

WORKSHOP: RESIDENTIAL ELECTRIC VEHICLES, ELECTRIC VEHICLE RATES AND ELECTRIC VEHICLE PROGRAMS

Presented by: Tracy Sato, Utility Integrations Manager

Customer Relations and Finance Committee
Board of Public Utilities
March 22, 2019

RiversidePublicUtilities.com



1

11/26/18 BOARD DIRECTION SUMMARY

1. Approved the staff recommendation to expand the availability of the previously approved EV-TOU rate to all domestic rate customers as well as additional clarifications.
- 2. Directed staff to refer this issue to the Board of the Public Utilities' Customer Relations/Finance Committee followed by a Board Workshop on a Domestic Electric Vehicle Program.**

RiversidePublicUtilities.com



2

BOARD DISCUSSION

1. Concern expressed over not meeting with auto dealer
2. Evaluate alternatives to the current process for a customer to utilize the Electric Vehicle Separately Metered TOU Rate
 - A. Keep it simple, convenient, low-cost for customer
 - B. The rate for residential EVs should include a rate discount for charging
 - C. Budget of energy use for charging EVs in a rate
 - D. Establish a time period for charging
 - E. Provide an online or mobile application for signing up
 - F. Design and propose a non-intrusive verification process

RiversidePublicUtilities.com



3

WORKSHOP AGENDA

1. Overview of Residential EVs in Riverside
2. Currently offered RPU Rates supporting EVs
3. Funding for EV rebates and programs
4. Options for EV rebates and programs

This is an interactive workshop intended for discussion.
Please ask questions throughout

RiversidePublicUtilities.com



4

WHY EVS AND WHY NOW?

1. Climate Change Goals

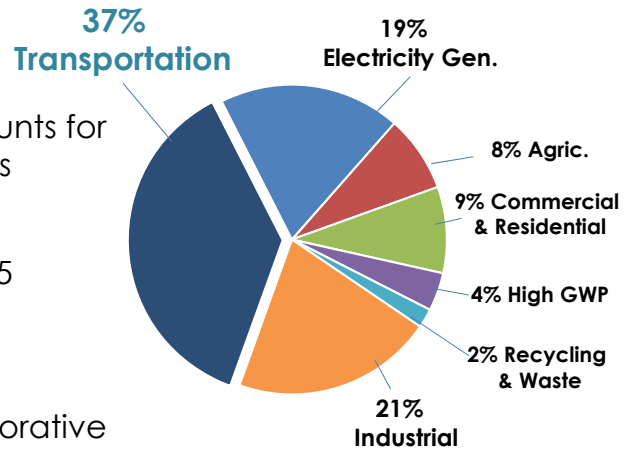
- A. In California, transportation accounts for ~40% of greenhouse gas emissions

2. State of California Goals

- A. 1.5 million EVs on the road by 2025
B. 5 million EVs on the road by 2030

3. City Commitment

- A. Utility 2.0, Green Action Plan, Restorative Growthprint, and General Plan 2025



RiversidePublicUtilities.com



5

EV TECHNOLOGY READY FOR CONSUMERS



127

Electric Vehicle
Models
by 2025

Includes sedans,
minivans, pickups, and
sport utility vehicles

RiversidePublicUtilities.com



6

STATE GRANT AND FUNDING ALLOCATIONS

1. California Air Resources Board ~\$670 million

- A. \$560 million for Low Carbon Transportation investments funded with Cap-and-Trade Auction Proceeds
- B. \$28.64 million for the Air Quality Improvement Program (AQIP)
- C. \$25 million Volkswagen Settlement Funds for ZEV Aspects of Vehicle Replacement Programs
- D. \$50 million for a new Zero- and Near Zero-Emission Warehouse Program

2. California Energy Commission ~\$120 million

- A. \$39 million for Southern California (Possible to increase to \$200 million in the future, \$5 million for Riverside County) for Alternative and Renewable Fuel and Vehicle Technology Program under CalEVIP.
- B. \$78.7 million for School Bus Replacement
- C. More anticipated

3. Southern California Air Quality Management District

RiversidePublicUtilities.com



7

CALIFORNIA ELECTRIC VEHICLE REBATES

By Manufacturer and EV Type

Received by Riverside Residents and Businesses
January 2011 through September 2018

~\$2 Million
in CVRP

Not Including Tax Credits or City Rebates

Almost 60% Generated
Between 2016-2018

Manufacturer	Battery	Fuel Cell	Plug-In Hybrid	Total # of Vehicles	Total Amount of Rebates
Audi			2	2	\$3,000
BMW	25		3	28	\$69,000
Cadillac			1	1	\$1,500
Chevrolet	53		195	248	\$441,833
Chrysler			4	4	\$6,000
FIAT	61			61	\$164,000
Ford	10		142	152	\$242,056
Honda	7	4	18	29	\$74,500
Hyundai	14		5	19	\$44,500
Kia	4		9	13	\$23,500
Mercedes-Benz	3	1		4	\$10,000
Mitsubishi	1		3	4	\$9,000
Nissan	92			92	\$241,584
Smart	11			11	\$29,500
Tesla	131			131	\$333,500
Toyota	5	9	102	116	\$224,500
Volkswagen	10			10	\$25,000
Total	427	14	484	925	\$1,942,973

RiversidePublicUtilities.com



8

SAVING MONEY AND CLEANING THE AIR

Battery EV compared to Conventional Gas Engine Vehicle

Traveling an average of 20,000 miles per year

Vehicle Type	Fuel Economy	Fuel Requirements	Estimated Annual Cost	Greenhouse Gas Emissions
Battery Electric	3.43 miles/kWh	5,831 kWh/year	\$1,069 for electricity	2.3 metric tons
Conventional Gas	22 miles / gallon	909 gallons / year	\$2,591 for gasoline	4.4 metric tons

Benefits of Electric

\$1,522
Savings

2.3
metric tons
reduced

RiversidePublicUtilities.com



9

WHAT WE HEARD FROM THE AUTO DEALERS

1. Automakers are committed to EVs

A. Cadillac's entire line of vehicles will be electric by 2025

2. New technology and charging

A. Porsche's new super-fast charging infrastructure, 350 kw charger with battery storage

3. What we saw in the past is not what will be in the future

4. Data and information for them is helpful

A. Training for sales staff is not requested at this time

5. Continue the conversation

RiversidePublicUtilities.com



10

WHAT SHOULD RPU BE CONSIDERING?

Utility Side

How is RPU planning and preparing for the new EV load?

1. IRP for EV forecasting
2. Power supply & peak load
3. Where is charging occurring
4. Type of charging
5. Infrastructure improvements



Customer Side

How does RPU support our new EV customers?

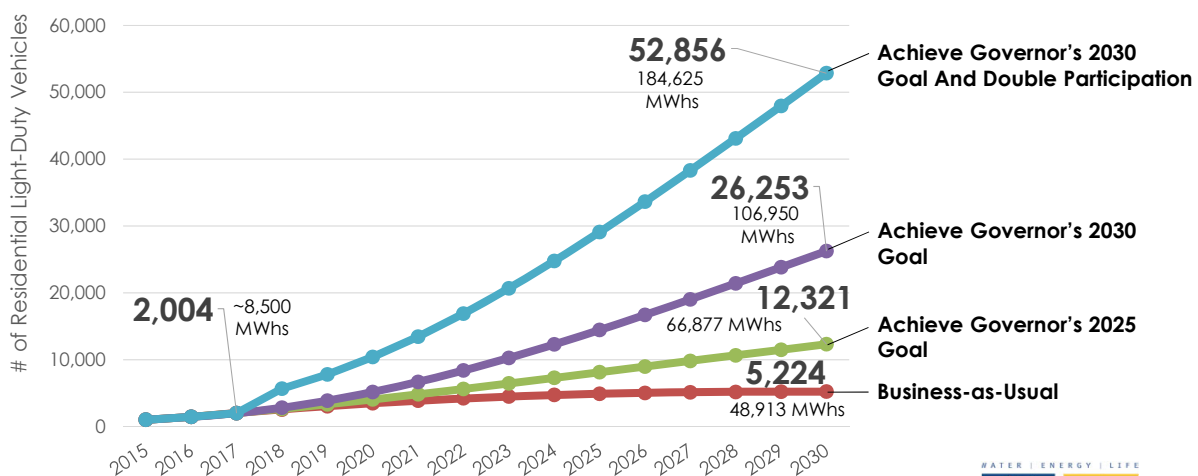
1. Rates to support EVs
2. Rebates
3. Education
4. EV charging locations
5. Ensuring all customers can benefit

RiversidePublicUtilities.com



11

RESIDENTIAL EV GROWTH IN RIVERSIDE (LIGHT-DUTY VEHICLES ONLY)

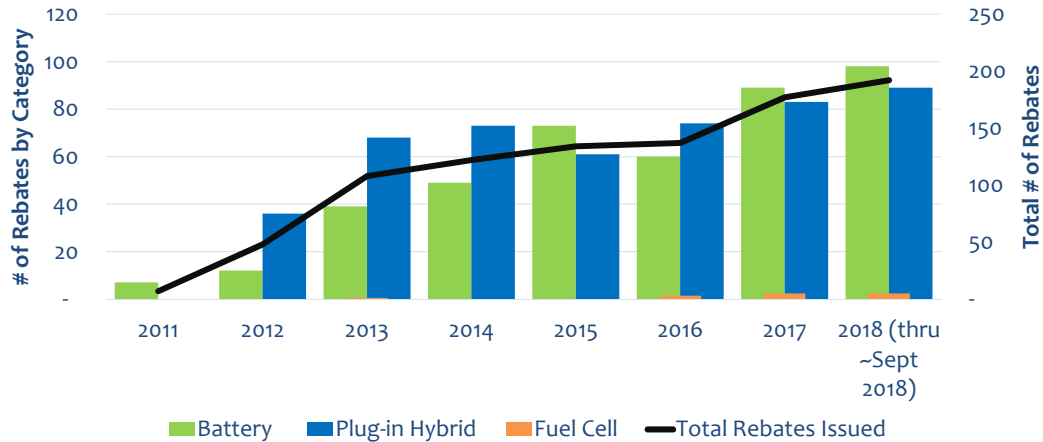


RiversidePublicUtilities.com



12

CLEAN VEHICLE REBATES BY YEAR IN RIVERSIDE

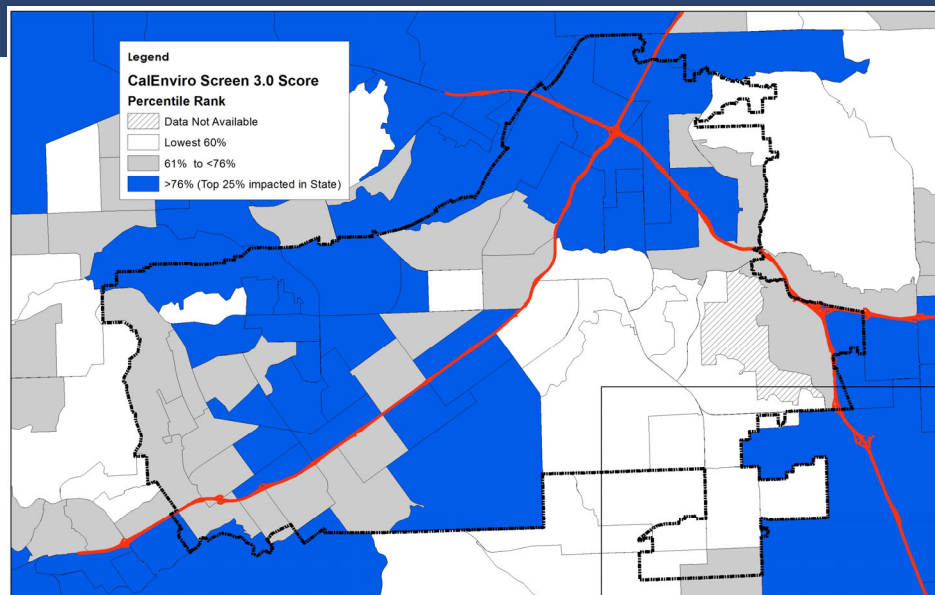


RiversidePublicUtilities.com



13

DISADVANTAGED COMMUNITIES IN RIVERSIDE



Equity Concerns

~46%
 City Population in a
 Disadvantaged
 Community

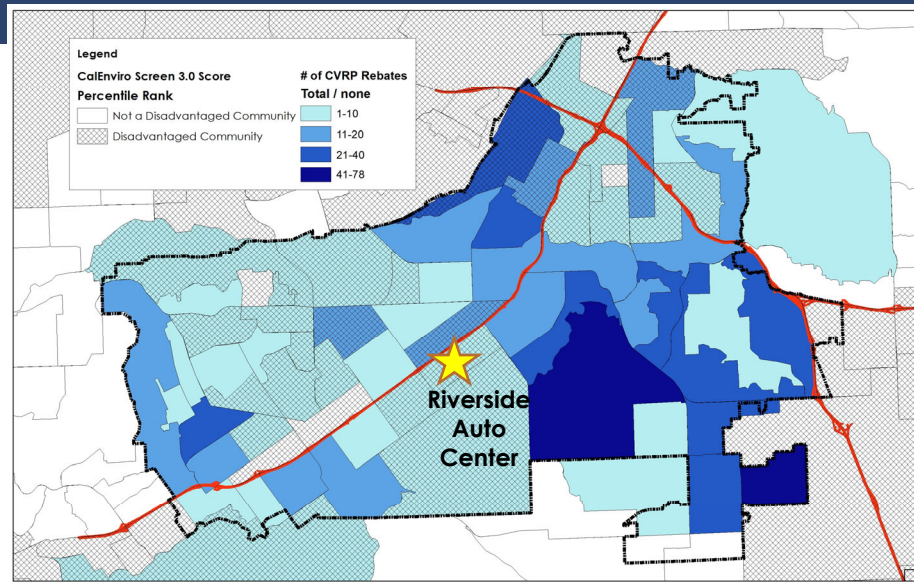
Disadvantage
 Community is based
 on a number of
 environmental, socio-
 economic, and health
 factors

RiversidePublicUtilities.com

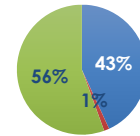


14

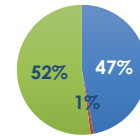
WHO IS GETTING CVRP REBATES IN RIVERSIDE?



Not a Disadvantaged
Community
1 EV every 306 persons



Disadvantaged
Community
1 EV every 1,007 persons



Plug-in Hybrid
Battery Electric
Fuel Cell / Hydrogen



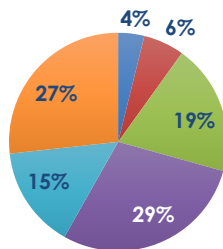
15

RiversidePublicUtilities.com

TYPES OF VEHICLE BY AUTOMAKER

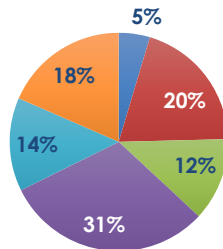
Battery Electric Vehicles

Non-DAC



BMW Chevrolet
Fiat Nissan
Other Tesla

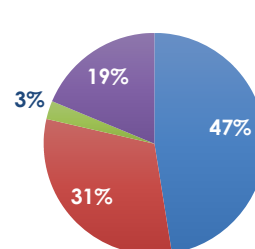
DAC



BMW Chevrolet
Fiat Nissan
Other Tesla

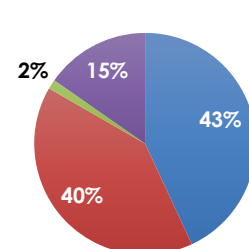
Plug-In Hybrid Electric Vehicles

Non-DAC



Chevrolet Ford
Other Toyota

DAC



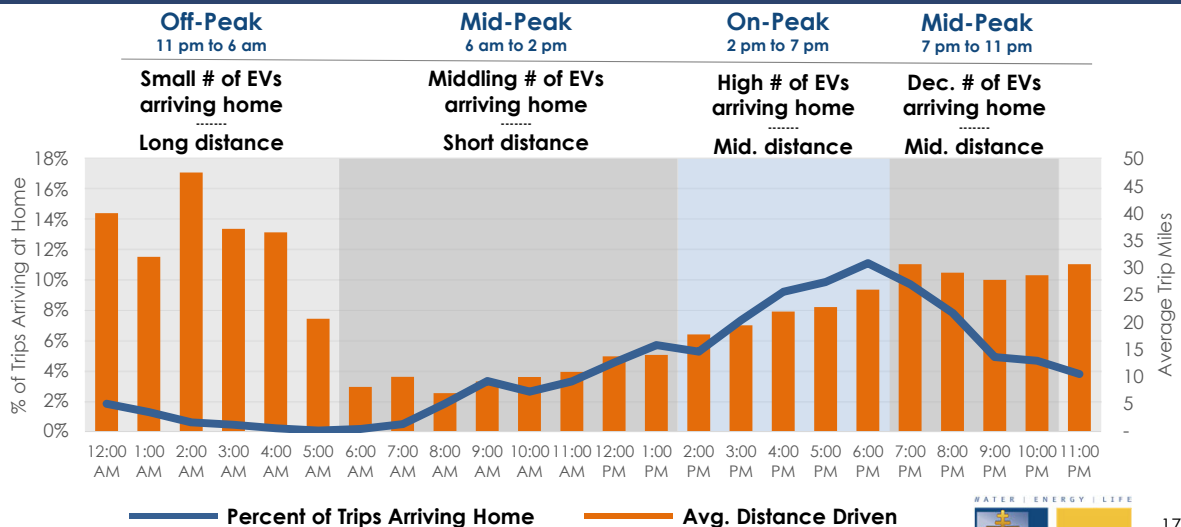
Chevrolet Ford
Other Toyota



16

RiversidePublicUtilities.com

RESIDENTIAL EV CHARGING CHARACTERISTICS

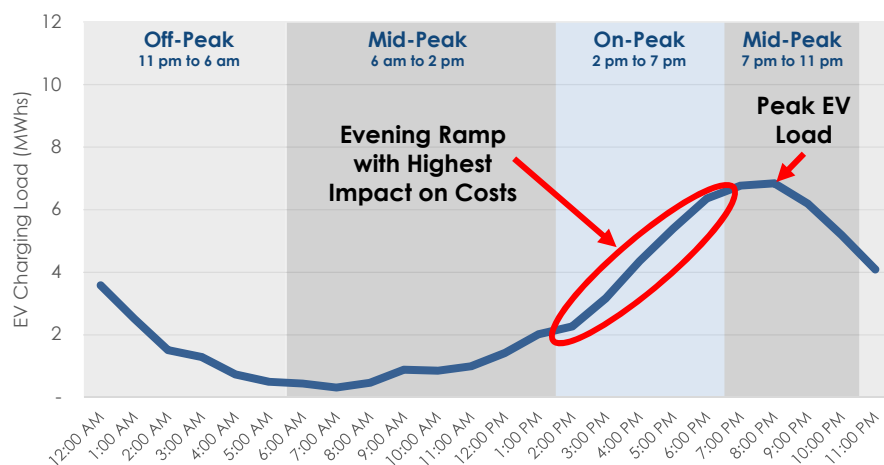


RiversidePublicUtilities.com



17

UNCONSTRAINED EV CHARGING LOAD



Evening ramp aligns with RPU's peak daily load demand – when residents arrive home

Peak charging occurs between 7 and 8 pm

RiversidePublicUtilities.com



18

RATE SETTING GOALS (FOR EV RATES TOO!)

1. Achieve full recovery of costs
2. Equitably allocate costs across and within customer classes
3. Encourage efficient use of water and electricity
4. Provide rate stability
5. Offer flexibility and options
6. Maintain rate competitiveness in region
7. Be simple and easy to understand

RiversidePublicUtilities.com



19

RATES OFFERED TO SUPPORT EVS

EV-Only Time of Use Rate

- Rate only applies to the electricity used by the EV
 - Customer opts into the rate
 - Equipment is installed
-
- Requires a separate meter adapter
 - Requires a 220V outlet (will require an electrical contractor if not available)
-
- Primarily for full Battery EV technology

Whole House Time of Use Rate

- Rate applies to the electricity used by the whole house
 - Customer opts into the rate
-
- No additional infrastructure or meter needed
-
- For full Battery EV or Plug-in Hybrid EV

RiversidePublicUtilities.com



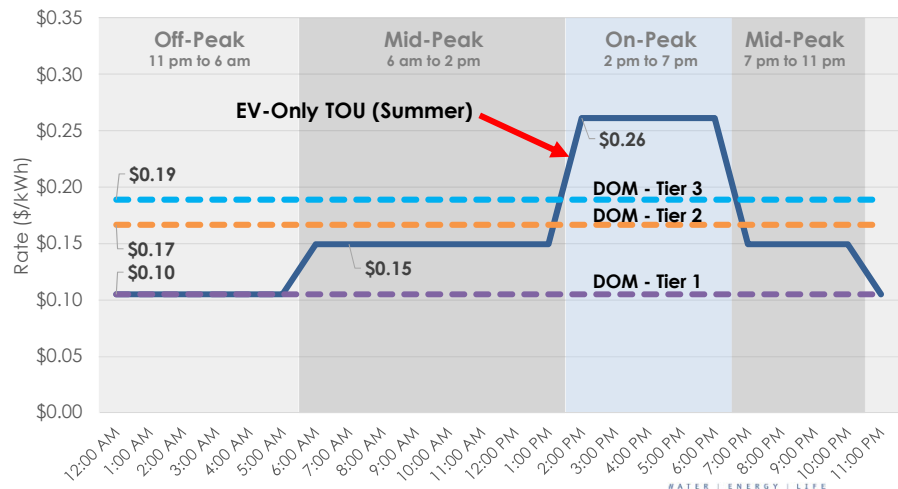
20

2019 DOMESTIC AND EV-ONLY TOU RATE TARIFFS

Rate Effective on
January 1, 2019

Customers benefit with
lower rates if they
charge outside of the
on-peak times

Customers pay the
energy cost and a
fixed customer charge
each month

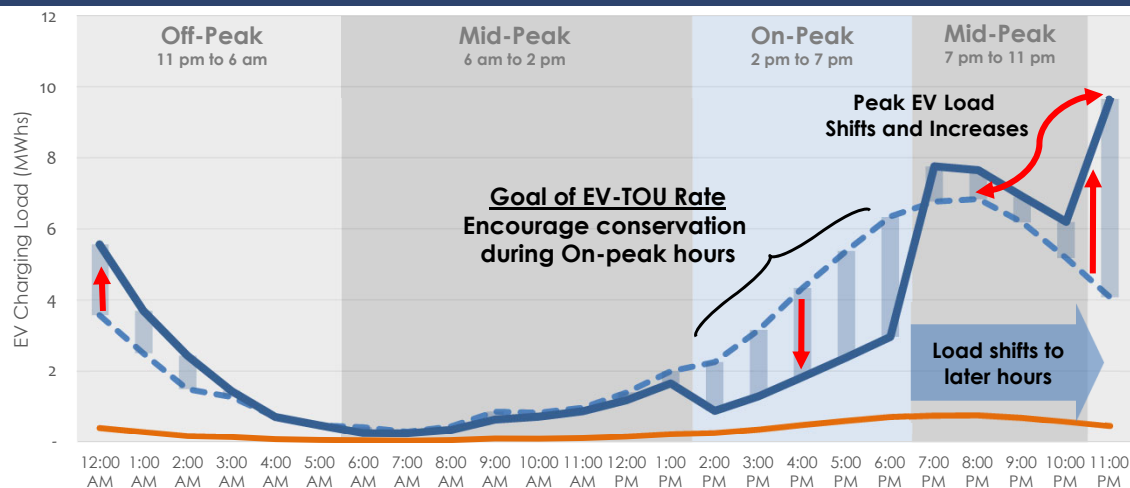


RiversidePublicUtilities.com



21

EV-ONLY TOU TARIFF & RESIDENTIAL CHARGING PATTERNS



RiversidePublicUtilities.com



22

EV TOU ONE-TIME EQUIPMENT COSTS

Potential Panel and/or Outlet Upgrade

If needed
(Costs vary)

Meter Adapter and Meter Set Cost

\$675

Adapter: \$400
Conduit, Wiring, Fittings & Straps: \$75
Installation labor: \$200

Building Permit and Inspection

\$120 to \$127

~\$800 plus any additional electrical

RiversidePublicUtilities.com



23

WHAT IS THE CUSTOMER BENEFIT?

Low EV Charging

Charging a Plug-in Hybrid

239 kWh/month

(9,500 miles on electric)

Annual Electric Charges (2019)

Schedule D: \$525.70
Schedule EV: \$433.08
Schedule DOM-TOU: \$428.91

Annual Savings

Schedule EV: **\$92.60**
Payback: **8+ years**

Schedule DOM-TOU: **\$96.79**

Medium EV Charging

Drives a Battery Electric Vehicle

292 kWh/month

(12,000 miles on electric)

Annual Electric Charges (2019)

Schedule D: \$642.28
Schedule EV: \$505.54
Schedule DOM-TOU: \$524.02

Annual Savings

Schedule EV: **\$136.74**
Payback: **6.8 years**

Schedule DOM-TOU: **\$118.26**

High EV Charging

Drives a Battery Electric Vehicle

486 kWh/month

(20,000 miles on electric)

Annual Electric Charges (2019)

Schedule D: \$1,069.01
Schedule EV: \$770.78
Schedule DOM-TOU: \$872.18

Annual Savings

Schedule EV: **\$298.23**
Payback: **2.7 years**

Schedule DOM-TOU: **\$196.83**

RiversidePublicUtilities.com



24

FUNDING OPTIONS

Highest
Certainty

Availability

Uncertainty
of \$ Amount

Requires
Evaluation

1. Cap and Trade Allowance Sales Proceeds

2. Public Benefit Funds

a. Only for low-income customer programs

3. Local, State, and Federal Grants

4. Low Carbon Fuel Standard Revenue

a. High uncertainty of availability of funds

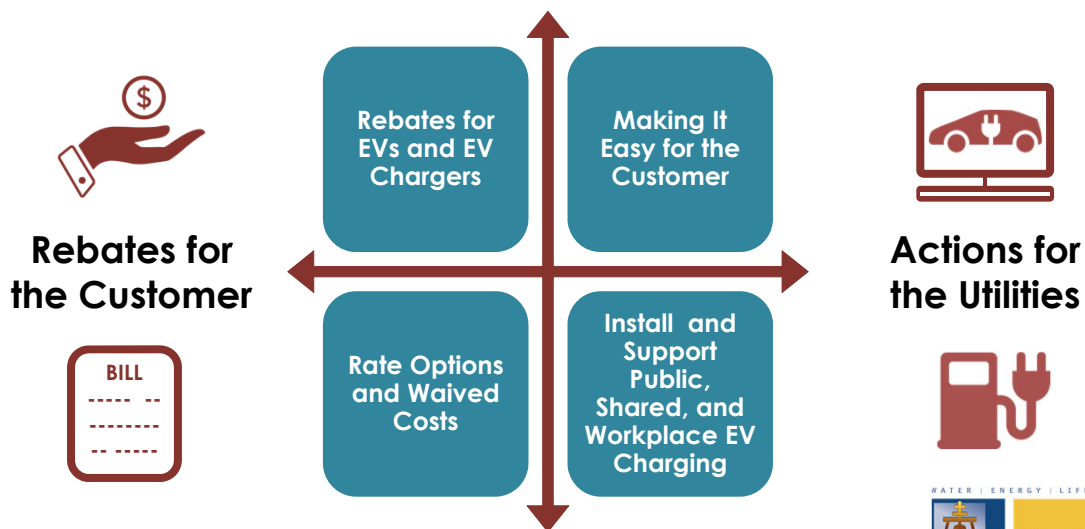
5. Rates / Utility Revenue



25

RiversidePublicUtilities.com

PROGRAM OPTIONS



26

RiversidePublicUtilities.com

REBATE OPTIONS FOR ELECTRIC VEHICLES AND CHARGERS

1. Rebate for used electric vehicles (purchase or lease)

- A. Typical rebate amount is \$500 to \$1000
- B. For 200 rebates per year, \$100,000 to \$200,000 per year

AND/OR

2. Rebate for a level 2 EV charger (new purchase)

- A. Typical rebate amount is \$500
- B. For 200 rebates per year, \$100,000 per year

OR

3. Rebate to cover \$500 of EV charging

- A. New EV owners only
- B. \$500 towards charging cost For 200 rebates per year, \$100,000 per year



RiversidePublicUtilities.com



27

OPTIONS FOR RATES OR ELECTRICITY

1. RPU currently offers two rates that support residential EV charging

- A. Schedule EV – Domestic separately metered EV rate
- B. Schedule DOM-TOU – Whole house time of use rate

2. Rebate to cover City and Utility-side costs for Schedule EV one-time equipment installations

- A. One-time rebate to cover the City's and Utilities' costs for the one-time permits, equipment, and installation of the meter adapter
- B. Initial year would cover all customers opting into the rate 500 to 1000 customers at \$802/customer for a total cost of \$401,000 to \$802,000
- C. Subsequent years, 150 customers per year at \$802/customer for a total cost of \$120,300

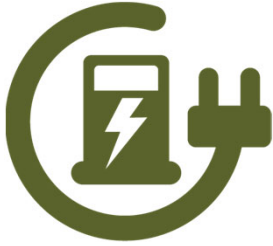


RiversidePublicUtilities.com



28

PUBLIC, WORKPLACE, AND MULTI-FAMILY EV CHARGING



1. Utility installed public access EV charging

- A. Located on City properties
- B. Costs depend on existing infrastructure

2. Workplace EV charging

- A. Provide charging access, public or private, to employees at Riverside businesses
- B. Supports regional efforts to reduce vehicle related emissions
- C. Provides charging access to EV owners who may not be able to charge at home

3. Multi-family EV charging

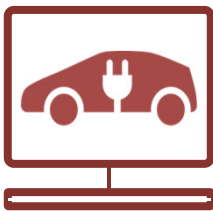
- A. Provide customers in multi-family housing access to EV charging



29

RiversidePublicUtilities.com

MAKING IT EASY FOR THE CUSTOMER



1. Online application processes

- A. For the rate and the rebates
- B. Concurrent with the rebate automation program being developed by RPU's
- C. Coordination between RPU and Building Division on permitting to minimize time demands for the customer

2. Non-Intrusive

- A. Must maintain verification requirements associated with the funding source
- B. Electronic submission of photos or scans of required documentation



30

RiversidePublicUtilities.com

DISCUSSION

1. Questions
2. Feedback about program and rebate options
3. Comments for Board consideration

RiversidePublicUtilities.com



31

RECOMMENDATIONS

That the Customer Relations/Finance Committee:

1. Receive and file the report on the status of residential electric vehicles in the City of Riverside, residential electric rates offered to customers to support electric vehicle charging, and options for programs to support residential electric vehicles;
2. Conduct a workshop and, at its conclusion, provide a set of comments and recommendations representing consensus of the Committee on preferred programs and rebates to support residential electric vehicles; and
3. Refer the set of comments and recommendations to be presented at a workshop to the Board of Public Utilities.

RiversidePublicUtilities.com



32