CVRP CY 2019 Data Brief: Vehicle Replacement & Incentive Influence

Revised March 2022 for ADA

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with thanks to M. Eluganti, M. Jones, and others at the Center for Sustainable Energy (CSE)
Outline: Vehicle Replacement & Incentive Influence Brief

I. Program Design (data context)

II. Vehicle Replacement
   A. Replacement Rates
   B. Vehicle Types Replaced

III. Incentive Influence
   A. Rebates
   B. Federal Tax Credit

IV. Summary & Select Findings

Additional Resources

EVs = light-duty plug-in hybrid, battery, and fuel-cell electric vehicles
(PHEVs, BEVx vehicles, BEVs, and FCEVs)
Context
Program Design
Approved Applications Over Time


5/3/21 image from https://cleanvehiclerebate.org/eng/rebate-statistics
## Base Rebate Amounts for Individuals

<table>
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</thead>
<tbody>
<tr>
<td><strong>Fuel-Cell EVs</strong></td>
<td>$3,000–$5,000 ‡</td>
<td>$1,500–$2,500 ‡</td>
<td>$2,500</td>
<td>$5,000</td>
<td>$5,000 *</td>
<td>$5,000**</td>
<td>$4,500***</td>
</tr>
<tr>
<td><strong>Battery EVs †</strong></td>
<td>$3,000–$5,000 ‡</td>
<td>$1,500–$2,500 ‡</td>
<td>$2,500</td>
<td>$2,500</td>
<td>$2,500 *</td>
<td>$2,500**</td>
<td>$2,000***</td>
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<tr>
<td><strong>Plug-in Hybrid EVs</strong></td>
<td>$3,000</td>
<td>$1,500</td>
<td>$1,500</td>
<td>$1,500</td>
<td>$1,500 *</td>
<td>$1,500**</td>
<td>$1,000***</td>
</tr>
<tr>
<td><strong>Zero-Emission Motorcycles</strong></td>
<td>$1,500</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>$750</td>
</tr>
<tr>
<td><strong>Neighborhood EVs</strong></td>
<td>$1,500</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>$900</td>
<td>None eligible</td>
<td>None eligible</td>
</tr>
<tr>
<td><strong>Commercial Zero-Emission Vehicles</strong></td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
<td>$20,000</td>
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</tbody>
</table>

† Includes range-extended battery electric vehicles.
‡ Amounts varied by ZEV type. For definitions, see CCR 1962.1.
* Lower-income consumers eligible for an additional $1,500.
** Lower-income consumers eligible for an additional $2,000.
*** Lower-income consumers eligible for an additional $2,500.
### Program Design Shapes Outcomes

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<tbody>
<tr>
<td>• Incentive stacking permitted</td>
<td>• Rebates per year limit = 2</td>
<td>• 30-month ownership requirement (retroactive)</td>
<td>• $250k–$500k income cap (PEVs)</td>
<td>• $150k–$300k income cap (PEVs)</td>
</tr>
<tr>
<td>• 36-month ownership requirement</td>
<td>• Total rebate limit = 2</td>
<td>• $1,500 for income-qualified households (≤ 300% FPL), excluding ZEMs</td>
<td>• $2,000 for income-qualified households (≤ 300% FPL), excl. ZEMs</td>
<td></td>
</tr>
<tr>
<td>• Rebates per year limit = 20</td>
<td>as of May 2014</td>
<td>• ≥ 20 UDDS electric miles</td>
<td>• ≥ 20 UDDS electric miles</td>
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<tr>
<td>• 18-month application window</td>
<td>as of May 2014</td>
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<tbody>
<tr>
<td>• $150k–$300k income cap on stacking HOV decal</td>
<td>• Stacking with CVAP grant not permitted (retroactive)</td>
<td>• Base MSRP ≤ $60k (PEVs)</td>
<td>• Stacking with CVAP grant permitted</td>
<td>• ≥ 30 U.S. EPA electric miles (45 UDDS)</td>
</tr>
<tr>
<td>• (only binding on FCEVs)</td>
<td></td>
<td>• ≥ 35 UDDS electric miles</td>
<td></td>
<td>• Rebate Now preapproval option limited to income-qualified households, expanded to include SJ Valley</td>
</tr>
<tr>
<td>• Rebate Now San Diego County preapproval pilot with point-of-sale option</td>
<td></td>
<td>• +$2,500 † for income-qualified households (≤ 300% FPL), excl. ZEMs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3-month application window ‡</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Total rebates limit = 1 §</td>
<td></td>
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</tbody>
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PEVs = plug-in EVs. FPL = Federal Poverty Level. ZEMs = zero-emission motorcycles. UDDS = Urban Dynomometer Driving Schedule. HOV = high-occupancy-vehicle. FCEVs = fuel-cell EVs. CVAP = Clean Vehicle Assistance Program. MSRP = manufacturer suggested retail price.

† Change due to $500 decrease in standard rebate amounts. ‡ COVID exemptions on application window effectively delayed implementation until 4/15/2021. § A second rebate can be approved for a FCEV if the first rebate was for a PEV.
Funding Availability Has Been Regularly Disrupted
(as of Oct 2019)

### Table 3: CVRP Waitlists

<table>
<thead>
<tr>
<th>Waitlist Year</th>
<th>Start Date</th>
<th>End Date</th>
<th>Length in Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011*</td>
<td>6/20</td>
<td>9/30</td>
<td>102</td>
</tr>
<tr>
<td>2013*</td>
<td>5/1</td>
<td>6/30</td>
<td>60</td>
</tr>
<tr>
<td>2014</td>
<td>3/28</td>
<td>7/22</td>
<td>116</td>
</tr>
<tr>
<td>2016</td>
<td>6/11</td>
<td>9/28</td>
<td>109</td>
</tr>
<tr>
<td>2017**</td>
<td>6/30</td>
<td>11/20</td>
<td>143</td>
</tr>
<tr>
<td>2019**</td>
<td>6/5</td>
<td>9/23</td>
<td>110</td>
</tr>
</tbody>
</table>

* Dates approximate.

** For standard applications only; no waitlist for income-qualified increased rebates.

Image from [https://cleanvehiclerebate.org/sites/default/files/attachments/CVRP_Disruptions_Fact_Sheet.pdf](https://cleanvehiclerebate.org/sites/default/files/attachments/CVRP_Disruptions_Fact_Sheet.pdf)
CA Consumer Survey Data: Plug-in EVs*
(Shows Rebates to Individuals Only)

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</thead>
<tbody>
<tr>
<td>Survey Responses (total n)**</td>
<td>19,460</td>
<td>11,611</td>
<td>8,957</td>
<td>25,615</td>
<td>65,643</td>
</tr>
<tr>
<td>Program Population (N)***</td>
<td>91,100</td>
<td>45,700</td>
<td>46,800</td>
<td>149,000</td>
<td>332,600</td>
</tr>
</tbody>
</table>

* PEVs include PHEVs and BEVs.

** Subsequently weighted to represent the program population along the dimensions of vehicle category, vehicle model, buy vs. lease, and county.

*** Small numbers of rebated vehicles are not represented in the time frames due to application lags. Rounded to nearest 100.
Consumer Survey Data *(Shows Rebates to Individuals Only)*

<table>
<thead>
<tr>
<th>Vehicle Purchase/Lease Dates</th>
<th>CVRP</th>
<th>MOR-EV</th>
<th>CHEAPR</th>
<th>NY State</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun. 2014 – Apr. 2020</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>May 2015 – Sep. 2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sep. 2012* – Apr. 2020</td>
<td></td>
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</tr>
</tbody>
</table>

| Survey Responses (total n)** | 66,902 | 6,616 | 1,565 | 1,808 | 76,891 |

| Program Population (N)***    | 339,200 | 16,100 | 3,500 | 8,600 | 367,400 |

*Two fuel-cell EVs rebated by CVRP with purchase/lease dates from Dec. 2010 – Sep. 2012 are included.

** Subsequently weighted to represent the program population along the dimensions of vehicle category, model, buy vs. lease, and county.

*** Small numbers of rebated vehicles are not represented in the time frames due to application lags. Rounded to nearest 100.
Vehicle Replacement
Vehicle Replacement Rates
Do EVs Get Used?

Replaced a vehicle with their rebated clean vehicle

Overall datasets: 76,891 total survey respondents weighted to represent 367,400 rebate recipients.
Vehicle Replacement is Increasing

Replaced a vehicle with their rebated *plug-in EV*

Overall datasets: 65,643 total survey respondents weighted to represent 332,600 rebate recipients.

Up to 85% in CY 2019
Vehicle Types Replaced
What Vehicles Have Rebates Helped Replace?

CY 2019 Plug-in Electric Vehicle Purchases/Leases

"Describe your previous vehicle that you replaced (or plan to replace) with your [rebated EV]"


What Vehicles Have Rebates Helped Replace?
Plug-in Electric Vehicle Purchases/Leases

- Gasoline: 57%
- All-battery electric
- Conventional hybrid
- Plug-in hybrid
- Diesel
- Compressed natural gas
- Alternative fuel
- Hydrogen fuel cell

Total

Model Year
- 1999 or earlier
- 2000–2005
- 2006–2011
- 2012–2017

Incentive Influence
Rebate Influence
Rebate Importance
(CY 2019 Plug-in EVs)

How important was the state rebate in making it possible for you to acquire your clean vehicle?

"Rebate Important" = 90%

Starting Dec. 2019, PEVs with base MSRP greater than $60k became ineligible.
Rebate Importance Decreases Above $60k MSRP (CY 2019 Plug-in EVs)

How important was the state rebate in making it possible for you to acquire your clean vehicle?

*Each vehicle was assigned the minimum Manufacturer’s Suggested Retail Price (MSRP) for that model/MY on fueleconomy.gov and does not reflect sale price. Where MSRP were unavailable for a given MY, MSRP from the previous or following MY were used. Tesla Model 3’s were assigned an MSRP of $49k for MY 2018, $35k for MY 2019 and 2020.

Rebate Influence: Importance

How important was the state rebate in making it possible for you to acquire your clean vehicle?

Overall datasets: 76,891 total survey respondents weighted to represent 367,400 rebate recipients.
Rebate Essentiality
(CY 2019 Plug-in EV Purchases/Leases)

Would not have purchased/leased their EV without the state rebate

Starting 12/2019, PEVs with base MSRP > $60k became ineligible.
Rebate Essentiality Decreases Above $60k MSRP
(CY 2019 Plug-in EV Purchases/Leases)

Would not have purchased/leased their EV without the state rebate

* Each vehicle was assigned the minimum Manufacturer’s Suggested Retail Price (MSRP) for that model/MY on fueleconomy.gov and does not reflect sale price. Where MSRPCs were unavailable for a given MY, MSRPCs from the previous or following MY were used. Tesla Model 3’s were assigned an MSRP of $49k for MY 2018, $35k for MY 2019 and 2020.

Rebate Essentiality Reflects Interesting Trends

As MSRP increases, rebate influence decreases

Rebate Essentiality Similar But Lower for Tesla
(CY 2019 Plug-in EV Purchases/Leases)

Would not have purchased/leased their EV without the state rebate


* Each vehicle was assigned the minimum Manufacturer’s Suggested Retail Price (MSRP) for that model/MY on fueleconomy.gov and does not reflect sale price. Where MSRPs were unavailable for a given MY, MSRPs from the previous or following MY were used.

Tesla Model 3’s were assigned an MSRP of $49k for MY 2018, $35k for MY 2019 and 2020.
Rebate Influence: Essentiality

Would not have purchased/leased their clean vehicle without rebate

Overall datasets: 76,891 total survey respondents weighted to represent 367,400 rebate recipients.
Federal Tax Credit Influence
Importance of Federal Tax Credit for Plug-in EVs
Consumer Survey, 2017–19 Edition*

“How important were each of the following factors [Federal Tax Incentives] in making it possible for you to acquire your clean vehicle?”

- Extremely important: 53%
- Very important: 25%
- Moderately important: 12%
- Slightly important: 6%
- Not at all important: 3%

*Note: federal tax credit began phasing out for Tesla and GM in 2019
Question-specific weighted n = 24,487.
Extreme Importance of Federal Tax Credit is Increasing

Percent rating tax credit **Extremely Important** in making it possible to acquire their *plug-in* vehicle from 54% in CY 2018 to 51% in CY 2019 (phase-out?)

Overall datasets: 65,643 total survey respondents weighted to represent 332,600 rebate recipients.
Percent Rating the Federal Tax Credit “Extremely Important”
(“...in making it possible” to acquire plug-in EVs)

Overall datasets: 75,632 total survey respondents weighted to represent 360,800 rebate recipients.
Summary & Select Findings
Summary & Select Findings: Replacement & Influence

Program design and disruptions (e.g., waitlists) shape impacts

Vehicle Replacement
- Increased to 85%
- >77% of replaced vehicles were gasoline-fueled; over half were MY 2013 or older

Incentive Influence
- 90% found rebate important enabler of EV acquisition; 54% would not have purchased/leased without it
- At MSRP greater than $60k, rebate influence decreases substantially
- Attractive offerings (including Tesla products) have somewhat lower Rebate Essentiality, but the differences between luxury/non-luxury MSRP s are bigger
- Rebate influence and federal-tax-credit influence are similar
  - Over half rated federal tax credit an extremely important enabler
  - Down somewhat from 2018 peak when all vehicles were still eligible
Additional Resources
Select Publications  (Reverse Chronological, as of 12/21/21)


Select Presentations (Reverse Chronological, as of 2/22)

- Cost-Effectiveness of Greenhouse Gas Emission Reductions Associated with California’s Clean Vehicle Rebate Project in 2019 (and 2020)
- California Plug-in Hybrid EV Consumers Who Found the U.S. Federal Tax Credit Extremely Important in Enabling Their Purchase
- Data from Statewide Electric Vehicle Rebate Programs: Vehicles, Consumers, Impacts, and Effectiveness
- CVRP CY 2019 Data Brief: Vehicle Replacement & Incentive Influence
- CVRP CY 2019 Data Brief: Consumer Characteristics
- CVRP Data Brief: MSRP Considerations
- EV Purchase Incentives: Program Design, Outputs, and Outcomes of Four Statewide Programs with a Focus on Massachusetts
- What Vehicles Are Electric Vehicles Replacing and Why?
- Electric Vehicle Incentives and Policies
- Proposed FY 2019–20 Funding Plan: Final CVRP Supporting Analysis
- CVRP: Data and Analysis Update
- Cost-Effectively Targeting EV Outreach and Incentives to “Rebate-Essential” Consumers
- Electric Vehicle Rebates: Exploring Indicators of Impact in Four States
- Targeting EV Consumer Segments & Incentivizing Dealers
- Supporting EV Commercialization with Rebates: Statewide Programs, Vehicle & Consumer Data, and Select Findings
- Yale Webinar: Supporting EV Commercialization with Rebates: Statewide Programs, Vehicle & Consumer Data, and Findings
- CVRP Income Cap Analysis: Informing Policy Discussions
Recommended citation:

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