
    - Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
    - State Volkswagen Settlement Mitigation
    - Carl Moyer Memorial Air Quality Standards Attainment Program
    - Cap-and-Trade Funding
    - Low Carbon Fuel Standard (LCFS)
- California Transportation Commission (CTC)
    - State Transportation Improvement Program (STIP)
    - Solution for Congested Corridor Programs (SCCP)
    - Local Partnership Program (LPP)
- California Department of Transportation (Caltrans)
    - Transit and Intercity Rail Capital Program
    - Transportation Development Credits
    - New Employment Credit
- California Energy Commission

Local

Additionally, CCTS will pursue local funding opportunities to support zero-emission bus deployment. While the aforementioned funding opportunities are mentioned by name, CCTS will not be limited to these sources and will regularly assess opportunities for fiscal support for the ZEB program.

Legislation Supporting the Zero-Emission Transition

Policies and regulations supporting the transition to zero-emission are proliferating as the efforts to decarbonize the transportation sector expand. CCTS is monitoring the implementation of relevant policies and legislation. With the passage of the *Bipartisan Infrastructure Law* and issuance of *Executive Order 14008: Tackling the Climate Crisis at Home and Abroad*, the federal government has set a renewed focus on zero-emission transit. Riverside County's goal to deploy zero-emission vehicles supports the federal administration's priorities of renewing transit systems, reducing Greenhouse Gas emissions from public transportation, equity, creation of good paying jobs, and connecting communities. State legislation such as the Innovative Clean Transit Regulation further supports the replacement of fossil-fuel vehicles on the roads of California. Moreover, on August 25, 2022, the CARB approved the Advanced Clean Cars II Rule, requiring all new vehicles sold in California to be zero-emission vehicles (ZEVs) by 2035.

I

Start-up and Scale-up Challenges

Financial Challenges

Challenges can arise with any new propulsion technology, its corresponding infrastructure, or in training operators and maintenance staff. Nearly all transit agencies must contend with the cost barriers posed by zero-emission technologies. The current market cost of ZEBs is between $980,000 and $1,310,000, which is about $320,000 to $650,000 more costly than traditional CNG buses. The predicted costs of zero-emission cutaways are between $300,000 and $370,000, which is about $120,000 and $200,000 more costly than traditional ICE cutaways.

Additionally, the necessary infrastructure to support these buses adds to the financial burden of transitioning to a ZEB fleet, as outlined below in **Table 6**, showing the cost of the transition. CCTS will seek financial support to cover the cost of their FCEBs from the resources discussed in Section H.

Table 6 – Incremental Cost of ZEB Transition

Incremental cost of ZEB Transition			
	CNG Baseline*	ZEB Incremental Costs	ZEB Transition Scenario Costs
Bus Capital Expense	$23M	$14M	$37M
Fueling Infrastructure	$0	$10-13M	$10-13M
Total	$23M	$24-27M	$47-50M

**Represents the capital costs that would have been incurred in the absence of the ICT Regulation*

As seen in **Table 6,** the costs of required fueling infrastructure and fueling operations for ZEB technologies pose another hurdle for transit agencies transitioning to zero-emission service. Continued financial support at the local, state and federal level to offset the capital cost of this new infrastructure is imperative. For alternative fuels such as hydrogen, financial support from state and federal grant opportunities for green hydrogen supply chains and increasing economies of scale on the production side will ultimately benefit transit agencies deploying and planning for FCEBs and BEBs.

CARB can support CCTS by ensuring continued funding for the incremental cost of zero-emission buses and fueling infrastructure. Funding opportunities should emphasize proper transition and deployment planning and should not preclude hiring consultants to ensure best practices and successful deployments. The price and availability of hydrogen, both renewable and not, continue to be challenges that can be allayed by legislation subsidizing and encouraging renewable fuel production.

Agency Specific Challenges

In March 2021, the City had undergone a restructuring and the transit division was moved from the Public Works Department to the Community Services Department under the newly created Community Assistance Division. During the reorganization, transit staffing was reduced in half, whereas the transit services are now being managed by one individual. Staff shortages create challenges in balancing increased day-to-day operations including, transit contractor oversight, budgeting, grant administration, regulatory compliance, etc. Further, staffing constraints and competing priorities will make it difficult to pursue grant opportunities, initiate capital improvement projects, and project management. Should this trend continue, staffing shortages will play a big role

in the timeliness of this project and the ability of the City to meet the purchasing mandate and the ICT regulation of achieving a 100% zero-emission fleet by 2040.

Limitations of Current Technology

Beyond cost barriers, transit agencies must also ensure that available zero-emission technologies can meet basic service requirements of the agency's duty cycles. The applicability of specific zero-emission technologies will vary widely among service areas and agencies. As such, it is critical that transit agencies in need of technical and planning support have access to these resources to avoid failed deployment efforts. Support in the form of technical consultants and experienced zero-emission transit planners will be critical to turning Rollout Plans into successful deployments and tangible emissions reductions.

In addition to the uncertainty of technology improvements, there are other risks to consider in trying to estimate costs over the 18-year transition period. Although current BEB range limitations may be improved over time as a result of advancements in battery energy capacity and more efficient components, battery degradation may re-introduce range limitations, which is a cost and performance risk to an all-BEB fleet over time. While this can be mitigated by on-route charging, there may be emergency scenarios where the buses are expected to perform off-route or atypical service. In these emergency scenarios that require use of BEBs, agencies may face challenges performing emergency response roles expected of them in support of fire and police operations. Furthermore, fleetwide energy service requirements, power redundancy, and resilience may be difficult to achieve at any given depot in an all-BEB scenario. Although FCEBs may not be subject to these same limitations, higher capital equipment costs and availability of hydrogen may constrain FCEB solutions. RCTC, CCTS, CTE and IBI Group will expand upon challenge mitigation and adaptation in the Riverside County ZEB Implementation & Financial Strategy Plan.

Appendix A – Approved Board Resolution

RESOLUTION NO. 2023-046

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CORONA, CALIFORNIA, AUTHORIZING THE SUBMISSION OF THE ZERO-EMISSION BUS ROLLOUT PLAN TO THE CALIFORNIA AIR RESOURCES BOARD AS REQUIRED BY THE INNOVATIVE CLEAN TRANSIT REGULATION.

WHEREAS, in 2018, California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) Regulation, which requires public transit agencies to gradually transition to a 100 percent Zero-Emission Bus (ZEB) fleet with a goal for the full transition by 2040; and

WHEREAS, the main provisions of the ICT regulation include the following:

1. Small transit agencies which operate less than 100 buses in annual maximum service are required to submit a Board approved ZEB Rollout Plan by June 30, 2023
2. Small transit agencies must purchase a minimum number of ZEBs during future procurements, according to the following schedule:

    a. Starting in calendar years 2026 through 2028, 25 percent of new bus purchases in each year must be ZEBs.
    b. Starting in calendar year 2029, 100 percent of all new bus purchases must be ZEBs; and

WHEREAS, the City of Corona's ZEB Rollout Plan, currently being presented to the City Council for adoption, is a living document intended to guide the City's conversion to a ZEB fleet and may be updated based on changes in vehicle technology, fleet size, and operating requirements; and

WHEREAS, the Rollout Plan must be approved by the City governing body through the adoption of a resolution prior to submission to CARB; and

WHEREAS, per the requirements of the ICT, the Rollout Plan includes the required information in the following sections:

1. Transit Agency Information
2. Rollout Plan General Information
3. Technology Portfolio
4. Current Bus Fleet Composition and Future Bus Purchases
5. Facilities and Infrastructure Modifications

6. Providing Service in Disadvantaged Communities
7. Workforce Training
8. Potential Funding Sources.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CORONA, CALIFORNIA, AS FOLLOWS: hereby adopts the presented ZEB Rollout Plan as a guide for the implementation of ZEB technology and approves it for submission to CARB.

PASSED, APPROVED, AND ADOPTED this 7th day of June 2023.

Mayor of the City of Corona, California

ATTEST:

Sylvia G. Edwards

City Clerk of the City of Corona, California

CERTIFICATION

I, Sylvia Edwards, City Clerk of the City of Corona, California, do hereby certify that the foregoing resolution was regularly introduced and adopted by the City Council of the City of Corona, California, at an adjourned regular meeting thereof held on the 7th day of June, 2023 by the following vote:

AYES: CASILLAS, DADDARIO, RICHINS, SPEAKE, STEINER

NOES: NONE

ABSENT: NONE

ABSTAINED: NONE

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the City of Corona, California, this 7th day of June, 2023.

Sylvia G. Edwards

City Clerk of the City of Corona, California

[SEAL]

Appendix B – Glossary

Auxiliary Energy: Energy consumed (usually as a by time measure, such as "x"kW/hour) to operate all support systems for non-drivetrain demands, such as HVAC and interior lighting.

Battery Electric Bus: Zero-emission bus that uses onboard battery packs to power all bus systems.

Battery Nameplate Capacity: The maximum rated output of a battery under specific conditions designated by the manufacturer. Battery nameplate capacity is commonly expressed in kWh and is usually indicated on a nameplate physically attached to the battery.

Block: Refers to a vehicle schedule, the daily assignment for an individual bus. One or more runs can work a block. A driver schedule is known as a "run."

Charging Equipment: The equipment that encompasses all the components needed to convert, control and transfer electricity from the grid to the vehicle for the purpose of charging batteries. May include chargers, controllers, couplers, transformers, ventilation, etc.

Depot Charging: Centralized BEB charging at a transit agency's garage, maintenance facility, or transit center. With depot charging, BEBs are not limited to specific routes, but must be taken out of service to charge.

Energy: Quantity of work, measured in kWh for ZEBs.

Energy Efficiency: Metric to evaluate the performance of ZEBs. Defined in kWh/mi for BEBs, mi/kg of hydrogen for FCEBs, or miles per diesel gallon equivalent for any bus type.

Fuel Cell Electric Bus: Zero-emission bus that utilizes onboard hydrogen storage, a fuel cell system, and batteries. The fuel cell uses hydrogen to produce electricity, with the waste products of heat and water. The electricity powers the batteries, which powers the bus.

Greenhouse Gas Emissions: Zero-emission buses have no harmful emissions that result from diesel combustion. Common GHGs associated with diesel combustion include carbon dioxide (CO2), carbon monoxide (CO), nitrous oxides (NOx), volatile organic compounds (VOCs), and particulate matter (PM). These emissions negatively impact air quality and contribute to climate change impacts.

Hydrogen Fueling Station: The location that houses the hydrogen production (if produced onsite), storage, compression, and dispensing equipment to support fuel cell electric buses.

On-route Charging: BEB charging while on the route. With proper planning, on-route charged BEBs can operate indefinitely, and one charger can charge multiple buses.

Operating Range: Driving range of a vehicle using only power from its electric battery pack to travel a given driving cycle.

Route Modeling: A cost-effective method to assess the operational requirements of ZEBs by estimating the energy consumption on various routes using specific bus specifications and route features.

Useful Life: FTA definition of the amount of time a transit vehicle can be expected to operate based on vehicle size and seating capacity. The useful life defined for transit buses is 12-years. For cutaways, the useful life is 7 years.

Validation Procedure: to confirm that the actual bus performance is in line with expected performance. Results of validation testing can be used to refine bus modeling parameters and to inform deployment plans. Results of validation testing are typically not grounds for acceptance or non-acceptance of a bus.

Zero-Emission Vehicle: A vehicle that emits no tailpipe emissions from the onboard source of power. This is used to reference battery-electric and fuel cell electric vehicles, exclusively, in this report.

Well-to-wheel Emissions: Quantity of greenhouse gas, criteria pollutants, and/or other harmful emissions that includes emissions from energy use and emissions from vehicle operation. For BEBs, well-to-wheel emissions would take into account the carbon intensity of the grid used to charge the buses. For FCEBs, well-to-wheel emissions would take into account the energy to produce, transport, and deliver the hydrogen to the vehicle

Zero-Emission Bus Rollout Plan

Prepared by Riverside Connect with support from the Center for Transportation and the Environment, Arcadis IBI Group, and the Riverside County Transportation Commission

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List of Abbreviations

ADA: Americans with Disabilities Act

A&E: Architecture and Engineering

BEB: Battery Electric Bus

CA: California

CARB: California Air Resources Board

CNG: Compressed Natural Gas

COVID/COVID-19: Coronavirus Disease 2019 (SARS-CoV-2)

CTE: Center for Transportation and the Environment

DAC: Disadvantaged Community

FCEB: Fuel Cell Electric Bus

HVAC: Heating, Ventilation, and Air Conditioning

ICE: Internal Combustion Engine

ICT: Innovative Clean Transit

kW: Kilowatt

kWh: Kilowatt-Hour

MW: Megawatt

OEM: Original Equipment Manufacturer

PM: Particulate Matter

PPI: Producer Price Index

CPI: Consumer Price Index

RFP: Request for Proposals

SCE: Southern California Edison (SoCal Edison)

TDA: Transportation Development Act

VTT: Verification of Transit Training

ZEB: Zero-Emission Bus

A glossary of useful terms can also be found in Appendix B - Glossary

Executive Summary

Riverside Connect operates a paratransit service for seniors over the age of 60 and disabled residents within the City of Riverside. It is a program within the Special Transportation division of the City Riverside's Parks, Recreation and Community Services Department. Riverside Connect's service area is within the 81 square mile area within the city limits of the City of Riverside. As of July 2022, Riverside Connect's fleet included thirty-four (34) 26-ft Compressed Natural Gas (CNG) cutaways, (2) NOR CAL VAN, TYPE V Ford Transit 350EL, all of which are allocated for paratransit service. Riverside County Transportation Commission (RCTC) awarded a contract to the Center for Transportation and the Environment (CTE) to perform a zero-emission bus (ZEB) transition study to create a plan for a 100% zero-emission fleet by 2040 on behalf of transit agencies and municipal transportation services in the cities of Banning, Beaumont, Corona and Riverside and the Palo Verde Valley Transit Agency to comply with the Innovative Clean Transit (ICT) regulation enacted by the California Air Resources Board (CARB). This report will focus on Riverside Connect's transition to zero-emission technology.

Riverside Connect's Rollout Plan achieves a zero-emission fleet in line with the 2040 target of the ICT Regulation. To achieve this goal, Riverside Connect will replace all CNG cutaways with zero emission cutaways when the vehicles reach the end of their 7-year useful life. By 2040, 17 of the agency's cutaways are expected to be battery electric cutaways that will recharge midday and 17 will be fuel cell electric cutaways. The last of the agency's CNG cutaways will reach end of life in 2033.

Riverside Connect's entire on demand or "Dial-A-Ride" (DAR) paratransit fleet operates out of 8095 Lincoln Avenue, within the City of Riverside's Corporation Yard. The administrative facility includes administrative offices, a dispatch area, restrooms, and a break room. The facility also includes a parking lot for the agency's fleet, a CNG slow fill station, and a CNG Maintenance Bay. The Maintenance Bay facility has four maintenance bays for CNG vehicles, an administrative office, and multiple storage compartments for vehicle parts and equipment. Riverside Connect plans to install both charging and hydrogen fueling infrastructure at this location to support their mixed fleet.

Riverside Connect's DAR service provides transportation opportunities to Disadvantaged Communities (DACs) and moving toward zero-emission vehicles will help improve the health of DACs and non-DACs alike. The agency will build upon an existing training structure for vehicle maintenance and operators to provide the necessary battery-electric cutaway and fuel cell electric cutaway specific training that will be required for the agency to own and operate battery electric and fuel cell electric cutaways. The agency estimates that pursuing a zero-emission fleet in place of a compressed natural gas (CNG) fleet will cost an additional $23M in vehicle costs and infrastructure alone between 2021 and 2040, which will require significantly more funding opportunities. Riverside Connect plans to pursue funding opportunities at the federal, state, and local levels to help fill this funding gap.

A

Transit Agency Information

Riverside Connect Profile

History

Owned and operated by the City of Riverside, Riverside Connect is an origin-to-destination shared ride service available to senior citizens (60 years of age and older) and persons with disabilities. Documentation from a physician is required for individuals with a disability.

Riverside Connect operates 362 days per year, only suspending service on Thanksgiving Day, Christmas Day and New Year's Day. Hours of operation are 8:00 a.m. – 5:30 p.m. Monday through Friday and 9:00 a.m. – 4:00 p.m. on weekends and holidays. To schedule a ride, passengers must call Riverside Connects' reservation telephone number, during the business hours of 8:00 a.m. – 5:00 p.m., Monday through Friday, and 9:00 a.m. – 3:00 p.m. on weekends and holidays. An answering machine is available before and after business hours for cancellations.

Service Area and Bus Service

Riverside Connect offers service within an 81 square mile area within the city limits of the City of Riverside. The city of Riverside is served by both Riverside Transit Agency (RTA) and Riverside Connect. Riverside Connect is operated by the City of Riverside, separately from the transit agency, under a Memorandum of Understanding (MOU) in order to provide solely paratransit, demand response services within the City limits. RTA provides fixed route service to the area and paratransit service outside the City limits. The current paratransit fleet consists of thirty-four (34) Glaval Bus Type C Ford E-450 CNG cutaways, and (2) NOR CAL VAN, TYPE V Ford Transit 350EL. Riverside Connect's DAR service is reserved for seniors of age 60 and older and people with disabilities, including those covered by the Americans with Disabilities Act (ADA). The DAR service may be primarily used for rides to grocery stores and medical facilities currently, however, as COVID-19 infection rates decrease, Riverside Connect anticipates that workshops, senior centers, and other programs will reopen and service will eventually return to pre-COVID levels.

Riverside Connect's service map is illustrated in **Figure 1.**

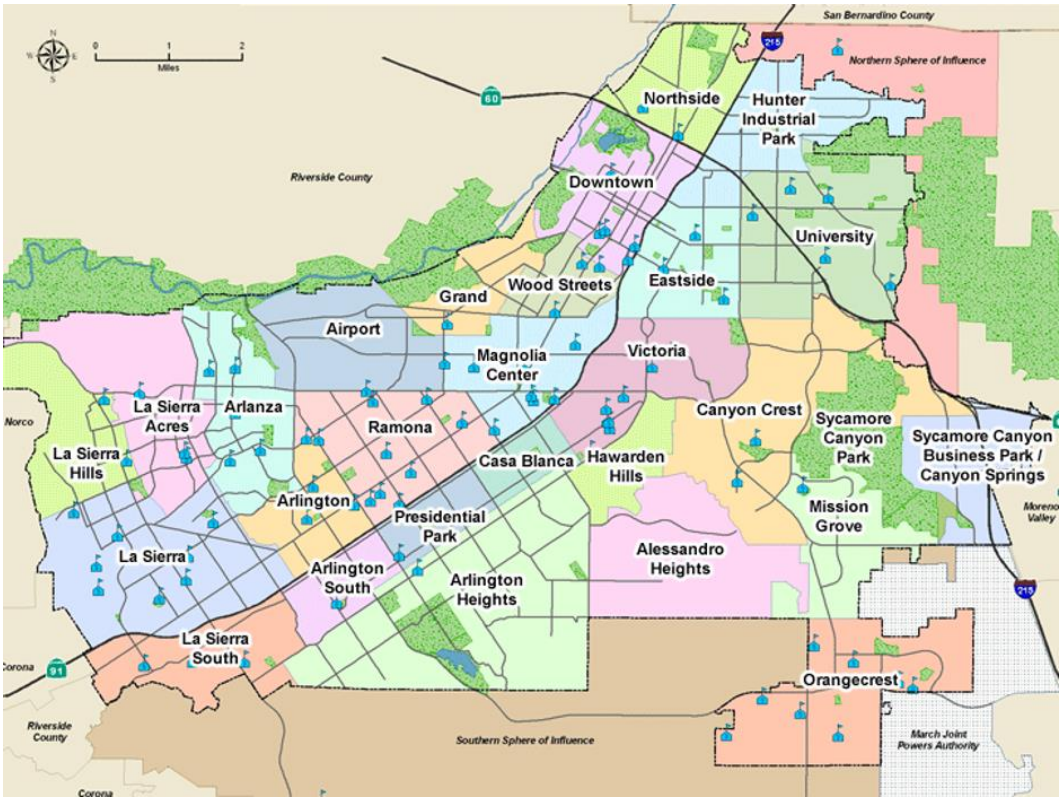

Figure 1 – Riverside Connect Service area

Ridership

Based on Riverside Connect data of total ridership from fiscal year 2021/2022, staff estimated that there were a total of 38,900 passengers throughout the year. In the 2020/2021 Fiscal Year, there were a total of 26,518 passengers. Riverside Connect anticipates that annual ridership in the 2022/2023 Fiscal Year will be 80,000 passengers, an increase of 106% over the 2021/2022 ridership.

Riverside Connect Basic Information

Transit Agency's Name:

Riverside Connect

Mailing Address: Riverside Connect

6927 Magnolia Ave,

Riverside, CA 92506

Transit Agency's Air Districts:

Riverside Connect is part of the South Coast Air Quality Management District (SCAQMD).

Transit Agency's Air Basin:

Mojave Desert Air Quality Management District is part of the South Coast Air Basin.[1]

Total number of buses in Annual Maximum Service:

The maximum number of active buses operating demand response services out of the Corporation Yard is thirty-four (34). The fleet is composed of 34 26' CNG cutaways.

Urbanized Area:

Riverside, CA. Riverside is 81.23 square miles of land area with 3,878 people per square mile living within that area.[2]

Population of Urbanized Area:

317,261 residents.[2]

[1] https://www.rcrcd.org/south-coast-air-quality-management-district-scaqmd

[2] https://www.census.gov/quickfacts/fact/table/riversidecitycalifornia/RHI525221

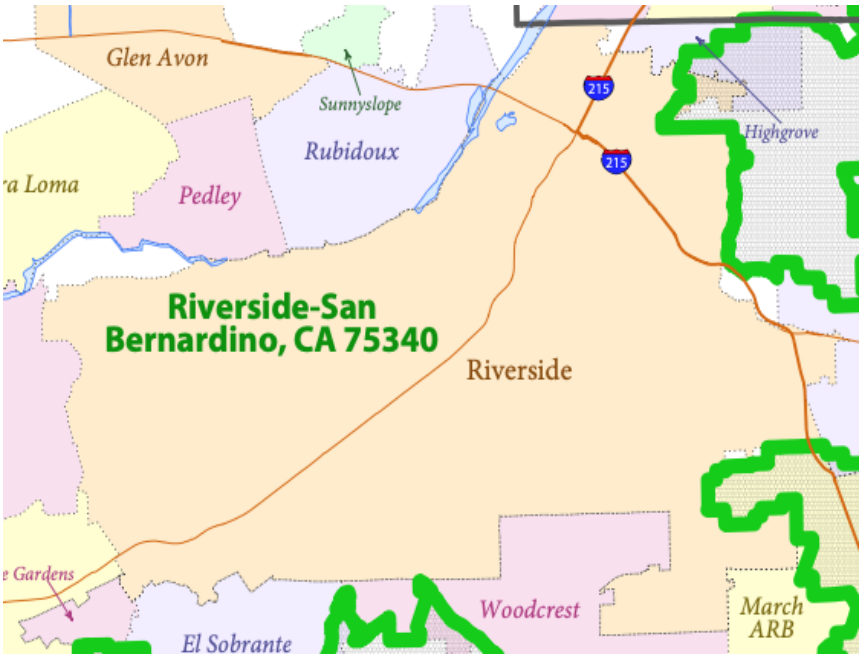

Figure 2 – City of Riverside Urbanized Rural Map[3][4]

Contact Information for Inquiries on the Riverside Connect ICT Rollout Plan:

Ron Profeta, Transit Manager, City of Riverside

3900 Main St,

Riverside, CA 92522

Tel: (951)-826-2000

RProfeta@riversideca.gov

Is your transit agency part of a Joint Group? No

Fleet Facility

Riverside Connect's entire DAR paratransit fleet operates out of 8095 Lincoln Avenue, within the City of Riverside's Corporation Yard. The administrative facility includes administrative offices, a dispatch area, restrooms, and a break room. The facility also includes a parking lot for the agency's fleet, a CNG slow fill station, and a CNG Maintenance Bay. The Maintenance Bay facility has four maintenance bays for CNG vehicles, an administrative office, and multiple storage compartments for vehicle parts and equipment. A map of the Corporation Yard is shown in **Figure 3**. These facilities offer a starting point for the consideration of viable locations for zero-emission fueling infrastructure, chargers and/or a **hydrogen fueling station**.

[3] https://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua75340_riverside--san_bernardino_ca/DC10UA75340_000.pdf

[4] Solid Green lines represent the boundaries of the urbanized area

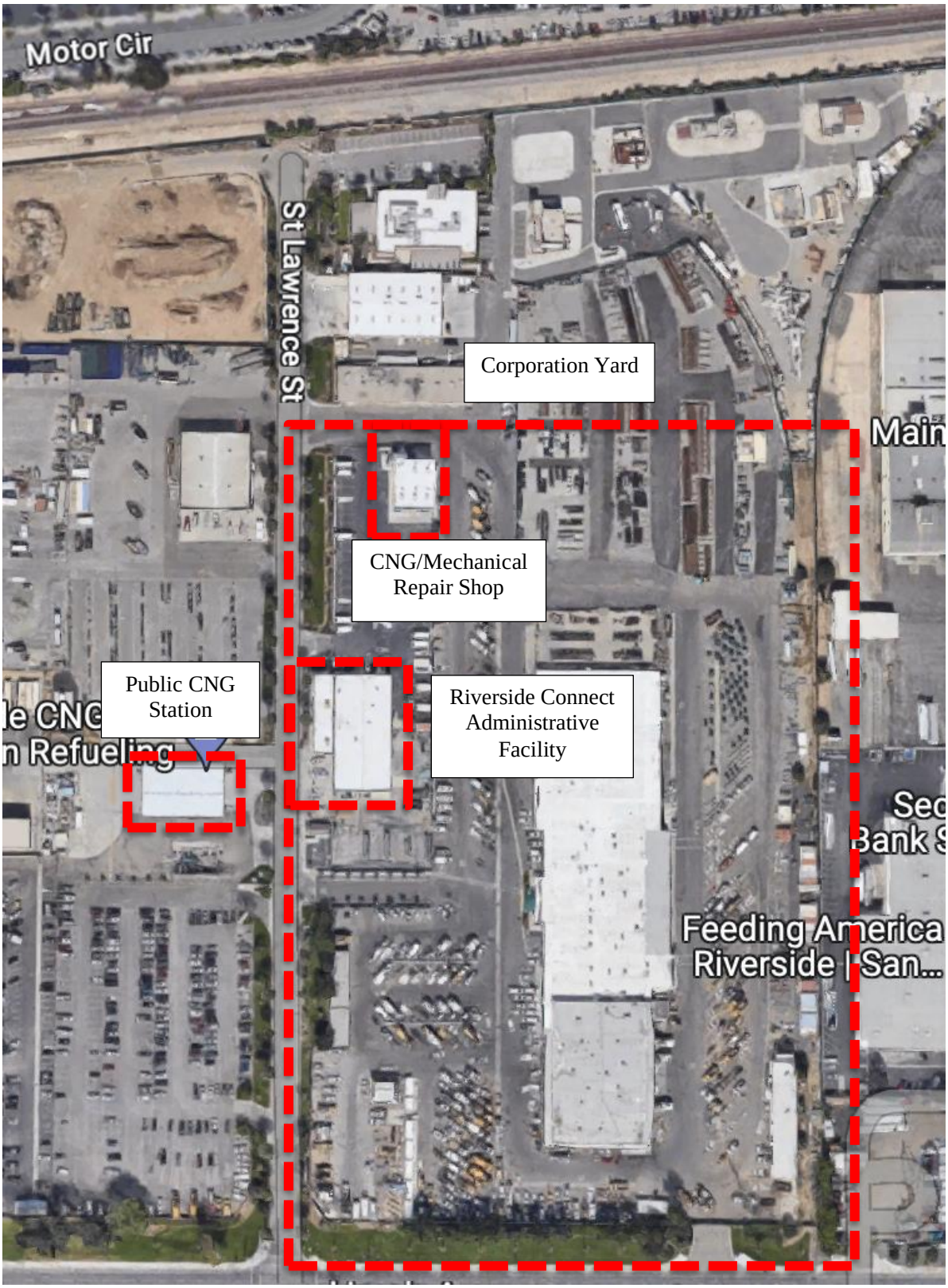

Figure 3 – Fueling, Administrative, and Storage Facility Overview

Riverside Connect Sustainability Goals

Per their City Strategic Plan, Envision Riverside 2025[5] The City of Riverside has dedicated themselves to the strategic priorities of "Environmental Stewardship" and "Infrastructure, Mobility & Connectivity." The City of Riverside defines Environmental Stewardship as "Champion[ing] proactive and equitable climate solutions based in science to ensure clean air, safe water, a vibrant natural world, and a resilient green new economy for current and future generations." To this end, relevant goals that they are working to fulfill are "rapidly decrease[ing] Riverside's carbon footprint by acting urgently to reach a zero carbon electric grid with the goal of reaching 100% renewable energy production by 2040 while continuing to ensure safe, reliable and affordable energy for all residents," "implement[ing] proactive policies and inclusive decision-making processes to deliver environmental justice and ensure that all residents breath healthy and clean air with the goal of having zero days of unhealthy air quality per the CalEnviroScreen by 2030," and "implement[ing] the requisite measures to achieve citywide carbon neutrality no later than 2040." The City's goals within their Strategic Priority of Infrastructure, Mobility & Connectivity are to "provide, expand and ensure equitable access to sustainable modes of transportation that connect people to opportunities such as employment, education, healthcare, and community amenities," "maintain, protect and improve assets and infrastructure within the City's built environment to ensure and enhance reliability, resiliency, sustainability, and facilitate connectivity," "Identify and pursue new and unique funding opportunities to develop, operate, maintain, and renew infrastructure and programs that meet the community's needs," and "Incorporate Smart City strategies into the planning and development of local infrastructure projects."

Riverside Connect has developed a plan to transition to a fully zero emission vehicle (ZEV) fleet composed of battery electric and fuel cell electric cutaways by 2040, in accordance with the Innovative Clean Transit (ICT) regulation, requiring all California transit agencies to follow zero-emission procurement guidelines with the goal of achieving 100% zero-emission fleets by 2040. Riverside Connect has committed to purchasing zero emission cutaways, demonstrating the agency's commitment to reducing emissions. Riverside Connect's transition to a fully zero emission fleet will ultimately benefit communities through cleaner air, greater independence from fossil fuels, and more environmental sustainability.

[5] https://www.riversideca.gov/sites/default/files/City%20Strategic%20Plan_Digital_2021_Spreads.pdf

B

Rollout Plan General Information

Overview of the Innovative Clean Transit Regulation

On December 14, 2018, CARB enacted the Innovative Clean Transit (ICT) regulation, setting a goal for California public transit agencies to have zero-emission bus fleets by 2040. The regulation specifies the percentage of new bus procurements that must be zero-emission buses for each year of the transition period (2023–2040). The annual percentages for Small Transit agencies are as follows:

ICT Zero-Emission Bus Purchase Requirements for Small Agencies:

January 1, 2026 - 25% of all new bus purchases must be zero-emission

January 1, 2027 - 25% of all new bus purchases must be zero-emission

January 1, 2028 - 25% of all new bus purchases must be zero-emission

January 1, 2029+ - 100% of all new bus purchases must be zero-emission

March 2021-March 2050 – Annual compliance report due to CARB

This purchasing schedule guides agency procurements to realize the goal of zero-emission fleets in 2040 while avoiding any early retirement of vehicles that have not reached the end of their 12-year useful life. Agencies have the opportunity to request waivers that allow purchase deferrals in the event of economic hardship or if zero-emission technology cannot meet the service requirements of a given route. These concessions recognize that zero-emission technologies may cost more than current internal combustion engine (ICE) technologies on a vehicle lifecycle basis and that zero-emission technology may not currently be able to meet all service requirements.

Riverside Connect Rollout Plan General Information

Rollout Plan's Approval Date: June 20, 2023

Resolution No: 24002

Contact for Rollout Plan follow-up questions:
Ron Profeta, Transit Manager, City of Riverside

3900 Main St,

Riverside, CA 92522

Tel: (951)-826-2000

RProfeta@riversideca.gov

Who created the Rollout Plan?
This Rollout Plan was created by Riverside Connect, with assistance from the Center for Transportation and the Environment (CTE) and the Riverside County Transportation Commission (RCTC).

This document, the ICT Rollout Plan, contains the information for Riverside Connect's zero-emission fleet transition trajectory as requested by the ICT Regulation. It is intended to outline the high-level plan for implementing the transition. The Rollout Plan provides estimated timelines based on information on bus purchases, infrastructure upgrades, workforce training, and other developments and expenses that were available at the time of writing.

Additional Agency Resources

Riverside Connect agency website: https://riversideca.gov/park_rec/programs-sports/seniors/special-transportation-division

C

Technology Portfolio

Zero Emission Transition Technology Selection

Based on outcomes of the zero-emission fleet transition planning study completed by CTE, Riverside Connect plans to transition its fleet to a mix of battery electric and fuel cell electric cutaways. By 2040, Riverside Connect expects to operate a fully zero-emission fleet of 34 cutaways.

A mixed technology zero-emission fleet scenario provides more service energy while avoiding as much opportunity charging and mitigating the higher fuel cost of a fuel cell electric-only fleet. A mixed technology zero-emission fleet also offers resilience by allowing service to continue should either fuel (electricity or hydrogen) become temporarily unavailable. This plan summarizes the charging and hydrogen infrastructure costs needed to support a fleet of 17 battery electric cutaways and 17 fuel cell electric cutaways.

Local Developments and Regional Market

California has become a global leader for zero-emission buses, as well as the zero-emission fuel and fueling infrastructure required to support these vehicles. California is home to four bus OEMs that manufacture zero-emission buses. Although three of these OEMs do not currently build FCEBs, growing demand for this vehicle technology may encourage these manufacturers to enter the market.

The state legislature has fostered growth in zero-emission fuels through the state's Low-Carbon Fuel Standard (LCFS) program, which incentivizes the consumption of fuels with a lower carbon intensity than traditional combustion fuels and through funding opportunities offered by CARB and CEC. The state's electrical utility companies have also supported the transition to ZEB technology by offering incentive programs for heavy duty EV charging infrastructure and service upgrades. California BEB deployments represent 37% of the nation's BEB deployments. [6]

California also has one of the most mature hydrogen fueling networks in the nation. The state's hydrogen market has developed to support the growing number of fuel cell electric vehicles on the roads in the state. California has four medium-and-heavy-duty fueling stations in operation and four more in development. Additionally, the number of hydrogen production and distribution centers is growing to meet increased hydrogen demand as it gains popularity as a transportation fuel. California fuel cell electric bus (FCEB) deployments represent 75% of the nation's FCEB deployments.[6]

ZEB Transition Planning Methodology

Riverside Connect's ICT Rollout Plan was created in combination with Riverside Connect's Existing Conditions Report and the Riverside County ZEB Financial Strategy Plan, utilizing CTE's ZEB Transition Planning Methodology. CTE's methodology consists of a series of assessments that enable transit agencies to understand what resources and decisions are necessary to convert their fleets to zero-emission technologies. The results of the assessments

[6] CALSTART. 2021. THE ADVANCED TECHNOLOGY TRANSIT BUS INDEX: A NORTH AMERICAN ZEB INVENTORY REPORT. https://calstart.org/wp-content/uploads/2022/01/2021-ZIO-ZEB-Final-Report_1.3.21.pdf

help the agency decide on a step-by-step process to achieve its transition goals. These assessments consist of data collection, analysis, and modeling outcome reporting stages. These stages are sequential and build upon findings in previous steps. The assessment steps specific to Riverside Connect's Rollout Plan are outlined below:

1. Planning and Initiation
2. Requirements Analysis & Data Collection
3. Service Assessment
4. Fleet Assessment
5. Fuel Assessment
6. Maintenance Assessment
7. Facilities Assessment
8. Total Cost of Ownership Assessment
9. Policy Assessment
10. Partnership Assessment

For **Requirements Analysis & Data Collection,** CTE collects data on the agency's fleet, routes and blocks, operational data (e.g., mileage and fuel consumption), and maintenance costs. Using this data, CTE establishes service requirements to constrain the analyses in later assessments and produce agency-specific outputs for the zero-emission fleet transition plan.

The **Service Assessment** phase initiates the technical analysis phase of the study. Using information collected in the Data Collection phase, CTE evaluates the feasibility of using zero-emission buses to provide service to the agency's routes and blocks over the transition plan timeframe from 2022 to 2040. Results from the Service Assessment are used to guide zero emissions vehicle procurement plans in the Fleet Assessment and to determine energy requirements in the Fuel Assessment.

The **Fleet Assessment** projects a timeline for the replacement of existing buses with zero emission vehicles that is consistent with Riverside Connect's existing fleet replacement plan and known procurements. This assessment also includes a projection of fleet capital costs over the transition timeline and is optimized to meet state mandates or agency goals, such as minimizing costs or maximizing service levels.

The **Fuel Assessment** merges the results of the Service Assessment and Fleet Assessment to determine annual fuel requirements and associated costs. The Fuel Assessment calculates energy costs through the full transition timeline for each fleet scenario, including the agency's existing ICE vehicles. To more accurately estimate battery electric cutaway charging costs, a focused Charging Analysis is performed to simulate daily system-wide energy use. As older technologies are phased out in later years of the transition, the Fuel Assessment calculates the changing fuel requirements as the fleet transitions to zero emission vehicles. The Fuel Assessment also provides a total fuel cost over the transition timeline.

The **Maintenance Assessment** calculates all projected fleet maintenance costs over the transition timeline. Maintenance costs are calculated for each fleet scenario and include costs of maintaining existing fossil-fuel cutaways that remain in the fleet and maintenance costs of new battery electric cutaways and fuel cell electric cutaways.

The **Facilities Assessment** determines the infrastructure necessary to support the projected zero-emission fleet composition over the transition period based on results from the Fleet Assessment and Fuel Assessment. This assessment evaluates the required quantities of charging infrastructure and/or hydrogen fueling station projects and calculates the costs of infrastructure procurement and installation sequenced over the transition timeline.

The **Total Cost of Ownership Assessment** compiles results from the previous assessment stages to provide a comprehensive view of all fleet transition costs, organized by scenario, over the transition timeline.

The **Policy Assessment** considers the policies and legislation that impact the relevant technologies.

The **Partnership Assessment** describes the partnership of the agency with the utility or alternative fuel provider.

Requirements Analysis & Data Collection

The Requirements Analysis and Data Collection stage begins by compiling operational data from Riverside Connect regarding its current fleet and operations and establishing service requirements to constrain the analyses in later assessments. CTE requested data such as fleet composition, fuel consumption and cost, maintenance costs, and annual mileage to use as the basis for analyses. Riverside Connect self-assigned topography and speed characteristics to each service day, which were utilized to better define efficiencies. The calculated efficiencies were then used in the Service Assessment to determine the energy requirements of Riverside Connect's service.

CTE evaluated battery electric and fuel cell electric vehicles to support Riverside Connect's technology selection. After collecting route and operational data, CTE determined that Riverside Connect's longest day in service is 122 miles and the average distance is 105 miles. Based on observed performance, CTE estimates FCEBs are able to complete any block under 350 total miles. Although there are currently no fuel cell electric cutaways on the market, CTE assumed that when fuel cell electric cutaways enter the market, they will perform similarly to FCEBs, and therefore Riverside Connect's service will likely be feasible with fuel cell cutaways. Although fuel cell cutaways were determined to have the capability of serving all of Riverside Connect's routes, Riverside Connect was interested in exploring battery electric and fuel cell electric cutaway service scenarios, so it was necessary to determine how much of Riverside Connect's service could feasibly be served by depot-only charged battery electric cutaways on a single charge and with midday charging in order to develop a set of zero emission transition scenarios that would allow the agency to make an informed decision on what technology or technologies would be most suitable to the agency's needs.

The energy efficiency and range of battery electric cutaways are primarily driven by vehicle specifications, such as on-board energy storage capacity and vehicle weight. Both metrics are affected by environmental and operating variables including the route profile (e.g., distance, dwell time, acceleration, sustained top speed over distance, average speed, and traffic conditions), topography (e.g., grades), climate (e.g., temperature), driver behavior, and operational conditions such as passenger loads and auxiliary loads. As such, BEB efficiency and range can vary dramatically from one agency to another or even from one service day to another. It was therefore critical for Riverside Connect to determine efficiency and range estimates based on an accurate representation of its operating conditions.

To understand battery electric cutaway performance on Riverside Connect routes, CTE modeled the impact of variations in passenger load, accessory load, and battery degradation on vehicle performance, fuel efficiency, and range. CTE ran models with different energy demands that represented *nominal* and *strenuous* conditions. Nominal loading conditions assume average passenger loads and moderate temperature over the course of the day, which places low demands on the motor and heating, ventilation, and air conditioning (HVAC) system. Strenuous loading conditions assume high or maximum passenger loading and near maximum output of the HVAC system. This nominal/strenuous approach offers a range of operating efficiencies to use for estimating average annual energy use (nominal) or ensuring that a vehicle will be able to meet service demands (strenuous). Route modeling ultimately provides an average energy use per mile (kilowatt-hour/mile [kWh/mi]) for each load case.

In addition to loading conditions, CTE modeled the impact of battery degradation on a battery electric cutaway's ability to complete a block. The range of a battery electric cutaway is reduced over time due to battery degradation. A battery electric cutaway may be able to complete a given trip with beginning-of-life batteries, while later it may be unable to complete the entire trip at some point in the future as batteries near their end-of-life or derated capacity (typically considered 70-80% of available service energy).

Service Assessment

Given the conclusion that fuel cell electric cutaways can meet the range requirements for Riverside Connect's service, the Service Assessment focused on evaluating the feasibility of battery electric cutaways in Riverside Connect's service area. The efficiencies calculated in the Requirements Analysis & Data Collection stage were used to estimate the energy requirements of Riverside Connect's service. The main focus of the Service Assessment is called the block analysis, which determines whether generic battery electric technology can meet the service requirements of a block based on range limitations, weather conditions, levels of battery degradation and route

specific requirements. The Transit Research Board's Transit Cooperative Research Program defines a block as "the work assignment for only a single vehicle for a single service workday".[7] In Riverside Connect's case, because they operate DAR paratransit service only, a block refers to the mileage performed by each vehicle across a series of unique trips throughout its service day. The energy needed to complete a block is compared to the available energy of the cutaway assigned to service the block. If the cutaway's usable onboard energy exceeds the energy required by the block, then the conclusion is that the battery electric cutaway can successfully complete that block on a single charge.

The Service Assessment projects the performance of a battery electric cutaway on a single overnight charge and operates on Riverside Connect's service schedule at the time of the plan's writing. The results are used to determine when along the transition timeline a fleet of overnight depot-charged battery electric cutaways can feasibly serve Riverside Connect's territory or if another zero-emission technology or midday charging is required to maintain service. This information can then be used to inform the scale and timing of battery electric cutaway procurements in the Fleet Assessment.

Modeling & Procurement Assumptions

CTE and Riverside Connect defined the following assumptions and requirements used throughout the study:

The Service Assessment energy profile assumed a 5% improvement in battery capacity every year with a starting battery capacity of 120 kWh for a 25' cutaway which represents an analogous zero emission cutaway suitable for Riverside Connect's transit vehicles and is an average of battery capacities seen in commercially-available cutaways of the same size and passenger capacity in 2022.

This analysis also assumed Riverside Connect will maintain their service in a similar distribution of distance, relative speeds, and elevation changes to pre-COVID-19 service because their cutaways will continue to serve similar locations within the service area and general topography remains constant even if specific routes and schedules change.

Fleet size and vehicle length distribution do not change over time. The analysis assumed that vehicles reaching the end of their useful life would be replaced with vehicles of the same size. Total fleet size remains the same over the transition period.

Cutaways are assumed to operate for a 7-year service life.

Usable on-board energy is assumed to be that of a mid-life battery (10% degraded) with a reserve at both the high and low end of the battery's charge potential. As previously discussed, battery age affects range, so a mid-life battery was assumed as the average capacity of the battery's service life. Charging batteries to 100% or dropping the charge below 10% also degrades the batteries over time, which is why the analysis assumes that the top and bottom portions of the battery are unusable.

CTE accounts for battery degradation over the transition period with the assumption that Riverside Connect can rotate the cutaways to match battery capacity to block energy requirements. As the zero-emission fleet transition progresses, older vehicles can be moved to shorter, less demanding blocks and newer vehicles can be assigned to longer, more demanding blocks to account for battery degradation in battery electric cutaways over time. Riverside Connect can rotate the fleet to meet demand, assuming there is a steady procurement of battery electric cutaways each year to match service requirements. CTE accounts for this variability in battery age by using a mid-life usable battery capacity to determine block feasibility.

Results

The Service Assessment determines the timeline for when Riverside Connect's service may become achievable by battery electric cutaways on a single depot charge. After determining what proportion of Riverside Connect's service could be completed by battery electric cutaways on a single charge, CTE was also able to determine the

[7] TRB's Transit Cooperative Research Program. 2014. TCRP Report 30: Transit Scheduling: Basic and Advanced Manuals (Part B). https://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_30-b.pdf

proportion of service that would require midday charged battery electric cutaways or longer range fuel cell electric cutaways in order to reach 100% ZEB service. Riverside Connect and CTE can then use these results to inform zero emission cutaway procurement decisions in the Fleet Assessment. Results from this analysis are also used to determine the specific energy requirements and fuel consumption of the fleet over time. These values are then used in the Fuel Assessment to estimate the cost to operate the transitioning fleet.

These projections assume the average service days will maintain a similar distribution to current service because Riverside Connect will continue to serve similar destinations within the city. This core assumption affects energy use estimates and service achievability in each year.

The results of Riverside Connect's Service Assessment for Dial-a-Ride service on a single charge can be found below in **Figure 4.** Based on CTE's analysis, Riverside Connect's average service day does not become feasible for a depot charged battery-electric cutaway on a single charge by 2040, which means that battery-electric cutaways would require some form of opportunity charging throughout the day to complete their service.

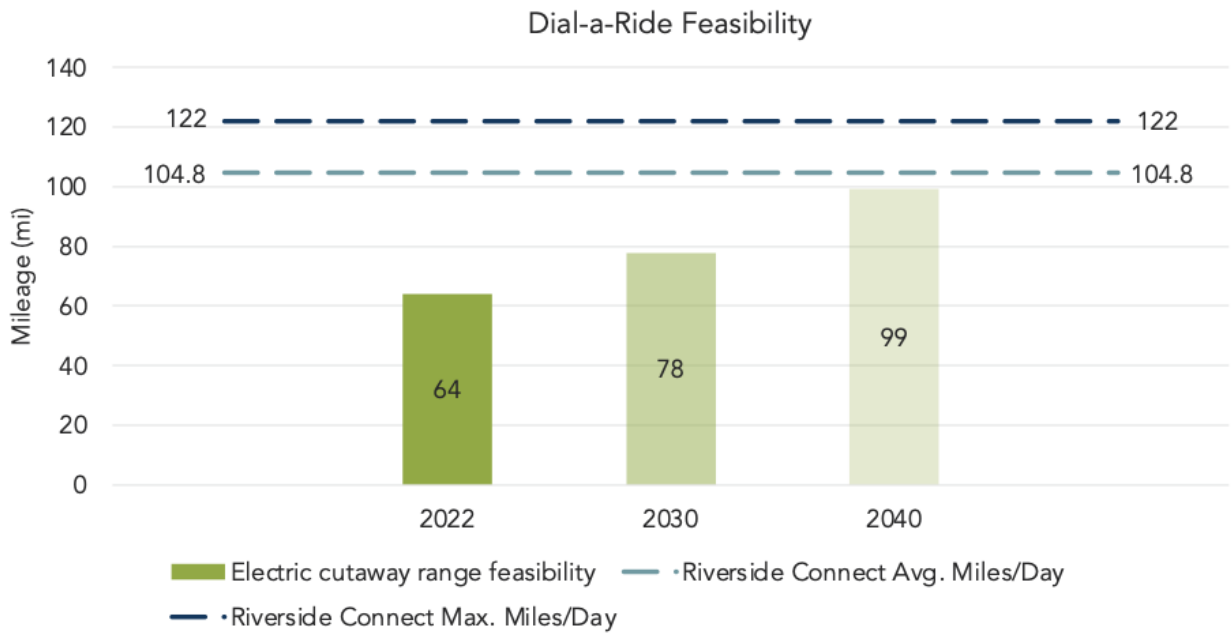

Figure 4 – Dial-A-Ride Feasibility

Pantograph and inductive charging have not yet been demonstrated on the market for electric cutaways, so this option was not considered. Demand response service is run sporadically throughout the day, with vehicles typically returning to the depot after completing their assignments. Based on this service pattern, it was assumed that battery-electric cutaways could be charged throughout the day when they return to the depot which would allow them to complete all of Riverside Connect's service. Also, as noted previously, fuel cell cutaways are assumed to be able to complete any trip under 350 total miles and Riverside Connect's longest service day is 122 miles long, which means that fuel cell technology will have the capability to meet Riverside Connect's service requirements. Therefore, battery electric cutaways with opportunity charging at the depot and fuel cell electric cutaways are viable options for Riverside Connect.

Description of Zero Emission Technology Solutions Considered

For this study, CTE developed 3 scenarios to compare to a baseline scenario and analyze the feasibility and cost effectiveness of implementing each technology as well as the co-implementation of both technologies. A baseline scenario was also developed to represent the typical "business-as-usual" case with retention of ICE cutaways for cost comparison purposes.

The scenarios are referred to by the following titles and described, in detail, below:

0. Baseline (current technology)
1. Battery Electric Cutaways Only
2. Mixed Fleet – Fuel Cell and Battery Electric Cutaways
3. Fuel Cell Cutaways Only

In the **Battery Electric Fleet Transition**, battery electric cutaways are to replace CNG vehicles as they reach end of life according to the purchasing requirements in the ICT Regulation. As previously noted, battery electric cutaways are not capable of meeting Riverside Connect's daily service requirements on a single charge, so midday opportunity charging is utilized on DAR service to sustain energy on-board. Based on CTE's modeling, all of Riverside Connect's service is fully achievable using opportunity-charged battery electric technology by 2040.

In the **Mixed Fleet Transition,** fuel cell cutaways and battery electric cutaways are purchased in equal numbers to make up a fully zero emission fleet. The costs for infrastructure and installation of two different charging and fueling infrastructures are taken into account. Fuel cell vehicles and hydrogen fuel, however, are more expensive than battery electric vehicles and electricity, so this scenario allows Riverside Connect to use the less expensive battery technology where possible and supplement service with fuel cell vehicles as needed, particularly in cases where the vehicle may not be able to return to the depot to charge midday, and support resilience and redundancy adaptation measures.

Finally, the **Fuel Cell Fleet Transition** was developed to examine the costs for hydrogen fueling and transitioning to a 100% fuel cell cutaway fleet. A fully fuel cell fleet avoids the need to install two types of fueling infrastructure by eliminating the need for depot charging equipment. Fleets composed entirely of fuel cell electric cutaways also offer the benefit of scalability compared to battery electric technologies. Adding fuel cell vehicles to a fleet after the initial facility build out does not necessitate large complementary infrastructure upgrades as long as the fueling station was appropriately sized for the fleet. Despite this benefit, the cost of fuel cell cutaways and hydrogen fuel are still more expensive than battery electric cutaways and electricity at current market prices.

When considering the various scenarios, this study can be used to develop an understanding of the range of costs that may be expected for Riverside Connect's zero emission transition, but ultimately, can only provide an estimate. Furthermore, this study aims to provide an overview of the myriad considerations the agency must take into account in selecting a transition scenario that go beyond cost, such as space requirements, safety implications, and operational changes that may differ between scenarios.

D

Current Fleet Composition and Future Vehicle Purchases

Fleet Assessment Methodology

The Fleet Assessment projects a timeline for the replacement of existing cutaways with zero emission cutaways. The timeline is consistent with Riverside Connect's fleet replacement plan that is based on the 7-year service life of truck-style cutaways. This assessment also includes a projection of fleet capital costs over the transition timeline.

Zero Emission Vehicle Cost Assumptions

CTE and Riverside Connect developed cost assumptions for future cutaway purchases. Key assumptions for cutaway costs for the Riverside Connect Transition Plan are as follows:

- CNG vehicle prices were provided by Riverside Connect and are inclusive of costs for configurable options and taxes.
- Capital vehicle costs are derived from the 2022 California, Washington and New Mexico State Contracts plus the annual PPI (2%) and tax (8.75%). Fuel Cell Cutaway pricing is a price estimation due to lack of market information.
- Costs for retrofits or bus conversions are not included. Procurements assume new vehicle costs.

Table 1- Fleet Assessment Cost Assumption

	Fuel Type		
Length	CNG	Electric	Fuel Cell
Cutaway	$157,537	$300,955	$376,153*

*Bus size not currently available for this technology

Description of Riverside Connect's Current Fleet

Riverside Connect's current service and fleet composition provide the baseline for evaluating the costs of transitioning to a zero-emission fleet. Riverside Connect staff provided the following key data on current service:

- Fleet composition by powertrain and fuel
- Daily paratransit service
- Mileage and fuel consumption
- Maintenance costs

Fleet

As of 2022, the Riverside Connect fleet includes 34 CNG 26' cutaways used for DAR paratransit service. Transit services, including operations, maintenance, and fueling, operate out of one depot in Riverside, CA.

Routes and Blocks

Riverside Connect's 2022 service exclusively consists of Dial-a-Ride paratransit service. Daily distances range from 82 miles to 122 miles. Vehicles pull out as early as 6:35 AM and return as late as 5:25 PM. Riverside Connect service runs within the boundaries of the City of Riverside.

Current Mileage and Fuel Consumption

Annual mileage of the fleet:
887,698 miles

Riverside Connect's ZEB Transition Plan assumes that the amount of service miles will remain the same.

Annual fuel consumption:
130,544 GGE of CNG

Fleet average efficiency:
6.8 miles per GGE

Riverside Connect current fuel expense:
$205,000 per year

Average fuel costs:
$1.57 per GGE of CNG

Maintenance Costs

Average maintenance costs per mile by vehicle type are estimated in **Table 2**. Vehicles also do not undergo any midlife overhauls due to their short usable life period as summarized in **Table 3.** These costs were utilized to project transition maintenance costs.

Table 2 – Labor and Materials Cost Assumptions

Vehicle Type	Estimate (Per Mile)
CNG Cutaway	$ 0.35
Battery Electric Cutaway	$0.32
Fuel Cell Electric Cutaway	$0.51

Table 3 – Midlife Overhaul Cost Assumptions

Vehicle Type	Overhaul (FC/Transmission) Cost Per vehicle life	Battery Warranty Cost Per vehicle life
CNG Cutaway	$0	$0
Battery Electric Cutaway	$0	$24,000
Fuel Cell Electric Cutaway	$0	$10,000

Zero-Emission Bus Procurement Plan and Schedule

Riverside Connect will provide demand response service with a fleet of seventeen (17) depot-charged and opportunity-charged battery electric cutaways and seventeen (17) fuel cell cutaways. This technology combination will be sufficient for meeting the agency's service demands. Riverside Connect's fleet transition strategy is to replace each compressed natural gas (CNG) cutaway as they reach the ends of their service lives with battery electric cutaways until 2029, and a mix of battery electric and fuel cell cutaways beginning in 2030. **Figure 5** below provides the number of each vehicle type that will be purchased each year through 2040 with this replacement strategy and the total cost of that procurement.

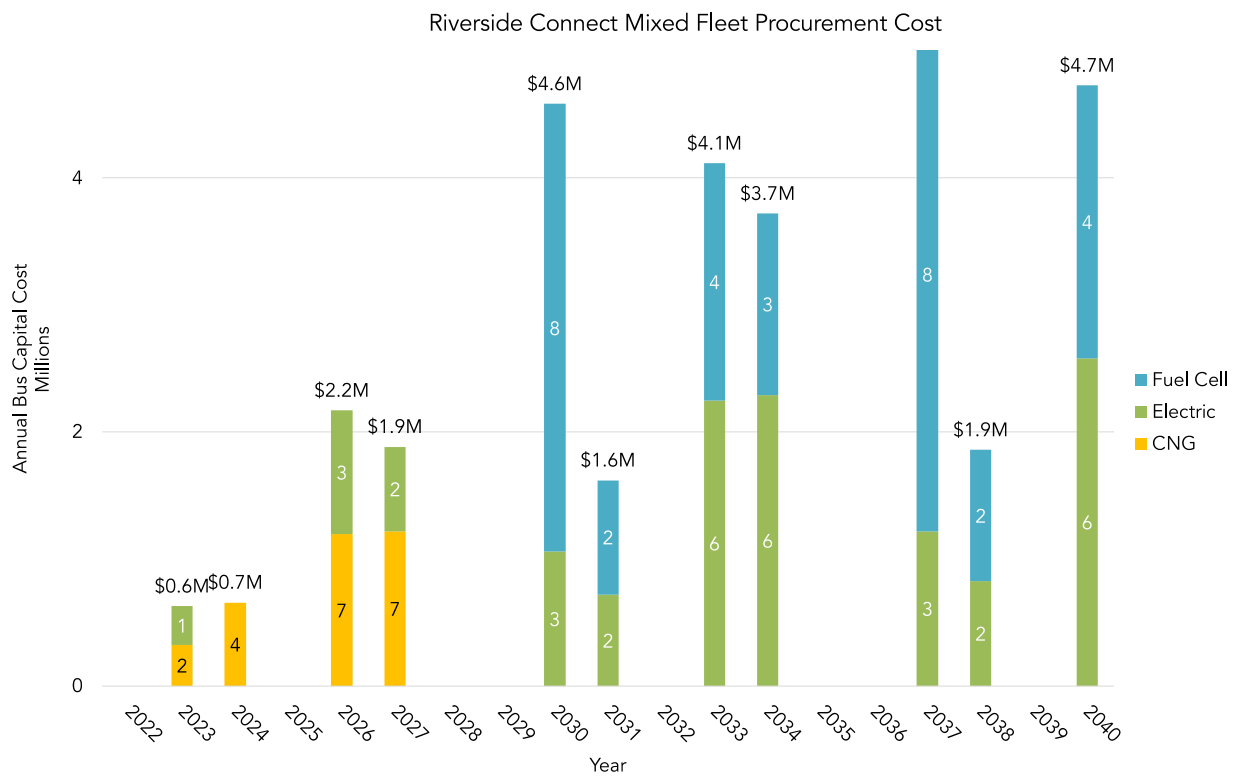

Figure 5 – Projected Fleet Procurements for Zero Emission Transition

Figure 6 demonstrates the annual composition of Riverside Connect's fleet through 2040. By 2034, Riverside Connect's fleet will consist entirely of battery electric and fuel cell cutaways. The fleet will remain the same size throughout the transition period.

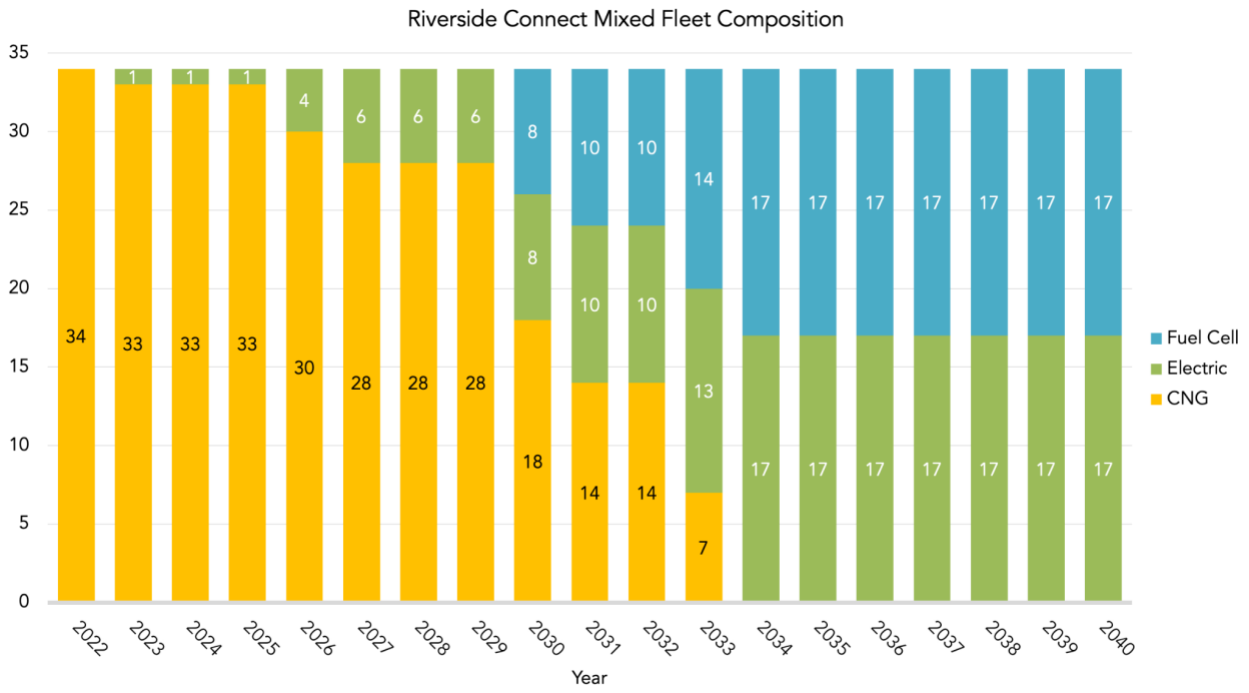

Figure 6 – Annual Fleet Composition, Zero Emission Transition

As seen in **Table 4** the capital investment required for purchasing zero-emission cutaways is significantly higher than for CNG cutaways. This highlights the importance of staying vigilant in the search for funding opportunities to help fill this gap.

Table 4 – Riverside Connect Vehicle Capital Investment to Transition to a 100% Zero Emission Fleet by 2040

	CNG Baseline*	Zero Emission Incremental Costs	Total Investment
Vehicle Capital Costs	$19M	$12M	$31M

*Represents the capital costs that would have been incurred in the absence of the ICT Regulation

Additional Considerations

When purchasing zero emission vehicles, the process may differ slightly from the process Riverside Connect currently uses to purchase vehicles. First, when contracting with zero emission vehicle manufacturers, Riverside Connect should ensure expectations are clear between the OEM and the agency. As with CNG purchases the agreement should be clear regarding the vehicle's configurations, technical capabilities, build and acceptance process, production timing with infrastructure, warranties, training, and other contract requirements. Additionally,

by developing and negotiating specification language collaboratively with the vendor(s), Riverside Connect can work with the vendor(s) to customize the cutaway to their needs as much as is appropriate, help advance the industry based on agency requirements and recommended advancements, ensure the acceptance and payment process is fully clarified ahead of time, fully document the planned capabilities of the cutaway to ensure accountability, and generally preempt any unmet expectations. Special attention should be given in defining the technical capabilities of the vehicle, since defining these for zero emission vehicles may differ from ICE vehicles.

When developing RFPs and contracting for zero emission vehicle procurements, Riverside Connect should specify the source of funding for the vehicle purchases to ensure grant compliance, outline data access requirements, define the price and payment terms, establish a delivery timeline, and outline acceptance and performance requirements. Riverside Connect should test the vehicles upon delivery for expected performance in range, acceleration, gradeability, highway performance, and maneuverability. Any such performance requirements must be included in the technical specification portion of the RFP and contract to be binding for the OEM. Defining technical specifications for zero emission vehicles will also differ slightly from their current CNG vehicles since they will need to include requirements for hydrogen fuel cell and battery performance. It is also recommended that Riverside Connect purchase an extended battery warranty for the vehicles, which should be specified in the RFP and contract.

Fuel cell procurement will also differ from ICE procurements since there are fewer OEMs presently manufacturing fuel cell buses and no OEMs presently manufacturing fuel cell cutaways, although this is expected to change with increasing demand. Riverside Connect will also be able to apply for additional funding for these vehicles through zero-emission vehicle specific funding opportunities, which are discussed further in which are discussed further in **Section H: Potential Funding Sources.**

E

Facilities and Infrastructure Modifications

Riverside Connect Facility Configuration and Depot Layout

Depot Address:
8095 Lincoln Avenue, Riverside, CA 92504

Electric Utility:
Riverside Public Utilities

Located in a NOx Exempt Area?
No

Bus Parking Capacity:
34+

Current Vehicle Types Supported:
Riverside Connect's depot currently supports fueling and maintenance of CNG cutaways.

Propulsion Types That Will be Supported at Completion of ZEB Transition:
Battery electric and hydrogen fuel cell electric propulsion

Facilities Assessment Methodology

Mixed fleet battery electric and fuel cell deployments such as Riverside Connect's require installation of charging stations and improvements to existing electrical infrastructure as well as hydrogen fueling infrastructure. Fuel cell deployments require installation of a fueling station and may require improvements such as upgrades to the switchgear or utility service connections. Planning and design work, including development of detailed electrical and construction drawings required for permitting, is also necessary once specific charging equipment has been selected.

Building off of the fleet procurement schedule that was outlined in the Fleet Assessment, CTE then uses industry average pricing to develop infrastructure scenarios that estimate the cost of building out the infrastructure necessary to support a full fleet transition to zero emission vehicles. This plan assumes that infrastructure projects will be completed prior to each cutaway delivery. To project the costs of fueling infrastructure, CTE used industry pricing observed in active projects and an infrastructure build timeline based on the procurement timeline. This plan assumes that infrastructure projects will be completed prior to each vehicle delivery. These projects are described in detail below.

Infrastructure Upgrade Requirements to Support Zero-Emission Buses

Description of Depot-Charging Infrastructure Considered

With Riverside Connect's mixed technology fleet, charging infrastructure is required to service a total of 17 battery electric cutaways along with hydrogen fueling infrastructure for 17 fuel cell cutaways to support a completely zero-emission fleet by 2040. Because there are separate costs associated with each type of zero emission technology,

the facilities assessment for this scenario is broken down by each fuel type. The total cost for mixed fleet fueling infrastructure is approximately $7.5 M.

Battery Electric Charging Infrastructure Summary

In order to support the battery electric portion of the fleet, Riverside Connect will need to work with a contractor to conduct detailed infrastructure planning, purchase chargers and dispensers, and add service capacity to their site. The estimated infrastructure costs for these technology & infrastructure expenses are as follows:

- **INFRASTRUCTURE PLANNING.** Building charging infrastructure requires planning at the depot. This assessment assumes that a planning project costs $200,000 and occurs only once per depot. The total cost of planning projects for Riverside Connect's single depot is estimated at $200,000.
- **DISPENSERS AND CHARGERS.** Riverside Connect's battery electric charging depot will consist of nine chargers with two dispensers per charger. Prices are estimated at $170,000 for a 150kW charger with two dispensers.
- **ELECTRIC SERVICE UPGRADE.** Riverside Connect requires an estimated 2 MW of additional electricity capacity by 2040 to accommodate charging for 17 battery electric cutaways. To meet the growing demand for electricity, the depot will need to upgrade its system to at least 2 MW of capacity by 2027. This is estimated to cost around $300,00 over the transition period.
- **CHARGER MAINTENANCE.** Riverside Connect's chargers are estimated to require annual maintenance with an estimated cost of $3,000 per year.
- **INFLATION FACTOR.** 5.4% inflation is added on all planning, procurement, and construction costs per the CPI. 3% inflation is added on all maintenance costs per industry standard inflation assumptions. All costs listed above are in 2022 dollars, projects occurring after 2022 are inflated per the inflation factor.

The cost of battery electric infrastructure is approximately $3M over the transition period.

FCEB Fueling Infrastructure Summary

In addition to battery electric charging, hydrogen fueling is required to support the Mixed Fleet. Like battery electric infrastructure, a fuel cell infrastructure deployment will also require hiring an infrastructure planning contractor. A storage capacity project, a fueling infrastructure capital project will also be necessary to allow Riverside Connect to fuel their hydrogen fuel cell vehicles on site. Infrastructure is assumed to be built out in one project that will conclude prior to the first fuel cell cutaway deployment in 2030. The estimated infrastructure costs for these technology & infrastructure expenses are as follows:

- **INFRASTRUCTURE PLANNING.** Building hydrogen infrastructure requires planning at the depot. This assessment assumes that a planning project costs $200,000 and occurs only once per depot. The total cost of planning projects for Riverside Connect's single depot will be approximately $200,000.
- **MAINTENANCE BAY UPGRADES.** Riverside Connect requires four upgrades to their maintenance bays. Each maintenance bay upgrade from CNG to Hydrogen is expected to cost $14,000. The total cost for the four maintenance bays is estimated to be $56,000.
- **HYDROGEN FUELING INFRASTRUCTURE.** Riverside Connect's fueling solutions were decided based on fuel consumption needs and approximately right-sized. Hydrogen infrastructure maintenance and operations are covered in the price of fuel in the fuel assessment. Cooperation with the adjacently located public hydrogen station located at 3044 St Lawrence St could decrease construction costs due to economies of scale. This project price is based on partnership and expansion of existing hydrogen infrastructure. A new build would increase the cost significantly.
- **INFLATION FACTOR.** 5.4% inflation is added on all project costs per the CPI. All costs listed above are in 2022 dollars, projects occurring after 2022 are inflated per the inflation factor.

The cost of fuel cell infrastructure is approximately $4.5 M over the transition period. **Figure 7** shows the estimated total costs for the fuel cell and battery electric infrastructure over the transition period. The combined total cost is approximately $7.5 M.

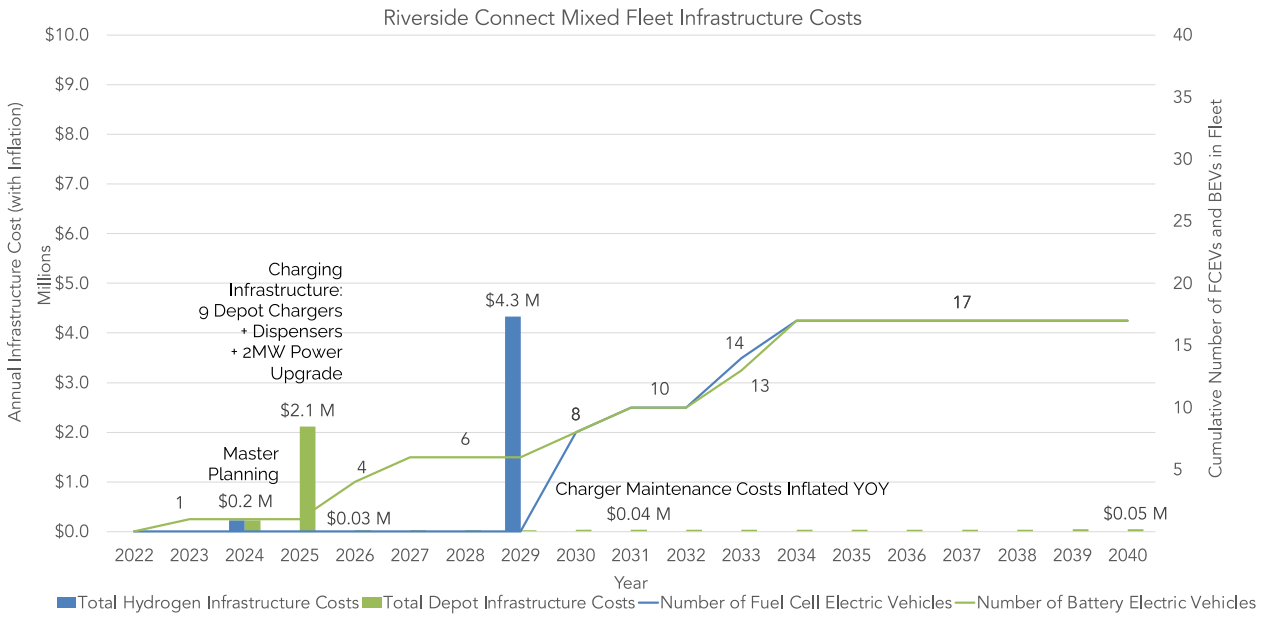

Figure 7 – Infrastructure Projects & Costs, Zero Emission Transition with Hydrogen and Electric Infrastructure

Utility Partnership Review

Riverside Public Utilities is a consumer-owned utility that provides both water and electricity to Riverside. Riverside Public Utilities is a founding member of the Southern California Public Power Authority (SCPPA), enjoying the benefits of joint action through cost-effective planning, construction, management, and operations of electrical energy resources. Riverside Public Utilities currently offers several EV incentives and rebates, although none of them are catered toward public transit applications8. Riverside Connect may be able to leverage their relationships with other agencies in the Commission to develop and maintain shared electric vehicle charging infrastructure by locating sites within Southern California Edison (SCE) territory.

Riverside Connect may also have access to local incentive programs aimed at reducing air pollution in Southern California; as the air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties, the South Coast Air Quality Management District (SCAQMD) provides a variety of financial incentives to encourage the immediate use of commercially available, low- or zero-emission technologies9. Of note is the Carl Moyer Program, that provides funding for alternative fueling infrastructure and heavy-duty vehicle replacement/conversion projects.

The City is sharing proposed planning documents to help the utility understand future loads so that any required grid infrastructure improvements can be addressed prior to implementation. The City's discussion of short- and long-term fleet goals with their utility will ensure that the utility can properly plan grid-side electrical infrastructure

[8] https://riversideca.gov/utilities/residents/rebates/electrify-riverside

[9] http://www.aqmd.gov/home/programs/business

upgrades to the City's Corporation Yard, and that the City can adequately upgrade equipment to support battery electric buses. Once the infrastructure upgrade needs are established, the City will incorporate the design and construction timelines into the overall transition plan timeline. The City recognizes the utility as a critical partner in electrification and will continue to partner with the utility after the planning stages so that charge management strategies and fleet expansion efforts can be coordinated effectively. The City has its own utilities department, Riverside Public Utilities (RPU), that provides service to all of the City.

Further, the City understands establishing and maintaining a partnership with the alternative fuel provider is critical to successfully deploying zero-emission vehicles and maintaining operations. Hydrogen fueling requires a plan for infrastructure installation, delivery, storage, dispensing, and upgrades to maintenance facilities. While fueling operations for hydrogen may require fewer operational changes than electric bus charging, understanding the local hydrogen supply market can be its own challenge. To overcome this challenge, the City may consider a competitive bid process for a design/build project as a reasonable approach to determining the appropriately sized station and selecting the most appropriate fueling technology at the best price.

F

Providing Service in Disadvantaged Communities

Providing Zero-Emission Service to DACs

In California, CARB defines disadvantaged communities (DACs) as communities that are both socioeconomically disadvantaged and environmentally disadvantaged due to local air quality. Lower income neighborhoods are often exposed to greater vehicle pollution levels due to proximity to freeways and ports, which puts these communities at greater risk of health issues associated with tailpipe emissions.[10] Zero emission vehicles will reduce energy consumption, harmful emissions, and direct carbon emissions within the disadvantaged communities Riverside Connect serves. The City of Riverside includes 38 distinct census tracts designated as DACs.

Environmental impacts, both from climate change and from local pollutants, disproportionately affect transit riders. For instance, poor air quality from tailpipe emissions and extreme heat harm riders waiting for buses at roadside stops. The transition to zero-emission technology will benefit the region by reducing fine particulate pollution and improving overall air quality. In turn, the fleet transition will support better public health outcomes for residents in DACs served by the selected routes.

Public transit has the potential to improve social equity by providing mobility options to low-income residents lacking access to a personal vehicle and helping to meet their daily needs. In California, transit use is closely correlated with car-less households as they are five times more likely to use public transit than households with at least one vehicle.[11] Although 21% of Californians in a zero-vehicle household are vehicle free by choice, 79% do not have a vehicle due to financial limitations. Many low-income people therefore rely solely on public transportation for their mobility needs.[12] Riverside Connect's current fleet of CNG cutaways consume 130,550 Gasoline Gallons Equivalent (GGE) of fuel per year, operating for approximately 887,700 miles per year. Moving Riverside Connect's fleet to zero-emission technology will help alleviate the pollution from tailpipe emissions, which will improve the health of communities impacted by NOx and particulate matter emissions and all local communities.

Access to quality transit services provides residents with a means of transportation to go to work, to attend school, to access health care services, and run errands. By purchasing new vehicles and decreasing the overall age of its fleet, Riverside Connect is also able to improve service reliability and therefore maintain the capacity to serve low-income and disadvantaged populations.

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[10] Reichmuth, David. 2019. Inequitable Exposure to Air Pollution from Vehicles in California. Cambridge, MA: Union of Concerned Scientists. https://www.ucsusa.org/resources/inequitable-exposure-air-pollution-vehicles-california-2019

[11] Grengs, Joe; Levine, Jonathan; and Shen, Qingyun. (2013). Evaluating transportation equity: An inter-metropolitan comparison of regional accessibility and urban form. FTA Report No. 0066. For the Federal Transit Administration

[12] Paul, J & Taylor, BD. 2021. Who Lives in Transit Friendly Neighborhoods? An Analysis of California Neighborhoods Over Time. Transportation Research Interdisciplinary Perspectives. 10 (2001) 100341. https://reader.elsevier.com/reader/sd/pii/S2590198221000488?token=CABB49E7FF438A88A19D1137A2B1851806514EF576E9A2D9462D3FAF1F6283574907562519709F8AD53DEC3CF95ACF27&originRegion=us-east-1&originCreation=20220216190930

Map of Disadvantaged Communities served by Riverside Connect

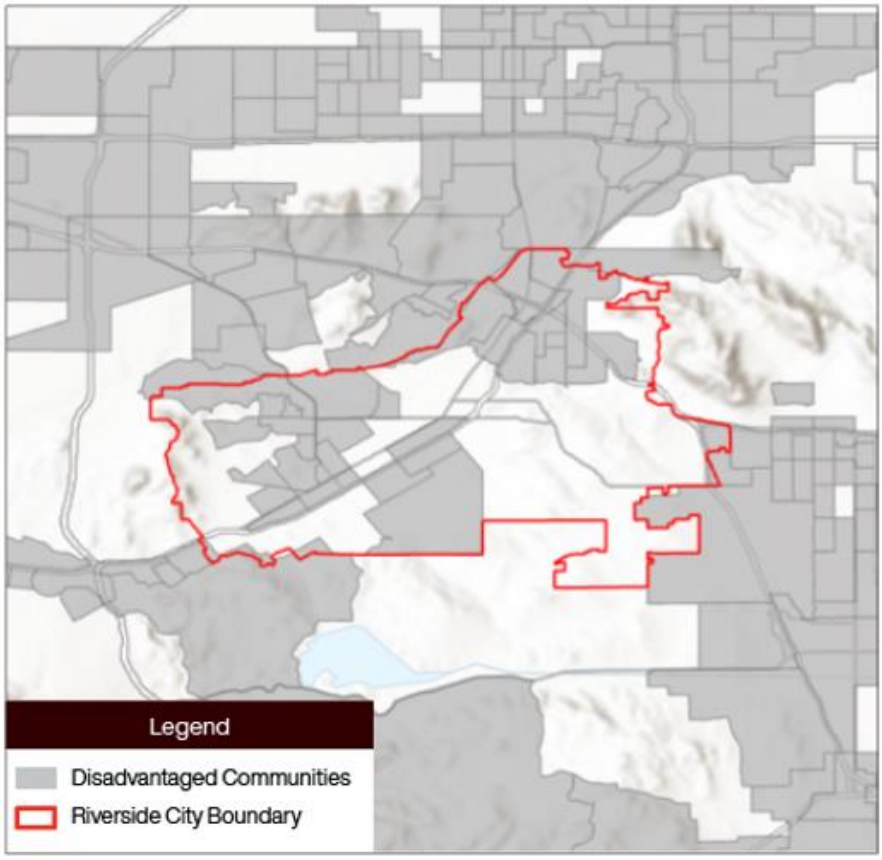

Figure 8 – Riverside Connect Disadvantaged Communities Service Map

Emissions Reductions for DACs

Greenhouse gasses (GHG) are the compounds primarily responsible for atmospheric warming and include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The effects of greenhouse gasses are not localized to the immediate area where the emissions are produced. Regardless of their point of origin, greenhouse gasses contribute to overall global warming and climate change.

Criteria pollutants include carbon monoxide (CO), nitrogen oxides (NOx), particulate matter under 10 and 2.5 microns (PM_{10} and $PM_{2.5}$), volatile organic compounds (VOC), and sulfur oxides (SO_X). These pollutants are considered harmful to human health because they are linked to cardiovascular issues, respiratory complications, or other adverse health effects.[13] These compounds are also commonly responsible for acid rain and smog. Criteria pollutants cause economic, environmental, and health effects locally where they are emitted. CARB defines DACs in part as disadvantaged by poor air quality because polluting industries or freight routes have often been cited in

[13] Institute of Medicine. Toward Environmental Justice: Research, Education, and Health Policy Needs. Washington, DC: National Academy Press, 1999; O'Neill MS, et al. Health, wealth, and air pollution: Advancing theory and methods. Environ Health Perspect. 2003; 111: 1861-1870; Finkelstein et al. Relation between income, air pollution and mortality: A cohort study. CMAJ. 2003; 169: 397-402; Zeka A, Zanobetti A, Schwartz J. Short term effects of particulate matter on cause specific mortality: effects of lags and modification by city characteristics. Occup Environ Med. 2006; 62: 718-725.

these communities. The resulting decrease in air quality has led to poorer health and quality of life outcomes for residents. Riverside Connect's operational Well-to-Wheel criteria emissions are summarized in **Table 5.**

Table 5 – Annual Vehicle Operation Pollutants by Fuel Type

Overall Annual Vehicle Operation Pollutants (lbs.)								
	CO	NOx	PM10	PM2.5	VOC	SOx	PM10 TBW	PM2.5 TBW
CNG	39,541.72	1,352.97	48.60	44.40	132.32	8.67	189.09	23.48

The transportation sector is the largest contributor to greenhouse gas emissions in the United States, accounting for more than 30% of total emissions, and within this sector, 25% of these emissions come from the medium- and heavy-duty markets, yet these markets account for less than 5% of the total number of vehicles. Electrifying these vehicles can have an outsized impact on pollution, fossil-fuel dependency, and climate change. Zero emission buses are four times more fuel efficient than comparable new diesel buses. Better fuel efficiency means less waste when converting the potential energy in the fuel to motive power. Less waste not only means less pollution, it results in more efficient use of natural resources. By transitioning to zero emission cutaways from CNG cutaways, Riverside Connect's zero-emission fleet will produce fewer carbon emissions and fewer harmful pollutants from the vehicle tailpipes. Considering DACs experience significantly more pollution from harmful emissions, communities disadvantaged by pollution served by Riverside Connect's fleet will therefore directly benefit from the reduced tailpipe emissions of zero emission vehicles compared to ICE vehicles.

Estimated Ridership in DACs

The City of Riverside includes 38 distinct census tracts designated as DACs. In addition, nearly 44% (35.64 square miles) of the city's land area is designated as a DAC. The City of Riverside's Special Transportation Division provides dial-a-ride (DAR) service within the city boundaries for seniors 60 and older, persons with disabilities, and other persons certified under the Americans with Disability Act (ADA). Some of the Riverside dial-a-ride service area falls within the DAC zones but specific trips may start and/or end outside of the DAC designated areas.

G

Workforce Training

Riverside Current Training Program

Riverside Connect's Current Training Program

Riverside Connect's transit services are contracted out which includes dispatching, operations, and maintenance of the vehicles and bus stops. The transit contractor is responsible for all training pertaining to the operations of Riverside Connect. While the city may coordinate/arrange the training necessary for the operation of the service, the contractor is ultimately responsible for ensuring their staff is up-to-date based on their core responsibilities. Contractor staff includes administration (general managers and safety managers), dispatchers, drivers, and maintenance staff (maintenance manager, mechanics, and utility workers). The contractor must adapt to changes in service levels, policies and procedures, and introduction to new technologies and adopt any and all changes into its' driver training program.

Operator Training

The transit contractor is responsible for all training of drivers including City's service policies, passenger fares and overview of the City's fleet. The contractor is responsible for the provision of qualified training staff to conduct behind-the-wheel driver training and other training determined by the contractor or the City. Hands-on training on the bus and bus-related equipment are required to ensure safe vehicle operations. The contractor is required to provide ongoing training and prepare all drivers assigned to the City's contract in a manner that conforms to all local, state, and federal laws.

Mechanics Training

The mechanics assigned to the City's contract must meet the requirements for vehicle maintenance as outlined in the scope of work. They must have knowledge of the city's fleet in order to perform complete, reliable, and safe inspections and repairs. They must be able to diagnose, repair, and maintain the vehicles listed in the City's revenue vehicle fleet. The contractor must comply with regulations pertaining to licensing and operations and maintenance of vehicles as contained in the California Vehicle Code, California Administrative Code, Title 13, and The Federal Motor Carrier Safety Regulations.

Dispatchers and Supervisors Training

Dispatchers are required to schedule and assign drivers and vehicles in accordance with the service hours schedule and scheduled trips for each day. The dispatchers are trained to assist drivers while they are in service and monitor the performance of the scheduled trips. They are trained to handle unanticipated service demands, passenger and/or vehicle accidents, and road calls in accordance with the City's policies and procedures which are outlined in detail in the scope of work. Further, the contract requires the transit contractor to provide a Safety and Training Supervisor who is licensed and certified to conduct classroom training of all drivers as well as behind-the-wheel driver training and other trainings determined necessary by the Contractor or the City

Riverside Connect Zero Emission Vehicle Training Plan

OEM Training

Riverside Connect plans to take advantage of trainings from the vehicle manufacturers and station suppliers, including maintenance and operations training, station operations and fueling safety, first responder training and other trainings that may be offered by the technology providers. OEM trainings provide critical information on operations and maintenance aspects specific to the equipment model procured. Additionally, many procurement contracts include train-the-trainer courses through which small numbers of agency staff are trained and subsequently train agency colleagues. This method provides a cost-efficient opportunity to provide widespread agency training on new equipment and technologies.

Bus and Fueling Operations and Maintenance

The transition to a zero-emission fleet will have significant effects on Riverside Connect's workforce. Meaningful investment is required to upskill maintenance staff and bus operators trained in ICE vehicle maintenance and ICE fueling infrastructure.

Riverside Connect training staff will work closely with the OEM providing vehicles to ensure all mechanics, service employees, and bus operators complete necessary training prior to deploying zero emission technology and that these staff undergo refresher training annually and as needed. Riverside Connect staff will also be able to bring up any issues or questions they may have about their training with their trainers. Additionally, trainers will observe classes periodically to determine if any staff would benefit from further training.

ZEB Training Programs

Several early zero emission bus (ZEB) adopters have created learning centers for other agencies embarking on their ZEB transition journeys. One such agency is SunLine Transit Agency, which provides service to the Coachella Valley and hosts the West Coast Center of Excellence in Zero Emission Technology (CoEZET). The Center of Excellence supports transit agency adoption, zero-emission commercialization and investment in workforce training. Similarly, AC Transit offers training courses covering hybrid and zero-emission technologies through their ZEB University program. Riverside Connect plans to take advantage of these trainings offered by experienced agencies.

There are several transit agencies within and around Riverside County that have successfully begun their transition to zero-emission technology. California has at least seven heavy-duty and transit-operated fueling stations in operation and at least four more in development[14]. Additionally, the number of hydrogen production and distribution centers is growing to meet increased hydrogen demand as it gains popularity as a transportation fuel. At present, there are two heavy-duty, transit-operated hydrogen fueling stations in the neighboring San Bernardino and Orange counties within 40 miles of Riverside Connect, and two planned transit-operated hydrogen fueling stations in Los Angeles County and Pomona within 30 miles of Riverside Connect. In addition, private hydrogen fueling stations by First Element Fuels and Stratosfuel within 80 miles of Riverside, CA are in development and should be commissioned before the end of the fleet transition timeline.

In the region, Omintrans, a public transit agency serving the San Bernardino Valley recently received $9.3 million from the Federal Transit Administration (FTA) under the FY2022 Low-No Emission Vehicle Program to develop hydrogen refueling infrastructure and launch a workforce development program. Similarly Sunline Transit Agency has received $7.8 million to upgrade their liquid hydrogen refueling infrastructure. Riverside Transit Agency has also received $5.2 million to procure hydrogen fuel cell buses. The presence of hydrogen fueling infrastructure projects, especially in the counties of Riverside and San Bernardino, demonstrates the feasibility of fuel cell electric

[14] Hydrogen Refueling Stations in California, California Energy Commission: https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics/hydrogen-refueling

technology for transit in the region. These agencies can serve as a resource for Riverside Connect to use when implementing zero-emission technology and supporting programs into their services.

H

Potential Funding Sources

Available Funding Opportunities

Federal

Riverside Connect is exploring federal grants through the following funding programs: Federal Transit Administration's (FTA) Urbanized Area Formula program; discretionary grant programs such as the Bus and Bus Facilities (B&BF) program, Low or No Emission Vehicle Deployment Program (Low-No), and Better Utilizing Investments to Leverage Development (BUILD) grant; and other available federal discretionary grant programs.

Annual Reliable Funding

- Federal Transportation Administration (FTA)
    - Urbanized Area Formula program
    - State of Good Repair Grants
    - Bus and Bus Facilities Formula grants

Future Funding Opportunities

- United States Department of Transportation (USDOT)
    - Better Utilizing Investments to Leverage Development (BUILD) Grants
- Federal Transportation Administration (FTA)
    - Bus and Bus Facilities Discretionary Grant
    - State of Good Repair Grants
    - Capital Investment Grants – New Starts
    - Capital Investment Grants – Small Starts
    - Low-or No-Emission Vehicle Grant
    - Metropolitan & Statewide Planning and Non-Metropolitan Transportation Planning
- Federal Highway Administration (FHWA)
    - Congestion Mitigation and Air Quality Improvement Program through SCAG
    - Surface Transportation Block Grant Program through SCAG
    - Carbon Reduction Program
- Environmental Protection Agency (EPA)
    - Environmental Justice Collaborative Program-Solving Cooperative Agreement Program

State

Riverside Connect will also seek funding from state resources through grant opportunities including but not limited to Senate Bill 1 State of Good Repair (SGR), Transit and Intercity Rail Capital Program (TIRCP), Low Carbon Transit Operations Program (LCTOP) funding, the California Energy Commission's Clean Transportation Program as well as Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) for bus purchases when available.

Annual Reliable Funding

- Administered by California Department of Transportation (Caltrans)
    - Transportation Development Act Funds
        - Local Transportation Funds

        - State Transit Assistance (STA)
    - State of Good Repair (SB 1 funds)
    - Low Carbon Transit Operations Program (LCTOP)

Future Funding Opportunities

- California Air Resources Board (CARB)
    - Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
    - State Volkswagen Settlement Mitigation
    - Carl Moyer Memorial Air Quality Standards Attainment Program
    - Cap-and-Trade Funding
    - Low Carbon Fuel Standard (LCFS)
- California Transportation Commission (CTC)
    - State Transportation Improvement Program (STIP)
    - Solution for Congested Corridor Programs (SCCP)
    - Local Partnership Program (LPP)
- California Department of Transportation (Caltrans)
    - Transit and Intercity Rail Capital Program
    - Transportation Development Credits
    - New Employment Credit
- California Energy Commission

Local

Additionally, Riverside Connect will pursue local funding opportunities to support zero-emission bus deployment. While the aforementioned funding opportunities are mentioned by name, Riverside Connect will not be limited to these sources and will regularly assess opportunities for fiscal support for the zero-emission program.

Legislation Supporting the Zero-Emission Transition

Policies and regulations supporting the transition to zero-emission are proliferating as the efforts to decarbonize the transportation sector expand. Riverside Connect is monitoring the implementation of relevant policies and legislation. With the passage of the *Bipartisan Infrastructure Law* and issuance of *Executive Order 14008: Tackling the Climate Crisis at Home and Abroad*, the federal government has set a renewed focus on zero-emission transit. Riverside County's goal to deploy zero-emission vehicles supports the federal administration's priorities of renewing transit systems, reducing Greenhouse Gas emissions from public transportation, equity, creation of good paying jobs, and connecting communities. State legislation such as the Innovative Clean Transit Regulation further supports the replacement of fossil-fuel vehicles on the roads of California. Moreover, on August 25, 2022, the CARB approved the Advanced Clean Cars II Rule, requiring all new vehicles sold in California to be zero-emission vehicles (ZEVs) by 2035.

I

Start-up and Scale-up Challenges

Financial Challenges

Challenges can arise with any new propulsion technology, its corresponding infrastructure, or in training operators and maintenance staff. Nearly all transit agencies must contend with the cost barriers posed by zero-emission technologies. The predicted costs of zero-emission cutaways are between $300,000 and $370,000, which is about $120,000 and $200,000 more costly than traditional CNG cutaways.

Additionally, the necessary infrastructure to support these vehicles adds to the financial burden of transitioning to a zero-emission fleet, as outlined below in **Table 6**, showing the cost of the transition. Riverside Connect will seek financial support to cover the cost of their fuel cell and battery electric cutaways from the resources discussed in Section H.

Table 6 – Incremental Cost of Zero Emission Transition

Incremental cost of Zero Emission Transition			
	CNG Baseline*	Zero Emission Incremental Costs	Zero Emission Transition Scenario Costs
Vehicle Capital Expense	$19M	$12M	$31M
Fueling Infrastructure	$0	$8M	$8M
Total	$19M	$20M	$39M

*Represents the capital costs that would have been incurred in the absence of the ICT Regulation

As seen in **Table 6,** the costs of required fueling infrastructure and fueling operations for zero emission technologies pose another hurdle for transit agencies transitioning to zero-emission service. Continued financial support at the local, state and federal level to offset the capital cost of this new infrastructure is imperative. For alternative fuels such as hydrogen, financial support from state and federal grant opportunities for green hydrogen supply chains and increasing economies of scale on the production side will ultimately benefit transit agencies deploying and planning for fuel cell and battery electric vehicles.

CARB can support Riverside Connect by ensuring continued funding for the incremental cost of zero-emission vehicles and fueling infrastructure. Funding opportunities should emphasize proper transition and deployment planning and should not preclude hiring consultants to ensure best practices and successful deployments. The price and availability of hydrogen, both renewable and not, continue to be challenges that can be allayed by legislation subsidizing and encouraging renewable fuel production.

Limitations of Current Technology

Beyond cost barriers, transit agencies must also ensure that available zero-emission technologies can meet basic service requirements of the agency's duty cycles. The applicability of specific zero-emission technologies will vary widely among service areas and agencies. As such, it is critical that transit agencies in need of technical and planning support have access to these resources to avoid failed deployment efforts. Support in the form of technical consultants and experienced zero-emission transit planners will be critical to turning Rollout Plans into successful deployments and tangible emissions reductions.

In addition to the uncertainty of technology improvements, there are other risks to consider in trying to estimate costs over the 18-year transition period. Although current battery electric range limitations may be improved over time as a result of advancements in battery energy capacity and more efficient components, battery degradation may re-introduce range limitations, which is a cost and performance risk to an all-battery electric fleet over time. While this can be mitigated by midday opportunity charging, there may be emergency scenarios where the cutaways are expected to perform off-route or atypical service. In these emergency scenarios that require use of battery electric vehicles, agencies may face challenges performing emergency response roles expected of them in support of fire and police operations. Furthermore, fleetwide energy service requirements, power redundancy, and resilience may be difficult to achieve at any given depot in an all-battery electric scenario. Although fuel cell vehicles may not be subject to these same limitations, higher capital equipment costs and availability of hydrogen may constrain fuel cell solutions. RCTC, Riverside Connect, CTE and Arcadis IBI Group will expand upon challenge mitigation and adaptation in the Riverside County ZEB Implementation & Financial Strategy Plan.

Appendix A – Approved Board Resolution

RESOLUTION NO. 24002

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF RIVERSIDE, CALIFORNIA, AUTHORIZING THE SUBMISSION OF THE ZERO-EMISSION BUS (ZEB) ROLLOUT PLAN TO THE CALIFORNIA AIR RESOURCES BOARD (CARB) AS REQUIRED BY THE INNOVATIVE CLEAN TRANSIT (ICT) REGULATION.

WHEREAS, in 2018, CARB adopted the ICT Regulation, which requires public transit agencies to gradually transition to a 100 percent ZEB fleet with a goal of full transition by 2040;

WHEREAS, the ICT Regulation's requirements include, but are not limited, to the following:

1. Small Transit Agencies which operate fewer than 100 buses in annual maximum service shall submit to CARB a governing body-approved ZEB Rollout Plan by July 1, 2023.

2. Small Transit Agencies must purchase a minimum number of ZEBs during future procurements, according to the following schedule:

i) Starting in calendar year 2026, 25 percent of new bus purchases must be ZEBs.

ii) Starting in calendar year 2029, 100 percent of all new bus purchases must be ZEBs;

WHEREAS, the City of Riverside's ZEB Rollout Plan, currently being presented to the City Council for adoption, is a living document intended to guide Riverside Connects' conversion to a ZEB fleet and may be updated based on changes in vehicle technology, fleet size and operating requirements;

WHEREAS, the presented ZEB Rollout Plan must be approved by the City Council through the adoption of a resolution prior to submission to CARB; and

WHEREAS, the presented ZEB Rollout Plan includes, in the following sections, information required by the ICT Regulation:

1. Transit Agency Information
2. Rollout Plan General Information
3. Technology Portfolio
4. Current Bus Fleet Composition and Future Bus Purchases
5. Facilities and Infrastructure Modifications
6. Providing Service in Disadvantaged Communities

CITY ATTORNEY'S OFFICE
3750 UNIVERSITY AVE., STE. 250
RIVERSIDE, CA 92501
(951) 826-5567

7. Workforce Training

8. Potential Funding Sources.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Riverside, California, as follows: The City Council of the City of Riverside, California, hereby adopts the presented ZEB Rollout Plan as a guide for the City of Riverside's implementation of ZEB technology and approves it for submission to CARB.

Section 1: The above recitals set forth above are incorporated herein as findings by the City Council.

Section 2: That the City Council of the City of Riverside, California, hereby adopts the presented ZEB Rollout Plan as a guide for the implementation of ZEB technology and approves it for submission to CARB.

ADOPTED by the City Council this 20th day of June, 2023.

PATRICIA LOCK DAWSON
Mayor of the City of Riverside

Attest:

DONESIA GAUSE
City Clerk of the City of Riverside

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CITY ATTORNEY'S OFFICE
3750 UNIVERSITY AVE., STE. 250
RIVERSIDE, CA 92501
(951) 826-5567

I, Donesia Gause, City Clerk of the City of Riverside, California, hereby certify that the foregoing resolution was duly and regularly adopted at a meeting of the City Council on the 20th day of June, 2023, by the following vote, to wit:

Ayes: Edwards, Cervantes, Fierro, Conder, Plascencia, Perry, and Hemenway

Noes:

Absent:

Abstain:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the City of Riverside, California, this 21st day of June, 2023.

DONESIA GAUSE
City Clerk of the City of Riverside

23-0608 BGS 05/16/23

CITY ATTORNEY'S OFFICE
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RIVERSIDE, CA 92501
(951) 826-5567

Appendix B – Glossary

Auxiliary Energy: Energy consumed (usually as a by time measure, such as "x"kW/hour) to operate all support systems for non-drivetrain demands, such as HVAC and interior lighting.

Battery Electric Bus: Zero-emission bus that uses onboard battery packs to power all bus systems.

Battery Nameplate Capacity: The maximum rated output of a battery under specific conditions designated by the manufacturer. Battery nameplate capacity is commonly expressed in kWh and is usually indicated on a nameplate physically attached to the battery.

Block: Refers to a vehicle schedule, the daily assignment for an individual bus. One or more runs can work a block. A driver schedule is known as a "run."

Charging Equipment: The equipment that encompasses all the components needed to convert, control and transfer electricity from the grid to the vehicle for the purpose of charging batteries. May include chargers, controllers, couplers, transformers, ventilation, etc.

Depot Charging: Centralized BEB charging at a transit agency's garage, maintenance facility, or transit center. With depot charging, BEBs are not limited to specific routes, but must be taken out of service to charge.

Energy: Quantity of work, measured in kWh for ZEBs.

Energy Efficiency: Metric to evaluate the performance of ZEBs. Defined in kWh/mi for BEBs, mi/kg of hydrogen for FCEBs, or miles per diesel gallon equivalent for any bus type.

Fuel Cell Electric Bus: Zero-emission bus that utilizes onboard hydrogen storage, a fuel cell system, and batteries. The fuel cell uses hydrogen to produce electricity, with the waste products of heat and water. The electricity powers the batteries, which powers the bus.

Greenhouse Gas Emissions: Zero-emission buses have no harmful emissions that result from diesel combustion. Common GHGs associated with diesel combustion include carbon dioxide (CO2), carbon monoxide (CO), nitrous oxides (NOx), volatile organic compounds (VOCs), and particulate matter (PM). These emissions negatively impact air quality and contribute to climate change impacts.

Hydrogen Fueling Station: The location that houses the hydrogen production (if produced onsite), storage, compression, and dispensing equipment to support fuel cell electric buses.

On-route Charging: BEB charging while on the route. With proper planning, on-route charged BEBs can operate indefinitely, and one charger can charge multiple buses.

Operating Range: Driving range of a vehicle using only power from its electric battery pack to travel a given driving cycle.

Route Modeling: A cost-effective method to assess the operational requirements of ZEBs by estimating the energy consumption on various routes using specific bus specifications and route features.

Useful Life: FTA definition of the amount of time a transit vehicle can be expected to operate based on vehicle size and seating capacity. The useful life defined for transit buses is 12-years. For cutaways, the useful life is 7 years.

Validation Procedure: to confirm that the actual bus performance is in line with expected performance. Results of validation testing can be used to refine bus modeling parameters and to inform deployment plans. Results of validation testing are typically not grounds for acceptance or non-acceptance of a bus.

Zero-Emission Vehicle: A vehicle that emits no tailpipe emissions from the onboard source of power. This is used to reference battery-electric and fuel cell electric vehicles, exclusively, in this report.

Well-to-wheel Emissions: Quantity of greenhouse gas, criteria pollutants, and/or other harmful emissions that includes emissions from energy use and emissions from vehicle operation. For BEBs, well-to-wheel emissions would take into account the carbon intensity of the grid used to charge the buses. For FCEBs, well-to-wheel emissions would take into account the energy to produce, transport, and deliver the hydrogen to the vehicle

Zero-Emission Bus Rollout Plan

Prepared by the Palo Verde Valley Transit Agency with support from the Center for Transportation and the Environment, Arcadis IBI Group, and the Riverside County Transportation Commission

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List of Abbreviations

ADA: Americans with Disabilities Act

A&E: Architecture and Engineering

BEB: Battery Electric Bus

CA: California

CARB: California Air Resources Board

CNG: Compressed Natural Gas

COVID/COVID-19: Coronavirus Disease 2019 (SARS-CoV-2)

CTE: Center for Transportation and the Environment

DAC: Disadvantaged Community

FCEB: Fuel Cell Electric Bus

HVAC: Heating, Ventilation, and Air Conditioning

ICE: Internal Combustion Engine

ICT: Innovative Clean Transit

kW: Kilowatt

kWh: Kilowatt-Hour

MW: Megawatt

OEM: Original Equipment Manufacturer

PM: Particulate Matter

PPI: Producer Price Index

CPI: Consumer Price Index

RFP: Request for Proposals

SCE: Southern California Edison (SoCal Edison)

TDA: Transportation Development Act

VTT: Verification of Transit Training

ZEB: Zero-Emission Bus

A glossary of useful terms can also be found in Appendix B - Glossary

Executive Summary

The Palo Verde Valley Transit Agency (PVVTA) is the sole Public Transit Operator in eastern Riverside County, serving over 18,000 residents in the City of Blythe and the unincorporated Riverside County areas of the Mesa Verde and Ripley. The agency operates six (6) deviated fixed routes, deviating up to 0.75 miles from mapped routes, serving Blythe, Ripley, Mesa Verde, Palo Verde College, the California Department of Corrections Facilities, and a premier route to the Coachella Valley called the Blythe Wellness Express (BWE). As of 2022, PVVTA's fleet included eight (8) total vehicles: three (3) 25-ft CNG cutaways, one (1) 32-ft CNG cutaway, and four (4) 25-ft gas cutaways. Riverside County Transportation Commission (RCTC) awarded a contract to the Center for Transportation and the Environment (CTE) to perform a zero-emission bus (ZEB) transition study to create a plan for a 100% zero-emission fleet by 2040 on behalf of transit agencies and municipal transportation services in the cities of Banning, Beaumont, Corona and Riverside and the Palo Verde Valley Transit Agency to comply with the Innovative Clean Transit (ICT) regulation enacted by the California Air Resources Board (CARB). This report will focus on PVVTA's transition to zero-emission technology.

PVVTA's Rollout Plan achieves a zero-emission fleet in line with the 2040 target of the ICT Regulation. To achieve this goal, PVVTA will replace all CNG and gasoline cutaways with zero emission cutaways when the vehicles reach the end of their 5- or 7-year useful life. By 2040, all 8 of the agency's vehicles are expected to be fuel cell electric cutaways. The last of the agency's internal combustion engine (ICE) cutaways will reach end of life in 2032.

PVVTA's entire transit fleet operates out of one primary division located at 415 North Main Street Blythe, California, and a secondary address at 175 West 14th Avenue. Maintenance is performed by PVVTA at a maintenance shop co-located with central operations at 415 N Main Street. PVVTA plans to install hydrogen fueling infrastructure at this location to support their fully FCEB fleet.

PVVTA's transit service provides transportation opportunities to Disadvantaged Communities (DACs) and moving toward zero-emission vehicles will help improve the health of DACs and non-DACs alike. The agency will build upon an existing training structure for vehicle maintenance and operators to provide the necessary fuel cell electric cutaway specific training that will be required for the agency to own and operate fuel cell electric cutaways. The agency estimates that pursuing a zero-emission fleet in place of an internal combustion engine (ICE) fleet will cost an additional $5M in vehicle costs and infrastructure alone between 2022 and 2040, which will require significantly more funding opportunities. PVVTA plans to pursue funding opportunities utilizing partnerships at the federal, state, and local levels to help fill this funding gap.

A

Transit Agency Information

PVVTA Profile

History

PVVTA was formed in 1978 in order to provide service to the City of Blythe and the unincorporated Riverside County areas of the Mesa Verde and Ripley. Over the last 45 years, PVVTA services have changed from a modest fixed route system into a Dial-A-Ride only program and in 2002 into the Deviated Fixed Route system that operates currently. In 2022, a Comprehensive Operational Analysis (COA) was conducted to provide a road map to PVVTA and transit stakeholders towards the future. This would include; Ride sharing opportunities, expansion of regional routing and improvement on schedule and frequency throughout the system.

Service Area and Bus Service

PVVTA operates six (6) deviated fixed routes, deviating up to 0.75 miles from mapped routes, serving Blythe, Ripley, Mesa Verde, Palo Verde College, the California Department of Corrections Facilities, and a premier route to the Coachella Valley called the Blythe Wellness Express (BWE). Two routes, the Red Route and the Wellness Express, travel at relatively high speed, and the other four are relatively low speed. PVVTA provides regional and local public transit services in eastern Riverside County. The current bus fleet consists of 8 cutaways: three (3) 25-ft CNG cutaways, one (1) 32-ft CNG cutaway, and four (4) 25-ft gasoline cutaways.

PVVTA's micro-transit service, the X-Tend-A-Ride, provides community-based, on-demand service to seniors, persons with disabilities, and the general public. In addition, PVVTA provides a mileage reimbursement service known as Desert RoadTRIP. This service is provided to seniors 60-years-and-older, persons with disabilities, and other persons certified under the Americans with Disability Act (ADA). Along with the PVVTA service area, the Desert RoadTRIP reaches areas such as the Desert Center, southern Palo Verde Valley, and the resort communities along US Highway 95. Since the X-Tend-A-Ride is performed by light-duty vehicles and Desert RoadTRIP provides this service through volunteers and volunteered vehicles, they will not be included in this transition plan.

PVVTA's service map is illustrated in **Figure 1.**

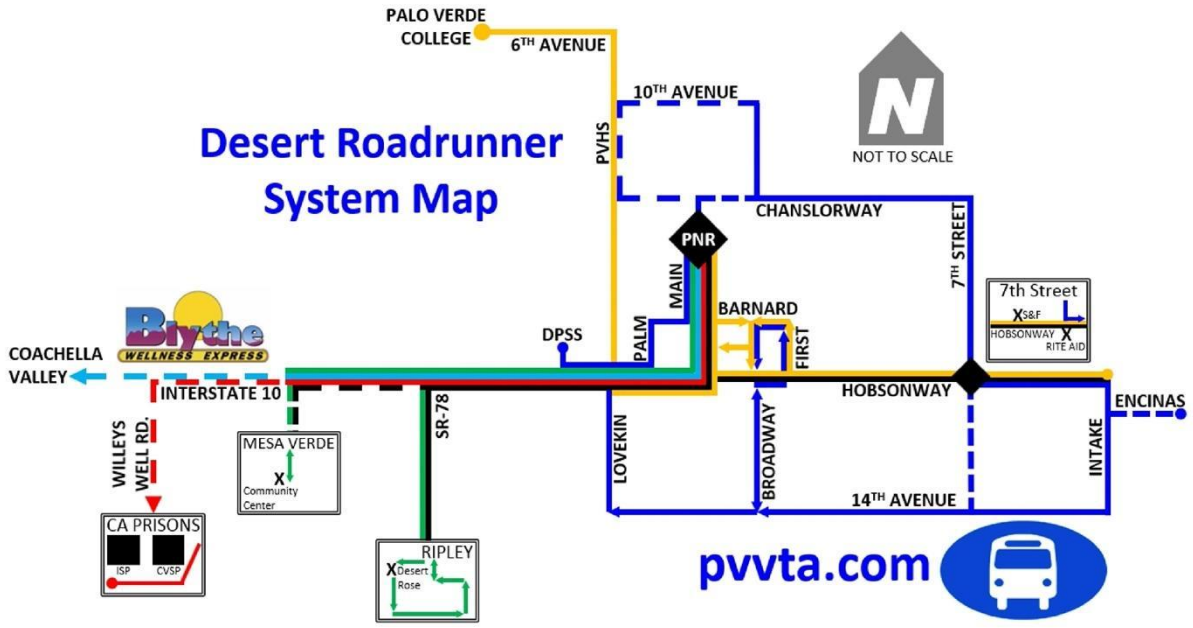

Figure 1 – PVVTA Service Area

Ridership

Based on PVVTA's data of total ridership from July 2021 through the month of March 2022, there were 15,072 passengers. In the 2020/2021 Fiscal Year, there were 17,892 passengers. PVVTA anticipates that annual ridership in the 2022/2023 Fiscal Year will be 21,110 passengers. Per the PVVTA Comprehensive Operations Analysis (COA), the agency is pursuing several service changes: PVVTA plans to increase operation of the Blythe Wellness Express to five days a week, double the service of the Blue Route to every 30 minutes, and extend the micro-transit service area and its operations during the evenings and on weekends.

PVVTA Basic Information

Transit Agency's Name:

Palo Verde Valley Transit Agency

Mailing Address:

Palo Verde Valley Transit Agency

415 N Main St,

Blythe, CA 92225

Transit Agency's Air Districts:

PVVTA is part of the Mojave Desert Air Quality Management District.

Transit Agency's Air Basin:

Mojave Desert Air Quality Management District is part of the Mojave Desert Air Basin.[1]

Total number of buses in Annual Maximum Service:

The maximum number of active buses operating fixed-route service out of PVVTA's primary transit facility is eight (8). The fleet is composed of 8 cutaways total: three (3) 25-ft CNG cutaways, one (1) 32-ft CNG cutaway, and four (4) 25-ft gas cutaways.

Urbanized Area:

PVVTA's service area is a non-urbanized, rural area, but their service is heavily concentrated in Blythe, CA. Blythe is 25.8 square miles of land area with most residents living near the core of the city proper. **There are** 17,793 residents in Blythe which is made up of local full-time residents, seasonal residents and those housed at the California State facilities near Blythe.

[1] https://www.mdaqmd.ca.gov/about-us

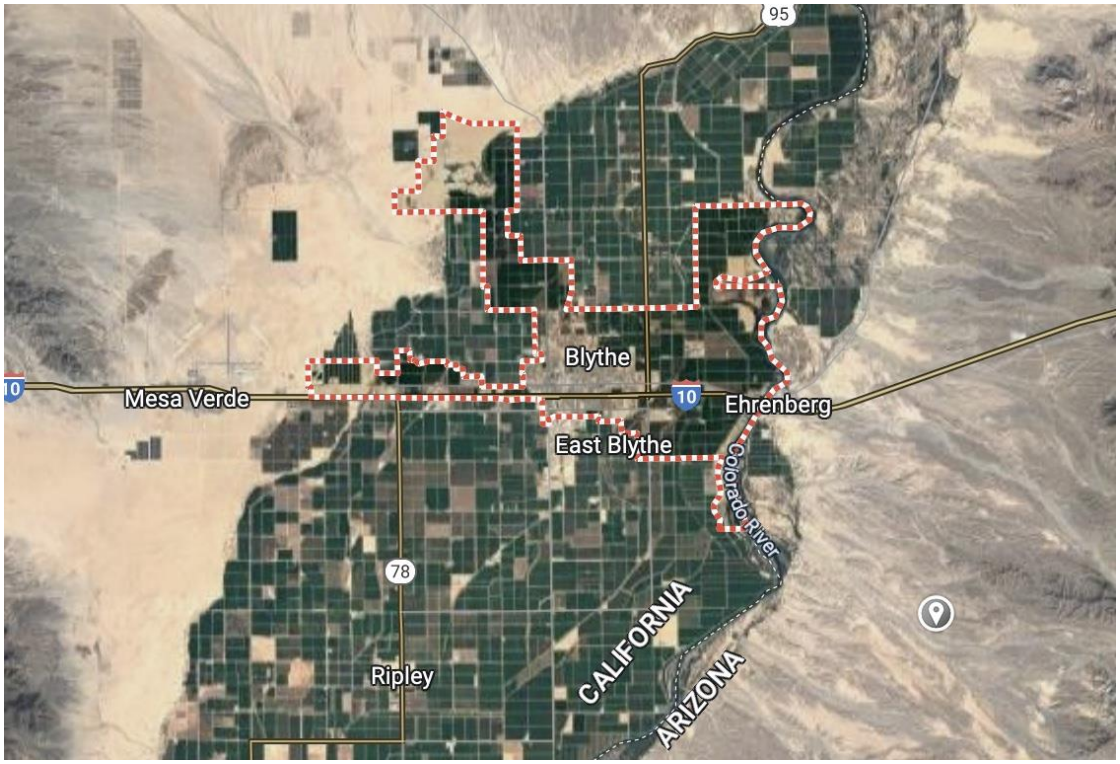

Figure 2 – City of Blythe Map[2]

Contact Information for Inquiries on the PVVTA ICT Rollout Plan:

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Is your transit agency part of a Joint Group? No

Fleet Facility

PVVTA's entire transit fleet operates out of one primary division located at 415 North Main Street, Blythe, California, and a secondary address at 175 West 14th Avenue. Maintenance is performed by PVVTA at a maintenance shop co-located with central operations at 415 N Main Street. PVVTA owns and operates a public CNG fueling station adjacent to the City of Blythe Public Works and Maintenance Building at 440 S Main St, Blythe, CA, which is also used by the Palo Verde Unified School District. The station features a 24-hour automated pay pump, portable restroom facilities, and free WIFI access. A layout of PVVTA's facilities and fueling locations are provided below in **Figure 3** and **Figure 4** to understand the locations of PVVTA's properties in relation to one another, as well as to routes and service areas. These facilities offer a starting point for the consideration of viable locations for a hydrogen fueling station.

[2] https://www.google.com/maps/place/Blythe,+CA/@33.6183123,-114.8927385,11z/data=!3m1!4b1!4m6!3m5!1s0x80d121436bd112e7:0x2c6ac2ec5ab225ae!8m2!3d33.6177725!4d-114.5882607!16zL20vMHIzZl8

Figure 3 – Facilities Overview: Administrative and Maintenance

Figure 4 - Facilities Overview: CNG fueling Station

PVVTA Sustainability Goals

PVVTA is dedicated to sustainability, and the agency plans to continue replacing their cutaways on a rolling basis as each vehicle reaches the end of their useful life. PVVTA's current procurement plans are to introduce one (1) CNG cutaway in FY'24, based on the assumption that such a vehicle will cost the agency $200,000 when adjusted for inflation. To service future vehicles, PVVTA is working with funding partners to identify financial streams to pool funds together to construct a modern, LEED compliant maintenance facility with infrastructure for alternatively fueled vehicles.

California's plan to address public health, air quality and climate protection goals includes the Innovative Clean Transit (ICT) regulation, which aims to reduce greenhouse gas (GHG), nitrogen oxide (NOx), and diesel particulate emissions. To accomplish its sustainability goals, PVVTA has developed a plan to transition to a fully zero emission vehicle (ZEV) fleet composed of fuel cell electric cutaways by 2040, in accordance with the Innovative Clean Transit (ICT) regulation, requiring all California transit agencies to follow zero-emission procurement guidelines with the goal of achieving 100% zero-emission fleets by 2040. PVVTA has committed to purchasing zero emission cutaways, demonstrating the agency's commitment to reducing emissions. PVVTA's transition to a fully zero emission fleet will ultimately benefit communities through cleaner air, greater independence from fossil fuels, and more environmental sustainability.

B

Rollout Plan General Information

Overview of the Innovative Clean Transit Regulation

On December 14, 2018, CARB enacted the Innovative Clean Transit (ICT) regulation, setting a goal for California public transit agencies to have zero-emission bus fleets by 2040. The regulation specifies the percentage of new bus procurements that must be zero-emission buses for each year of the transition period (2023–2040). The annual percentages for Small Transit agencies are as follows:

ICT Zero-Emission Bus Purchase Requirements for Small Agencies:

January 1, 2026 - 25% of all new bus purchases must be zero-emission

January 1, 2027 - 25% of all new bus purchases must be zero-emission

January 1, 2028 - 25% of all new bus purchases must be zero-emission

January 1, 2029+ - 100% of all new bus purchases must be zero-emission

March 2021-March 2050 – Annual compliance report due to CARB

This purchasing schedule guides agency procurements to realize the goal of zero-emission fleets in 2040 while avoiding any early retirement of vehicles that have not reached the end of their useful life. Agencies have the opportunity to request waivers that allow purchase deferrals in the event of economic hardship or if zero-emission technology cannot meet the service requirements of a given route. These concessions recognize that zero-emission technologies may cost more than current internal combustion engine (ICE) technologies on a vehicle lifecycle basis and that zero-emission technology may not currently be able to meet all service requirements.

PVVTA Rollout Plan General Information

Rollout Plan's Approval Date: June 21, 2023

Resolution No: PVVTA 2023-04

A copy of the approved resolution Is attached to the Rollout Plan.

Contact for Rollout Plan follow-up questions:
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Who created the Rollout Plan?
This Rollout Plan was created by PVVTA, with assistance from the Center for Transportation and the Environment (CTE) and the Riverside County Transportation Commission (RCTC).

This document, the ICT Rollout Plan, contains the information for PVVTA's zero-emission fleet transition trajectory as requested by the ICT Regulation. It is intended to outline the high-level plan for implementing the transition. The Rollout Plan provides estimated timelines based on information on bus purchases, infrastructure upgrades, workforce training, and other developments and expenses that were available at the time of writing.

Additional Agency Resources

PVVTA agency website: https://pvvta.com/

C

Technology Portfolio

Zero Emission Transition Technology Selection

Based on outcomes of the zero-emission fleet transition planning study completed by CTE, PVVTA plans to transition its entire fleet to fuel cell electric cutaways. By 2040, PVVTA expects to operate a fully zero-emission fleet of 8 cutaways.

A fuel cell electric zero-emission fleet scenario provides more service energy while avoiding the need for opportunity charging that would otherwise be necessary for a fully battery electric or mixed technology fleet. Transitioning to a fully fuel cell electric fleet also avoids the need to install two types of fueling infrastructure by eliminating the need for depot charging equipment, simplifying the transition as a whole. This plan summarizes the hydrogen infrastructure and vehicle costs needed to support the transition of the fleet to 8 fuel cell electric cutaways.

Local Developments and Regional Market

California has become a global leader for zero-emission buses, as well as zero-emission fuel and fueling infrastructure. California is home to four bus OEMs that manufacture zero-emission buses. Although three of these OEMs do not currently build FCEBs, growing demand for this vehicle technology may encourage these manufacturers to enter the market.

The state legislature has fostered growth in zero-emission fuels through the state's Low-Carbon Fuel Standard (LCFS) program, which incentivizes the consumption of fuels with a lower carbon intensity than traditional combustion fuels and through funding opportunities offered by CARB and CEC.

California also has one of the most mature hydrogen fueling networks in the nation. The state's hydrogen market has developed to support the growing number of fuel cell electric vehicles on the roads in the state. California has four medium-and-heavy-duty fueling stations in operation and four more in development. Additionally, the number of hydrogen production and distribution centers is growing to meet increased hydrogen demand as it gains popularity as a transportation fuel. California fuel cell electric bus (FCEB) deployments represent 75% of the nation's FCEB deployments.[6]

ZEB Transition Planning Methodology

PVVTA's ICT Rollout Plan was created in combination with PVVTA's Existing Conditions Report and the Riverside County ZEB Financial Strategy Plan, utilizing CTE's ZEB Transition Planning Methodology. CTE's methodology consists of a series of assessments that enable transit agencies to understand what resources and decisions are necessary to convert their fleets to zero-emission technologies. The results of the assessments help the agency decide on a step-by-step process to achieve its transition goals. These assessments consist of data collection, analysis, and modeling outcome reporting stages. These stages are sequential and build upon findings in previous steps. The assessment steps specific to PVVTA's Rollout Plan are outlined below:

1. Planning and Initiation
2. Requirements Analysis & Data Collection

3. Service Assessment
4. Fleet Assessment
5. Fuel Assessment
6. Maintenance Assessment
7. Facilities Assessment
8. Total Cost of Ownership Assessment
9. Policy Assessment
10. Partnership Assessment

For **Requirements Analysis & Data Collection,** CTE collects data on the agency's fleet, routes and blocks, operational data (e.g., mileage and fuel consumption), and maintenance costs. Using this data, CTE establishes service requirements to constrain the analyses in later assessments and produce agency-specific outputs for the zero-emission fleet transition plan.

The **Service Assessment** phase initiates the technical analysis phase of the study. Using information collected in the Data Collection phase, CTE evaluates the feasibility of using zero-emission buses to provide service to the agency's routes and blocks over the transition plan timeframe from 2022 to 2040. Results from the Service Assessment are used to guide zero emissions vehicle procurement plans in the Fleet Assessment and to determine energy requirements in the Fuel Assessment.

The **Fleet Assessment** projects a timeline for the replacement of existing buses with zero emission vehicles that is consistent with PVVTA's existing fleet replacement plan and known procurements. This assessment also includes a projection of fleet capital costs over the transition timeline and is optimized to meet state mandates or agency goals, such as minimizing costs or maximizing service levels.

The **Fuel Assessment** merges the results of the Service Assessment and Fleet Assessment to determine annual fuel requirements and associated costs. The Fuel Assessment calculates energy costs through the full transition timeline for each fleet scenario, including the agency's existing ICE vehicles. To more accurately estimate battery electric cutaway charging costs, a focused Charging Analysis is performed to simulate daily system-wide energy use. As older technologies are phased out in later years of the transition, the Fuel Assessment calculates the changing fuel requirements as the fleet transitions to zero emission vehicles. The Fuel Assessment also provides a total fuel cost over the transition timeline.

The **Maintenance Assessment** calculates all projected fleet maintenance costs over the transition timeline. Maintenance costs are calculated for each fleet scenario and include costs of maintaining existing fossil-fuel cutaways that remain in the fleet and maintenance costs of new battery electric cutaways and fuel cell electric cutaways.

The **Facilities Assessment** determines the infrastructure necessary to support the projected zero-emission fleet composition over the transition period based on results from the Fleet Assessment and Fuel Assessment. This assessment evaluates the required quantities of charging infrastructure and/or hydrogen fueling station projects and calculates the costs of infrastructure procurement and installation sequenced over the transition timeline.

The **Total Cost of Ownership Assessment** compiles results from the previous assessment stages to provide a comprehensive view of all fleet transition costs, organized by scenario, over the transition timeline.

The **Policy Assessment** considers the policies and legislation that impact the relevant technologies.

The **Partnership Assessment** describes the partnership of the agency with the utility or alternative fuel provider.

Requirements Analysis & Data Collection

The Requirements Analysis and Data Collection stage begins by compiling operational data from PVVTA regarding its current fleet and operations and establishing service requirements to constrain the analyses in later assessments. CTE requested data such as fleet composition, fuel consumption and cost, maintenance costs, and annual mileage to use as the basis for analyses. PVVTA self-assigned topography and speed characteristics to each service day, which were utilized to better define vehicle efficiencies. The calculated efficiencies were then used in the Service Assessment to determine the energy requirements of PVVTA's service.

CTE evaluated battery electric and fuel cell electric vehicles to support PVVTA's technology selection. The range of FCEBs, however, does not have the same level of sensitivity to environmental and operating conditions as BEBs. After collecting route and operational data, CTE determined that PVVTA's longest block is 306 miles. Based on observed performance, CTE estimates FCEBs are able to complete any block under 350 total miles. Although there are currently no fuel cell electric cutaways on the market, CTE assumed that when fuel cell electric cutaways enter the market, they will perform similarly to FCEBs, and therefore PVVTA's service will likely be feasible with fuel cell cutaways. Although fuel cell cutaways were determined to have the capability of serving all of PVVTA's routes, PVVTA was interested in exploring battery electric and mixed technology service scenarios as well, so it was necessary to determine how much of PVVTA's service could feasibly be served by depot-only charged battery electric cutaways on a single charge and with midday charging in order to develop a set of zero emission transition scenarios that would allow the agency to make an informed decision on what technology or technologies would be most suitable to the agency's needs.

The energy efficiency and range of battery electric cutaways are primarily driven by vehicle specifications, such as on-board energy storage capacity and vehicle weight. Both metrics are affected by environmental and operating variables including the route profile (e.g., distance, dwell time, acceleration, sustained top speed over distance, average speed, and traffic conditions), topography (e.g., grades), climate (e.g., temperature), driver behavior, and operational conditions such as passenger loads and auxiliary loads. As such, BEB efficiency and range can vary dramatically from one agency to another or even from one service day to another. It was therefore critical for PVVTA to determine efficiency and range estimates based on an accurate representation of its operating conditions.

To understand battery electric cutaway performance on PVVTA routes, CTE modeled the impact of variations in passenger load, accessory load, and battery degradation on vehicle performance, fuel efficiency, and range. CTE ran models with different energy demands that represented *nominal* and *strenuous* conditions. Nominal loading conditions assume average passenger loads and moderate temperature over the course of the day, which places low demands on the motor and heating, ventilation, and air conditioning (HVAC) system. Strenuous loading conditions assume high or maximum passenger loading and near maximum output of the HVAC system. This nominal/strenuous approach offers a range of operating efficiencies to use for estimating average annual energy use (nominal) or ensuring that a vehicle will be able to meet service demands (strenuous). Route modeling ultimately provides an average energy use per mile (kilowatt-hour/mile [kWh/mi]) for each load case.

In addition to loading conditions, CTE modeled the impact of battery degradation on a battery electric cutaway's ability to complete a block. The range of a battery electric cutaway is reduced over time due to battery degradation. A battery electric cutaway may be able to complete a given trip with beginning-of-life batteries, while later it may be unable to complete the entire trip at some point in the future as batteries near their end-of-life or derated capacity (typically considered 70-80% of available service energy).

Service Assessment

Given the conclusion that fuel cell electric cutaways can meet the range requirements for PVVTA's service, the Service Assessment focused on evaluating the feasibility of battery electric cutaways in PVVTA's service area. The efficiencies calculated in the Requirements Analysis & Data Collection stage were used to estimate the energy requirements of PVVTA's service. The main focus of the Service Assessment is called the block analysis, which determines whether generic battery electric technology can meet the service requirements of a block based on range limitations, weather conditions, levels of battery degradation and route specific requirements. The Transit Research Board's Transit Cooperative Research Program defines a block as "the work assignment for only a single vehicle for a single service workday".[3] A block is usually comprised of several trips on various routes. The energy needed to complete a block is compared to the available energy of the bus assigned to service the block. If the cutaway's usable onboard energy exceeds the energy required by the block, then the conclusion is that the battery electric cutaway can successfully operate on that block.

The Service Assessment projects the performance of a battery electric cutaway on a single overnight charge and operates on PVVTA's service schedule at the time of the plan's writing. The results are used to determine when along the transition timeline a fleet of overnight depot-charged battery electric cutaways can feasibly serve PVVTA's territory or if another zero-emission technology or midday charging is required to maintain service. This information can then be used to inform the scale and timing of battery electric cutaway procurements in the Fleet Assessment.

Modeling & Procurement Assumptions

CTE and PVVTA defined the following assumptions and requirements used throughout the study:

The Service Assessment energy profile assumed a 5% improvement in battery capacity every year with a starting battery capacity of 120 kWh for a 25' cutaway which represents an analogous zero emission cutaway suitable for PVVTA's transit vehicles and is an average of battery capacities seen in commercially-available cutaways of the same size and passenger capacity in 2022.

This analysis also assumed PVVTA will maintain their service in a similar distribution of distance, relative speeds, and elevation changes to pre-COVID-19 service because their cutaways will continue to serve similar locations within the service area and general topography remains constant even if specific routes and schedules change.

Fleet size and vehicle length distribution do not change over time. The analysis assumed that vehicles reaching the end of their useful life would be replaced with vehicles of the same size. Total fleet size remains the same over the transition period. Cutaways are assumed to operate for a 5- or 7-year service life dependent on length.

Usable on-board energy is assumed to be that of a mid-life battery (10% degraded) with a reserve at both the high and low end of the battery's charge potential. As previously discussed, battery age affects range, so a mid-life battery was assumed as the average capacity of the battery's service life. Charging batteries to 100% or dropping the charge below 10% also degrades the batteries over time, which is why the analysis assumes that the top and bottom portions of the battery are unusable.

CTE accounts for battery degradation over the transition period with the assumption that PVVTA can rotate the cutaways to match battery capacity to block energy requirements. As the zero-emission fleet transition progresses, older vehicles can be moved to shorter, less demanding blocks and newer vehicles can be assigned to longer, more demanding blocks to account for battery degradation in battery electric cutaways over time. PVVTA can rotate the fleet to meet demand, assuming there is a steady procurement of battery electric cutaways each year to match service requirements. CTE accounts for this variability in battery age by using a mid-life usable battery capacity to determine block feasibility.

[3] TRB's Transit Cooperative Research Program. 2014. TCRP Report 30: Transit Scheduling: Basic and Advanced Manuals (Part B). https://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_30-b.pdf

Results

The Service Assessment determines the timeline for when PVVTA's service may become achievable by battery electric cutaways on a single depot charge. After determining what proportion of PVVTA's service could be completed by battery electric cutaways on a single charge, CTE was also able to determine the proportion of service that would require midday charged battery electric cutaways or longer-range fuel cell electric cutaways in order to reach 100% ZEB service. PVVTA and CTE can then use these results to inform zero emission cutaway procurement decisions in the Fleet Assessment. Results from this analysis are also used to determine the specific energy requirements and fuel consumption of the fleet over time. These values are then used in the Fuel Assessment to estimate the cost to operate the transitioning fleet.

These projections assume the average service days will maintain a similar distribution to current service because PVVTA will continue to serve similar destinations within the city. This core assumption affects energy use estimates and service achievability in each year.

The results of PVVTA's Service Assessment can be found below in **Figure 5.** Based on CTE's analysis, 0% of PVVTA's blocks could be served by a single charge of a depot-only cutaway with a 120-kWh battery and, with the assumed 5% improvement every year, 14% of PVVTA's blocks could be served by this technology by 2036, which means that PVVTA's service cannot be completed with depot-only charged cutaways.

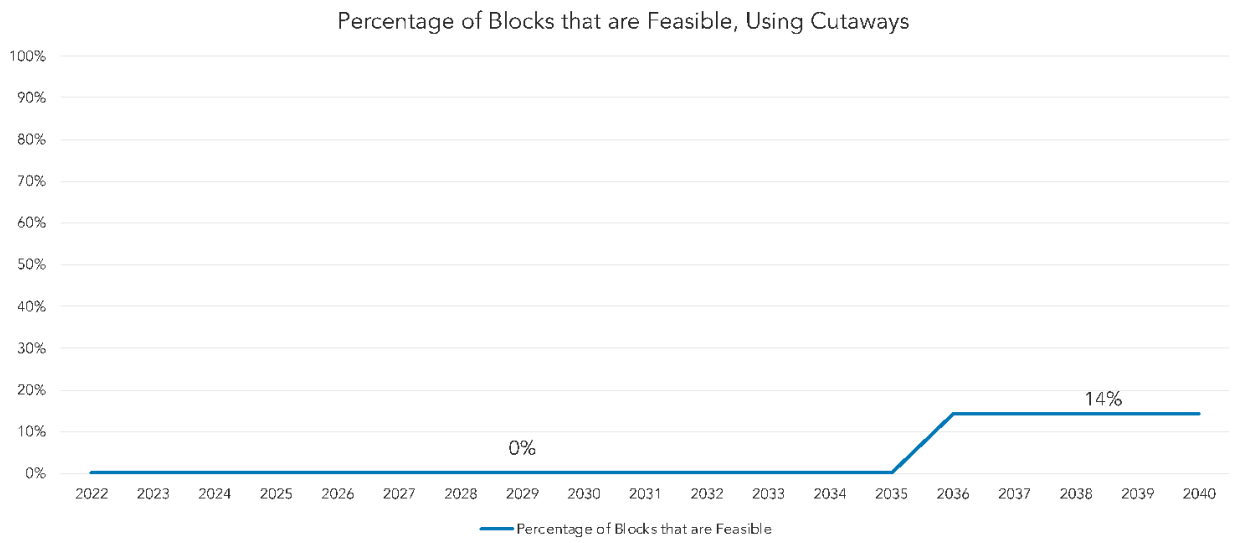

Figure 5 – BEB Block Achievability Percentage by Year

Also, as noted previously, fuel cell cutaways are assumed to be able to complete any trip under 350 total miles and PVVTA's longest block is 306 miles long, which means that fuel cell technology will have the capability to meet PVVTA's service requirements. Therefore, a mixed fleet of fuel cell electric cutaways and battery electric cutaways with opportunity charging at the depot and a full fleet of fuel cell electric cutaways are viable options for PVVTA. Pantograph and inductive charging have not yet been demonstrated on the market for electric cutaways, so this option was not considered.

Description of Zero Emission Technology Solutions Considered

For this study, CTE developed 2 scenarios to compare to a baseline scenario and analyze the feasibility and cost effectiveness of implementing each technology as well as the co-implementation of both technologies. The scenarios are referred to by the following titles and described, in detail, below. A baseline scenario was developed to represent the typical "business-as-usual" case with retention of ICE cutaways for cost comparison purposes. A battery-electric only scenario was not considered beyond the initial analyses because it is unfeasible with currently available technology.

0. Baseline (current technology)
1. Mixed Fleet – Fuel Cell and Battery Electric Cutaways (with opportunity charging)
2. Fuel Cell Cutaways Only

In the **Mixed Fleet Transition,** battery-electric cutaways supplement a primarily fuel cell cutaway fleet to make up a fully zero-emission fleet. The costs for infrastructure and installation of two different charging and fueling infrastructures are taken into account. This scenario takes into account PVVTA's planned purchases of two battery-electric cutaways in 2024 even though they are not feasible according to CTE's modeling. It is assumed that PVVTA would be able to modify their service to accommodate the range limitations, either by shortening blocks or utilizing midday opportunity charging at the depot. Additionally, two more battery electric cutaways are added to the fleet when the feasibility increases after 2036. Overall, a mixed fleet is more resilient as it would allow service to continue if either fuel became temporarily unavailable for any reason.

The **Fuel Cell Fleet Transition** was developed to examine the costs for hydrogen fueling and transitioning to a 100% fuel cell cutaway fleet. A fully fuel cell fleet avoids the need to install two types of fueling infrastructure by eliminating the need for depot charging equipment. Fleets composed entirely of fuel cell electric cutaways also offer the benefit of scalability compared to battery electric technologies. Adding fuel cell vehicles to a fleet after the initial facility build out does not necessitate large complementary infrastructure upgrades as long as the fueling station was appropriately sized for the fleet. Despite this benefit, the cost of fuel cell cutaways and hydrogen fuel are still more expensive than battery electric cutaways and electricity at current market prices.

When considering these scenarios, this study can be used to develop an understanding of the range of costs that may be expected for PVVTA's zero emission transition, but ultimately, can only provide an estimate. Furthermore, this study aims to provide an overview of the myriad considerations the agency must take into account in selecting a transition scenario that go beyond cost, such as space requirements, safety implications, and operational changes that may differ between scenarios.

D

Current Fleet Composition and Future Vehicle Purchases

Fleet Assessment Methodology

The Fleet Assessment projects a timeline for the replacement of existing cutaways with zero emission cutaways. The timeline is consistent with PVVTA's fleet replacement plan that is based on the 7-year service life of truck-style cutaways. This assessment also includes a projection of fleet capital costs over the transition timeline.

Zero Emission Vehicle Cost Assumptions

CTE and PVVTA developed cost assumptions for future cutaway purchases. Key assumptions for cutaway costs for the PVVTA Transition Plan are as follows:

- CNG and gasoline vehicle prices were provided by PVVTA and are inclusive of costs for configurable options and taxes.
- Capital vehicle costs are derived from the 2022 California, Washington and New Mexico State Contracts plus the annual PPI (2%) and tax (8.75%). Fuel Cell Cutaway pricing is a price estimation due to lack of market information.
- Costs for retrofits or bus conversions are not included. Procurements assume new vehicle costs.

Table 1 – Fleet Assessment Cost Assumption

	Fuel Type		
Length	CNG	Gas	Fuel Cell
Cutaway (25ft)	$165,326	$128,772	$376,153*

*Bus size not currently available for this technology

Description of PVVTA's Current Fleet

PVVTA's current service and fleet composition provide the baseline for evaluating the costs of transitioning to a zero-emission fleet. PVVTA staff provided the following key data on current service:

- Fleet composition by powertrain and fuel
- Routes and blocks
- Mileage and fuel consumption
- Maintenance costs

Fleet

As of 2022, the PVVTA fleet includes three (3) 25-ft CNG cutaways, one (1) 32-ft CNG cutaway, and four (4) 25-ft gas cutaways used for fixed route service. Transit services operate out of one primary division located at 415 North Main Street, Blythe, California, and a secondary address at 175 West 14th Avenue. Maintenance is performed at a maintenance shop co-located with central operations at 415 N Main Street. PVVTA owns and operates a public CNG fueling station, which is also used by the Palo Verde Unified School District, located adjacent to the City of Blythe Public Works and Maintenance Building at 440 S Main St, Blythe, CA.

Routes and Blocks

PVVTA's 2022 service consists of six (6) deviated fixed routes, deviating up to 0.75 miles from mapped routes. For the purpose of this analysis, CTE considered six (6) independent bus blocks in order to accurately quantify the daily mileages and corresponding energy consumption metrics. To calculate average block distances, CTE summed sequential daily mileages based on vehicle IDs, and calculated average and maximum daily block mileages. Blocks range in distance from 152 to 306 miles. Vehicles pull out as early as 5:20 AM and return as late as 7:00 PM. PVVTA service runs within and around the City of Blythe.

Current Mileage and Fuel Consumption

Annual mileage of the fleet:
241,783 miles

PVVTA's ZEB Transition Plan assumes that the amount of service miles will remain the same.

Annual fuel consumption:
17,019 GGE of CNG and gasoline

Fleet average efficiency:
6.8 miles per GGE

PVVTA current fuel expense:
$73,284 per year

Average fuel costs:
$4.31 per GGE

Maintenance Costs

Average maintenance costs per mile by vehicle type are estimated in **Table 2.** Vehicles also do not undergo any midlife overhauls due to their short usable life period as summarized in

Table 3. These costs were utilized to project transition maintenance costs.

Table 2 – Labor and Materials Cost Assumptions

Vehicle Type	Estimate (Per Mile)
CNG/Gas Cutaway	$ 0.35
Fuel Cell Electric Cutaway	$0.51

Table 3 – Midlife Overhaul Cost Assumptions

Vehicle Type	Overhaul (FC/Transmission) Cost Per vehicle life	Battery Warranty Cost Per vehicle life
CNG Cutaway	$0	$0
Gas Cutaway	$0	$0
Fuel Cell Electric Cutaway	$0	$10,000

Zero-Emission Bus Procurement Plan and Schedule

PVVTA will provide service with a fleet made up entirely of fuel cell electric cutaways, as this technology will be sufficient for meeting the agency's service demands. Considering PVVTA will be phasing out their gasoline cutaways before beginning their zero-emission vehicle transition, PVVTA's fleet transition strategy is to replace each CNG cutaway as they reach the ends of their service lives with fuel cell electric cutaways beginning in 2028. **Figure 6** below provides the number of each vehicle type that will be purchased each year through 2040 with this replacement strategy and the total cost of that procurement.

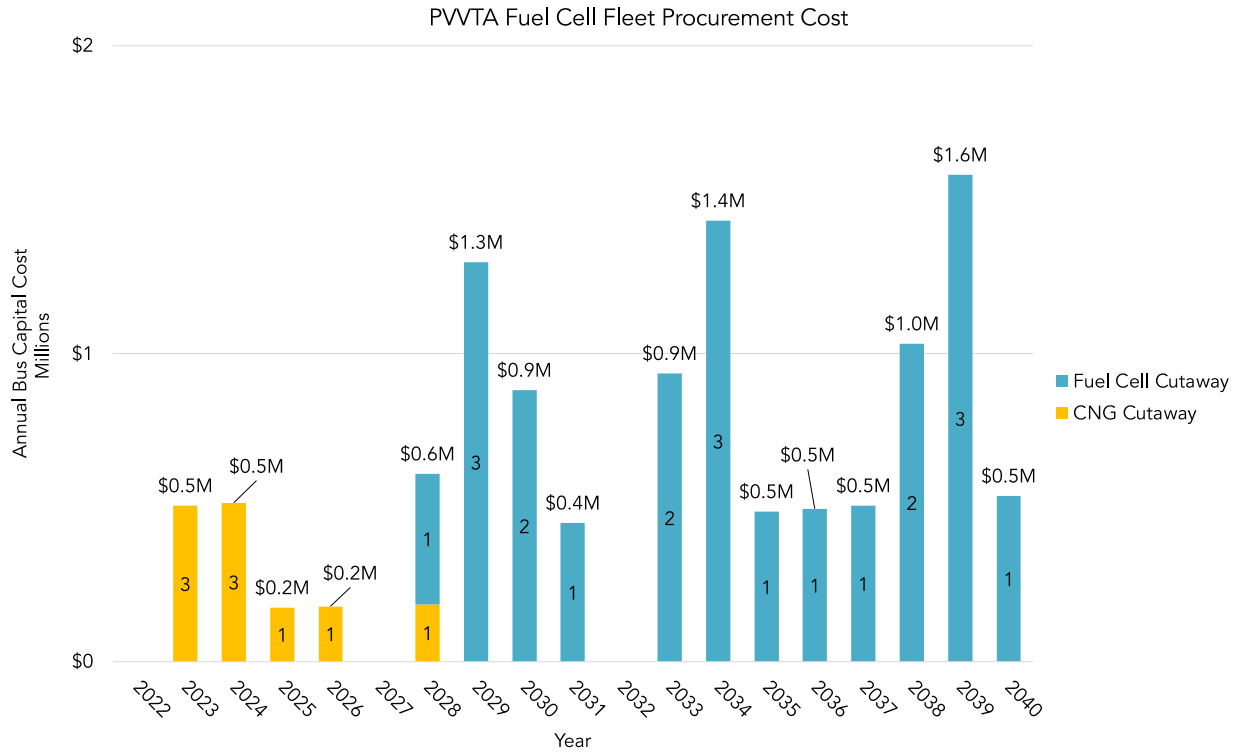

Figure 6 – Projected Fleet Procurements for Zero Emission Transition

Figure 7 demonstrates the annual composition of PVVTA's fleet through 2040. By 2033, PVVTA's fleet will consist entirely of fuel cell cutaways. The fleet will remain the same size throughout the transition period.

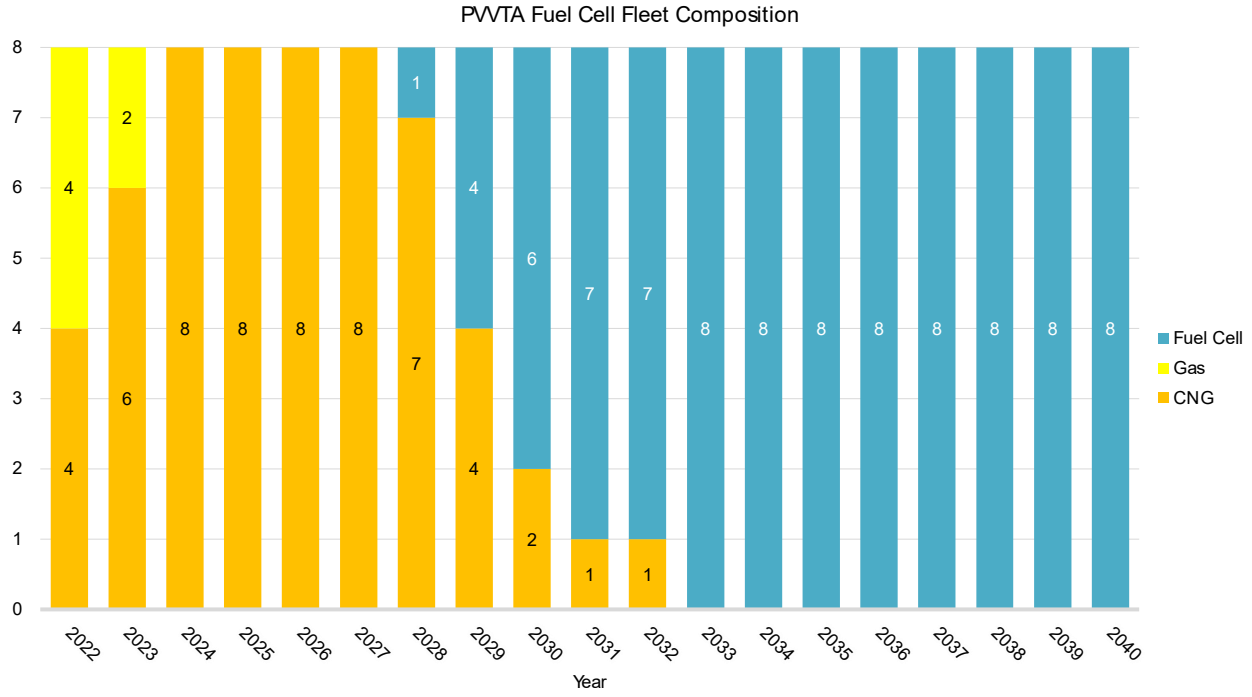

Figure 7 – Annual Fleet Composition, Zero Emission Transition

As seen in **Table 4**, the capital investment required for purchasing zero-emission cutaways is significantly higher than for CNG and gasoline cutaways. This highlights the importance of staying vigilant in the search for funding opportunities to help fill this gap.

Table 4 – PVVTA Vehicle Capital Investment to Transition to a 100% Zero Emission Fleet by 2040

	CNG/Gas Baseline*	Zero Emission Incremental Costs	Total Investment
Vehicle Capital Costs	$7M	$5M	$12M

*Represents the capital costs that would have been incurred in the absence of the ICT Regulation

Additional Considerations

When purchasing zero emission vehicles, the process may differ slightly from the process PVVTA currently uses to purchase vehicles. First, when contracting with zero emission vehicle manufacturers, PVVTA should ensure expectations are clear between the OEM and the agency. As with CNG purchases the agreement should be clear regarding the vehicle's configurations, technical capabilities, build and acceptance process, production timing with infrastructure, warranties, training, and other contract requirements. Additionally, by developing and negotiating specification language collaboratively with the vendor(s), PVVTA can work with the vendor(s) to customize the cutaway to their needs as much as is appropriate, help advance the industry based on agency requirements and recommended advancements, ensure the acceptance and payment process is fully clarified ahead of time, fully document the planned capabilities of the cutaway to ensure accountability, and generally preempt any unmet expectations. Special attention should be given in defining the technical capabilities of the vehicle, since defining these for zero emission vehicles may differ from ICE vehicles.

When developing RFPs and contracting for zero emission vehicle procurements, PVVTA should specify the source of funding for the vehicle purchases to ensure grant compliance, outline data access requirements, define the price and payment terms, establish a delivery timeline, and outline acceptance and performance requirements. PVVTA should test the vehicles upon delivery for expected performance in range, acceleration, gradeability, highway performance, and maneuverability. Any such performance requirements must be included in the technical specification portion of the RFP and contract to be binding for the OEM. Defining technical specifications for zero emission vehicles will also differ slightly from their current ICE vehicles since they will need to include requirements for hydrogen fuel cell performance.

Fuel cell procurement will also differ from ICE procurements since there are fewer OEMs presently manufacturing fuel cell buses and no OEMs presently manufacturing fuel cell cutaways, although this is expected to change with increasing demand. PVVTA will also be able to apply for additional funding for these vehicles through zero-emission vehicle specific funding opportunities, which are discussed further in **section H: Potential Funding Sources.**

E

Facilities and Infrastructure Modifications

PVVTA Facility Configuration and Depot Layout

Depot Address:
415 North Main Street, Blythe, CA 92225

Electric Utility:
Southern California Edison (SCE)

Located in a NOx Exempt Area?
No

Bus Parking Capacity:
8+

Current Vehicle Types Supported:
PVVTA's depot currently supports fueling and maintenance of CNG and gasoline cutaways.

Propulsion Types That Will be Supported at Completion of ZEB Transition:
Hydrogen fuel cell electric

Facilities Assessment Methodology

Fuel cell deployments such as PVVTA's require installation of hydrogen fueling infrastructure. Fuel cell deployments require installation of a fueling station and may require improvements such as upgrades to the switchgear or utility service connections. Planning and design work, including development of detailed electrical and construction drawings required for permitting, is also necessary once specific charging equipment has been selected.

Building off of the fleet procurement schedule that was outlined in the Fleet Assessment, CTE then uses industry average pricing to develop infrastructure scenarios that estimate the cost of building out the infrastructure necessary to support a full fleet transition to zero emission vehicles. This plan assumes that infrastructure projects will be completed prior to each cutaway delivery. To project the costs of fueling infrastructure, CTE used industry pricing observed in active projects and an infrastructure build timeline based on the procurement timeline. This plan assumes that infrastructure projects will be completed prior to each vehicle delivery. These projects are described in detail below.

Infrastructure Upgrade Requirements to Support Zero-Emission Buses

Description of Infrastructure Considered

With PVVTA's fuel cell electric fleet, hydrogen fueling infrastructure is required for eight (8) fuel cell cutaways to support a completely zero-emission fleet by 2040. The total cost for hydrogen fueling infrastructure is approximately $10 M.

FCEB Fueling Infrastructure Summary

Hydrogen fueling is required to support the fully fuel cell electric fleet. Like battery electric infrastructure, fuel cell infrastructure deployment will require hiring an infrastructure planning contractor. A storage capacity project, a fueling infrastructure capital project will also be necessary to allow PVVTA to fuel their hydrogen fuel cell vehicles on site. Infrastructure is assumed to be built out in one project that will conclude prior to the first fuel cell cutaway deployment in 2028. The estimated infrastructure costs for these technology & infrastructure expenses are as follows:

- **INFRASTRUCTURE PLANNING.** Building hydrogen infrastructure requires planning at the depot. This assessment assumes that a planning project costs $200,000 and occurs only once per depot. The total cost of planning projects for PVVTA's single depot will be approximately $200,000.
- **MAINTENANCE BAY UPGRADES.** Maintenance bay upgrades are not included in PVVTA costs.
- **HYDROGEN FUELING INFRASTRUCTURE.** PVVTA's fueling solutions were decided based on fuel consumption needs and approximately right-sized. Hydrogen infrastructure maintenance and operations are covered in the price of fuel in the fuel assessment.
- **INFLATION FACTOR.** 5.4% inflation is added on all project costs per the CPI. All costs listed above are in 2022 dollars, projects occurring after 2022 are inflated per the inflation factor.

The total cost of fuel cell infrastructure is approximately $10 M over the transition period. **Figure 8** shows the estimated total costs for the fuel cell infrastructure over the transition period.

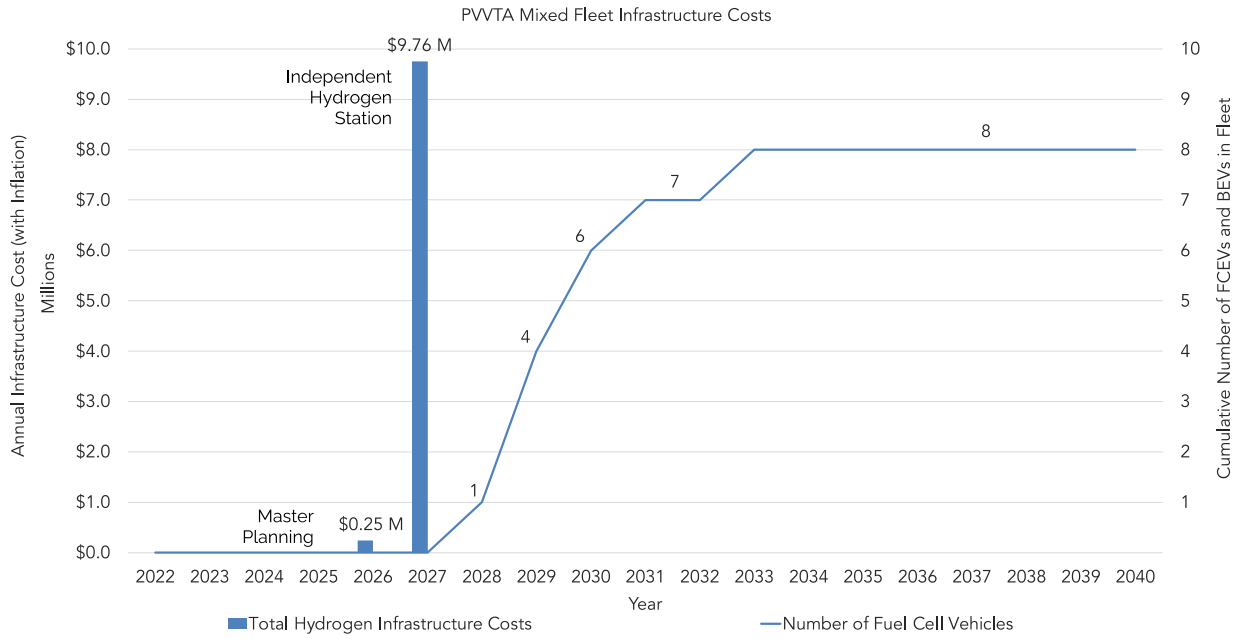

Figure 8 – Infrastructure Project & Costs, Zero Emission Transition with Hydrogen Infrastructure

Utility Partnership Review

Southern California Edison (SCE) the electricity provider, or utility, for PVVTA offers support to transit agencies looking to transition to zero-emission vehicles, such as the Charge Ready Transport (CRT) program that supports both California's greenhouse gas (GHG)-reduction goal and local air-quality requirements. The Program assists customers with transitioning to cleaner fuels by reducing their cost for the purchase and installation of required battery-electric vehicle (EV) charging infrastructure, as well as providing rebates to offset the cost of charging stations for certain eligible customers. Although PVVTA is not looking to transition to battery electric vehicles, the agency should still inform SCE of their plans to install a hydrogen fueling station at their location as this will add demand to the grid. SCE may need to account for this demand in their long-term demand planning.

PVVTA may also have access to local incentive programs aimed at reducing air pollution in Southern California; as the air pollution control agency for San Bernardino County's High Desert and Riverside County's Palo Verde Valley, the Mojave Desert Air Quality Management District (MDAQMD) provides a variety of financial incentives to encourage the immediate use of commercially available, low- or zero-emission technologies[4]. Of note is the Carl Moyer Program, that provides funding for alternative fueling infrastructure and heavy-duty vehicle replacement/conversion projects.

Furthermore, PVVTA understands establishing and maintaining a partnership with the hydrogen fuel provider is critical to successfully deploying zero-emission vehicles and maintaining operations. Hydrogen fueling requires a plan for infrastructure installation, delivery, storage, dispensing, and upgrades to its facilities. PVVTA may consider partnerships with agencies that have developed these systems or look for a competitive bid process for a design/build project as a reasonable approach to determining the appropriately sized station and fueling at the best price.

[4] https://www.mdaqmd.ca.gov/grants

F

Providing Service in Disadvantaged Communities

Providing Zero-Emission Service to DACs

In California, CARB defines disadvantaged communities (DACs) as communities that are both socioeconomically disadvantaged and environmentally disadvantaged due to local air quality. Lower income neighborhoods are often exposed to greater vehicle pollution levels due to proximity to freeways and the ports, which puts these communities at greater risk of health issues associated with tailpipe emissions.[5] Zero emission vehicles will reduce energy consumption, harmful emissions, and direct carbon emissions within the disadvantaged communities PVVTA serves. The PVVTA service area includes two distinct census tracts designated as DACs; one in the City of Blythe, and one along the Wellness Express line that serves the Coachella Valley.

Environmental impacts, both from climate change and from local pollutants, disproportionately affect transit riders. For instance, poor air quality from tailpipe emissions and extreme heat harm riders waiting for buses at roadside stops. The transition to zero-emission technology will benefit the region by reducing fine particulate pollution and improving overall air quality. In turn, the fleet transition will support better public health outcomes for residents in DACs served by the selected routes.

Public transit has the potential to improve social equity by providing mobility options to low-income residents lacking access to a personal vehicle and helping to meet their daily needs. In California, transit use is closely correlated with car-less households as they are five times more likely to use public transit than households with at least one vehicle.[6] Although 21% of Californians in a zero-vehicle household are vehicle free by choice, 79% do not have a vehicle due to financial limitations. Many low-income people therefore rely solely on public transportation for their mobility needs.[7] PVVTA's current fleet of CNG and gasoline cutaways consume 14,967 Gasoline Gallons Equivalent (GGE) of fuel per year, operating for approximately 240,000 miles per year. Moving PVVTA's fleet to zero-emission technology will help alleviate the pollution from tailpipe emissions, which will improve the health of communities impacted by NOx and particulate matter emissions and all local communities.

Access to quality transit services provides residents with a means of transportation to go to work, to attend school, to access health care services, and run errands. By purchasing new vehicles and decreasing the overall age of its fleet, PVVTA is also able to improve service reliability and therefore maintain the capacity to serve low-income and disadvantaged populations.

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[5] Reichmuth, David. 2019. Inequitable Exposure to Air Pollution from Vehicles in California. Cambridge, MA: Union of Concerned Scientists. https://www.ucsusa.org/resources/inequitable-exposure-air-pollution-vehicles-california-2019

[6] Grengs, Joe; Levine, Jonathan; and Shen, Qingyun. (2013). Evaluating transportation equity: An inter-metropolitan comparison of regional accessibility and urban form. FTA Report No. 0066. For the Federal Transit Administration

[7] Paul, J & Taylor, BD. 2021. Who Lives in Transit Friendly Neighborhoods? An Analysis of California Neighborhoods Over Time. Transportation Research Interdisciplinary Perspectives. 10 (2001) 100341. https://reader.elsevier.com/reader/sd/pii/S2590198221000488?token=CABB49E7FF438A88A19D1137A2B1851806514EF576E9A2D9462D3FAF1F6283574907562519709F8AD53DEC3CF95ACF27&originRegion=us-east-1&originCreation=20220216190930

Map of Disadvantaged Communities served by PVVTA

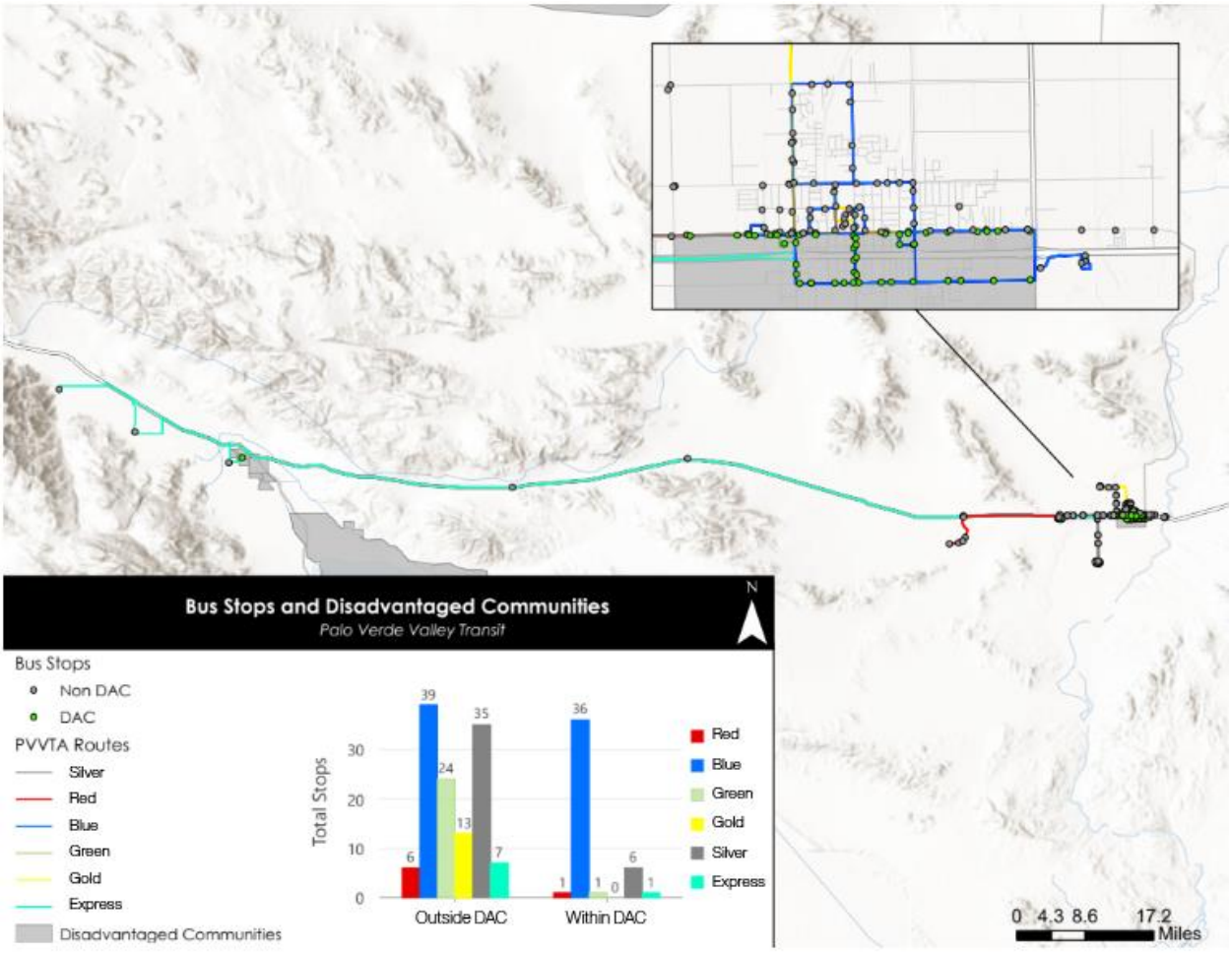

Figure 9 – PVVTA's Bus Service Relative to Disadvantaged Communities

Emissions Reductions for DACs

Greenhouse gasses (GHG) are the compounds primarily responsible for atmospheric warming and include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The effects of greenhouse gasses are not localized to the immediate area where the emissions are produced. Regardless of their point of origin, greenhouse gasses contribute to overall global warming and climate change.

Criteria pollutants include carbon monoxide (CO), nitrogen oxides (NOx), particulate matter under 10 and 2.5 microns (PM_{10} and $PM_{2.5}$), volatile organic compounds (VOC), and sulfur oxides (SO_X). These pollutants are considered harmful to human health because they are linked to cardiovascular issues, respiratory complications, or other adverse health effects.[8] These compounds are also commonly responsible for acid rain and smog. Criteria

[8] Institute of Medicine. Toward Environmental Justice: Research, Education, and Health Policy Needs. Washington, DC: National Academy Press, 1999; O'Neill MS, et al. Health, wealth, and air pollution: Advancing theory and methods. Environ Health Perspect. 2003; 111: 1861-1870; Finkelstein et al. Relation between income, air pollution and mortality: A cohort study. CMAJ. 2003; 169: 397-402; Zeka A, Zanobetti A, Schwartz J. Short term effects of particulate matter on cause specific mortality: effects of lags and modification by city characteristics. Occup Environ Med. 2006; 62: 718-725.

pollutants cause economic, environmental, and health effects locally where they are emitted. CARB defines DACs in part as disadvantaged by poor air quality because polluting industries or freight routes have often been cited in these communities. The resulting decrease in air quality has led to poorer health and quality of life outcomes for residents. PVVTA's operational Well-to-Wheel criteria emissions are summarized in **Table 5.**

Table 5 – Annual Vehicle Operation Pollutants by Fuel Type

Overall Annual Vehicle Operation Pollutants (lbs.)								
	CO	NOx	PM10	PM2.5	VOC	SOx	PM10 TBW	PM2.5 TBW
CNG	1,068	7.4	0.2	0.2	2.4	0.3	6.0	0.8
Gas	1,010	15.0	1.6	1.5	24.7	1.2	10.3	1.3

The transportation sector is the largest contributor to greenhouse gas emissions in the United States, accounting for more than 30% of total emissions, and within this sector, 25% of these emissions come from the medium- and heavy-duty markets, yet these markets account for less than 5% of the total number of vehicles. Electrifying these vehicles can have an outsized impact on pollution, fossil-fuel dependency, and climate change. Zero emission buses are four times more fuel efficient than comparable new diesel buses. Better fuel efficiency means less waste when converting the potential energy in the fuel to motive power. Less waste not only means less pollution, it results in more efficient use of natural resources. By transitioning to zero emission cutaways from CNG and gasoline cutaways, PVVTA's zero-emission fleet will produce fewer carbon emissions and fewer harmful pollutants from the vehicle tailpipes. Considering DACs experience significantly more pollution from harmful emissions, communities disadvantaged by pollution served by PVVTA's fleet will therefore directly benefit from the reduced tailpipe emissions of zero emission vehicles compared to ICE vehicles.

Estimated Ridership in DACs

PVVTA's service area includes two distinct census tracts designated as DACs. According to Arcadis IBI Group's in-depth analysis overlaying PVVTA's deviated fixed route service and 2021 census tract data for disadvantaged communities based on CalEnviroScreen 4.0, 48 stops (31%) and 22 service miles (5%) of PVVTA's deviated fixed route service are located within DACs.

G

Workforce Training

PVVTA Current Training Program

PVVTA's contractor, Transportation Concepts, manages the training of our dispatchers, mechanics, operators, and supervisors. A comprehensive program is provided for all operating staff that continually evaluates performance and prepares our operators to anticipate and correct issues that arise in passenger transportation services.

PVVTA Zero Emission Vehicle Training Plan

OEM Training

PVVTA plans to take advantage of trainings from the vehicle manufacturers and station suppliers, including maintenance and operations training, station operations and fueling safety, first responder training and other trainings that may be offered by the technology providers. OEM trainings provide critical information on operations and maintenance aspects specific to the equipment model procured. Additionally, many procurement contracts include train-the-trainer courses through which small numbers of agency staff are trained and subsequently train agency colleagues. This method provides a cost-efficient opportunity to provide widespread agency training on new equipment and technologies.

Bus and Fueling Operations and Maintenance

The transition to a zero-emission fleet will have significant effects on PVVTA's workforce. Meaningful investment is required to upskill maintenance staff and bus operators trained in ICE vehicle maintenance and ICE fueling infrastructure.

PVVTA training staff will work closely with the OEM providing vehicles to ensure all mechanics, service employees, and bus operators complete necessary training prior to deploying zero emission technology and that these staff undergo refresher training annually and as needed. PVVTA staff will also be able to bring up any issues or questions they may have about their training with their trainers. Additionally, trainers will observe classes periodically to determine if any staff would benefit from further training.

ZEB Training Programs

Several early zero emission bus (ZEB) adopters have created learning centers for other agencies embarking on their ZEB transition journeys. One such agency is SunLine Transit Agency, which provides service to the Coachella Valley and hosts the West Coast Center of Excellence in Zero Emission Technology (CoEZET). The Center of Excellence supports transit agency adoption, zero-emission commercialization and investment in workforce training. Similarly, AC Transit offers training courses covering hybrid and zero-emission technologies through their ZEB University program. PVVTA plans to take advantage of these trainings offered by experienced agencies.

There are several transit agencies within and around PVVTA that have successfully begun their transition to zero-emission technology. California has at least seven heavy-duty and transit-operated fueling stations in operation

and at least four more in development[9]. Additionally, the number of hydrogen production and distribution centers is growing to meet increased hydrogen demand as it gains popularity as a transportation fuel. At present, there are two heavy-duty, transit-operated hydrogen fueling stations in the neighboring San Bernardino and Orange counties and two planned transit-operated hydrogen fueling stations in Los Angeles County and Pomona, which are all about 200 miles of PVVTA. In addition, private hydrogen fueling stations by First Element Fuels and Stratosfuel within 200 miles of Blythe, CA are in development and should be commissioned before the end of the fleet transition timeline.

In the region, Omintrans, a public transit agency serving the San Bernardino Valley recently received $9.3 million from the Federal Transit Administration (FTA) under the FY2022 Low-No Emission Vehicle Program to develop hydrogen refueling infrastructure and launch a workforce development program. Similarly, Sunline Transit Agency has received $7.8 million to upgrade their liquid hydrogen refueling infrastructure. Riverside Transit Agency has also received $5.2 million to procure hydrogen fuel cell buses. The presence of hydrogen fueling infrastructure projects, especially in the counties of Riverside and San Bernardino, demonstrates the feasibility of fuel cell electric technology for transit in the region. These agencies can serve as a resource for PVVTA to use when implementing zero-emission technology and supporting programs into their services.

[9] Hydrogen Refueling Stations in California, California Energy Commission: https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics/hydrogen-refueling

H

Potential Funding Sources

Available Funding Opportunities

Federal

Although not an eligible recipient on their own, PVVTA is exploring federal grants in partnership with eligible recipients, such as Caltrans, RCTC or Sunline through the following funding programs: Federal Transit Administration's (FTA) Urbanized Area Formula program; discretionary grant programs such as the Bus and Bus Facilities (B&BF) program, Low or No Emission Vehicle Deployment Program (Low-No), and Better Utilizing Investments to Leverage Development (BUILD) grant; and other available federal discretionary grant programs. They are also eligible to be direct recipients of 5311 funds.

Annual Reliable Funding

- Federal Transportation Administration (FTA)
    - Urbanized Area Formula program
    - State of Good Repair Grants
    - Bus and Bus Facilities Formula grants

Future Funding Opportunities

- United States Department of Transportation (USDOT)
    - Better Utilizing Investments to Leverage Development (BUILD) Grants
- Federal Transportation Administration (FTA)
    - Bus and Bus Facilities Discretionary Grant
    - State of Good Repair Grants
    - Capital Investment Grants – New Starts
    - Capital Investment Grants – Small Starts
    - Low-or No-Emission Vehicle Grant
    - Metropolitan & Statewide Planning and Non-Metropolitan Transportation Planning
- Federal Highway Administration (FHWA)
    - Congestion Mitigation and Air Quality Improvement Program through SCAG
    - Surface Transportation Block Grant Program through SCAG
    - Carbon Reduction Program
- Environmental Protection Agency (EPA)
    - Environmental Justice Collaborative Program-Solving Cooperative Agreement Program

State

PVVTA will also seek funding from state resources through grant opportunities including but not limited to Senate Bill 1 State of Good Repair (SGR), Transit and Intercity Rail Capital Program (TIRCP), Low Carbon Transit Operations Program (LCTOP) funding, the California Energy Commission's Clean Transportation Program as well as Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) for bus purchases when available.

Annual Reliable Funding

- Administered by California Department of Transportation (Caltrans)
    - Transportation Development Act Funds
        - Local Transportation Funds
        - State Transit Assistance (STA)
    - State of Good Repair (SB 1 funds)
    - Low Carbon Transit Operations Program (LCTOP)

Future Funding Opportunities

- California Air Resources Board (CARB)
    - Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
    - State Volkswagen Settlement Mitigation
    - Carl Moyer Memorial Air Quality Standards Attainment Program
    - Cap-and-Trade Funding
    - Low Carbon Fuel Standard (LCFS)
- California Transportation Commission (CTC) – As with most federal grants, PVVTA is not eligible to be a direct recipient for CTC grants, but could partner with an eligible recipient
    - State Transportation Improvement Program (STIP)
    - Solution for Congested Corridor Programs (SCCP)
    - Local Partnership Program (LPP)
- California Department of Transportation (Caltrans)
    - Transit and Intercity Rail Capital Program
    - Transportation Development Credits
    - New Employment Credit
- California Energy Commission

Local

Additionally, PVVTA will pursue local funding opportunities to support zero-emission bus deployment. While the aforementioned funding opportunities are mentioned by name, PVVTA will not be limited to these sources and will regularly assess opportunities for fiscal support for the zero-emission program.

Legislation Supporting the Zero-Emission Transition

Policies and regulations supporting the transition to zero-emission are proliferating as the efforts to decarbonize the transportation sector expand. PVVTA is monitoring the implementation of relevant policies and legislation. With the passage of the *Bipartisan Infrastructure Law* and issuance of *Executive Order 14008: Tackling the Climate Crisis at Home and Abroad*, the federal government has set a renewed focus on zero-emission transit. PVVTA's goal to deploy zero-emission vehicles supports the federal administration's priorities of renewing transit systems, reducing Greenhouse Gas emissions from public transportation, equity, creation of good paying jobs, and connecting communities. State legislation such as the Innovative Clean Transit Regulation further supports the replacement of fossil-fuel vehicles on the roads of California. Moreover, on August 25, 2022, the CARB approved the Advanced Clean Cars II Rule, requiring all new vehicles sold in California to be zero-emission vehicles (ZEVs) by 2035.

I

Start-up and Scale-up Challenges

Financial Challenges

Challenges can arise with any new propulsion technology, its corresponding infrastructure, or in training operators and maintenance staff. Nearly all transit agencies must contend with the cost barriers posed by zero-emission technologies. The predicted costs of zero-emission cutaways are between $300,000 and $380,000, which is about $120,000 and $200,000 more costly than traditional ICE cutaways.

Additionally, the necessary infrastructure to support these vehicles adds to the financial burden of transitioning to a zero-emission fleet, as outlined below in **Table 6** showing the cost of the transition. PVVTA will seek financial support to cover the cost of their fuel cell electric cutaways from the resources discussed in Section H.

Specific challenges for PVVTA locally is the flat or slightly reduced population growth within the Palo Verde Valley. As funds at the local, State and Federal level are often tied to population, Blythe and the Palo Verde Valley are at a disadvantage as other adjacent areas such as Western Riverside County and the Coachella Valley are seeing a substantial increase in population. Also, any newly generated funds for transportation locally would be shared with other municipal and County needs.

Table 6 – Incremental Cost of Zero Emission Transition

Incremental cost of Zero Emission Transition			
	CNG/Gas Baseline*	Zero Emission Incremental Costs	Zero Emission Transition Scenario Costs
Vehicle Capital Expense	$7M	$5M	$12M
Fueling Infrastructure	$0	$10M	$10M
Total	$7M	$15M	$22M

*Represents the capital costs that would have been incurred in the absence of the ICT Regulation

As seen in **Table 6,** the costs of required fueling infrastructure and fueling operations for zero emission technologies pose another hurdle for transit agencies transitioning to zero-emission service. Continued financial support at the local, state and federal level to offset the capital cost of this new infrastructure is imperative. For alternative fuels such as hydrogen, financial support from state and federal grant opportunities for green hydrogen supply chains and increasing economies of scale on the production side will ultimately benefit transit agencies deploying and planning for fuel cell and battery electric vehicles.

CARB can support PVVTA by ensuring continued funding for the incremental cost of zero-emission vehicles and fueling infrastructure. Funding opportunities should emphasize proper transition and deployment planning and should not preclude hiring consultants to ensure best practices and successful deployments. The price and availability of hydrogen, both renewable and not, continue to be challenges that can be allayed by legislation subsidizing and encouraging renewable fuel production.

Limitations of Current Technology

Beyond cost barriers, transit agencies must also ensure that available zero-emission technologies can meet basic service requirements of the agency's duty cycles. The applicability of specific zero-emission technologies will vary widely among service areas and agencies. As such, it is critical that transit agencies in need of technical and planning support have access to these resources to avoid failed deployment efforts. Support in the form of technical consultants and experienced zero-emission transit planners will be critical to turning Rollout Plans into successful deployments and tangible emissions reductions.

In addition to the uncertainty of technology improvements, there are other risks to consider in trying to estimate costs over the 18-year transition period. Although fuel cell vehicles may not be subject to the same limitations that battery electric vehicles are such as battery degradation and range restrictions, higher capital equipment costs and availability of hydrogen may constrain fuel cell solutions. RCTC, PVVTA, CTE and Arcadis IBI Group will expand upon challenge mitigation and adaptation in Riverside County ZEB Implementation & Financial Strategy Plan.

Appendix A – Approved Board Resolution

RESOLUTION NO. PVVTA 2023-04

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE PALO VERDE VALLEY TRANSIT AGENCY AUTHORIZING THE SUBMISSION OF THE ZERO-EMISSION BUS ROLLOUT PLAN TO THE CALIFORNIA AIR RESOURCES BOARD AS REQUIRED BY THE INNOVATIVE CLEAN TRANSIT REGULATION.

WHEREAS, in 2018, California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) Regulation, which requires public transit agencies to gradually transition to a 100 percent Zero-Emission Bus (ZEB) fleet with a goal for the full transition by 2040;

WHEREAS, the main provisions of the ICT regulation include the following:
1. Small transit agencies which operate less than 100 buses in annual maximum service are required to submit a Board approved ZEB Rollout Plan by June 30, 23.
2. Small transit agencies must purchase a minimum number of ZEBs during future procurements, according to the following schedule:

   a. Starting in calendar years 2026 through 2028, 25 percent of new bus purchases in each year must be ZEBs.
   b. Starting in calendar year 2029, 100% of all new bus purchases must be ZEBs;

WHEREAS, the PVVTA ZEB Rollout Plan, currently being presented to the Board of Directors for adoption, is a living document intended to guide the Agency's conversion to a ZEB fleet and may be updated based on changes in vehicle technology, fleet size, and operating requirements.

WHEREAS, the Rollout Plan must be approved by the Agency governing body through the adoption of a resolution prior to submission to CARB. and

WHEREAS, per the requirements of the ICT, the Rollout Plan includes the required information in the following sections:

1. Transit Agency Information
2. Rollout Plan General Information
3. Technology Portfolio
4. Current Bus Fleet Composition and Future Bus Purchases
5. Facilities and Infrastructure Modifications
6. Providing Service in Disadvantaged Communities
7. Workforce Training
8. Potential Funding Sources.

NOW, THEREFORE, BE IT RESOLVED by the Board of Director of the Palo Verde Valley Transit Agency, hereby adopts the presented ZEB Rollout Plan as a guide for the implementation of ZEB technology and approves it for submission to CARB.

PASSED, APPROVED AND ADOPTED this 21st day of June 2023 by the following roll call vote to wit:

AYES: **DeConinck. Rodriguez, Perez, Halby III, Alvarado**

NOES: **NONE**

ABSENT: **NONE**

Joseph DeConinck, Chairman

ATTEST:

Mallory Crecelius, Clerk

Appendix B – Glossary

Auxiliary Energy: Energy consumed (usually as a by time measure, such as "x"kW/hour) to operate all support systems for non-drivetrain demands, such as HVAC and interior lighting.

Battery Electric Bus: Zero-emission bus that uses onboard battery packs to power all bus systems.

Battery Nameplate Capacity: The maximum rated output of a battery under specific conditions designated by the manufacturer. Battery nameplate capacity is commonly expressed in kWh and is usually indicated on a nameplate physically attached to the battery.

Block: Refers to a vehicle schedule, the daily assignment for an individual bus. One or more runs can work a block. A driver schedule is known as a "run."

Charging Equipment: The equipment that encompasses all the components needed to convert, control and transfer electricity from the grid to the vehicle for the purpose of charging batteries. May include chargers, controllers, couplers, transformers, ventilation, etc.

Depot Charging: Centralized BEB charging at a transit agency's garage, maintenance facility, or transit center. With depot charging, BEBs are not limited to specific routes, but must be taken out of service to charge.

Energy: Quantity of work, measured in kWh for ZEBs.

Energy Efficiency: Metric to evaluate the performance of ZEBs. Defined in kWh/mi for BEBs, mi/kg of hydrogen for FCEBs, or miles per diesel gallon equivalent for any bus type.

Fuel Cell Electric Bus: Zero-emission bus that utilizes onboard hydrogen storage, a fuel cell system, and batteries. The fuel cell uses hydrogen to produce electricity, with the waste products of heat and water. The electricity powers the batteries, which powers the bus.

Greenhouse Gas Emissions: Zero-emission buses have no harmful emissions that result from diesel combustion. Common GHGs associated with diesel combustion include carbon dioxide (CO2), carbon monoxide (CO), nitrous oxides (NOx), volatile organic compounds (VOCs), and particulate matter (PM). These emissions negatively impact air quality and contribute to climate change impacts.

Hydrogen Fueling Station: The location that houses the hydrogen production (if produced onsite), storage, compression, and dispensing equipment to support fuel cell electric buses.

On-route Charging: BEB charging while on the route. With proper planning, on-route charged BEBs can operate indefinitely, and one charger can charge multiple buses.

Operating Range: Driving range of a vehicle using only power from its electric battery pack to travel a given driving cycle.

Route Modeling: A cost-effective method to assess the operational requirements of ZEBs by estimating the energy consumption on various routes using specific bus specifications and route features.

Useful Life: FTA definition of the amount of time a transit vehicle can be expected to operate based on vehicle size and seating capacity. The useful life defined for transit buses is 12-years. For cutaways, the useful life is 7 years.

Validation Procedure: to confirm that the actual bus performance is in line with expected performance. Results of validation testing can be used to refine bus modeling parameters and to inform deployment plans. Results of validation testing are typically not grounds for acceptance or non-acceptance of a bus.

Zero-Emission Vehicle: A vehicle that emits no tailpipe emissions from the onboard source of power. This is used to reference battery-electric and fuel cell electric vehicles, exclusively, in this report.

Well-to-wheel Emissions: Quantity of greenhouse gas, criteria pollutants, and/or other harmful emissions that includes emissions from energy use and emissions from vehicle operation. For BEBs, well-to-wheel emissions would take into account the carbon intensity of the grid used to charge the buses. For FCEBs, well-to-wheel emissions would take into account the energy to produce, transport, and deliver the hydrogen to the vehicle

AGENDA ITEM 11

RIVERSIDE COUNTY TRANSPORTATION COMMISSION	
DATE:	November 27, 2023
TO:	Budget and Implementation Committee
FROM:	Tyler Madary, Legislative Affairs Manager
THROUGH:	David Knudsen, External Affairs Director
SUBJECT:	State and Federal Legislative Update

STAFF RECOMMENDATION:

This item is for the Committee to recommend the Commission to take the following action(s):

1) Adopt the Commission's 2024 State and Federal Legislative Platform; and
2) Receive and file a state and federal legislative update.

BACKGROUND INFORMATION:

Draft 2024 State and Federal Legislative Platform

Each year, the Commission updates and adopts a legislative platform that serves as a framework for the policy positions the Commission will take on pieces of legislation, regulations, and administrative policies. The platform addresses broad themes critical to the Commission in both Sacramento and Washington, D.C and allows staff, Commissioners, and the Commission's lobbyists to communicate in a timely, effective manner with state and federal agencies and elected officials as issues arise.

The proposed 2024 State and Federal Legislative Platform builds on previously adopted platforms, with minor changes from the 2023 version. Recommended changes include:

- Simplifying and consolidating language where feasible;
- Eliminating or updating priorities that have either been addressed or are based on policies that are no longer in effect; and
- Adding reference to the progressive design-build procurement method, following the passage of Senate Bill 677 by Senator Josh Newman earlier this year.

The proposed 2024 State and Federal Legislative Platform is attached, along with a copy that includes track changes to highlight additions and deletions from the 2023 version.

State Update

The State Legislature reconvenes for it final year of its two-year session on January 3 and Governor Gavin Newsom is expected to outline his budget proposal before the required January 10, 2024 deadline. Governor Newsom and Legislators will likely need to address a larger deficit next year than previously forecasted. According to the State Department of Finance (DOF) this is due to state tax revenue coming in below projections—possibly the result of the six-month extension in the state's tax filing deadline earlier this year. The 2023 Budget Act signed by Governor Newsom in June projected a $14 billion shortfall in the next fiscal year, which begins July 1, 2024.

Federal Update

On October 25, Representative Mike Johnson was elected Speaker of the House of Representatives. The House passed a new Continuing Resolution on November 14 to fund government operations beyond November 17, and the Senate is expected to do the same ahead of the deadline. This agreement funds agencies at Fiscal Year 2023 levels covered by the Agriculture; Energy-Water; Military Construction-Veterans Affairs; and Transportation-Housing & Urban Development bills through January 19, 2024, while all other appropriations bills will be extended to February 2, 2024. The new Continuing Resolution offers Congress an opportunity to keep the government open while negotiations continue for full Fiscal Year 2024 Appropriations legislation.

FISCAL IMPACT:

This is a policy and information item. There is no fiscal impact.

Attachments:
1) Draft 2024 State and Federal Legislative Platform – Redline Version
2) Draft 2024 State and Federal Legislative Platform – Edits Accepted Version
3) Legislative Matrix – December 2023

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

OBJECTIVE: The ~~2023~~2024 State and Federal Legislative Platform serves as the framework that will guide Riverside County Transportation Commission's (RCTC or Commission) advocacy efforts for state and federal policy and funding decisions that enable the Commission to: implement Measure A, the Regional Transportation Plan (RTP), and adopted plans and programs; comply with state and federal requirements; and provide greater mobility, equitable access, improved quality of life, operational excellence, and economic vitality in Riverside County.

RCTC's State and Federal Legislative Platform offers positions on key policy issues which are likely to be the focus in the next legislative and congressional sessions.

Equity and Fairness

- Ensure that rural, low-income, and disadvantaged communities in Riverside County benefit from equity-based transportation planning and implementation policies.
- State and federal funding should be distributed equitably to Riverside County. This includes core formula funding as well as supplemental distributions.
- Governance structures should ensure equitable representation and decision-making authority is provided to Riverside County.
- Policies should be developed and implemented ~~recognizing~~ with regional variance to limit disproportionate impacts on~~by distinguishing high-growth~~ regions with fast-growing populations~~for their impact on the economy, environment, and should be dynamic to address current and future population growth~~, including low-income and disadvantaged communities priced out of coastal urban centers.
- Engage in policy discussions regarding the way public outreach and public meetings are conducted by public agencies.

Regional Control

- Project selection and planning authority for state/federal funds should be as local as possible, preferably in the hands of the Commission.
- State and federal rulemakings, administrative processes, program guidelines, and policy development activities should include meaningful collaboration from regional transportation agencies.
- Oppose efforts by non-elected, regulatory bodies and non-transportation interests to assert control over transportation funding and decision-making.
- Policies should be sensitive to each region's unique needs and avoid "one size fits all" assumptions, over-reliance on single modes of transportation that would disadvantage regional mobility, and lack of distinction between urban, suburban, and rural needs.
- State and federal ~~policies should align~~ authority related to ~~select~~ planning, programming, funding, clearing, or managing the performance of projects should align rather than conflict or duplicate~~, manage performance~~, and should recognize mandates and responsibilities placed upon regional and local governments.

Protect Our Authority and Revenue

- Existing statutory authorities for the Commission should be preserved and protected.
- Oppose efforts to infringe on the Commission's discretion in collecting and administering its revenue sources including, but not limited to: Measure A, tolls, and TUMF.

- Oppose efforts to place mandates on agencies which could nullify RCTC mobility improvement priorities by driving up operating and project delivery costs ~~and thereby reducing the amount of funds available to deliver mobility improvements~~.
- Oppose efforts to remove or reduce tax exemption ~~on~~ of municipal bond interest to avoid increased costs to financed projects.
- Reinstate advanced refunding of municipal bond authority.
- Oppose legislation that restructures or interferes with governance of the Commission or other local and regional transportation agencies without the support and consent of the entity affected.
- Oppose legislation that amends procurement law in a manner that increases the Commission's exposure to litigation, costs, decreased private sector competition, conflicts of interest, or deviation from best practices.
- Support efforts to preserve, stabilize, leverage and/or increase funding for transportation.
- Oppose policy changes that infringe on the ability of the Commission to receive~~s~~ maximum sales tax collections ~~resulting from implementation of the *Wayfair* Supreme Court Decision~~ relative to state sales taxes on internet sales or any other change in policy.
-

Innovation

- Support implementation and expansion of state and federal initiatives to expedite and advance innovative transportation policies, programs, and technologies.

Project Delivery Streamlining

- Support all efforts to reduce project delivery timelines and provide flexibility to meet planning requirements due to changing circumstances, while maintaining important environmental protections.
- Support the availability of project delivery tools such as the design-build and progressive design-build project delivery methods, construction manager/general contractor (CM/GC, or construction manager at-risk) project delivery method, and public-private partnerships to the Commission, the State, federal agencies, and other infrastructure agencies. Oppose efforts to add barriers to effective implementation of such tools.
- Support the simplification of SB 743 Steinberg (Chapter 386, Statutes of 2013) VMT modeling and analysis for highway projects.
- Support reciprocity of the California Environmental Quality Act (CEQA) for the National Environmental Protection Act (NEPA).
- Support removing the statutory sunset on the NEPA Assignment program California participates in with the Federal Highway Administration which continues to benefit Commission projects. ~~Engage with the California Department of Transportation (Caltrans) and U.S. Department of Transportation to allow the State and the Commission to participate in the NEPA reciprocity pilot program.~~
- Support creation of a low-interest loan program to support habitat conservation plans that mitigate the impacts of transportation infrastructure and make project approvals more efficient.
- Support efforts to modernize the CEQA, including but not limited to:
    - Reduce the Commission's exposure to litigation;
    - Increase accountability and disclosure for plaintiffs in CEQA cases;
    - Limit courts' ability to invalidate an entire CEQA document when a writ of mandate can resolve discreet issues;
    - Exempt illegal actions from CEQA review; and
    - Prohibit "document dumping."
- Support categorical exclusions for multimodal transit projects and for safety improvements on roads and highways.

Accountability

- Revenue derived from transportation sources should be spent exclusively on planning, development, and implementation of transportation projects. Support measures to strengthen the relationship between transportation revenue and expenditures; oppose measures that weaken them.
- Support efforts to ensure that all projects in a voter-approved sales tax measure expenditure plan are delivered to the public.
- Encourage the adoption of on-time, balanced state budgets, and federal appropriation and authorization legislation to ensure transportation projects are delivered without delay or costly stoppages, and that adequate planning for future projects can take place.
- Promote policies that ensure state and federal agencies have adequate funding in order to be responsive and accountable to Commission concerns when working on Commission projects.
- Oppose efforts by non-elected, regulatory bodies to dilute, reduce, or withhold transportation funds.
- Support maximum transparency of funding agencies through the clear scoring and evaluation of funding requests.

Alignment of Responsibilities

- Support strong collaborative partnerships with state and federal agencies.
- Support local control and policies that incentivize self-help counties' continued funding contribution to transportation projects in California.
- Support policies that provide decision-making authority and flexibility to agencies bearing financial risk for projects. Oppose policies that place unfunded mandates and other undue burdens and restrictions on agencies that bear financial risk for projects.
- Support efforts by the state government~~s~~ to improve maintenance and operations of the state highway and interstate systems.
- Oppose efforts by the state government to negate their obligation to maintain the state and federal highway systems, or otherwise realign those costs and responsibilities to local and regional agencies.
- Oppose efforts by the state legislature to deflect responsibility for voting on revenue for statewide transportation to local voters.

Environment

- Encourage efforts to limit impacts to the climate, air quality, and habitats in a manner that promotes improved quality of life and equitable outcomes for residents of Riverside County, provided that these efforts are sufficiently funded and do not negatively impact the mission of RCTC.

Climate Action and Air Quality

- Support a greater share of state greenhouse gas (GHG) reduction funds toward transportation investments to address the transportation sector's share of GHG emissions.
- Ensure criteria for defining disadvantaged communities and environmental justice areas of concern accurately represent Riverside County and enable the region to compete for funding.
- Oppose efforts to place new environmental criteria (such as GHG reduction or vehicle miles traveled reduction) on transportation projects and programs without commensurate funding for alternatives or mitigation.
- Oppose legislative proposals or implementation measures (programming, funding, environmental

review, etc.) associated with the Climate Action Plan for Transportation Infrastructure (CAPTI), Caltrans System Investment Strategy (CSIS), Executive Order N-19-19, Executive Order N-79-20, AB 32 Nunez (Chapter 488, Statutes of 2006), SB 375 Steinberg (Chapter 728, Statutes of 2008), SB 743 Steinberg (Chapter 386, Statutes of 2013), SB 32 Pavley (Chapter 249, Statutes of 2016), AB 1278 Muratsuchi (Chapter 337, Statutes of 2022), or other climate action goals that hinder a just transition to multimodal transportation systems in Riverside County.

- Support alternative metrics to Vehicle Miles Traveled (VMT) that more accurately account for environmental impacts. Support use of per capita measurements when mitigating transportation sector impacts in growing regions.
- Support efforts that allow transportation agencies to receive credit for VMT-reducing projects that have been recently delivered or are included in future delivery plans.
- Oppose legislation to authorize a multicounty revenue measure for environmental programs if the measure is not required to: (1) provide equitable funding to Riverside County, and (2) be developed through formal consultation with the Commission before and after passage, and (3) involve the Commission in expenditure of funds within Riverside County related to transportation projects, programs, and services; or if such a measure would negatively impact the Commission's ability to achieve voter approval of local transportation revenue.

Habitat Conservation

- Support efforts or initiatives that expedite the approval of Habitat Conservation Plans or Special Area Management Plans, or support existing plans.
- Support funding for projects and programs that promote wildlife connectivity, if resources are not redirected from other transportation funding programs.
- Oppose legislation that limits the streamlining benefit of the Western Riverside County Multiple Species Habitat Conservation Plan or Coachella Valley Multiple Species Habitat Conservation Plan by impugning or duplicating requirements for analysis and remediation of impacts.

Alternatives to Driving

- Support the continued development of a multimodal transit system in Riverside County that promotes equitable access through geographic reach and service frequency, commuter and mobility choice, and environmental sustainability, as well as maximizes regional competitiveness for state and federal funding.
- Support integration of public transportation systems in southern California.

Ridesharing

- Support incentives to employers that enhance or create transit reimbursement or ridesharing programs.
- Oppose new mandates on employers or transportation agencies that would result in disruption of the Commission's ridesharing program.
- Support programs and policies that invest in and foster new technologies that promote ridesharing, traffic information, and commuter assistance.
- Support regional cooperation toward establishing transportation data standards and technological integrations.
- Support rideshare and vanpool program eligibility for state and federal transit funding, such as the Transportation Development Act.

Active Transportation

- Support maximum regional control of project selection for funding of active transportation projects.
- Support policies and programs that recognize when active transportation improvements are incorporated into other modal projects.

Transit

- Support all transit operators in Riverside County with legislative concerns impacting the operators' funding and operations.
- Support efforts to provide flexibility of funding between capital and operating budgets from state/federal programs for transit agencies.
- Support efforts to reevaluate transit performance measures in state and federal law.
- Support policies and funding programs that promote the establishment or expansion of express bus service that utilizes the Riverside Express Lanes.
- Support incentives for transit agencies that utilize alternative fuels and/or zero-emission buses.
- Support additional funding for specialized transit programs within state and federal programs.
- Support funding for micro-transit programs, as well as efforts to classify these programs as transit operations/transit operators within state and federal programs.
- Oppose unfunded mandates that would negatively impact the operating budgets of transit agencies.

Passenger Rail

- Support inclusion and prioritization of Coachella Valley ~~San Gorgonio Pass~~ Rail service in the California State Rail Plan, Federal Corridor ID Program, and other state and federal plans and program pipelines.
- Support legislation to better enable the Coachella Valley ~~San Gorgonio Pass~~ Rail service to become part of California's intercity rail network, such as legislation to allow intercity rail joint powers authorities to expand their service areas.
- Support efforts to secure state and federal funding for the Coachella Valley ~~San Gorgonio Pass~~ Rail ~~service~~ project.
- Support LOSSAN Rail Corridor Agency and Metrolink with legislative and regulatory concerns impacting funding and operations.
- Support efforts to provide an equitable share of funding to west coast intercity rail systems as compared to the Northeast Corridor.
- Support Metrolink's policy and funding needs with regards to implementation of positive train control and other rail safety items.
- Support Metrolink's SCORE implementation and encourage early SCORE investments in Riverside County.
- Support efforts to prioritize high-speed rail funding for connectivity improvements to existing transit systems and infrastructure in California's urban areas. In particular, support all efforts to ensure that funding is provided as soon as possible to projects included in the Memorandum of Understanding (MOU) between the California High Speed Rail Authority (CHSRA), the Southern California Association of Governments (SCAG), and the Commission.
- Ensure that the Commission's rights and interests in passenger rail in southern California are properly respected in state, federal, and regional plans and policies.

Teleworking/Remote Working

- Engage in policy discussions that utilize teleworking as a method to reduce traffic congestion and improve local economic and public health by permanently increasing the number of Riverside County residents who telecommute or work remotely.

Tolling and Managed Lanes

- Support legislation that ensures the full and accurate capture of toll revenues, to protect the Commission's debt and congestion management obligations.
- Support legislation that authorizes toll agencies to pilot or deploy new technology to improve toll operations and mobility.
- Support legislation and policies that strengthen existing statutory authority for connecting toll segments to be implemented in an adjacent county with approvals by both authorized counties.
- Engage in legislation regarding privacy laws to ensure an appropriate balance between customer privacy, public safety, financial obligation, and practical operations is reasonably met.
- Oppose legislation increasing the type and/or number of vehicles subject to free or reduced toll rates, to protect the Commission's debt and congestion management obligations, and to reduce operational costs and complexity.
- Oppose state and federal policies which would dictate how tolling policy and rates are implemented on the Commission's tolled facilities.
- Engage in policy discussions that may involve legislation or regulatory efforts that add statutory barriers to expanding the use of tolling.
- Oppose policies that would dictate, limit use of, or create onerous requirements for utilizing ~~surplus~~ toll revenue.
- Engage in legislation and monitor administrative policies relating to interoperability of business practices of tolled facilities statewide, regionally, and nationally, in order to ensure technical feasibility, efficient and effective operations, cost reasonableness, and customer satisfaction.
- Support increased enforcement of managed lanes for improved travel time reliability and effective operation of express bus service.
- Support policies that recognize the role of pricing and managed lanes as an integral part of multi-modal corridor mobility and achieving environmental goals.
- Support initiatives and research that demonstrate the air quality improvements, VMT reduction, and economic benefits from the use of toll and managed lanes.

Goods Movement

- Policies should recognize the impact of goods movement from the Ports of Los Angeles and Long Beach and the U.S.-Mexico border on Riverside County.
- Support state and federal legislative action to continue dedicated funding for goods movement projects, inasmuch as the funding source:
    - Has a nexus to the user;
    - Does not reduce funding to existing highway and transit programs;
    - Provides funding to California, and southern California in particular, commensurate with this region and state's significance to interstate goods movement; and
    - Can be spent on grade separation projects.
- ~~Provide input to the National Freight Advisory Committee and California State Freight Advisory Committee.~~
- Advocate for accurate representation of Riverside County in the ~~Primary~~ National Highway Freight Network or other national or statewide freight route designations.
- Advocate for freight funding from state and federal sources to be distributed based on a regional

consensus, in consultation with state and federal agency's freight plans.

- Oppose increasing the capacity or intensity of freight movement in and near Riverside County without commensurate mitigation of impacts.
- Support legislation to ensure that the Commission is eligible to seek federal goods movement and freight program discretionary grant funding.
- Oppose policies that restrict the ability to deliver goods movement enhancements due to application of SB 743 or other VMT reduction or mitigation requirements.

Projects

- Support programs and policies that advantage transportation projects in Riverside County.
- Oppose policies that inhibit the efficient, timely delivery of such projects.

Funding

- Support continued testing and analysis of California's road charge pilot program as a potential replacement of the state motor fuels excise tax as the primary funding mechanism for transportation and ensure that both urban, suburban, and rural communities are treated in an equitable manner.
- Monitor the federal government's pilot program to explore potential replacement mechanisms for the federal gasoline excise tax.
- Support all efforts to maintain, at the very least, level state/federal funding for transportation programs.
- Support re-dedication of California truck weight fees to transportation accounts.
- Monitor legislation relating to tax collection for impacts on Measure A revenues or administration fees.
- Support maximizing Commission flexibility and discretion over funding decisions.
- Funding sources should be discretionary and distributed by population share to facilitate expeditious project delivery and expenditure of funds.
- Support maintaining the legislative intent behind Senate Bill 1 (Statutes 2017) and historic base program funding, by:
    - Opposing efforts to tie distribution of transportation funding to ancillary policy matters, such as housing.
    - Opposing efforts to deviate from legislative intent and existing statute.
    - Supporting efforts to adjust formula allocations to maximize funding decisions being made as locally as possible.
    - Ensuring program guidelines are as broad as possible with respect to mode, to the extent appropriate while adhering to legislative intent.

Regional Partnerships

- Collaborate with regional transportation agencies to impact transportation funding and regulatory policies to bring equity and fairness to the Inland Empire region.
- Collaborate with public and private sector stakeholders on policy and funding matters that enhance economic development and quality of life in the Inland Empire region.
- Engage in legislative efforts impacting regional transportation agencies, particularly when the efforts have a nexus to the Commission.
- Support implementation of projects in other counties that are contained in the Southern California Association of Governments RTP/Sustainable Communities Strategy when requested by other counties and not in conflict with the Commission's interests.

RIVERSIDE COUNTY TRANSPORTATION COMMISSION

OBJECTIVE: The 2024 State and Federal Legislative Platform serves as the framework that will guide Riverside County Transportation Commission's (RCTC or Commission) advocacy efforts for state and federal policy and funding decisions that enable the Commission to: implement Measure A, the Regional Transportation Plan (RTP), and adopted plans and programs; comply with state and federal requirements; and provide greater mobility, equitable access, improved quality of life, operational excellence, and economic vitality in Riverside County.

RCTC's State and Federal Legislative Platform offers positions on key policy issues which are likely to be the focus in the next legislative and congressional sessions.

Equity and Fairness

- Ensure that rural, low-income, and disadvantaged communities in Riverside County benefit from equity-based transportation planning and implementation policies.
- State and federal funding should be distributed equitably to Riverside County. This includes core formula funding as well as supplemental distributions.
- Governance structures should ensure equitable representation and decision-making authority is provided to Riverside County.
- Policies should be developed and implemented with regional variance to limit disproportionate impacts on regions with fast-growing populations, including low-income and disadvantaged communities priced out of coastal urban centers.
- Engage in policy discussions regarding the way public outreach and public meetings are conducted by public agencies.

Regional Control

- Project selection and planning authority for state/federal funds should be as local as possible, preferably in the hands of the Commission.
- State and federal rulemakings, administrative processes, program guidelines, and policy development activities should include meaningful collaboration from regional transportation agencies.
- Oppose efforts by non-elected, regulatory bodies and non-transportation interests to assert control over transportation funding and decision-making.
- Policies should be sensitive to each region's unique needs and avoid "one size fits all" assumptions, over-reliance on single modes of transportation that would disadvantage regional mobility, and lack of distinction between urban, suburban, and rural needs.
- State and federal authority related to planning, programming, funding, clearing, or managing the performance of projects should align rather than conflict or duplicate, and should recognize mandates and responsibilities placed upon regional and local governments.

Protect Our Authority and Revenue

- Existing statutory authorities for the Commission should be preserved and protected.
- Oppose efforts to infringe on the Commission's discretion in collecting and administering its revenue sources including, but not limited to: Measure A, tolls, and TUMF.

- Oppose efforts to place mandates on agencies which could nullify RCTC mobility improvement priorities by driving up operating and project delivery costs.
- Oppose efforts to remove or reduce tax exemption of municipal bond interest to avoid increased costs to financed projects.
- Reinstate advanced refunding of municipal bond authority.
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- Oppose policy changes that infringe on the ability of the Commission to receive maximum sales tax collections relative to state sales taxes on internet sales or any other change in policy.

Innovation

- Support implementation and expansion of state and federal initiatives to expedite and advance innovative transportation policies, programs, and technologies.

Project Delivery Streamlining

- Support all efforts to reduce project delivery timelines and provide flexibility to meet planning requirements due to changing circumstances, while maintaining important environmental protections.
- Support the availability of project delivery tools such as the design-build and progressive design-build project delivery methods, construction manager/general contractor (CM/GC, or construction manager at-risk) project delivery method, and public-private partnerships to the Commission, the State, federal agencies, and other infrastructure agencies. Oppose efforts to add barriers to effective implementation of such tools.
- Support the simplification of SB 743 Steinberg (Chapter 386, Statutes of 2013) VMT modeling and analysis for highway projects.
- Support reciprocity of the California Environmental Quality Act (CEQA) for the National Environmental Protection Act (NEPA).
- Support removing the statutory sunset on the NEPA Assignment program California participates in with the Federal Highway Administration which continues to benefit Commission projects.
- Support creation of a low-interest loan program to support habitat conservation plans that mitigate the impacts of transportation infrastructure and make project approvals more efficient.
- Support efforts to modernize the CEQA, including but not limited to:
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    - Increase accountability and disclosure for plaintiffs in CEQA cases;
    - Limit courts' ability to invalidate an entire CEQA document when a writ of mandate can resolve discreet issues;
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- Support maximum transparency of funding agencies through the clear scoring and evaluation of funding requests.

Alignment of Responsibilities

- Support strong collaborative partnerships with state and federal agencies.
- Support local control and policies that incentivize self-help counties' continued funding contribution to transportation projects in California.
- Support policies that provide decision-making authority and flexibility to agencies bearing financial risk for projects. Oppose policies that place unfunded mandates and other undue burdens and restrictions on agencies that bear financial risk for projects.
- Support efforts by the state government to improve maintenance and operations of the state highway and interstate systems.
- Oppose efforts by the state government to negate their obligation to maintain the state and federal highway systems, or otherwise realign those costs and responsibilities to local and regional agencies.
- Oppose efforts by the state legislature to deflect responsibility for voting on revenue for statewide transportation to local voters.

Environment

- Encourage efforts to limit impacts to the climate, air quality, and habitats in a manner that promotes improved quality of life and equitable outcomes for residents of Riverside County, provided that these efforts are sufficiently funded and do not negatively impact the mission of RCTC.

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- Support a greater share of state greenhouse gas (GHG) reduction funds toward transportation investments to address the transportation sector's share of GHG emissions.
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review, etc.) associated with the Climate Action Plan for Transportation Infrastructure (CAPTI), Caltrans System Investment Strategy (CSIS), Executive Order N-19-19, Executive Order N-79-20, AB 32 Nunez (Chapter 488, Statutes of 2006), SB 375 Steinberg (Chapter 728, Statutes of 2008), SB 743 Steinberg (Chapter 386, Statutes of 2013), SB 32 Pavley (Chapter 249, Statutes of 2016), AB 1278 Muratsuchi (Chapter 337, Statutes of 2022), or other climate action goals that hinder a just transition to multimodal transportation systems in Riverside County.

- Support alternative metrics to Vehicle Miles Traveled (VMT) that more accurately account for environmental impacts. Support use of per capita measurements when mitigating transportation sector impacts in growing regions.
- Support efforts that allow transportation agencies to receive credit for VMT-reducing projects that have been recently delivered or are included in future delivery plans.
- Oppose legislation to authorize a multicounty revenue measure for environmental programs if the measure is not required to: (1) provide equitable funding to Riverside County, and (2) be developed through formal consultation with the Commission before and after passage, and (3) involve the Commission in expenditure of funds within Riverside County related to transportation projects, programs, and services; or if such a measure would negatively impact the Commission's ability to achieve voter approval of local transportation revenue.

Habitat Conservation

- Support efforts or initiatives that expedite the approval of Habitat Conservation Plans or Special Area Management Plans, or support existing plans.
- Support funding for projects and programs that promote wildlife connectivity, if resources are not redirected from other transportation funding programs.
- Oppose legislation that limits the streamlining benefit of the Western Riverside County Multiple Species Habitat Conservation Plan or Coachella Valley Multiple Species Habitat Conservation Plan by impugning or duplicating requirements for analysis and remediation of impacts.

Alternatives to Driving

- Support the continued development of a multimodal transit system in Riverside County that promotes equitable access through geographic reach and service frequency, commuter and mobility choice, and environmental sustainability, as well as maximizes regional competitiveness for state and federal funding.
- Support integration of public transportation systems in southern California.

Ridesharing

- Support incentives to employers that enhance or create transit reimbursement or ridesharing programs.
- Oppose new mandates on employers or transportation agencies that would result in disruption of the Commission's ridesharing program.
- Support programs and policies that invest in and foster new technologies that promote ridesharing, traffic information, and commuter assistance.
- Support regional cooperation toward establishing transportation data standards and technological integrations.
- Support rideshare and vanpool program eligibility for state and federal transit funding, such as the Transportation Development Act.

Active Transportation

- Support maximum regional control of project selection for funding of active transportation projects.
- Support policies and programs that recognize when active transportation improvements are incorporated into other modal projects.

Transit

- Support all transit operators in Riverside County with legislative concerns impacting the operators' funding and operations.
- Support efforts to provide flexibility of funding between capital and operating budgets from state/federal programs for transit agencies.
- Support efforts to reevaluate transit performance measures in state and federal law.
- Support policies and funding programs that promote the establishment or expansion of express bus service that utilizes the Riverside Express Lanes.
- Support incentives for transit agencies that utilize alternative fuels and/or zero-emission buses.
- Support additional funding for specialized transit programs within state and federal programs.
- Support funding for micro-transit programs, as well as efforts to classify these programs as transit operations/transit operators within state and federal programs.
- Oppose unfunded mandates that would negatively impact the operating budgets of transit agencies.

Passenger Rail

- Support inclusion and prioritization of Coachella Valley Rail service in the California State Rail Plan, Federal Corridor ID Program, and other state and federal plans and program pipelines.
- Support legislation to better enable the Coachella Valley Rail service to become part of California's intercity rail network, such as legislation to allow intercity rail joint powers authorities to expand their service areas.
- Support efforts to secure state and federal funding for the Coachella Valley Rail project.
- Support LOSSAN Rail Corridor Agency and Metrolink with legislative and regulatory concerns impacting funding and operations.
- Support efforts to provide an equitable share of funding to west coast intercity rail systems as compared to the Northeast Corridor.
- Support Metrolink's policy and funding needs with regards to implementation of positive train control and other rail safety items.
- Support Metrolink's SCORE implementation and encourage early SCORE investments in Riverside County.
- Support efforts to prioritize high-speed rail funding for connectivity improvements to existing transit systems and infrastructure in California's urban areas. In particular, support all efforts to ensure that funding is provided as soon as possible to projects included in the Memorandum of Understanding (MOU) between the California High Speed Rail Authority (CHSRA), the Southern California Association of Governments (SCAG), and the Commission.
- Ensure that the Commission's rights and interests in passenger rail in southern California are properly respected in state, federal, and regional plans and policies.

Teleworking/Remote Working

- Engage in policy discussions that utilize teleworking as a method to reduce traffic congestion and improve local economic and public health by permanently increasing the number of Riverside County residents who telecommute or work remotely.

Tolling and Managed Lanes

- Support legislation that ensures the full and accurate capture of toll revenues, to protect the Commission's debt and congestion management obligations.
- Support legislation that authorizes toll agencies to pilot or deploy new technology to improve toll operations and mobility.
- Support legislation and policies that strengthen existing statutory authority for connecting toll segments to be implemented in an adjacent county with approvals by both authorized counties.
- Engage in legislation regarding privacy laws to ensure an appropriate balance between customer privacy, public safety, financial obligation, and practical operations is reasonably met.
- Oppose legislation increasing the type and/or number of vehicles subject to free or reduced toll rates, to protect the Commission's debt and congestion management obligations, and to reduce operational costs and complexity.
- Oppose state and federal policies which would dictate how tolling policy and rates are implemented on the Commission's tolled facilities.
- Engage in policy discussions that may involve legislation or regulatory efforts that add statutory barriers to expanding the use of tolling.
- Oppose policies that would dictate, limit use of, or create onerous requirements for utilizing toll revenue.
- Engage in legislation and monitor administrative policies relating to interoperability of business practices of tolled facilities statewide, regionally, and nationally, in order to ensure technical feasibility, efficient and effective operations, cost reasonableness, and customer satisfaction.
- Support increased enforcement of managed lanes for improved travel time reliability and effective operation of express bus service.
- Support policies that recognize the role of pricing and managed lanes as an integral part of multi-modal corridor mobility and achieving environmental goals.
- Support initiatives and research that demonstrate the air quality improvements, VMT reduction, and economic benefits from the use of toll and managed lanes.

Goods Movement

- Policies should recognize the impact of goods movement from the Ports of Los Angeles and Long Beach and the U.S.-Mexico border on Riverside County.
- Support state and federal legislative action to continue dedicated funding for goods movement projects, inasmuch as the funding source:
    - Has a nexus to the user;
    - Does not reduce funding to existing highway and transit programs;
    - Provides funding to California, and southern California in particular, commensurate with this region and state's significance to interstate goods movement; and
    - Can be spent on grade separation projects.
- Advocate for accurate representation of Riverside County in the National Highway Freight Network or other national or statewide freight route designations.
- Advocate for freight funding from state and federal sources to be distributed based on a regional

consensus, in consultation with state and federal agency's freight plans.

- Oppose increasing the capacity or intensity of freight movement in and near Riverside County without commensurate mitigation of impacts.
- Support legislation to ensure that the Commission is eligible to seek federal goods movement and freight program discretionary grant funding.
- Oppose policies that restrict the ability to deliver goods movement enhancements due to application of SB 743 or other VMT reduction or mitigation requirements.

Projects

- Support programs and policies that advantage transportation projects in Riverside County.
- Oppose policies that inhibit the efficient, timely delivery of such projects.

Funding

- Support continued testing and analysis of California's road charge pilot program as a potential replacement of the state motor fuels excise tax as the primary funding mechanism for transportation and ensure that both urban, suburban, and rural communities are treated in an equitable manner.
- Monitor the federal government's pilot program to explore potential replacement mechanisms for the federal gasoline excise tax.
- Support all efforts to maintain, at the very least, level state/federal funding for transportation programs.
- Support re-dedication of California truck weight fees to transportation accounts.
- Monitor legislation relating to tax collection for impacts on Measure A revenues or administration fees.
- Support maximizing Commission flexibility and discretion over funding decisions.
- Funding sources should be discretionary and distributed by population share to facilitate expeditious project delivery and expenditure of funds.
- Support maintaining the legislative intent behind Senate Bill 1 (Statutes 2017) and historic base program funding, by:
    - Opposing efforts to tie distribution of transportation funding to ancillary policy matters, such as housing.
    - Opposing efforts to deviate from legislative intent and existing statute.
    - Supporting efforts to adjust formula allocations to maximize funding decisions being made as locally as possible.
    - Ensuring program guidelines are as broad as possible with respect to mode, to the extent appropriate while adhering to legislative intent.

Regional Partnerships

- Collaborate with regional transportation agencies to impact transportation funding and regulatory policies to bring equity and fairness to the Inland Empire region.
- Collaborate with public and private sector stakeholders on policy and funding matters that enhance economic development and quality of life in the Inland Empire region.
- Engage in legislative efforts impacting regional transportation agencies, particularly when the efforts have a nexus to the Commission.
- Support implementation of projects in other counties that are contained in the Southern California Association of Governments RTP/Sustainable Communities Strategy when requested by other counties and not in conflict with the Commission's interests.

RIVERSIDE COUNTY TRANSPORTATION COMMISSION - POSITIONS ON STATE AND FEDERAL LEGISLATION – DECEMBER 2023

Legislation/ Author	Description	Bill Status	Position	Date of Board Adoption
AB 6 (Friedman)	This bill provides significant new oversight to the California Air Resources Board in the approval process of a metropolitan planning organization's Sustainable Communities Strategy and the methodology used to estimate greenhouse gas emissions. These new burdensome requirements will likely result in significant delays to transportation projects.	Passed the Assembly, referred to the Senate Transportation and Environmental Quality Committees on June 14, 2023. Two-year bill. September 15, 2023	*Oppose Based on Platform*	5/24/2023
AB 7 (Friedman)	This bill requires the California State Transportation Agency, California Department of Transportation, and California Transportation Commission to consider specific goals as part of their processes for project development, selection, and implementation. AB 7 may impact the allocation of billions of dollars in state transportation funding, infringing on RCTC's ability to deliver critically needed transportation infrastructure in Riverside County.	Ordered to the inactive file. Two-year bill. September 11, 2023	*Oppose Based on Platform*	5/25/2023
AB 558 (Arambula)	This bill restructures the Fresno County Transportation Authority (FCTA) by increasing its board membership from nine to thirteen members. This restructuring is done without the consensus and support from regional stakeholders and sets a concerning precedent for RCTC and other regional transportation agencies that rely upon a collaborative process to be effective. Additionally, the bill was amended on April 18 to subject a county transportation expenditure plan prepared by the Fresno County Transportation Authority (FCTA) to the requirements of the California Environmental Quality Act.	Hearing postponed by the Local Government Committee on April 24, 2023. Two-year bill. April 28, 2023	*Oppose Based on platform*	4/10/2023
AB 1385 (Garcia)	This bill would raise RCTC's maximum tax rate authority from 1% to 1.5%.	Approved by the Governor. October 8, 2023	*Support*	3/8/2023

Legislation/ Author	Description	Bill Status	Position	Date of Board Adoption
AB 1525 (Bonta)	This bill significantly narrows the location and types of projects eligible to receive state transportation funding by requiring 60% of funds to be allocated to priority populations.	Held under submission in the Assembly Appropriations Committee on May 18, 2023. Two-year bill. May 18, 2023	*Oppose Based on platform*	4/11/2023
SB 617 (Newman)	This bill, until January 1, 2029, would authorize a transit district, municipal operator, consolidated agency, joint powers authority, regional transportation agency, or local or regional agency, as described, to use the progressive design-build process for up to 10 public works projects in excess of $5 million for each project. The bill would specify that the authority to use the progressive design-build process.	Approved by the Governor. October 4, 2023	*Support Based on platform*	4/5/2023