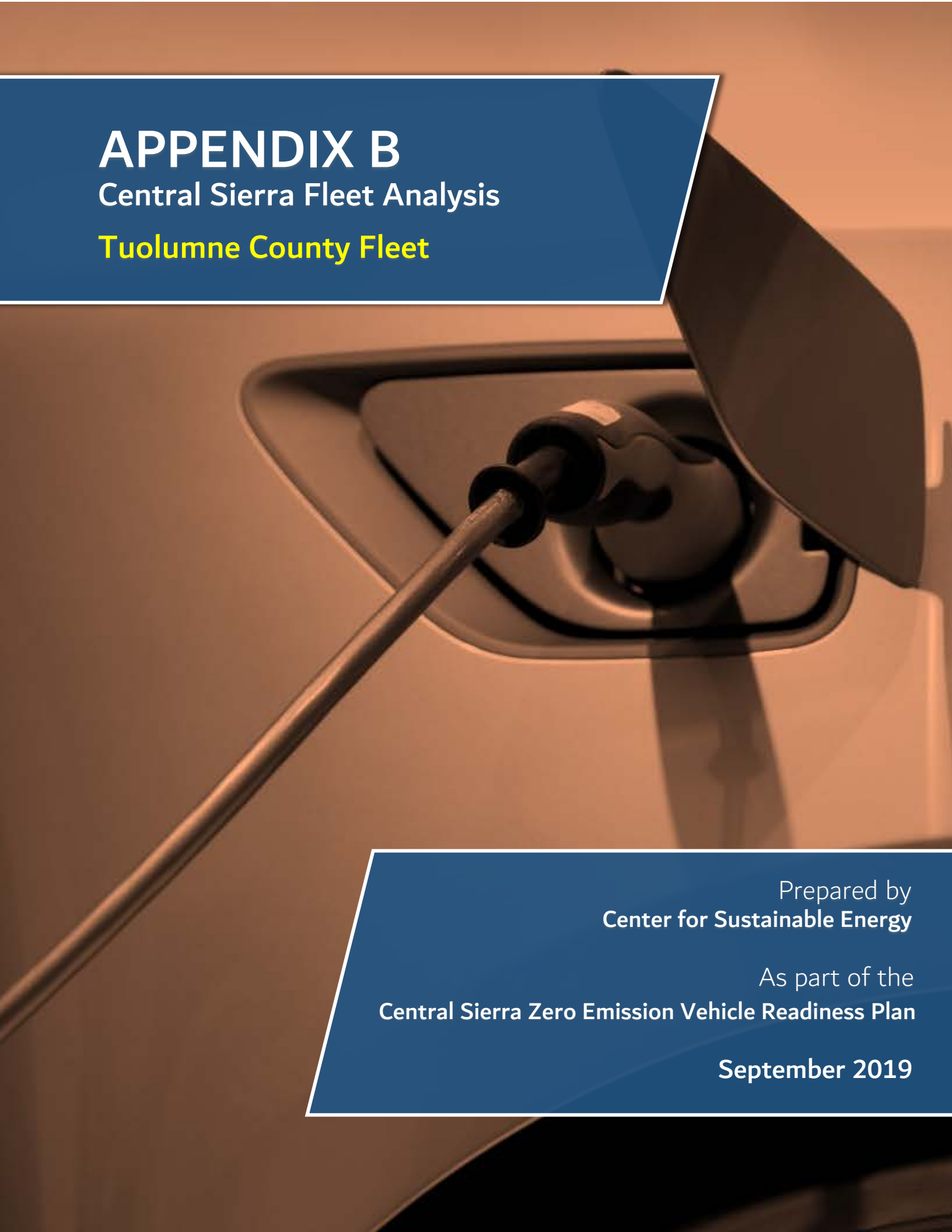

APPENDIX B

Central Sierra Fleet Analysis

Tuolumne County Fleet

Prepared by
Center for Sustainable Energy

As part of the
Central Sierra Zero Emission Vehicle Readiness Plan

September 2019

I. Introduction

Governor Edmund G. Brown Jr.'s Executive Order B-48-18 committed to a target of 5 million zero-emission vehicles (ZEVs) registered and operating on California roads by 2030. As part of the Central Sierra region's (Region) efforts to comply with the mandates of the Executive Order, the Tuolumne County Transportation Council (TCTC) engaged the Center for Sustainable Energy (CSE) to develop a ZEV Readiness Plan (the Plan) for the four-county Central Sierra region, consisting of the counties of Alpine, Amador, Calaveras, and Tuolumne.The goal of the Plan is to improve opportunities for ZEV Readiness in the Region and resolve barriers to the widespread deployment of private and public ZEV infrastructure. In pursuit of this goal, the Tuolumne County fleet was analyzed to identify opportunities for electrification. The analysis focused on the following:

- Analyzing the current fleet and identifying inventory that can be replaced with electric or plug-in hybrid alternatives.
- Estimate the capital cost to replace current/future vehicles with electric or plug-in hybrid alternatives. Identify incentives and other cost savings associated with fleet transition.
- Discuss benefits of replacing internal combustion vehicles with ZEVs.

Findings

- Currently, the Tuolumne County fleet has **260 vehicles** that have electric replacement options, either available currently or in the very near-term (next 2-4 years).
- The estimated total cost of replacing 260 vehicles with similar internal combustion models is $9.1 million.
- The following two replacement scenarios (a full-BEV scenario and a PHEV-BEV mix) were identified to provide options for a Tuolume County fleet transition:
    - **BEV-Only Scenario**: Replace all 260 eligible vehicles with fully electric alternatives. This will cost approximately $21.41 million (an incremental cost of $12.34 million), save up to $1.13 million in fuel costs and abate 9,051 tonnes of greenhouse gases (GHGs) over the vehicles' assumed lifetime of ten years. Using the 40kWh Nissan Leaf as a replacement instead of the Chevrolet Bolt EV would reduce lifetime fuel savings by approximately $5,425 over the total vehicle class, but state rebates would effectively eliminate the incremental cost of the vehicles.
    - **PHEV Scenario:** Replace 187 vehicles with PHEVs. This will cost approximately $7.61 million (an incremental cost of $2.78 million), save up to $1,082,458 in fuel costs and abate 2,230 tonnes of GHGs over the vehicles' assumed lifetime of ten years. Converting 73 vehicles in the light SUV category to conventional hybrid-electric vehicles would save an additional $374,289 in fuel costs over ten years, and would present an additional $260,000 upfront cost. Using the Hyundai Ioniq PHEV as a replacement in the light gas car category instead of the Toyota Prius Prime would reduce lifetime fuel savings by

approximately $10,055 over the total vehicle class, but state rebates would effectively eliminate the incremental cost of the vehicles.

- Payback periods ranged from as low as immediate to upwards of 15 years. Light-duty vehicles tended to display the best payback: on the PHEV side, the Hyundai Ioniq PHEV (immediate) and Toyota Prius Prime (1 year) recouped their value rapidly, while among BEVs, the Chevrolet Bolt (7 years) was quickest to reach cost parity through fuel savings. The alternative of the Nissan Leaf would achieve immediate payback. More comprehensive results are illustrated in Tables 3a and 3b.
- BEVs/PHEVs typically have lower maintence requirements and costs, compared to internal combustion engine vehicles, but specific savings are difficult to predict given the nascent state of the market.
- Benefits of converting to ZEVs include reduced environmental impact, reduced maintenance costs, and achieving and maintaining regulatory compliance.

II. Current Fleet Replacement Analysis

CSE examined the County's current fleet inventory to determine which vehicles vehicles are suitable for electric replacement. This analysis found that there are **260 total vehicles** that can be replaced with electric vehicles. Table 1 shows the current vehicles identified as candidates for electric replacement:

Table 1: Existing fleet vehicles with suitable replacement options (PHEV and/or BEV)

Count of Vehicles	Model Year	Make and Model	Class	Replacement Model Suitability (BEV/PHEV)
51	1998-2018	Ford Taurus, Chrysler 300	Light Sedan	High/ High
104	1994-2017	Chevrolet Silverado, Toyota Tacoma, Ford F-150	Light Duty Pickup	Moderate/High
4	1993-2012	Ford Altec Boom Lift, Chevrolet K3500	Medium Duty Pickup	Moderate/ Moderate
73	1970-2018	Dodge Durango, Chevrolet Traverse, Ford Explorer	Light Duty SUV	Moderate/ Low
28	1996-2017	Chevrolet Express, Ford Econoline, Dodge Caravan	Light Duty Van	High/Moderate

Note: "Suitability of Available Replacement" reflects the likelihood that the currently available BEV/PHEV models can serve as a direct replacement for the existing vehicles, considering duty cycle, passenger capacity, and other variables.

Please note that the recommendations outlined in section 3 are general recommendations based on vehicle size and weight and may not be direct replacements due to variations in requirements for duty cycle, passenger capacity, and/or other specific considerations. For more information and additional

alternatives, please see the Internal Combustion Engine (ICE) Alternative Guidebook (Appendix C in the Central Sierra ZEV Plan).

III. Replacement Strategy

Vehicles

Each vehicle identified in Table 1 has a replacement option, however, some are more cost-effective than others. Specifically, recommendations for replacement of light-duty trucks are less cost-effective and offer fewer options than recommendations for replacing sedans. That being said, electric light-duty truck options are rapidly being released to the market and we expect that there will be more options available within ten years.

Two replacement strategies were developed to provide Tuolumne County with an all BEV replacement option and a BEV/PHEV option, which will require less capital investment and increase fleet resiliency. In the first scenario, all the eligible vehicles are replaced with BEVs, which maximizes the potential greenhouse gas reductions but will require the greatest capital investment. This scenario is depicted in Table 2a. Table 2b depicts the second scenario where a mix of BEV and PHEVs is identified. Tables 3a and 3b show the existing vehicles, their associated BEV/PHEV replacement vehicles, the estimated vehicle-life and entire-class fuel cost savings, and abated greenhouse gas emissions resulting from converting the entire vehicle class.

Table 2a: BEV-only fleet replacement scenario (costs)

Count	Class	BEV/ PHEV	Proposed Make and Model	ICE MSRP (unit)	ZEV MSRP (unit)	Incremental Cost (unit)	Cost of ZEV Replacement	Potential Incentives
104	Light Gas Pickup	BEV	Motiv EPIC 4 Dearborn – Truck Body	$33,320	$188,570	$155,250	$19,611,280	$80,000 x104 = $8,320,000
73	Light Gas SUV	BEV	Lightning Systems Transit 350HD Passenger Van	$41,748	$130,748	$89,000	$9,544,604	$50,000 x73 = $3,650,000
51	Light Gas Car	BEV	Chevrolet Bolt	$24,402	$32,572	$8,170	$1,661,172	$2,500 x51 = $127,500
28	Light Gas Passenger Van	BEV	Lightning Systems Transit 350HD Passenger Van	$41,748	$130,748	$89,000	$3,660,944	$50,000 x28 = $1,400,000
4	Medium Gas Pickup	BEV	Motiv EPIC 4 Dearborn – Truck Body	$36,745	$188,570	$151,825	$754,280	$80,000 x4 = $320,000
					Subtotal	**$26,158,970**	**$35,232,280**	**$13,817,500**
						TOTAL INCREMENTAL COST (Incremental Cost – Incentives)		**$12,341,470**

Alternative Vehicles

Count	Class	BEV/ PHEV	Proposed Make and Model	ICE MSRP (unit)	ZEV MSRP (unit)	Incremental Cost (unit)	Cost of ZEV Replacement	Potential Incentives
51	Light Gas Car	BEV	Nissan Leaf (40kWh)	$24,402	$26,614	$2,212	$1,357,314	$2,500 x51 = $127,500

Table 1b: PHEV/Hybrid fleet replacement scenario (costs)

Count	Class	BEV/PHEV	Proposed Make and Model	ICE MSRP (unit)	ZEV MSRP (unit)	Incremental Cost (unit)	Cost of ZEV Replacements	Potential Incentives
104	Light Gas Pickup	PHEV	XL Hybrids Ford F-150 with XLP Plug-In Hybrid Upfit	$25,000	$50,000	$25,000	$5,200,000	$2,000 x104 = $208,000
51	Light Gas Car	PHEV	Toyota Prius Prime (PHEV)	$24,402	$26,096	$1,694	$1,397,400	$1,500 x51 = $76,500
28	Light Gas Passenger Van	PHEV	Chrysler Pacifica PHEV	$21,897	$39,514	$17,617	$1,106,392	$1,500 x28 = $42,000
4	Medium Gas Pickup	PHEV	XL Hybrids F-250 with XLP Plug-In Hybrid Upfit	$38,400	$63,400	$25,000	$253,600	$6,000 x4 = $24,000
					Subtotal	**$3,130,206**	**$7,957,392**	**$350,500**
						TOTAL INCREMENTAL COST (Incremental Cost – Incentives)		**$2,779,706**

Alternative Vehicles

Count	Class	BEV/PHEV	Proposed Make and Model	ICE MSRP (unit)	New MSRP (unit)	Incremental Cost (unit)	Cost of Replacements	Potential Incentives
73	Light Gas SUV	Hybrid	Toyota Highlander Hybrid	$29,814	$33,378	$3,564	$2,436,594	-
51	Light Gas Car	PHEV	Hyundai Ioniq PHEV	$24,402	$22,950	-$1,452	$1,170,450	$1,500 x51 = $76,500

Table 3a: BEV-only fleet replacement scenario (benefits)

Fully Electric Options								
Car Class	**Representative Model Being Replaced**	**Replacement Vehicle**	**Quantity of Eligible Vehicles in Class**	**Estimated Per-Vehicle Annual Fuel Savings**	**Vehicle Lifetime Savings**	**Estimated Payback Period (Years)**	**Total Class Lifetime Fuel Savings**	**Total Class Lifetime GHG Savings (tonnes)**
Light Gas Pickup	Chevrolet Silverado 1500	Motiv EPIC 4 Dearborn – Truck Body	104	$64.85	$710	>15	$73,851	3,906.12
Light Gas SUV	Ford Explorer 4x4	Lightning Systems Ford Transit 350HD Passenger Van with LightningElectric Drivetrain - 120 Mile Range	73	$680.44	$7,451	>15	$543,899	2,848.62
Light Gas Car	Pontiac Grand Prix	Chevrolet Bolt EV	51	$591.54	$7,595	7	$387,362	1,343.34
Light Gas Passenger Van	Chevrolet Astro	Lightning Systems Transit 350HD Passenger Van	28	$321.81	$3,524	>15	$98,664	747.76
Medium Gas Pickup	Chevrolet K3500	Motiv EPIC 4 Dearborn – Truck Body	4	$543.07	$5,946	>15	$23,786	205.32
		Subtotal	**260**	**$2,202**	**$25,226**	**--**	**$1,127,562**	**9,051.16**

Alternative Vehicles

Car Class	**Representative Model Being Replaced**	**Replacement Vehicle**	**Quantity of Eligible Vehicles in Class**	**Estimated Per-Vehicle Annual Fuel Savings**	**Vehicle Lifetime Savings**	**Estimated Payback Period (Years)**	**Total Class Lifetime Fuel Savings**	**Total Class Lifetime GHG Savings (tonnes)**
Light Gas Car	Chrysler 300	Nissan Leaf (40kWh)	51	$683.94	$7,489	Immediate*	$381,937	1,343.34

*The available state incentives exceed the incremental cost of purchasing the recommended replacement vehicle.

Table 3b: PHEV/HEV fleet replacement scenario (benefits)

Plug-in Hybrid Options								
Car Class	**Representative Model Being Replaced**	**Replacement Vehicle**	**Quantity of Eligible Vehicles in Class**	**Estimated Per-Vehicle Annual Fuel Savings**	**Vehicle Lifetime Savings**	**Estimated Payback Period (Years)**	**Total Class Lifetime Fuel Savings**	**Total Class Lifetime GHG Savings (tonnes)**
Light Gas Pickup	Chevrolet Silverado 1500	XL Hybrids Ford F-150 with XLP Plug-In Hybrid Upfit	104	$504.78	$5,527.18	>15	$574,826	1,249.96
Light Gas Car	Pontiac Grand Prix	Toyota Prius Prime (PHEV)	51	$629.84	$8,014.70	1	$408,750	764.83
Light Gas Passenger Van	Chevrolet Astro	Chrysler Pacifica PHEV	28	$244.72	$2,679.57	>15	$75,028	163.15
Medium Gas Pickup	Chevrolet K3500	XL Hybrids F-250 PHEV	4	$544.62	$5,963.39	>15	$23,854	51.87
		Subtotal	**260**	**$1,92.96**	**$22,184.84**	**--**	**$1,082,458**	**2,229.81**

Alternative Vehicles

Car Class	**Representative Model Being Replaced**	**Replacement Vehicle**	**Quantity of Eligible Vehicles in Class**	**Estimated Per-Vehicle Annual Fuel Savings**	**Vehicle Lifetime Savings**	**Estimated Payback Period (Years)**	**Total Class Lifetime Fuel Savings**	**Total Class Lifetime GHG Savings (tonnes)**
Light Gas SUV	Ford Explorer 4x4	Toyota Highlander Hybrid	73	$468.25	$5,127.25	6	$374,289	813.89
Light Gas Car	Chrysler 300	Hyundai Ioniq PHEV	51	$713.95	$7,817.55	Immediate*	$398,695	866.96

*The available state incentives exceed the incremental cost of purchasing the recommended replacement vehicle.

Tuolumne has access to low-cost, zero-carbon electricity from the New Melones Dam. As such, the Estimated Per-Vehicle Annual Fuel Savings; Vehicle Lifetime Savings; Estimated Payback Period; Total Class Lifetime Fuel Savings; and Total Class Lifetime GHG Savings reflects operating the vehicles using Tuolumne Public Power Agency energy.

The following assumptions (Table 4) were incorporated in the above tables:

Table 4: Assumptions underpinning tables 3a and 3b (above).

Assumption	Value
Vehicle Service Life*	10 years
Gasoline Price ($/gallon)	$2.95
Gasoline GHG Intensity (kg CO2e/gallon)	8.78 kg
Diesel Price ($/gallon)	$2.70
Diesel GHG Intensity (kg CO2e/gallon)	10.21 kg
Electricity Price † ($/kWh)	$0.110
Electricity GHG Intensity † (kg CO2e/kWh)	0 kg
*Vehicles may be kept longer than this value, providing further savings on fuel and GHG abatement	

In general, electrified light-duty truck and large sport utility vehicle (SUV) options are limited in the market, and therefore towing capacities, cargo volumes, and other specifications are not an exact match. Specific suitability depends on several variables, including terrain, use intensity, and passenger capacity requirements. Plug-in hybrid heavy-duty vehicles, such as school buses, are even rarer, and thus are typically excluded from the analysis.

Furthermore, the upfront costs of purchasing a plug-in vehicle are significantly higher than comparable internal-combustion models. Tables 3a and 3b specify this incremental cost and include available state rebates (where applicable) as a separate column.

The vehicle replacement analysis used average fuel prices, as reported by the Tuolumne County Transportation Council, and divided the fleet's vehicles into classes shown above, using a representative vehicle's mileage and fuel consumption to reflect the "typical" vehicle within each class. The representative vehicle was then compared to the replacement plug-in vehicle**.**

While Tuolumne County's fleet is large and diverse, vehicle mileages were not supplied with the dataset. The data was approximated by averaging mileages of similar vehicles from other fleets, and may not necessarily be representative of actual mileages. Regardless, the County has significant opportunity to

reduce operating costs and GHG emissions by pursuing BEV replacements for their gasoline passenger cars, and by replacing its pickup trucks and vans with BEV/PHEV alternatives. The current absence of an appropriate BEV replacement for SUVs makes a direct replacement less likely, though the specified replacement vehicle may be able to serve as a suitable alternative in many cases. Due to the lack of an appropriately sized and capable PHEV replacement for the light-duty SUV category, the Toyota Highlander Hybrid (non-PHEV) was specifically requested as a replacement. Additionally, newer model years and vehicles not ready for replacement on a normal turnover schedule should be lower priority than older vehicles but do represent similar opportunity for savings.

Other Considerations

Three primary levers have an outsized impact on the financial payback for electrified vehicles: the annual mileage driven; the price differential between petroleum fuels and electricity; and the ability to claim state and federal rebates. The estimated annual mileages for Tuolumne County's fleet are relatively low (between 7000-9000 miles annually), and the County can procure conventional petroleum fuels at a significantly lower cost than the state average. As Tuolumne County is currently unable to directly claim the federal tax credit or lease vehicles to take advantage of the credit, these factors combine to put the agency at a disadvantage when examining only economic payback. However, vehicles with payback periods longer than 15 years may not offer a good economic return, but can still offer fuel savings, reduce greenhouse gas emissions, and position the fleet as a forward-thinking, environmentally conscious entity.

The procurement of plug-in vehicles should be straightforward, and in many cases does not differ significantly from the procurement process for internal-combustion vehicles. More specialized applications (e.g. custom moderate-to-heavy duty and coach-bodied buses) may require direct communication with a manufacturer or an authorized retailer. Authorized retailers are typically listed on manufacturer websites. Some EVs are available and eligible for reduced cooperative purchase through organizations such as Sourcewell. Incentives outlined below as section 4 offer the ability to lower the upfront cost of procurement but may be subject to additional stipulations and conditions. Due to the size of Tuolumne County's fleet and the high proportion of light-duty vehicles, significant cost savings over direct ownership may be realized if leasing vehicles becomes an option, which would allow for federal incentives to be passed through to the County.

Tuolumne County should carefully evaluate all fuel types and available incentives when vehicle replacement decisions are made. California offers rebates and incentives for alternative fuel vehicles and infrastructure: currently available incentives are outlined later in this chapter.

Accessible charging and fueling infrastructure are crucial for successfully incorporating ZEVs into fleets. It is a best practice to evaluate, site, and construct enough infrastructure prior to adding ZEV vehicles. Ideally, electricity demand evaluations are completed, and the appropriate number of charging/fueling

stations are installed before vehicles are ordered. While charging at lower power levels (2kW - 7 kW) is adequate for the small batteries found in passenger cars, vehicles with high gross vehicle weights typically require larger batteries. These large vehicles may require higher-powered charging (30kW – 500kW) in applications that require minimal downtime.

IV. Incentives

The California Energy Commission (CEC) and ARB offer alternative transportation grants and rebates through the Clean Transportation Program, formerly known as the Alternative and Renewable Fuel and Vehicle Technology Program (ARFVTP), and other low carbon transportation funding. Funding is allocated annually and the 2019-2020 budget for the CEC Clean Transportation Program (www.energy.ca.gov/altfuels/) is approximately $95.2 million. ARB managed about $400 million in rebates and projects in FY 2017-18 and 2018-19 through the Air Quality Improvement Program/ Low Carbon Transportation funding plan (www.arb.ca.gov/msprog/aqip/aqip.htm).

Vehicle Incentives

The calculations that underpin Tables 2a and 2b use the California Hybrid Truck and Bus Voucher Incentive Project (HVIP) program to offset the incremental cost of electrified buses and trucks. While ZEVs from most manufacturers still qualify for federal tax credits, feedback received from the Tuolumne County Transportation Council indicated that the only way for public agencies to access that credit is through leasing the vehicles, which is an unattractive option. Thus, any federal tax credits are excluded from the primary economic analysis above. Incentives from the Clean Vehicle Rebate Program to offset the incremental cost of electrified or PHEV light-duty vehicles are included.

Clean Vehicle Rebate Project (CVRP)

CSE manages ARB's Clean Vehicle Rebate Project (CVRP) (https://cleanvehiclerebate.org/), which provides rebates of up to $2,500 for light duty battery electric and plug-in hybrid vehicle purchases. CSE received $120 million in funding for FY 2018-2019. Table 5, *CVRP Rebate Amounts for Light-Duty Vehicles,* summarizes the rebates available.

Table 5: CVRP rebate amounts for light-duty vehicles

Vehicle Class	Maximum Incentive
Light duty zero emission vehicles (ZEV)	$2,500
Plug-in hybrid electric vehicles (PHEV)	$1,500
Zero emission motorcycles (ZEM)	$ 900
Neighborhood electric vehicles (NEV)	$ 900
Note: Eligible vehicles and associated rebate amounts are subject to change. Visit the CVRP program site for eligible vehicle models and associated rebates.	

Hybrid Truck and Bus Voucher Incentive Project (HVIP)

Rebates for commercial vehicles including trucks and buses are available through ARB's Hybrid Truck and Bus Voucher Incentive Project (HVIP) (www.californiahvip.org). As of September 2019, new applicants are being waitlisted as all available funds have been exhausted, though additional funding is expected in January 2020. A summary of the incentives available is provided in the ARB HVIP Voucher Amounts for Trucks and Buses tables below. Additional incentives are available for transit buses, vehicle conversions, and in disadvantaged communities.

Table 6: HVIP Voucher Amounts for *Zero-Emissions* Trucks & Buses

Gross Vehicle Weight (in pounds)	HVIP Maximum Voucher
5,001 – 8,500 lbs	$20,000
8,501 – 10,000 lbs	$25,000
10,001 – 14,000 lbs	$50,000
14,001 – 19,500 lbs	$80,000
19,501 – 26,000 lbs	$90,000
26,001 – 33,000 lbs	$95,000
> 33,001 lbs	$150,000

Table 7. Maximum HVIP Voucher Amounts for *Hybrid* Trucks & Buses

Gross Vehicle Weight (in pounds)	HVIP Maximum Voucher
6,001 – 8,500 lbs	$2,000
8,500 – 10,000 lbs	$6,000
10,001 – 19,500 lbs	$9,000
19,501 – 26,000 lbs	$12,000
26,001 – 33,000 lbs	$15,000
> 33,000 lbs	$18,000

Note that HVIP additionally provides incentives for electric vehicle charging infrastructure, as outlined in the following Infrastructure section.

Additional Funding Avenues (Vehicles)

Volkswagen Settlement Funding

The Volkswagen Environmental Mitigation trust provides $130 million to the state of California to "replace eligible Class 4-8 school, transit, and shuttle buses with new, commercially available, zero-emission technologies" (Air Resources Board, 2018). A school bus is eligible for a maximum incentive of

$400,000; a transit bus is eligible for a maximum incentive of $180,000 (battery electric) or $400,000 (fuel cell); and a shuttle bus is eligible for a maximum incentive of $160,000. All of these awards additionally cover supportive infrastructure. For more information, please visit https://ww2.arb.ca.gov/resources/documents/californias-beneficiary-mitigation-plan

NOTE: VW Mitigation Funds are not stackable with HVIP funds; it is an either/or rebate.

Infrastructure

This analysis only covers the costs and fuel savings associated with the ownership and operation of fleet vehicles themselves. Another crucial component of electrification is the presence of reliable onsite charging infrastructure to ensure that vehicles are present and fueled when they are needed. Table 8, below, outlines the range of costs for the first EVCS port (plug) installed at a given site. Table 9 outlines specific installation variables that are incorporated into the "installation" cost element shown in Table 7. Note that many buses use DC Fast Charging as their default charging method.

Table 8: Approximate costs for non-residential, single-port electric vehicle charging stations (EVCS).
Cost data from Dept. of Energy (2015)

Cost Element	Level 1		Level 2		DC Fast Charge	
	Low	High	Low	High	Low	High
Hardware	$300	$1,500	$400	$6,500	$10,000	$40,000
Permitting	$100	$500	$100	$1,000	$500	$1,000
Installation	$0*	$3,000	$600	$12,700	$8,500	$51,000
Total	$400	$5,000	$1,100	$20,200	$19,000	$92,200

Table 9 : Installation component cost ranges
Cost data from SANDAG (2016)

Cost Element	Cost
Conduit	$1.50-$2.50/ft
Trenching	$25-$100/ft
Concrete Patch	$14-$15/sq.ft
Asphalt Patch	$10-$11/sq.ft

Several funding programs exist to reduce the overall cost of installing EVCS at sites.

California Hybrid Truck and Bus Voucher Incentive Program (HVIP)

The HVIP program offers a voucher enhancement of up to $30,000 per vehicle voucher received to reduce the cost of installing EV infrastructure intended to support the ordered vehicles. The

enhancements require a separate application, are approved on a case-by-case basis and can be combined with other funding sources to cover up to 100% of the total capital cost of installation.

Pacific Gas and Electric (PG&E)

PG&E administers two currently active funding programs for electric vehicle infrastructure. These programs include the FleetReady Program, Fast Charge Program and EV Charge Network Program.

- **EV Fleet** – Starting in May 2019. PG&E received $236 million in eligible funds from the California Public Utilities Commission (CPUC) for infrastructure supporting fleet vehicle charging. PG&E is working with fleet managers that request funding across Northern and Central California to install EVCS at 700 sites (pge.com/fleetready).
- **Fast Charge Program** – Starting in summer 2019. PG&E will fund and build infrastructure for public DCFCs, including 25% located within DACs. Furthermore, PG&E will offer rebates for customers in disadvantaged communities (DACs) who wish to purchase DCFCs (CPUC Approves New PG&E Projects to Help Accelerate Electric Vehicle Adoption in California, 2018).

California Electric Vehicle Infrastructure Program (CALeVIP)

CALeVIP offers financial incentives for eligible EVCS infrastructure installations and works with local governments and community partners to develop regional EV charging projects statewide. Though funding is not available in the current 2019-2020 funding cycle for the Central Sierra region, new projects are added periodically and the region may be included in future funding. For more information, please see the CALeVIP website and browse the currently available projects.

Congestion Mitigation and Air Quality Improvement (CMAQ) Program

The FAST Act authorizes funding of $2.3 billion to $2.5 billion to the CMAQ program for apportionment to the states. States, local governments and transit agencies can use these funds to invest in transportation projects that support the Clean Air Act. Projects eligible for the funds include alternative fuel vehicles and infrastructure. A project supported with CMAQ funds must demonstrate that the project reduces emissions, is located in, or benefits an EPA designated nonattainment or maintenance area and is a transportation project (23 U.S.C. 149) (Federal Highway Administration, 2017). Projects located on FAST-designated corridors (including US 395 and SR 120) receive funding priority over those not located on these corridors. **Note: under the current Buy America requirements that apply to projects funded through this avenue, CMAQ funds may prove prohibitively difficult to utilize.**

Volkswagen Settlement

- *Electrify America*

  The Electrify America program is a subsidiary of Volkswagen with the goal of investing $800 million into zero-emission vehicle projects between 2017 and 2027. This investment has typically been into Level 2 and DC Fast Charge infrastructure. Communities can suggest locations, but final siting decisions are ultimately up to Volkswagen/Electrify America.
- *California Volkswagen Mitigation*

The Volkswagen Environmental Mitigation Trust provides approximately $423 million for California to mitigate the additional NOx emissions from diesel Volkswagen vehicles equipped with defeat devices. As part of this, $5 million will be allocated in a competitive solicitation for EV infrastructure buildout. The funding cycle will begin inviting solicitations in Q3/Q4 2019 with the goal of filling physical and funding gaps in installed EVCS.

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