

C. STA Alternative Fuel and Infrastructure Plan

Robert Guerrero

Recommendation:

Forward a recommendation to the TAC and STA Board to distribute the Alternative Fuels and Infrastructure Plan for public input.

Pg. 49

6. ACTION FINANCIAL

A. Mobility Management One Stop Transportation Call Center

Elizabeth Richards,
Consultant

Recommendation:

Forward a recommendation to the TAC and STA Board to approve the following:

1. Authorize the STA to implement Solano's Mobility Management (MM) Call Center as a 3-year pilot program; and
2. Direct STA staff to monitor and evaluate the Mobility Management Call Center Pilot Program and report on its effectiveness on an annual basis.

(1:20 – 1:35 p.m.)

Pg. 157

7. ACTION NON-FINANCIAL

A. Travel Training Scope of Work

Anthony Adams

Recommendation:

Forward a recommendation to the TAC and STA Board to approve the revised Scope of Work for Countywide Travel Training as specified in Attachment A.

(1:35 – 1:45 p.m.)

Pg. 159

B. Solano County Intercity Paratransit Service Contract

Matt Tuggle,
Solano County

Recommendation:

Provide a recommendation to the County of Solano that the new intercity paratransit contract contain the following:

1. Farebox Tier 1 of 25%, Tier 2 of 50%, and Tier 3 of 75%;
2. Required days of service to be Monday through Saturday;
3. Required Hours of service 5am-9pm on Monday through Friday, and 9am-5pm on Saturday; and,
4. Maximum number of subsidized one-way trips per month capped at 16.

(1:45 – 1:55 p.m.)

Pg. 165

8. INFORMATIONAL ITEMS – DISCUSSION ITEMS

A. Countywide In-Person ADA Eligibility Program Update and Update of Mobility Management Grant Funding

Liz Niedziela

(1:55 – 2:05 p.m.)

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- | | | |
|-----------|--|-----------------------------|
| B. | Transit Corridor Study Update and Alternatives
(2:05 – 2:40 p.m.)
Pg. 177 | Nancy Whelan,
Consultant |
| C. | Discussion of Clipper Implementation
(2:20 – 2:50 p.m.)
Pg. 181 | Wayne Lewis,
FAST |
| D. | Commuter Benefits Program - Senate Bill 1339
(2:50 – 3:00 p.m.)
Pg. 183 | Judy Leaks |
| E. | Status of Marketing Plan for SolanoExpress and SNCI Program
(3:00 – 3:10 p.m.)
Pg. 185 | Jayne Bauer |

NO DISCUSSION ITEMS

- | | | |
|------------|--|---------------|
| F. | Legislative Update
Pg. 195 | Jayne Bauer |
| G. | Summary of Other Funding Opportunities
Pg. 227 | Sara Woo |
| 9. | FUTURE INTERCITY TRANSIT CONSORTIUM AGENDA ITEMS | Liz Niedziela |
| 10. | TRANSIT OPERATOR COORDINATION ISSUES | Group |
| 11. | ADJOURNMENT
The next regular meeting of the SolanoExpress Intercity Transit Consortium is scheduled at
1:30 p.m. on Tuesday, Pqxxgo dgt '48, 2013. | |

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**INTERCITY TRANSIT CONSORTIUM
Meeting Minutes of August 27, 2013**

1. CALL TO ORDER

Wayne Lewis called the regular meeting of the SolanoExpress Intercity Transit Consortium to order at approximately 1:37 p.m. in the Solano Transportation Authority Conference Room.

Members Present: Janet Koster (By phone) Dixon Rendi-Ride
Wayne Lewis, Chair Fairfield and Suisun Transit
Jim McElroy Rio Vista Delta Breeze
Mona Babauta SolTrans
Liz Niedziela STA
Matt Tuggle County of Solano

Members Absent: Judy Leaks SNCI
Brian McLean, Vice Chair Vacaville City Coach

Also Present: Daryl Halls STA
Jayne Bauer STA
Robert Guerrero STA
Sofia Recalde STA
Johanna Masiclat STA
Nancy Whelan STA Project Manager

Others Present: *(In Alphabetical Order by Last Name)*
Gary Albright SolTrans
Nathan Newell County of Solano
Elizabeth Romero SolTrans

2. APPROVAL OF THE AGENDA

On a motion by Mona Babauta, and a second by Jim McElroy, the SolanoExpress Intercity Transit Consortium approved the agenda to include an amendment to the recommendation under Agenda Item 7.B., Mobility Management Update. The recommendation should now read as follows:

Recommendation:

Forward a recommendation to the TAC and STA Board to:

- ~~1. Approve the revised Scope of Work for Countywide Travel Training as specified in Attachment B;~~
1. Approve the Scope of Work for the development of a Mobility Management Website as specified in Attachment C; and
2. Authorize the Executive Director to issue a Request for Proposal (RFP) and enter into an agreement for Mobility Management Website Development Services *for an amount not-to-exceed \$35,000.*

3. OPPORTUNITY FOR PUBLIC COMMENT

4. REPORTS FROM CALTRANS, MTC, AND STA STAFF

Jayne Bauer reminded the Consortium members that the deadline to submit their nominations for Transit Employee of the Year is Friday, August 30, 2013.

Liz Niedziela distributed Comment Cards for the Countywide In-Person ADA Eligibility Program and requested that the Consortium members review and provide any edits prior to final distribution next week.

5. CONSENT CALENDAR

On a motion by Janet Koster, and a second by Matt Tuggle, the SolanoExpress Intercity Transit Consortium approved Consent Calendar Item A and B.

A. Minutes of the Consortium Meeting of June 25, 2013

Recommendation:

Approve the Consortium Meeting Minutes of June 25, 2013.

B. Transportation for Clean Air (TFCA)

Recommendation:

Forward a recommendation to the TAC and STA Board to approve the following projects and amounts for the FY 2013-14 Solano TFCA Program Manager Funds:

1. Solano Community College Student Bus Voucher Program (\$42,000);
2. Safe Routes to School (SR2S) High School Trip Reduction Pilot (\$24,981); and
3. Suisun City Electric Charging Station (\$2,000).

6. ACTION FINANCIAL

A. None.

7. ACTION NON-FINANCIAL

A. Legislative Update

Jayne Bauer reviewed staff's recommendation to take the position to oppose *Senate Bill (SB) 556 – unless amended to exempt public transportation providers*. She explained that SB 556 would require public agencies, including public transit systems, to "label" employees and vehicles which are independent contractors or operated by independent contractors with a "NOT A GOVERNMENT EMPLOYEE" or "THE OPERATOR OF THIS VEHICLE IS NOT A GOVERNMENT EMPLOYEE" disclosure.

In addition, Jayne Bauer reported and distributed a letter of support for AB 466 (Quirk-Silva) – CMAQ Funding Formula which would require CalTrans to continue allocating federal Congestion Management and Air Quality Improvement Program (CMAQ) funding to California regions pursuant to a long standing formula. She noted that passing this legislation will provide much needed financial predictability for local transportation agencies.

After further discussion, the Consortium amended the recommendation to add a support position to AB 466 (Quirk-Silva).

Recommendation:

Forward a recommendation to the TAC and STA Board to take the following position:

1. *SB 556 – oppose unless amended to exempt public transportation providers; and*
2. ***AB 466 (Quirk-Silva) – support***

On a motion by Jim McElroy, and a second by Mona Babauta, the SolanoExpress Intercity Transit Consortium unanimously approved the recommendation as amended shown above in ***bold italics***.

B. Mobility Management Plan Update

Sofia Recalde provided an update and summarized the first month of activity to the Countywide In-Person ADA Eligibility Program which launched on July 1, 2013. She reported on the appointment volume, new versus re-certification, eligibility determinations, type of disability, time to scheduled assessment, time to receipt of eligibility determination letter, and impact on paratransit.

Sofia Recalde also provided an update to the development of the Mobility Management Website. She noted that a preliminary draft scope of work for the Mobility Management website was distributed to the transit operators for review and comment. She noted that a meeting was held in mid-August to discuss the scope and related issues and that comments to be received will be incorporated into the revised scope of work. She added that a further revision has been made and the selected consultant would present the website to the Paratransit Coordinating Council (PCC) and Senior and People with Disabilities committee(s) at a future meeting.

Recommendation:

Forward a recommendation to the TAC and STA Board to:

- ~~1. ***Approve the revised Scope of Work for Countywide Travel Training as specified in Attachment B;***~~
1. Approve the Scope of Work for the development of a Mobility Management Website as specified in Attachment C; and
2. Authorize the Executive Director to issue a Request for Proposal (RFP) and enter into an agreement for Mobility Management Website Development Services ***for an amount not-to-exceed \$35,000.***

On a motion by Jim McElroy, and a second by Matt Tuggle, the SolanoExpress Intercity Transit Consortium unanimously approved the recommendation as amended shown above in ~~***strikethrough bold italics***~~.

C. Coordinated Short Range Transit Plan Status Update and Coordination Report

Nancy Whelan provided a status report to the Coordinated SRTP and Coordination Report. She cited that the Draft SRTPs for each operator have been reviewed and to date, Final Draft SRTPs have been adopted by the City Councils of the Cities of Dixon, Fairfield, Rio Vista, and Vacaville by the Board of Directors of SolTrans.

In addition, Nancy Whelan also provided a status report to the Draft Coordination Report. She noted that based on the peer comparison and the discussion at the meetings that were held; the performance standards were re-named to performance benchmarks to better reflect the aspirational nature of the performance metrics and were adjusted to reflect peer performance for these metrics. She added that the performance benchmarks will be used to inform the development of the Transit Corridor Study and the Service Coordination Report and will be included in the Coordinated SRTP to be considered for adoption by the STA Board on September 11, 2013.

Recommendation:

Forward a recommendation to the TAC and STA Board to approve:

1. The intercity performance benchmarks in Attachment A; and
2. The Solano County Coordinated SRTP Coordination Report shown in Attachment B.

On a motion by Jim McElroy, and a second by Mona Babauta, the SolanoExpress Intercity Transit Consortium unanimously approved the recommendation.

8. INFORMATIONAL ITEMS – DISCUSSION ITEMS

A. STA Alternative Fuel and Infrastructure Plan Update

Robert Guerrero provided an update to the development of the STA Alternative Fuel and Infrastructure Plan. He highlighted some of the comments and responses received from the Plan’s Technical Working group. Some of the changes included updated transit bus cost, revised lifecycle cost references, and caveats related to cost assumptions and benefit charts. STA staff will meet with the Technical Working Group members to obtain their final input during the months of August and September.

B. Personal Care Attendant on Fixed Route

Sofia Recalde noted that in order to address the question of when and/or if a Personal Care Attendant is or should be required on fixed route and paratransit at the October meeting, staff is proposing that either a transit operator volunteers to present to committee or arrange for a consultant to present. If a consultant is preferred, STA staff will provide the transit operators an opportunity to review the consultant’s presentation on their findings before the meeting.

C. Clipper Implementation Update

Chair Lewis commented that implementation of CLIPPER will require FAST to change the fare structure used for Solano Express because the tiered zone fare will not be allowed and each route can only have a single fare for CLIPPER. He passed out a proposed fare structure to start the discussion to set the stage for action later this year.

NO DISCUSSION

D. Other Funding Opportunities Summary

9. FUTURE INTERCITY TRANSIT CONSORTIUM AGENDA ITEMS

10. TRANSIT OPERATOR COORDINATION ISSUES

11. ADJOURNMENT

The meeting adjourned at 3:00 p.m. The next regular meeting of the SolanoExpress Intercity Transit Consortium is scheduled at **1:30 p.m. on Tuesday, September 24, 2013.**

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DATE: September 16, 2013
TO: SolanoExpress Intercity Transit Consortium
FROM: Robert Macaulay, Planning Director
RE: 2013 Congestion Management Program Update

Background:

The legislation creating Congestion Management Agencies (CMAs), such as the Solano Transportation Authority (STA), required the bi-annual update of agency Congestion Management Programs (CMPs). CMPs are reviewed by the regional Metropolitan Planning Organization for consistency with the most-recently adopted Regional Transportation Plan (RTP). For Solano County and for nine County Bay Area- this is performed by the Metropolitan Transportation Commission (MTC)

MTC typically publishes guidance for update of the CMP in March or April of the year that it is due. This year, because of the development of the new RTP, known as Plan Bay Area, the MTC guidance memo (Attachment A) was not adopted until July 5, and Plan Bay Area was not adopted until July 18. The most important impact of this is that the final land uses and transportation network to be used in an updated traffic model were not available in time to allow proper update and validation of the county travel demand model. As a result, and with the approval of MTC staff, the 2013 CMP update focuses on local changes such as transit use data.

Discussion:

The Draft 2013 Solano CMP is provided as Attachment B. The proposed amendments were made using track changes in order to emphasize differences between the adopted 2011 version and the draft 2013 version. The changes generally fall into the following categories:

- New Plan Bay Area goals - required to be incorporated into the document by MTC's July 5, 2015 guidance memo.
- Updated Capital Improvement Program, to reflect completed projects and changes to the RTP approved transportation network.
- Updated system performance data, primarily focused on the transit system.

The draft 2013 Solano CMP does not show any significant changes in traffic patterns in the past two years, but it does note changes to transit services that have occurred. With the adoption of the new RTP and the reported upturn in the economy of Solano County and the region, the 2015 Solano CMP may be a substantially different document.

The Draft 2013 Solano CMP will be reviewed by MTC, and any proposed changes will be reviewed by the STA TAC in November 2013. The Final 2013 Solano CMP is due to MTC in December of 2013.

Fiscal Impact:

No impact to the STA General Fund.

Recommendation:

Forward a recommendation to the TAC and STA Board to send the Draft 2013 Solano CMP to MTC for review and comment.

Attachments:

- A. MTC July 5 CMP Update Guidance Memo
- B. Draft 2013 Solano CMP (To be provided under separate cover.)

Item 2c



METROPOLITAN
TRANSPORTATION
COMMISSION

Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, CA 94607-4700
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Memorandum

TO: Planning Committee

DATE: July 5, 2013

FR: Executive Director

RE: 2013 Congestion Management Program Guidance: MTC Res. No. 3000, Revised

Background

The state law establishing the Congestion Management Programs (CMPs) includes specific requirements for the content and development process, the relationship between the CMPs and the metropolitan planning process, and requirements for system monitoring. MTC's responsibilities include review of the consistency of the CMPs with the Regional Transportation Plan (RTP), evaluation of the consistency and compatibility of the CMPs in the region, and inclusion of the CMP projects in the Regional Transportation Improvement Program (RTIP) in order to compete for state funding.

CMP Review Process and Schedule

MTC is required to evaluate consistency of the CMPs every two years with the RTP that is in effect when the CMP is submitted. In anticipation of the upcoming CMP review this fall (see Table 1, attached) staff is recommending an update to the CMP guidelines to reflect the policies in Plan Bay Area that are relevant to the CMPs. This will allow the CMAs time to incorporate the new guidance into their draft CMPs that are due to MTC in October.

Proposed Changes in CMP Guidance for 2013

The changes to the CMP Guidance include references to regional goals and policies established in the draft Plan Bay Area. Staff will update the guidelines, as necessary, to reflect any final revisions to the Plan that have relevance to the CMPs. Projects proposed for the Regional Transportation Improvement Program (RTIP) will be reviewed for consistency with MTC's Plan Bay Area.

Recommendation

MTC Res. 3000 delegates to this Committee the responsibility for approving amendments to the CMP Guidance (MTC Res. No 3000). Staff recommends that the committee approve the revisions to Attachments A and B of Res. No. 3000, for the purpose of providing guidance for the development of the 2013 CMPs consistent with Plan Bay Area.

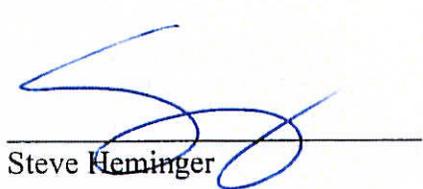

Steve Heminger

Table 1

MTC's 2013 CMP Review Process and Draft Schedule

Date	Event	Responsible Party
July 12	Approval of updates to CMP Guidance	MTC's Planning Committee
October 16	Final 2013 CMPs due to MTC Proposed RTIP project listings to MTC	CMAs
October 21- November 14	Review of consistency of CMPs with the Regional Transportation Plan (RTP)	MTC staff
November 14 (tentative)	MTC's Consistency Findings on 2013 CMPs	Planning Comm. Recommendation
December 11	MTC's approval of the 2014 RTIP	PAC recommendation
December 18 (tentative)	MTC's Consistency Findings on 2013 CMPs MTC's approval of the 2014 RTIP	MTC
December 24	2014 RTIP due to the California Transportation Commission (CTC)	MTC

Date: June 25, 1997
W.I.: 30.5.10
Referred By: WPC
Revised: 06/11/99-W 05/11/01-POC
06/13/03-POC 06/10/05-POC
05/11/07-PC 05/08/09-PC
06/10/11-PC 07/12/13-PC

ABSTRACT

Resolution No. 3000, Revised

This resolution revises MTC's Guidance for Consistency of Congestion Management Programs with the Regional Transportation Plan (RTP).

This resolution supersedes Resolution No. 2537

Attachments A and B of this resolution were revised on June 11, 1999 to reflect federal and state legislative changes established through the passage of the Transportation Equity Act of the 21st Century and SB 45, respectively. In addition, the Modeling Checklist has been updated.

Attachments A and B of this resolution were revised on May 11, 2001 to reflect state legislative changes and to reference updated demographic and forecast data.

Attachments A and B of this resolution were revised on June 13, 2003 to reflect state legislative changes, 2001 RTP goals and policies, and to reference updated demographic and forecast data.

Attachments A and B of this resolution were revised on June 10, 2005 to reflect the updated RTP goals, as per Transportation 2030, and to reference updated demographic and forecast data.

Attachments A and B of this resolution were revised on May 11, 2007 to reflect federal legislative changes established through the passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA), and to reference new State Transportation Control Measures and updated demographic and forecast data.

Attachments A and B of this resolution were revised on May 8, 2009 to reflect MTC's new RTP (Transportation 2035 Plan), an updated Travel Demand Modeling Checklist, and revised Resolution 3434 and TOD policy.

ABSTRACT

MTC Resolution No. 3000, Revised

Page 2

Attachments A and B of this resolution were revised on June 10, 2011 to reflect the new regional coordinated land use and transportation planning process as directed through SB 375, an updated Travel Demand Modeling Checklist, the newly released Highway Capacity Manual 2010, the Bay Area 2010 Ozone Strategy, and updates to the table noting achievement of the Transit Oriented Development requirements by Resolution No. 3434 transit extension project.

Attachments A and B of this resolution were revised on July 12, 2013 to reflect the new RTP (Plan Bay Area) and the statutory requirements in MAP-21 for RTP and air quality conformity requirements.

Date: June 25, 1997
W.I.: 30.5.10
Referred By: WPC

Re: Congestion Management Program Policy.

METROPOLITAN TRANSPORTATION COMMISSION
RESOLUTION NO. 3000

WHEREAS, the Metropolitan Transportation Commission (MTC) is the regional transportation planning agency for the San Francisco Bay Area pursuant to Government Code Sections 66500 et seq; and

WHEREAS, Government Code § 65080 requires each transportation planning agency to prepare a regional transportation plan and a regional transportation improvement program directed at the achievement of a coordinated and balanced regional transportation system; and

WHEREAS, Government Code § 65089 requires a designated local agency in each urbanized county to develop, adopt, and periodically update a congestion management program for the county and its included cities unless a majority of local governments in a county and the county board of supervisors elect to be exempt; and requires that this congestion management program be developed in consultation, among others, with the regional transportation planning agency; and

WHEREAS, Government Code § 65089.2 requires that, for each congestion management program prepared, the regional transportation planning agency must make a finding that each congestion management program is consistent with the regional transportation plan, and upon making that finding shall incorporate the congestion management program into the regional transportation improvement program; and

WHEREAS, Government Code § 65082 requires that adopted congestion management programs be incorporated into the regional transportation improvement program approved by MTC; and

WHEREAS, MTC has adopted a Congestion Management Program Policy (MTC Resolution 2537, Revised) to provide guidance for all the counties and cities within the region in preparing their congestion management programs; and,

WHEREAS, MTC's Congestion Management Program Policy needs to be updated from time to time to provide further guidance, now, therefore, be it

RESOLVED, that MTC adopts the Congestion Management Program Policy, as set forth in Attachments A and B to this resolution, which are incorporated herein by reference; and, be it further

RESOLVED, that the MTC Work Program Committee is delegated the responsibility for approving amendments to Attachments A and B; and, be it further

RESOLVED, that this resolution shall be transmitted to the nine Bay Area Congestion Management Agencies for use in preparing their congestion management programs; and, be it further

RESOLVED, that MTC Resolution No. 2537, Revised is hereby superceded.

METROPOLITAN TRANSPORTATION COMMISSION

Jane Baker, Chairwoman

The above resolution was entered into by the Metropolitan Transportation Commission at a regular meeting of the Commission held in Oakland, California, on June 25, 1997.

Date: June 25, 1997
W.I.: 30.5.10
Referred By: WPC
Revised: 06/11/99-W 05/11/01-POC
06/13/03-POC 06/10/05-POC
05/11/07-PC 05/08/09-PC
06/10/11-PC 07/12/13-PC

Attachment A
Resolution No. 3000
Page 1 of 11

**GUIDANCE FOR CONSISTENCY OF
CONGESTION MANAGEMENT PROGRAMS
WITH THE REGIONAL TRANSPORTATION PLAN**

Metropolitan Transportation Commission

July 2013

**GUIDANCE FOR CONSISTENCY OF
CONGESTION MANAGEMENT PROGRAMS
WITH THE REGIONAL TRANSPORTATION PLAN**

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I. INTRODUCTION

A. Purpose of This Guidance

The Congestion Management Program (CMP) statutes establish specific requirements for the content and development process for CMPs, for the relationship between CMPs and the metropolitan planning process, for CMA monitoring and other responsibilities, and for the responsibilities of MTC as the regional transportation agency. CMPs are not required in a county if a majority of local governments and the Board of Supervisors adopt resolutions electing to be exempt from this requirement (AB 2419 (Bowler) Chapter 293, Statutes of 1996). This Guidance is for those counties that prepare a CMP in accordance with state statutes. For counties that opt out of preparing a CMP, MTC will directly work with the appropriate county agencies to establish project priorities for funding.

CMP statutes also specify particular responsibilities involving CMPs for the regional transportation agency, in the Bay Area, MTC. These responsibilities include review of the consistency of the CMPs with the RTP, evaluation of the consistency and compatibility of the CMPs in the Bay Area, and inclusion of the CMP projects in the Regional Transportation Improvement Program (RTIP).

The purpose of this guidance is to focus on the relationship of the CMPs to the regional planning process and MTC's role in determining consistency of CMPs with the Regional Transportation Plan (RTP).

B. Legislative Requirement for Congestion Management Programs

Congestion Management Programs were established as part of a bi-partisan legislative package in 1989, and approved by the voters in 1990. This legislation also increased transportation revenues and changed state transportation planning and programming processes. The specific CMP provisions were originally chartered by the Katz-Kopp-Baker-Campbell Transportation Blueprint for the Twenty-First Century by AB 471 (Katz); (Chapter 106, Statutes 1989). They were revised by AB 1791 (Katz) (Chapter 16, Statutes of 1990), AB 3093 (Katz) (Chapter 2.6, Statutes of 1992), AB 1963 (Katz) (Chapter 1146, Statutes of 1994), AB 2419 (Bowler) (Chapter 293, Statutes of 1996), AB 1706 (Chapter 597, Statutes of 2001), and SB 1636 (Figueroa)(Chapter 505, Section 4, Statutes of 2002), which defines and incorporates "infill opportunity zones." The provisions regarding establishing new "infill opportunity zones" have now expired, but established infill opportunities zones are still subject to the statutes.

CMP statutes establish requirements for local jurisdictions to receive certain gas tax subvention funds. Additionally, CMPs play a role in the development of specific project proposals for the Regional Transportation Improvement Program.

C. The Role of CMPs in the Metropolitan Planning Process

CMPs play a role in the countywide and regional transportation planning processes:

- CMPs can identify specific near term projects to implement the longer-range vision established in a countywide plan.
- Through CMPs, the transportation investment priorities of the multiple jurisdictions in each county can be addressed in a countywide context.
- CMPs establish a link between local land use decision making and the transportation planning process.
- CMPs are a building block for the federally required Congestion Management Program.

II. MTC's ROLE and RESPONSIBILITIES

A. MTC's Responsibilities regarding CMPs

MTC's direct responsibilities under CMP statutes are concentrated in the following provisions:

“The regional agency shall evaluate the consistency between the program (i.e., the CMP) and the regional transportation plans required pursuant to Section 65080. In the case of a multicounty regional transportation planning agency, that agency shall evaluate the consistency and compatibility of the programs within the region. (Section 65089.2 (a))

The regional agency, upon finding that the program is consistent, shall incorporate the program into the regional transportation improvement program as provided for in Section 65082. If the regional agency finds the program is inconsistent, it may exclude any project in the congestion management program from inclusion in the regional transportation improvement program. (Section 65089.2(b))

It is the intent of the Legislature that the regional agency, when its boundaries include areas in more than one county, should resolve inconsistencies and mediate disputes which arise between agencies related to congestion management programs adopted for those areas.” Section 65089.2.(d)(1))

B. The Regional Transportation Plan (RTP) Regulatory Setting and Goals

Federal Requirements

The primary federal requirements regarding RTPs are addressed in the metropolitan transportation planning rules in Title 23 of the Code of Federal Regulations (CFR) Part 450 and 500 and Title 49 CFR Part 613. These federal regulations have been updated to reflect the metropolitan transportation planning regulations called out in MAP-21. Under MAP-21, the U.S. Department of Transportation requires that metropolitan planning organizations, such as MTC, prepare long-range transportation plans and update them

every four years if they are in areas designated as “nonattainment” or “maintenance” for federal air quality standards. Plan Bay Area fulfills this requirement.

State Requirements

California Government Code Section 65080 sets forth the State’s requirements for RTPs. Section 65080 requires MPOs located in air quality nonattainment regions update their RTPs at least every four years.

The regional agencies, particularly MTC, the Association of Bay Area Governments, the Bay Area Air Quality Management District, and the Bay Conservation and Development Commission, will also address new requirements flowing from California’s 2008 Senate Bill 375 (Steinberg), which calls on each of the state’s 18 metropolitan areas to reduce greenhouse gas (GHG) emissions from cars and light trucks. The mechanism for achieving these reductions will be a Sustainable Communities Strategy (SCS). Plan Bay Area is the region’s SCS and RTP and has been developed in an integrative process with the Bay Area’s regional and local partners.

State Regional Transportation Plan (RTP) Guidelines

The RTP Guidelines adopted by the California Transportation Commission (CTC) state that the CTC cannot program projects that are not identified in the RTP.

Section 65080 of the Government Code, as amended by SB 375, states that the RTP shall contain four distinct elements:

- A Policy Element that reflects the mobility goals, policies and objectives of the region;
- A Sustainable Communities Strategy, as established through SB 375;
- An Action Element that identifies programs and actions to implement the RTP; and
- A Financial Element that summarizes the cost of implementing the projects in the RTP in a financially constrained environment.

Plan Bay Area serves all the specific planning purposes outlined in the CTC RTP Guidelines

C. Consistency Findings

MTC’s findings for the consistency of CMPs focus on five areas:

- Goals and objectives established in the RTP,
- Consistency of the system definition with adjoining counties,
- Consistency with federal and state air quality plans,
- Consistency with the MTC travel demand modeling database and methodologies; and
- RTP financial assumptions.

1) Goals and objectives established in the RTP

Plan Bay Area represents the adopted transportation policy and action statement of how the Bay Area will approach the region’s transportation needs to the year 2040. It was prepared by MTC in partnership with the Association of Bay Area Governments (ABAG), the Bay Area Air Quality Management District (BAAQMD), and the Bay Conservation and Development Commission (BCDC) and in collaboration with Caltrans, the nine county-level Congestion Management Agencies (CMAs) or substitute agencies, over two dozen Bay Area transit operators, and numerous transportation stakeholders and the public.

Plan Bay Area incorporates a set of performance targets for as quantifiable measures against which progress may be evaluated, as shown below:

PLAN BAY AREA PERFORMANCE TARGETS

Goal/Outcome	#	Target
CLIMATE PROTECTION	1	Reduce per-capita CO ₂ emissions from cars and light-duty trucks by 15% <i>Statutory - Source: California Air Resources Board, as required by SB 375</i>
ADEQUATE HOUSING	2	House 100% of the region’s projected growth by income level (very-low, low, moderate, above-moderate) without displacing current low-income residents <i>Statutory - Source: ABAG, as required by SB 375</i>
HEALTHY & SAFE COMMUNITIES	3	Reduce premature deaths from exposure to particulate emissions: <ul style="list-style-type: none"> • Reduce premature deaths from exposure to fine particulates (PM2.5) by 10% • Reduce coarse particulate emissions (PM10) by 30% • Achieve greater reductions in highly impacted areas <i>Source: Adapted from federal and state air quality standards by BAAQMD</i>
	4	Reduce by 50% the number of injuries and fatalities from all collisions (including bike and pedestrian) <i>Source: Adapted from California State Highway Strategic Safety Plan</i>
	5	Increase the average daily time walking or biking per person for transportation by 70% (for an average of 15 minutes per person per day) <i>Source: Adapted from U.S. Surgeon General’s guidelines</i>
OPEN SPACE AND AGRICULTURAL PRESERVATION	6	Direct all non-agricultural development within the urban footprint (existing urban development and urban growth boundaries) <i>Source: Adapted from SB 375</i>
EQUITABLE ACCESS	7	Decrease by 10% the share of low-income and lower-middle income residents’ household income consumed by transportation and housing

<i>Source: Adapted from Center for Housing Policy</i>	
ECONOMIC VITALITY	<p>8 Increase gross regional product (GRP) by an average annual growth rate of approximately 2%</p> <p><i>Source: Bay Area Business Community</i></p>
TRANSPORTATION SYSTEM EFFECTIVENESS	<p>9</p> <ul style="list-style-type: none"> • Increase non-auto mode share by 10% • Decrease automobile vehicle miles traveled per capita by 10% <p><i>Source: Adapted from Caltrans Smart Mobility 2010</i></p> <hr/> <p>10 Maintain the transportation system in a state of good repair:</p> <ul style="list-style-type: none"> • Increase local road pavement condition index (PCI) to 75 or better • Decrease distressed lane-miles of state highways to less than 10% of total lane-miles • Reduce share of transit assets past their useful life to 0% <p><i>Source: Regional and state plans</i></p>

Regional Transit Expansion Program

The Regional Transit Expansion Program – adopted by the Commission as Resolution 3434 –calls for a nearly \$12 billion investment in new rail and bus projects that will improve mobility and enhance connectivity for residents throughout the Bay Area. MTC has adopted a Transportation and Land Use Platform that calls for supportive land use plans and policies to support transit extensions in Res. 3434. Further, MTC has adopted a Transit Oriented Development Policy, as part of Res. 3434, that establishes specific housing thresholds for these extensions, requires station area plans and establishes corridor working groups. These regional policies and specific projects within the county should be recognized in the CMP (attached as Appendix C).

2) Consistency of the system definition with adjoining counties

The CMP statutes require that the CMA designate a system of highways and roadways which shall be subject to the CMP requirements. Consistency requires the regional continuity of the CMP designated system for facilities that cross county borders.

3) Consistency with pertinent Air Quality Plans

Transportation Control Measures (TCMs) are identified in the federal and state air quality plans to achieve and maintain the respective standards for ozone and carbon monoxide. The statutes require that the Capital Improvement Program (CIP) of the CMP conform to transportation related vehicle emission air quality mitigation measures. CMPs should promote the region's adopted transportation control measures (TCMs) for the Federal and State Clean Air Plans. In addition, CMPs are encouraged to consider the benefits of greenhouse gas (GHG) reductions in developing the CIP, although GHG emission reductions are not currently required in either Federal or State Clean Air Plans.

A reference to the lists of federal and state TCMs is provided in Attachment B. The lists may be updated from time to time to reflect changes in the federal and state air quality plans..

In particular, TCMs that require local implementation should be identified in the CMP, specifically in the CIP:-

CMPs are also required to contain provisions pertaining to parking cash-out.

(1) The city or county in which a commercial development will implement a parking cash-out program that is included in a congestion management program pursuant to subdivision (b), or in a deficiency plan pursuant to Section 65089.4, shall grant to that development an appropriate reduction in the parking requirements otherwise in effect for new commercial development. (2) At the request of an existing commercial development that has implemented a parking cashout program, the city of county shall grant an appropriate reduction in the parking requirements otherwise applicable based on the demonstrated reduced need for parking, and the space no longer needed for parking purposes may be used for other appropriate purposes. (Section 65089 (d)

It should also be noted that starting on January 1, 2010, cities, counties and air districts have the option of enforcing the State Parking Cash-Out statutes (Section 43845 of the Health and Safety Code), as per SB 728 (Lowenthal). This provides local jurisdictions with another tool to craft their own approaches to support multi-modal transportation systems, address congestion and green house gasses.

4) Consistency with the MTC Travel Demand Modeling Databases and Methodologies

MTC's statutory requirements regarding consistent databases are as follows:

The agency, (i.e., the CMA) in consultation with the regional agency, cities, and the county, shall develop a uniform data base on traffic impacts for use in a countywide transportation computer model . . . The computer models shall be consistent with the modeling methodology adopted by the regional planning agency. The data bases used in the models shall be consistent with the data bases used by the regional planning agency. Where the regional agency has jurisdiction over two or more counties, the data bases used by the agency shall be consistent with the data bases used by the regional agency. (Section 65089 (c))

MTC desires the development and implementation of consistent travel demand models, with shared input databases, to provide a common foundation for transportation policy and investment analysis.

The Regional Model Working Group of the Bay Area Partnership serves as a forum for sharing data and expertise, and providing peer review for issues involving the models developed by or for the CMAs, MTC, and other parties. The MTC Checklist for

Modeling will be used to guide the consistency assessment of CMA models with the MTC model.

The Checklist is included in Attachment B, and addresses:

- Demographic/econometric forecasts
- Pricing assumptions
- Network assumptions
- Travel demand methodologies; and,
- Traffic assignment methodologies

5) **Level of Service Methodology**

CMP statutory requirements regarding level of service are as follows

“Level of service (LOS) shall be measured by Circular 212, by the most recent version of the Highway Capacity Manual, or by a uniform methodology adopted by the agency that is consistent with the Highway Capacity Manual.” (Section 65089 (b))

The most recently adopted version of the Highway Capacity Manual is HCM2010, which significantly enhances how engineers and planners assess the traffic and environmental effects of highway projects by:

- Providing an integrated multimodal approach to the analysis and evaluation of urban streets from the points of view of automobile drivers, transit passengers, bicyclists, and pedestrians;
- Addressing the proper application of micro-simulation analysis and the evaluation of those results; and
- Examining active traffic management in relation to both demand and capacity.

Use of HCM2010 is encouraged, especially for the integrated multimodal approach to analysis of streets for various users.

6) **RTP Financial Requirements and Projections**

Under the federal transportation authorization (MAP-21), the actions, programs and projects in the RTP must be financially deliverable within reasonable estimates of public and private resources. While CMPs are not required by legislation to be financially constrained, recognition of financial constraints, including the costs for maintaining, rehabilitating, and operating the existing multi-modal system and the status of specific major projects, will strengthen the consistency and linkage between the regional planning process and the CMP. The CMA may submit project proposals for consideration by MTC in developing future financially constrained RTPs.

D. Consistency and Compatibility of the Programs within the Region

The CMP statutes require that, in the case of a multi-county regional transportation agency, that agency shall evaluate the consistency and compatibility of the congestion management programs within the region. Further, it is the Legislature's stated intention that the regional agency (i.e., MTC in the San Francisco Bay Area) resolve inconsistencies and mediate disputes between congestion management programs within a region.

To the extent useful and necessary, MTC will identify differences in methodologies and approaches between the CMPs on such issues as performance measures and land use impacts.

E. Incorporation of the CMP Projects into the RTIP

State transportation statutes require that the MTC, in partnership with the State and local agencies, develop the Regional Transportation Improvement Program (RTIP) on a biennial cycle. The RTIP is the regional proposal for State and federal funding, adopted by MTC and provided to the California Transportation Commission (CTC) for the development of the State Transportation Improvement Program (STIP). In 1997, SB 45 (Statutes 1997, Chapter 622) significantly revised State transportation funding policies, delegating project selection and delivery responsibilities for a major portion of funding to regions and counties. Subsequent changes to state law (AB 2928 – Statutes 2000, Chapter 91) made the RTIP a five-year proposal of specific projects, developed for specific fund sources and programs. The RTIP is required to be consistent with the RTP that is currently in effect. The RTP is revised periodically.

The CMP statutes establish a direct linkage between CMPs that have been found to be consistent with the RTP, and the RTIP. MTC will review the projects in the Capital Improvement Program (CIP) of the CMP for consistency with the RTP. MTC's consistency findings for projects in the CMPs will be limited to those projects that are included in the RTP, and do not extend to other projects that may be included in the CMP. Some projects may be found consistent with a program category in the RTP. MTC, upon finding that the CMP is consistent with the RTP, shall incorporate the program into the RTIP, subject to specific programming and funding requirements. If MTC finds the program inconsistent, it may exclude any project in the program from inclusion in the RTIP. Since the RTIP must be consistent with the RTP, projects that are not consistent with the RTP will not be included in the RTIP. MTC may include certain projects or programs in the RTIP which are not in a CIP, but which are in the RTP. In addition, SB 45 requires projects included in the Interregional Transportation Improvement Program (ITIP) to be consistent with the RTP.

MTC will establish funding bid targets for specific funds, based upon the fund estimate as adopted by the California Transportation Commission (CTC). Project proposals can only be included in the RTIP within these funding bid targets. MTC will also provide information on other relevant RTIP processes and requirements, including coordination

between city, county, and transit districts for project applications, schedule, evaluations and recommendations of project submittals, as appropriate for the RTIP.

As per CTC's Guidelines, MTC will evaluate the projects in the RTIP based on specific performance indicators and measures as established in the RTP, and provide this evaluation to the CTC along with the RTIP. CMAs are encouraged to consider the performance measures in Plan Bay Area when developing specific project proposals for the RTIP; more details will be provided in the RTIP Policies and Procedures document, adopted by MTC for the development of the RTIP.

III. CMP PREPARATION AND SUBMITTAL TO MTC

A. CMP Preparation

If prepared, the CMP shall be developed by the CMA in consultation with, and with the cooperation of, MTC, transportation providers, local governments, Caltrans, and the BAAQMD, and adopted at a noticed public hearing of the CMA. As established in SB 45, the RTIP is scheduled to be adopted by December 15 of each odd numbered year. If circumstances arise that change this schedule, MTC will work with the CMAs and substitute agencies in determining an appropriate schedule and mechanism to provide input to the RTIP.

B. Regional Coordination

In addition to program development and coordination at the county level, and consistency with the RTP, the compatibility of the CMPs with other Bay Area CMPs would be enhanced through identification of cross county issues in an appropriate forum, such as Partnership and other appropriate policy and technical committees. Discussions would be most beneficial if done prior to final CMA actions on the CMP.

C. Submittal to MTC

To provide adequate review time, draft CMPs should be submitted to MTC in accordance to a schedule MTC will develop to allow sufficient time for incorporation into the RTIP for submittal to the California Transportation Commission. Final CMPs must be adopted prior to final MTC consistency findings.

D. MTC Consistency Findings for CMPs

MTC will evaluate consistency of the CMP every two years with the RTP that is in effect when the CMP is submitted; for the 2013 CMP the RTP in effect will be Plan Bay Area. MTC will evaluate the consistency of draft CMPs when received, based upon the areas specified in this guidance, and will provide staff comments of any significant concerns. MTC can only make final consistency findings on CMPs that have been officially adopted.

Date: June 25, 1997
W.I.: 30.5.10
Referred By: WPC
Revised: 06/11/99-W 05/11/01-POC
06/13/03-POC 06/10/05-POC
05/11/07-PC 05/08/09-PC
06/10/11-PC 07/12/13-PC

Attachment B
Resolution No. 3000
Page 1 of 18

Attachment B to MTC Resolution No. 3000 consists of:

- Appendix A Federal and State Transportation Control Measures
- Appendix B Checklist for Modeling Consistency for CMPs
- Appendix C MTC's Regional Transit Expansion Program of Projects (MTC Resolution No. 3434, revised 09/24/08)
- Appendix D MTC's Resolution No. 3434 Transit Oriented Development (TOD) Policy, revised 10/24/07

Appendix A: Federal and State Transportation Control Measures (TCMs)

Federal TCMs:

For a list and description of current Federal TCMs, see the “Federal Ozone Attainment Plan for the 1-Hour National Ozone Standard” adopted Oct. 24, 2001, and “2004 Revision to the California State Implementation Plan for Carbon Monoxide, Updated Maintenance Plan for Ten Federal Planning Areas,” approved January 30, 2006.

The current Federal TCMs have been fully implemented. Refer to the "Final Transportation-Air Quality Conformity Analysis Transportation 2035 Plan and 2011 Transportation Improvement Program" at http://www.mtc.ca.gov/funding/tip/Final_AQ_conformity_Analysis.pdf (page 15) for the specific implementation steps in the advancement of these Federal TCMs.

State TCMs:

For a list and description of current State TCMs, see “Bay Area 2010 Ozone Strategy,” or subsequent revisions as adopted by the Bay Area Air Quality Management.

CMAQ Evaluation and Assessment Report:

MTC participated in a federal evaluation and assessment of the direct and indirect impacts of a representative sample of Congestion Mitigation and Air Quality (CMAQ) – funded projects on air quality and congestion levels. The study estimated the impact of these projects on emissions of transportation related pollutants, including carbon monoxide (CO), ozone precursors – oxides of nitrogen (NO_x), volatile organic compounds (VOCs), particulate matter (PM₁₀ and PM_{2.5}), and carbon dioxide (CO₂) for information purposes, as well as on traffic congestion and mobility. There is also additional analysis of the selected set of CMAQ-funded projects to estimate of the cost effectiveness at reducing emissions of each pollutant. This report may be of interest to CMAs; it is available on line at:

<http://www.fhwa.dot.gov/environment/cmaqpgs/safetealu1808/index.htm>
or from the MTC/ABAG Library.

Appendix B: MTC Checklist for Modeling Consistency for CMPs

Overall approach

MTC's goal is to establish regionally consistent model "sets" for application by MTC and the CMAs. In the winter of 2010/2011, MTC replaced the modeling tool – named *BAYCAST-90* – that had been in place, with relatively minor modifications, for the past two decades with a more sophisticated, so-called "activity-based" model – named *Travel Model One*. This change required a broad re-thinking of these guidelines as they now require a framework in which trip-based and activity-based models can be aligned. The approach remains the same: a checklist is used to adjudge consistency across model components.

Checklist

This checklist guides the CMAs through their model development and consistency review process by providing an inventory of specific products to be developed and submitted to MTC, and by describing standard practices and assumptions.

Because of the complexity of the topic, the checklist may need additional detailed information to explain differences in methodologies or data. Significant differences will be resolved between MTC and the CMA, taking advantage of the Regional Model Working Group. Standard formats for model comparisons will be developed by MTC for use in future guidelines.

Incremental updates

The CMA forecasts must be updated every two years to be consistent with MTC's forecasts. Alternative approaches to fully re-running the entire model are available, including incremental approaches through the application of factors to demographic inputs and/or trip tables. Similarly, the horizon year must be the same as the TIP horizon year. However, interpolation and extrapolation approaches are acceptable, with appropriate attention to network changes. These alternatives to re-running the entire model should be discussed with MTC before the CMP is adopted by the CMA.

Defining the MTC model sets

The MTC model sets referred to below are defined as those in use on December 31st of the year preceding the CMP update.

Key Assumptions

Please report the following information.

A. General approach:

Discuss the general approach to travel demand modeling by the CMA and the CMA model's relationship to either *BAYCAST-90* or *Travel Model One*.

PRODUCT 1: Description of the above.

B. Demographic/economic/land use forecasts:

Both base and forecast year demographic/economic/land use ("land use") inputs must be consistent – though not identical – to the census tract-level data provided by ABAG. Specifically, if CMAs wish to reallocate land use within their own county (or counties),

they must consult with the affected city (or cities) as well as with ABAG and MTC. Further, the resulting deviation in the subject county (or counties) should be no greater than plus or minus one percent from the county-level totals provided by ABAG for the following variables: population, households, jobs, and employed residents. Outside the subject county (or counties), the land use variables in the travel analysis zones used by the county must match either ABAG's estimates exactly when aggregated/disaggregated to census tracts or the county-in-question's estimates per the revision process noted above (e.g. Santa Clara county could use the revised estimates San Mateo developed through consultation with local cities, ABAG, and MTC). Forecast year demand estimates should use either the *Plan Bay Area* or Draft Proposed Plan (used in the *Plan Bay Area* DEIR) land use data, both generated by ABAG. CMAs may also analyze additional, alternative land use scenarios that will not be subject to consistency review.

PRODUCTS: 2) A statement establishing that the differences between key ABAG land use variables and those of the CMA do not differ by more than one percent at the county level for the subject county. A statement establishing that no differences exist at the census-tract-level outside the county between the ABAG forecast or the ABAG/CMA revised forecast.

3) A table comparing the ABAG land use estimates with the CMA land use estimates by county for population, households, jobs, and employed residents for both the base year and the horizon year.

4) If land use estimates within the CMA's county are modified from ABAG's projections, agendas, discussion summaries, and action items from each meeting held with cities, MTC, and/or ABAG at which the redistribution was discussed, as well as before/after census-tract-level data summaries and maps.

C. Pricing Assumptions:

Use MTC's automobile operating costs, transit fares, and bridge tolls or provide an explanation for the reason such values are not used.

PRODUCT 5: Table comparing the assumed automobile operating cost, key transit fares, and bridge tolls to MTC's values for the horizon year.

D. Network Assumptions:

Use MTC's regional highway and transit network assumptions for the other Bay Area counties. CMAs should include more detailed network definition relevant to their own county in addition to the regional highway and transit networks. For the CMP horizon year, to be compared with the TIP interim year, regionally significant network changes in the base case scenario shall be limited to the current Transportation Improvement Program (TIP) for projects subject to inclusion in the TIP.

PRODUCT 6: Statement establishing satisfaction of the above.

E. Automobile ownership:

Use *Travel Model One* automobile ownership models or forecasts, *BAYCAST-90* automobile ownership models, or submit alternative models to MTC for review and comment.

PRODUCT 7: County-level table comparing estimates of households by automobile ownership level (zero, one, two or more automobiles) to MTC's estimates for the horizon year.

F. Tour/trip generation:

Use *Travel Model One* tour generation models or forecasts, *BAYCAST-90* trip generation models, or submit alternative models to MTC for review and comment.

PRODUCT 8: Region-level tables comparing estimates of trip and/or tour frequency by purpose to MTC's estimates for the horizon year.

G. Activity/trip location:

Use *Travel Model One* activity location models or forecasts, *BAYCAST-90* trip distribution models, or submit alternative models to MTC for review and comment.

PRODUCTS: 9) Region-level tables comparing estimates of average trip distance by tour/trip purpose to MTC's estimates for the horizon year.

10) County-to-county comparison of journey-to-work or home-based work flow estimates to MTC's estimates for the horizon year.

H. Travel mode choice:

Use *Travel Model One* models or forecasts, *BAYCAST-90* models, or submit alternative models to MTC for review and comment.

PRODUCT 11: Region-level tables comparing travel mode share estimates by tour/trip purpose to MTC's estimates for the horizon year.

I. Traffic Assignment

Use *Travel Model One* or *BAYCAST-90* models, or submit alternative models to MTC for review and comment.

PRODUCTS: 12) Region-level, time-period-specific comparison of vehicle miles traveled and vehicle hours traveled estimates by facility type to MTC's estimates for the horizon year.

13) Region-level, time-period-specific comparison of estimated average speed on freeways and all other facilities, separately, to MTC's estimates for the horizon year.

Alternatively, CMAs may elect to utilize MTC zone-to-zone vehicle trip tables, adding network and zonal details within the county as appropriate, and then re-run the assignment. In this case, only Products 12 and 13 are applicable.

**Appendix C: MTC's Regional Transit Expansion Program of Projects
(MTC Resolution 3434)**

Note that Resolution No. 3434, Revised, is reproduced below with the TOD Policy attached as Appendix D to Resolution No. 3000; other associated appendices are not attached here – the other appendices are available upon request from the MTC library.

Date: December 19, 2001
W.I.: 12110
Referred by: POC
Revised: 01/30/02-C 07/27/05-C
 04/26/06-C 10/24/07-C
 09/24/08-C

ABSTRACT

Resolution No. 3434, Revised

This resolution sets forth MTC's Regional Transit Expansion Program of Projects.

This resolution was amended on January 30, 2002 to include the San Francisco Geary Corridor Major Investment Study to Attachment B, as requested by the Planning and Operations Committee on December 14, 2001.

This resolution was amended on July 27, 2005 to include a Transit-Oriented Development (TOD) Policy to condition transit expansion projects funded under Resolution 3434 on supportive land use policies, as detailed in Attachment D-2.

This resolution was amended on April 26, 2006 to reflect changes in project cost, funding, and scope since the 2001 adoption.

This resolution was amended on October 24, 2007 to reflect changes in the Transit-Oriented Development (TOD) Policy in Attachment D-2.

This resolution was amended on September 24, 2008 to reflect changes associated with the 2008 Strategic Plan effort (Attachments B, C and D).

Further discussion of these actions are contained in the MTC Executive Director's Memorandum dated December 14, 2001, July 8, 2005, April 14, 2006, October 12, 2007 and September 10, 2008.

Date: December 19, 2001
W.I.: 12110
Referred by: POC

RE: Regional Transit Expansion Program of Projects

METROPOLITAN TRANSPORTATION COMMISSION
RESOLUTION NO. 3434, Revised

WHEREAS, the Metropolitan Transportation Commission (MTC) is the regional transportation planning agency for the San Francisco Bay Area pursuant to Government Code Section 66500 et seq.; and

WHEREAS, MTC adopted Resolution No. 1876 in 1988 which set forth a new rail transit starts and extension program for the region; and

WHEREAS, significant progress has been made in implementing Resolution No. 1876, with new light rail service in operation in San Francisco and Silicon Valley, new BART service extended to Bay Point and Dublin/Pleasanton in the East Bay, and the BART extension to San Francisco International Airport scheduled to open in 2002; and

WHEREAS, MTC's long range planning process, including the Regional Transportation Plan and its *Transportation Blueprint for the 21st Century*, provides a framework for comprehensively evaluating the next generation of major regional transit expansion projects to meet the challenge of congestion in major corridors throughout the nine-county Bay Area; and

WHEREAS, the Commission adopted Resolution No. 3357 as the basis for assisting in the evaluations of rail and express/rapid bus projects to serve as the companion follow-up program to Resolution No. 1876; and

WHEREAS, local, regional, state and federal discretionary funds will continue to be required to finance an integrated program of new rail transit starts and extensions including those funds which are reasonably expected to be available under current conditions, and new funds which need to be secured in the future through advocacy with state and federal legislatures and the electorate; and

WHEREAS, the Regional Transit Expansion program of projects will enhance the Bay Area's transit network with an additional 140 miles of rail, 600 miles of new express bus routes,

and a 58% increase in service levels in several existing corridors, primarily funded with regional and local sources of funds; and

WHEREAS, MTC recognizes that coordinated regional priorities for transit investment will best position the Bay Area to compete for limited discretionary funding sources now and in the future; now, therefore, be it

RESOLVED, that MTC adopts a Regional Transit Expansion Program of Projects, consistent with the Policy and Criteria established in Resolution No. 3357, as outlined in Attachment A, attached hereto and incorporated herein as though set forth at length; and be it further

RESOLVED, that this program of projects, as set forth in Attachment B is accompanied by a comprehensive funding strategy of local, regional, state and federal funding sources as outlined in Attachment C, attached hereto and incorporated herein as though set forth at length; and, be it further

RESOLVED, that the regional discretionary funding commitments included in this financial strategy are subject to the terms and conditions outlined in Attachment D, attached hereto and incorporated herein as though set forth at length; and, be it further

METROPOLITAN TRANSPORTATION COMMISSION

Sharon J. Brown, Chair

The above resolution was entered into by the Metropolitan Transportation Commission at a regular meeting of the Commission held in Oakland, California, on December 19, 2001.

Appendix D: MTC's Regional Transit Expansion Program of Projects (MTC Resolution 3434) TOD Policy

Res. No. 3434, TOD Policy (Attachment D-2), revised October 24, 2007, is shown below; other associated Res. 3434 appendices are available upon request from the MTC library.

Date: July 27, 2005
W.I.: 12110
Referred by: POC
Revised: 10/24/07-C

Attachment D-2
Resolution No. 3434
Page 10 of 7

MTC RESOLUTION 3434 TOD POLICY
FOR REGIONAL TRANSIT EXPANSION PROJECTS

I. Purpose

The San Francisco Bay Area—widely recognized for its beauty and innovation—is projected to grow by almost two million people and one and a half million jobs by 2030. This presents a daunting challenge to the sustainability and the quality of life in the region. Where and how we accommodate this future growth, in particular where people live and work, will help determine how effectively the transportation system can handle this growth.

The more people who live, work and study in close proximity to public transit stations and corridors, the more likely they are to use the transit systems, and more transit riders means fewer vehicles competing for valuable road space. The policy also provides support for a growing market demand for more vibrant, walkable and transit convenient lifestyles by stimulating the construction of at least 42,000 new housing units along the region's major new transit corridors and will help to contribute to a forecasted 59% increase in transit ridership by the year 2030.

This TOD policy addresses multiple goals: improving the cost-effectiveness of regional investments in new transit expansions, easing the Bay Area's chronic housing shortage, creating vibrant new communities, and helping preserve regional open space. The policy ensures that transportation agencies, local jurisdictions, members of the public and the private sector work together to create development patterns that are more supportive of transit.

There are three key elements of the regional TOD policy:

- (a) Corridor-level thresholds to quantify appropriate minimum levels of development around transit stations along new corridors;
- (b) Local station area plans that address future land use changes, station access needs, circulation improvements, pedestrian-friendly design, and other key features in a transit-oriented development; and
- (c) Corridor working groups that bring together CMAs, city and county planning staff, transit agencies, and other key stakeholders to define expectations, timelines, roles and responsibilities for key stages of the transit project development process.

2. TOD Policy Application

The TOD policy only applies to physical transit extensions funded in Resolution 3434 (see Table 1). The policy applies to any physical transit extension project with regional discretionary funds, regardless of level of funding. Resolution 3434 investments that only entail level of service improvements or other enhancements without physically extending the system are not subject to the TOD policy requirements. Single station extensions to international airports are not subject to the TOD policy due to the infeasibility of housing development.

**TABLE 1
 RESOLUTION 3434 TRANSIT EXTENSION PROJECTS SUBJECT TO CORRIDOR THRESHOLDS**

Project	Sponsor	Type	Threshold met with current development?	Meets TOD Policy (with current + new development as planned)?
BART East Contra Costa Rail Extension (eBART) (a) Phase 1 Pittsburg to Antioch (b) Future phases	BART/CCTA	Commuter Rail	No No	Yes No
BART – Downtown Fremont to San Jose / Santa Clara (a) Fremont to Berryessa (b) Berryessa to San Jose/Santa Clara	(a) BART (b) VTA	BART extension	No No	Not yet determined; planning is underway Not yet determined
AC Transit Berkeley/Oakland/San Leandro Bus Rapid Transit: Phase 1	AC Transit	Bus Rapid Transit	Yes	Yes
Caltrain Downtown Extension/Rebuilt Transbay Terminal	TJPA	Commuter Rail	Yes	Yes
MUNI Third Street LRT Project Phase 2 – New Central Subway	MUNI	Light Rail	Yes	Yes
Sonoma-Marin Rail (a) Phase 1 downtown San Rafael to downtown Santa Rosa (b) Future phases tbd	SMART	Commuter Rail	No	Not yet determined; planning is underway Not yet being planned

Project	Sponsor	Type	Threshold met with current development?	Meets TOD Policy (with current + new development as planned)?
Dumbarton Rail	SMTA, ACCMA, VTA, ACTIA, Capitol Corridor	Commuter Rail	No	Not yet determined; planning is underway
Expanded Ferry Service to Berkeley, Alameda/Oakland/Harbor Bay, Hercules, Richmond, and South San Francisco; and other improvements.*	WTA	Ferry	No	Line specific

* Ferry terminals where development is feasible shall meet a housing threshold of 2500 units. MTC staff will make the determination of development feasibility on a case by case basis.

3. Definitions and Conditions of Funding

For purposes of this policy “regional discretionary funding” consists of the following sources identified in the Resolution 3434 funding plan:

FTA Section 5309- New Starts
FTA Section 5309- Bus and Bus Facilities Discretionary
FTA Section 5309- Rail Modernization
Regional Measure 1- Rail (bridge tolls)
Regional Measure 2 (bridge tolls)
Interregional Transportation Improvement Program
Interregional Transportation Improvement Program-Intercity rail
Federal Ferryboat Discretionary
AB 1171 (bridge tolls)
CARB-Carl Moyer/AB434 (Bay Area Air Quality Management District) ¹

These regional funds may be programmed and allocated for environmental and design related work, in preparation for addressing the requirements of the TOD policy. Regional funds may be programmed and allocated for right-of-way acquisition in advance of meeting all requirements in the policy, if land preservation for TOD or project delivery purposes is essential. No regional funds will be programmed and allocated for construction until the requirements of this policy have been satisfied. See Table 2 for a more detailed overview of the planning process.

4. Corridor-Level Thresholds

Each transit extension project funded in Resolution 3434 must plan for a minimum number of housing units along the corridor. These corridor-level thresholds vary by mode of transit, with more capital-intensive modes requiring higher numbers of housing units (see Table 3). The corridor thresholds have been developed based on potential for increased transit ridership, exemplary existing station sites in the Bay Area, local general plan data, predicted market demand for TOD-oriented housing in each county, and an independent analysis of feasible development potential in each transit corridor.

¹ The Carl Moyer funds and AB 434 funds are controlled directly by the California Air Resources Board and Bay Area Air Management District. Res. 3434 identifies these funds for the Caltrain electrification project, which is not subject to the TOD policy.

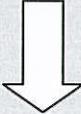
TABLE 2 REGIONAL TOD POLICY IMPLEMENTATION PROCESS FOR TRANSIT EXTENSION PROJECTS		
Transit Agency Action	City Action	MTC/CMA/ABAG Action
All parties in corridors that do not currently meet thresholds (see Table 1) establish Corridor Working Group to address corridor threshold. Conduct initial corridor performance evaluation, initiate station area planning. <div style="text-align: center;">  </div>		
Environmental Review/ Preliminary Engineering /Right-of-Way	Conduct Station Area Plans	Coordination of corridor working group, funding of station area plans
<i>Step 1 Threshold Check: the combination of new Station Area Plans and existing development patterns exceeds corridor housing thresholds .</i>		
Final Design	Adopt Station Area Plans. Revise general plan policies and zoning, environmental reviews	Regional and county agencies assist local jurisdictions in implementing station area plans
<i>Step 2 Threshold Check: (a) local policies adopted for station areas; (b) implementation mechanisms in place per adopted Station Area Plan by the time Final Design is completed.</i> <div style="text-align: center;">  </div>		
Construction	Implementation (financing, MOUs) Solicit development	TLC planning and capital funding, HIP funding

TABLE 3: CORRIDOR THRESHOLDS HOUSING UNITS – AVERAGE PER STATION AREA					
Project Type / Threshold	BART	Light Rail	Bus Rapid Transit	Commuter Rail	Ferry
Housing Threshold	3,850	3,300	2,750	2,200	2,500*

Each corridor is evaluated for the Housing Threshold. For example, a four station commuter rail extension (including the existing end-of-the-line station) would be required to meet a corridor-level threshold of 8,800 housing units.

Threshold figures above are an average per station area for all modes except ferries based on both existing land uses and planned development within a half mile of all stations. New below market rate housing is provided a 50% bonus towards meeting housing unit threshold.

** Ferry terminals where development is feasible shall meet a housing threshold of 2500 units. MTC staff will make the determination of development feasibility on a case by case basis.*

Meeting the corridor level thresholds requires that within a half mile of all stations, a combination of existing land uses and planned land uses meets or exceeds the overall corridor threshold for housing (listed in Table 3);

Physical transit extension projects that do not currently meet the corridor thresholds with development that is already built will receive the highest priority for the award of MTC’s Station Area Planning Grants.

To be counted toward the threshold, planned land uses must be adopted through general plans, and the appropriate implementation processes must be put in place, such as zoning codes. General plan language alone without supportive implementation policies, such as zoning, is not sufficient for the purposes of this policy. Ideally, planned land uses will be formally adopted through a specific plan (or equivalent), zoning codes and general plan amendments along with an accompanying programmatic Environmental Impact Report (EIR) as part of the overall station area planning process. Minimum densities will be used in the calculations to assess achievement of the thresholds.

An existing end station is included as part of the transit corridor for the purposes of calculating the corridor thresholds; optional stations will not be included in calculating the corridor thresholds.

New below-market housing units will receive a 50 percent bonus toward meeting the corridor threshold (i.e. one planned below-market housing unit counts for 1.5 housing units for the purposes of meeting the corridor threshold. Below market for the purposes of the Resolution 3434 TOD policy is affordable to 60% of area median income for rental units and 100% of area median income for owner-occupied units);

The local jurisdictions in each corridor will determine job and housing placement, type, density, and design.

The Corridor Working Groups are encouraged to plan for a level of housing that will significantly exceed the housing unit thresholds stated here during the planning process. This will ensure that the Housing Unit Threshold is exceeded corridor-wide and that the ridership potential from TOD is maximized.

5. Station Area Plans

Each proposed physical transit extension project seeking funding through Resolution 3434 must demonstrate that the thresholds for the corridor are met through existing development and adopted station area plans that commit local jurisdictions to a level of housing that meets the threshold. This requirement may be met by existing station area plans accompanied by appropriate zoning and implementation mechanisms. If new station area plans are needed to meet the corridor threshold, MTC will assist in funding the plans. The Station Area Plans shall be conducted by local governments in coordination with transit agencies, Association of Bay Area Governments (ABAG), MTC and the Congestion Management Agencies (CMAs).

Station Area Plans are opportunities to define vibrant mixed use, accessible transit villages and quality transit-oriented development – places where people will want to live, work, shop and spend time. These plans should incorporate mixed-use developments, including new housing, neighborhood serving retail, employment, schools, day care centers, parks and other amenities to serve the local community.

At a minimum, Station Area Plans will define both the land use plan for the area as well as the policies—zoning, design standards, parking policies, etc.—for implementation. The plans shall at a minimum include the following elements:

- Current and proposed land use by type of use and density within the ½ mile radius, with a clear identification of the number of existing and planned housing units and jobs;
- Station access and circulation plans for motorized, non-motorized and transit access. The station area plan should clearly identify any barriers for pedestrian, bicycle and wheelchair access to the station from surrounding neighborhoods (e.g., freeways,

railroad tracks, arterials with inadequate pedestrian crossings), and should propose strategies that will remove these barriers and maximize the number of residents and employees that can access the station by these means. The station area and transit village public spaces shall be made accessible to persons with disabilities.

- Estimates of transit riders walking from the half mile station area to the transit station to use transit;
- Transit village design policies and standards, including mixed use developments and pedestrian-scaled block size, to promote the livability and walkability of the station area;
- TOD-oriented parking demand and parking requirements for station area land uses, including consideration of pricing and provisions for shared parking;
- Implementation plan for the station area plan, including local policies required for development per the plan, market demand for the proposed development, potential phasing of development and demand analysis for proposed development.
- The Station Area Plans shall be conducted according to the guidelines established in MTC's Station Area Planning Manual.

6. Corridor Working Groups

The goal of the Corridor Working Groups is to create a more coordinated approach to planning for transit-oriented development along Resolution 3434 transit corridors. Each of the transit extensions subject to the corridor threshold process, as identified in Table 1, will need a Corridor Working Group, unless the current level of development already meets the corridor threshold. Many of the corridors already have a transit project working group that may be adjusted to take on this role. The Corridor Working Group shall be coordinated by the relevant CMAs, and will include the sponsoring transit agency, the local jurisdictions in the corridor, and representatives from ABAG, MTC, and other parties as appropriate.

The Corridor Working Group will assess whether the planned level of development satisfies the corridor threshold as defined for the mode, and assist in addressing any deficit in meeting the threshold by working to identify opportunities and strategies at the local level. This will include the key task of distributing the required housing units to each of the affected station sites within the defined corridor. The Corridor Working Group will continue with corridor evaluation, station area planning, and any necessary refinements to station locations until the corridor threshold is met and supporting Station Area Plans are adopted by the local jurisdictions.

MTC will confirm that each corridor meets the housing threshold prior to the release of regional discretionary funds for construction of the transit project.

7. Review of the TOD Policy

MTC staff will conduct a review of the TOD policy and its application to each of the affected Resolution 3434 corridors, and present findings to the Commission, within 12 months of the adoption of the TOD policy.

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DATE: September 13, 2013
TO: SolanoExpress Intercity Transit Consortium
FROM: Robert Guerrero, Project Manager
RE: STA Alternative Fuel and Infrastructure Plan

Background:

The STA began the development of the Alternative Fuel and Infrastructure Plan in June 2012 with assistance for the consultant group ICF International. The purpose of the Plan was to review major choices for alternative fuels and vehicles, assesses their benefits and costs, and identifies implementation actions to help overcome barriers to greater use of alternative fuels. The Plan was intended to be a tool to assist member agencies in future decisions for fleet conversions and infrastructure improvements; it was not intended to be a vehicle replacement plan.

The Alternative Fuels and Infrastructure Plan is intended to also serve as an advocacy document for future grant funding for STA's member agencies. In addition, the Plan will provide a resource document to guide potential discretionary clean air funds available through the Bay Area Air Quality Management District and Yolo Solano Air Quality Management District. Both Air Districts have been active partners and participants in the Plan's development.

A Technical Working Group was established to provide technical support and feedback as the Plan is being developed. The Working Group consisted of fleet managers, public works, planning, transit, and Air District staff. Since the start of the Plan's development, the Working Group has met three times to review technical reports supporting the draft Alt. Fuels and Infrastructure Plan. In addition, the Alternative Modes Policy Sub-Committee of the STA Board provided overall policy guidance in the plan's development and was provided updates regarding the Plan's development.

Discussion:

STA staff provided a draft of the Alternative Fuels and Infrastructure Plan to the Transit Consortium and the STA Technical Advisory Committee at their August 27th and 28th meeting respectively. The goal was to provide members an opportunity to provide technical comments on the draft with a due date of September 11th. This also gave the Technical Working Group another opportunity to provide final comments. As reported at the last meeting, STA staff had intended to incorporate final technical comments into a draft to be released for public input.

Since then, two comments were submitted separately from the City of Benicia and the County of Solano. Attachment A includes the comments received and how they were considered as part of the latest draft. Attachment B is the revised Plan recommended by STA staff to be distributed for public input. If approved, STA staff will add the draft Plan to the STA website and issue press releases and facebook notices soliciting input.

Fiscal Impact:

Funding for the Alternative Fuels and Infrastructure Plan was approved by the STA Board and included in the STA FY 2013-14 Budget for \$75,000 from State Transit Assistance Funds.

Recommendation:

Forward a recommendation to the TAC and STA Board to distribute the Alternative Fuels and Infrastructure Plan for public input.

Attachments:

- A. Final Technical Comments and Responses
- B. Revised Alternative Fuels and Infrastructure Plan

**ICF Response to Technical Comments on Draft Alternative Fuels and
Infrastructure Plan dated 9-15-13**

#	Comment	ICF Response and Action Taken
	<i>Comments Received at Technical Work Group Meeting #3</i>	
1	Can we make mention of the Benicia CNG Feasibility Study in the industrial park?	Reference to the Feasibility Study was added to Section 3.2 and 5.2.
2	Benicia has 2 Level II stations and will have a solar-powered, battery backed, dual compatible DCFC (operational in November). The DCFC is likely the first dual compatible, battery backed, and solar powered station in the U.S. (p. 38 indicates we already have the DCFC - it hasn't been installed yet)	Updated Table 3-7
3	There is also no discussion of pricing for public charging (vs. just for City use) or the costs associated with managing the stations. This could go on p. 52 - if the stations are used by the public and the City how will the public be charged? Are there additional grants available if stations are open to the public, etc. (yes, most likely). I'm also interested in where the DCFC budget estimates came from - do they include all infrastructure costs or just the station itself?	<p>Added paragraph on pricing of charging in Section 5.3 under Municipal Fleets.</p> <p>Added brief mention of EVSE maintenance and networking fees in Section 4.2. Clarified that DFCF costs includes all power infrastructure, equipment, and installation costs.</p> <p>Also revised the costs of the DCFC. After talking with PG&E and the other utilities, we determined the previous values were too low.</p>
4	May be worth mentioning how GHG reductions were calculated, i.e. was a national average used for an emissions factor or did ICF use a utility-specific (PG&E) factor?	Added note in Section 4.4 that GHG reductions are based on ARB carbon intensity values and thus reflect CA averages.
5	Table 3.1 lists the County as owning 8 medium and heavy duty trucks when we actually own 46.	Table 3.1 and 3.2 updated.
6	Also, as the cost of gasoline increases over the next 20 years as almost all experts are predicting, the cost of using E85 is expected to increase at a slower rate which will then first match unleaded gasoline and then become cheaper.	Add mention of this in Section 2.1

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SOLANO COUNTY

Alternative Fuels & Infrastructure Plan

FINAL DRAFT



Solano County Alternative Fuels & Infrastructure Plan

FINAL DRAFT

September 2013

Submitted to:

Robert Guerrero, Senior Planner
Solano Transportation Authority
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Prepared by:

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List of Acronyms

A	amperes
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AC	alternating current
AC Transit	Alameda-Contra Costa Transit District
AFDC	Alternative Fuels Data Center
ARB	California Air Resources Board
AST	aboveground storage tank
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
B5	5% biodiesel blended with conventional diesel
B20	20% biodiesel blended with conventional diesel
B100	pure biodiesel
BEV	battery electric vehicle
CAFE	corporate average fuel economy
Caltrans	California Department of Transportation
CEC	California Energy Commission
CH ₄	methane
CMAQ	Congestion Mitigation and Air Quality Improvement
CNG	compressed natural gas
CO	carbon monoxide
CPUC	California Public Utilities Commission
DC	direct current
DCFC	DC fast charge
DERA	Diesel Emissions Reduction Act
DOE	U.S. Department of Energy
DPM	diesel particulate matter
E10	gasoline mixed with 10% ethanol
E85	85% ethanol blend
E100	pure ethanol
EIA	U.S. Energy Information Administration
EPA	U.S. Environmental Protection Agency
EV	electric vehicle
EVSE	electric vehicle supply equipment
FCV	fuel cell vehicle
FFV	flexible fuel vehicle

List of Acronyms (continued)

FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FY	fiscal year
g/CO ₂ e/MJ	grams of carbon dioxide-equivalent per megajoule
GGE	gasoline gallon equivalent
GHG	greenhouse gas
HDV	heavy-duty vehicle
HEV	hybrid electric vehicle
ICE	internal combustion engine
kWh	kilowatt-hours
LCFS	Low Carbon Fuel Standard
LDV	light-duty vehicle
LEV	low emission vehicle
LNG	liquefied natural gas
LPG	liquefied petroleum gas
M85	85% methanol blended with 15% gasoline
MTC	Metropolitan Transportation Commission
NAAQS	National Ambient Air Quality Standards
NGV	natural gas vehicle
NO _x	nitrogen oxides
NRG	NRG Energy, Inc.
OEM	original equipment manufacturer
PEV	plug-in electric vehicle
PG&E	Pacific Gas and Electric Company
PHEV	plug-in hybrid electric vehicle
PM	particulate matter
PM _{2.5}	fine particulate matter
PON	Program Opportunity Notice
psi	pounds per square inch
RFA	Request for Application
RFS2	revised Renewable Fuel Standard
SAE	Society of Automotive Engineers
SMR	steam methane reformation
SolTrans	Solano County Transit
SO _x	sulfur oxides
SPI	small paddle inductive

List of Acronyms (continued)

STA	Solano Transportation Authority
STP	Surface Transportation Program
SUV	sport utility vehicle
TCRP	Transit Cooperative Research Program
ULSD	ultra-low sulfur diesel
UST	underground storage tank
V	volt
VOC	volatile organic compound
ZBUS	zero emission bus
ZEV	zero emission vehicle

Executive Summary

Local governments, transit agencies, and other vehicle owners are increasingly interested in using alternative transportation fuels because of their environmental benefits, ability to reduce dependency on petroleum, and potential cost savings. Although alternative fuel vehicles have been used in Solano County for more than a decade, the last several years have brought new opportunities through a wider variety of vehicle and fuel options, improvements in vehicle performance, and lower costs.

Recognizing both the potential benefits of, and obstacles to, alternative fuels for transportation, the Solano Transportation Authority (STA) Board unanimously approved the development of the first countywide plan for alternative fuels and related infrastructure for Solano County in September 2011. The STA Board identified four initial goals for the plan, which were subsequently clarified by the Alternative Fuels and Infrastructure Plan Technical Working Group. The goals are as follows:

1. Reduce greenhouse gas emissions
2. Reduce criteria pollutant emissions
3. Encourage alternative fuels and vehicle technologies that provide economic benefits to Solano County public agencies, residents, and businesses
4. Take advantage of alternative fuel funding opportunities

This plan is intended to help local government and other public agencies to increase the use of alternative fuels within their jurisdictions and achieve the four goals identified by the STA Board. The plan should be considered a starting point and not a detailed investment strategy; any fleet or agency considering major investments in new vehicles or fueling infrastructure will likely need to conduct more specific analyses of costs and engineering feasibility. It is hoped that this plan will help to elevate interest in alternative fuels, highlight the most promising options and implementation steps, and foster new collaboration among public agencies and between the government and the private sector.

Types of Alternative Fuels

The major alternatives to gasoline and diesel include biofuels (ethanol and biodiesel), fossil fuel alternatives (natural gas and propane), and emerging transportation energy sources (hydrogen and electricity). These fuels differ widely in terms of their sources and applications.

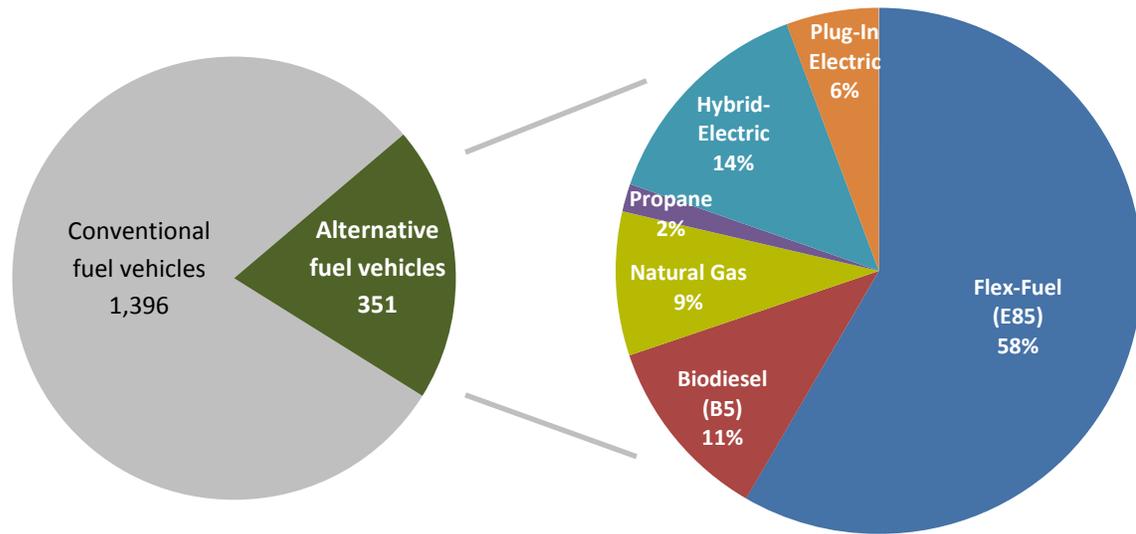
- **Ethanol** is a renewable fuel made primarily from corn. Nearly all gasoline used for transportation in the United States contains up to 10% ethanol. Flexible fuel vehicles (FFVs) can run on 85% ethanol blended with gasoline (E85). FFVs are widely available from nearly every major auto manufacturer.
- **Biodiesel** is a renewable fuel, typically made from soybean or waste oils. Most biodiesel is used in low-level blends with diesel, typically B5 or B20, and can be used in many engines without modification. Pure biodiesel (B100) often requires equipment changes.

-
- **Natural gas** is an odorless, gaseous mixture of hydrocarbons, predominantly methane. Vehicles can run on compressed natural gas (CNG), which is stored on-board a vehicle in pressurized cylinders. CNG models are available for light-, medium-, and heavy-duty vehicles. Liquefied natural gas (LNG) is also used as a transportation fuel, primarily for heavy-duty vehicles.
 - **Propane**, or liquefied petroleum gas (LPG), is produced either as a byproduct of natural gas processing or by crude oil refining. Propane is mainly used in light-duty pickup trucks, taxis, medium-duty vans, and heavy-duty school buses. Most propane vehicles are converted from gasoline vehicle, rather than produced by an original equipment manufacturer (OEM).
 - **Electricity** can be used to power all-electric vehicles (also referred to as battery electric vehicles or BEVs) and plug-in hybrid electric vehicles (PHEVs). All electric vehicles (EVs) draw electricity from the electricity grid and store the energy in batteries. In a BEV, the battery powers the motor. PHEVs also have an electric motor that uses energy stored in a battery, as well as an internal combustion engine that can run on conventional or alternative fuel. Although technically they do not use alternative fuels, hybrid electric vehicles (HEVs) are an advanced technology that can accomplish many of the same objectives as alternative fuel vehicles, including emissions reduction and fuel savings.
 - **Hydrogen** is an emerging fuel and not widely used for transportation at this time. Extensive government and industry research and development are focused on hydrogen production and hydrogen fuel cell vehicles (FCVs). In FCV applications, the fuel cells generate electricity by using hydrogen as a fuel. While several transit agencies in California are operating hydrogen buses, significant challenges with respect to cost and durability of the hydrogen FCV must be resolved before mass production is possible.

Current Alternative Fuel Vehicles and Infrastructure

Solano County and its seven incorporated cities and public transit agencies currently operate approximately 1,750 on-road vehicles, including automobiles and light-duty trucks, medium- and heavy-duty trucks, vans and minibuses, and full-size transit buses. Approximately 20% of these vehicles use, or are capable of using, alternative fuels, as shown in Figure ES-1.

Figure ES-1. Percent of Alternative Fuel Vehicles in Solano County Municipal Fleets



The most common type of alternative fuel vehicle in the County (and nationally) is a flexible fuel vehicle that can operate on gasoline, E85, or a mixture of the two. Other examples of current alternative fuel vehicles in the County include:

- **Biodiesel.** Solano County’s 40 diesel vehicles operate on B5 (5% biodiesel blend).
- **Natural gas vehicles.** Vacaville City Coach’s entire fleet of 15 transit buses runs on CNG. Vacaville also operates 8 CNG Honda Civic sedans and 7 CNG pick-up trucks and vans. Suisun City has a CNG pick-up truck.
- **Propane vehicles.** Solano County owns 6 propane pick-up trucks.
- **Hybrid-electric vehicles.** Solano County Transit (SolTrans) operates 21 diesel-hybrid buses and FAST operates 7 hybrid buses. Vallejo has 21 hybrid-electric vehicles. Benicia, Fairfield, and Rio Vista also have hybrid-electric sedans or SUVs.
- **Battery-electric vehicles.** Vacaville operates 17 Toyota RAV4 BEVs, and another BEV is operated by Rio Vista. Benicia has 2 plug-in hybrid vehicles.

In terms of alternative fuel infrastructure, Solano County is limited as compared the Sacramento region and the rest of the Bay Area. As shown in Table ES-1, most of the alternative fueling stations are located in Vacaville and Fairfield, and many are not available to the public.

Table ES-1. Number and Location of Alternative Fuel Infrastructure in Solano County

Fuel Type	Public Fueling Stations	Private Fueling Stations
E85	2 (Vacaville and Fairfield)	1 (Fairfield and Solano County Corporation Yard)
Biodiesel	none	2 (Travis AFB and Solano County Corporation Yard)
Natural Gas	1 (Vacaville)	2 (Fairfield and Vacaville Corporation Yard)
Propane	1 (Vacaville)	1 (Solano County Corporation Yard)
Electric Vehicle Charging	26+ (various locations)	2 (Vacaville)

Costs and Benefits

Alternative fuel vehicles vary widely in terms of their cost implications for vehicle fleets and their environmental benefits. While it is difficult to compare costs with a high degree of precision, the following generalizations can be made:

- Among **light duty vehicles**, most alternatives to gasoline vehicles carry a higher initial purchase price, including hybrid-electric, battery electric, CNG, and propane vehicles. However, the annual fueling costs for alternative fueled light duty vehicles are often lower, especially in the case of CNG, hybrids, and EVs. Whether this fuel cost savings offsets the higher purchase price over the vehicle lifetime depends on how much the vehicle is driven, the fuel cost differential, and other factors.
- Among **transit buses**, a CNG and hybrid bus typically cost 12% and 35% more than their conventional diesel counterpart, respectively. Fueling costs for hybrid and CNG buses are lower. If the agency owns its CNG fueling facility, CNG bus fleets can enjoy fueling costs that are as much as 3-4 times lower than diesel.

Nearly all alternative fuel vehicle options will reduce air pollutant and greenhouse gas emissions to some degree. From a public health standpoint, the pollutants of greatest concern in Northern California are nitrogen oxides (NOx), volatile organic compounds (VOCs), fine particulate matter (PM2.5), and diesel particulate matter (DPM). The greatest air pollution benefits come from BEVs, which produce zero tailpipe emissions. CNG and B100 also produce large emission reductions for several pollutants; both fuels eliminate DPM. E85 and low-level biodiesel blends reduce most pollutants by 10% - 20%.

Greenhouse gas (GHG) emissions benefits depend not only the fuel and vehicle type but also on the source of the fuel. BEVs have the lowest GHG emissions – typically 65% lower than a gasoline vehicle. CNG and propane have GHG benefits in the range of 10 – 30%. The GHG benefits of E85 depend heavily on source of the ethanol. Typical corn-based ethanol has only marginal GHG benefits compared to gasoline. Ethanol made from plant waste matter can have GHG benefits as large as 60%.

Implementation Steps

For agencies that are interested in increasing use of alternative fuels, the implementation steps listed in Table ES-2 should be considered. These recommendations are based on a high-level assessment; a more detailed assessment that considers specific sites and operating environments would be needed to fully understand the benefits and drawbacks that any one alternative fuel type offers.

Table ES-2. Summary of Implementation Steps to Increase Use of Alternative Fuels

Fuel Category	Implementation Steps and Action Items
Biofuels	<p>E85</p> <ul style="list-style-type: none"> • Educate vehicle operators about FFVs already in fleets that can utilize E85 • Investigate modifying fueling infrastructure to install E85 by either retrofitting existing or installing new storage tanks and dispensers • Engage local retail fueling station owners and E85 infrastructure providers to determine the feasibility of expanding E85 to the general public • Identify grant opportunities to support public and private expansion of E85 <p>Biodiesel</p> <ul style="list-style-type: none"> • Check engine warranties to determine if any buses or heavy trucks are incompatible with low-level biodiesel blends (e.g., B5) • When renegotiating contracts with diesel suppliers, require B5 as part of the specification (assuming no engine warranty concerns) • To prepare for a future move to B20 for diesel fleets: (1) update procurement procedure to account for B20, (2) confirm engine warranties for current vehicles are covered with B20, (3) confirm existing underground storage tanks are B20 compatible and, if incompatible, (4) seek to update tanks for compatibility

Fuel Category	Implementation Steps and Action Items
Natural Gas	<p>Expanding Fueling Infrastructure</p> <ul style="list-style-type: none"> Identify potential refueling station locations Perform feasibility studies of these locations to determine station cost and proximity to current or future natural gas vehicle fleets Investigate options for new natural gas station development (station built by local agency vs. private developer) <p>Overcoming Incremental Vehicle Costs</p> <ul style="list-style-type: none"> Pursue federal, state and regional funding sources to reduce NGV incremental costs <p>Overcoming Unfamiliar Maintenance and Operation Procedures</p> <ul style="list-style-type: none"> Contact the local fire marshal and utility to help identify safety guidelines Contact other local fleets that have installed natural gas stations and maintain their own fleets to help identify any required upgrades or improvements and changes to maintenance practices Participate in Natural Gas Transit Users Group, which shares lessons learned and problem-solving techniques; provides a technical forum for fleet maintenance staff; and communicates safety issues, codes, and standards
Electricity	<p>Expanding Infrastructure Deployment</p> <ul style="list-style-type: none"> Utilize the Bay Area Plug-In Electric Vehicle Readiness Plan to identify new locations for potential public charging infrastructure Pursue identified potential EVSE deployment funding sources <p>Ensuring EV Readiness for Local and Regional Governments</p> <ul style="list-style-type: none"> Review the checklist of recommendations from the Bay Area Plug-In Electric Vehicle Readiness Plan Identify steps to implement the prioritized items with an emphasis on (1) building codes, (2) permitting and inspection practices, and (3) zoning, parking rules and local ordinances <p>Deploying EVs in Municipal Fleets</p> <ul style="list-style-type: none"> Identify potential fleets in the County interested in EVs Perform feasibility studies for fleets, including vehicle and infrastructure costs, infrastructure and vehicle credits and rebates, and potential LCFS revenue from the sale of credits Contact local fleets that invested in EVs and have taken advantage of federal, state, and regional credits, rebates and funding sources (such as Alameda County), to help in determine accurate costs for feasibility studies Identify opportunities to deploy hybrid-electric vehicles for municipal fleets or transit.

1. Introduction and Background

This document is a plan for expanding the use of alternative transportation fuels in Solano County. Many local governments, transit agencies, and other vehicle owners are interested in alternative fuels because of their environmental benefits and potential to reduce dependency on petroleum. Although alternative fuel vehicles have been used by Solano County for more than a decade, the last several years have brought a wider variety of vehicle and fuel options, improvements in vehicle performance, and lower costs. This plan reviews the major choices for alternative fuels and vehicles, assesses their benefits and costs, and identifies implementation actions to help overcome barriers to greater use of alternative fuels.

Challenges and Opportunities with Alternative Fuels

Alternative transportation fuels are not entirely new. Electric-powered vehicles were first introduced in the early days of the automobile. During the energy crisis of the 1970s, alternatives to petroleum began to receive serious consideration. Vehicles were introduced that could run on alcohol-based fuels such as ethanol and methanol. During the 1990s, the State and several transit agencies experimented with operating automobiles and buses running on 85% methanol blended with 15% gasoline (M85); more than 15,000 M85 flex-fuel vehicles were on the road in California in the late 1990s. Around that time, General Motors introduced the EV-1, the first mass-produced electric vehicle from a major automaker.

Despite the public and private sector efforts over the last several decades, alternative fuels have failed to make more than a small dent in the transportation fuels market, long dominated by gasoline and diesel. These conventional fuels benefit from an extensive and efficient system of fuel production, distribution, and retailing that helps to keep gasoline and diesel convenient and relatively cheap. Vehicle manufacturers reinforce the status quo by offering the greatest variety and lowest prices for vehicles that run on gasoline and diesel. Today, alternative fuel vehicles make up only approximately 0.5% of all vehicles on the road in the United States.

While the current market share is small, there are indications that alternative fuels may be poised to gain a significant toehold in the transportation sector. State and federal mandates and incentives are helping to drive private research and development, with a goal of producing alternative fuels that are cleaner and cost-competitive. Technology advances have lowered the cost of batteries and other key components of alternative fuel vehicles. The abundant supply and low price of natural gas is generating tremendous interest from private sector fleets as well as some government fleets. To cite a few examples of these recent developments:

- Consumption of biodiesel in the United States has grown from essentially zero in 2000 to nearly 900 million gallons in 2011.
- California now has 60 retail stations selling 85% ethanol blend (E85, a blend of 85% ethanol and 15% gasoline by volume), double the number available in 2009.

-
- More than 50,000 plug-in electric vehicles were sold in the U.S. in 2012, up from 345 vehicles in 2010. Nearly all major automobile manufacturers will offer plug-in electric vehicles within the next several years.
 - Approximately 19% of buses nationwide now operate on natural gas, and natural gas buses account for fully one-third of the new buses on order by transit agencies.

The advantages of using alternative fuels can be substantial. For many, the most compelling reason to switch to alternative fuels is the environmental benefits. Most alternative fuel vehicles produce lower emissions of particulate matter, nitrogen oxides, and other pollutants that cause air pollution and adverse public health effects. Most alternative fuel vehicles also produce fewer greenhouse gas (GHG) emissions that contribute to global climate change. In some cases, using alternative fuels, particularly natural gas and electricity, can also reduce vehicle operating costs. Even if alternative fuels do not reduce operating costs, they may be less subject to the price volatility that has plagued petroleum-based fuels in recent years and creates challenges for public agencies operating on tight budgets. Buyers of alternative fuel vehicles may also be able to take advantage of incentive funding available from federal, state, and regional public agencies.

Role of Local Governments and Other Public Agencies

Local governments and other public agencies can accelerate the transition to alternative fuels in a number of ways. By operating alternative fuel vehicles, public agencies lead by example, helping to support nascent markets and demonstrating to businesses and residents the feasibility of the vehicles. Opportunities exist to expand the use of alternative fuels among municipal fleets in Solano County, given that 85% of the county's approximately 1,400 municipal vehicles run on conventional gasoline and diesel. In some cases, limited fueling or charging infrastructure may be hindering the use of alternative fuels; in these instances, governments can help to expand the needed infrastructure through direct investment or by facilitating public and private partnerships. Local government planning and permitting actions can also encourage private sector deployment of alternative fuel infrastructure and vehicles.

While many elected officials and city staff recognize the promise of alternative fuels, the path forward is often unclear. The numerous options for alternative vehicles and fuels, and their environmental benefits, can be confusing. Further complicating the choices are the differences in fuel costs and requirements for alternative fueling infrastructure. Some options necessitate a large up-front investment, with the potential for longer-term cost savings and major environmental gains. Other options bring more modest benefits but can be achieved relatively quickly and with little capital cost.

Plan Goals and Vision

Recognizing both the potential benefits of, and obstacles to, alternative fuels for transportation, the Solano Transportation Authority (STA) Board unanimously approved the development of the first countywide plan for alternative fuels and related infrastructure for Solano County in September 2011. The STA Board identified four initial goals for the plan, which were subsequently clarified by the Alternative Fuels and Infrastructure Plan Technical Working Group. The goals are as follows:

-
5. Reduce greenhouse gas emissions
 6. Reduce criteria pollutant emissions
 7. Encourage alternative fuels and vehicle technologies that provide economic benefits to Solano County public agencies, residents, and businesses
 8. Take advantage of alternative fuel funding opportunities

The Technical Working Group also agreed on the following vision for the plan:

Solano County will maximize alternative fuel use where feasible to protect public health, mitigate the effects of climate change, and capture economic benefits while continuing to serve the mobility needs of the county's residents and businesses.

This plan is intended to help local government and other public agencies to increase the use of alternative fuels within their jurisdictions and achieve the four goals identified by the STA Board. The plan should be considered a starting point and not a detailed investment strategy; any fleet or agency considering major investments in new vehicles or fueling infrastructure will likely need to conduct more specific analyses of costs and engineering feasibility. It is hoped that this plan will help to elevate interest in alternative fuels, highlight the most promising options and implementation steps, and foster new collaboration among public agencies and between the government and the private sector.

Plan Organization

The remainder of this plan is organized in four main sections.

- **Chapter 2** provides an overview of the six major transportation alternative fuels: ethanol, biodiesel, natural gas, propane, hydrogen, and electricity.
- **Chapter 3** presents a summary of the vehicle fleets owned and operated by Solano County's municipal agencies, including alternative fuel vehicles. This chapter also describes the current state of infrastructure to supply alternative fuels in the county.
- **Chapter 4** reviews the benefits and costs of alternative fuel vehicles in four categories: fleet cost impacts, air pollution and health impacts, greenhouse gas emissions impacts, and funding sources.
- **Chapter 5** presents implementation steps for achieving the plan goals, with an emphasis on near-term actions that can be led by Solano County public agencies.

The information most relevant to the four plan goals established by STA and the Technical Working Group is contained in Chapter 4.

2. Overview of Alternative Fuels for Transportation

The major alternatives to gasoline and diesel include biofuels (ethanol and biodiesel), fossil fuel alternatives (natural gas and propane), and emerging transportation energy sources (hydrogen and electricity). These fuels differ widely in terms of their sources and applications. This section provides an overview of the six major transportation alternative fuels.

2.1. Ethanol

Description

Ethanol is a renewable fuel made from various plant materials collectively referred to as *biomass*. Also known as *ethyl alcohol*, it is a clear, colorless liquid. Ethanol can be made from corn grain (typical in the United States), sugar cane (mainly in Brazil), or cellulosic feedstocks (non-food based feedstocks such as crop residues). Currently, the United States produces almost all of its ethanol from corn feedstocks, with small niche markets using other materials. Ethanol is produced largely in the Midwest, corresponding with the bulk of the nation's corn production. The U.S. ethanol industry includes more than 200 operational production facilities and a number of facilities currently under construction.¹



Cellulosic ethanol is produced from dedicated energy crops, such as wood chips or crop residues. While it is more difficult to release the sugars in these feedstocks for ethanol production, they offer several advantages over starch and sugar crops. Cellulosic feedstocks are more abundant and can include waste products or feedstocks that can be grown on land not appropriate for other crops. In addition, less energy is required to grow, collect, and convert these feedstocks to ethanol. Researchers are currently addressing challenges associated with cellulosic ethanol production. For example, enzymes and microbes are currently under development that can accelerate deconstruction of cellulosic biomass into the sugars used for ethanol production.

Ethanol's octane number is greater than gasoline, making it ideal for blending with gasoline (octane increases vehicle power and performance). The energy content of ethanol is less than that of gasoline; 1 gallon of pure ethanol (E100) contains approximately 34% less energy than 1 gallon of gasoline.

More than 95% of gasoline used for transportation in the United States contains up to 10% ethanol to boost octane levels, meet air quality requirements, or satisfy mandates such as the U.S. Environmental Protection Agency's (EPA's) Renewable Fuel Standard. E10 (gasoline mixed with 10% ethanol) can be used in any gasoline-powered vehicle. Other low-level blends of ethanol are also available, and E15 was

recently approved by EPA for use in conventional gasoline vehicles that are model years 2001 and newer.

While the use of ethanol in the California retail motor fuels market is largely dominated by E10, more ethanol is being introduced into California (and the United States in general) through the expansion of E85. The remainder of this report focuses on these higher level ethanol blends.

Current Uses

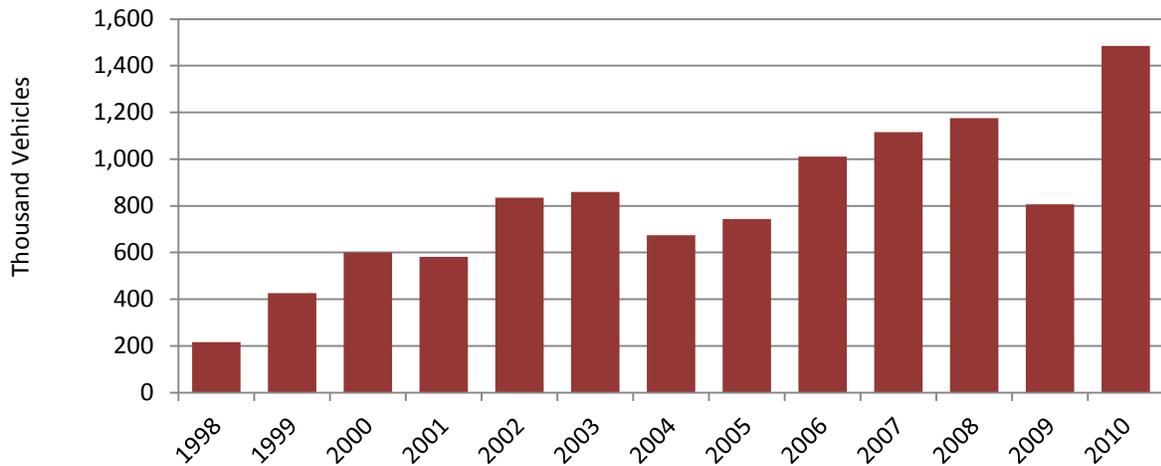
Ethanol is used as a substitute for conventional gasoline in light-duty vehicle (LDV) applications. While low-level blends can be used in gasoline-powered vehicles without alterations, E85 has different properties than gasoline. Consequently, only automobiles with compatible fuel systems and powertrain calibration can operate using the fuel. These vehicles are referred to as flexible fuel vehicles (FFVs). FFVs have an internal combustion engine (ICE) and are capable of operating on gasoline, E85, or a mixture of the two. From the driver's perspective, the only difference between FFVs and conventional gasoline-powered vehicles is the reduced fuel economy when using E85 or other mid-level blends. Gasoline-powered vehicles can be converted to FFVs, although it requires extensive modifications to the original vehicle.



FFVs are widely available from nearly every major auto manufacturer, in part because manufacturers are able to earn credits toward the federal corporate average fuel economy (CAFE) standards by selling FFVs. Ford, Chrysler, and General Motors offer the widest variety of FFVs. Most models of pickups, sport utility vehicles (SUVs), and vans, as well as many sedans, are available with an FFV option. The price of a new FFV is typically similar or identical to its gasoline counterpart.

Figure 2-1 shows the growth in the number of on-road FFVs that were sold, leased, or converted in the United States between 1998 and 2010. Presently, E85 FFVs account for two of every three alternative fuel vehicles in use nationwide. It is important to note, however, that many (perhaps most) FFVs are fueled primarily with gasoline.

Figure 2-1. E85 Flexible Fuel Vehicles Sold, Leased, or Converted per Year in the U.S. (1998–2010)



Source: Alternative Fuels Data Center, <http://www.afdc.energy.gov/>

In California, it is estimated that approximately 360,000 FFVs are currently using E85 (see Table 2-1). The FFVs are spread throughout all counties and account for 1–2% of all LDVs in each county.

Table 2-1. E85 Flexible Fuel Vehicle Population in California

Vehicle Class	Flexible Fuel Vehicles	All Vehicles	%
Passenger car	62,376	14,106,362	0.4%
Sport utility vehicle	128,658	5,368,323	2.4%
Van	50,884	1,816,770	2.8%
Pickup truck	121,012	4,135,251	2.9%
Total	362,930	25,426,706	1.4%

Source: ICF International, 2011, “Technical Analysis for Alternative and Renewable Fuel and Vehicle Technology Program, Task 2—Evaluate Alternative and Renewable Fuel Infrastructure and Distribution Development for E85.” Prepared for the California Energy Commission, June

In Solano County, local governments currently operate more than 130 FFVs, including 120 FFVs owned by the County. Solano County’s Corporation Yard #1 includes an E85 fueling facility (shown below).

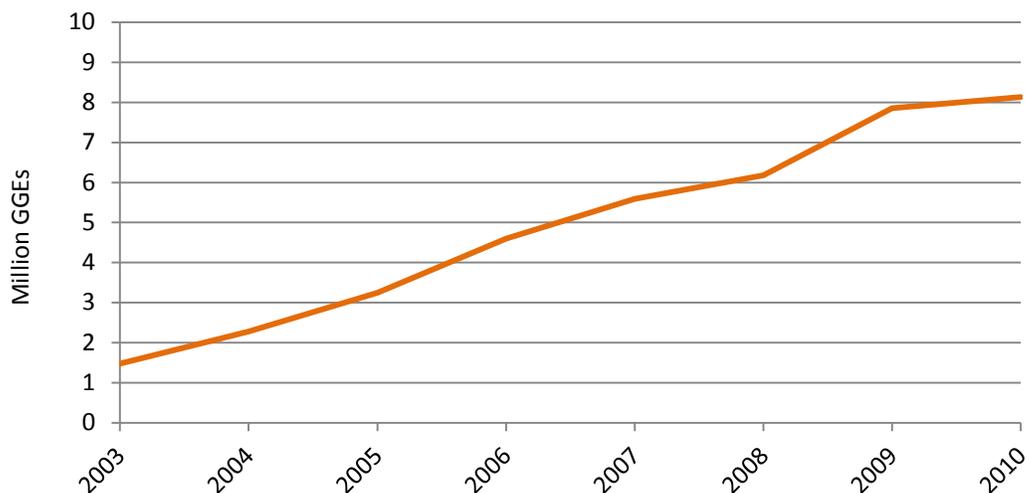


E85 Fueling Facility at Solano County Corporate Yard

Fuel Supply, Demand, and Price

In 2010, the total amount of E85 consumed in California was 8,134,000 gasoline gallon equivalents (GGE), or approximately 0.4% of total gasoline consumption.² Consumption of E85 in California has increased five-fold between 2003 and 2010, as illustrated in Figure 2-2. Despite the strong growth in E85 consumption, however, use of the fuel is still dwarfed by other alternative transportation fuels. E85 accounts for only 6% of total alternative transportation fuel use in California, on a GGE basis.

Figure 2-2. E85 Consumption by Motor Vehicles in California (2003–2010)

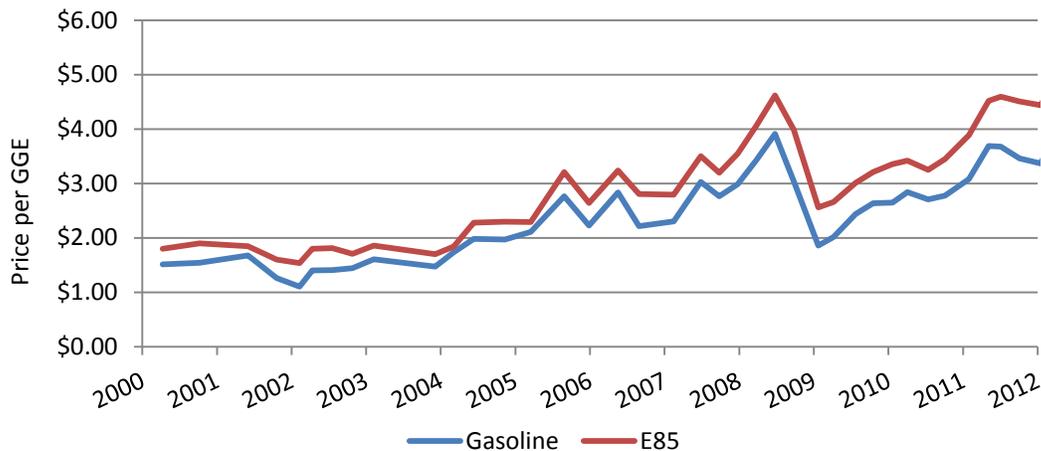


Source: Alternative Fuels Data Center, <http://www.afdc.energy.gov/>

As of January 2013, the average price for E85 on the West Coast was \$3.34/gallon.³ As mentioned above, 1 gallon of E85 contains less energy than 1 gallon of gasoline; therefore, using E85 results in a lower fuel economy compared to gasoline, amounting to an approximately 25% decrease in miles per

gallon. Since 2000, the price of E85 has generally followed retail gasoline prices (see Figure 2-3). The prices shown for E85 have been adjusted to account for the lower energy content of ethanol. In the future, the price of E85 is expected to grow at a slower rate than gasoline, since it is derived from a renewable and domestic source. At some point, E85 may become less expensive than gasoline.

Figure 2-3. Price of E85 and Gasoline, Nationwide (2000–2012)



Source: Alternative Fuels Data Center, <http://www.afdc.energy.gov/>

2.2. Biodiesel

Description

Biodiesel is a renewable fuel made by reacting animal or vegetable fats with alcohol. Approximately 70% of the nation’s biodiesel is produced in the Midwest, where soybean oil is the dominant biodiesel feedstock.⁴ California currently has six biodiesel producers, with total capacity of 90 million gallons per year (approximately 5% of the total U.S. production capacity). Most California plants have multi-feedstock capabilities and use a variety of feedstocks, including waste cooking oils, waste animal fats, and waste corn oil from ethanol production.⁵ Currently, California’ biodiesel comes primarily from waste oils.⁶

Most biodiesel is used in low-level blends, usually as 5% or 20% biodiesel blended with conventional diesel, referred to as B5 or B20, respectively. B20 is the most common blend in the United States as it provides good cold-weather performance, is generally cost effective, and can be used in most engines without modification. Pure biodiesel (B100) is available in the marketplace and can be used in some engines without modification, although equipment changes may be necessary in other engines.

Approximately 80 fueling stations are currently selling B20 or higher level blends in California. Of these, approximately 50 stations are available to the public; the remaining stations primarily are operated by federal government fleets. The only station currently dispensing B20 in Solano County is at Travis Air Force Base.

Uses and Applications

In contrast to most other alternative fuels, biodiesel does not require a specific alternative fuel vehicle. Depending on the blend level, biodiesel can be used in most conventional diesel vehicles. High-level blends tend to have a solvent effect that cleans a vehicle's fuel system and releases deposits accumulated from previous petroleum diesel use. Once released, these deposits may initially clog filters and require filter replacement in the first few tanks of high-level biodiesel blends. As such, vehicle operators should consult their vehicle and engine warranty statements before using biodiesel, particularly before using biodiesel blends higher than B5.

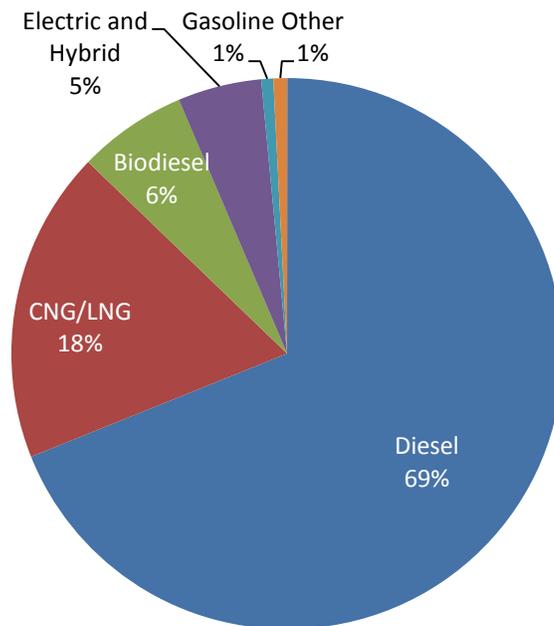
Biodiesel can have a limited shelf life due to factors such as contamination and exposure to air, extreme temperatures, and additives. Shelf life issues are a greater concern with higher blends. Proper fuel management can dramatically extend biodiesel's shelf-life to a year or more, which is on par with conventional diesel.

A majority of the biodiesel used in the United States is consumed by commercial fleets and government entities, including transit agencies, waste haulers, and school districts. The San Francisco Municipal Transportation Authority operates more than 500 vehicles (mostly transit buses) on biodiesel (B20), making up the largest municipal biodiesel fleet in the nation.⁷ The California Department of Transportation (Caltrans) fuels most of its diesel fleet with B5, and more than 500 of the San Diego Unified School District school buses will run on biodiesel blends by 2015.⁸ Figure 2-4 shows that, as of 2009, 6% of transit buses nationwide were using biodiesel in some blend. More recent information from the American Public Transportation Association suggests that this fraction is now closer to 8%.⁹

B20 is the common blend, and most heavy-duty diesel engine manufacturers state that using up to B20 will not void engine warranties. Many fleets have successfully used B50 to B99 blends for several years or more.¹⁰ In 2008, the American Society for Testing and Materials adopted biodiesel standards for blends up to B20 and for B99.



Figure 2-4. Alternative Fuel Transit Buses in Service, Nationwide (2009)



Source: American Public Transportation Association, 2011, "Fact Book"

Solano County uses B5 (5% biodiesel blend) in all of its 22 diesel vehicles, which are fueled at the County Corporation Yard. The County has plans to increase biodiesel blend levels to B10 or B20 in the near future.

Fuel Supply, Demand, and Price

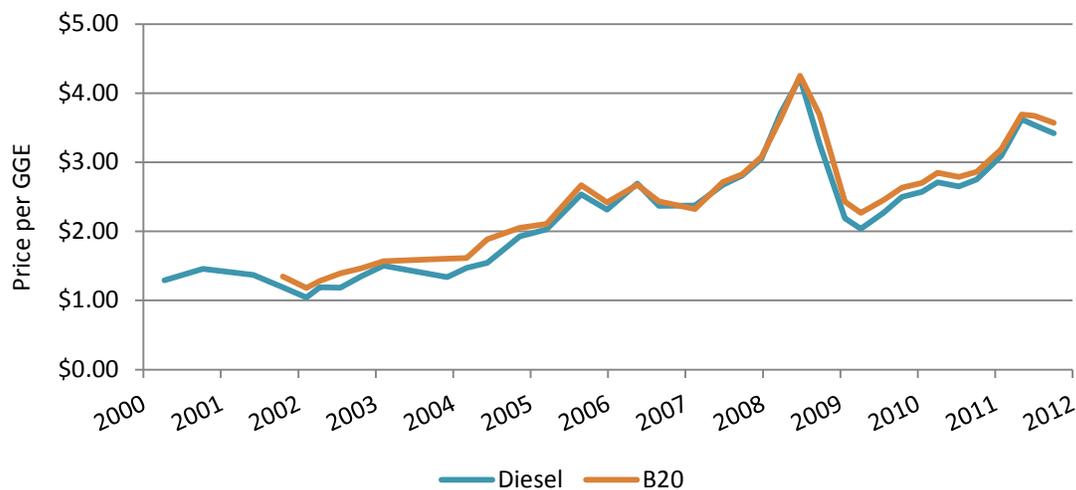
Total U.S. biodiesel consumption in 2011 was 878 million gallons, or 1.5% of all diesel fuel consumed.¹¹ While biodiesel accounts for only a small fraction of all diesel used, biodiesel consumption in 2011 reflects more than a three-fold increase over 2010 levels.

Growth over the last decade has generally been strong; however, production and consumption of biodiesel has fluctuated widely in the last several years, due in part to changes in tax laws. In 2008, U.S.-based producers generated approximately 678 million gallons of biodiesel. This production level fell to 311 million gallons in 2010, largely due to the temporary expiration of the \$1.00-per-gallon federal tax credit for biodiesel blenders. The credit was allowed to expire on December 31, 2009, and resulted in a 49% drop in biodiesel production between 2008 and 2010. The credit was retroactively reinstated in December 2010. In 2011, the biodiesel industry saw record-breaking biodiesel production, which was also supported by EPA's revised Renewable Fuel Standard (RFS2) volume requirements. The biodiesel tax credit was renewed again in January 2013.

On the West Coast, the average price for biodiesel (B20) as of January 2013 was \$4.19/gallon, approximately 2% higher than the average West Coast price of diesel (\$4.11/gallon). Since 2002, B20 prices have closely tracked diesel prices, typically with a small price premium. Figure 2-5 compares the price of B20 and diesel nationwide from 2000 to 2012. As noted above, the federal \$1.00-per-gallon

retailer tax credit expired on December 31, 2011. While biodiesel prices have continued to shadow conventional fuel prices in 2012, expiration of the tax credit could result in a more dramatic affect if diesel prices come down. Biodiesel does contain approximately 8% less energy than petroleum diesel, which translates to a 1–2% difference when using B20; however, most users report no noticeable difference in fuel economy.

Figure 2-5. Price of B20 and Diesel, Nationwide (2000–2012)



Source: Alternative Fuels Data Center, <http://www.afdc.energy.gov/>

Greater use of biodiesel has been constrained by California’s limited distribution and local fueling infrastructure, and the current price disparity between biodiesel and ultra-low sulfur diesel (ULSD), which is required in California.¹²

2.3. Natural Gas

Description

Natural gas is an odorless, gaseous mixture of hydrocarbons, predominantly composed of methane (CH₄). One-quarter of the energy used in the United States is produced by natural gas. With plentiful reserves bolstered by newly accessible gas in shale formations, natural gas is a reliable, primarily domestic source of clean-burning fuel. Natural gas is typically extracted from gas and oil wells, as well as from supplemental sources such as biomass and coal. Gas trapped in reservoirs is extracted through drilling. Advances in hydraulic fracturing technologies have provided access to large volumes of natural gas from shale formations. In addition, natural gas can be derived from biogas, which is produced through anaerobic digestion of organic matter in biomass waste materials.

California receives most of its natural gas supply from Arizona, Nevada, and Oregon, with approximately 15% of the natural gas supply coming from in-state sources.

Natural gas in compressed (CNG) or liquefied (LNG) form has been used as transportation fuel in California for more than 20 years. The high octane number of natural gas makes it suitable for spark ignition (gasoline) engines with some modifications. Heavy-duty natural gas vehicles are also available. Some use spark ignition natural gas systems, while others use high-pressure direct injection in a compression ignition (diesel) cycle.

CNG is stored onboard a vehicle in cylinders pressurized at 3,000–3,600 pounds per square inch (psi). A CNG-powered vehicle has a similar fuel economy to a gasoline vehicle on a GGE basis, with a GGE equal to approximately 5.66 pounds of CNG. CNG is used in light-, medium-, and heavy-duty vehicles (HDVs).

Purifying natural gas and super-cooling it to -260°F creates LNG. Because it must be kept at cold temperatures, LNG is stored in double-walled, vacuum-insulated pressure vessels. Liquid is more dense than gas (CNG), so LNG is beneficial for vehicles that require a longer driving range—as more energy can be stored by volume in an LNG tank. As such, LNG is typically used in medium- and heavy-duty vehicles. A gallon of LNG has approximately 66% of the energy in a gallon of gasoline; consequently, a GGE equals approximately 1.5 gallons of LNG.

California has been a leader in natural gas vehicles and currently accounts for approximately one-half of the nation's use of natural gas for transportation. Moreover, demand for natural gas as a transportation fuel has been growing rapidly, due in part to the price advantages (discussed below). Approximately 250 CNG stations and 12 LNG stations are located in the state. Most CNG fueling stations compress the gas on site. Only a few large-scale liquefaction facilities provide LNG fuel for transportation nationwide; otherwise, LNG must be delivered to stations by truck.

Uses and Applications

Natural gas can be used in virtually all types of on-road vehicles. There are actually three different types of natural gas vehicles (NGVs):

- Dedicated, which run only on natural gas;
- Bi-fuel, which use natural gas or gasoline; and
- Dual-fuel, which run on natural gas and use diesel for ignition assistance.

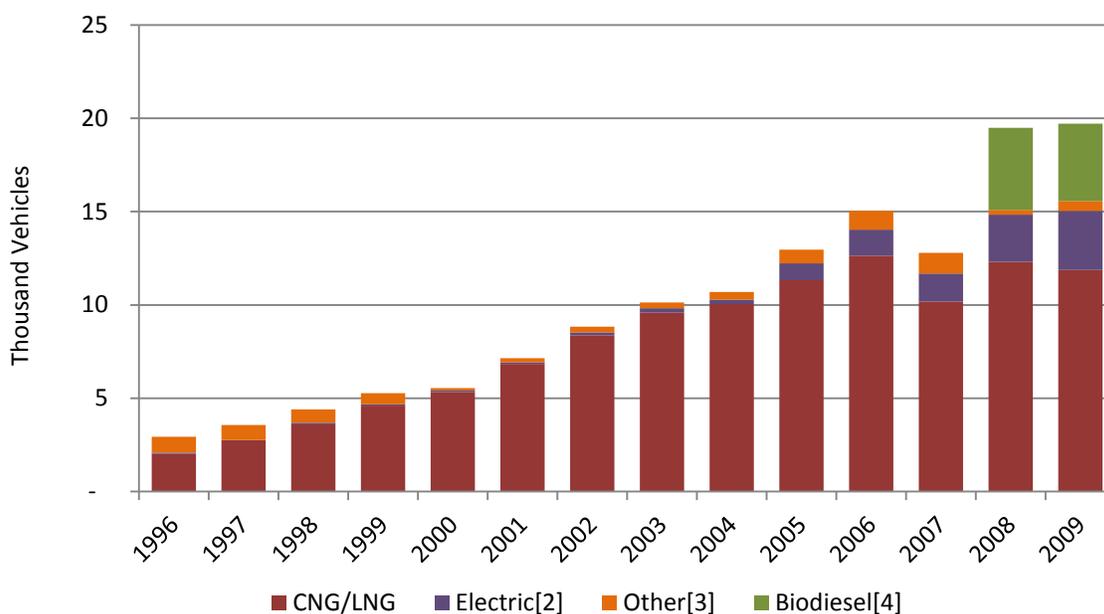
Dual-fuel vehicles are traditionally limited to HDVs. Dedicated NGVs tend to demonstrate better performance and produce lower emissions than bi-fuel vehicles. Because dedicated NGVs have only one fuel tank, they weigh less than bi-fuel NGVs and offer more cargo capacity. Although extra storage tanks can increase the range of an NGV, the additional weight may decrease the amount of cargo the vehicle can carry.

For light-duty uses, the only natural gas vehicle currently available from an original equipment manufacturer (OEM) is the CNG Honda Civic. More models are available for medium-duty truck and van applications. For example, a 2013 GMC Savana cargo van is available in a CNG version.¹³ Many of the other on-road NGVs in use today are conversions.

For medium- and heavy-duty trucks, natural gas options are widely available. For example, medium-duty natural gas trucks are available from Ford, Freightliner, Kenworth, and Peterbilt, among others. Natural gas street sweepers and refuse trucks are produced by several manufacturers.

Among transit buses, natural gas has been the dominant alternative fuel. Approximately 12,000 natural gas transit buses are in operation nationwide, or 19% of the national bus fleet. As of 2010, transit agencies in California used an estimated 5,138 CNG and 327 LNG vehicles.¹⁴ The Los Angeles County Metropolitan Transportation Authority contributes significantly to this count, with over 2,200 CNG transit buses in their fleet; these buses have logged over 1 billion miles.¹⁵ Figure 2-6 shows the number of alternative fuel transit buses operating nationwide, from 1996 to 2009, as collected by the U.S. Energy Information Administration (EIA).

Figure 2-6. Alternative Fuel Transit Buses, Nationwide (1996–2009)



Notes: [1] Data not continuous between 2006 and 2007 due to new data sources and improved accuracy; [2] “Electric” includes catenary-electric, battery-electric, and hybrid-electric; [3] “Other” category includes propane, hydrogen, biodiesel (until 2008), and various blends; [4] “Biodiesel” category was counted in “Other” until 2008.

Source: American Public Transportation Association, Fact Book, 2011, http://www.apta.com/resources/statistics/Documents/FactBook/2011_Fact_Book_Appendix_A.pdf

In Solano County, Vacaville has been a leader and an award winner in the use of alternative fuels, especially natural gas, for transportation (see case study box in Section 4.2). Vacaville City Coach opted to transition to CNG for its bus fleet approximately 10 years ago, partly in response to the ARB “Fleet Rule for Transit Agencies,” which required transit agencies to select a “diesel path” or “alternative fuels path” to comply with more stringent emissions standards for buses. All of the Vacaville’s 15 full-size buses now run on CNG. In addition, Vacaville has been incorporating CNG sedans and pick-ups into its fleet, and currently has 15 CNG light duty vehicles. The city operates its own CNG fueling facility, and

recently entered into agreement to sell CNG to Vacaville’s private refuse hauling fleet. Suisun City also operates a CNG pick-up truck.



Vacaville City Coach CNG Bus

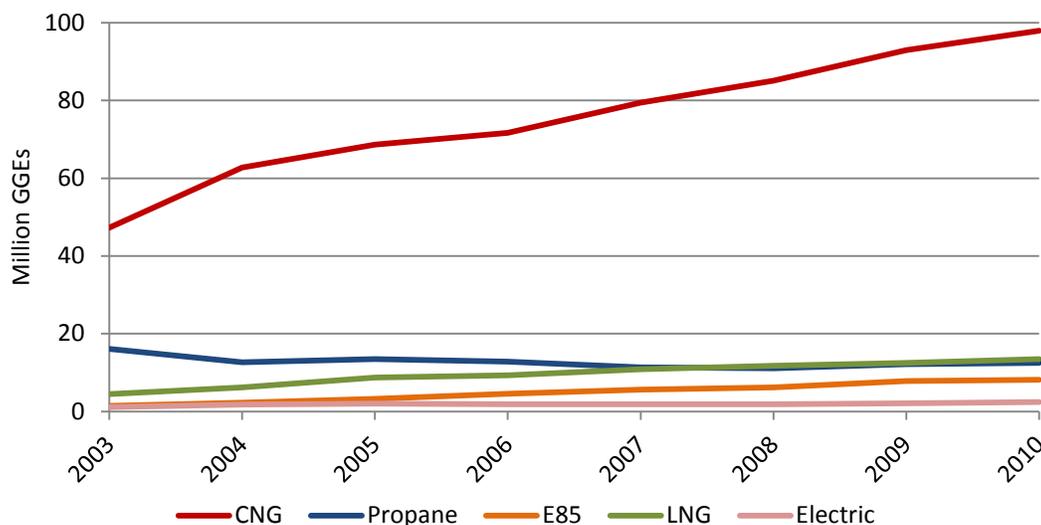


Vacaville CNG Honda Civic

Fuel Supply, Demand, and Price

Over the last decade, use of natural gas for transportation has grown significantly and continues to do so. Figure 2-7 shows that transportation natural gas consumption has doubled since 2003.

Figure 2-7. Consumption of Alternative Fuels in the Transportation Sector in California (2003–2010)

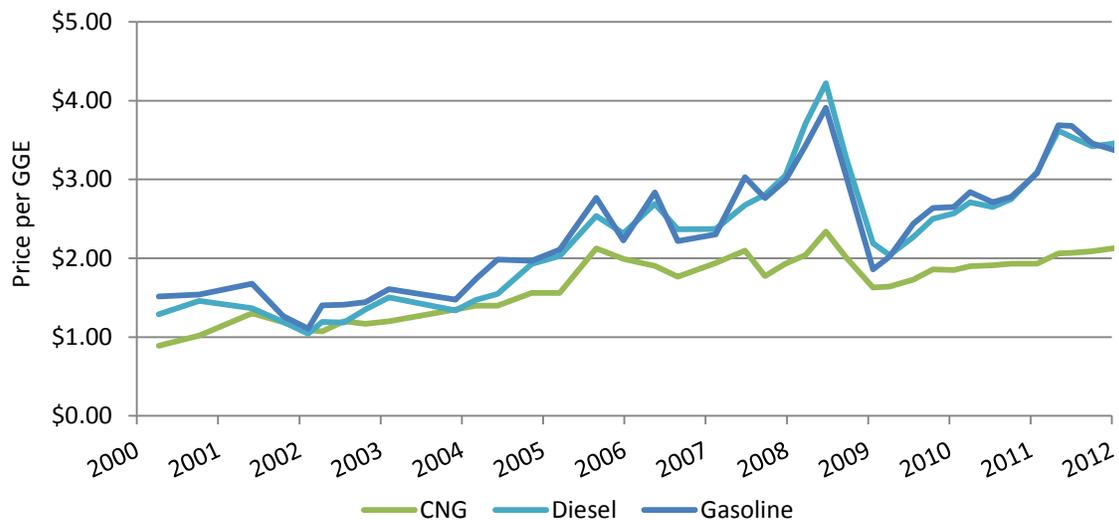


The strong interest in natural gas is due primarily to its price advantage over gasoline and diesel. As of January 2013, the average retail price for CNG on the West Coast was \$2.39/GGE, compared to \$3.54/gallon for gasoline and \$4.11/gallon for diesel. A CNG-powered vehicle has approximately the same fuel economy as a conventional gasoline-powered vehicle on a GGE basis. Figure 2-8 shows that

the price of CNG has remained relatively steady since 2000, while conventional fuel prices have fluctuated dramatically at times and increased overall.

For a fleet with its own CNG fueling station, natural gas prices are often much lower than retail. The station operator typically purchases bulk natural gas from the utility (e.g., Pacific Gas and Electric Company [PG&E]) and compresses the gas on site. The bulk purchase price for natural gas is in the range of \$0.80–\$0.90 per GGE, or approximately one-quarter the price of gasoline.

Figure 2-8. Retail Price of Natural Gas, Diesel, and Gasoline, Nationwide (2000–2012)



Source: Alternative Fuels Data Center, <http://www.afdc.energy.gov/>

2.4. Propane

Description

Liquefied petroleum gas (LPG) is commonly referred to as *propane*. *Autogas* is another term specific to propane used in transportation. Propane turns into a colorless, odorless liquid when stored under pressure inside a tank. As pressure is released, the liquid propane vaporizes and turns into a gas, which is used for combustion. Propane presents no threat to soil, surface water, or groundwater. Additionally, propane has a high octane rating, which allows for increased vehicle power and performance.

Nearly all U.S. propane supply is produced in North America either as a byproduct of natural gas processing or by crude oil refining. Pipelines, railroads, barges, trucks, and tanker ships are used to ship propane from its points of production to bulk distribution terminals. Trucks are filled at the terminals, and propane dealers then distribute propane to end users, which include retail fuel sites. Currently, approximately 230 propane stations are found in California, the majority of which are available to the public. Public propane fueling locations in California are located at large propane distributor facilities

such as AmeriGas, Ferrellgas, and Suburban Propane; smaller propane distributor locations; U-Haul facilities; and conventional fueling locations.

Uses and Applications

Propane is mainly used in light-duty pickup trucks, taxis, medium-duty vans, and heavy-duty school buses. Propane is well suited for spark ignition engines, and gasoline engines can be converted relatively easily to use propane. The high octane rating of propane (104–112 compared to 87–92 for gasoline), combined with low carbon and oil contamination characteristics, results in engine life that can last up to two times longer than a gasoline engine. Propane can be stored onboard a vehicle as a liquid at a low pressure—between 100 and 200 psi, allowing for refueling times comparable to gasoline refueling.

The cruising speed, power, and acceleration of propane vehicles are similar to those of gasoline-powered vehicles. Propane has approximately 73% the energy content of gasoline per gallon; therefore, the typical range of an LDV equipped with a 20-gallon tank is approximately 250 miles. Driving range can be increased by adding additional storage tanks; however, the added weight displaces payload capacity.

Because few propane vehicles are offered by OEMs, propane normally requires conversion of a gasoline vehicle. Companies providing propane conversions include Baytech Corporation, Bi-Phase Technologies, CleanFuel USA, Emissions Solutions, Inc., and Roush CleanTech.



Propane has a small niche among transit fleets. As of 2010, an estimated 742 propane buses were in use in California. California transit agencies operate a total of 18 propane vehicles; the remaining buses are operated by school districts, other local government agencies, and private fleets.¹⁶ For example, in addition to their extensive CNG bus fleet, Los Angeles County Unified School District operates 126 propane school buses.¹⁷

Propane can also be well suited to off-road applications such as fork lifts, commercial mowers and other grounds maintenance equipment, and airport ground support equipment.

Solano County owns and operates 6 propane pick-up trucks. The County's Corporation Yard includes a propane refueling facility (shown below).



Solano County's Propane Fueling Station

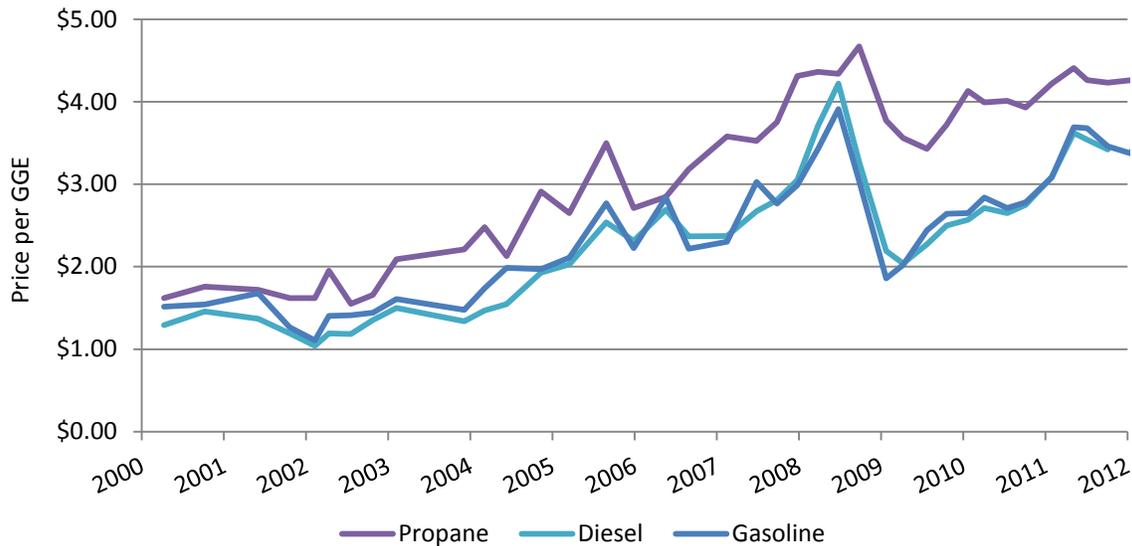
Fuel Supply, Demand, and Price

Motor vehicles in California used 12 million GGEs of propane in 2010, or 0.1% of total gasoline use in the state. Propane consumption for transportation has steadily declined in recent years, due in part to limited vehicle offerings, limited fueling stations, and heightened interest in other alternative fuels. Nationwide, 2010 propane consumption for transportation was 44% lower than in 2003.

As of January 2013, the average price for propane on the West Coast was \$2.93/gallon, compared to \$3.54/gallon for gasoline. Note that these propane prices are reflective primarily of public stations reporting to the U.S. Department of Energy's (DOE's) Clean Cities Program. Private refueling station prices are generally lower, and a dedicated transportation fleet using propane could likely secure lower prices. In January 2013, the price for propane at private fueling stations was 20% lower than at public fueling stations.

As noted above, the energy content of propane fuel is approximately 73% of that of gasoline. This energy content difference is reflected in vehicle fuel economy. Propane vehicle providers report that the new liquid injection technologies appear to have only a 10–15% fuel efficiency disadvantage in practice, although there is currently no independent verification of these claims. Over the last several years, the price gap between propane and gasoline has narrowed; on a GGE basis, the two fuels are now quite similar in price, as shown in Figure 2-9.¹⁸

Figure 2-9. Price of Propane, Diesel, and Gasoline, Nationwide (2000–2012)



Source: Alternative Fuels Data Center, <http://www.afdc.energy.gov/>

2.5. Hydrogen

Description

Hydrogen (H₂) is a colorless, odorless gas at earth-surface temperatures; however, it is rarely found in nature alone and is usually bonded with other elements. Hydrogen is found in large quantities in water (H₂O), hydrocarbons (such as methane), and other organic matter.

Presently, hydrogen is not widely used as a transportation fuel. Extensive government and industry research and development are focused on hydrogen production and hydrogen fuel cell vehicles (FCVs). The energy content in 2.2 pounds (1 kilogram) of hydrogen gas is approximately the same as the energy content in 1 gallon of gasoline. To ensure that FCVs have a driving range comparable to conventional vehicles, it is essential that an FCV store enough fuel on board to make up for hydrogen's low volumetric energy density. While some hydrogen storage technologies are currently undergoing additional research and demonstration, the majority of storage technologies are still under development—including bonding of hydrogen chemically with a material such as metal hydride. Hydrogen storage technologies currently undergoing demonstration include compressing gaseous hydrogen in high-pressure tanks at up to 10,000 psi and cooling liquid hydrogen cryogenically to -423°F (-253°C) in insulated tanks.

Most hydrogen used in the United States is produced near its end use location, typically at large industrial sites. Because there is no widespread demand for hydrogen as a transportation fuel, an effective hydrogen distribution system (e.g., a pipeline) has yet to be created for widespread use of FCVs. Of the approximately 50 hydrogen fueling stations in the United States, 23 are in California, and few are open to the public.¹⁹ Hydrogen infrastructure development in California was bolstered by the California Hydrogen Highway Network Project, an effort introduced in 2004 to develop public hydrogen

fueling stations in the state. The project has focused on cluster areas, including Los Angeles County, Orange County, Sacramento, and the San Francisco Bay Area. Currently, eight public hydrogen stations are located in the state—one in Emeryville and seven in Southern California.²⁰

Most of the existing stations produce hydrogen using on-site electrolysis, with several using “green” electricity to power the electrolyzer. Several stations produce hydrogen using on-site solar arrays to power the electrolyzer. In addition, several stations plan to generate hydrogen in the future using on-site steam methane reformation. This development will largely depend on the stations transitioning toward a mass market opportunity, rather than a niche market that serves fewer than 10 vehicles.

Uses and Applications

Hydrogen can be used as a fuel in both LDV and HDV applications. For years, hydrogen in FCVs has been considered attractive because of its zero tailpipe emissions, high efficiency, and fuel source diversity. For transportation, hydrogen is currently used primarily as a compressed gas, stored at 5,000 psi in both passenger car and transit bus applications. Although hydrogen FCVs have been under development since the 1970s, efforts to develop a pathway to commercialization took off in the late 1990s with investments from automakers, European and Japanese governments, and DOE.

The two main vehicle strategies are use of hydrogen fuel in an ICE vehicle or in an FCV. The main benefit of the ICE is the relatively low cost of converting a gasoline or diesel engine to use hydrogen. However, the amount of hydrogen that can be carried onboard an ICE vehicle in terms of energy content is quite small, equivalent to approximately only 4–5 gallons of gasoline. This makes the range of a hydrogen-fueled ICE vehicle quite low. Consequently, there has not been much interest in the hydrogen ICE vehicle. Nevertheless, it may be a bridging technology for FCVs.

In FCV applications, the fuel cells generate electricity by using hydrogen as a fuel in an electrochemical process. This electricity generated by a stack of cells is then used to drive an electric motor, which drives the vehicle. In some cases, the electric motors driving the vehicle are powered solely by a fuel cell, while others use a hybrid drive system that includes a battery pack or other power source for peaking requirements. This results in a zero emission vehicle, where the only exhaust products are water and heat.

Significant challenges with respect to cost and durability of the hydrogen FCV must be resolved before mass production is possible. While no light-duty hydrogen FCVs are commercially available on a nationwide basis at this time, Honda has begun leasing its FCX Clarity sedan to residents in Southern California (Torrance, Santa Monica, and Irvine). The company plans to lease 200 of the vehicles in the first 3 years of its program. In addition, Mercedes-Benz is planning a limited leasing program for their B-Class F-Cell vehicle in the Los Angeles and San Francisco Bay areas.²¹



Hydrogen buses are currently being tested in transit applications in California. A fuel cell bus demonstration project funded by DOE placed buses into revenue service at the Alameda-Contra Costa Transit District (AC Transit), Santa Clara Valley Transportation Authority, and SunLine Transit Agency in the Coachella Valley. Data collected from the buses involved in this effort have helped to evaluate FCV performance, emissions, costs, and operating characteristics.²² AC Transit is now taking delivery of 12 new fuel cell buses with more sophisticated power systems.

Fuel Supply, Demand, and Price

Hydrogen is an emerging fuel, and little is currently used in the transportation sector. Thus, fuel supply, demand, and price information are not comparable to information available for other fuels. The outlook for hydrogen vehicles is a long-term vision based on low carbon production options, zero tailpipe emissions, and the benefits of an electric drive system.

The market penetration of FCVs is affected by California's zero emission vehicles (ZEV) mandate, since battery electric vehicles (BEVs) and FCVs are the only technologies able to receive pure ZEV credits. In the near term (2012), the number of hydrogen LDVs being leased and tested in California is expected to reach approximately 200–300. Several auto manufacturers anticipate a 2015–2018 timeframe for FCV commercialization but, because of the underdeveloped fueling infrastructure, it is unclear how accepting consumers will be of these offerings.

In addition, California's zero emission bus (ZBus) regulation may affect market penetration, particularly in urban bus fleets. Under this regulation, beginning in 2011, transit agencies with a fleet of 200 or more urban buses must ensure that 15% of their new annual bus purchases are zero emission buses. In January 2010, the California Air Resources Board (ARB) postponed implementation of this regulation until the agency develops and approves new purchase requirements.

The DOE and others, including the California Fuel Cell Partnership and the California Energy Commission (CEC), have examined the long-term cost targets, with projections of \$3–\$6 per kilogram as a retail price. DOE's target price is \$2–\$4 per GGE, delivered and untaxed—a value at which hydrogen is competitive with gasoline.

2.6. Electricity

Description

Electricity can be used to power all-electric vehicles (also referred to as battery electric vehicles or BEVs) and plug-in hybrid electric vehicles (PHEVs), collectively known as electric vehicles (EVs). All EVs draw electricity from off-board electrical power sources (i.e., the electricity grid) and store the energy in batteries. In a BEV, the battery powers the motor. PHEVs also have an electric motor that uses energy stored in a battery, as well as an ICE that can run on conventional or alternative fuel.

Although technically they do not use alternative fuels, hybrid electric vehicles (HEVs) are an advanced technology that can accomplish many of the same objectives as alternative fuel vehicles, including emissions reduction and fuel savings. Hybrid electric technology increases vehicle efficiency by

introducing an electric motor and generator, an energy storage device (e.g., a battery), and power electronics. The electric motor and generator absorb energy via regenerative braking and store that energy in a battery to offset the acceleration and power demands of the vehicle. HEVs reduce petroleum consumption but do not utilize grid electricity to offset additional petroleum fuel consumption.

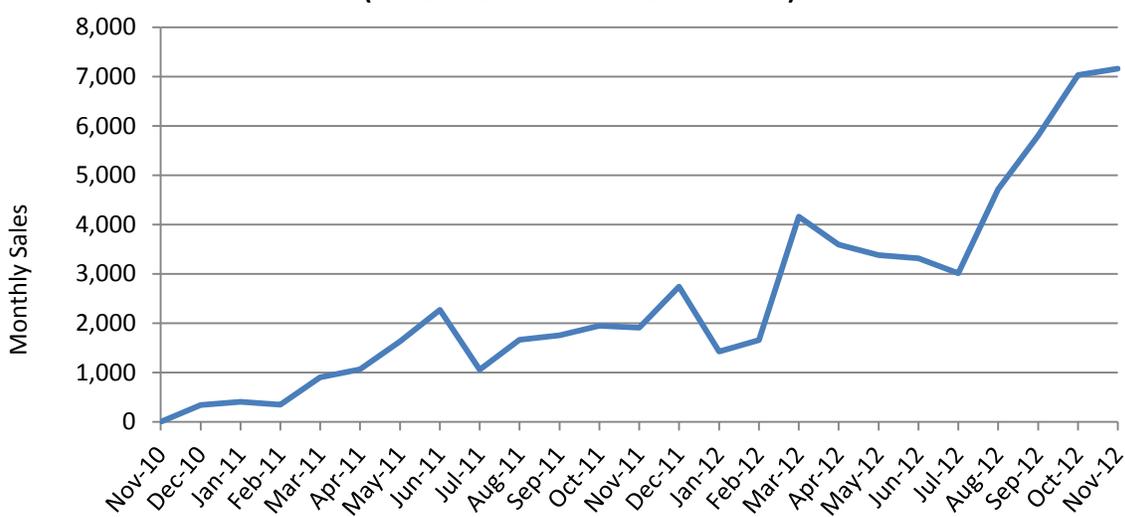
EVs are charged by plugging into EV-charging infrastructure. This equipment is classified by the rate or speed at which the batteries are charged. Charging times vary and can range from 15 minutes to 20 hours or more, depending on factors such as battery size and type, and the type of charging equipment used. Today, three types of equipment are in use, with others under development. Level 1 chargers use a 120-volt (V) alternating current (AC) plug. Level 2 chargers are rated at less than or equal to 240-V AC. Direct current (DC) fast charging has a 480-V input. In addition, inductive charging uses an electromagnetic field to transfer electricity to an EV without a cord; this is still being used in certain areas where it was installed for EVs in the 1990s.

Currently, more than 12,000 EV charging outlets are located across the country, and at least 2,800 are in California (not including residential infrastructure).²³ Infrastructure expansion is occurring rapidly, a trend that is expected to continue.

Uses and Applications

Both heavy-duty and light-duty EVs are commercially available, although the current focus is on the light-duty market. Since 2010, several manufacturers have begun to introduce light-duty BEV and PHEV models, and more vehicle models are expected to be released in 2013 and 2014. Figure 2-10 shows the number of EVs that were sold in the United States between November 2010 and November 2012, not including low-speed or neighborhood electric vehicles. As manufacturers increase their model year offerings, sales are expected to increase. EVs currently make up 0.6% of all U.S. light-duty vehicle sales.

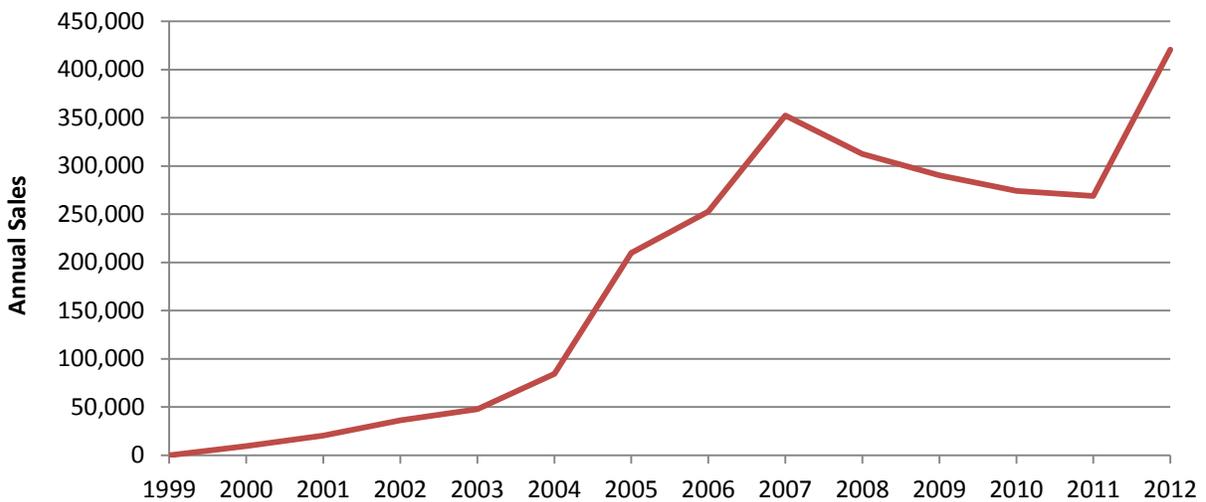
**Figure 2-10. Monthly Electric Vehicle Sales in the United States
(November 2010 – November 2012)**



Source: www.hybridcars.com, Hybrid Market Dashboard

HEVs were first sold in the United States in 2000, when the Toyota Prius and Honda Insight were introduced into the U.S. market. HEV sales grew rapidly between 2003 and 2007, topping 350,000 vehicles in 2007, and then declined somewhat along with the broader U.S. automobile market, as shown in Figure 2-11. HEV sales picked up in 2012, topping 400,000 vehicle sales. HEVs currently make up approximately 3% of all U.S. light-duty vehicle sales.

Figure 2-11. Annual Hybrid Electric Vehicle Sales in the United States (1999–2012)



Source: Alternative Fuels Data Center, <http://www.afdc.energy.gov>; www.hybridcars.com

Hybrid electric medium- and heavy-duty trucks have been introduced only in the last several years, although all major truck makers now offer HEVs. Nationwide, approximately 4,000 HEV medium- and heavy-duty trucks are in use. Many of these are in California, due in part to ARB’s Hybrid Truck and Bus Voucher Incentive Project (HVIP).

Electric buses are currently being used by a number of transit agencies in California. Trolley buses powered by electricity from overhead wires have been used in San Francisco for several decades. These buses have auxiliary power units allowing them to travel off-wire for several blocks.²⁴ In addition, as of 2010, an estimated 28 BEVs operating independently of overhead wires were in use by transit agencies in California. In Bakersfield, for example, an electric bus refurbished to look like the historic Bakersfield electric trolley offers free rides along a 1-mile loop in the city. Foothill Transit (Los Angeles County) operates three 35-foot electric buses made by Proterra, purchased using federal stimulus funds. The San Joaquin Regional Transit District (Stockton) is now adding two of the same Proterra electric buses to its fleet.

Hybrid electric buses are widely used in transit service. First introduced in the late 1990s, hybrid buses have been gaining market share and now account for approximately 9% of buses nationwide. More than 60 transit agencies now operate gasoline-electric or diesel-electric hybrid buses.²⁵

Hybrid-electric technology can also be used to provide auxiliary power for vehicles such as utility trucks. For example, the “JEMS” technology offered by Altec uses stored electrical energy to power truck aerial

device, tool,s and exportable power. The energy storage system can be recharged by plugging into grid power or by the truck’s internal combustion engine.

In Solano County, a number of municipal agencies operate hybrid and battery electric vehicles. Vacaville was one of the first local governments in the nation to operate BEVs. The city obtained 24 Toyota RAV4 BEVs approximately 10 years ago, a “first generation” electric vehicle that uses an inductive charging paddle rather than the current SAE J1772 charging standard. The city still operates many of these vehicles, although their production has since been discontinued in favor of “second generation” EVs. Solano County Transit (SolTrans) operates 21 diesel-hybrid buses, and Fairfield and Suisun Transit (FAST) operates 7 hybrid buses. The City of Benicia operates 6 HEVs and 2 PHEVs. Rio Vista’s fleet includes a hybrid-electric SUV and battery-electric vehicle. Fairfield also operates 2 HEVs.



Vacaville Toyota RAV4 Electric Vehicle



SolTrans Diesel-Hybrid Bus

Fuel Supply, Demand, and Price

Because only in the last 2 years have there been significant OEM offerings of EVs, available statistics on electricity use for transportation are not meaningful. EIA estimates that electricity demand in the transportation sector in 2020 will be approximately 0.03 quadrillion British thermal units, reflecting 3.5% annual growth.²⁶ For perspective, to keep up with this demand, it is estimated that the number of Level 2 chargers in 2020 would need to be as high as 1,250,000 for residential and 3,200,000 for non-residential, as illustrated in Table 2-2.

Table 2-2. Forecasted Electric Vehicle Charger Population, Nationwide (2020)

Scenario	Vehicle Population (millions)	Residential Chargers (thousands)		Non-Residential Chargers (thousands)	
		L-1	L-2	L-2	DC Fast Charging
Low	0.56	448	112	280	28
Moderate	1.25	812	438	1,070	180
High	2.5	1,250	1,250	3,200	550

Notes: Level 1 (L-1) chargers use a 120-volt (V) alternating current plug; Level 2 (L-2) chargers are rated at less than or equal to 240-V AC. Direct-current (DC) fast charging has a 480-V input.

The price of electricity varies widely depending on the rate schedule and the time of day of use (peak, partial-peak, off-peak). PG&E rates can vary from as low as \$0.10 per kilowatt-hour (kWh) to as high as \$0.24 per kWh. For sake of comparison, a light duty vehicle that pays \$4.00 per gallon of gasoline is equivalent to about \$0.45 per kWh.

3. Solano County Government Fleets and Alternative Fueling Infrastructure

This chapter presents a summary of the vehicle fleets owned and operated by Solano County’s municipal agencies, including alternative fuel vehicles. The chapter also describes the current state of infrastructure to supply alternative fuels in the county.

3.1. Municipal Fleets

Based on a survey conducted for this study in 2012, Solano County and its seven incorporated cities and public transit agencies currently operate approximately 1,400 on-road vehicles. These vehicles include automobiles and light-duty trucks, medium- and heavy-duty trucks, vans and minibuses, and full-size transit buses.

Table 3-1 summarizes the number of vehicles operated by type and by agency. The county’s municipal fleets operate more than 1,300 light-duty vehicles and nearly 250 medium- and heavy-duty trucks. The largest fleets are operated by Solano County, Vacaville, and Fairfield. The county’s five transit agencies collectively operate 126 full-size transit buses and 54 minibuses and paratransit vans.

Table 3-1. Municipal Fleet Vehicles in Solano County by Vehicle Type (2012)

Agency	Passenger Cars and Light-Duty Trucks	Medium- and Heavy-Duty Trucks	Minibuses and Paratransit Vans	Transit Buses (35+ feet)	Total
Solano County	447	46	-	-	493
City of Benicia	8	27	-	-	35
City of Dixon	44	11	9	-	64
City of Fairfield	243	43	4	-	290
FAST	6	-	11	44	61
City of Rio Vista	10	13	4	-	27
Suisun City	16	9	-	-	25
City of Vacaville	283	52	-	-	335
Vacaville City Coach	-	-	6	15	21
City of Vallejo	238	48	-	-	286
SolTrans	23	-	20	67	110
Total	1,318	249	54	126	1,747

Table 3-2 shows the same municipal fleet vehicles organized by fuel type. Gasoline and diesel fuel are used by the vast majority (80%) of the municipal vehicles; the remainder are capable of operating on some type of alternative fuel, as discussed below.

Table 3-2. Municipal Fleet Vehicles in Solano County by Fuel Type (2012)

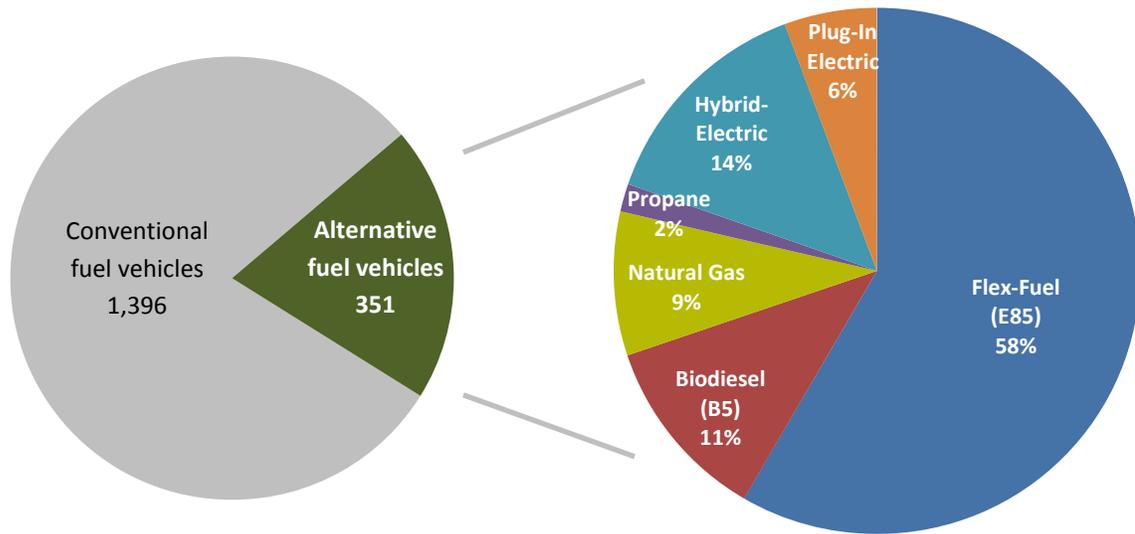
Agency	Fuel Type								Total
	Gasoline	Diesel	Flex-Fuel (E85)	Biodiesel (B5)	Natural Gas	Propane	Hybrid-Electric	Plug-In Electric	
Solano County	327	-	120	40	-	6	-	-	493
City of Benicia	7	20	-	-	-	-	6	2	35
City of Dixon	40	11	13	-	-	-	-	-	64
City of Fairfield	252	22	14	-	-	-	2	-	290
FAST	8	44	2	-	-	-	7	-	61
City of Rio Vista	23	2	-	-	-	-	1	1	27
Suisun City	18	6	-	-	1	-	-	-	25
City of Vacaville	252	51	-	-	15	-	-	17	335
Vacaville City Coach	2	4	-	-	15	-	-	-	21
City of Vallejo	170	48	56	-	-	-	12	-	286
SolTrans	43	46	-	-	-	-	21	-	110
Total	1,142	254	205	40	31	6	49	20	1,747

The AFVs operated by Solano County public agencies in 2012 include the following:

- **Flex-fuel (E85) vehicles.** These are light-duty vehicles that can fuel with gasoline or E85. They include 120 FFVs owned by Solano County, 56 owned by Vallejo, 14 owned by Fairfield, and 13 FFVs leased by the Dixon Police Department.
- **Biodiesel.** All 40 Solano County diesel vehicles operate on B5 (5% biodiesel blend).
- **Natural gas vehicles.** Vacaville City Coach’s entire fleet of 15 transit buses runs on CNG. Vacaville also operates 8 CNG Honda Civic sedans and 7 CNG pick-up trucks and vans. Suisun City has a CNG pick-up truck.
- **Propane vehicles.** Solano County owns 6 propane pick-up trucks.
- **Hybrid-electric vehicles.** Solano County Transit (SolTrans) operates 21 diesel-hybrid buses and FAST operates 7 hybrid buses. Vallejo has 21 hybrid-electric vehicles. Benicia, Fairfield, and Rio Vista also have hybrid-electric sedans or SUVs.
- **Battery-electric vehicles.** Vacaville operates 17 Toyota RAV4 BEVs, and another BEV is operated by Rio Vista. Benicia has 2 plug-in hybrid vehicles.

Figure 3-1 illustrates the percentages of alternative fuel vehicles currently in use among Solano County municipal and transit agency fleets.

Figure 3-1. Percent of Alternative Fuel Vehicles in Solano County Municipal Fleets



3.2. Alternative Fuel Stations

Alternative fuel infrastructure is available throughout Solano County and in the greater Northern California region. Data on alternative fuel facilities were collected through a survey of fleet managers and from the U.S. Department of Energy, Alternative Fuels Data Center (www.afdc.energy.gov).

Approximately 35 alternative fueling sites were identified within Solano County. More than 80% of these sites are EV charging stations, concentrated in Vacaville and Fairfield. Of the remaining sites, only two or three locations were identified for biodiesel, E85, natural gas, and propane. The information presented here includes a mix of both publicly available and private fueling stations.

In the remainder of this section, maps show the location and distribution of different fueling stations; several tables follow that provide more information on each station.

Ethanol

As illustrated in Figure 3-2, ethanol (E85) is widely available in Northern California. The Sacramento area alone hosts 29 stations that provide E85. The fuel is not widely available in Solano County, however, as only three stations in the county provide it. Two of these stations offer public access: one in Vacaville and one in Fairfield. The third station providing E85 is the Solano County Corporation Yard #1 in Fairfield, which does not offer public access. Table 3-3 lists the stations in Solano County that provide E85 fuel.

Figure 3-2. E85 Fueling Infrastructure in and around Solano County (2012)

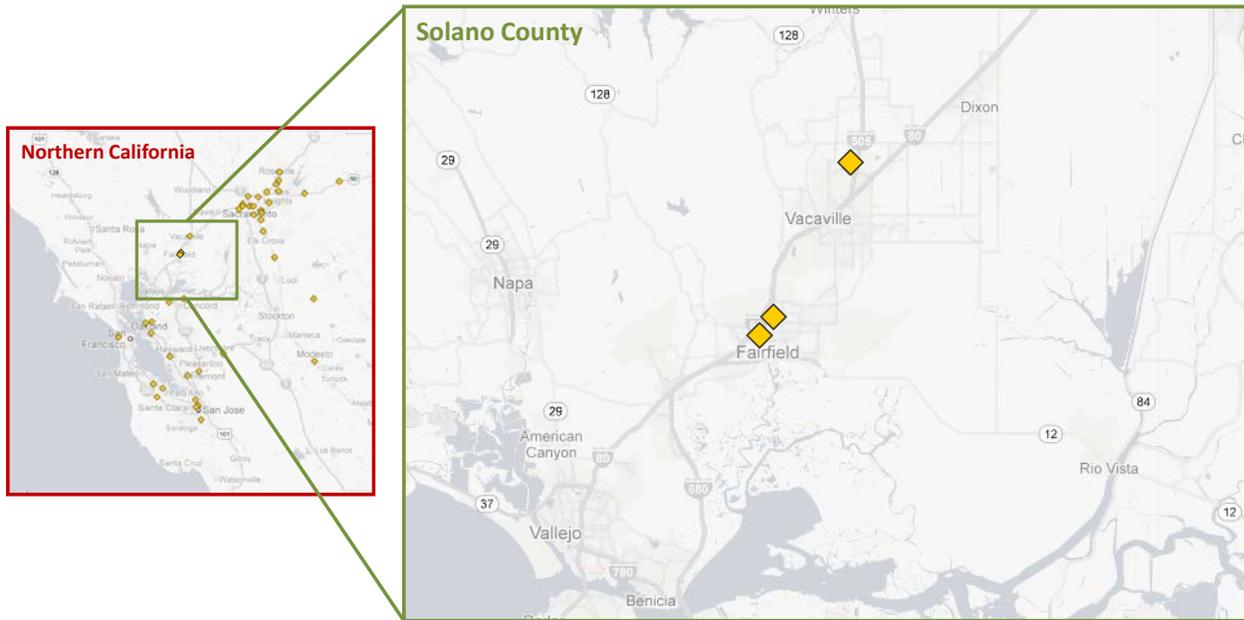


Table 3-3. E85 Fueling Infrastructure in Solano County (2012)

Station Name	Street Address	City	Access
Solano County Corporation Yard #1	3255 North Texas Street	Fairfield	Private
Pacific Pride – Interstate Oil Co	917 Cotting Lane	Vacaville	Public
Plaza Oliver Valero	1009 Oliver Road	Fairfield	Public

Biodiesel

The County has two biodiesel fueling stations: Solano County’s Corporation Yard #1 (located in Fairfield) and a facility at Travis Air Force Base. Neither station offers public access. As illustrated in Figure 3-3, the Sacramento region has 7 biodiesel fueling stations; 18 stations are located throughout the remainder of Northern California. Table 3-4 lists the stations in Solano County that provide biodiesel fuel.

Figure 3-3. Biodiesel Fueling Infrastructure in and around Solano County (2012)

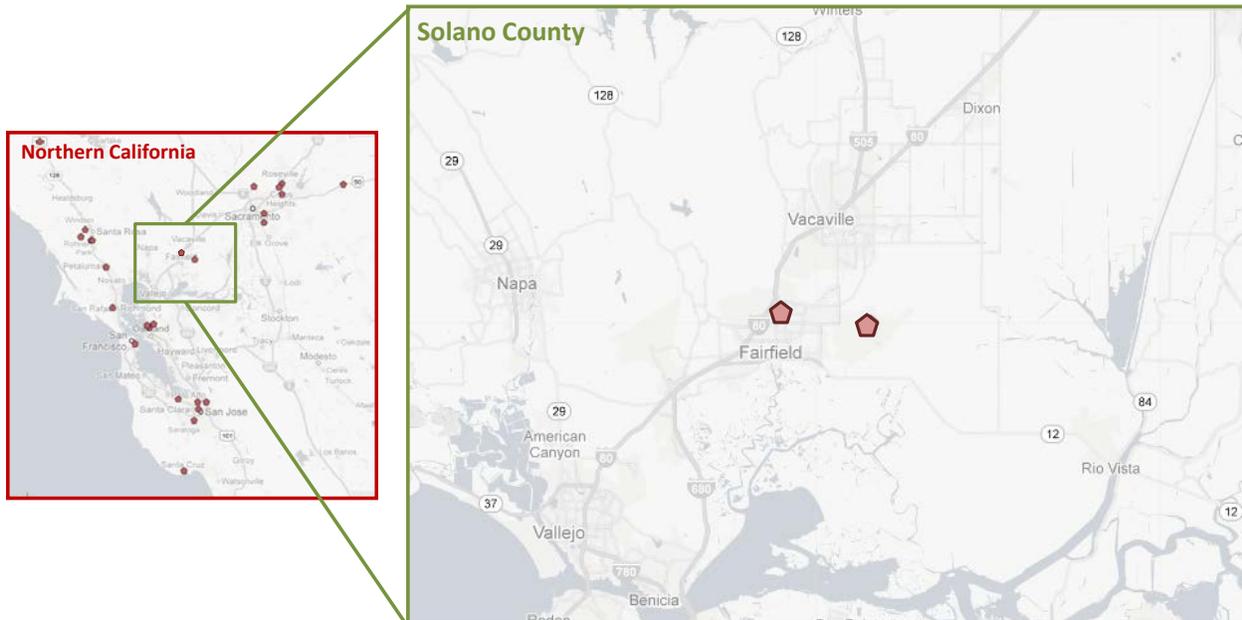


Table 3-4. Biodiesel Fueling Infrastructure in Solano County (2012)

Station Name	Street Address	City	Access	Biodiesel Blends Available
Solano County Corporation Yard #1	3255 North Texas Street	Fairfield	Private	B5 (B10 planned in 2013)
Travis Air Force Base	430 Hangar Avenue	Fairfield	Private	B20

Natural Gas

As shown in Figure 3-4, natural gas fueling infrastructure is distributed widely throughout Northern California. CNG is more common than LNG and is found at many public, utility, and private locations. Three CNG stations are located in Solano County, including a PG&E facility in Vacaville with public access; the City of Vacaville Corporation Yard; and an LNG/CNG facility in Fairfield, which is one of only four LNG facilities in Northern California. The two CNG facilities located in nearby Davis are outside Solano County; one of these stations serves the Davis transit agency, Unitrans, while the other offers public access. Table 3-5 lists the stations in Solano County that provide natural gas fuel.

A current study is assessing the feasibility of installing a CNG fueling facility at two locations in Vallejo and one location in Benicia. The study will provide a conceptual layout and preliminary cost estimate to construct each fueling facility, determine the cost/benefit for each, and provide an estimate for retrofitting existing maintenance facilities to accommodate CNG buses and other vehicles.

Figure 3-4. Natural Gas Fueling Infrastructure in and around Solano County (2012)

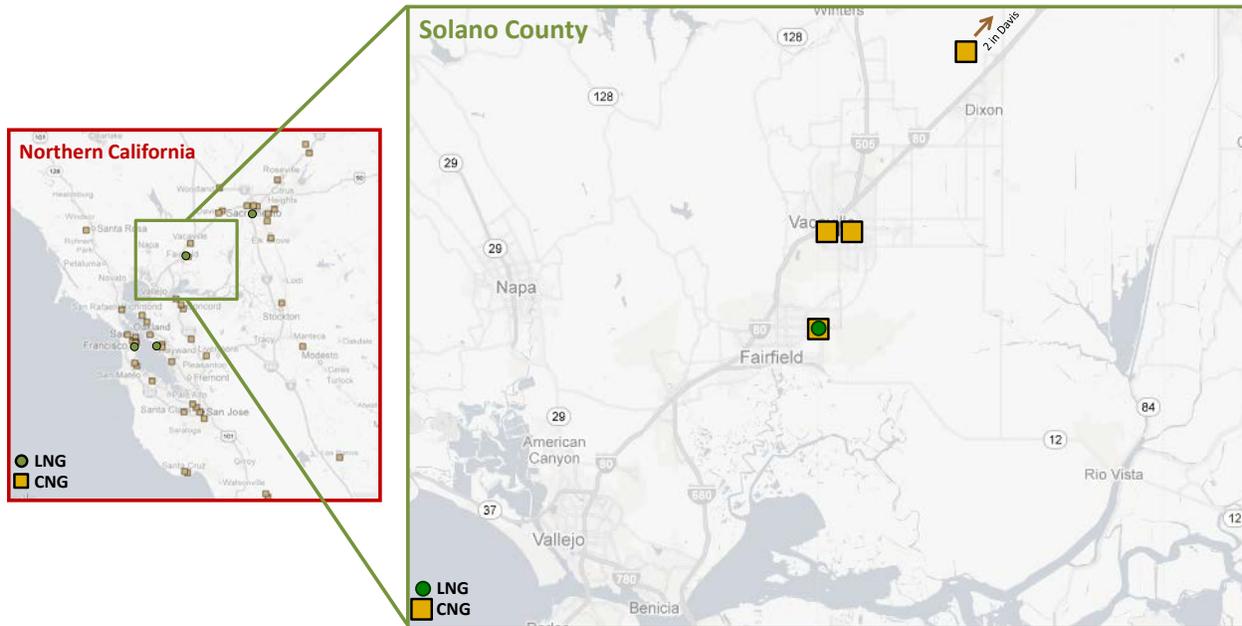


Table 3-5. Natural Gas Fueling Infrastructure in Solano County (2012)

Fuel Type	Station Name	Street Address	City	Access	Details
LNG/CNG	Solano Garbage	1930 Walters Court	Fairfield	Private	Quick fill; 3000 and 3600 psi
CNG	PG&E Vacaville Service Center	158 Peabody Road	Vacaville	Public	Quick fill; 3000 psi
CNG	City of Vacaville Corporation Yard	1001 Allison Drive	Vacaville	Private	N/A

Propane

Propane fuel (for transportation uses) is available throughout Northern California, with large clusters in Alameda County and Sacramento County (Figure 3-5). In Solano County, the fuel is less common, found at only two stations. One station, located in Vacaville, offers public access. The other station is located in the Solano County Corporation Yard #1, with no public access. Several public-access stations offer propane near Rio Vista, just outside Solano County. Table 3-6 lists the stations in Solano County that provide propane fuel.

Figure 3-5. Propane Fueling Infrastructure in and around Solano County (2012)

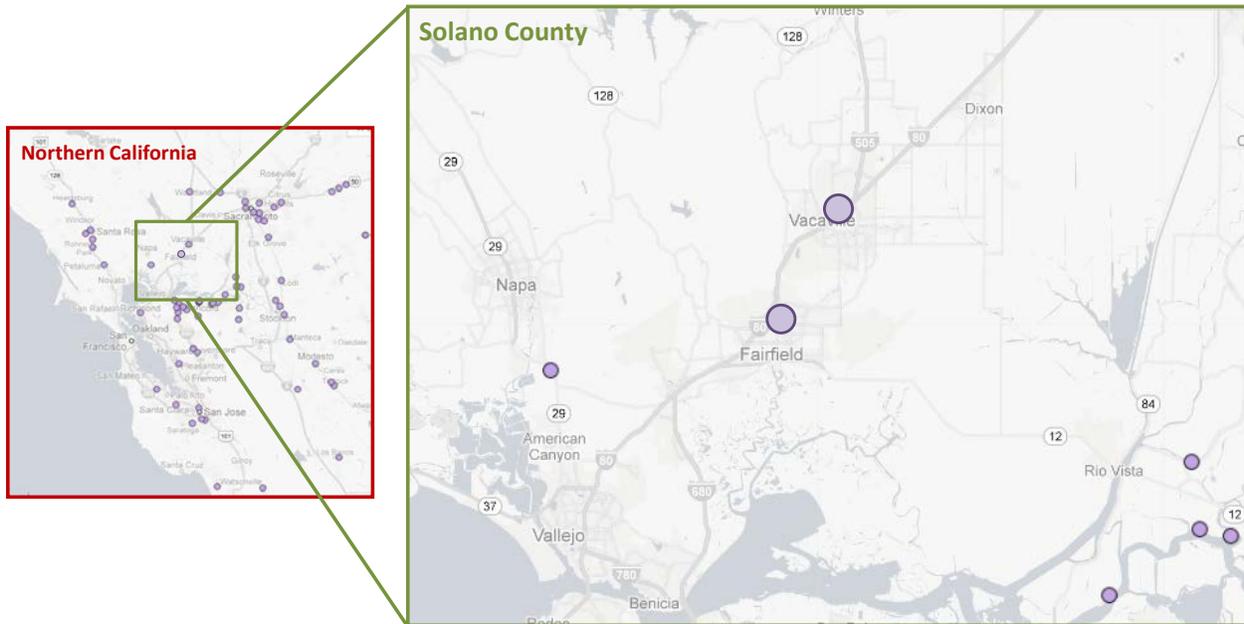


Table 3-6. Propane Fueling Infrastructure in Solano County (2012)

Station Name	Street Address	City	Access
Solano County Corporation Yard #1	3255 N. Texas Street	Fairfield	Private
U-Haul	1240 E Monte Vista Avenue	Vacaville	Public

Electric Vehicle Charging Stations

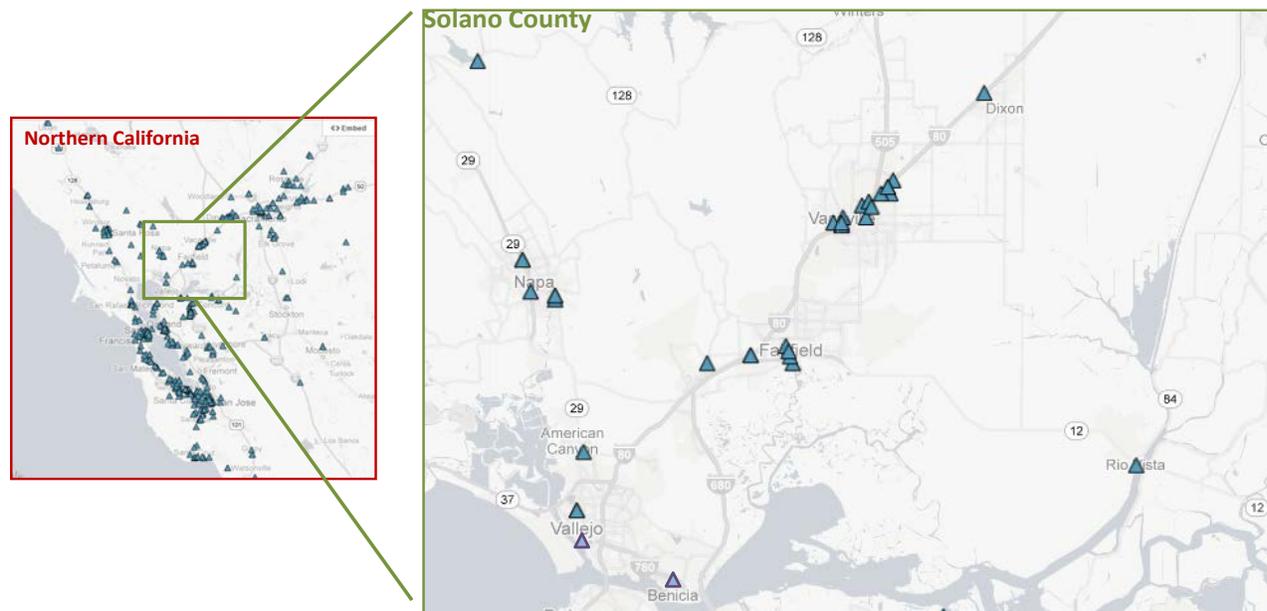
Approximately 28 electric vehicle charging stations are located throughout Solano County (Figure 3-6). The current charging station standards established by the Society of Automotive Engineers (SAE) differentiate between three levels:

- Level 1 AC – These use standard 120-volt (V), single-phase service with a three-prong electrical outlet at 15–20 amperage (A).
- Level 2 AC – These are used specifically for EV charging and are rated at less than or equal to 240 V AC, and less than or equal to 80 A.
- DC fast-charging (DCFC) units – These provide power much faster than the AC counterparts, with a 480 V input.

In addition, some older charging stations are built to the small paddle inductive (SPI) charging standard. Vehicle support for SPI was phased out starting in 2001, when ARB adopted the current conductive charging standards. In Solano County, the majority of sites host multiple charging stations, and one-half

provide at least two types of equipment—current Level 2 charging equipment and the older SPI standard. Fourteen charging stations are built on municipal sites, and 14 are on private property (Table 3-7). Vacaville in particular has been a leader in the installation of EV charging infrastructure.

Figure 3-6. Electric Vehicle Charging Infrastructure in and around Solano County (2012)



Notes: Maps accessed September 17, 2012; includes public and private stations; does not include planned and residential charging stations; each triangle represents one charging location, which may include more than one port; refer to Table 3-7 for a full list of infrastructure.

Table 3-7. Electric Vehicle Charging Infrastructure in Solano County (2012)

Station Name	Street Address	City	Access	Charging Infrastructure Available
Benicia City Hall	250 East L Street	Benicia	Public	2 Level 2 and 1 DCFC station*
Pitt School Plaza	1440 Ary Lane	Dixon	Public	1 Level 1; 1 SPI; 1 Tesla conductive
Fairfield City Hall	1000 Webster Street	Fairfield	Public	2 Level 2
Fairfield Transportation Center	2000 Cadenasso Drive	Fairfield	Public	2 Tesla conductive
Momentum Nissan	2545 Auto Mall Parkway	Fairfield	Public (dealer) & private (service center)	2 Level 2
Solano Community College	4000 Suisun Valley Road	Fairfield	Public	3 Level 2; 1 SPI
Solano County Government Center Parking Structure	501 Union Avenue	Fairfield	Public	1 SPI; 4 Level 2
Rio Vista City Hall	1 Main Street	Rio Vista	Public	1 Level 1; 1 Level 2; 1 SPI
Suisun Amtrak Station Park & Ride Lot	650 Lotz Way	Suisun City	Public	1 Level 2; 1 SPI
Suisun City Civic Center	701 Civic Center Boulevard	Suisun City	Public	1 Level 2; 1 SPI

Station Name	Street Address	City	Access	Charging Infrastructure Available
Kaiser Permanente – Vacaville	1 Quality Drive	Vacaville	Public	3 SPI; 1 Avcon conductive
Leisure Town Center	100 Sequoia Drive	Vacaville	Public	1 Level 2; 1 SPI
Vacaville Cultural Center	1000 Ulatis Drive	Vacaville	Public	1 Level 2; 1 SPI
Stars Recreation Center	155 Browns Valley Parkway	Vacaville	Public	3 Level 2; 1 SPI
Nut Tree Village	1651 East Monte Vista Avenue	Vacaville	Public	1 Level 1; 1 SPI
Vacaville Regional Transport Center	190 Hickory Lane	Vacaville	Public	3 Level 2; 1 SPI
Vacaville Premium Outlets	321 Nut Tree Road	Vacaville	Public	2 Level 2
Office of Housing & Redevelopment	40 Eldridge Avenue	Vacaville	Public	2 SPI
KUIC Parking Lot – Lot 9	500 Catherine Street	Vacaville	Public	1 Level 2; 1 SPI
Kohl's	570 Orange Drive	Vacaville	Public	1 Level 1; 1 Level 2
Vacaville City Hall	650 Merchant Street	Vacaville	Private	2 Level 2; 7 SPI
Vacaville Police Headquarters	660 Merchant Street	Vacaville	Private	2 SPI
Nissan of Vacaville	671 Orange Drive	Vacaville	Public (dealership) & private (service center)	2 Level 2
Bella Vista Road Park & Ride Lot	782 Davis Court	Vacaville	Public	3 Level 1; 4 Level 2; 1 SPI
Leisure Town Road Park & Ride Lot	Leisure Town Road & Orange Drive	Vacaville	Public	1 Level 2; 1 SPI
Vallejo City Hall	555 Santa Clara Street	Vallejo	Public	2 Level 2
Vallejo Nissan	3287 Sonoma Boulevard	Vallejo	Public (dealership) & private (service center)	2 Level 2
Vallejo Ferry Terminal	495 Mare Island Way	Vallejo	Public	2 SPI; 1 Avcon conductive; 1 Tesla conductive

Notes: Information accessed September 17, 2012; includes public and private stations; does not include planned and residential charging stations; each row represents one charging location, which may include more than one port.

Tesla conductive chargers are used for Tesla EVs only. Avcon conductive chargers are a predecessor to the current SAE J1772 standard for chargers and require an adaptor box to be used with most EVs currently in production.

Benicia's DCFC will be operational in November 2013.

Source: U.S. Department of Energy, Alternative Fuels Data Center, <http://www.afdc.energy.gov/>

4. Benefits and Costs of Alternative Fuel Vehicles

Local governments in Solano County may be interested in alternative fuels for different reasons. Some communities may be primarily concerned about climate change and looking for opportunities to reduce GHG emissions. Another city may be considering alternative fuels primarily as a way to minimize fleet operating costs and petroleum dependence, or to satisfy regulatory requirements. And others could be seeking funding opportunities. This chapter reviews the benefits and costs of alternative fuel vehicles in four main areas:

- Regulatory requirements
- Fleet cost impacts
- Air pollution and health impacts
- Greenhouse gas emissions impacts
- Funding sources

4.1. Regulatory Requirements

The California Air Resources Board (ARB) has authority to adopt regulations that apply to California vehicles and fuels. In the past, some fleets have switched to alternative fuels as a way to comply with ARB regulations. Table 4-1 summarizes current and recent regulations that could affect public transit and municipal fleets; a brief discussion of each regulation follows. At present, there are no regulations that would necessitate use of alternative fuels by municipal or transit fleets.

Table 4-1: Summary of ARB Regulations and their Impact on Transit or Municipal Fleets

Regulation	Impact on Transit or Municipal Fleets
Transit Fleets	
Fleet Rule for Transit Agencies	Required agencies to upgrade buses to cleaner standards by 2011. Currently, no additional upgrade requirements. Annual reporting required.
Zero Emission Buses	Would require large transit agencies to purchase battery or fuel cell buses for 15% of its annual purchases. Currently suspended by ARB, pending further review.
On-Road Heavy-Duty Diesel Vehicles Regulation	Requires agencies to replace or upgrade heavy-duty trucks to meet 2010 engine standards. Transit fleets are exempt.
Municipal fleets	
Fleet Rule for Public Agencies and Utilities	Required agencies to upgrade trucks to cleaner standards by 2011. Currently, no additional upgrade requirements. No annual reporting is needed, but there are recordkeeping requirements.
In-Use Off-Road Diesel	Requires agencies to upgrade or retrofit their off-road equipment fleets to meet

Regulation	Impact on Transit or Municipal Fleets
Vehicle Regulation	cleaner standards, starting in 2014 through 2023. Deadlines are extended for medium and small fleets.
Other Regulations	
Low Emission / Zero Emission Vehicles	No requirements for transit or municipal fleets. Cleaner passenger cars will be available for purchase.
Low Carbon Fuel Standard	No requirements for transit or municipal fleets. The rule will accelerate introduction of low carbon fuels for transportation.

Fleet Rule for Transit Agencies

In February 2000, ARB adopted the Fleet Rule for Transit Agencies, which includes several provisions designed to reduce harmful criteria pollutant and air toxic emissions from urban buses and other transit vehicles. These requirements were designed to be phased in between 2002 and 2010, and are largely in place as of 2012. The Transit Fleet Rule requires transit agencies to upgrade its urban bus fleet to meet more stringent emissions standards, phased in gradually through 2009. The rate of this phase-in depended on the “fuel path” that fleet managers chose to meet the standards. Under the “diesel path,” transit agencies were to meet emission reductions of 85% in 2007 (compared to 2002 baseline) through a combination of retrofitting existing diesel buses and purchasing new diesel buses. In the “alternative fuel path,” transit agencies were given two additional years to meet the standards but were required to adopt alternative fuel buses as the majority of new bus purchases or leases. Also included in this regulation is the Zero Emission Bus mandate, discussed below.

Solano County transit agencies already comply with this rule. ARB still requires annual reporting of each agency’s transit fleet, which can be done using the agency’s online reporting tool.

Zero Emission Bus Rule

The Zero Emission Bus (ZBus) mandate was enacted as part of the Transit Fleet Regulation in 2000. This ambitious program was designed to jump-start research, development, and deployment of new bus technologies, which were not available at the time the rule was introduced. ARB’s goal was that by the time the ZBus requirement would become binding, the advanced bus market would have sufficiently matured to reduce the burden of compliance. The original ZBus rule required large transit agencies (those with more than 200 buses in their fleets) to meet a minimum purchase requirement for zero emission buses. The regulation originally required transit agencies to acquire 15% of all new annual bus purchases as ZBuses, beginning in year 2011.

Due to agency feedback and the delays in market-ready ZBus technologies, ARB has delayed components of the regulation. In January 2010, the agency postponed the ZBus requirement until a feasibility study determines that the technology is sufficiently matured. As an indicator of market

readiness, ARB has informally set a threshold of 125% for the cost of a ZBus compared to a conventional bus. As of 2009, the agency estimated the cost premium as 275%.

If implemented, the ZBus regulation has the potential for significant impacts to transit agencies, in that it would require purchase of hydrogen fuel cell or battery electric buses. However, there is no certainty when or even if the rule will be implemented. Moreover, as currently written, the regulation only applies to large transit agencies (with more than 200 buses). The largest Solano County transit fleet (SolTrans) currently has approximately 60 buses. For more information about the Zero Emission Bus rule, visit www.arb.ca.gov/msprog/bus/zeb/zeb.htm.

On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation

In 2007, ARB adopted the On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation, known as the “Truck and Bus Rule.” This regulation requires that older heavy-duty trucks must be upgraded with cleaner equipment starting January 2012, and replaced starting January 2015. By full project phase-in in 2023, nearly all trucks and buses must meet emission standards for model year 2010 engines.

This rule does not apply to public transit agencies or local governments, so has no direct impact on Solano County government fleets.

Fleet Rule for Public Agencies and Utilities

The Fleet Rule for Public Agencies and Utilities was enacted in 2005 to reduce emissions from older heavy-duty trucks operated by municipalities or utilities. The regulation excludes vehicle types covered under other mandates, including transit buses, as well as trucks newer than model year 2007, which already meet the emission standard. Depending on the truck model year, municipalities must phase-in “Best Available Control Technology” (BACT) to reduce particulate matter emissions. This can be achieved by installing Diesel Particulate Filters to remove particulates from a truck’s exhaust stream.

For most public agencies, including those in Solano County, this rule required updates to municipal fleets by 2011. For Solano County agencies, these updates have likely been completed and there are no further compliance requirements.

In-Use Off-Road Diesel Vehicle Regulation

In July 2007, ARB approved the In-Use Off-Road Diesel Vehicle Regulation, structured with similar requirements as the On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation. All existing off-road vehicles (including construction equipment, street sweepers, landscaping vehicles, and others) would need to meet strict pollution standards, through upgrades, retrofits, or replacement. In 2010 the agency delayed the implementation date for cleaner emission standards, due to effects of the recession on the industry and a delay in obtaining a necessary waiver from EPA. Under amendments to the ruling in December 2010, the emission standards will begin to take effect in 2014 for large fleets, 2017 for medium fleets, and 2019 for small fleets. The new standards will be fully phased in by 2023 for large and medium fleets and 2028 for small fleets.

This regulation may have significant impact on Solano County municipalities, depending on the size and age of its off-road fleet. The new standards phase in starting in 2014 for large fleets (more than 5,000 combined horsepower) and finishing in 2023. This schedule is delayed for medium (more than 2,500 combined horsepower) and small fleets. The regulation also includes requirements for reporting and labeling off-road equipment. In addition, fleets must limit equipment idling. ARB designed this regulation so fleets could comply with the standards by upgrading current diesel vehicles or replacing old trucks with new diesel vehicles. A fleet does not need to introduce alternative fuel equipment in order to meet the regulation's emission standard. For more information about the Off-road Equipment Rule, visit www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.

Low-Emission Vehicle / Zero-Emission Vehicle Regulations

For more than 20 years, ARB has regulated emissions from passenger cars through increasingly stringent emission standards. The first Low-Emission Vehicle (LEV) regulations were enacted in 1990, followed by tighter LEV II standards in 1998 and LEV III in 2011, applied to new cars sold between 2015 and 2025. LEV III standards will reduce smog-forming emissions by 75% and GHG emissions by 34%. In tandem with LEV III, CARB enacted a Zero-Emission Vehicle (ZEV) program to accelerate the sales and use of electric and fuel cell vehicles. ZEV mandates require manufacturers to meet ZEV sales targets as a portion of their overall new vehicle sales within California. In total, the regulation will result in 1.4 million ZEVs sold in 2025, accounting for 15.4% of all sales.

LEV III and ZEV regulations have been combined into ARB's Advanced Clean Car Rules. These regulations do not contain any provisions that specifically apply to transit or municipal fleets. As manufacturers upgrade their vehicles to meet the LEV/ZEV rules, fleet owners will have more choices available if they choose to purchase low-emission or zero-emission passenger cars

Low Carbon Fuel Standard

In 2010 ARB enacted the Low Carbon Fuel Standard (LCFS), which requires a 10% reduction in the carbon intensity of transportation fuels in 2020. LCFS is designed as a framework to encourage the use of alternative fuels in place of gasoline or diesel. The regulation places mandates on "regulated parties," primarily the refiners and blenders of gasoline, diesel, and their substitutes, to meet a schedule for reducing the carbon intensity of their fuel through 2020.

One goal of LCFS is to encourage the availability of alternative fuels in the marketplace, specifically the availability of ethanol, biodiesel, bio-natural gas, and other low-carbon substitutes. Like the ZEV standards, in most cases LCFS does not impose restrictions directly on transit or municipal fleets; however, LCFS should ease barriers to introducing alternative-fuel vehicles and infrastructure by making the fuels more readily accessible.

In some cases, LCFS directly may apply to transit or municipal fleets, due to the definition of a "regulated party." For conventional natural gas fuel (as opposed to biogas), LCFS defines the regulated party as the entity that owns the natural gas fueling equipment. In these cases, a transit or municipal agency may choose to opt-in to LCFS requirements in order to be eligible to earn credits from using low-carbon fuels, although this is not required.

4.2. Fleet Cost Impacts

Fleets considering the purchase of new vehicles often compare choices based on *lifecycle* costs, which include all the costs associated with a vehicle during its lifetime in the fleet, such as the purchase price, resale value, fuel costs, maintenance costs, and any fueling infrastructure costs. It is difficult to estimate and compare lifecycle costs with a high degree of precision because they vary from fleet to fleet depending on factors such as vehicle annual mileage, usage and duty cycle, fleet size, existing maintenance facilities and staff experience, existing fueling infrastructure, and financing mechanisms. This section does not perform a full lifecycle analysis; rather, it presents information on vehicle purchase price, fuel costs, and (for some vehicle types) maintenance costs, comparing each alternative fuel to its conventional fuel counterpart.

Information is also presented on fueling infrastructure costs, although these costs are not factored into the cost examples because the differences in infrastructure costs can make side-by-side comparisons misleading. Any agency making decisions about fleet purchasing and infrastructure investment will need to perform a more detailed and agency-specific calculation of lifecycle cost and return on investment. The following sections provide examples of generalized purchase price, operations and maintenance, and fuel costs for light-duty sedans, light-duty trucks, medium- and heavy-duty trucks, and transit buses. A summary discussion of fueling infrastructure costs is found at the end of the section.

Light-Duty Vehicle Costs

Vehicle Purchase Price

The alternative fuels currently available to light-duty vehicles for fleet purchases are E85, CNG, propane, and electricity. No light-duty hydrogen fuel cell vehicles currently are commercially available for purchase, although Mercedes Benz (B-Class F-CELL) and Honda (Clarity) offer a fuel cell vehicle for lease in California. Table 4-2 shows sample incremental vehicle prices for light-duty sedans. These values represent the additional purchase price when compared to a conventional gasoline vehicle. The Honda Civic and Ford Focus were chosen for the comparison because together they can illustrate the alternative fuels for light-duty sedans. Table 4-3 shows sample incremental vehicle prices for light-duty trucks compared to conventional gasoline trucks.

Table 4-2. Sample Incremental Vehicle Prices for Alternative Fuel Light-Duty Sedans Compared to Gasoline Vehicles

Honda Civic				Ford Focus		
Gasoline	HEV	CNG	Propane	Gasoline	E85	BEV
Baseline	\$5,195	\$7,500	\$6,000	Baseline	\$0	\$11,749

Table 4-3. Sample Incremental Vehicle Prices for Alternative Fuel Light-Duty Trucks Compared to Gasoline Vehicles

Chevrolet Silverado 1500			Chevrolet Silverado 2500		GMC Sierra 2500	
Gasoline	E85	HEV	Gasoline	Propane	Gasoline	CNG Bi-Fuel
Baseline	\$0	\$17,445	Baseline	\$6,500	Baseline	\$17,445

The price differences of alternative fuel vehicles are driven by several factors, including the following.

- The retail price for an **E85 flex fuel vehicle** is usually identical to its conventional gasoline counterpart. Although the cost to produce an FFV is slightly higher than for a comparable gasoline vehicle, manufacturers have typically set identical prices as a way to encourage FFV sales, which can earn federal CAFE credits for auto makers.²⁷ For several models, most of the available light-truck configurations are designated as FFV.
- **CNG vehicles** carry a price premium over their conventional fuel counterparts. The primary reason for the price premium is the cost of CNG fuel tanks, as well as the lower production volumes.
- **EVs and HEVs** carry a higher price than their conventional fuel counterparts, mainly because of the cost of the batteries. Both BEV and PHEV sedans are eligible for the current federal tax credit of up to \$7,500, as well as a state incentive up to \$2,500 (the Clean Vehicle Rebate Project). BEV and PHEV light-duty trucks are eligible for up to \$30,000 of incentives through the HVIP. These incentives can significantly reduce the purchase price of EVs and, when combined with the fuel cost savings, make these sedans competitive with gasoline vehicles over the life of the vehicle. HEVs, while cheaper than EVs, do not achieve the same level of petroleum reduction and use no low cost grid electricity as a fuel source.
- Because few **propane vehicles** are offered by OEMs, propane usually requires conversion of a gasoline vehicle. The current price of a bi-fuel conversion that enables a conventional fueled vehicle to operate on both propane and gasoline is approximately \$5,500–\$6,500 ; the incremental costs of converting to a dedicated propane light-duty vehicle is approximately \$11,600.

Operations and Maintenance Costs

The overwhelming component of operations costs for all vehicles is fueling costs. Owners of alternative fuels fleets need to weigh the following factors related to the costs of alternative fuels.

- While **E85** is typically cheaper per gallon at the pump, vehicle operating costs are often higher because of the lower mileage per GGE of FFV vehicles. Based on current prices, the annual cost of fuel for an FFV running on E85 will be 25% greater than for a comparable gasoline vehicle.

- At the current low natural gas prices, **natural gas** vehicles achieve a significant fuel savings compared to their conventional fuel versions. Natural gas fuel prices at public retail stations are higher than at private stations, which are usually owned and operated by private fleets or transit agencies.
- The impacts of **propane** on operating costs depend heavily on its price differential with gasoline. The average retail price of propane is currently slightly higher than gasoline on a GGE basis (i.e., accounting for the lower energy content of propane). However, private propane stations typically offer significantly lower prices than public stations, which can result in a lower effective fuel price.
- Because **electric drive** vehicles have significantly better mileage than their gasoline and diesel counterparts, their annual fueling costs are lower. With many light-duty vehicle models now available, the fuel economy advantage of EVs and HEVs depends on the specific model, as well as the amount of highway vs. city driving. In the case of electric vehicles, fleets should also account for the costs of maintaining charging stations. In many cases, there may also be networking fees associated with “smart” charging equipment, particularly for Level 2 EVSE and DCFC. ICF estimates maintenance costs of about \$20 per month and networking fees of approximately \$20 per month for both Level 2 EVSE and DCFC. For fleets using Level 1 charging, maintenance costs will be very low or zero.

Table 4-4 and Table 4-5 show the lifetime fueling costs of light-duty sedans and trucks, respectively, assuming 10,000 miles per year, 50% highway and 50% city operation, and a 10-year vehicle life.

Table 4-4. Sample Light-Duty Sedan Lifetime Fueling Costs

Honda Civic						Ford Focus		
Gasoline	Hybrid	CNG Public	CNG Private	Propane Public	Propane Private	Gasoline	E85	BEV
\$11,100	\$8,500	\$7,200	\$3,000	\$16,700	\$12,800	\$11,500	\$14,500	\$3,600

Table 4-5. Sample Light-Duty Truck Lifetime Fueling Costs

Chevrolet Silverado 1500			Chevrolet Silverado 2500			GMC Sierra 2500		
Gasoline	E85	HEV	Gasoline	Propane Public	Propane Private	Gasoline	CNG Bi-Fuel Public	CNG Bi-Fuel Private
\$21,900	\$27,300	\$17,800	\$27,800	\$31,400	\$24,000	\$33,700	\$24,900	\$10,600

In terms of maintenance costs, some fleets report that FFVs have higher overall maintenance costs than their gasoline counterparts; others report no significant difference in FFV maintenance costs. The caustic nature of alcohol found in E85 fuel creates more wear on (non-synthetic) rubber components such as gaskets or seals. However, modern FFVs have been designed with synthetic rubber components to avoid this outcome.

CNG and propane vehicles burn cleaner than conventionally fueled vehicles, and field reports indicate that engine life is extended and general engine maintenance may be less than required for gasoline vehicles. On the other hand, most propane vehicles use engines that were originally designed for gasoline (e.g., lacking hardened valves) and therefore may require additional maintenance. Additional training requirements and lack of certified maintenance facilities also can increase costs for propane fleets. The net impact on maintenance costs related to the use of alternative fuels will depend on a variety of factors and is difficult to generalize.

Because the EVs currently available to consumers have been introduced only in the last 3 years, information is limited related to their maintenance costs. Most researchers assume that BEVs will cost less to maintain than ICE vehicles because their engines have fewer moving parts and maintenance needs. For example, BEVs will not need oil changes, air filter replacements, spark plug replacements, or timing chain adjustments. Because they use regenerative braking, both HEVs and EVs will experience less brake wear.

Because current maintenance cost information is not extensive and the differences are expected to be small, maintenance costs are not included in the cost comparisons below.

Purchase and Fuel Cost Comparison

Based on the purchase price and operations cost assumptions described above and in the preceding tables, Figure 4-1 and Figure 4-2 present a sample cost comparison for light-duty sedans and light-duty trucks, respectively.

Figure 4-1. Sample Light-Duty Sedan Purchase and Lifetime Fuel Cost Comparison

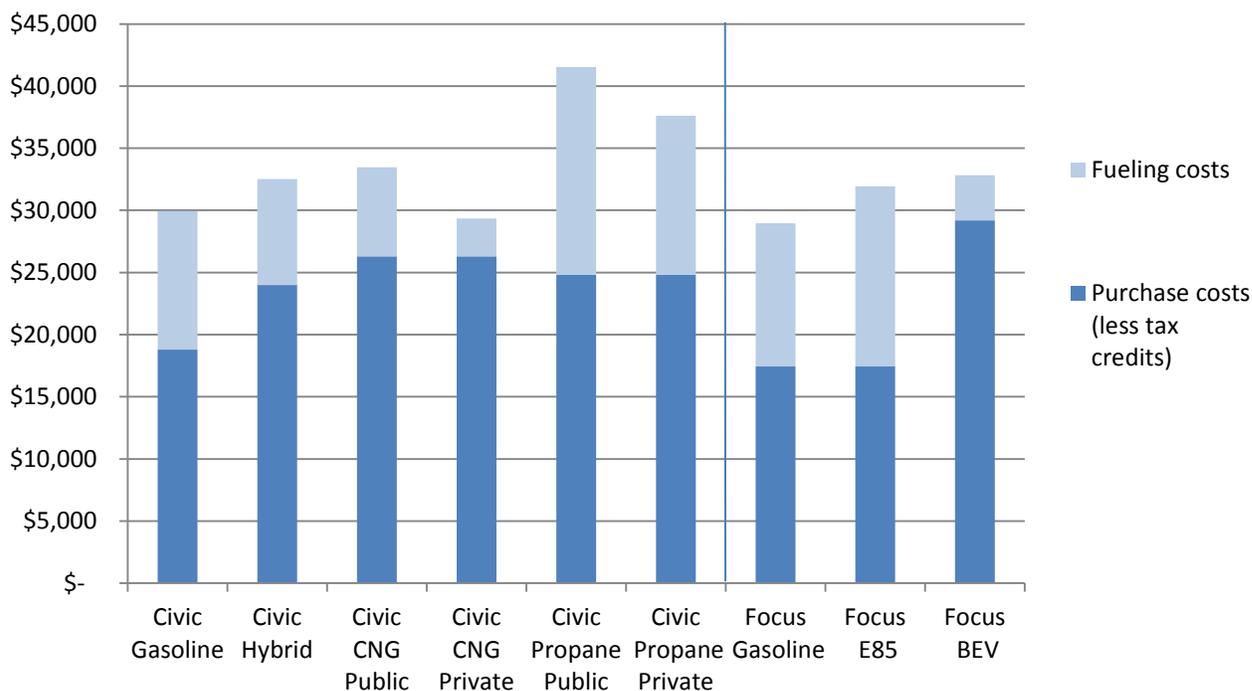
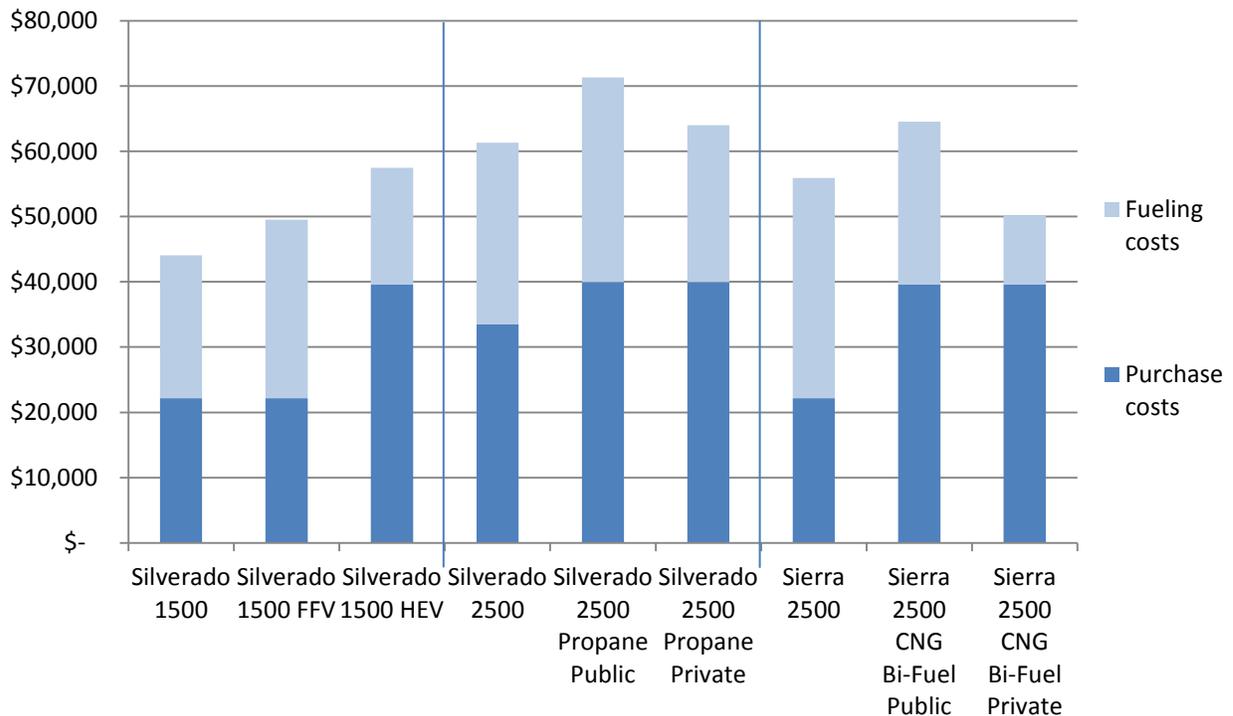


Figure 4-2. Sample Light-Duty Truck Purchase and Lifetime Fuel Cost Comparison



For most of the sample light-duty vehicles included in the preceding figures, alternative fuels result in an increase in purchase plus fuel costs over the baseline gasoline vehicle. The exceptions are the CNG vehicles (Civic sedan and GMC Sierra 2500) fueled at a private (fleet-owned) facility. For many other options, the lifetime cost increase is modest. For example, the E85 and BEV Ford Focus cost 10% and 13% more, respectively, than a gasoline Focus over the vehicle lifetime. Also note that these are sample vehicle models; other HEV and BEV options may result in lifetime cost savings.

Medium- and Heavy-Duty Truck and Transit Bus Costs

Vehicle Purchase Price

Because biodiesel can act as a drop-in replacement for diesel fuel, costs for biodiesel vehicles are comparable to those for conventional diesel vehicles. Biodiesel will run in most diesel vehicles without need for retrofit or conversion. B5 is approved by manufacturers in all diesel engines. B20 has been shown to perform well in diesel vehicles, even in cold weather and in older vehicles.²⁸ Based on bus price assumptions supplied by the Metropolitan Transportation Commission (MTC) for fiscal year 2013-2014, the total purchase price for 40 foot diesel, diesel HEV, and CNG buses are \$544,000, \$733,000, and \$607,000, respectively. MTC guidance notes that the federal government covers, on average, 80.64% of the bus purchase price, and the local government pays the remaining 19.38%. Using these assumptions, a local government would typically pay \$105,416, \$142,041, and \$117,624 for a diesel, diesel HEV, and CNG bus, respectively.

The price differential for purchase of natural gas buses is smaller in percentage terms compared to the difference in purchase price for natural gas light-duty sedans and trucks. The purchase price of a CNG bus is approximately 12% higher than that of a diesel bus, compared to a 40–75% purchase price increase for natural gas light-duty sedans and trucks.

Table 4-6. Sample Incremental Vehicle Prices for Alternative Fuel Medium-Duty Trucks and Transit Buses Compared to Diesel Vehicles

Medium-Duty Truck		Transit Bus (Local Portion)			
Diesel	B20	Diesel	B20	Diesel HEV	CNG
Baseline	\$0	Baseline	\$0	\$36,625	\$12,208

Maintenance and Operations Costs

Biodiesel has a solvent quality that will clean the fuel delivery system. Even at low-level blends, initial use of biodiesel will require changing fuel filters more often as the fuel accumulates contaminants in the fuel system. After the fuel system is clean, fuel filter service intervals return to normal.²⁹

Once any initial maintenance costs associated with a transition to biodiesel have been incurred, regular maintenance costs should be similar to those for conventional diesel vehicles. A study for the Federal Transit Administration (FTA) reported that maintenance costs for a fleet of 100 buses using B20 would be slightly lower than for using ULSD (\$0.14 vs. \$0.15 per mile).³⁰ In a study examining transit buses running on B20 for 100,000 miles, the National Renewable Energy Laboratory found no difference in fuel economy, engine maintenance costs, or road calls between buses operating on B20 and those operating on diesel.³¹

Maintenance costs for CNG buses are reported to be higher than for diesel buses based on a survey of transit agencies.³² While maintenance costs varied across surveyed agencies, the median cost was found to be 15% higher, at \$0.68 per mile compared to \$0.59 per mile for diesel. Note that some of these reports of higher CNG maintenance costs may be based on experiences with “first generation” CNG buses, as was the case with Vacaville. Some agencies report that newer CNG buses have no significant maintenance cost differences compared to diesel. Also note that fleets introducing natural gas for the first time will face significant costs associated with constructing or retrofitting a maintenance facility that can service CNG vehicles.

In terms of fueling costs, biodiesel in B20 blend currently costs approximately 2% more than conventional diesel, and the fuel has slightly lower energy content. Switching to B20 would increase annual fueling costs by 3–4%. Thus, for medium-duty trucks, sample lifetime fuel costs would be \$39,200 for diesel and \$40,400 for B20.

The fuel savings from hybrid electric buses depends on factors such as the number of stops per mile, average speed, and topography. Since the electric battery is recharged through braking, hybrids can be much more fuel efficient than their conventional counterparts in stop-and-go traffic, while their fuel economy advantages are less in freeway traffic. The San Francisco Municipal Transportation Agency

(SFMTA) has seen a 25% improvement in fuel economy with its hybrids. New York City MTA (which has the nation's largest hybrid bus fleet) has experienced a 10% to 30% fuel economy improvement, and one study found a 27% improvement for King County Metro Transit in the Seattle. Fairfield has observed a 35% - 50% fuel economy improvement compared to diesel buses of similar model year. Note that the fuel economy of hybrid buses has improved nearly 50% over the last seven years, due mainly to technology improvements.³³ So the newest hybrid buses will likely achieve greater fuel savings than older models.

Table 4-7 shows sample lifetime operations and maintenance costs for diesel and several transit bus alternative fuel options. These calculations assume a transit bus life of 12 years.³⁴

Table 4-7. Sample Transit Bus Lifetime Operations and Maintenance Costs

Cost Type	Diesel	B20	Diesel HEV	CNG	
				Public	Private
Fuel costs	\$487,500	\$502,400	\$390,000	\$367,000	\$163,400
Maintenance costs	\$283,200	\$283,200	\$283,200	\$326,400	\$326,400

Purchase and Fuel Costs

Using the purchase price and maintenance and operations costs discussed above, Figure 4-3 and Figure 4-4 show a sample cost comparison for medium-duty trucks and transit buses, respectively.

Figure 4-3. Sample Medium-Duty Truck Purchase and Lifetime Fuel Cost Comparison

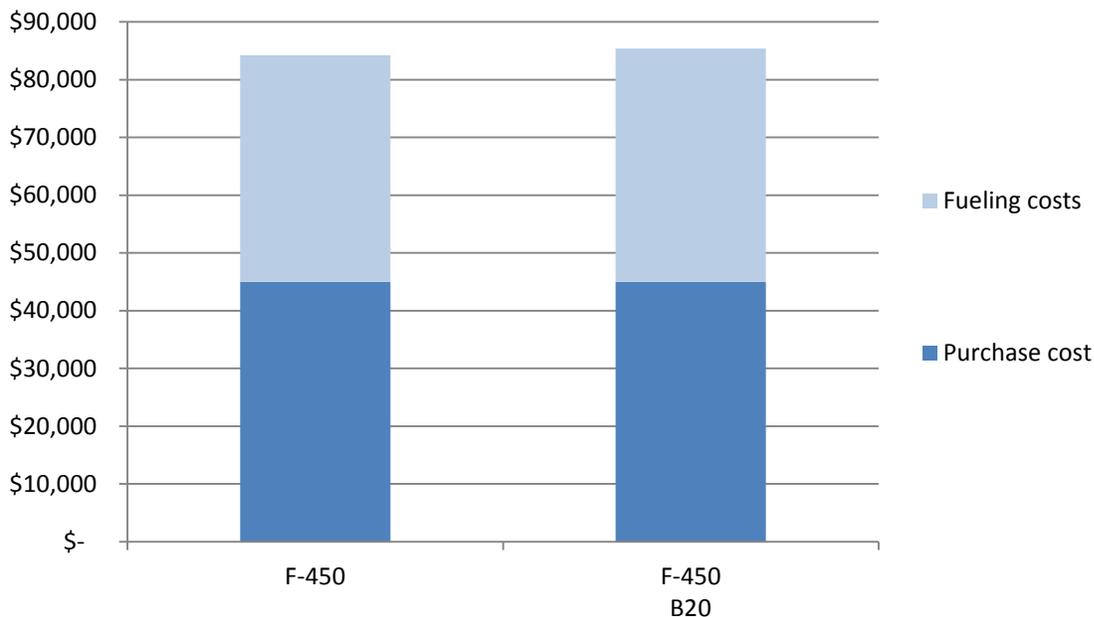
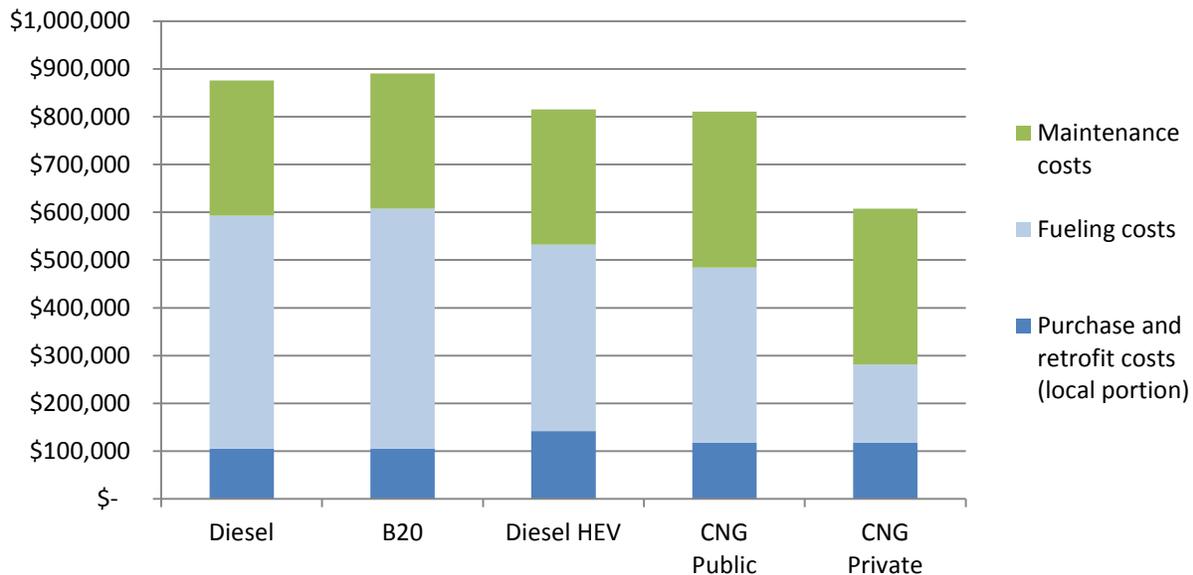


Figure 4-4. Sample Transit Bus Purchase and Lifetime Maintenance and Fuel Cost Comparison



As shown in these figures, biodiesel for medium-duty trucks and transit buses have slightly higher costs due to increased fuel costs. The lower fuel costs for the diesel HEV over the 12-year life offsets the higher purchase cost of the diesel HEV compared to the diesel bus. CNG buses have a lower cost due to the much lower fuel costs of CNG compared to diesel, particularly in the case of CNG purchased from private stations.

When considering costs associated with heavy-duty vehicles, it should be recognized that vehicles that have an axle weight of over 16,000 lbs can significantly affect pavement on non-arterial roads. If a certain type of bus (CNG, Diesel, Hybrid, etc.) is heavier on one or both axles, it can cause more damage to a road. It is possible that a cost savings to a transit agency could result in premature and costly repairs for a local public works agency if there is a significant increase in weight on the bus axles.

Fueling Infrastructure Costs

E85 vehicles require dedicated infrastructure for fuel storage and refueling. E85 fuel is delivered as a blend to the station. A fleet with E85 vehicles can choose to “fill up” at public stations or install dedicated infrastructure alongside conventional gasoline tanks. A typical cost for a new E85 station is \$150,000.³⁵ If a single ethanol pump and new fuel tank are added to an existing station, a typical cost is \$60,000; adding E85 capacity by converting an existing tank costs approximately \$11,000.³⁶ Currently, only three E85 fueling stations are located in Solano County: the Solano County Corporation Yard #1 facility in Fairfield and publicly available stations in Vacaville and Fairfield.

CNG vehicle fleets require a dedicated on-site natural gas station or accessible public facilities. For small CNG fleets, especially those consisting of passenger cars and light-duty trucks, public infrastructure would likely be sufficient if a source is nearby. Large CNG fleets and bus fleets would likely require on-site infrastructure. The CEC estimates that the cost of a new CNG fueling station would range from

\$600,000 to \$5 million, depending on the size of the facility and other factors.³⁷ CNG fueling infrastructure also involves maintenance costs that are likely to be higher than for conventional fuel infrastructure. A Transportation Research Board study found the annual maintenance cost of CNG fueling infrastructure to be 6.8% of the infrastructure capital cost.³⁸ The cost of LNG infrastructure fits within the range above.

The cost of building a propane fueling station is similar to that for a comparably sized gasoline dispensing system, and propane refueling infrastructure can often be added to existing service station infrastructure. The cost of a typical fleet fueling facility capable of serving 10–30 vehicles would range from \$25,000 for a 500-gallon tank with a non-electronic turnkey dispenser skid system up to \$60,000 for a fully integrated electronic fuel dispenser system with a 2,000-gallon tank.³⁹

The per-vehicle refueling station cost depends on the number of vehicles served by the facility. Because of the relatively low facility costs and the quick fill capability of a propane station, most private fleet facilities operate well below their vehicle capacity. Based on a typical fleet size of 10–20 vehicles, the cost of a dedicated fleet propane refueling station would be approximately \$2,000–\$3,000 per vehicle. The per-vehicle costs drop quickly for facilities serving larger fleets.

Similar to operations and maintenance costs, there is relatively little experience with installation of hydrogen fueling infrastructure. The examples to date have likely incurred much higher costs than will future hydrogen fueling stations. AC Transit opened a hydrogen fueling facility in April 2012 to serve its fleet of 12 demonstration fuel cell buses.⁴⁰ The total cost of the facility was approximately \$6 million, funded in part by a state grant.⁴¹ The agency is building another hydrogen fueling station in Oakland.

Use of EVs by public agencies requires the availability of charging infrastructure, sometimes referred to as electric vehicle supply equipment (EVSE). The cost of EVSE depends heavily on the type of charger, as well the extent of any trenching and concrete work needed to bring electrical service to the charger. Costs typically range from \$3,800 to \$11,000 for Level 1 EVSE, from \$5,600 to \$14,000 for Level 2, and from \$100,000 to \$150,000 for DC fast charging (including all power infrastructure, equipment, and installation costs).

Table 4-8 shows a summary of the estimated costs for alternative fuels infrastructure. In addition to the equipment costs for infrastructure, there are potential increases in costs for additions to the Fleet Management Information System (FMIS) that would need to be included.

Table 4-8. Estimated Infrastructure Costs for Alternative Fuels

E85		CNG	Propane	Hydrogen	EV		
Existing Station	New Station	New Station	New Station	New Station	Level 1	Level 2	DC Fast Charging
\$60,000	\$150,000	\$600,000 – \$5 million	\$60,000	\$6 million	\$3,800 – \$11,000	\$5,600 – \$14,000	\$100,000 – \$150,000

Vacaville's Experience with Natural Gas

Among Solano county agencies, Vacaville has the most experience with using natural gas for transportation. In 2001, Vacaville built an on-site CNG compression station and retrofitted its bus maintenance facility to handle CNG. The cost of the compression station was approximately \$800,000. Vacaville City Coach then began operating five 30-foot CNG buses. These vehicles were among the first generation of CNG buses and suffered from maintenance problems, mostly because of the undersized bus body rather than the fuel. In 2009 and 2010, the agency switched to 35-foot New Flyer low-floor CNG buses, following successful operation of this model by Golden Gate Transit. Vacaville's 15 CNG buses have performed well, with maintenance costs comparable to a conventional diesel bus. On the general fleet side, the city now has approximately 15 CNG cars and trucks in its fleet. The CNG Honda Civic has become the sedan of choice as gasoline-powered sedans are replaced.



Because of the low cost of CNG, Vacaville's fleet now enjoys significantly lower operating costs. While the price of natural gas fluctuates, the city has typically paid \$0.90 - \$1.00 per diesel gallon equivalent (DGE) for gas delivered to city's yard via pipeline. Compressing the gas adds about 10% to the cost. Vacaville can also take advantage of a federal tax rebate for natural gas. The net cost to the city is approximately \$0.80 - \$0.90 per DGE, as compared to recent diesel prices of \$4.00 per gallon and higher. These substantial cost savings allow Vacaville City Coach to achieve

a higher farebox recovery ratio (the portion of operating costs covered by bus fares).

Vacaville is currently investigating the prospect of providing CNG for the city's refuse hauling contractor. Within a few years, the refuse hauler will operate 38 CNG vehicles in Vacaville, all of which could be potentially fueled at the city's corporate yard CNG station. This arrangement has the potential to provide additional revenue for the city, while also providing discounted CNG to the refuse hauler and reducing diesel emissions in the city's neighborhoods.

4.3. Air Pollution and Health Impacts

The air pollutants of greatest concern in Northern California are nitrogen oxides (NOx), volatile organic compounds (VOCs), fine particulate matter, and diesel particulate matter (DPM). These are termed *criteria pollutants*. NOx and VOCs are the two major components in the formation of ground level ozone, or smog. Ground level ozone can trigger a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis. The EPA has designated the San Francisco Bay Area as a marginal nonattainment area for ozone, indicating some exceedances of the National Ambient Air Quality Standard (NAAQS).

Particulate matter (PM) is directly emitted from engines and is produced by motor vehicle tire and brake wear. PM is also created when emissions of NOx or sulfur oxides (SOx) react with other compounds in the atmosphere to form particles. Many scientific studies have linked breathing PM to significant health problems, including aggravated asthma, chronic bronchitis, and heart attacks. The most significant health impacts are caused by fine particulate matter (PM2.5), which consists of particles less than 2.5 microns in diameter. The San Francisco Bay Area is designated as a nonattainment area for PM2.5, indicating an unacceptable air pollution level for this finer particular matter.

DPM is of particular concern because it is widely believed to be a human carcinogen when inhaled. DPM carries heavy metals and toxic hydrocarbons into the body, and is the primary cancer-causing agent in vehicle exhaust. Studies in Southern California have found that 70% of the air pollution inhalation cancer risk in the region was caused by DPM, most of which comes from goods movement sources.⁴²

Biofuels and Blends

Unlike GHGs, which are measured on a lifecycle basis, criteria pollutant emissions focus exclusively on the vehicle—including both vehicle tailpipe exhaust or evaporations from the fueling system. Vehicle criteria pollutant emissions are a significant source of air quality problems within urban areas, including smog and cancer-causing chemicals. E85 emissions of NOx (a precursor to smog) are 27% lower than those for gasoline, while VOCs show a small decrease.⁴³ NOx emission benefits are due to the lower combustion temperature for E85. Notably, NOx emissions for the lower-ethanol content E10 blend are slightly higher than those for gasoline. It is important to note that FFVs meet the same emissions standards as conventional vehicles, regardless of their using gasoline or E85.

B20 biodiesel shows small emission benefits across most criteria pollutants. VOCs and carbon monoxide (CO) are reduced by approximately 20% and 10%, respectively. These values are relatively small compared to emissions for diesel, as the B20 blend is primarily diesel fuel. Biodiesel has been shown to slightly increase and decrease NOx emissions, depending on the study. The change in NOx emissions varied between plus and minus 2% for B20 in EPA testing.⁴⁴ When considering diesel emissions, the most significant pollutant is DPM, primarily in the form of soot emitted from the tailpipe. As noted, DPM carries heavy metals and toxic hydrocarbons into the body, and is the primary cancer-causing agent in diesel vehicle exhaust. B20 reduces DPM by approximately 10%.⁴⁵ However, because new diesel vehicles have pollution controls such as diesel particulate filters, DPM emissions are low in new vehicles even

without the use of B20. B100 reduces DPM by 100%. Figure 4-5 shows the percent change in emissions for E85, B20, and B100 compared to petroleum-based fuels.

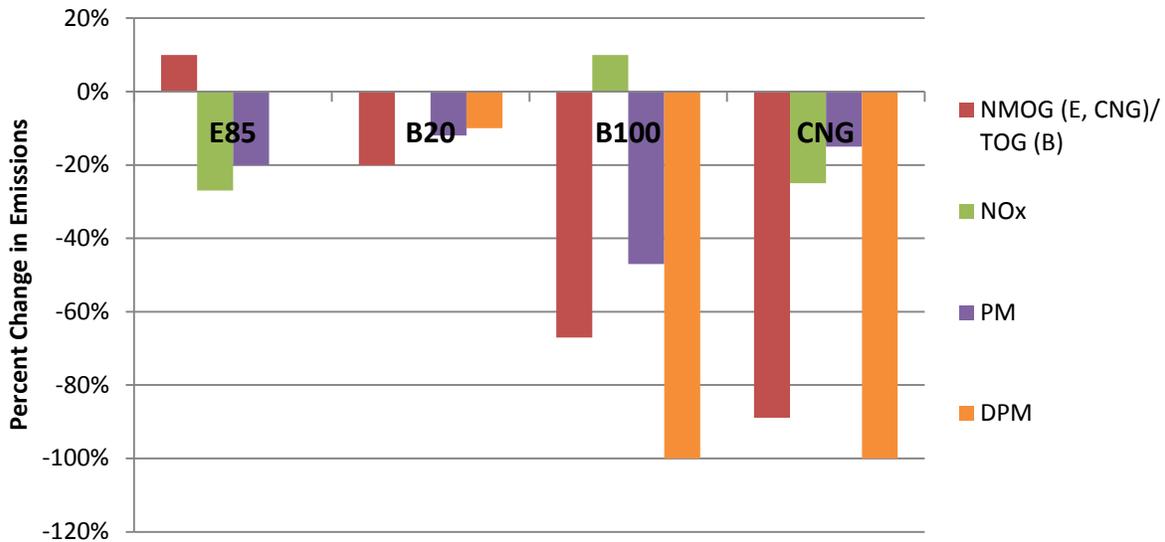
Natural Gas and Propane

In passenger cars, EPA reports that the criteria pollutant emissions benefits of CNG are small compared to gasoline vehicles with modern emission controls. EPA's emission standards do not differentiate among fuel types, and CNG vehicles are held to the same standard as gasoline vehicles. Nevertheless, NGVs offer emissions benefits compared to gasoline vehicles, especially when replacing older vehicles.⁴⁶ Emissions certifications for light-duty trucks (both original engine manufacturer and after-market conversion) show a range of lower and slightly higher emissions for criteria pollutants but always below the emissions standard.⁴⁷

In bus transit fleets, CNG historically has produced significant emissions reductions compared to diesel. However, with the introduction of low-emission diesel buses that meet the EPA 2007/2010 emissions standards, the benefits of CNG are more modest because both diesel and CNG heavy-duty engines must meet the same stringent emissions standards. There has been little in-use testing of emissions from new CNG buses for comparison to diesel. Based on natural gas engines certified for HDVs, NOx emissions reductions appear to be in the range of 20–30%, with 25% represented in the chart below.^{48 49} The effect on PM emissions is less certain. New natural gas engines for trucks have been certified at PM emissions levels significantly lower than diesel. However, natural gas trucks operated at the Port of Los Angeles have shown greatly increased ammonia emissions relative to diesel trucks.⁵⁰ Ammonia can produce secondary particulates that could offset the PM benefits of natural gas. Newer natural gas vehicles may eliminate this problem. The effect of natural gas vehicles on PM emissions is an area of ongoing research. For this report, PM benefits were assumed in the range of 10–20% (15% represented in the chart below) in comparison to conventional diesel. In CNG applications that displace 100% of diesel, DPM is also decreased by 100%.

Propane burns cleaner than gasoline or diesel. However, compared to modern gasoline and diesel vehicles, propane does not offer significant criteria pollutant emissions benefits. Emissions certification data for propane conversions of gasoline engines show both slight increases and decreases in criteria pollutant emissions, depending on the size of the engine and vehicle converted.⁵¹ The emissions control systems of conventional vehicles have improved to the extent that gasoline or diesel emissions are already at a very low level. As with natural gas vehicles, EPA emissions standards apply equally to all fuel types.⁵² Also, similar to CNG, propane shows a 100% reduction of DPM. Figure 4-5 shows the percent change in emissions for CNG compared to petroleum-based fuels.

Figure 4-5. Emissions Reductions of Biofuels, Biofuel Blends, and CNG Compared to Petroleum-Based Fuels



Note: NMOG is non-methane organic gases (presented for E85 and CNG). TOG is total organic gases (presented for B20 and B100).

Hydrogen and Electricity

Hydrogen and electricity are considered the two main advanced fuels. From a tailpipe perspective, the criteria pollutant and air toxic benefits of hydrogen depend on the vehicle technology used. For FCVs, vehicles emit only water vapor with trace amounts of hydrogen, eliminating all tailpipe pollutants. A major benefit of BEVs is the total elimination of tailpipe emissions. Consequently, BEVs can greatly contribute to improving local air quality.

The benefits of PHEVs and HEVs are less because these vehicles burn gasoline during a portion of operation. However, with emission control technology in place, criteria pollutant emissions from PHEVs and HEVs are equivalent to or less than those from conventional gasoline and diesel vehicles. In contrast, hydrogen ICE vehicles produce quantities of NOx in the combustion process. Hydrogen’s higher flame temperature compared to gasoline drives higher NOx emissions, although these emissions can be greatly reduced in an after-treatment process.

4.4. Greenhouse Gas Emissions Impacts

This section discusses the GHG benefits of alternative fuels and technologies for the gasoline/light-duty sector and the diesel/medium- and heavy-duty sector.

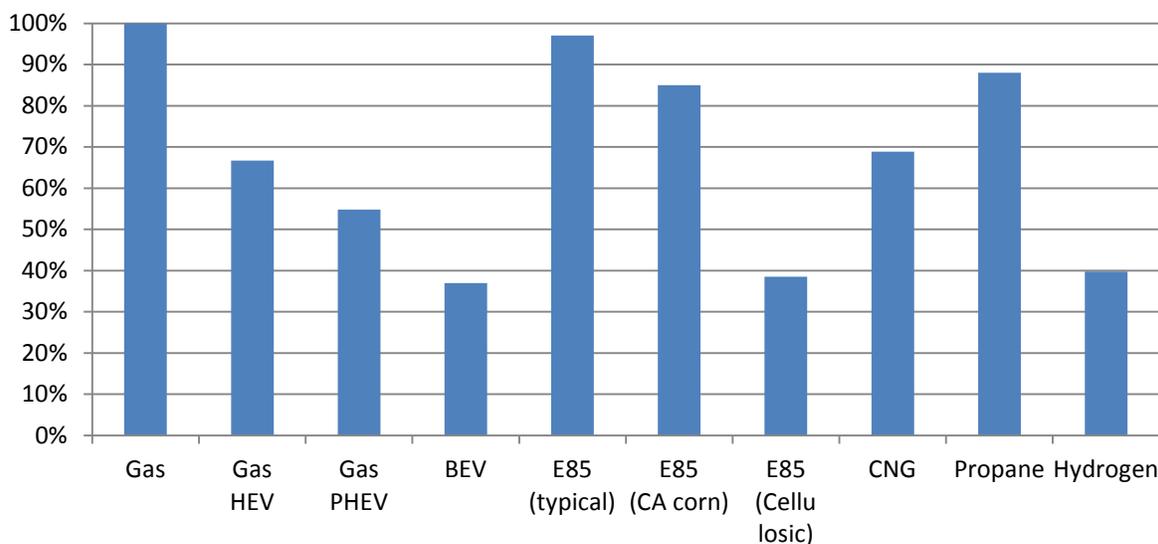
Gasoline/Light-Duty Vehicles

For gasoline/light-duty vehicles, the alternative fuels and technologies to reduce GHGs are hybridization, electricity, ethanol, natural gas, propane, and hydrogen. Figure 4-6 compares the GHG emissions of alternative technologies and fuels to the emissions of conventional gasoline vehicles. These emissions

estimates are based on fuel-specific carbon intensity values published by ARB and thus reflect fuel and electricity typical for the state.

The GHG emissions benefits of ethanol vary considerably, depending on the feedstock that is used and the method of refining the fuel. The most common feedstock in use for ethanol in California today is a blend of Midwest corn and California feedstock. Because relatively high GHG emissions are associated with crop production, the net GHG emissions resulting from typical ethanol are just 4% less than those of gasoline. If ethanol is produced exclusively in California, there is a potential for a 19% carbon intensity reduction due to the increased efficiency of California ethanol plants. This translates to a 15% carbon intensity reduction for E85 using California corn ethanol. Ethanol produced from sugar cane is cleaner, with GHGs that are on average 23% less than those from gasoline. Cellulosic ethanol produced from forest waste would reduce greenhouse gas emissions by 78% compared to gasoline. Note that the GHG emissions benefits of various ethanol blends will be less than the benefits of pure ethanol, depending on the ratio of ethanol to gasoline.

Figure 4-6. GHG Emissions Benefits of Alternative Technologies and Fuels for Light-Duty Vehicles Compared to Conventional Gasoline



Natural gas has GHG emission benefits when used as an alternative to gasoline. The most prevalent form of natural gas compressed to CNG has a lifecycle carbon intensity of 31% less than gasoline. The benefits of LNG are smaller, primarily due to the energy needed to liquefy the fuel. When natural gas is delivered from overseas sources, the carbon intensity is higher due to transportation needs. While the carbon intensity of propane is lower than conventional fuels, it is among the highest of alternative fuels listed in this report. With a carbon intensity of 86.9 grams of carbon dioxide-equivalent per megajoule (g CO₂e/MJ), GHG emissions from propane are 12% less than those of gasoline.⁵³

Although hydrogen FCVs can produce significantly lower GHG emissions than gasoline on a lifecycle basis, the benefits depend heavily on how the hydrogen is produced. The difference lies in the feedstock source—whether hydrogen is produced from natural gas (using steam methane reformation [SMR]

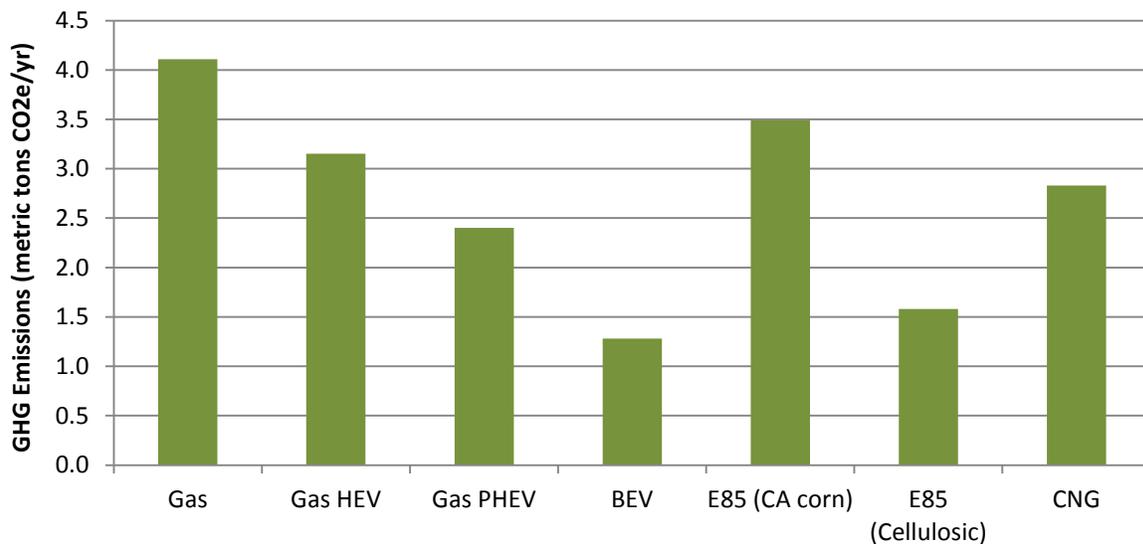
technology), produced from water using “dirty” electricity with a high-carbon intensity, or produced from “clean” electricity from renewable sources. SMR-produced hydrogen has higher carbon intensity than conventional gasoline, at 95.86 g CO₂e/MJ; when the efficiency of a FCV is taken into account, however, hydrogen has 60% lower GHG emissions than gasoline.^{54,55}

Hybridization does not change the type of fuel consumed but lessens the amount of fuel used by increasing the fuel economy. Reviewing newer EPA-rated fuel economies of hybrid vehicles compared to their gasoline counterparts, hybridization increases fuel economy by an estimated 50%. HEVs typically see a 33% reduction in GHG emissions compared to a comparable gasoline ICE vehicle.

The GHG emissions of EVs depend on fuel mix and vehicle type. For purposes of the Low Carbon Fuel Standard (LCFS), ARB estimated that EVs are three times more energy efficient than conventional gasoline ICE vehicles. For a typical BEV, the net effect is a 71% reduction in GHG emissions per mile, compared to a gasoline ICE vehicle. The emissions benefits of PHEVs are less because they are designed to operate on a mix of electricity and gasoline. A typical PHEV produces 48% fewer GHG emissions per mile. Note that increased usage of EVs will increase demand for electricity. The effects of EVs on the electric grid are minimized if EVs can be charged during off-peak times (e.g., night time).

For cities wishing to estimate the GHG benefit of alternative fuel vehicles on a tonnage basis, Figure 4-7 shows annual GHG emissions per vehicle across the various fuel and technology options. These estimates use the same assumptions for annual mileage and fuel economy as discussed in Section 4.2. The emissions benefits can be multiplied by the number of alternative fuel vehicles in a fleet to estimate the total GHG impact.

Figure 4-7. Annual GHG Emissions of Alternative Technologies and Fuels for a Light-Duty Vehicle Compared to Conventional Gasoline



Diesel/Medium- and Heavy-Duty Vehicles

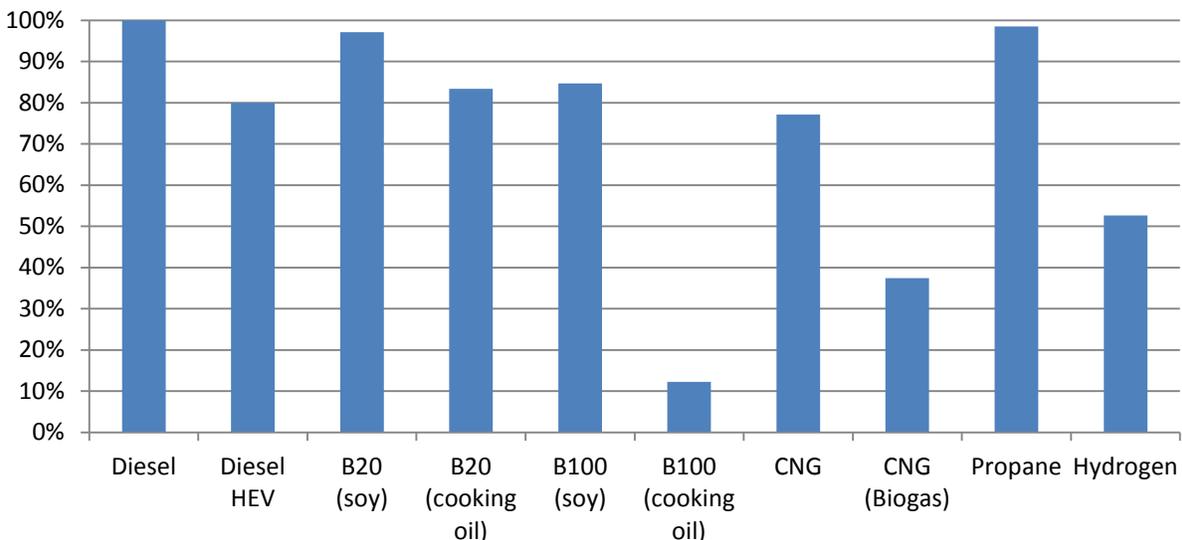
For diesel/medium- and heavy-duty vehicles, the alternative fuels and technologies to reduce GHGs are hybridization, biodiesel, natural gas, propane, and hydrogen. Figure 4-7 shows the GHG emissions of these technologies and fuels compared to conventional diesel vehicles.

Similar to ethanol, the CO₂ emissions at the tailpipe from a vehicle running on biodiesel are roughly equivalent to those from a vehicle running on conventional diesel. The GHG emission benefits of biodiesel are apparent only when viewed on a lifecycle basis that considers fuel production.

Biodiesel is currently produced from several feedstocks, in three main categories: waste oils such as used cooking oil, plant oils such as corn or palm oil, and crops such as Midwest soybeans. In the case of waste cooking oil and other waste streams (such as corn oil when extracted from distillers grains), the total biodiesel GHG emissions are very low. For example, when produced from used cooking oil, biodiesel reduces GHG emissions by approximately 85%.⁵⁶ When produced from soybeans, however, the reductions are only 12%, due to emissions related to cultivation of the soybeans.⁵⁷ The land use effects similarly reduce the GHG emissions benefits of using virgin corn oil and palm oil as a biofuel feedstock. These GHG emissions benefit figures apply to pure biodiesel. When blended with conventional diesel, the emission benefits would be reduced, depending on the ratio of the blend.

Natural gas, in compressed or liquid form, has GHG emissions benefits when used as an alternative to diesel. The most prevalent form of natural gas has a lifecycle carbon intensity of 23% less than diesel when taking into account the 10% efficiency loss of natural gas compared to diesel. The benefits of LNG are smaller, primarily due to the energy needed to liquefy the fuel. Natural gas produced from biogenic sources produces much less CO₂ (on a lifecycle basis) than conventional natural gas or diesel. No crop production emissions are associated with gases collected from waste streams. CNG produced from landfill gas (biomethane) has a lifecycle carbon intensity that is 63% less than conventional diesel when taking into account the 10% efficiency loss of natural gas compared to diesel. While the carbon intensity of propane is lower than conventional fuels, it is among the highest of alternative fuels listed in this report.⁵⁸

Figure 4-8. GHG Emissions Benefits of Alternative Technologies and Fuels for Medium- and Heavy-Duty Vehicles Compared to Diesel

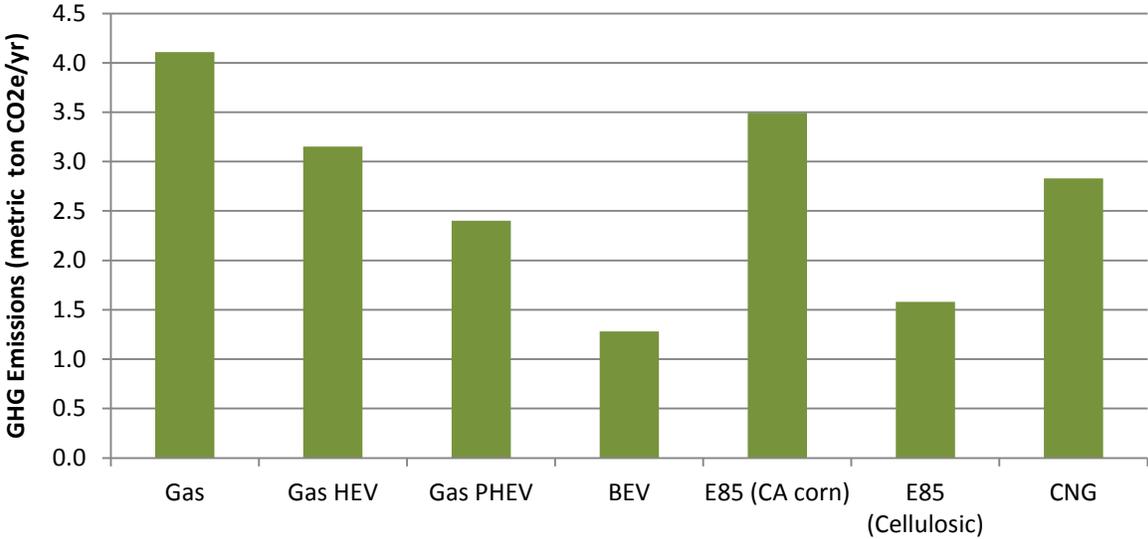


Similar to gasoline, hydrogen FCVs can produce significantly lower GHG emissions than diesel on a lifecycle basis; reduced GHG emissions depend heavily on how the hydrogen is produced. SMR-produced hydrogen has higher carbon intensity than diesel, at 95.86 g CO₂e/MJ; when the efficiency of an FCV is taking into account, however, hydrogen has 60% lower GHG emissions than diesel.^{59,60}

When compared to diesel, the most prevalent electrification technology is hybridization and not pure battery electric technologies. This is due to the extremely high incremental cost of battery electric medium- and heavy-duty vehicles. Hybrid-electric diesel vehicles, including transit buses, have an estimated increased efficiency of 25%, resulting in a 20% decrease in fuel consumption and GHG emissions. Hybrid-electric diesel vehicles using biodiesel blends would result in additional GHG emissions reductions.

Figure 4-9 below, using the same assumptions in Section 4.2 for annual fuel consumption, shows the estimated annual GHG emissions for a selection of alternative fuels for a transit bus. For cities wishing to estimate the GHG benefit of alternative fuel buses on a tonnage basis, the emissions benefits can be multiplied by the number of alternative fuel vehicles in a fleet to estimate the total GHG impact.

Figure 4-9. Annual GHG Emissions of Alternative Technologies and Fuels for a Transit Bus Compared to Diesel



4.5. Funding Sources

A variety of federal, state, and regional funds are available to fleets for alternative vehicles and infrastructure. Described below are available sources of funding starting at the federal level and working down to the regional level.

Federal Funding

The main sources of funding for fleets and transit agencies at the federal level are Congestion Mitigation and Air Quality Improvement (CMAQ) funds; FTA Grants, including the Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER) Program and the Clean Fuels Grants Program; Diesel Emissions Reduction Act (DERA) funding; and federal vehicle and infrastructure tax credit.

Congestion Mitigation and Air Quality Improvement Program. The CMAQ Program funds transit improvements, travel demand management strategies, traffic flow improvements, and public fleet conversions to cleaner fuels. The federal share for most CMAQ-eligible projects is 80%. Establishment of alternative fuel refueling facilities and related other infrastructure is eligible for funding if the facility is publicly owned or leased. However, if private alternative fuel stations are reasonably accessible, CMAQ funds may not be used to fund publicly owned refueling stations. Grants from this program can pay for the incremental cost of purchasing natural gas vehicles and can be used to fund alternative fuel refueling projects, although the projects must have 20% local or regional co-funding, and funding is allowed for private/public partnerships.

Federal Transit Administration Grants. The FTA provides grants to help fund transit buses for local and regional public transit systems. FTA helps communities support public transportation by issuing grants to eligible recipients for planning, vehicle purchases, facility construction, operations, and other purposes. Two of FTA’s programs are described below.

Transit Investments for Greenhouse Gas and Energy Reduction Program. The TIGGER Program is managed by FTA's Office of Research, Demonstration and Innovation in coordination with the Office of Program Management and FTA regional offices. The TIGGER Program works directly with public transportation agencies to implement new strategies for reducing GHG emissions and for reducing energy use within transit operations. These strategies can be implemented through operational or technological enhancements or innovations. To align the TIGGER Program with other strategic initiatives, FTA encourages project implementation that will enhance operational efficiencies, demonstrate innovative electric drive strategies, and create an environment prioritizing public transportation through intelligent transportation systems or other related technology approaches to achieve efficiency and sustainability goals. Eligible recipients include public transportation agencies, federally recognized tribes, and state departments of transportation. Eligible activities include capital investments that assist in reducing the energy consumption of a transit agency and capital investments that reduce greenhouse gas emissions of a transit agency.

Clean Fuels Grants Program. The Clean Fuels Grants Program has a two-fold purpose. First, the program was developed to assist nonattainment and maintenance areas in achieving or maintaining the NAAQS for ozone and CO. Second, the program supports emerging clean fuel and advanced propulsion technologies for transit buses and markets for those technologies. Eligible recipients include entities authorized to receive federal urbanized formula funds and located in areas that are designated as maintenance or non-attainment for ozone or CO. Eligible activities include assisting recipients to purchase or lease clean fuel buses and to construct or lease clean fuel bus facilities or electrical recharging facilities and related equipment; and projects relating to clean fuel, biodiesel, hybrid electric, or zero emissions technology buses that exhibit equivalent or superior emissions reductions to existing clean fuel or hybrid electric technologies. Facilities and related equipment for clean diesel buses are not eligible for these grants.

Examples of Federal Transit Administrations' Transit Investments for Greenhouse Gas and Energy Reduction (TIGGER) and Clean Fuels Grants Programs

The fiscal year 2011 Sustainability Awards for the TIGGER and Clean Fuels Programs granted a total of \$13.7 million to California recipients. These included the following grants:

- TIGGER Program grant of \$6.7 million to Long Beach Public Transportation Company to replace diesel buses with all electric buses for a pilot program
- TIGGER Program grant of \$4.9 million to Sunline Transit Agency to assist in building two fuel cell hybrid buses
- Clean Fuels grant of \$2 million to Long Beach Public Transportation Company to replace aging diesel buses with gasoline/electric hybrid buses
- Clean Fuels grant of \$700,000 to Monterey-Salinas Transit to replace gas minibuses with diesel hybrid electric buses

Diesel Emissions Reduction Act Program. The DERA Act of 2010, or DERA 2, reauthorizes the DERA grant program to award up to \$100 million per year for fiscal year (FY) 2012–2016. DERA 2 removes the

requirement that 50% of funds be used for public fleets and removes restrictions on using funds for programs mandated by state or local law. DERA funds will continue to support projects that strategically reduce diesel emissions. EPA distributes DERA funds through seven regional collaboratives, with 70% of funds awarded on a nationally competitive basis and 30% allocated for state programs. The collaboratives issue regional Requests for Applications (RFAs). New natural gas vehicles and natural gas conversion systems certified by EPA or ARB are eligible for all categories for which the collaboratives issue an RFA.

Federal Tax Credits. The last main federal funding source is federal tax credits. Three main federal tax credits are available to transit districts and fleets:

- Fueling equipment for natural gas, liquefied petroleum gas (propane), electricity, E85, or diesel fuel blends containing a minimum of 20% biodiesel installed between January 1, 2006, and December 31, 2013, is eligible for a tax credit of 30% of the cost, not to exceed \$30,000. Fueling station owners who install qualified equipment at multiple sites are allowed to use the credit toward each location.
- A fuel cell vehicle tax credit of up to \$4,000 is available for the purchase of qualified light-duty FCVs. Tax credits are also available for medium- and heavy-duty FCVs (\$10,000 – \$40,000, depending on vehicle weight). This tax credit expires on December 31, 2014.
- PHEVs purchased in or after 2010 may be eligible for a federal income tax credit of up to \$7,500. The credit amount varies based on the capacity of the battery used to fuel the vehicle.

State Funding

The three main state funding opportunities are the Alternative and Renewable Fuel and Vehicle Technology Program (Assembly Bill [AB] 118), the California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP) and the Light-Duty Clean Vehicle Rebate Project.

Alternative and Renewable Fuel and Vehicle Technology Program. AB 118 authorizes the California Energy Commission (CEC) to develop and deploy alternative and renewable fuels and advanced transportation technologies to help attain the state’s climate change policies. The CEC has an annual program budget of approximately \$100 million to support renewable and alternative transportation fuel projects. The statute allows the CEC to use grants, loans, loan guarantees, revolving loans, and other appropriate measures. Eligible recipients include public agencies, private businesses, public/private partnerships, vehicle and technology consortia, workforce training partnerships and collaboratives, fleet owners, consumers, recreational boaters, and academic institutions. The 2013–2014 program funding proposes infrastructure funding for EV charging (\$7 million), hydrogen fueling (\$20 million), and natural gas fueling (\$1.5 million). There is also \$12 million of proposed funding for NGV deployment. The CEC releases Program Opportunity Notices (PONs) for available funding that involves submitting competitive applications.

AB 118 Natural Gas Funding Opportunities

The California Energy Commission, through PON-12-605 Natural Gas Fueling Infrastructure, awarded funding on March 18, 2013, of almost \$4 million, with a significant share going to cities and school districts. Most of this funding was to assist building new CNG stations or upgrading existing stations. Applicants receiving grants included the City of Sacramento; County of Santa Clara; City of Santa Clarita; City of Anaheim; and the Lodi, Murrieta Valley, and Poway Unified School Districts. For example, the City of Sacramento plans on using its awarded \$600,000 grant plus a match of \$600,000 to upgrade and expand the existing LNG infrastructure.

Through PONs 10-603 and 10-604, AB 118 offers grants to buy down the incremental cost of natural gas and propane vehicles. Grant amounts range from \$3,000 to \$32,000 per natural gas vehicle and from \$3,000 to \$20,000 for propane vehicles. Grant amounts are based on vehicle weight. These grant opportunities are available until April 1, 2014, or until the funds are exhausted.

California Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project. The HVIP Program is intended to speed the early market introduction of clean, low-carbon hybrid and electric trucks and buses. The HVIP Program is designed to offset approximately one-half of the incremental additional cost of eligible hybrid and battery-electric medium- and heavy-duty vehicles and reduces this cost at the time of purchase. The HVIP base vouchers range from \$8,000 to \$45,000 on a first-come, first-served basis for the purchase of each eligible new hybrid or electric truck or bus. With the program's additional funding for qualified vehicles (the first three vehicles purchased), voucher levels can reach \$65,000 per vehicle. As of March 29, 2013, over \$12 million in vouchers are still available in the program.

Light-Duty Clean Vehicle Rebate Program. The Light-Duty Clean Vehicle Rebate Project is funded by the ARB and administered statewide by the California Center for Sustainable Energy. A total of \$26.1 million has been appropriated for FY 2009–2012 to promote the production and use of zero-emission vehicles, including EVs, PHEVs, and FCVs. Rebates of up to \$2,500 per light-duty vehicle are available for individuals and business owners who purchase or lease new eligible zero-emission EVs or PHEVs.

Regional Funding

Regional funding sources include Bay Area Air Quality Management District (BAAQMD) grants and incentives, Yolo-Solano Clean Air Funds, and Western Propane Gas Association's New Propane Vehicle Rebate Program.

Bay Area Air Quality Management District Funds. Part of Solano County is covered by the BAAQMD and can apply for BAAQMD grants and incentives. These grants and incentives include Climate Protection Grants, Lower-Emission School Bus funds, and the Transportation Fund for Clean Air. For example, the Transportation Fund for Clean Air can provide for a wide range of funding opportunities, including the purchase or lease of clean air vehicles.

Yolo-Solano Air Quality Management District Clean Air Funds. Yolo-Solano Air Quality Management District Clean Air Funds allow private businesses, non-profit organizations, and public agencies to apply for grants for projects designed to reduce emissions from motor vehicles. The funds can be used for vehicles or infrastructure. Projects awarded Clean Air Funds include replacing or retrofitting diesel trucks

and off-road equipment that do not qualify for other regional programs, new electric vehicles, construction of pedestrian and bicycle facilities, transit projects, and public information and education programs. Proposals can be made in one of three categories: clean technologies and low-emission vehicles; alternative transportation; transit; and public education.

Sacramento Metropolitan Air Quality Management District Regional Funding Program. Private business and public agencies that operate heavy-duty vehicles or mobile off-road equipment in the Sacramento Federal Non-Attainment Area (SFNA) which includes the eastern portion of Solano County, including Vacaville, Dixon, and Rio Vista, can receive funds to defray the costs of new lower emission technologies that meet cost effectiveness criteria. The program can help fleets pay for new lower emission engines, lower emission retrofits, and new equipment replacements under the district's Heavy-Duty Low-Emission Vehicle Program.

Western Propane Gas Association New Propane Vehicle Rebate Program. The Western Propane Gas Association funds a New Propane Vehicle Rebate Program. Up to \$1,000 is available to California propane customers who purchase a new propane vehicle or convert an existing vehicle to a propane system. The program runs until August 31, 2013.

Regulatory Funding

Low Carbon Fuel Standard. In some cases, LCFS directly may apply to transit or municipal fleets, due to the definition of a "regulated party." Entities that produce (CNG) and consume (CNG, electricity) alternative fuels can voluntarily opt-in to the LCFS and become a regulated party to generate credits. Requirements of a regulated party include quarterly and annual fuel consumption reports, which are done on-line through the state's LCFS tool and are used to calculate the credits generated. Opt-in parties are different than refiners and importers of gasoline and diesel, who are required to be regulated parties in the LCFS. For conventional natural gas fuel (as opposed to biogas), LCFS defines the regulated party as the entity that owns the natural gas fueling equipment. Also, if the transit or municipal fleets uses electricity in BEV or PHEVs in a fleet of three or more vehicles, the agency is eligible to opt-in to the LCFS and generate credits. These credits then can be sold to regulated parties for increased revenue and help offset incremental vehicle costs and infrastructure costs. Credits are currently being sold between \$40-\$65 per credit, which equates to approximately \$0.09-\$0.15 per GGE of CNG and \$0.31-\$0.50 per GGE of electricity.

5. Implementation Steps

Based on the assessment of the technologies, benefits, and costs of alternative fuel vehicles and infrastructure presented in the previous chapters, it appears that the three most promising areas of focus for Solano County public agencies interested in promoting alternative transportation fuels are:

- Biofuels
- Natural gas
- Electric vehicles

The most effective implementation steps for public agencies differ among these three fuel categories. This chapter discusses implementation steps, with an emphasis on near-term actions that can be led by Solano County public agencies interested in use of alternative fuels.

5.1. Biofuels

As discussed in Chapters 2 and 4, biofuels differ from most other alternative fuels in that they do not require large investments in new vehicle technologies. Many FFVs in municipal fleets are already capable of running on E85, and biodiesel blends up to B20 can be used in most HDVs without modification. Rather, the major barriers to increased use of biofuels are limited fueling infrastructure and limited understanding of biofuel options among the vehicle operators.

For agencies that are interested in increasing use of biofuels, the following implementation steps should be considered. These recommendations are based on a high-level assessment; a more detailed assessment that considers specific sites and operating environments would be needed to fully understand the benefits and drawbacks that any one alternative fuel type offers.

E85

E85 vehicles using corn-based ethanol produce modest reductions in GHG and air pollution emissions. In the future, by using E85 made from cellulosic ethanol (currently limited in supply), fleets can obtain much larger GHG emissions benefits.

One simple step to increase E85 use is simply to educate drivers or other staff about FFVs that may already be in their fleets. The fleet survey reported in Chapter 3 of this plan identified 133 FFVs currently in municipal fleets, but it is believed that this number is an undercount. Some city staff may not realize that they have FFVs, because the vehicles look identical to conventional gasoline vehicles and can operate solely on gasoline. For example, all Ford Crown Victorias model year 2006 and newer (a common police patrol vehicle) come flex-fuel capable from the factory. To remind operators about their fueling options, fleets should apply a designator for E85 capability to all FFVs, new and existing, if the fleet does not already do so.

The limited E85 fueling infrastructure is clearly another barrier to increasing the use of biofuels. As discussed in Chapter 3, the County currently has only three E85 fueling facilities—two that are publicly available (in Fairfield and Vacaville) plus the fueling station at Solano County’s corporate yard.

Both municipal fleets and private fleets can potentially modify fueling infrastructure at their operations and maintenance facilities to install E85 refueling infrastructure. This is a straightforward step to increase the amount of E85 consumed in fleets. There are two main pathways to install E85 infrastructure: (1) retrofit the existing storage tanks and dispenser to be E85 compatible; or (2) install new storage tanks and dispensers for E85. Generally, retrofits are cheaper; however, it is likely that a fleet may not have sufficient storage tank capacity to convert an existing tank to E85 storage and maintain sufficient on-site storage to continue dispensing gasoline and diesel to other vehicles in the fleet. If new storage tanks and dispensers are to be installed, fleets should consider an aboveground storage tank (AST) to reduce the installation costs associated with an underground storage tank (UST). For instance, the Solano County Corporation Yard installed an AST for E85 in 2009. Generally, due to space constraints and consumer convenience, retail fueling stations install USTs for E85.

ICF estimates the following costs to retrofit or install a new E85 fueling station—these estimates include the costs of tanks, dispensers, hanging hardware, and additional equipment:⁶¹

- In a retrofit scenario, costs range from \$11,000 to \$30,000.
- In a new installation, typical costs range from \$50,000 to \$125,000.

It is a significant challenge to provide more public E85 refueling opportunities because of the economics that retail fueling infrastructure providers face. First, the majority of retail fueling infrastructure providers are small business owners. A common misconception is that fueling stations are owned by large energy companies, but the larger companies started divesting from retail fueling stations due to lower profit margins in the 1990s. Consequently, most of the fueling station owners today have limited access to the capital that is required to invest in E85 infrastructure. Second, the return on the investment in E85 is often difficult to justify given weak demand for E85. Generally, the most cost-effective choice for E85 infrastructure is a retrofit or conversion of an existing tank and dispensers. In other words, the retail station owner needs to ensure that the demand for E85 will be sufficient to generate revenue to pay back the initial investment and offset the lost sales of the converted dispenser. This need often puts additional strain on the return-on-investment calculations performed by retail station owners.

Despite these barriers, there is an increasing interest in E85 refueling infrastructure, due in large part to regulatory drivers such as California’s LCFS and EPA’s RFS2. For instance, Propel is expanding the network of E85 infrastructure in nearby Sacramento significantly with the support of a grant from the CEC. Propel also has secured significant private investment, which is likely a positive indication of increased private interest in expanding E85 infrastructure. Moving forward, Solano County agencies should seek to engage local retail fueling station owners and E85 infrastructure providers such as Propel to determine the feasibility of expanding the availability of E85 to the general public and identifying grant opportunities to support this expansion.

Biodiesel

Like ethanol, use of biodiesel also results in lower GHG and most air pollution emissions; benefits increase with the percent of biodiesel blend (e.g., B20 has larger benefits than B5). All diesel vehicles can use low-level biodiesel blends (such as B5), and most can use blends up to B20 without vehicle modification or voiding of the vehicle warranty. Moreover, B5 and B20 cost only a few cents more per gallon than conventional diesel.

Use of biodiesel in California is increasing. As noted in Chapter 3, the Solano County fleet uses B5 for its HDVs. Aside from more frequent checking and cleaning of fuel filters during the transition period, Solano County reports no problems with the fuel and is now considering use of higher level blends. Caltrans uses B5 in most of its HDVs, and several transit agencies in California are already using B20.

Among fuel providers, there is significant movement in California toward B5. For instance, Kinder Morgan is providing B5 at its Colton terminal (Southern California) and in Fresno, while Chevron is moving to B5 at its Montebello terminal. These shifts toward B5 are part of a response to the EPA's RFS2 and California's LCFS. Several terminals in Southern California and Central California provide B5; the availability of B5 in Northern California is expected to increase significantly in the near-term future.

In the near term, the fleets with central fueling should consider including a requirement in their bidding process that specifies the use of B5. As an example, SolTrans contracted in late 2011 with Pinnacle Petroleum to provide petroleum products—gasoline and diesel—to SolTrans facilities, including bus facilities and ferry facilities. This contract has a 2-year base with three 1-year options. In other words, it appears that, at the end of 2013, SolTrans could seek to modify the supply and delivery contract to include B5 as part of the specification. Pinnacle Petroleum's webpage indicates that they provide biodiesel products ranging from B5 to B100. The transition to B5 should not require any infrastructure modifications for the fuel supplier, nor should it require any refueling infrastructure or vehicle modifications on behalf of SolTrans or other fleets. While fleet managers should check engine warranties, it is highly unlikely that use of B5 will void any warranties.

Fleets that consider diesel as the best option for their bus or heavy-duty truck fleet in the near-term future should consider a transition to B20. It should be recognized, however, that the transition to B20 can be more challenging than a transition to B5, as it may necessitate a new storage tank and potential vehicle limitations. Fleets should consider the following before making a transition to B20:

- Fleet managers should update their procurement process to account for B20 (similar to the recommendations for B5 above). Most fuel providers should be capable of providing a biodiesel product.
- Fleet managers should confirm that engine warranties are covered by B20.
- Fleet managers will need to confirm that existing USTs are compatible with B20, assuming the fuel will be stored as B20 and not blended on site. Although a vast majority of USTs are compatible with B20, it is likely that a new storage tank would need to be installed, since most fleets would need to maintain conventional diesel fueling for equipment that cannot use

biodiesel. Existing USTs should be cleaned thoroughly prior to transition to B20 to remove any residuals in the tank. Fuel filters need to be cleaned more frequently with B20, particularly in the transition period, because biodiesel acts as a solvent and tends to dislodge contaminants in the fuel system. Fueling hoses likely also will need replacement.

- In the event that the diesel UST is not compatible with B20 (or higher blends), the agency should seek to update their tank as needed. This will require an investment on the order of \$175,000, depending on the costs of digging up the tank.
- Fleet managers should confirm that any shelf-life issues with B20 or higher blends will not cause problems, particularly with equipment that is used only seasonally (e.g., chippers).

5.2. Natural Gas

As shown in Section 4.1, natural gas fueled vehicles have the potential for lower costs than conventional fueled vehicles. This is especially true with transit and fleet vehicles that refuel at private stations and enjoy lower fuel prices compared to public stations. This discount is usually due to long-term purchasing agreements between the fleet and the fuel provider. Natural gas vehicles also have lower air pollution and GHG emissions.

The most appropriate applications for natural gas as a transportation fuel tend to be those with high fuel use, which enables the higher purchase price of the vehicle to be offset through lower annual fuel costs. The higher the fuel consumption, the quicker the payback period and the more potential for fuel cost savings. Natural gas is not available or suitable for all vehicle types and uses, and should be analyzed on a fleet- and vehicle-specific basis. For example, the lower power of natural gas engines may preclude its use for some off-road applications.

Based on the large current fuel price differential, it appears that many Solano County fleets could reduce their costs by switching to natural gas. But several barriers prevent this from happening. The three main barriers are lack of fueling infrastructure; higher incremental vehicle costs; and lack of familiarity with the fuel, including new maintenance and operational practices. If a fleet is to perform its own fueling and maintenance, then a transition to natural gas requires a significant “all-in” commitment to guarantee the fleet can recoup any necessary infrastructure and vehicles costs. In other words, natural gas differs from most other alternative fuels in that fleets cannot simply “try out” the fuel with a few vehicles. As noted in Section 4.2, the cost of a new CNG fueling station can range from \$600,000 to \$5 million, and the fleet would also likely need to retrofit its maintenance facility.

For agencies that are interested in increasing use of natural gas as a transportation fuel, the following implementation steps should be considered. These recommendations are based on a high-level assessment; a more detailed assessment that considers specific sites and operating environments would be needed to fully understand the benefits and drawbacks that any one alternative fuel type offers.

Fueling Infrastructure

Solano County currently has three natural gas fueling stations, two located in Vacaville and one in Fairfield. These stations service the Vacaville City Coach and City of Vacaville transit bus and light-duty fleet vehicles and the Solano Garbage Company medium- and heavy-duty vehicle fleet. The limited refueling infrastructure in Solano County is likely a barrier to implementation, with some fleets possibly resisting conversion to natural gas due to limited fueling capacity. At the same time, there may be insufficient demand for private companies to invest in constructing publicly available natural gas refueling stations. This is a common barrier with many alternative fuels.

Fleets can be the fastest way to break through this “chicken-and-egg” problem as they can quickly, with large vehicle purchases, provide increased demand and justify the construction of new natural gas refueling infrastructure. These new stations can potentially serve a greater purpose of increasing demand outside of the fleet by providing both private and public access to the station. Increased public access will allow small fleets and individual vehicle purchasers an opportunity to take advantage of the fuel price differential between natural gas and gasoline or diesel.

Several potential locations in Solano County have been preliminarily identified for new natural gas refueling stations, as shown in Table 5-1. A feasibility study is currently underway to assess the Vallejo and Benicia locations.

Table 5-1. Possible Locations for New Natural Gas Fueling Facilities in Solano County

City	Location	Potential Users
Vallejo	SolTrans Bus Maintenance Facility 1850 Broadway	SolTrans buses, Vallejo public works, public
Vallejo	Vallejo Transit Center Park & Ride Curtola Parkway & Lemon Street	SolTrans buses, Vallejo public works, public
Benicia	Benicia Industrial Park	SolTrans buses, Benicia public works, public
Dixon	Dixon Public Works Maintenance Yard 285 East Chestnut Street	Dixon public works, public, trucks using I-80
Rio Vista	To be determined	Rio Vista public works, public, trucks using Highway 12

Ideally, these stations would have both public and private fleet access, but this type of access can increase station costs. The main variables affecting station cost are pipeline access (estimated cost of \$1 million per mile for pipeline access), existing infrastructure, and the type of station (time-fill versus fast-fill). Existing infrastructure and site suitability affect the costs for site preparation.

The type of station depends on the main fuel users of the station, as described below.

- **Time-fill stations** are built for fleet vehicles that operate during the day and refuel overnight. These stations do not require compressed storage, because the large compressors refuel vehicles directly and multiple vehicles at a time. The main cost component for this type of station is the compressors.
- **Fast-fill stations** are built for public access where the refueling can happen within 5 minutes. These stations have high-pressure storage tanks that refuel the vehicle and compressors that refill the tanks between fueling events. The two main cost components for this type of station are compressors and storage tanks (either high pressure or liquefied).

Stations built to fulfill both private fleet and public access will need equipment to satisfy both types of refueling events.

An organization wishing to develop a new natural gas station typically has the option of financing the station on its own or securing a private developer to build and operate the station. To build the station on its own, the local agency would need to obtain the private capital necessary to build and operate the station. State and federal funding may be available for natural gas infrastructure. This approach was used by Solano Garbage, the local subsidiary of Republic Services, in Fairfield. The company built an LNG/CNG station, where the natural gas is stored as LNG and can be dispensed as either LNG or CNG. The main benefit of building your own station is lower fuel prices, because the station owner is paying only for the commodity price of the gas, amortized capital, and operations and maintenance costs. For comparison, privately developed stations incur all of these costs in addition to the mark-up and fee of the private developer and operator. The second benefit is the potential source of income from contracting with outside fleets and individual vehicle operators who would like to use the station. The DOE's Alternative Fuels Data Center has a link to the Clean Cities Vehicle and Infrastructure Cash-Flow Evaluation (VICE) Model, which can help in evaluating the return on investment and payback period for natural gas infrastructure.⁶²

Building It Yourself – Solano Garbage

Solano Garbage Company built and operates an LNG/CNG fueling facility in Fairfield. Solano Garbage is a subsidiary of Republic Services, a national waste management services company. The company uses liquefied natural gas (LNG) in Class 8 refuse trucks as well as compressed natural gas (CNG) in several Ford E-450 vans. The original motivation behind natural gas vehicle (NGV) adoption in 2001 was the company's waste collection contract with the City of Fairfield, which specified vehicle emissions requirements. Republic Services chose to pursue LNG as a means to satisfy this mandate.

Solano Garbage used federal grants to help offset the costs of the natural gas station. By owning and operating the station, Solano Garbage can contract with other outside fleets, including Suisun City, who want to use the station for refueling.

When the station was constructed, the company planned ahead for future capacity expansion. Because all vehicles are dedicated NGVs, driver education was essential early on to ensure that the vehicles were sufficiently and properly fueled. The company has encountered no significant barriers related to vehicles or infrastructure.



The other approach is to contract with a private developer to build, own, and operate the natural gas station. Examples of private developers are Trillium CNG and Clean Energy. This option does not require capital expenditure for the station, but usually requires a long-term fueling agreement that guarantees a minimum fuel throughput for the operator. The fuel costs for this station option are usually higher than the build-it-yourself option to include cost recovery, mark-up, and fee. This option also allows for the potential of public refueling dispensers. Transit agencies in Elk Grove and Montebello, California have recently chosen this option with Clean Energy. The station built for the City of Elk Grove also has a public dispenser.

Private Developer – City of Elk Grove

The City of Elk Grove’s transit bus system, *e-tran*, maintains a fleet of more than 50 vehicles, all of which are powered by compressed natural gas (CNG). Prior to 2011, *e-tran* buses were using a nearby Pacific Gas and Electric Company fueling station, but the time-fill capabilities were not ideal, and there was a possibility that the station would be unavailable during upgrades or relocated in the future. The City began to explore other options, including building a fueling facility of their own.

The City faced several challenges, primarily a lack of space to install a station at their corporate yard and no capital resources that could be diverted from vehicle investments to infrastructure. Working with Clean Energy, the City was able to overcome both hurdles. Clean Energy negotiated with the owner of an existing card lock fueling station and leased available property for the CNG infrastructure. Clean Energy also provided up-front capital in exchange for a 10-year fueling agreement with the City. The City was able to ensure a reduced CNG fuel rate for the long term as long as a minimum fuel consumption commitment was met. Federal grants also reduced the overall infrastructure costs.

Operated and maintained by Clean Energy, the station opened for business in March 2011 and is available to area fleets as well as the public. Additional dispensers were included at the station to ensure that *e-tran* vehicles are always able to fuel as needed.



When an agency is considering installation of a new station and weighing the options, it is important to contact cities and fleets to better understand the pros and cons of both approaches. Cities and transit operators can learn from and build off the experiences of others. Cities and transit operators may also be able to make use of another agency’s resources, such as maintenance facility specifications and scopes of work for procurements and solicitations.

Incremental Vehicle Cost

As discussed in Section 4.1, NGVs carry a higher purchase price than their gasoline and diesel counterparts, mainly because of the cost of the fuel tanks. This higher up-front cost usually will be offset by lower fueling costs over the lifetime of the vehicle. The payback period depends primarily on the amount of fuel used per year and the price differential between natural gas and conventional fuel. Transit buses often have the shortest payback period, while light-duty trucks and sedans have a longer payback.

The incremental costs for NGVs can be reduced by state and federal funding, including AB 118, CMAQ, FTA, and DERA 2 programs. For more information on these funding sources, see Section 4.5. Reducing the incremental vehicle costs from state and federal funding will reduce the price differential necessary for a positive payback and increase the cost savings. It is recommended that fleets investigate these avenues of funding during the planning stages for NGV purchases to take advantage of all available funding sources.

Unfamiliar Maintenance and Operational Practices

Natural gas stations, infrastructure, and vehicle maintenance facilities require meeting more stringent safety guidelines than conventional fueling stations and vehicle maintenance facilities. The local fire marshal and utility can help with identifying these requirements. Additional investment may be needed to address these guidelines and needs. The City of Montebello, for example, required \$50,000 in improvements to its maintenance facility when it switched to natural gas buses. It is recommended that agencies and fleets considering natural gas refueling contact their local fire marshal and other local agencies and fleets that have installed natural stations and maintain their own vehicles. This first-hand experience has immense value in identifying what upgrades and improvements could be required and what changes to maintenance practices could be required.

Another resource to assist transit agencies with the transition to natural gas is the Natural Gas Transit Users Group, operated through the Clean Vehicle Education Foundation and funded by the DOE.⁶³ This group helps stakeholders by sharing lessons learned and problem-solving techniques; providing a technical forum for fleet maintenance staff; and communicating safety issues, codes, and standards. It is recommended that agencies not only contact and visit local fleets (including Vacaville and Elk Grove) and transit agencies that have made the switch to natural gas, but also connect with Transit Users Group to address any potential questions and concerns.

5.3. Electric Vehicles

Electric vehicles have the potential to reduce GHG emissions, criteria air pollutant emissions, and displace petroleum. Although electric vehicles currently have only a small market share, the long-term success of electrification depends on steps that are taken today. This is why local and regional agencies have prioritized EV readiness and planning. These near-term efforts are intended to pave the way for the long-term transition to electric vehicles consistent with California's regulatory initiatives such as AB 32, the Low Carbon Fuel Standard, and the ZEV Program. For instance, the ZEV Program requires that by 2025 about 15% of new light-duty vehicles be ZEVs, with ARB's most likely compliance scenario weighted towards EVs (rather than FCVs).

Electrification of transportation is part of California's long-term strategy to achieve significant GHG and criteria pollutant reductions, and near-term actions – such as EV deployment in municipal fleets – can help facilitate and accelerate that transition. The transition to electric vehicles, however, will face a number of barriers that should decrease over time. The sections below highlight the potential for electric vehicle deployment, while recognizing that there are considerable costs for consumers and fleets alike which will limit deployment until cost competitiveness improves.

The greatest barrier to increased use of EVs among Solano County residents in the near term is the high vehicle price. Because local governments are typically not in a position to provide incentives for consumer purchasing of vehicles, the ability for Solano County agencies to overcome this barrier is limited. Federal and state agencies have taken the lead in overcoming price barriers by offering incentives such as the federal tax credit (valued at up to \$7,500 per vehicle) and the California Vehicle Rebate Project, administered by ARB (with rebates valued up to an additional \$2,500 per vehicle). Despite the limited ability to influence car purchasing decisions, local agencies can help facilitate the deployment of EVs in several key areas, including: (1) targeted infrastructure deployment; (2) EV readiness through actions such as expedited permitting processes; and (3) deploying EVs in municipal fleets.

For agencies that are interested in increasing use of electric vehicles, the following implementation steps should be considered. These recommendations are based on a high-level assessment; a more detailed assessment that considers specific sites and operating environments would be needed to fully understand the benefits and drawbacks that any one alternative fuel type offers.

Infrastructure Deployment

Overview

Most EVs are likely to be charged at the owner’s residence. However, the availability of public charging for personal vehicles and fleet vehicles likely will significantly benefit the transition to electric vehicles. Regional agencies such as BAAQMD and the Metropolitan Transportation Commission (MTC) have played a central role in coordinating the initial deployment of and planning for EVSE in the Bay Area. STA has played a key role in developing Solano County’s charging station infrastructure to date using funding from the CMAQ program, BAAQMD Transportation Fund for Clean Air funds, and Yolo-Solano Clean Air Funds. The City of Vacaville has also been a leader in EVSE deployment. In 2011, Vacaville was voted runner-up for the “Most EV-Ready Community” award given by the Bay Area Climate Collaborative. In the next several years, it will be incumbent on local agencies to continue to play a central role in facilitating publicly available EVSE.

Several levels of EV charging are relevant to this discussion. EVSE is based on current standards established by the Society of Automotive Engineers (SAE) and differentiated by the maximum amount of power provided to an EV battery:

- **Level 1 AC** – These use standard 120-volt (V), single-phase service with a three-prong electrical outlet at 15–20 amperage (A).
- **Level 2 AC** – These are used specifically for EV charging and are rated at less than or equal to 240 V AC, and less than or equal to 80 A.
- **DC fast-charging units** – These provide power much faster than the AC counterparts, with a 480-V input. However, DC fast-charging equipment is more expensive to build and operate.

The times needed to replenish a battery halfway and fully for some common EVs—including the Toyota Prius Plug-in, Chevrolet Volt, Nissan LEAF, and Tesla Roadster—are shown in Table 5-2. Charging times

on Level 1 EVSE are primarily suitable for small battery vehicles, such as the Volt, which require more than 7 hours to fully charge. Estimated charge times using DC fast charging for the Volt, LEAF, and Roadster are included, despite not being equipped with the appropriate hardware, and are meant only for illustrative purposes. For DC fast charging, calculations assume that the battery is charged only to 80%, and the remaining 20% is completed by charging at a slower rate. If left connected at high power, the time to fully charge the battery will increase to over 1 hour because of the nature of DC fast charging.

Table 5-2. Estimated Charging Times Using Electric Vehicle Supply Equipment (hours: minutes)

Charger Type / Usable Power	Charge Level	Vehicle			
		Prius	Volt	LEAF	Roadster
Level 1 / 1.4 kW	Half	1:34	3:42	7:42	15:08
	Full	3:08	7:25	15:25	30:17
Level 2 / 7.5 kW	Half	0:40	1:34	3:16	2:49
	Full	1:20	3:09	6:32	5:39
DC fast / 50 kW	Half	0:02	0:06	0:12	0:25
	Full	0:05	0:47	1:39	1:08
DC fast / 150 kW	Half	0:01	0:02	0:04	0:08
	Full	0:02	0:41	1:25	0:41

The costs of EVSE depend on factors such as hardware, permitting, and installation. The following ranges of costs are typical:

- Single-family homes with dedicated parking: \$900–\$2,350
- Multiple-dwelling units (e.g., multi-family) and workplace installations
 - Level 1 EVSE: \$3,800–\$5,000
 - Level 2 EVSE: \$5,600–\$14,000
- Public installations (e.g., parking lots or on-street parking)
 - Level 1 and Level 2 EVSE: same as above for workplace installations
 - DC fast-charging EVSE: \$100,000–\$150,000

These ranges are based on each EVSE location installed and generally include two ports. It is also worth noting that the marginal cost of the next EVSE installation is a fraction of the total installed cost reported. The EVSE hardware is the only cost element that does not yield some benefit with increased number of installations. This is particularly relevant because the hardware represents a small fraction of the overall cost for both Level 1 and Level 2 EVSE. Even for DC fast-charging EVSE, multiple installations result in potentially significant savings, with approximately 25–60% of the installed cost represented by

the hardware. There is already some downward pressure on the hardware costs of DC fast-charging EVSE, as evidenced by Nissan's recent partnership with Sumitomo to market a charger for \$9,900.⁶⁴

Level 2 and DC fast-charging EVSE costs for multiple-dwelling units and workplaces will vary considerably depending on the siting characteristics. For instance, PG&E has estimated a range of \$500–\$30,000 for Level 2 charging EVSE. A number of factors could significantly increase the cost of DC fast charging, such as distribution upgrades and increased construction costs (e.g., increased trenching and repair or concrete work).

Siting Analysis: Residential Charging, Workplace Charging, and Opportunity Charging

With respect to EV fueling or charging, vehicle architecture plays a significant role in determining both the frequency and amount of charging needed during any fueling session; this is because different types of EVs use electricity somewhat differently. For example, PHEVs use electricity to extend the range of the vehicle and to provide a dual-fuel option, while BEVs use electricity as their sole source of propulsion energy. With this in mind, siting of charging infrastructure is a key component of successful EV deployment and requires consideration of the following questions:

- **Location:** What are potential venues and areas to locate EVSE? Options are generally characterized as at home, at workplaces, and on public or private property.
- **Quantity:** How many EVSE are needed to support electric vehicle drivers?
- **Level of charging:** What voltage and power levels are necessary for useful EV charging at the various locations—Level 1, Level 2, or DC fast charging?
- **Investment:** Who pays for and maintains public and private infrastructure?
- **Payment:** How much should individuals pay for a “charge”?

BAAQMD recently commissioned a siting analysis as part of the *Bay Area Plug-In Electric Vehicle Readiness Plan* to start answering some of these questions.⁶⁵ The analysis focused on (1) residential charging; (2) workplace charging; and (3) publicly accessible charging (also referred to as *opportunity charging*). The results specific to Solano County have been extracted for the purposes of this report, as discussed below.

Overall, Solano County residents appear to be somewhat less likely to purchase EVs compared to other residents in the San Francisco Bay Area, based on data from the Clean Vehicle Rebate Project shown in Table 5-3. Solano County residents to date have received rebates for the purchase of 70 PHEVs and 51 BEVs, accounting for 2% of all Bay Area rebates. The ratio of EV rebates per 1,000 residents (0.29) is lower than ratios for the other eight Bay Area Counties.

Table 5-3. Rebates Issued in the Bay Area from the Clean Vehicle Rebate Project

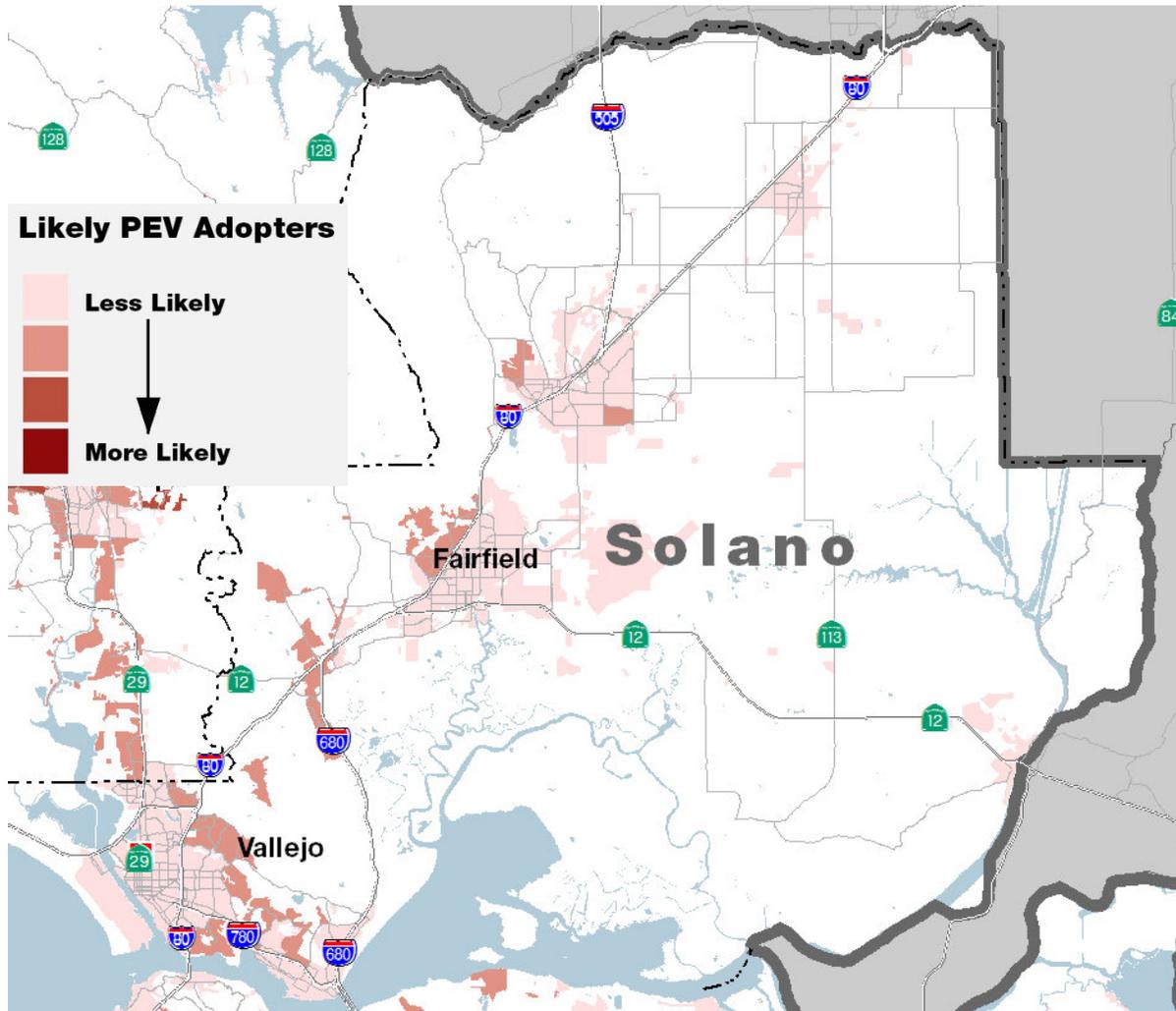
County	EV Rebates Issued through April 2013				Population (2011)	Rebates per 1,000 Residents
	PHEVs	BEVs	Total	Percent		
Alameda County	680	919	1,599	20%	1,530,000	1.05
Contra Costa County	369	420	789	10%	1,066,000	0.74
Marin County	151	222	373	5%	255,000	1.46
Napa County	28	31	59	1%	138,000	0.43
San Francisco County	151	318	469	6%	813,000	0.58
San Mateo County	300	660	960	12%	727,000	1.32
Santa Clara County	1,239	2,030	3,269	41%	1,809,000	1.81
Solano County	70	51	121	2%	416,000	0.29
Sonoma County	110	193	303	4%	488,000	0.62
Bay Area Total	3,098	4,844	7,942	100%	7,242,000	1.10

Source: <http://energycenter.org/index.php/incentive-programs/clean-vehicle-rebate-project/cvrp-project-statistics> ; accessed April 8, 2013

Residential Charging

As part of the *Bay Area Plug-In Electric Vehicle Readiness Plan* development, ICF identified the most likely adopters of EVs in the Bay Area based on household factors such as income, hybrid ownership, household type (e.g., single family vs. multi-family units), home ownership, and education. Figure 5-1 shows the home location of the most likely EV adopters.

Figure 5-1. Locations of Most Likely Electric Vehicle Adopters in Solano County



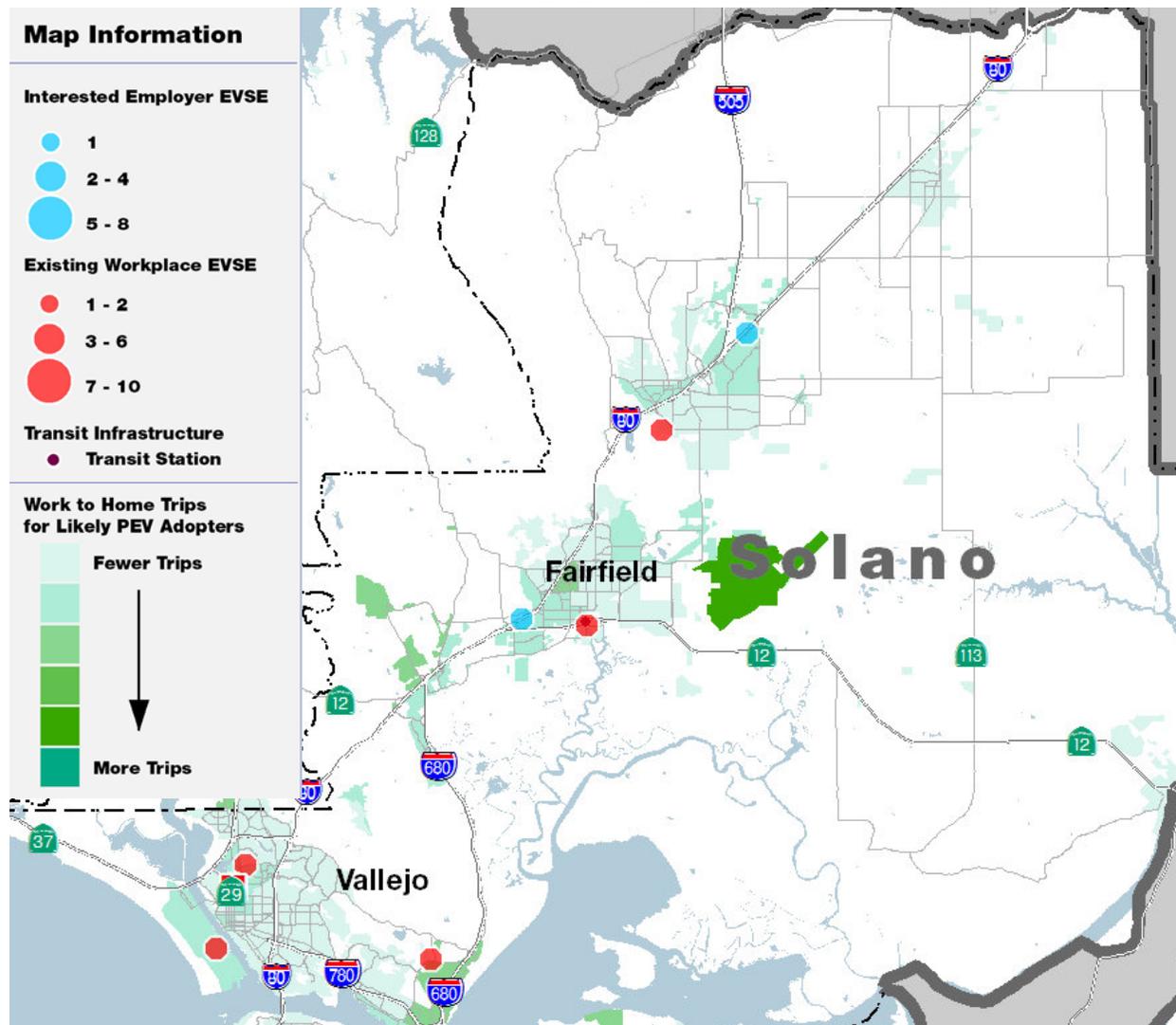
Workplace Charging

Workplace charging is significant because personal vehicles are likely to spend a considerable amount of time parked at work. According to MTC analyses, the average distance traveled to work for Bay Area commuters in 2010 was approximately 13 miles; these miles include only the distance between home and work and do not factor in any side trips, errands, or other trips that may extend the daily distance traveled. In other words, the average round-trip commute distance in the Bay Area is approximately 26 miles. In some cases (e.g., with the Chevrolet Volt) there may be sufficient range to make these trips entirely using electricity. However, with increases in the sales of PHEVs with less than 25 miles of range, and several more PHEV models with similar ranges hitting the market soon, there is significant potential to extend the all-electric miles traveled in places like Solano County.

Figure 5-2 shows an overlay of the following data: the most likely destination zones for workplace trips (different shades of green), areas with existing workplace Level 2 EVSE (red dots), and areas with

employers interested in deploying workplace EVSE for employee charging (blue dots). This map was created as part of the *Bay Area Plug-In Electric Vehicle Readiness Plan*.

Figure 5-2. Workplace Charging Siting Analysis for Solano County



As shown in Figure 5-2 (as red dots), there is already modest deployment of workplace EVSE today with some interest (light blue dots) in workplace EVSE. Moreover, several areas in Solano County have a significant number of work trips for what have been identified as likely PEV adopters, including at Travis Airforce Base (east of Fairfield), in Green Valley (west of Fairfield), around Vallejo, and around Benicia.

Opportunity Charging

Opportunity charging is distinguished from residential and workplace charging, and covers a wide range of situations in which an EV driver could potentially charge when away from home or work. This category of charging covers a wide variety of venue, such as retail shopping parking lots, on-street parking, airport long- and short-term parking, and cultural and recreational centers. Table 5-4 provides

general guidance regarding the type of EVSE for different venue types, mainly based on the duration of time that an EV driver may be parked at a specific location.

Table 5-4. Example of Charging Type Based on Trip Purpose

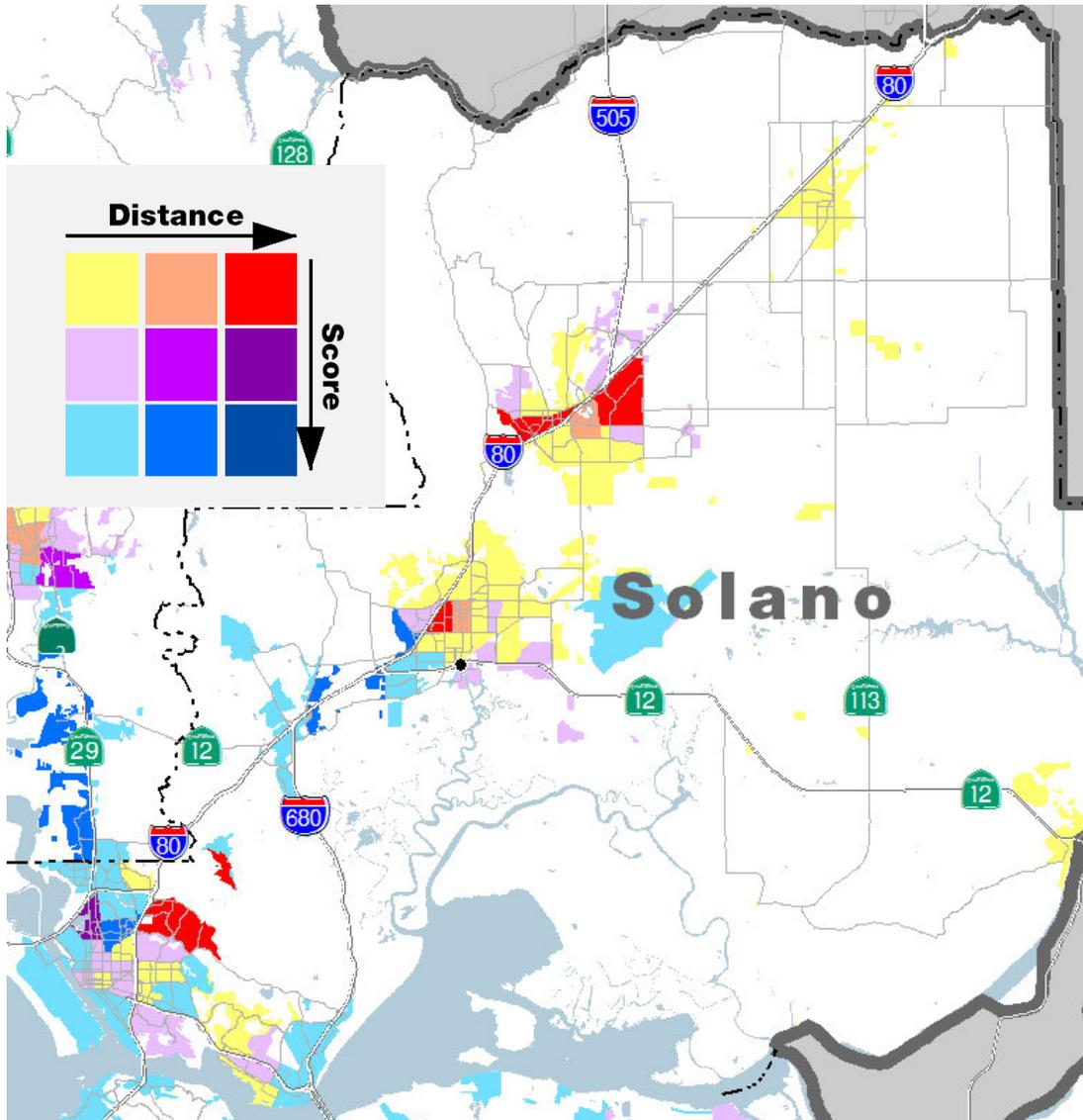
Category	Typical Venues	Available Charging Time	Charging Method (Primary/Secondary)
Opportunity and Destination	Shopping centers	0.5 – 2 hours	Level 2/DC fast
	Airports (short-term parking)	< 1 hour	Level 2/DC fast
	Streets/meters	1 – 2 hours	Level 1/Level 2
	Other	< 1 hour	Level 2/DC fast
	Parking garages	2 – 10 hours	Level 2/Level 1
	Cultural and sports centers	2 – 5 hours	Level 2/Level 1
	Airports (long-term parking)	8 – 72+ hours	Level 1/Level 2
	Hotels/recreation sites	8 – 72 hours	Level 2/Level 1
Corridor/Pathway	Interstate highways	< 0.5 hours	DC fast/Level 2
	Commuting/recreation roads	< 0.5 hours	DC fast/Level 2
Emergency	Fixed	< 0.1 hours	DC fast
	Mobile	< 1 hour	Level 2/DC fast

Figure 5-3 illustrates the locations with the highest potential for opportunity charging in Solano County. The legend in Figure 5-3 shows nine colors representing a matrix of scoring across three groups of distances and three groups based on the number of EV trips. Each block or color in the horizontal direction (left to right) represents the following trip distances: 0–5 miles, 6–10 miles, and 11+ miles. Each block or color in the vertical direction (top to bottom) represents the highest number of trips by likely PEV adopters to that zone. In other words, the blue shaded zones (light, medium, and dark blue) represent the most trips by likely EV adopters to that particular region. Thus:

- Dark blue zones are expected to have the highest number of long-distance EV trips that would use opportunity charging.
- Light blue zones are expected to have the highest number of short-distance EV trips that would use opportunity charging.
- Red zones are expected to have a moderate number of long-distance EV trips that would use opportunity charging.
- Yellow zones are expected to have a moderate number of short-distance EV trips that would use opportunity charging.

Retail locations (e.g., shopping malls or dining establishments) in the zones with shades of blue (represented in the bottom of the 3x3 matrix in the legend) should be considered the highest priority areas for Level 2 EVSE deployment for opportunity charging.

Figure 5-3. Opportunity Charging Siting Analysis for Solano County



The results of the opportunity charging siting analysis are similar to those for workplace EVSE, with some notable differences:

- There is significant potential for Level 1 and Level 2 EVSE around Travis Air Force Base, Green Valley, Vallejo, and Benicia.
- There is a higher concentration of opportunity trips around Fairfield (particularly southwest Fairfield) and a concentration of short-distance trips with a high rating (light blue) around

Vallejo, and the opportunity rating for Benicia is noticeably higher than the workplace rating in the previous map.

- Based on the analysis, likely EV adopters would be traveling longer distances to Vacaville (indicated by the red and orange markings along Interstate 80), where Level 2 EVSE would likely be a good candidate.
- There is good potential for Level 2 EVSE in Green Valley and the stretch of Interstate 80 between Green Valley and Fairfield, including around the Fairfield campus of Solano Community College.

Funding Opportunities

In the near-term future, there will be several funding opportunities for EVSE deployment in Solano County.

- The CEC continues to deploy EVSE through the Alternative and Renewable Fuel and Advanced Vehicle Technology Program (funded via AB 118).
- Last year, NRG Energy Inc. (NRG)—an EVSE infrastructure provider—reached a settlement agreement with the California Public Utilities Commission (CPUC) in the amount of \$122.5 million to fund the installation of EVSE throughout California over a period of 4 years. More specifically:
 - 200 Freedom Stations to be deployed statewide, with 55 of these deployed in the Bay Area (including Solano County). Each Freedom Station will consist of at least one 50 kW DC fast charger and one Level 2 EVSE.⁶⁶
 - 10,000 Make-Ready Stubs and 1,000 Make-Ready Arrays,⁶⁷ collectively referred to as *Make-Readies*, are to be deployed statewide at a cost of \$40 million. An estimated 1,650 Make-Ready Stubs will be deployed in the Bay Area (including Solano County), with an additional 4,000 stubs to be deployed at NRG’s discretion. The bulk of the \$40 million will go toward wiring homes and preparing workplaces, multi-family dwelling units, hospitals, and schools for EVSE.
- As part of the development of the Bay Area’s Sustainable Community Strategy (per Senate Bill 375), MTC and the Association of Bay Area Governments (ABAG) have developed a program referred to as a **Regional EVSE Network Program**. The program is designed to defray the installation costs of EVSE, with a focus on workplace charging. MTC will be coordinating with BAAQMD and other stakeholders as necessary to update the siting analysis that ICF performed and target the regions and employers that will maximize GHG reductions through targeted EVSE deployment.
- Solano County can also work closely with MTC to identify funding opportunities through the Federal Highway Administration (FHWA). Recent changes to some of FHWA’s core programs could benefit Solano County. The Moving Ahead for Progress in the 21st Century (MAP-21) Act (Public Law 112-141) added several eligible project types to the Surface Transportation Program

(STP)—electric vehicle charging infrastructure that is added to existing or included in new fringe and corridor parking facilities is eligible for STP funding. This is a particularly interesting opportunity for Solano County: Even though the region only has modest EV penetration rates to date (as discussed briefly), it will likely be an important inter-regional corridor between the San Francisco Bay Area and the Sacramento region. It will be important to deploy DC fast charging along inter-regional corridors in places such as Solano County.

- A tax credit is available for entities installing EVSE, worth up to 30% of the total cost of the installation. This tax credit expires at the end of 2013. This is less of a funding opportunity for Solano County but could be an important factor in any public/private partnerships that Solano County pursues in the near-term future.

EV Readiness for Local and Regional Governments

The *Bay Area Plug-In Electric Vehicle Readiness Plan* prioritized actions for local governments in the areas of (1) building codes; (2) permitting and inspection practices; and (3) zoning, parking rules, and local ordinances. The objective of EV readiness planning is to outline the actions that local governments and affected stakeholder will need to take in order to be ready to meet the increased and unique demands by EVs and supporting charging infrastructure. The prioritized recommendations from the Readiness Plan are repeated in the Table 5-5, and include both the metrics that regional agencies will be using to track progress and the targets for readiness.

Table 5-5. Local Government Actions for Electric Vehicle Readiness

Recommendations	Metric	Regional Target
Adopt California Building Code standards for EVSE into local building codes	Percentage of agencies with standards for EVSE in building codes	100% of local governments by 2014
Create a permitting checklist for residents and contractors	Percentage of agencies that have created a permitting checklist for EVSE	100% of local governments by 2014
Train permitting and inspection officials in EVSE installation	Percentage of agencies that have trained permitting and inspection officials in EVSE installation	100% of local governments by 2014
Specify design guidelines for PEV parking spaces	Percentage of agencies that have adopted design guidelines for PEV parking	100% of local governments by 2014
Adopt requirements for pre-wiring EVSE into the building code and/or minimum requirements for PEV parking spaces	Percentage of agencies that have adopted requirements for pre-wiring EVSE into the building code and/or minimum requirements for EV parking spaces	100% of local governments by 2021

Recommendations	Metric	Regional Target
Work with local utilities to create a notification protocol for new EVSE through the permitting process	Percentage of agencies working with local utilities to create a notification protocol for new EVSE through the permitting process	100% of local governments in areas where MOUs [memoranda of understanding] provide electricity by 2021
Staff the permitting counter with electrical permitting experts	Percentage of agencies staffing the permitting counter with electrical permitting experts	100% of local governments by 2021
Adopt a climate action plan, general plan element, or stand-alone plan that encourages deployment of PEVs and EVSE	Percentage of agencies that have adopted a climate action plan, general plan element, or stand-alone plan that encourages deployment of PEVs and EVSE	100% of local governments by 2021
Allow PEV parking spaces to count toward minimum parking requirements	Percentage of agencies that allow PEV parking spaces to count toward minimum parking requirements	100% of local governments by 2021
Adopt regulations and enforcement policies for PEV parking spaces	Percentage of agencies with regulations and enforcement policies for PEV parking spaces	100% of local governments by 2021

More information is available about each one of these recommendations in the *Bay Area Plug-In Electric Vehicle Readiness Plan*. For the purposes of this plan, however, it is important to note that EV readiness will likely become an important determinant for funding opportunities. EV readiness has been prioritized by regional agencies (including BAAQMD, MTC, and ABAG) and state agencies such as the Office of Planning and Research and the CEC. To the extent that STA can expedite implementation of the recommendations of the *Bay Area Plug-In Electric Vehicle Readiness Plan*, it will likely be easier for regional and state agencies to prioritize funding to Solano County. Furthermore, NRG is working closely with readiness efforts to identify the areas where Freedom Stations and Make-Readies can be deployed; although they have numerical targets, the settlement with the CPUC is tied to expenditures. It is in NRG’s best interest to deploy as much EVSE as possible, given the money available to spend; areas with higher levels of readiness are likely to have more cost-effective installations.

Municipal Fleets

Municipal fleets are often identified as an ideal application for EVs. Municipal fleets tend to have lower mileage than vehicles in the personal light-duty vehicle fleet. Although this increases the payback period for investment, some of this can be offset through innovative fleet financing programs. Municipal fleets have already shown leadership through increased deployment of HEVs. For instance, according to ICF estimates, government fleets have hybrid penetration rates from 25% to 95% greater than the personal light-duty vehicle fleet. One worry of municipal fleet, however, is that staff may not accept BEVs the way

they have accepted HEVs, since BEVs introduce new procedures for fueling and drivers may be concerned about range. These concerns can be alleviated through educational and training programs.

The main concern for fleets will be the expenditure associated with acquiring EVs—both the vehicles and the charging infrastructure. Despite the significantly lower costs of electricity as a transportation fuel compared to gasoline (or diesel) and the lower overall maintenance costs of EVs compared to conventional vehicles, the payback period for EVs in a fleet application will likely make it difficult to justify the higher cost of EVs. Furthermore, public fleets are often ineligible for the incentives available today for EV purchasing. For instance, the federal tax credit requires the purchaser to have a tax liability. On the other hand, local government agencies are eligible to receive a rebate through the Clean Vehicle Rebate Project, valued at up to \$2,500 per vehicle (note: no entity can receive more than 20 rebates in a calendar year).

Although the costs of EV charging infrastructure are not as significant investment as the vehicles, the additional cost can be a barrier to EV deployment. There are a variety of factors that can increase the cost of EVSE installation. In the case of municipal fleets, older municipal buildings may require electrical upgrades. Most incentives available for EVSE deployment focus on the hardware and/or installation, and costs related to electrical service upgrades are not eligible. Furthermore, government agencies are not in a position to claim the federal tax credit for infrastructure deployment because they do not have a federal tax liability (as noted previously regarding the federal tax credit for vehicles).

Some municipal fleets have been making these upgrades as part of their plan to deploy EVs. For example, staff with Alameda County have noted that many municipalities made upgrades as part of the Local Government EV Fleet project funded by MTC (discussed in more detail below). MTC funding is helping Alameda County and its partners deploy 90 EVs in municipal fleets. Based on feedback from Alameda County staff, many of the municipal facilities did require upgrades; however, most municipalities paid for those upgrades themselves and did not use grant money. Despite being a barrier to EV deployment, there are ancillary benefits beyond EV charging to these upgrades that can help modernize municipal buildings.

Another factor that may affect the deployment of EVs in municipal fleets is the cost of electricity associated with EVs. Charging at off-peak times (e.g., overnight) in a residential application can be very inexpensive for EV drivers – around \$0.10/kWh. However, municipal fleets charging during on-peak or partial-peak times may be subject to increased demand charges and increased electricity costs. The impact depends entirely on the rate schedule and can vary considerably. Fleets considering EV deployment should seek to understand the electricity cost impacts of on-peak and partial peak charging on a case-by-case basis to understand the lifecycle cost of EVs. For the sake of reference, the current pump price of gasoline – at about \$4.00 per gallon in California – is equivalent to about \$0.45/kWh. Even in a scenario in which a fleet exclusively charges during on-peak times (which is unlikely), the electricity costs will be less than that price-equivalent basis.

As part of any evaluation of EVSE deployment, local governments should also consider whether or not the EVSE will be available to the public for EV charging. It is likely that (additional) grant money will be available if the EVSE are made available to the public. If an agency opts to provide publicly available

EVSE, they will have to determine how to collect fees for charging. Most smart charging equipment has software (e.g., via ChargePoint or other EV service provider) that allows station owners to set the price of electricity charged at a facility. This type of service is not required for fleet-only charging and will require a recurring cost outlay for the fleet's consideration. Although some municipalities in the Bay Area (and elsewhere in the United States) have provided free charging to the public to help spur the initial market for EVs, this is not a sustainable practice, and most cities are no longer providing the charging freely or have plans to phase out free charging in the near-term future.

There may be opportunities for STA to seek funding through regional initiatives such as MTC's Climate Initiatives Grant Program. The Local Government EV Fleet Project, which is administered by eight local governments (led by Alameda County) that are in the process of procuring 90 PEVs for municipal fleets and 90 Level 2 chargers accessible to both the government fleets and, in some cases, the public. The local government agencies are deploying 78 light-duty PHEVs and BEVs and 12 vans or shuttles. The project received \$2.8 million in Climate Initiative funding and additional funding from the BAAQMD and the CEC. The results of this project will help inform MTC's next round of funding.

Another way to offset the transition to EVs for municipal fleets is through credits under California's LCFS. There is potential to earn LCFS credits through the deployment of EVs in fleets. If municipal agencies own and operate more than three EVs and own the EVSE that is used to charge the vehicles, the municipal agency is eligible to receive LCFS credits. These credits can be used toward compliance with the LCFS, which requires a 10% reduction in the carbon intensity of gasoline and diesel by 2020. In principle, these LCFS credits can help fleets defray the higher costs of EV purchasing. The number of credits that can be earned is a function of how much electricity the EVs use, which is linked to vehicle miles traveled.

In addition to BEVs and PHEVs, the use of HEVs in light-duty, medium-duty, heavy-duty, and transit bus applications can reduce gasoline and diesel consumption without the requirement of additional refueling infrastructure. As discussed in Section 4, diesel hybrid transit buses have shown fuel savings on the order 20% - 40% and possibly higher, depending on the type of use. Hybrid-electric technologies can be applied to utility trucks and similar vehicles that require auxiliary power. Funding may be available to help offset the higher purchase price of hybrid buses and trucks, as discussed in Section 4.5.

5.4. Summary of Implementation Steps and Action Items

Fuel Category	Implementation Steps and Action Items
Biofuels	<p>E85</p> <ul style="list-style-type: none"> • Educate vehicle operators about FFVs already in fleets that can utilize E85 • Investigate modifying fueling infrastructure to install E85 by either retrofitting existing or installing new storage tanks and dispensers • Engage local retail fueling station owners and E85 infrastructure providers to determine the feasibility of expanding E85 to the general public • Identify grant opportunities to support public and private expansion of E85 <p>Biodiesel</p> <ul style="list-style-type: none"> • Check engine warranties to determine if any buses or heavy trucks are incompatible with low-level biodiesel blends (e.g., B5) • When renegotiating contracts with diesel suppliers, require B5 as part of the specification (assuming no engine warranty concerns) • To prepare for a future move to B20 for diesel fleets: (1) update procurement procedure to account for B20, (2) confirm engine warranties for current vehicles are covered with B20, (3) confirm existing USTs are B20 compatible and, if incompatible, (4) seek to update tanks for compatibility
Natural Gas	<p>Expanding Fueling Infrastructure</p> <ul style="list-style-type: none"> • Identify potential refueling station locations • Perform feasibility studies of these locations to determine station cost and proximity to current or future natural gas vehicle fleets • Investigate options for new natural gas station development (station built by local agency vs. private developer) <p>Overcoming Incremental Vehicle Costs</p> <ul style="list-style-type: none"> • Pursue federal, state and regional funding sources to reduce NGV incremental costs <p>Overcoming Unfamiliar Maintenance and Operation Procedures</p> <ul style="list-style-type: none"> • Contact the local fire marshal and utility to help identify safety guidelines • Contact other local fleets that have installed natural gas stations and maintain their own fleets to help identify any required upgrades or improvements and changes to maintenance practices • Participate in Natural Gas Transit Users Group, which shares lessons learned and problem-solving techniques; provides a technical forum for fleet maintenance staff; and communicates safety issues, codes, and standards

Fuel Category	Implementation Steps and Action Items
Electricity	<p>Expanding Infrastructure Deployment</p> <ul style="list-style-type: none"> • Utilize the Bay Area Plug-In Electric Vehicle Readiness Plan, including figures in Section 5.3, to identify new locations for potential public charging infrastructure • Pursue potential EVSE deployment funding sources identified in Section 5.3 <p>Ensuring EV Readiness for Local and Regional Governments</p> <ul style="list-style-type: none"> • Review the checklist of recommendations from the Bay Area Plug-In Electric Vehicle Readiness Plan that is prioritized in Table 5-5 • Identify steps to implement the prioritized items with an emphasis on (1) building codes, (2) permitting and inspection practices, and (3) zoning, parking rules and local ordinances <p>Deploying EVs in Municipal Fleets</p> <ul style="list-style-type: none"> • Identify potential fleets in the County interested in EVs • Perform feasibility studies for fleets, including vehicle and infrastructure costs, infrastructure and vehicle credits and rebates, and potential LCFS revenue from the sale of credits • Contact local fleets that invested in EVs and have taken advantage of federal, state, and regional credits, rebates and funding sources (such as Alameda County), to help in determine accurate costs for feasibility studies • Identify opportunities to deploy hybrid-electric vehicles for municipal fleets or transit.

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⁶⁷ Note that an array can have no more than 10 stubs, which means that there must be at least 1,000 unique locations across the state.



DATE: September 13, 2013
TO: SolanoExpress Intercity Transit Consortium
FROM: Elizabeth Richards, Mobility Management Project Manager
RE: Mobility Management One Stop Transportation Call Center

Background:

Since July 2012, STA has been working with consultants to develop a Mobility Management Plan for Solano County. The development of a Mobility Management Plan was identified in the 2011 Solano Transportation Study for Seniors and People with Disabilities as a strategy to assist seniors, people with disabilities, and low income and transit dependent individuals with their transportation needs. The Solano Mobility Management Plan will identify existing services and programs, explore potential partnerships, and analyze how to address mobility needs in Solano County in a cost effective manner.

The Solano Mobility Management Plan will address four key elements to assist seniors, people with disabilities, and low income and transit dependent individuals with their transportation needs. These four elements are:

- One Stop Transportation Call Center
- Travel Training
- Countywide In-Person ADA Eligibility and Certification Process
- Older Driver Safety Information.

All of these strategies were included in the scope of work for the Solano Mobility Management Program and were identified as priorities in the Senior and People with Disabilities Study. These four elements have been presented to the Solano Seniors and People with Disabilities Transportation Advisory Committee, the Paratransit Coordinating Council (PCC), the Intercity Transit Consortium, the STA Board and the Senior Coalition.

The Mobility Management plan was presented and discussed several times at each of the STA committees. To present an overview of the study and its elements as well as to solicit comments. As the elements were developed with more detail, the groups were presented to again and more detailed input was received. At each of the meetings this project was presented, there has been good discussion and valuable input. Transit operators have been in attendance at many of these meetings and have been interviewed as well.

While the overall Mobility Management Plan document is being refined, three components have been approved for implementation by the STA Board: ADA In-Person Eligibility Process, Travel Training and website. The ADA In-Person Eligibility Process was initiated July 2013. As Travel Training complements that process, that program has been moving forward as well. There has also been an interest in sharing mobility management transportation services information among agencies throughout the county. The mechanism to do this is a Mobility Management website. The STA Board approved the release of a Request for Proposals (RFP) and a scope of work to create the website.

Discussion:

A Mobility Management One Stop Transportation Call Center was recommended in previous planning efforts and prioritized as a strategy for early implementation of a Mobility Management program. To disseminate information to callers efficiently and have a location to coordinate a wide range of transportation resources' information from not only public transit but also human services agencies, non-profits and the private sector, a Call Center also provides personalized assistance to those who prefer "live" assistance. The target market for the Mobility Management call center would be seniors, people with disabilities, and low-income.

As expanding upon an existing call center would be the most efficient way to implement this service, the consultants reviewed and considered various call centers as a potential Mobility Management Call Center location. These included 211, 511, Area Agency on Aging (AAoA) and the STA's Solano Napa Commuter Information (SNCI) program. After analyzing how these services operate, it was determined that the best fit would be to build the Mobility Management upon the SNCI program. The SNCI program is a long established local program with staff already providing a wide range of transportation information. Personalized service is delivered by live staff on a daily basis. While most calls are for home-to-work trips, calls requesting information and assistance about other types of trips are also answered.

Transit operators also provide live operator assistance to their clients. All offer information on their own transit system. Some provide information on connecting transit services as well and a few have information on some non-transit services. These transit operators call centers would continue as is or have the option to expand the information they provide using information gathered and kept up-to-date by the Mobility Management Call Center and Mobility Management Website.

The draft Mobility Management Plan proposal is to integrate the Mobility Management Call Center into the SNCI program. The STA's Transit Mobility Coordinator would handle reporting and outreach. Together they would be responsible for keeping a transportation services database up-to-date which would be shared via the Mobility Management website mentioned above. The website would be accessible to the general public directly and be a resource for partner agencies (transit operators, social service agencies, non-profits and others) to assist their clients directly if they choose. The Call Center would also house information on Mature Driver program information (the fourth program of the Mobility Management Plan).

New Freedom funding has been secured by the STA in the amount of \$175,000 to sufficiently hire and train staff as well as provide supplies and outreach for the proposed call center. It is anticipated that start-up of this program targeted between April 1 and July 1, 2014.

Fiscal Impact:

The New Freedom Funds in the amount \$123,305 is recommended to be used to fund the Call Center and \$260,000 in STAF that have dedicated in Mobility Management Program Implementation over the three years proposed pilot program.

Recommendations:

Forward a recommendation to the TAC and STA Board to approve the following:

1. Authorize the STA to implement Solano's Mobility Management (MM) Call Center as a 3-year pilot program; and
2. Direct STA staff to monitor and evaluate the Mobility Management Call Center Pilot Program and report on its effectiveness on an annual basis.



DATE: September 24, 2013
TO: Solano Express Intercity Transit Consortium
FROM: Anthony Adams, Transit Mobility Coordinator
RE: Travel Training Scope of Work

Background:

Since July 2012, STA has been working with consultants, the Solano Transit Operators, and the Senior and People with Disabilities Advisory Committee to develop a Mobility Management Plan for Solano County. The development of a Mobility Management Plan was identified in the 2011 Solano Transportation Study for Seniors and People with Disabilities as a priority strategy to assist seniors, people with disabilities, low income and transit dependent individuals with their transportation needs. The Solano Mobility Management Plan is gathering information about existing services and programs, exploring potential partnerships, and analyzing how to address mobility needs in Solano County in a cost effective manner.

The Solano Mobility Management Plan proposes to focus on four key elements that were also identified as strategies in the Solano Transportation Study for Seniors and People with Disabilities, we will only be discussing the second topic listed below:

1. Countywide In-Person American Disability Act (ADA) Eligibility and Certification Program
2. Travel Training
3. Older Driver Safety Information
4. One Stop Transportation Call Center

In June 2013, the Consortium reviewed and approved a Scope of Work for Travel Training.

Discussion:

Travel Training Scope of Work

STA staff has modified the Scope of Work (Attachment A) to include more intensive travel training for individuals who may need it and people with disabilities. In order to coordinate existing services and prevent duplication of services, the selected consultant will identify potential partnerships to perform more intensive travel training. In the absence of such partnerships, the selected consultant will perform those tasks directly. In addition, the modified Scope of Work includes language about the development of an Outreach Plan for the Countywide Travel Training Program.

In summary, the Travel Training Scope of Work includes the following tasks:

1. Administer Travel Training/Transit Ambassador programs for Dixon, Rio Vista and unincorporated area residents;
2. Develop Travel Training Programs for SolTrans and FAST that they will administer;

3. Develop and administer travel training programs for SolanoExpress Intercity Service
4. Produce 3-5 transit training videos;
5. Design and print 3-5 full color Transit Rider Guides;
6. Administer intensive level travel training, either directly or through referral; and
7. Administer specialized countywide travel training program for people with physical disabilities, either directly or through referral

Fiscal Impact:

In July 2013, the STA Board authorized the Executive Director to issue a Request for Proposal (RFP) and enter into an agreement for Travel Training Consultant Services for an amount not-to-exceed \$130,000. The funding is provided through a JARC grant landed by the STA and State Transit Assistance Fund (STAF) provided by STA.

Recommendation:

Forward a recommendation to the TAC and STA Board to approve the revised Scope of Work for Countywide Travel Training as specified in Attachment A.

Attachment:

- A. Revised DRAFT Scope of Work for Countywide Travel Training

Travel Training

Draft Scope of services

Task 1: Develop and/or Administer Travel Training/Transit Ambassador programs:

A. Develop and Administer for Dixon, Rio Vista and unincorporated area residents

- Primary target market: Travel Training for Seniors, People with Disabilities, and Low-Income
- Initiate new Travel Training/Travel Ambassador programs
- To include in-field one-one one and group in-service training, bus familiarization sessions, and presentations
- Conduct travel training directly and/or recruit volunteers
- Maximize coverage, flexibility, and resources with use of volunteers. Recruitment to be conducted in collaboration with STA, Dixon, and Rio Vista.
- Train and manage volunteers.
- Work with STA in developing policies and procedures of the program
- Coordinate with transit operators and social service agencies.
- Travel train residents for travel within above jurisdictions and to locations outside Dixon and Rio Vista which could include not only locations in Solano County bus also outside the county. Depending upon clients' needs, Travel Training may be on locally operated public transit buses, but would also include on public transit connecting to these services (such as Yolobus, FAST, South County Transit, Tri-Delta, etc.) This could also include Travel Training on intercity ADA paratransit services.
- Work with STA on the development of an outreach plan
- Produce promotional collateral
- Assist with program outreach
- Work with STA to develop a customer service evaluation system
- Track activity and compile performance data to report at least monthly to STA

B. Develop SolTrans, and FAST local Travel Training programs

STA will help SolTrans and FAST initiate new Travel Training programs while coordinating with Vacaville City Coach existing Travel Training program that is already in place.

- Primary target market: Travel Training for Seniors, People with Disabilities, and Low-Income
- Initiate new Travel Training/Travel Ambassador programs at SolTrans and FAST
- To include in-field one-one one and group in-service training, bus familiarization sessions, and presentations
- Work with SolTrans, FAST, and STA in developing policies and procedures of the program
- Coordinate with SolTrans and FAST and social service agencies in their areas
- Assist SolTrans and FAST recruit, train and manage volunteer Travel Trainers
- Travel Train SolTrans, FAST, and City Coach clients who desire longer distance training such as intercity and intercounty trips as referred by these entities. This could involve travel on locally operated systems, connecting transit systems, and/or travel on local public transit services operated by others (Capitol Corridor, San Francisco Bay Ferry, Napa VINE, etc.)
- Work with SolTrans, FAST, and STA on development of an outreach plan and assist with program outreach
- Travel Training/Transit Ambassador program to be consistent with Transit Training video and Transit Rider Guide
- Track activity and compile performance data to report at least monthly to SolTrans, FAST, and STA.

Task 2: Produce 3-5 transit training videos

- Length of each video: approximately 5 minutes
- Primary target markets are seniors, people with disabilities, and low-income populations
- Create scripts structured similar to existing Vacaville City Coach training video
- Shoot and edit footage to produce videos specific to SolTrans, FAST, and balance of county transit services
- Work collaboratively with STA, SolTrans, and FAST in producing videos
- Narrate videos as needed and edit audio specifically for each transit system
- Produce for on-line viewing as well as DVD distribution directly to individuals as well as for group training purposes
- Video to be consistent and complementary with Travel Training/Ambassador program and Transit Rider Guide

Task 3: Design and print 3-5 full color Transit Rider Guides

- Size and design Rider Guide brochures
- Design to be easy to read especially for target market of seniors, people with disabilities and low-income
- Work collaboratively with STA, SolTrans, and FAST in design and printing of brochures specific to SolTrans, FAST, and balance of county
- Handle all aspects of print production
- Transit Rider Guide to be consistent and complementary with Travel Training/Ambassador program and Training Video
- Initial print-run of at least 5,000 of each brochure

Task 4: Intensive level Travel Training program

The intensive level of travel training would involve multiple training sessions for individuals who need a higher level of service to master riding public transit independently. The target audience may include people with cognitive disabilities or similar limitations.

- Service is to be available countywide
- Service is not to duplicate existing services. Identify potential partnerships who provide this type of Travel Training and develop referral process. If partnerships are not available, provide service directly.
- This is intended to be an intensive travel training program in which multiple training sessions are likely to be needed for each client. Process to include an initial assessment of rider's abilities to determine the course of the training.
- Preparations for training and the training itself may include some, or all, of the following: trip planning, path of travel review, route and scout, modeling, role playing, shadowing, fading, bus riding and navigation skills,
- Demand for service may be small initially. Contractor needs to have ability to adjust to increase and be flexible depending upon demand for service.
- Trainers to be experienced in working with people with developmental disabilities and transit with strong interpersonal skills
- Work with STA, transit operators, schools, and social service agencies to promote Travel Training for people with developmental disabilities through the creation of an Outreach Plan
- Produce collateral materials for promotion of program.
- Program is to track activities, compile data and report to STA and transit operators on a monthly basis.

Task 5: Specialized countywide Travel Training program for people with physical disabilities

- Service is to be available countywide
- Service is not to duplicate existing services. Identify potential partnerships who provide this type of Travel Training and develop referral process. If partnerships are not available, provide service directly.
- This is intended to be an intensive travel training program in which multiple training sessions are likely to be needed for each client. Process to include an initial assessment of rider's abilities to determine the course of the training.
- Preparations for training and the training itself may include some, or all, of the following: trip planning, path of travel review, route and scout, modeling, role playing, shadowing, fading, bus riding and navigation skills,
- Demand for service may be small initially. Contractor needs to have ability to adjust to increase and be flexible depending upon demand for service.
- Trainers to be experienced in working with people with physical disabilities and transit with strong interpersonal skills
- Work with STA, transit operators, schools, social service agencies to promote Travel Training for people with physical disabilities through the creation of an Outreach Plan
- Produce collateral materials for promotion of program.
- Program is to track activities, compile data and report to STA and transit operators on a monthly basis.



DATE: September 17, 2013
TO: SolanoExpress Intercity Transit Consortium
FROM: Matt Tuggle, Solano County
RE: Solano County Intercity Paratransit Service Contract

Background:

On July 12, 2013, the Solano Transportation Authority, the local transit agencies, and Solano County entered into an MOU to fund a new taxi-based intercity paratransit service. The new service will provide trips to both ambulatory and non-ambulatory riders with accessible vans, where the existing taxi scrip service only provides trips to ambulatory riders. As the contract administering agency, Solano County is currently preparing to advertise for a professional services contract which will provide the intercity paratransit services. A trip cost per mile will be solicited. The Request for Proposal (RFP) is in the draft stages of development, with a target release date in October.

Discussion:

On September 12, a meeting was held to discuss provisions of the service and general contents of the draft RFP. In order to reach a final draft RFP and contract budget, the fare structure, days of service, hours of service, and other trip limitation requirements must be determined.

The intercity paratransit service contract is proposed to require operation six days per week, except on holidays currently observed by the County. Hours of operation for the service are proposed Monday through Friday from 5:00 am to 9:00 pm. Hours of operation for Saturday are proposed from 9:00 am to 5:00 pm.

A tiered fare structure is proposed for the new service during regular operating hours. Three tiers have been proposed depending on the hours of operation. Tier 1 fare would require a 25% farebox (rider-paid fare) and would operate from 9:00 am to 5:00 pm Monday through Friday. Tier 2 fare would require a 50% farebox and would operate from 7:00 am to 8:59 am and 5:01 pm to 7:00 pm Monday through Friday as well as Saturday service. Tier 3 fare would require a 75% farebox and would operate from 5:00 am to 6:59 am and 7:01 pm to 9:00 pm Monday through Friday. Per the MOU, these farebox percentages may be adjusted in the future at the discretion of the partner agencies (contract award, mid-year budget reviews, fiscal year closeout, etc.).

To be guaranteed a trip, riders must call one day in advance. Same day trip requests will be at the contractor's option and require 75% farebox. Service during off-hours and holidays may be provided at the contractor's option, but the rider would pay 100% of the trip cost.

A maximum number of 16 one-way trips per month is recommended for riders to qualify for subsidy under Tiers 1 through 3. When riders exceed 16 one-way trips per month, it is recommended that the rider be responsible for paying 100% of the trip cost, though service would still be provided during regular hours of service.

The majority of the recommendations listed above were discussed and agreed to in the September 12, 2013 meeting held at Solano County offices with the majority of agency partners to the MOU in attendance.

Fiscal Impact:

The new service contract will be funded with County and local transit operators TDA, two federal New Freedom grants, and passenger fares. Balancing the farebox and operating revenues against the service costs will ensure that the service is sustainable. Farebox adjustments by the partner agencies could be made during the life of the new contract, as necessary.

Recommendation:

Provide a recommendation to the County of Solano that the new intercity paratransit contract contain the following:

1. Farebox Tier 1 of 25%, Tier 2 of 50%, and Tier 3 of 75%;
2. Required days of service to be Monday through Saturday;
3. Required Hours of service 5am-9pm on Monday through Friday, and 9am-5pm on Saturday; and,
4. Maximum number of subsidized one-way trips per month capped at 16.



DATE: September 24, 2013
TO: Solano Express Intercity Transit Consortium
FROM: Liz Niedziela, Transit Program Manager
Anthony Adams, Transit Mobility Coordinator
RE: Countywide In-Person ADA Eligibility Program Update and Update of
Mobility Management Grant Funding

Background:

Since July 2012, STA has been working with consultants, the Solano Transit Operators, the Senior and People with Disabilities Advisory Committee and Paratransit Coordinating Council to develop a Mobility Management Plan for Solano County. The development of a Mobility Management Plan was identified in the 2011 Solano Transportation Study for Seniors and People with Disabilities as a priority strategy to assist seniors, people with disabilities, low income and transit dependent individuals with their transportation needs. The Solano Mobility Management Plan is gathering information about existing services and programs, exploring potential partnerships, and analyzing how to address mobility needs in Solano County in a cost effective manner.

The Solano Mobility Management Plan proposes to focus on four key elements that were also identified as strategies in the Solano Transportation Study for Seniors and People with Disabilities, but staff will only be discussing the first element in the update:

1. Countywide In-Person American Disability Act (ADA) Eligibility and Certification Program
2. Travel Training
3. Older Driver Safety Information
4. One Stop Transportation Call Center

Discussion:

Countywide In-Person ADA Eligibility Program Update

Between August 1st and August 31st, the Call Center scheduled 174 appointments, an increase of 37% from the month of July. On average, the Call Center scheduled 5.5 appointments per day with a minimum of 1 appointment and a maximum of 21 appointments in one day. Of the 174 scheduled appointments, 42 (24%) either canceled or were a “no show.” This rate is slightly higher than last month and higher than the 20% national average. CARE Evaluators, STA and the affected operators (FAST and SolTrans) are working to reduce the number of no-shows.

Due to the success of the public awareness of this program, the demand for ADA eligibility has been much higher than expected. The unanticipated demand has led to longer wait times for some applicants in the SolTrans and FAST areas, which had the longest wait up to 31 days. As a result, CARE has added more assessment dates to the FAST and SolTrans service areas in order to reduce the waiting for assessments time. This issue will continue to be monitored.

See attachment A for a graphical representation of the August 2013 - ADA In Person ADA Eligibility Report including countywide and individual operator comparisons.

Mobility Management Program Funding Update

Solano County was highly successful in receiving grant funding from Caltrans' Job Access Reverse Commute (JARC) and New Freedom programs (Attachment B). All of the applicants from Solano County that applied received funding from one of these programs. Solano County received a total of \$756,875 in JARC and New Freedom Funding for these programs. The Solano County Mobility Management Program received funding from JARC and New Freedom that will help fund the Call Center, Travel Training, Website, and Outreach while providing some sustainability in the next few years as shown in Attachment C.

Recommendation:

Informational.

Attachments:

- A. Countywide In-Person ADA Eligibility: August 2013 progress report
- B. Solano County JARC and New Freedom Awards
- C. Solano Mobility Management Budget

Countywide In-Person ADA Eligibility Program August 2013 Progress Report

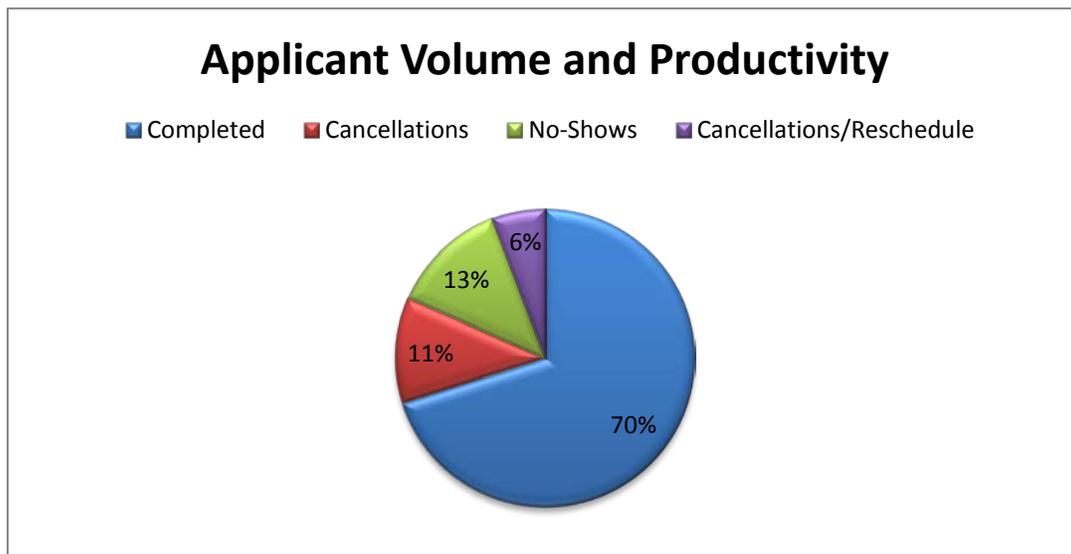
Appointment Volume: Between August 1st and August 31st, the Call Center scheduled 174 appointments. On average the Call Center scheduled 5.5 appointments per day with a minimum of 1 appointment and a maximum of 21 appointments in one day.

New versus re-certification: Sixty-three percent were new applicants and 37% were applicants seeking recertification.

Applicant Volume and Productivity: Of the 174 scheduled appointments, 122 (70%) of the applicants appeared for their in-person assessment, 22 (13%) applicants were a no show, and 20 (11%) were cancellations, ten (6%) scheduled appointments which were cancelled, but rescheduled for a later date. Totalling cancellations and no-shows provides an incompleteness rate of 26%, which is higher than last month, and higher than the 20% national standard for in-person ADA certification assessments incompleteness rate. CARE Evaluators, STA and the affected operators (FAST and SolTrans) are working to reduce the number of no-shows.

Applicant Volume and Productivity by Location

	Countywide	Dixon Readi- Ride	FAST	Rio Vista Delta Breeze	SolTrans	Vacaville City Coach
Completed	122	4	44	2	48	24
Cancellations	20	0	5	0	10	5
No-Shows	22	2	3	0	11	6
Cancellations/Reschedule	10	0	4	0	4	2
Incompletion Rate	26%	33%	15%	0%	30%	31%



Eligibility determinations: Of the 122 assessments that took place in the month of August, 100 (82%) were given unrestricted eligibility, 2 (2%) were denied, 0 (0%) were given trip-by-trip eligibility, 12 (10%) were given conditional eligibility, and 8 (7%) were given temporary eligibility.

Eligibility Results by Service Area						
	Countywide	Dixon Read-Ride	FAST	Rio Vista Delta Breeze	SolTrans	Vacaville City Coach
Unrestricted	100	3	34	2	40	21
Conditional	12	1	5	0	4	2
Trip-by-trip	0	0	0	0	0	0
Temporary	8	0	3	0	4	1
Denied	2	0	2	0	0	0

The only two denials from all 122 completed applications came from the recertification category.

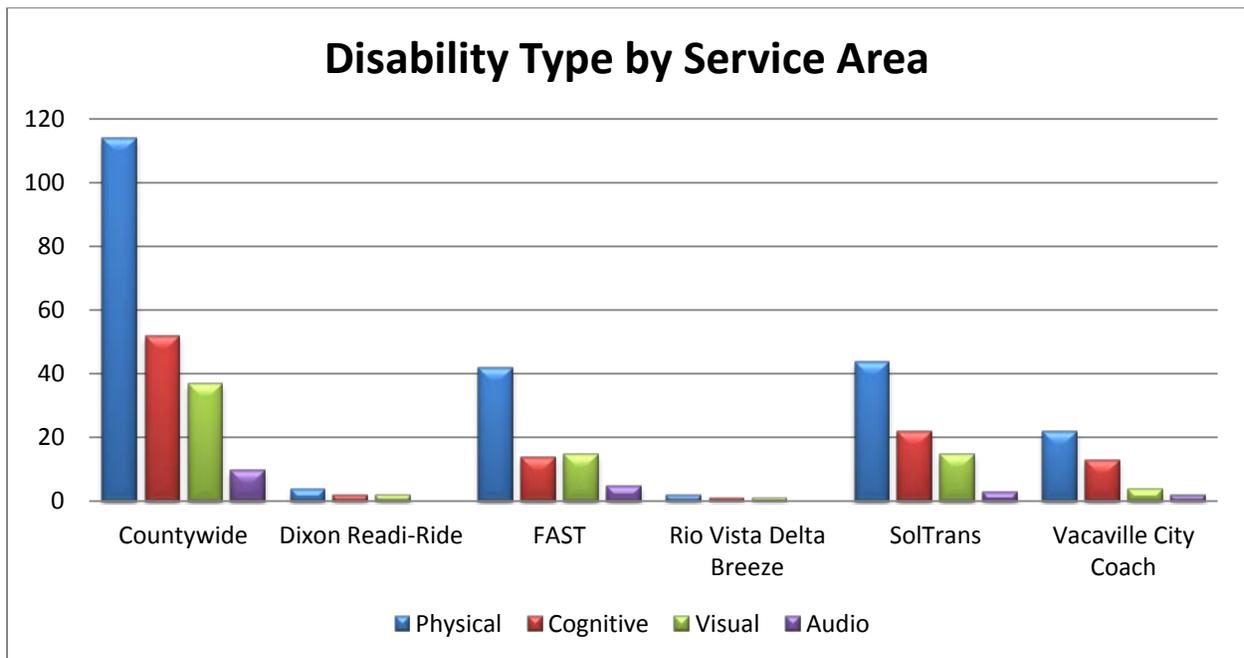
Countywide Eligibility Results by Application Type						
NEW		Percentage		RECERTIFICATION		Percentage
Unrestricted	64	83%		Unrestricted	36	80%
Conditional	8	10%		Conditional	4	9%
Trip-by-trip	0	0%		Trip-by-trip	0	0%
Temporary	5	6%		Temporary	3	7%
Denied	0	0%		Denied	2	4%
TOTAL	77	63%		TOTAL	45	37%

Impact on paratransit: As part of the new countywide in-person assessment program, applicants are provided a complimentary trip on paratransit for the applicant and the applicant's Personal Care Attendant (PCA) upon request. Nearly half of the applicants (45%) provided their own transportation to the assessment site in August.

Transportation to and from In-Person Assessment						
	Countywide	Dixon Read-Ride	FAST	Rio Vista Delta Breeze	SolTrans	Vacaville City Coach
Own Transportation	55	0	22	2	20	11
Complementary Paratransit	67	4	22	0	28	13

Type of Disability: Many of the applicants who completed the in-person assessment presented with more than one type of disability. Nonetheless, the most common type of disability reported was a physical disability (53%) followed by a cognitive disability (19%) and visual disability (17%). This pattern was true in every service area except FAST where a visual disability was the second most commonly reported disability. An auditory disability was the least commonly reported disability, with only (5%) of the total.

Disability Type Countywide and by Service Area						
	Countywide	Dixon Readi-Ride	FAST	Rio Vista Delta Breeze	SolTrans	Vacaville City Coach
Physical	114	4	42	2	44	22
Cognitive	52	2	14	1	22	13
Visual	37	2	15	1	15	4
Audio	10	0	5	0	3	2



Time to scheduled assessment: On average, the time between an applicant call to schedule an in-person assessment and the date of their assessment is approximately eight days. The longest amount of time clients had to wait for an appointment in August was 31 days. As a result, CARE has added more assessment dates to the FAST and SolTrans service area in order to reduce the waiting time. The goal is for clients to receive an appointment within 2-3 weeks of their phone call.

In reviewing future appointments in September and October, C.A.R.E. Evaluators are able to schedule clients in Dixon, Rio Vista, Suisun City and Vacaville for an in-person assessment in their service area within 2 weeks, and Benicia and Fairfield residents are able to schedule appointments within 3 weeks of their initial call to C.A.R.E. It is anticipated that the wait time for FAST passengers will drop to 2 weeks with the addition of 2 assessment dates in Suisun City. However, there still appears to be an issue with Vallejo residents experiencing extended wait times. STA staff is scheduling a meeting with C.A.R.E. evaluators and Soltrans to resolve this issue.

Time (Days) from Scheduling to Appointment						
	Countywide	Dixon Readi-Ride	FAST	Rio Vista Delta Breeze	SolTrans	Vacaville City Coach
Average for Period	8	2	9	8	9	5
Longest	31	4	28	8	31	14

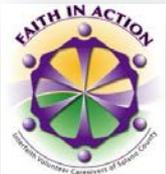
Time to receipt of eligibility determination letter: On average, the time between the applicant’s assessment and the receipt of the eligibility determination letter was 13 days, improved from 16 days in July. The ADA requirement is 21 days.



Solano County Job Access Reverse Commute (JARC) and New Freedom Tentative Awards January 2014



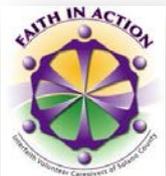
Applicant	Award	Description	Amount
Faith In Action	New Freedom	Operating Assistance – Volunteer Driver Program	\$102,675
Solano County	New Freedom	Intercity Taxi Scrip Program	\$100,000
SolTrans	JARC	Operating Assistance- Service to SCC in Vallejo	\$200,000
STA	New Freedom	Mobility Management	\$175,000
STA	JARC	Mobility Management	\$179,200
Total			\$756,875



Statewide Competitive Process

Solano County Percentage of Available Funding

	New Freedom	JARC
Solano County Award	\$ 377,675	\$ 379,200
Available Small Urban	\$ 1,624,193	\$ 3,201,052
Solano County %	23%	12%



MOBILITY MANAGEMENT BUDGET

REVENUE

Year	JARC	New Freedom	OBAG	STAF	STAF Paratransit	Unfunded	Total
2011-12					\$ 100,534		\$ 100,534
2012-13	\$ 250,000			\$ 100,000	\$ 289,343		\$ 639,343
2013-14	\$ 179,200	\$ 175,000		\$ 153,129	\$ 129,194		\$ 636,523
2014-15			\$ 125,000				\$ 125,000
2015-16			\$ 125,000				\$ 125,000
Spent	\$ (75,519)						\$ (75,519)
Revenue	\$ 353,681	\$ 175,000	\$ 250,000	\$ 253,129	\$ 519,071	\$ -	\$ 1,550,881
Total Cost	\$ 353,681	\$ 175,000	\$ 250,000	\$ 253,129	\$ 519,071	\$ 294,929	\$ 1,845,810
Difference	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (294,929)	\$ (294,929)

EXPENITURES

ADA In-Person Eligibility

Year	JARC	New Freedom	OBAG	STAF	STAF Paratransit	Unfunded	Total
2013-14	\$ -	\$ -	\$ -	\$ -	\$ 145,000		\$ 145,000
2014-15	\$ -	\$ -	\$ -	\$ -	\$ 145,000		\$ 145,000
2015-16	\$ -	\$ -	\$ -	\$ -		\$ 150,000	\$ 150,000
Cost	\$ -	\$ -	\$ -	\$ -	\$ 290,000	\$ 150,000	\$ 440,000

Travel Training

Year	JARC	New Freedom	OBAG	STAF	STAF Paratransit	Unfunded	Total
*2013	\$ 75,792						\$ 139,481
	\$ 63,689						
*2014	\$ 135,760	\$ 40,000		\$ 33,940			\$ 271,700
	\$ 41,600	\$ 10,000		\$ 10,400			
2015			\$ 125,000	\$ 46,250	\$ 95,071	\$ 9,929	\$ 276,250
2016			\$ 125,000	\$ 16,250		\$ 135,000	\$ 276,250
Cost	\$ 316,841	\$ 50,000	\$ 250,000	\$ 106,840	\$ 95,071	\$ 144,929	\$ 963,681

* Cost separated by travel training(1st line) and brochures (2nd line)

Website

Year	JARC	New Freedom	OBAG	STAF	STAF Paratransit	Unfunded	Total
2013	\$ 35,000						\$ 35,000
2014	\$ 1,840	\$ 1,695		\$ 460	\$ 7,000		\$ 10,995
2015				\$ 5,829	\$ 7,000		\$ 12,829
2016					\$ 13,000		\$ 13,000
Cost	\$ 36,840	\$ 1,695	\$ -	\$ 6,289	\$ 14,000		\$ 58,824

Call Center

Year	JARC	New Freedom	OBAG	STAF	STAF Paratransit	Unfunded	Total
2014		\$ 123,305					\$ 123,305
2015			\$ -	\$ 70,000	\$ 60,000		\$ 130,000
2016				\$ 70,000	\$ 60,000		\$ 130,000
Cost	\$ -	\$ 123,305	\$ -	\$ 140,000	\$ 120,000		\$ 383,305

Total Cost	\$ 353,681	\$ 175,000	\$ 250,000	\$ 253,129	\$ 519,071	\$ 294,929	\$ 1,845,810
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DATE: September 12, 2013
TO: SolanoExpress Intercity Transit Consortium
FROM: Nancy Whelan, Transit Consultant
RE: Transit Corridor Study Update and Alternatives

Background:

The I-80/I-680/I-780/State Route (SR) 12 Transit Corridor Study (“Transit Corridor Study”) updates the Transit Corridor Studies completed in 2004 (I-80/I-680/I-780) and 2006 (SR 12) and will address current and future travel demand in the corridor, existing service and alternatives for serving the corridor, and a recommended phased implementation plan. The Transit Corridor Study will not only address transit services, but also update the facilities and connections needed to support these services into the future. The Transit Corridor Plan will provide guidance and coordination for future investments.

Discussion:

Preparation of the I-80/I-680/I-780/State Route (SR) 12 Transit Corridor Study was initiated at the same time as the Coordinated Short Range Transit Plan (SRTP) for Solano County. Arup has led the project team for the two studies which have been conducted in parallel over the past 13 months. On September 11, 2013, the STA Board approved the Solano County Coordinated Short Range Transit Plan and adopted performance benchmarks for intercity transit service.

The performance benchmarks were developed in collaboration with the transit operators as a part of the Service Coordination Analysis component of the Coordinated SRTP. In addition to incorporating the benchmarks in the FAST and SolTrans SRTPs, the benchmarks are being used in the development of the Transit Corridor Study.

Elements of the Transit Corridor Study have been presented and discussed with the SolanExpress Consortium over the past several months. Topics have included:

- Service design goals and objectives
- Review of other studies and best practices
- Service performance in the transit corridor
- Demand forecasting
- Preliminary transit corridor alternatives
- Potential on-line freeway stations

Service Design Principles

The Intercity Funding Agreement notes five core service design principles:

- Provides connectivity between cities
- Provides regional transit connections
- Meets unmet transit needs
- Minimize stops in each city
- Is user friendly

The current intercity system addresses the majority of these principles. All the routes provide connectivity between cities, only Routes 20 and 85 do not connect with a regional transit service, and all routes serve unmet transit needs. Routes 30, 40, 80 and 90 are fast and minimize stops in each city, but Routes 20, 78 and 85 have multiple stops.

Only the definition of “user-friendly” requires additional discussion. In general, a well-used and well-liked transit service creates and meets passenger expectations of quality for a transit service. These expectations fall into five categories:

- Safety
- Reliability
- Frequency
- Span of Service
- Speed

The desire for a user-friendly service and the need to meet the other intercity service objectives, results in a set of guiding principles that have emerged during the study’s analysis and discussion.

1. Intercity/regional transit services will be designed to be:
 - Easy-to-use;
 - Simple, legible, and easily understood by the public; and
 - Frequent enough such that passengers do not need a schedule on a large part of the system.

The goal is to operate every 15 minutes during peak periods, subject to demand.

2. Intercity/regional services will connect Solano cities to each other, link higher education campuses, and connect the county to external regional transit services. It will be integrated and scheduled collaboratively with other regional carriers, such as WETA ferries and BART.
3. Intercity/regional transit services will benefit from transit priority and transit preferential measures (such as transit signal priority, bus queue jumps, in-line freeway stations, etc.) to decrease transit passenger travel times, improve reliability and reduce system operating costs.

The goal is to operate at an average speed of 35 mph and achieve excellent on-time performance.

4. Transit service will be prioritized to the most promising markets and corridors, with good patronage rewarded by better service and shorter waits.
5. Intercity/regional transit services will achieve a high farebox recovery.
These principles are reflected in the transit corridor service design standards and adopted intercity performance benchmarks. These are the principles underlying the development of transit corridor alternatives.

Development of Transit Corridor Alternatives

Several transit corridor alternatives have been presented to the Consortium over the past few months. Discussions of the transit corridor alternatives have resulted in refinements, including a revised alternative that focuses on serving the colleges. At the September 24, 2013 Consortium meeting the consulting team will present an update set of service alternatives, how they meet the service design goals and criteria, and the pros and cons of each. Handouts of the proposed transit corridor alternatives will be provided at the meeting.

Recommendation:

Informational.

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DATE: September 17, 2013
TO: SolanoExpress Intercity Transit Consortium
FROM: Wayne Lewis, Fairfield and Suisun Transit
RE: Discussion of Clipper Implementation

Background/Discussion:

Wayne Lewis of Fairfield and Suisun Transit has requested for the implementation of Clipper in Solano County be placed on the agenda for discussion by the Consortium.

Recommendation:

Informational.

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DATE: September 17, 2013
TO: SolanoExpress Intercity Transit Consortium
FROM: Judy Leaks, SNCI Program Manager
RE: Commuter Benefits Program - Senate Bill 1339

Background:

Motor vehicles are the largest source of greenhouse gases and other air pollutants in the San Francisco Bay Area. Reducing the growth in vehicle miles traveled is necessary to achieve the State's bold climate protection targets set by AB 32 and SB 375, and to reduce other air pollutants that adversely impact public health. The Bay Area Commuter Benefits Program would assist the Bay Area in achieving these targets and goals.

Senate Bill 1339, signed into law in fall 2012, authorizes the Bay Area Air Quality Management District (Air District) and Metropolitan Transportation Commission (MTC) to adopt and implement a regional ordinance, known as the Bay Area Commuter Benefits Program (Program). The Program would require employers with 50 or more full-time employees in the Bay Area to select one of the following four commuter benefit options to offer to their employees:

- The option for employees to pay for their transit or vanpool expenses with pre-tax dollars, as allowed by current federal law;
- A transit or vanpool subsidy to reduce, or cover, employees' monthly transit or vanpool costs;
- A low-cost or free shuttle, vanpool, or bus service operated by or for the employer; or
- An alternative method that would be equally as effective as the other options in reducing single-occupant vehicle trips (and/or vehicle emissions).

Building on the success of similar programs adopted in the cities of San Francisco, Berkeley and Richmond, as well as the San Francisco International Airport, the Bay Area Commuter Benefits Program facilitates a regional approach to encourage the use of sustainable commute modes, such as public transit, ridesharing, bicycling and walking, in the effort to reduce greenhouse gas emissions from the transportation sector, reducing traffic congestion and improving air quality.

In Bay Area cities where these programs are already in place, most employers have chosen the pre-tax option, which can provide economic benefits to both employers and employees through tax savings. While this is a good option in transit-rich areas, it does not translate well in less urban areas. Therefore, STA's Solano Napa Commuter Information (SNCI) staff has been working with the BAAQMD and MTC staff to further develop the fourth option to address the needs of employers that are located in areas that are not as comprehensively served by transit, have limited financial resources, and/or operate a business that does not lend itself to telecommuting.

Solano County is in two Air Districts, the BAAQMD (Vallejo, Benicia and Fairfield) and the Yolo Solano Air Quality Management District (YSAQMD). YSAQMD is not required to implement the Commuter Benefits Program, but YSAQMD staff has expressed interest in adopting a similar program as a voluntary measure for businesses with 50 or more full-time employees in its jurisdiction, which includes the northeast portion of Solano County, including Vacaville, Dixon, and Rio Vista.

Discussion:

Many Solano County employers actively take part in programs that encourage the use of commute alternatives through the SNCI program. Currently, forty-one (41) employers are participating in the 2013 Solano Commute Challenge and sixty-six (66) employers are registered in the STA's Emergency Ride Home program. Carpooling is often the primary option for their employees. There are an estimated 111 Solano employers with 50 or more employees in the implementation area (and 40 more 50 plus employers in the YSAQMD area) that currently receive support and outreach from STA's Solano Napa Commuter Information (SNCI) program.

The Air District and the MTC are currently developing plans for adopting and implementing the Program, and will conduct public workshops to present, discuss and receive comments on the Program (Draft Regulation 14, Rule 1: the Bay Area Commuter Benefits Program). The Solano County Workshop will take place on Wednesday, October 9, from 2:00pm to 4:00pm at the Fairfield Community Center, Lakeside Suite A, 1000 Kentucky Street in Fairfield. Invitations will be sent to all Solano employers with 50 or more employees located within the boundaries of the BAAQMD. SNCI staff will send additional information to current employer clients within that category, as well as work closely with the Solano Economic Development Corporation (Solano EDC) to spread the word throughout the employer community.

STA staff is viewing Commuter Benefits Program as an opportunity to continue to work with Solano employers, and to motivate additional employers to provide employees with commute options, thereby reducing traffic congestion and greenhouse gas emissions and improving air quality. These outcomes will also be beneficial for Solano County and the entire region.

Fiscal Impact:

None.

Recommendation:

Informational.



DATE: September 16, 2013
TO: SolanoExpress Intercity Transit Consortium
FROM: Jayne Bauer, Marketing & Legislative Program Manager
RE: Status of Marketing Plan for SolanoExpress and SNCI Program

Background:

The STA manages and markets a variety of transportation related programs and services. This includes the design and implementation of the marketing objectives for the SolanoExpress Intercity Transit program and the Solano Napa Commuter Information (SNCI) Program.

SolanoExpress:

With the assistance of Regional Measure 2 (RM2) Marketing funds from MTC, the STA Board authorized the launch of a comprehensive marketing program for the SolanoExpress services. STA staff has worked with Solano County Transit (SolTrans) and Fairfield and Suisun Transit (FAST) to develop and implement this program. The goals of the marketing effort for SolanoExpress intercity transit services in FY 2012-13 were to:

1. Promote SolanoExpress services as positive alternatives to driving alone for commuting and other trip purposes
2. Increase awareness of SolanoExpress services
3. Increase ridership on SolanoExpress routes and the farebox recovery rate

Solano Napa Commuter Information (SNCI):

It has been several years since the SNCI program has evaluated the effectiveness of its marketing and public information efforts. The marketing plans developed by STA staff each year list a number of strategies, plans and products that are employed to promote the services offered by SNCI. In order to ensure the program is reaching its target group with the right messages within the constraints of the program's limited budget resources, the STA Board authorized securing the services of a marketing firm who can evaluate the overall marketing program for SNCI, and develop a marketing strategy and marketing action plan. The marketing goal of the SNCI program was to increase awareness of the program and the number of people in Solano County using alternative forms of transportation such as transit, carpool, vanpool, ferry and bicycle.

Discussion:

SolanoExpress:

Moore Iacafano Goltsman, Inc. (MIG), is the consultant under contract to execute the marketing campaign for SolanoExpress. A SolanoExpress Marketing Project Team consisting of Jayne Bauer and Liz Niedziela of STA, Wayne Lewis of FAST, and Ward Stewart (initially Philip Kamhi) of SolTrans was formed to guide the effort. The Team has coordinated the activities with MIG and brought updates to Consortium, TAC and STA Board meetings. A SolanoExpress Marketing Subcommittee of the STA Board was formed to review and approve the marketing plan. Presentations have been made to the STA Board and the SolTrans Board for comments and final approvals. A Scope of Work (Attachment A) outlines the tasks to be completed and products delivered by the consultant.

Additional work originally scoped out for FY 2013-14 is being conducted at the current time. Services include design, production and installation of decals on 19 SolanoExpress FAST buses, additional local print ads, promotional items, and upgrade of the SolanoExpress website. An updated table of all the elements completed and in progress (Attachment B) is included for your information. Attachment E shows examples of the media elements that are in progress.

SNCI:

Moore Iacafano Goltsman, Inc. (MIG), is the consultant under contract to execute the marketing campaign for Solano Napa Commuter Information. Jayne Bauer and Judy Leaks of STA have coordinated the activities with MIG and brought updates to Consortium, TAC and STA Board meetings.

The Metropolitan Transportation Commission (MTC) collected data for a “Commuter Profile” for several years, but has discontinued this effort. The consultant created and conducted a survey to gather current data. The STA Executive Committee provided input for the creation of survey content, and reviewed and approved the marketing strategy. The marketing action plan was submitted to and approved by the STA Board. Now that the work of the consultant is complete, the Board will determine at a later date the next steps in implementing the final marketing action plan. A Scope of Work (Attachment B) briefly outlines the tasks to be completed and products delivered by the consultant with a target timeframe of June 2013.

The final product will consist of:

1. Marketing Assessment and survey.
2. Marketing Strategy that will guide the implementation of the SNCI Marketing Campaign.
3. Marketing Action Plan based on the Marketing Strategy that proposes specific marketing collateral and activities for the next two fiscal years (2013/14 and 2014/15).

Additional evaluation of the SNCI logo (paid for under the FY 2012-13 contract) is currently being conducted by MIG, with proposals to be given to staff this fall. An updated table of all the elements completed and in progress is included for your information (Attachment D).

Fiscal Impact:

SolanoExpress Marketing is funded through Regional Measure 2 (RM2) (\$131,600) and State Transit Assistance Fund (STAF) (\$28,400). The contract was amended in July to provide an extra \$60,000 of STAF and RM 2 funds already dedicated to these purposes, for additional marketing work as outlined above, and extended the contract date to June 30, 2014.

SNCI Marketing plan is funded through a combination of STA General and SNCI Marketing accounts (\$38,000).

Recommendation:

Informational.

Attachments:

- A. SolanoExpress Transit Marketing Scope of Work for FY 2012-13
- B. SolanoExpress Marketing Elements Update
- C. Solano Napa Commuter Information (SNCI) Marketing Scope of Work for FY 2012-13
- D. Solano Napa Commuter Information (SNCI) Marketing Elements Update
- E. SolanoExpress Marketing Elements

Scope of Work

SolanoExpress Transit Marketing Services FY 2012-13

Marketing Objective

The objective of the SolanoExpress Marketing Program is to build upon the past marketing strategies and apply them specifically to promote seven intercity transit services as a system as well as individually:

- SolanoExpress SolTrans Rt. 78
- SolanoExpress SolTrans Rt. 80
- SolanoExpress SolTrans Rt. 85
- SolanoExpress FAST Rt. 20
- SolanoExpress FAST Rt. 30
- SolanoExpress FAST Rt. 40
- SolanoExpress FAST Rt. 90

An approved Marketing Plan will guide the implementation of the SolanoExpress Transit Marketing Campaign for FY 2012-13. In addition to the Plan, the final product will include the design, creation, media placement and printing of various marketing collateral as outlined:

Marketing Plan

Develop a marketing plan to include an ongoing campaign that incorporates a wide range of marketing strategies that will effectively promote, increase awareness and ridership, and implement branding of SolanoExpress services to key audiences:

- Existing core riders
- Existing occasional riders
- General public/non-riders

Marketing Collateral

Create and produce marketing products that may include the following:

- a) Ad placement for print publications/media
- b) Design/scripting/placement of internet ads
- c) Fare Incentive flyers and electronic media ads
- d) Outline of recommended SolanoExpress Website Updates
- e) Bus shelter posters
- f) SolanoExpress Decals for Bus Stop Signs
- g) Bus Stop Sign Schedules Frames
- h) Printed Brochures/Posters/Promotional Collateral
- i) Ads for internal and external bus placement

SolanoExpress Marketing Campaign Elements

I. Online

- Google Ad Network
 - Various banner ad sizes
 - Geographically targeted to Solano County
 - Campaign run: Week of September 2–Week of October 7
 - 1,020,000 estimated impressions
- Facebook
 - 155x155 banner image with clickable link
 - Geographically targeted to Solano County
 - Campaign run: Week of September 2–Week of October 7
 - 2,040,000 estimated impressions
- Pandora
 - 500x500 banner ad with 30-second audio
 - Geographically targeted to Solano County
 - Campaign run: Week of September 2–Week of September 23
 - 1,194,000 estimated impressions
- Bay Area Newsgroup Online
 - Run of network, including The Reporter.com, Times Herald.com, Yahoo.com
 - Geographically targeted to Solano County
 - Campaign run: Week of September 2–Week of September 23
 - 350,500 estimated impressions

II. Radio

- KUIC
 - :60 spot
 - 228 total spots
 - Campaign run: Week of September 2–Week of October 7
 - 430,200 estimated impressions

III. Print

- *Benicia Herald*
 - ¼ page full-color ad
 - Placement in Sunday edition
 - Campaign run: 9/8, 9/15, 9/22, 9/29
- *Vacaville Reporter*
 - ¼ page full-color ad
 - Placement in Sunday edition
 - Campaign run: 9/8, 9/15, 9/22, 9/29
- *Vallejo Times Herald*
 - ¼ page full-color ad
 - Placement in Sunday edition
 - Campaign run: 9/8, 9/15, 9/22, 9/29
- *UC Davis Aggie*
 - Campaign geared toward UC Davis students, faculty and staff

- ¼ page full-color ad
- Placement in Thursday edition of weekly paper
- Campaign to begin after start of academic year (9/24)
- Campaign run: 9/26, 10/3, 10/10, 10/17
- Direct Mail Incentive
 - Postcard mailed to approx. 12,000 households in target neighborhoods
 - Free ride voucher received after user registers online
 - Incentive registration and tracking database in production
 - Incentive mailing to drop early October
- Bus Tails
 - 23" x 23" displays mounted on back of FAST and SolTrans Express buses.
 - To be printed: Week of September 9
 - Currently coordinating with FAST and SolTrans on installation by end of September

Additional Elements (not related to Marketing Campaign)

- I. Bus Schedules and Frames**
 - Template design completed, template provided to operators
 - Frame sizes to be confirmed by FAST and SolTrans (Week of Sept. 9)
- II. Transit Connections Brochure**
 - STA compiling final edits to map
 - MIG to finalize content, prepare files for printing
 - To printer by week of September 15
- III. Bus Shelter Posters**
 - Poster design to incorporate final map from TC Brochure (above)
- IV. Bus Decals**
 - Decals for application to FAST buses
- V. Art Poster**
 - Poster elements confirmed by STA
 - Artist to provide base map, illustration of elements and color study
- VI. Redesigned Web Site**
 - MIG developing wireframes showing proposed content reorganization and reformatting to “responsive design” solution (i.e., an interface that allows the site to be viewed on multiple devices)
 - MIG developing improved mapping interface to allow users to access more detailed route information
 - Proposed wireframes and map interface to be presented for internal review week of September 15
- VII. Promotional Items**
 - STA to identify specific items to be developed

Scope of Work

Solano Napa Commuter Information Marketing Services FY 2012-13

Marketing Objective

The objective of the SNCI Marketing Program is to increase the number of people in Solano County using alternative forms of transportation such as transit, carpool, vanpool, ferry and bicycle.

Marketing Assessment and Survey

Facilitate a marketing assessment to determine public perception and knowledge of SNCI and its programs and how SNCI and STA can best communicate to the target audience.

1. Review existing marketing plans, research and public outreach efforts
2. Conduct polling and/or surveys to gather new data
3. Identify and contact target groups (employers, commuters, students/parents, high school students, general travelers)

Marketing Strategy

Develop a marketing strategy that will effectively promote SNCI and its programs to the identified target audiences; develop theme for marketing SNCI programs and/or rebrand SNCI.

Marketing Action Plan

Develop an action plan that follows the marketing strategy and addresses the marketing objective to increase the number of people in Solano County using alternative forms of transportation such as transit, carpool, vanpool, ferry and bicycle. Incorporate all nine (9) major elements of the SNCI Work Program into the action plan:

1. Customer Service
2. Employer Program
3. Vanpool Program
4. Incentives Program
5. Solano Emergency Ride Home
6. SNCI Awareness Campaign/ General Marketing
7. California Bike to Work/Bike to School Campaign
8. Annual Solano Commute Challenge
9. Partnerships

SNCI Market Research

- I. Commuter Survey (completed)**
 - Telephone survey designed and managed by MIG and EMC Research
 - 401 respondents
 - Conducted February 25–March 3, 2013
 - Toplines presented in early March, 2013
 - Presentation of Opinion Research delivered late March, 2013

- II. Employer Survey (completed)**
 - Online survey designed by MIG and distributed by SNCI staff
 - 20 respondents
 - Conducted May, 2013
 - Summary provided in draft Marketing Strategy and Action plan and again in September, 2013

- III. Marketing Strategy and Action Plan**
 - Draft submitted June, 2013
 - Summary of market research
 - Identifies primary audiences, message themes
 - Phased marketing strategy:
 - Program brand
 - Program website, social media
 - Employer outreach
 - Commuter marketing campaigns

- IV. Revised Program Logo**
 - Internal brand survey/questionnaire to be distributed Fall 2013
 - Logo concepts to be developed after review of internal survey

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SOLANOEXPRESS MARKETING

✘ September – October, 2013

- + Online
- + Direct Mail
- + Radio
- + Bus Tails
- + Print
- + Schedule Frames
- + Schedule Frames
- + Transit Connections Brochure
- + Bus Shelter Posters
- + Promotional Items
- + Redesigned Website (early 2014)



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DATE: September 16, 2013
TO: SolanoExpress Intercity Transit Consortium
FROM: Jayne Bauer, Marketing and Legislative Program Manager
RE: Legislative Update

Background:

Each year, STA staff monitors state and federal legislation that pertains to transportation and related issues. On March 13, 2013, the STA Board approved its amended 2013 Legislative Priorities and Platform to provide policy guidance on transportation legislation and the STA's legislative activities during 2013. Monthly legislative updates have been provided by STA's State and Federal lobbyists for your information (Attachments A and B). A Legislative Bill Matrix listing state bills of interest is available at <http://tiny.cc/staleg>. A Federal Funding Matrix is included as Attachment C.

Discussion:

State

Senate Bill ([SB 556 \(Corbett\)](#)) would require public agencies, including public transit systems, to "label" employees and vehicles which are independent contractors or operated by independent contractors with a "NOT A GOVERNMENT EMPLOYEE" or "THE OPERATOR OF THIS VEHICLE IS NOT A GOVERNMENT EMPLOYEE" disclosure. The STA Board approved a position to monitor SB 556. On September 11, the bill was ordered to the inactive file and will not be considered this legislative year, although it may be brought back in 2014.

Assembly Bill ([AB 466 \(Quirk-Silva\)](#)) requires Caltrans to continue allocating federal Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds to regions pursuant to the current and longstanding formula. The bill codifies in state statutes the weighted population distribution formula that was in effect in federal law up until the enactment of Moving Ahead for Progress in the 21st Century Act (MAP-21). AB 466 is supported by the STA Legislative Platform #VI.9 - Funding). As of August 26th, AB 466 (Attachment D) is endorsed by (among other southern California agencies) the Metropolitan Transportation Commission (MTC) and Santa Clara Valley Transportation Authority (VTA), and opposed by the State Department of Finance. The STA Board approved a support position of AB 466 (Attachment E), and the bill has been sent to Engrossing and Enrolling in preparation for action by the Governor.

Senate Constitutional Amendment ([SCA 4 \(Liu\)](#)) would lower the voter threshold to 55% for local transportation sales tax measures. The STA Board approved support of SCA 4 on February 13th. The bill was amended in the Senate Rules Committee on August 28th (Attachment F) to impose further restrictions:

- At least 50 percent of the tax proceeds must be expended for programs or purposes included in a sustainable communities strategy.

- A local government, when expending any of the tax proceeds for an expansion project on the state highway system, must dedicate a portion of those proceeds, as determined under statute, for the ongoing maintenance of that expansion project.

A number of county transportation agencies, including the Self-Help Counties Coalition, have raised concerns regarding these amendments.

As seen in the bold outlining in the STA Legislative Bill Matrix Digest (Attachment G), AB 466 is the only state bill acted upon by the STA Board that moved forward this year to the Governor's desk.

Federal

TIGER 2013 Grant Funding

STA staff and STA Federal Lobbyist Susan Lent worked closely with the City of Fairfield to coordinate the application and all the required letters of support for the Fairfield/Vacaville Intermodal Station project, which was submitted on June 1st for a \$9M rural area set-aside. The project application was known and well received by all departments with which we met in Washington DC. Congressman Garamendi reached out personally to outgoing DOT Secretary LaHood verbally and in writing advocating for the project. The project garnered letters of support from every state and federal legislator representing Solano County.

The list of funding recipients was released September 5th, and unfortunately, Solano County is not among the recipients. Only 3 projects in California were awarded funding (in Fresno, Truckee and San Diego), but none of the 5 Bay Area projects, including the Train Station, were among them.

Fiscal Impact:

None.

Recommendation:

Informational.

Attachments:

- A. Shaw/Yoder/Antwih State Legislative Update
- B. Akin Gump Federal Legislative Update
- C. Federal Funding Matrix
- D. Letter to Senator Wolk re AB 466
- E. AB 466 (Quire-Silva) Amended August 22, 2013
- F. SCA 4 (Liu) Amended August 28, 2013
- G. STA Legislative Bill Matrix Digest



SHAW/YODER/ANTWIH, inc.
LEGISLATIVE ADVOCACY • ASSOCIATION MANAGEMENT

August 28, 2013

TO: Board of Directors, Solano Transportation Authority

FM: Joshua W. Shaw, Partner
Shaw / Yoder / Antwih, Inc.

RE: **STATE LEGISLATIVE UPDATE – July/ August 2013**

Since our last report of late June, the legislature took its one-month Summer Recess, and then reconvened in early August to begin the sprint towards the September 13th close of the first year of this two-year legislative session. The Interim Study Recess begins that day, and the legislature won't return again until January of 2014.

Thus, the focus has been on moving bills through the "second House" and to the governor's desk.

Besides lobbying the positions on bills previously adopted by the Board, we also worked with your staff during this period to identify additional bills for your consideration.

Here's an update on our new and ongoing activities:

Bills of Interest

1. **SB 556 (Corbett)** was recently gutted and amended to require all public agencies, including public transit systems, to "label" employees and vehicles which are independent contractors or operated by independent contractors with a "NOT A GOVERNMENT EMPLOYEE" or "THE OPERATOR OF THIS VEHICLE IS NOT A GOVERNMENT EMPLOYEE" disclosure. Transit systems throughout the state – including those overseen by the STA – utilize independent, outside contractors to provide transit services, such as drivers/operators for buses and rail vehicles. This bill would place a financial burden on both transit systems and the independent contractors in order to meet the disclosure requirement. Furthermore, the bill would have a potentially detrimental impact on public perception, internally and externally.

We therefore concur with your staff and recommend that board Oppose this bill.

2. **SCA 4 (Liu) & SCA 8 (Corbett)** are constitutional amendments that would lower local vote thresholds for tax measures that support transportation programs, from two-thirds to 55%. The STA board Supports these bills. Each was heard in the Senate Transportation and Housing Committee on August 27, and I testified at the hearing on your behalf.

The author of SCA 4 took suggested committee amendments that: a) add an additional requirement that a percentage of the tax proceeds raised under this new authority be spent on projects aimed at reducing transportation-related greenhouse gas emissions; and b) require that a portion of any of these local tax proceeds spent on the state highway system be set aside for the future maintenance of that new highway capacity. I indicated to the committee that your board would need to evaluate its position on the measure based on these new amendments. (The author of SCA 8 did not take these same amendments.)

In any case, we will have time to engage in this discussion because, as discussed in our earlier reports, we expect that the full Senate will *not* act on these measures this year. Rather, we expect the legislature to consider these and other related measures as a package *next* year, and determine which if any should go forward, and in what form. The legislature will have until mid-summer next year to place anything on the November 2014 ballot.

3. **AB 466 (Quirk-Silva)** would require Caltrans to continue allocating federal Congestion Management and Air Quality Improvement Program (CMAQ) funding to California regions pursuant to a long-standing formula. The bill is needed to provide much-needed financial predictability for local transportation agencies. The enactment of the federal Moving Ahead for Progress in the 21st Century Act (MAP-21) resulted in a number of modifications to CMAQ; as a result of those changes, the formula California uses to distribute CMAQ funds is no longer codified in federal law.

Staff informs us that the STA has used CMAQ Funds to support a wide variety of transit and active transportation projects and improvements. In the last funding cycle alone, STA utilized CMAQ funds to: support bike and pedestrian safety improvements for the City of Dixon; improved ADA access and safety improvements for the Suisun/Fairfield Train Station; complete phase 5 of Solano County's Vaca-Dixon bike route; and, provided outreach efforts for increased ridership through the STA Transit Ambassador Program.

Thus, we concur with staff's recommendation that the STA board ought to Support this bill.

4. **AB 935 (Frazier)**, relative to the composition of the WETA board of directors, did not move in this reporting period; as we reported earlier, **the author has determined to make AB 935 a two-year bill**. However, we did recently begin discussions with the Governor's legislative staff and with his appointments office about the prospects for ensuring our county's continued representation on the board. We will work with you and your staff over the coming months to identify and pursue the necessary points of communication, with the appropriate officials.

The STA board Supports this bill.

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M E M O R A N D U M

August 24, 2013

To: Solano Transportation Authority
From: Akin Gump Strauss Hauer & Feld LLP
Re: July and August Report

In July and August we monitored developments with transportation appropriations and authorization bills and with the Department of Transportation's implementation of MAP-21. We also advised STA regarding Buy America Act implications related to the utility relocation work associated with the I-80/680/SR 12 project and assisted STA with obtaining clarification from the Federal Highway Administration that Buy America requirements do not apply to the utility relocation contract since it will not be reimbursed with federal funds.

Fiscal Year 2014 Appropriations

Neither the House nor the Senate were able to advance their respective fiscal year 2014 transportation appropriations bills before the August recess and the fate of both bills and a final compromise is uncertain.

The Senate Appropriations Committee passed the bill (S. 1243) with bipartisan support including strong support from Senator Susan Collins, the ranking member on the transportation appropriations subcommittee. The bill would make available about \$51 billion in transportation spending, including \$550 million for TIGER grants and \$500 million for a competitive grant program for bridge repairs in critical transportation corridors. Despite the bipartisan support for the bill in Committee, Senate Majority Leader Mitch McConnell (R-KY) lobbied his caucus to vote against allowing the bill to proceed to a vote on grounds that the bill appropriated too much money and was inconsistent with planned spending cuts. The vote to invoke cloture on August 1 failed to receive the 60 votes (54-43) necessary to bring the measure to a final vote.

The House transportation bill (H.R. 2610) met with a similar fate. That bill included about \$41 billion for transportation programs. While the House bill funded highway formula programs at the levels authorized in MAP-21, it did not include funding for the TIGER program and reduced funding for Amtrak and other discretionary transportation and HUD programs. House Democrats and some moderate urban Republicans opposed the bill because of the spending reductions, while more conservative Republicans opposed the bill because it did not cut spending further. House Republican leadership withdrew the bill from consideration by the House on July 31. Leadership stated that the reason for withdrawing the bill was that there was insufficient floor time before the recess to allow for a consideration of amendments and a vote. House Appropriations Committee Chairman Hal Rogers, however, attributed the withdrawal to a lack of

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support within the Republican caucus. He maintained that spending levels under sequestration are too low and urged his leadership to negotiate a budget deal that will replace sequestration.

House Speaker John Boehner (R-OH) stated that the House is likely to take up a short-term continuing resolution when Congress returns from the recess in September. The current fiscal year ends on September 30, leaving little time to resolve fiscal year 2014 spending. With a \$10 billion difference between the House and Senate transportation appropriations bills, it is not clear that even if the House and Senate could pass their individual bills, that they could reconcile them. To date, the House has passed four of the twelve appropriations bills. The Senate has not passed any of its appropriations bills.

Transportation Reauthorization – Oversight Hearings

A July 23 hearing before the House Transportation and Infrastructure Committee's Highways and Transit Subcommittee highlighted the growing shortfall in the Highway Trust Fund and projections that the Trust Fund will be insolvent by the time that MAP-21 expires at the end of fiscal year 2014. Kim Crowley presented the Congressional Budget Office's estimate that Congress would need to raise motor fuel taxes by roughly 10 cents per gallon to close the funding gap and maintain current spending levels. Declining revenues were attributed to improved motor vehicle fuel efficiency, growing use of alternative fuels and declining miles-driven. Congress has not increased the current 18.4-cents-per-gallon gas tax and 24.4-cents-per-gallon diesel tax since 1993. The Trust Fund has failed to keep pace with transportation spending since 2008 and Congress has continually transferred funds from the Treasury to make up the shortfall. DOT Under Secretary for Policy, Polly Trottenberg, did not present policy recommendations to increase revenue to the Highway Trust Fund. She stated that Washington does not have an appetite to move to a fee for vehicle miles travelled. The Administration does not support increasing the gasoline tax, but instead has suggested using savings from reduced spending on the wars in Iran and Afghanistan for transportation.

At a July 24 hearing before the Senate Environment and Public Works Committee, Transportation Secretary Anthony Foxx endorsed the expansion of the Transportation Infrastructure Finance and Innovation Act (TIFIA) program, but warned that demand for financing is quickly outstripping available funding. MAP-21 increased the annual appropriation for TIFIA from \$122 million annually to \$750 million in fiscal 2013 and \$1 billion in fiscal 2014. Requests for TIFIA financing have averaged about \$15 billion annually over the last three years. Secretary Foxx testified that DOT has received about 31 requests totaling \$42 billion for the fiscal year 2013 program. Secretary Foxx also stated that 25 projects are currently underway with 5 to 6 projects under review having met the program's criteria for credit worthiness. Sen. David Vitter (R-LA), the Committee's Ranking Minority Member, expressed concern that

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making “public interest” a factor in DOT’s evaluation of applications may give the Administration too much discretion over project selection.

Regulatory Streamlining

On July 31, Senators Claire McCaskill (D-MO) and Ron Portman (R-OH) introduced *The Federal Permitting Improvement Act* (S. 1397), which is intended to expedite permitting for infrastructure projects that cost more than \$25 million. Eligible projects include renewable or conventional energy production, electricity transmission, surface transportation, aviation, ports and waterways, water resource projects, broadband, pipelines, and manufacturing. The bill would identify best practices and deadlines for reviews and approvals, including designating one "lead agency" for a project, encouraging greater cooperation with state and local permitting authorities, providing greater transparency and early public participation, including creation of a website to track federal permit approvals, and reducing the Statute of Limitations for lawsuits from six years to 150 days. The bill was referred to the Committee on Homeland Security and Governmental Affairs. Senators John Barrasso (R-WY), Joe Donnelly (D-IN), and Michael Enzi (R-WY) cosponsored the bill.

On July 10, the House Judiciary Committee approved *The Responsible and Professionally Invigorating Development (RAPID) Act* (H.R. 2641), by a vote of 18-9. The bill would require federal agencies to complete environmental reviews and issue permits for projects under NEPA within specified time periods. The bill would establish an 18-month maximum for an environmental assessment and a 36-month maximum for an environmental impact statement. Under the bill, judicial review of a NEPA permit, license, or approval issued by a federal agency would be limited to 180 days from the determination. The bill was introduced on July 10 by Rep. Tom Marino (R-PA). The same bill was introduced last year.

Legislation Introduced

On July 22, Rep. Steve Stivers (R-OH) introduced *The American-Made Energy and Infrastructure Jobs Act* (H.R. 2784). The bill would allow expanded drilling in the Outer Continental Shelf (OCS) and use some of the revenues for infrastructure. The bill authorizes the Secretary of Treasury to issue 20-year interest bearing bonds to provide up-front funding for transportation projects. The bonds would generate \$25 billion per year over six years. The proceeds of the bonds would go to the Highway Trust Fund (95 percent) and State Revolving Loan Funds (5 percent) for clean water and wastewater projects.

On August 2, Rep. Albio Sires (D-NJ) introduced *The Commute Less Act* (H.R. 2968), a bill that would give employers tools to provide transportation alternatives to employees, including rideshare and telework programs and shuttle services to connect transit stations with business parks. Metropolitan Planning Organizations serving a transportation management area could establish employer advisory councils that include representatives of employers in the area. The

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employer advisory council would develop and maintain a commuter trip reduction plan that identifies commuting patterns in the transportations area, goals and a plan for reduction of vehicle miles traveled during peak commuting hours, and a financing plan for the projects and activities that would reduce congestion. The bill would require transit grant recipients that receive a grant of more than \$75 million for a project that will reduce traffic flow for more than 120 days to prepare a congestion mitigation plan that includes funding for projects to reduce vehicle miles traveled during peak commuting hours along the impacted corridor. The bill was referred to the House Transportation and Infrastructure Committee.

STA Federal Funding Matrix

Fund Source	Application Contact	Eligibility	Amount Available	Deadlines	Program Description	Proposed Submittal	Staff Contact
TIGER V Discretionary Grant*	Department of Transportation Office of Secretary - Howard Hill (202-366-0301) TIGERGrants@dot.gov	State, local government authorities, transit agencies, MPOs, others	\$473 million	06/03/13	Projects that are eligible for TIGER Discretionary Grants include, but are not limited to: (1) Highway or bridge projects eligible under title 23, United States Code; (2) public transportation projects eligible under chapter 53 of title 49, United States Code; (3) freight rail transportation projects; and (4) passenger rail projects; and (5) marine port infrastructure investments. The FY 2013 Appropriations Act specifies that TIGER Discretionary Grants may be not less than \$10 million (except in rural areas) and not greater than \$200 million. No more than 25% awarded to a single State. Minimum of \$120 million awarded in rural areas. Funds can be used for up to 80% of project costs; priority given to projects for which Federal funding is required to complete an overall financing package and projects can increase their competitiveness by demonstrating significant non-Federal contributions. Only available for obligation through September 30, 2014. Projects compete on the merits of the medium to long-term impacts of the projects themselves (not just job creation).	\$9M Fairfield/Vacaville Intermodal Station STA co-sponsor with Vacaville and CCJPA <i>(applied for \$12M in TIGER III – not awarded)</i>	Steve Hartwig
National Clean Diesel Funding Assistance Program (DERA)	Environmental Protection Agency	U.S. regional, state, local or tribal agencies/consortia or port authorities with jurisdiction over transportation or air quality; School districts, municipalities, metropolitan planning organizations (MPOs), cities and counties	\$9 million	06/25/13	Funds awarded under this program cannot be used to fund emissions reductions mandated under Federal law. Equipment used for testing emissions or for fueling infrastructure is not eligible for funding. Buses, medium or heavy duty trucks, marine engines and locomotives may qualify for funding. Non-road engines or vehicles used in construction, cargo handling (including at a port or airport), agriculture, mining or energy production (including stationary generators and pumps) also qualify. Grant funds may be used for clean diesel projects that use: <ul style="list-style-type: none"> • Retrofit technologies that are verified or certified by either EPA or CARB • Idle-reduction technologies that are EPA verified • Aerodynamic technologies and low rolling resistance tires that are EPA verified • Early replacement and repower with certified engine configurations (incremental costs only) 		

STA Federal Funding Matrix

Fund Source	Application Contact	Eligibility	Amount Available	Deadlines	Program Description	Proposed Submittal	Staff Contact
Innovative Transit Workforce Development Program	Betty Jackson, FTA Office of Research and Innovation (202) 366-1730 Betty.Jackson@dot.gov	Public transit agencies; state departments of transportation (DOTs) providing public transportation services; and Indian tribes, non-profit institutions and institutions of higher education or a consortium of eligible applicants.	\$5 million Authorized under MAP-21	TBD	Funding will be provided to transit agencies and other entities with innovative solutions to pressing workforce development issues. Proposals should target one or more the following areas in the lifecycle of the transit workforce: (1) Pre-employment training/preparation; (2) Recruitment and hiring; (3) Incumbent worker training and retention; and (4) Succession planning/phased retirement. Proposal minimum \$100,000 and maximum \$1,000,000.		
Ferry Boat Discretionary (FBD) Program	Vanessa Williams, Office of Program Management, Vanessa.williams@dot.gov , 202-366-4818)	Vehicular Ferries, serving public roads, not on the Interstate system or Passenger Ferries on a fixed route transit ferry eligible under 49 USC 53 that serve as an alternative to an eligible highway route	\$30 million authorized under MAP-21	10/21/13	This is a new transit discretionary grant program authorized under MAP-21. \$30 million per year is set-aside from the Urban formula program totals to support passenger ferries. Funding will be awarded on a competitive selection basis. Eligible projects are capital projects including ferries, terminals, and related infrastructure. Capital projects include, but are not limited to, the purchase, replacement, or rehabilitation of, ferries and terminals and related equipment.		
Smart Growth Implementation Assistance (SGIA) Program	EPA – Abby Hall (hall.abby@epa.gov, 202-566-2086)	Open to state, local, regional, and tribal governments (and non-profits that have partnered with a governmental entity)	\$75,000 per recipient in contractor support	03/01/2013	The program provides technical assistance to help communities grow in ways that improve the local economy, the environment, and people’s health. The program aims to help applicants develop solutions to local challenges, such as managing stormwater, increasing transit-oriented development, and adapting to climate change, and to share those solutions with other communities. EPA sought applications in the following four categories: 1) Community Resilience to Disasters and Climate Change; 2) Redevelopment for Job Creation; 3) Manufactured and Modular Homes in Sustainable Neighborhood Design ; and 4) Medical and Social Service Facilities Siting.		

STA Federal Funding Matrix

Fund Source	Application Contact	Eligibility	Amount Available	Deadlines	Program Description	Proposed Submittal	Staff Contact
Building Blocks for Sustainable Communities	EPA - Kevin Nelson(nelson.kevin@epa.gov, 202-566-2835).	Local, county, or tribal government	N/A	Requests for Letters of Interest expected Fall 2013	This technical assistance will help selected local and/or tribal governments to implement development approaches that protect the environment, improve public health, create jobs, expand economic opportunity, and improve overall quality of life. The purpose of delivering these tools is to stimulate a discussion about growth and development, strengthen local capacity to implement sustainable communities approaches, and provide ideas on how to change local policies and procedures to make communities more economically and environmentally sustainable. Assistance will be provided through presentations, meetings with community stakeholders, and/or activities that strive to relay to participants the impacts of the community's development policies. Communities select from 10 tools: (1): Walking Audits Tool; (2) Parking Audits; (3) Sustainable Design and Development; (4) Smart Growth Zoning Codes for Small Cities and Rural Areas; (5) Green Building Toolkit; (6) Using Smart Growth to Produce Fiscal and Economic Health; (7) Complete Streets; (8) Preferred Growth Areas; (9) Creating a Green Streets Strategy; and (10) Linking Water Quality and Land Use.		
Economic Development Assistance Programs - Public Works and Economic Development Facilities Program	Department of Commerce Economic Development Administration	District Organizations; Indian Tribe or a consortiums; State, city, or other political subdivision of a State, including a special purpose unit of a State or local government engaged in economic or infrastructure development activities, or a consortium of political subdivisions; consortiums of or institutions of higher education; or public or private non-profit organizations or associations	FY2013: \$111 million (30 percent for cycle 1; 70 percent for cycles 2, 3 and 4)	December 13, 2012 for funding cycle 2 of FY 2013; March 13, 2013 for funding cycle 3 of FY 2013; June 13, 2013 for funding cycle 4 of FY 2013 ; and September 13, 2013 for funding cycle 1 of FY 2014	Supports the construction or rehabilitation of essential public infrastructure and facilities to help communities and regions leverage their resources and strengths to create new and better jobs, drive innovation, become centers of competition in the global economy, and ensure resilient economies. Applicants are responsible for demonstrating to EDA the nature and level of economic distress in the region impacted by the proposed project. Applicants are also responsible for defining the region that the project will assist and must provide supporting statistics and other information, as appropriate. To be eligible under this FFO, a project must be located in a region that, on the date EDA receives the application for investment assistance, meets one (or more) of the following economic distress criteria: (i) an unemployment rate that is, for the most recent 24-month period for which data are available, at least one percentage point greater than the national average unemployment rate; (ii) per capita income that is, for the most recent period for which data are available, 80 percent or less of the national average per capita income; or (iii) a "Special Need."		

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August 28th, 2013

The Honorable Lois Wolk
California State Senate, 3rd District
State Capitol Building, Room 5114
Sacramento, CA 95814

RE: Support for AB 466 (Quirk-Silva) – CMAQ Funding Formula

Dear Senator Wolk,

On behalf of the Solano Transportation Authority (STA), I urge your **SUPPORT** for **AB 466 (Quirk-Silva)** and respectfully request your **AYE** vote when it is heard on the Senate Floor. AB 466 would require CalTrans to continue allocating federal Congestion Management and Air Quality Improvement Program (CMAQ) funding to California regions pursuant to the current and long standing formula.

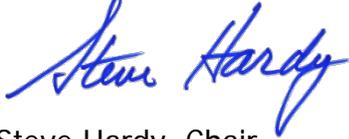
Passing this legislation will provide much needed financial predictability for local transportation agencies. The enactment of the federal Moving Ahead for Progress in the 21st Century Act (MAP-21) resulted in a number of modifications to CMAQ. As a result of those changes, the formula California uses to distribute CMAQ funds is no longer codified in federal law.

In recent years, STA has used CMAQ Funds to support a wide variety of transit and active transportation projects and improvements. In the last funding cycle alone, STA utilized more than \$7 million in CMAQ funds to support projects such as the bike and pedestrian safety improvements for the City of Dixon; ADA access and safety improvements for the Suisun-Fairfield Train Station; and the Georgia Street downtown streetscape project in Vallejo.

AB 466 is necessary to ensure that STA and other transportation programming agencies and transit systems throughout California will be able to continue to rely on the allocation of CMAQ funds for important projects and improvements that benefit our local communities. For these reasons, I urge your **SUPPORT** of **AB 466 (Quirk-Silva)** and respectfully request you **"AYE"** vote when it is heard on the Senate Floor.

Thank you for your consideration and for your continued support of transportation concerns in Solano County.

Sincerely,



Steve Hardy, Chair
Mayor, City of Vacaville

cc: The Honorable Sharon Quirk-Silva, 65th Assembly District
The Honorable Susan Bonilla, Assembly Member, 14th District
The Honorable Jim Frazier, Assembly Member, 11th District
The Honorable Mariko Yamada, Assembly Member, 4th District
STA Board Members
Mr. Daryl K. Halls, Executive Director
Ms. Jayne Bauer, Marketing & Legislative Program Manager
Joshua W. Shaw, Partner, Shaw/Yoder/Antwih, Inc.
Bay Area CMA Directors

AMENDED IN SENATE AUGUST 22, 2013
 AMENDED IN ASSEMBLY MARCH 14, 2013
 CALIFORNIA LEGISLATURE—2013–14 REGULAR SESSION

ASSEMBLY BILL**No. 466**

Introduced by Assembly Member Quirk-Silva

February 19, 2013

An act to amend Section 182.7 of the Streets and Highways Code, relating to transportation.

LEGISLATIVE COUNSEL'S DIGEST

AB 466, as amended, Quirk-Silva. Federal transportation funds.

Existing law provides for the allocation of certain federal transportation funds apportioned to the state between state purposes administered by the Department of Transportation and local and regional purposes administered by various regional agencies, including funds made available under the federal Congestion Mitigation and Air Quality Improvement Program, as specified.

This bill would require the department to allocate federal funds to regional agencies under the federal Congestion Mitigation and Air Quality Improvement Program based on a weighted formula that considers population and pollution in a given area, as specified.

Vote: majority. Appropriation: no. Fiscal committee: yes.
 State-mandated local program: no.

The people of the State of California do enact as follows:

- 1 SECTION 1. Section 182.7 of the Streets and Highways Code
- 2 is amended to read:

1 182.7. (a) Notwithstanding Sections 182 and 182.5, Sections
2 188, 188.8, and 825 do not apply to the expenditure of an amount
3 of federal funds equal to the amount of federal funds apportioned
4 to the state pursuant to Section 104(b)(4) of Title 23 of the United
5 States Code. These funds shall be known as the congestion
6 mitigation and air quality program funds and shall be expended in
7 accordance with Section 149 of Title 23 of the United States ~~Code.~~
8 *Code, including the requirements relating to particular matter*
9 *less than 2.5 micrometers in diameter in subsections (g) and (k)*
10 *of the section.* The department, the transportation planning
11 agencies, and the metropolitan planning organizations may do all
12 things necessary in their jurisdictions to secure and expend those
13 federal funds in accordance with the intent of federal law and this
14 chapter.

15 (b) The congestion mitigation and air quality program funds
16 shall be apportioned by the department to the metropolitan planning
17 organizations designated pursuant to Section 134 of Title 23 of
18 the United States Code and, in areas where none has been
19 designated, to the transportation planning agency established by
20 Section 29532 or 29532.1 of the Government Code. All funds
21 apportioned to the state pursuant to Section 104(b)(4) of Title 23
22 of the United States Code shall be apportioned to metropolitan
23 planning organizations and transportation planning agencies
24 responsible for air quality conformity determinations in federally
25 designated air quality nonattainment and maintenance areas within
26 the state as follows:

27 (1) The department shall apportion these funds in the ratio that
28 the weighted nonattainment and maintenance population in each
29 federally designated area within the state bears to the total of all
30 weighted nonattainment and maintenance area populations in the
31 state.

32 (2) Subject to paragraph (3), the weighted nonattainment and
33 maintenance area population shall be calculated by multiplying
34 the population of each area in the state that is a nonattainment area
35 or maintenance area as described in Section 149(b) of Title 23 of
36 the United States Code for ozone or carbon monoxide by the
37 following factors:

38 (A) A factor of 1.0, if, at the time of apportionment, the area is
39 a maintenance area.

1 (B) A factor of 1.0, if, at the time of the apportionment, the area
2 is classified as a marginal ozone nonattainment area under Subpart
3 2 of Part D of Title I of the Clean Air Act (42 U.S.C. Sec. 7511 et
4 seq.).

5 (C) A factor of 1.1, if, at the time of the apportionment, the area
6 is classified as a moderate ozone nonattainment area under Subpart
7 2 of Part D of Title I of the Clean Air Act (42 U.S.C. Sec. 7511 et
8 seq.).

9 (D) A factor of 1.2, if, at the time of the apportionment, the area
10 is classified as a serious ozone nonattainment area under Subpart
11 2 of Part D of Title I of the Clean Air Act (42 U.S.C. Sec. 7511 et
12 seq.).

13 (E) A factor of 1.3, if, at the time of the apportionment, the area
14 is classified as a severe ozone nonattainment area under Subpart
15 2 of Part D of Title I of the Clean Air Act (42 U.S.C. Sec. 7511 et
16 seq.).

17 (F) A factor of 1.4, if, at the time of the apportionment, the area
18 is classified as an extreme ozone nonattainment area under Subpart
19 2 of Part D of Title I of the Clean Air Act (42 U.S.C. Sec. 7511 et
20 seq.).

21 (G) A factor of 1.0, if, at the time of the apportionment, the area
22 is not a nonattainment or maintenance area for ozone, but is
23 classified under Subpart 3 of Part D of Title I of the Clean Air Act
24 (42 U.S.C. Sec. 7512 et seq.) as a nonattainment area for carbon
25 monoxide.

26 (H) A factor of 1.0, if, at the time of *the* apportionment, an area
27 is designated as a nonattainment area for ozone under Subpart 1
28 of Part D of Title I of the Clean Air Act (42 U.S.C. Sec. 7512 et
29 seq.).

30 (3) If, in addition to being designated as a nonattainment or
31 maintenance area for ozone as described in paragraph (2), any
32 county within the area is also classified under Subpart 3 of Part D
33 of Title I of the Clean Air Act (42 U.S.C. Sec. 7512 et seq.) as a
34 nonattainment or maintenance area described in paragraph (2) for
35 carbon monoxide, the weighted nonattainment or maintenance
36 area population of the county, as determined under subparagraphs
37 (A) to (F), inclusive, or subparagraph (H) of paragraph (2), shall
38 be further multiplied by a factor of 1.2.

1 (4) Funds allocated under this subdivision shall remain available
2 for three federal fiscal years, including the federal fiscal year
3 apportioned.

4 (c) Notwithstanding subdivision (b), where county transportation
5 commissions have been created by Division 12 (commencing with
6 Section 130000) of the Public Utilities Code, all congestion
7 mitigation and air quality program funds shall be further
8 apportioned by the metropolitan planning organization to the
9 county transportation commission on the basis of relative
10 population within the federally designated air quality nonattainment
11 and maintenance areas after first apportioning to the nonattainment
12 and maintenance areas in the manner and in accordance with the
13 formula set forth in subdivision (b).

14 In the Monterey Bay region, all congestion mitigation and air
15 quality ~~improvement~~ program funds shall be further apportioned,
16 on the basis of relative population, by the metropolitan planning
17 organization to the regional transportation planning agencies
18 designated under subdivision (b) of Section 29532 of the
19 Government Code.

20 (d) The department shall notify each metropolitan planning
21 organization, transportation planning agency, and county
22 transportation commission receiving an apportionment under this
23 section, as soon as possible each year, of the amount of obligational
24 authority estimated to be available for expenditure from the federal
25 apportionment. The metropolitan planning organizations,
26 transportation planning agencies, and county transportation
27 commissions, in cooperation with the department, congestion
28 management agencies, cities and counties, and affected transit
29 operators, shall select and program projects in conformance with
30 federal law. Each metropolitan planning organization and
31 transportation planning agency shall, not later than August 1 of
32 each even-numbered year beginning in 1994, submit its
33 transportation improvement program prepared pursuant to Section
34 134 of Title 23 of the United States Code to the department for
35 incorporation into the state transportation improvement program.

36 (e) Not later than July 1 of each year, the metropolitan planning
37 organizations and the regional transportation planning agencies
38 receiving obligational authority under this section, shall notify the
39 department of the projected amount of obligational authority that
40 each entity intends to use during the remainder of the current

1 federal fiscal year, including, but not limited to, a list of projects
2 that will use the obligational authority. Any federal obligational
3 authority that will not be used shall be redistributed by the
4 department to other projects in a manner that ensures that the state
5 will continue to compete for and receive increased obligational
6 authority during the federal redistribution of obligational authority.
7 If the department does not have sufficient federal apportionments
8 to fully use excess obligational authority, the metropolitan planning
9 organization or transportation planning agency relinquishing
10 obligational authority shall make sufficient funding available to
11 the department to fund alternate projects, when practical, within
12 the geographical areas relinquishing the obligational authority.
13 Notwithstanding this subdivision, the department shall comply
14 with subsection (f) of Section 133 of Title 23 of the United States
15 Code.

16 (f) The department shall be responsible for closely monitoring
17 the use of federal transportation funds, including congestion
18 management and air quality *program* funds to assure full and timely
19 use. The department shall prepare a quarterly report for submission
20 to the commission regarding the progress in use of all federal
21 transportation funds. The department shall notify the commission
22 and the appropriate implementation agency whenever there is a
23 failure to use federal funds within the three-year apportionment
24 period established under paragraph (4) of subdivision (b).

25 (g) The department shall provide written notice to implementing
26 agencies when there is one year remaining within the three-year
27 apportionment period established under paragraph (4) of
28 subdivision (b).

29 (h) Within six months of the date of notification required under
30 subdivision (g), the implementing agency shall provide to the
31 department a plan to obligate funds that includes, but need not be
32 limited to, a list of projects and milestones.

33 (i) If the implementing agency has not met the milestones
34 established in the implementation plan required under subdivision
35 (h), prior to the end of the three-year apportionment period
36 established under paragraph (4) of subdivision (b), the commission
37 shall redirect those funds for use on other transportation projects
38 in the state.

39 (j) Congestion mitigation and air quality program funds available
40 under this section exchanged pursuant to Section 182.8 may be

1 loaned to and expended by the department. The department shall
2 repay from the State Highway Account to the Traffic Congestion
3 Relief Fund all funds received as federal reimbursements for funds
4 exchanged under Section 182.8 as they are received from the
5 Federal Highway Administration, except that those repayments
6 are not required to be made more frequently than on a quarterly
7 basis.
8 (k) Prior to determining the amount for local subvention required
9 by this section, the department shall first deduct the amount
10 authorized by the Legislature for increased department oversight
11 of the federal subvented program.

O

AMENDED IN SENATE AUGUST 28, 2013

AMENDED IN SENATE MAY 21, 2013

AMENDED IN SENATE MARCH 19, 2013

Senate Constitutional Amendment

No. 4

Introduced by Senator Liu
(Coauthor: Senator Pavley)
 (Coauthor: Assembly Member Bonilla)

December 3, 2012

Senate Constitutional Amendment No. 4—A resolution to propose to the people of the State of California an amendment to the Constitution of the State, by amending Section 4 of Article XIII A thereof, and by amending Section 2 of Article XIII C thereof, relating to taxation.

LEGISLATIVE COUNSEL'S DIGEST

SCA 4, as amended, Liu. Local government transportation projects: special taxes: voter approval.

The California Constitution conditions the imposition of a special tax by a city, county, or special district upon the approval of $\frac{2}{3}$ of the voters of the city, county, or special district voting on that tax, except that certain school entities may levy an ad valorem property tax for specified purposes with the approval of 55% of the voters within the jurisdiction of these entities.

This measure would provide that the imposition, extension, or increase of a special tax by a local government for the purpose of providing funding for local transportation projects requires the approval of 55% of its voters voting on the proposition, if the proposition proposing the tax includes certain requirements. This measure would prohibit a local government from expending any revenues derived from a special

transportation tax approved by 55% of the voters at any time prior to the completion of a statutorily identified capital project funded by revenues derived from another special tax of the same local government that was approved by a $\frac{2}{3}$ vote. The measure would also make conforming and technical, nonsubstantive changes.

Vote: $\frac{2}{3}$. Appropriation: no. Fiscal committee: no.
State-mandated local program: no.

1 ~~Resolved by the Assembly, SENATE, the Senate concurring,~~
2 ~~ASSEMBLY CONCURRING,~~ That the Legislature of the State of
3 California at its 2013–14 Regular Session commencing on the
4 third day of December 2012, two-thirds of the membership of each
5 house concurring, hereby proposes to the people of the State of
6 California that the Constitution of the State be amended as follows:
7 First—That Section 4 of Article XIII A thereof is amended to
8 read:
9 Section 4. Except as otherwise provided by Section 2 of Article
10 XIII C, a city, county, or special district, by a two-thirds vote of
11 its voters voting on the proposition, may impose a special tax
12 within that city, county, or special district, except an ad valorem
13 tax on real property or a transactions tax or sales tax on the sale
14 of real property within that city, county, or special district.
15 Second—That Section 2 of Article XIII C thereof is amended
16 to read:
17 SEC. 2. Notwithstanding any other provision of this
18 Constitution:
19 (a) A tax imposed by any local government is either a general
20 tax or a special tax. A special district or agency, including a school
21 district, has no authority to levy a general tax.
22 (b) A local government shall not impose, extend, or increase
23 any general tax unless and until that tax is submitted to the
24 electorate and approved by a majority vote. A general tax is not
25 deemed to have been increased if it is imposed at a rate not higher
26 than the maximum rate so approved. The election required by this
27 subdivision shall be consolidated with a regularly scheduled general
28 election for members of the governing body of the local
29 government, except in cases of emergency declared by a unanimous
30 vote of the governing body.
31 (c) Any general tax imposed, extended, or increased, without
32 voter approval, by any local government on or after January 1,

1 1995, and prior to the effective date of this article, may continue
2 to be imposed only if that general tax is approved by a majority
3 vote of the voters voting in an election on the issue of the
4 imposition, which election is held no later than November 6, 1998,
5 and in compliance with subdivision (b).

6 (d) (1) Except as otherwise provided in paragraph (2), a local
7 government shall not impose, extend, or increase any special tax
8 unless and until that tax is submitted to the electorate and approved
9 by two-thirds of the voters voting on the proposition. A special
10 tax is not deemed to have been increased if it is imposed at a rate
11 not higher than the maximum rate so approved.

12 (2) (A) The imposition, extension, or increase of a special tax
13 by a local government for the purpose of providing funding for
14 local transportation projects under its jurisdiction, as may otherwise
15 be authorized by law, requires the approval of 55 percent of the
16 voters voting on the proposition, if all of the following are met:

17 ~~(A)~~

18 (i) The ballot proposition contains a specific list of programs
19 and purposes to be funded, and a requirement that tax proceeds be
20 spent solely for those programs and purposes.

21 (ii) *The ballot proposition requires that at least 50 percent of*
22 *the tax proceeds be expended by the local government for programs*
23 *or purposes included in a sustainable communities strategy adopted*
24 *pursuant to Chapter 2.5 (commencing with Section 65080) of*
25 *Division 1 of Title 7 of the Government Code or any successor to*
26 *that chapter, as either of them may be amended, or, in the case of*
27 *a local government not included within a sustainable communities*
28 *strategy, for programs or purposes that are authorized by law to*
29 *be included in such a strategy.*

30 ~~(B)~~

31 (iii) The ballot proposition includes a requirement for annual
32 independent audit of the amount of tax proceeds collected and
33 expended and the specified purposes and programs funded.

34 ~~(C)~~

35 (iv) The ballot proposition requires the governing board to create
36 a citizens' oversight committee to review all expenditures of
37 proceeds and financial audits and report its findings to the
38 governing board and the public.

39 (v) *The ballot proposition requires a local government, when*
40 *expending any of the tax proceeds for an expansion project on the*

1 *state highway system, to dedicate a portion of those proceeds, as*
2 *determined under statute, for the ongoing maintenance of that*
3 *expansion project.*

4 ~~(3)~~

5 (B) A special tax for the purpose of providing funding for local
6 transportation projects is not deemed to have been increased if it
7 is imposed at a rate not higher than the maximum rate previously
8 approved in the manner required by law. ~~The~~

9 (C) *The* Legislature shall define local transportation projects
10 for purposes of this ~~subdivision~~ *paragraph.*

11 ~~(4)~~

12 (D) A local government shall not expend any revenues derived
13 from a special tax approved by 55 percent of the voters under *this*
14 ~~paragraph (2)~~ at any time prior to the completion of a statutorily
15 identified capital project funded, in whole or in part, by revenues
16 derived from another special tax of the same local government
17 that was approved by a two-thirds vote under paragraph (1).

O

STA Priority Bill Matrix Digest as of 9/16/2013

Bill ID/Topic	Location	Summary	Position
<p>AB 431 Mullin D</p> <p>Regional transportation plan: sustainable communities strategy: funding.</p>	<p>ASSEMBLY 2 YEAR 5/3/2013 - Failed Deadline pursuant to Rule 61(a)(2). (Last location was TRANS. on 4/16/2013)</p>	<p>Existing law requires certain transportation planning activities by designated transportation planning agencies, including development of a regional transportation plan. Certain of these agencies are designated by federal law as metropolitan planning organizations. Existing law requires metropolitan planning organizations to adopt, as part of the regional transportation plan in urban areas, a sustainable communities strategy, which is to be designed to achieve certain targets established by the State Air Resources Board for the reduction of greenhouse gas emissions from automobiles and light trucks in the region.</p> <p>This bill would authorize a transportation planning agency that is designated as a metropolitan planning organization to impose a transactions and use tax, as specified, at a rate of no more than 0.5% even if the combined rate of this tax and other specified taxes imposed in the county, exceeds, if certain requirements are met. The bill would require the ordinance to contain an expenditure plan, with not less than 25% of available net revenues to be spent on each of the 3 categories of transportation, affordable housing, and parks and open space, in conformity with the sustainable communities strategy, with the remaining net available revenues to be spent for purposes determined by the transportation planning agency to help attain the goals of the sustainable communities strategy. This bill contains other existing laws.</p> <p>Gutted and Amended on 9/12/2013 to topic unrelated to STA concerns.</p>	<p>Oppose 5/8/13</p>
<p>AB 466 Quirk-Silva D</p> <p>Federal transportation funds.</p>	<p>ASSEMBLY 9/6/2013 – Senate amendments concurred in. To Engrossing and Enrolling..</p>	<p>Existing law provides for the allocation of certain federal transportation funds apportioned to the state between state purposes administered by the Department of Transportation and local and regional purposes administered by various regional agencies, including funds made available under the federal Congestion Mitigation and Air Quality Improvement Program, as specified.</p> <p>This bill would require the department to allocate federal funds to regional agencies under the federal Congestion Mitigation and Air Quality Improvement Program based on a weighted formula that considers population and pollution in a given area, as specified.</p> <p>Last Amended on 8/29/2013</p> <p>The amendments taken on this bill were technical and non-substantive in nature.</p>	<p>Support 9/11/13</p>

Bill ID/Topic	Location	Summary	Position
<p>AB 574 Lowenthal D</p> <p>California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund: sustainable communities strategies.</p>	<p>ASSEMBLY 2 YEAR 5/24/2013 - Failed Deadline pursuant to Rule 61(a)(5). (Last location was APPR. SUSPENSE FILE on 5/15/2013)</p>	<p>The California Global Warming Solutions Act of 2006 designates the State Air Resources Board as the state agency charged with monitoring and regulating sources of emissions of greenhouse gases. The act authorizes the state board to include use of market-based compliance mechanisms. Existing law requires all moneys, except for fines and penalties, collected by the state board from the auction or sale of allowances as part of a market-based compliance mechanism to be deposited in the Greenhouse Gas Reduction Fund and to be available upon appropriation by the Legislature. Existing law requires the Department of Finance, in consultation with the state board and any other relevant state agency, to develop, as specified, a 3-year investment plan for the moneys deposited in the Greenhouse Gas Reduction Fund. This bill would require the state board, in consultation with the California Transportation Commission and the Strategic Growth Council, to establish standards for the use of moneys allocated from the Greenhouse Gas Reduction Fund for sustainable community's projects, as specified. The bill would require the state board, in consultation with the California Transportation Commission and the Strategic Growth Council, to establish the criteria for the development and implementation of regional grant programs, as specified. The bill would require the California Transportation Commission, in consultation with the state board, to designate the regional granting authority within each region of the state to administer the allocated moneys for regional grant programs, as specified. This bill contains other existing laws. Last Amended on 4/15/2013</p>	<p>Support 5/8/13</p>
<p>AB 935 Frazier D</p> <p>San Francisco Bay Area Water Emergency Transportation Authority: terms of board members.</p>	<p>SENATE 2 YEAR 7/12/2013 - Failed Deadline pursuant to Rule 61(a)(10)(SEN). (Last location was T. & H. on 5/23/2013)</p>	<p>Existing law establishes the San Francisco Bay Area Water Emergency Transportation Authority with specified powers and duties, including, but not limited to, the authority to coordinate the emergency activities of all water transportation and related facilities within the bay area region, as defined. This bill would expand the number of members appointed by the Senate Committee on Rules and the Speaker of the Assembly to 2 members each. The bill would require that the initial terms of the additional members appointed by the Senate Committee on Rules and the Speaker of the Assembly pursuant to its provisions shall be 2 years and 6 years, respectively. The bill would require that one of the 3 members appointed by the Governor be a bona fide labor representative and that another member be a resident of the City and County of San Francisco selected from a list of 3 nominees provided by the San Francisco County Transportation Authority. This bill contains other related provisions and other existing laws. Last Amended on 4/25/2013</p>	<p>Support 3/13/13</p>

Bill ID/Topic	Location	Summary	Position
<p>SB 33 Wolk D</p> <p>Infrastructure financing districts: voter approval: repeal.</p>	<p>ASSEMBLY THIRD READING 9/11/2013 – Ordered to inactive file on request of Assembly Member Atkins</p>	<p>Existing law authorizes a legislative body, as defined, to create an infrastructure financing district, adopt an infrastructure financing plan, and issue bonds, for which only the district is liable, to finance specified public facilities, upon voter approval. Existing law authorizes an infrastructure financing district to fund infrastructure projects through tax increment financing, pursuant to the infrastructure financing plan and agreement of affected taxing entities, as defined.</p> <p>This bill would revise and recast the provisions governing infrastructure financing districts. The bill would eliminate the requirement of voter approval for creation of the district and for bond issuance, and would authorize the legislative body to create the district subject to specified procedures. The bill would instead authorize a newly created public financing authority, consisting of 5 members, 3 of whom are members of the city council or board of supervisors that established the district, and 2 of whom are members of the public, to adopt the infrastructure financing plan, subject to approval by the legislative body, and issue bonds by majority vote of the authority by resolution. The bill would authorize a public financing authority to enter into joint powers agreements with affected taxing entities with regard to nontaxing authority or powers only. The bill would authorize a district to finance specified actions and projects, and prohibit the district from providing financial assistance to a vehicle dealer or big box retailer, as defined. The bill would create a public accountability committee, as specified, to review the actions of the public financing authority. This bill contains other related provisions and other existing laws.</p> <p>Last Amended on 8/26/2013</p> <p>The amendments would prohibit a district from financing any project or portion of a project within the boundaries of a former redevelopment agency until the successor agency has received a finding of completion and makes a clarifying definition of “net available revenue”</p>	

Bill ID/Topic	Location	Summary	Position
<p>SB 556 Corbett D</p> <p>Agency: ostensible: nongovernmental entities.</p>	<p>ASSEMBLY THIRD READING 9/11/2013 – Ordered to inactive file on request of Assembly Member Atkins</p>	<p>Existing law specifies the authority of agents in dealing with 3rd persons. Existing law states when an agency is ostensible for purposes of determining the authority of an agent. Existing law prohibits unfair methods of competition and unfair or deceptive acts or practices undertaken by a person in a transaction intended to result or which results in the sale or lease of goods to any consumer. This bill would prohibit a person, firm, corporation, or association that is a nongovernmental entity and contracts to perform labor or services for a public entity from displaying on a vehicle or uniform a seal, emblem, insignia, trade, brand name, or any other term, symbol, or content that reasonably could be interpreted as implying that the labor or services are being provided by employees of the public agency, unless the vehicle or uniform conspicuously displays a disclosure, as specified.</p> <p>Last Amended on 9/4/2013</p> <p>-The amendments remove the specific “non-government employee” language from the disclosure requirement, but still require non-government agencies to include a disclosure (company name, logo, tax ID, and “service provided by” statement or similar statement) on their vehicles and uniforms if the vehicle and uniform look like that of the public agency.</p> <p>-The amendments include reference to vehicle code section 27900, which already includes certain disclosure requirements for passenger vehicles. According to the amendments, it seems that this requirement would suffice as a disclosure requirement for vehicles subject to that code section.</p> <p>-With the amendments, the bill would exclude tow truck drivers and freeway service patrols (the amendments reference article 3.3 of the vehicle code).</p> <p>-The amendments KEEP the definition of “conspicuous” for the disclosure requirement, meaning the disclosure is required to be as “at least the same size as and located close to the logo referring to the public agency.”</p> <p>- Amended to limit the scope of the requirement to <u>public health or safety</u> service providers.</p>	<p>Monitor 9/11/13</p>
<p>SB 791 Wyland R</p> <p>Motor vehicle fuel tax: rate adjustment.</p>	<p>SENATE T. & H. 4/29/2013 - Set, first hearing. Hearing canceled at the request of author.</p>	<p>Existing law, as of July 1, 2010, exempts the sale of, and the storage, use, or other consumption of, motor vehicle fuel from specified sales and use taxes and increases the excise tax on motor vehicle fuel, as provided. Existing law requires the State Board of Equalization to annually adjust the excise tax rate for the state's next fiscal year so that the revenues from the sales and use tax exemption and motor vehicle fuel excise tax increase are revenue neutral. This bill would eliminate the requirement that the State Board of Equalization adjust the rate of the excise tax on motor vehicle fuel, and instead would require the Department of Finance to annually calculate that rate and report that calculated rate to the Joint Legislative Budget Committee. The rate for the state's next fiscal year would remain the same as the rate of the current fiscal year or would decrease, as provided. This bill would further state that the rate may increase upon a further act by the Legislature. This bill contains other related provisions. Last Amended on 4/4/2013</p>	<p>Oppose 5/8/13</p>

Bill ID/Topic	Location	Summary	Position
<p>SCA 4 Liu D</p> <p>Local government transportation projects: special taxes: voter approval.</p>	<p>SENATE APPR. 8/29/2013 - Re-referred to Com. on APPR.</p>	<p>The California Constitution conditions the imposition of a special tax by a city, county, or special district upon the approval of 2/3 of the voters of the city, county, or special district voting on that tax, except that certain school entities may levy an ad valorem property tax for specified purposes with the approval of 55% of the voters within the jurisdiction of these entities. This measure would provide that the imposition, extension, or increase of a special tax by a local government for the purpose of providing funding for local transportation projects requires the approval of 55% of its voters voting on the proposition, if the proposition proposing the tax includes certain requirements. This measure would prohibit a local government from expending any revenues derived from a special transportation tax approved by 55% of the voters at any time prior to the completion of a statutorily identified capital project funded by revenues derived from another special tax of the same local government that was approved by a 2/3 vote.</p> <p>Recent amendments would require that 50% of the tax proceeds be expended by the local government for programs or purposes included in a sustainable communities strategy. Recent amendments also would require the local government, when expending the tax proceeds for an expansion project on the state highway system, to dedicate a portion of those proceeds, as determined under statute, for the ongoing maintenance of that expansion project.</p> <p>Last Amended on 8/28/2013</p>	<p>Support 2/13/13</p>
<p>SCA 8 Corbett D</p> <p>Transportation projects: special taxes: voter approval.</p>	<p>SENATE APPR. 8/29/2013 - Re-referred to Com. on APPR.</p>	<p>The California Constitution conditions the imposition of a special tax by a city, county, or special district upon the approval of 2/3 of the voters of the city, county, or special district voting on that tax, except that certain school entities may levy an ad valorem property tax for specified purposes with the approval of 55% of the voters within the jurisdiction of these entities. This measure would provide that the imposition, extension, or increase of a special tax by a local government for the purpose of providing funding for transportation projects requires the approval of 55% of its voters voting on the proposition, if the proposition proposing the tax includes certain requirements. The measure would also make conforming and technical, nonsubstantive changes.</p> <p>Last Amended on 5/21/2013</p>	<p>Support 2/3/13</p>

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DATE: September 17, 2013
 TO: SolanoExpress Intercity Transit Consortium
 FROM: Sara Woo, Associate Planner
 RE: Summary of Other Funding Opportunities

Discussion:

Below is a list of funding opportunities that will be available to STA member agencies during the next few months, broken up by Federal, State, and Local. Attachment A provides further details for each program.

	FUND SOURCE	AMOUNT AVAILABLE (approximately)	APPLICATION DEADLINE
Regional¹			
1.	Carl Moyer Memorial Air Quality Standards Attainment Program (for San Francisco Bay Area)	Approximately \$20 million	Due On First-Come, First Served Basis
2.	Carl Moyer Off-Road Equipment Replacement Program (for Sacramento Metropolitan Area)	Approximately \$10 million	Due On First-Come, First-Served Basis
3.	Air Resources Board (ARB) Clean Vehicle Rebate Project (CVRP)	Up to \$5,000 rebate per light-duty vehicle	Due On First-Come, First-Served Basis
4.	Bay Area Air Quality Management District (BAAQMD) Hybrid Electric Vehicle Purchase Vouchers (HVIP)	Approximately \$10,000 to \$45,000 per qualified request	Due On First-Come, First-Served Basis
State			
5.	Safe Routes to Transit (SR2T)	Approximately \$4.3 million available	Due September 30, 2013
6.	Goods Movement Emission Reduction Program	Up to \$50,000 Class 6, 7, and 8 trucks.	Due October 10, 2013
Federal			
7.	N/A	N/A	N/A

*New funding opportunity

Fiscal Impact:

None.

Recommendation:

Informational.

Attachment:

- A. Detailed Funding Opportunities Summary

¹ Local includes programs administered by the Solano Transportation Authority and regionally in the San Francisco Bay Area and greater Sacramento.

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The following funding opportunities will be available to the STA member agencies during the next few months. Please distribute this information to the appropriate departments in your jurisdiction.

Fund Source	Application Contact**	Application Deadline/Eligibility	Amount Available	Program Description	Proposed Submittal	Additional Information
Local Grants¹						
Carl Moyer Memorial Air Quality Standards Attainment Program (for San Francisco Bay Area)	Anthony Fournier Bay Area Air Quality Management District (415) 749-4961 afournier@baaqmd.gov	Ongoing. Application Due On First-Come, First Served Basis Eligible Project Sponsors: private non-profit organizations, state or local governmental authorities, and operators of public transportation services	Approx. \$20 million	Carl Moyer Memorial Air Quality Standards Attainment Program provides incentive grants for cleaner-than-required engines, equipment, and other sources of pollution providing early or extra emission reductions.	\$12M Fairfield/Vacaville Intermodal Train Station STA co-sponsor STA staff contact: Janet Adams	Eligible Projects: cleaner on-road, off-road, marine, locomotive and stationary agricultural pump engines http://www.baaqmd.gov/Divisions/Strategic-Incentives/Funding-Sources/Carl-Moyer-Program.aspx
Carl Moyer Off-Road Equipment Replacement Program (for Sacramento Metropolitan Area)	Gary A. Bailey Sacramento Metropolitan Air Quality Management District (916) 874-4893 gbailey@airquality.org	Ongoing. Application Due On First-Come, First-Served Basis Eligible Project Sponsors: private non-profit organizations, state or local governmental authorities, and operators of public transportation services	Approx. \$10 million , maximum per project is \$4.5 million	The Off-Road Equipment Replacement Program (ERP), an extension of the Carl Moyer Program, provides grant funds to replace Tier 0, high-polluting off-road equipment with the cleanest available emission level equipment.	N/A	Eligible Projects: install particulate traps, replace older heavy-duty engines with newer and cleaner engines and add a particulate trap, purchase new vehicles or equipment, replace heavy-duty equipment with electric equipment, install electric idling-reduction equipment http://www.airquality.org/mobile/moyererp/index.shtml

¹ Local includes opportunities and programs administered by the Solano Transportation Authority and/or regionally in the San Francisco Bay Area and greater Sacramento

Fund Source	Application Contact**	Application Deadline/Eligibility	Amount Available	Program Description	Proposed Submittal	Additional Information
Local Grants¹						
Air Resources Board (ARB) Clean Vehicle Rebate Project (CVRP)*	Meri Miles ARB (916) 322-6370 mmiles@arb.ca.gov	Application Due On First-Come, First-Served Basis	Up to \$5,000 rebate per light-duty vehicle	The Zero-Emission and Plug-In Hybrid Light-Duty Vehicle (Clean Vehicle) Rebate Project is intended to encourage and accelerate zero-emission vehicle deployment and technology innovation. Rebates for clean vehicles are now available through the Clean Vehicle Rebate Project (CVRP) funded by the Air Resources Board (ARB) and implemented statewide by the California Center for Sustainable Energy (CCSE).	N/A	Eligible Projects: Purchase or lease of zero-emission and plug-in hybrid light-duty vehicles http://www.arb.ca.gov/mspr/og/agip/cvrp.htm
Bay Area Air Quality Management District (BAAQMD) Hybrid Electric Vehicle Purchase Vouchers (HVIP)*	To learn more about how to request a voucher, contact: info@californiahvip.org	Application Due On First-Come, First-Served Basis	Approx. \$10,000 to \$45,000 per qualified request	The California Air Resources Board (ARB) created the HVIP to speed the market introduction of low-emitting hybrid trucks and buses. It does this by reducing the cost of these vehicles for truck and bus fleets that purchase and operate the vehicles in the State of California. The HVIP voucher is intended to reduce about half the incremental costs of purchasing hybrid heavy-duty trucks and buses.	N/A	Eligible Projects: Purchase of low-emission hybrid trucks and buses http://www.californiahvip.org/
Good Movement Emission Reduction Program*	BAAQMD staff (415) 749-4994 grants@baaqmd.gov	Applications Accepted between August 26, 2013 and October 10, 2013	Up to \$50,000 for Class 6, 7, and 8 trucks.	The program purpose is to reduce emissions from the diesel engines in trucks, locomotives, ships, harbor craft, and cargo handling equipment that contribute to local, regional, and global air pollution. The diesel pollution from goods movement/freight transport operations greatly impacts the health of community residents near ports, railyards, distribution centers, and roads with high truck traffic. Diesel emissions are also a major cause of the high regional ozone and fine particle levels that harm millions of Californians today.	N/A	Eligible Projects: Purchase of low-emission trucks for Class 6, 7, and 8. http://www.baagmd.gov/?scitemid=42BEECC2-F011-42B3-A336-399CF8DB4DDD
State Grants						
Safe Routes to Transit (SR2T)*	Clarrissa Cabansagan TransForm (510) 740-3150 x333 ccabansagan@TransFormCA.org	Application Due to Caltrans: September 30, 2013	Approx. \$4.3 M	The purpose of the Safe Routes to Transit Program intends to reduce congestion on Bay Area bridge corridors by improving access and safety for bicyclists and pedestrians to and from regional transit stations. http://www.transformca.org/programs/safe-routes-transit-2013-applications	N/A	Eligible Projects: Capital and planning projects are eligible, but operations and maintenance projects are not. To be eligible, a project must facilitate walking or bicycling to existing transit services, hereby increasing ridership on a regional transit system. Please see the FAQs for a detailed statement about eligibility. http://www.transformca.org/campaign/sr2t
Federal Grants						
N/A						

*New Funding Opportunity

**STA staff, Sara Woo, can be contacted directly at (707) 399-3214 or swoo@sta-snci.com for assistance with finding more information about any of the funding opportunities listed in this report