ZEV COMMISSION MEETING, May 17th, 2018

Electric Vehicle Rebates in Massachusetts: Status & Sustainability

Department of Energy Resources: Rebate Program Executor

Center for Sustainable Energy: Rebate Program Administrator

Objectives

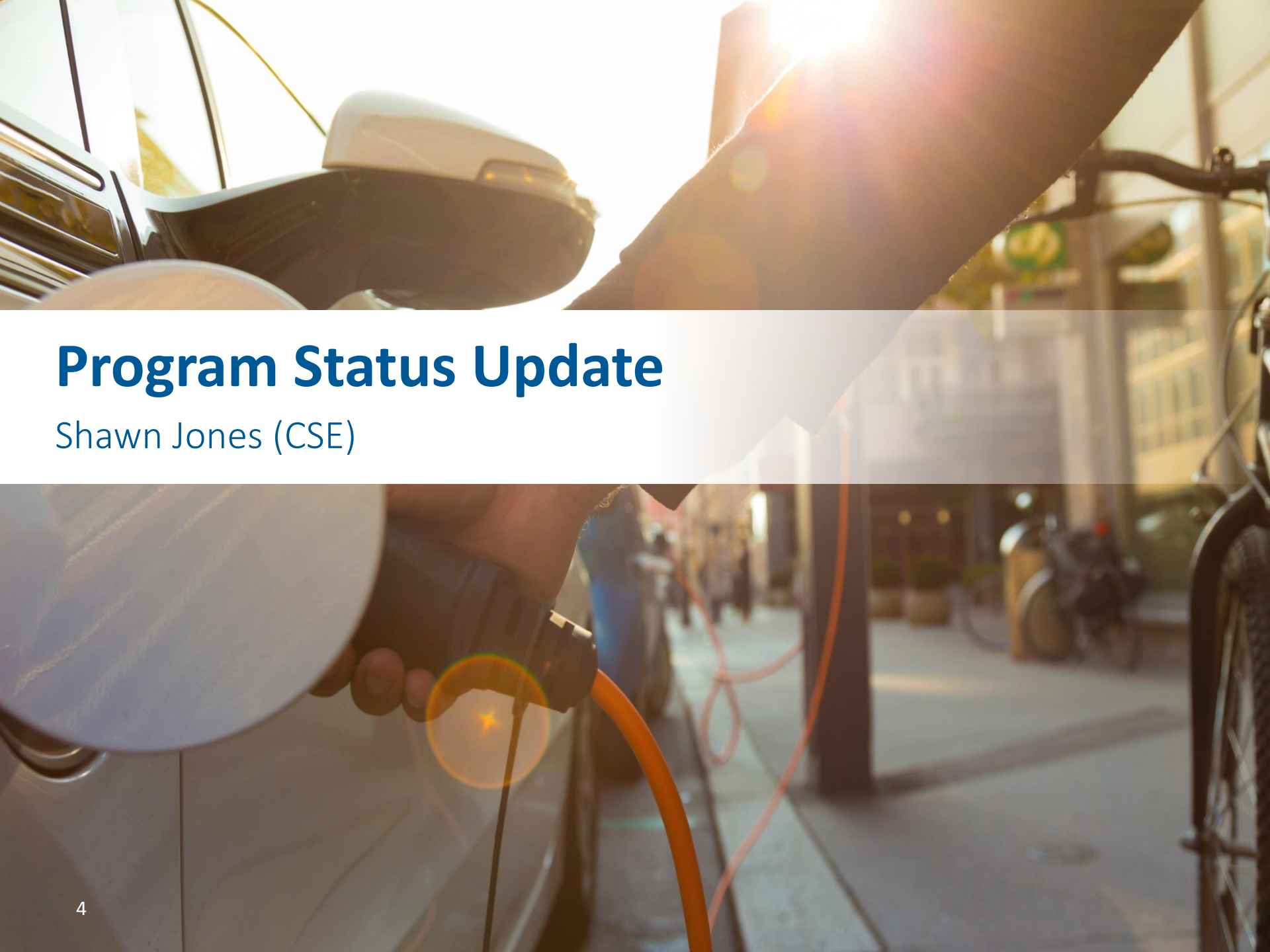
Provide update on MOR-EV program status

Data based approach to inform program decisions to:

- Increase program effectiveness
- Increase program sustainability

Outline

- Program status update
  - Shawn Jones (CSE)
- Program design and effectiveness considerations
  - Brett Williams, PhD (CSE)
- Sustainable MOR-EV design
  - Will Lauwers (DOER) and Linda Benevides (EEA)
- Q&A and discussion
  - All

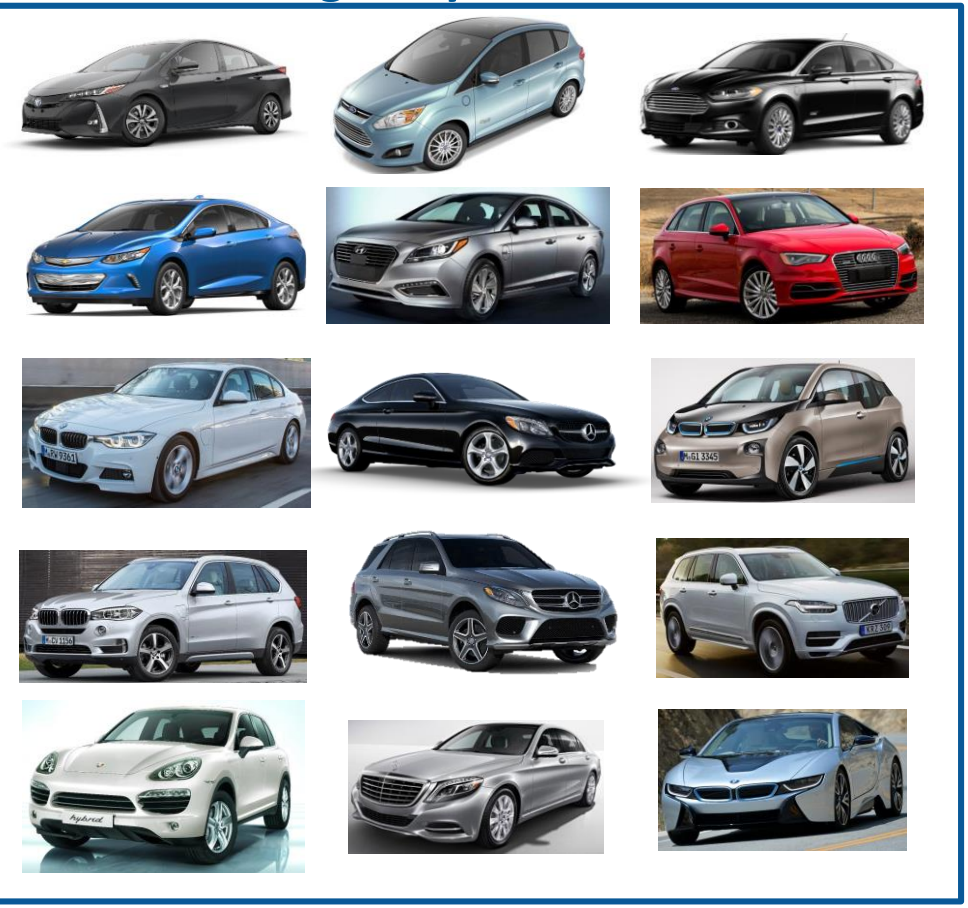


Program Status Update

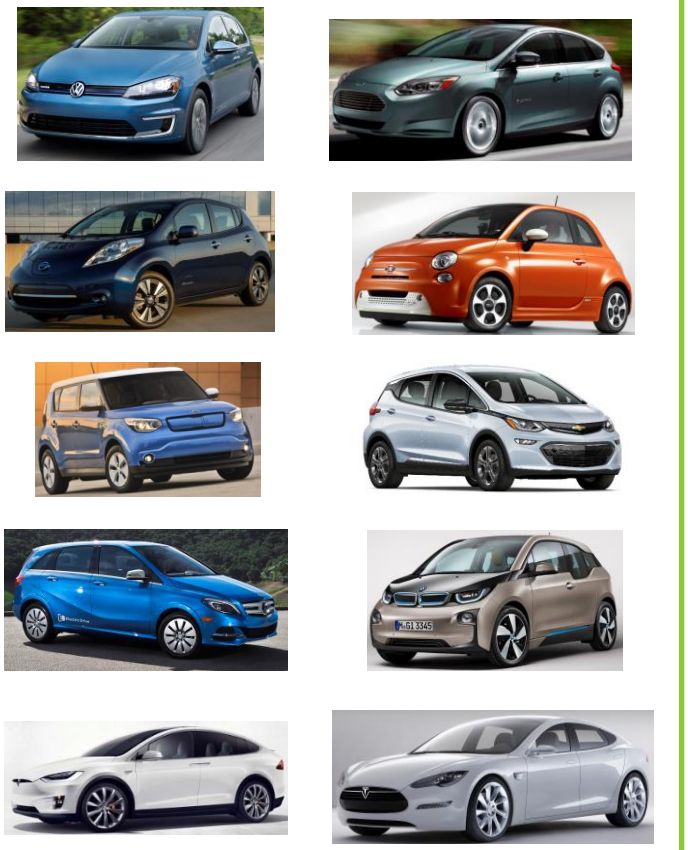
Shawn Jones (CSE)

Status Update: More Choice

Plug-in hybrid EVs



All-battery EVs

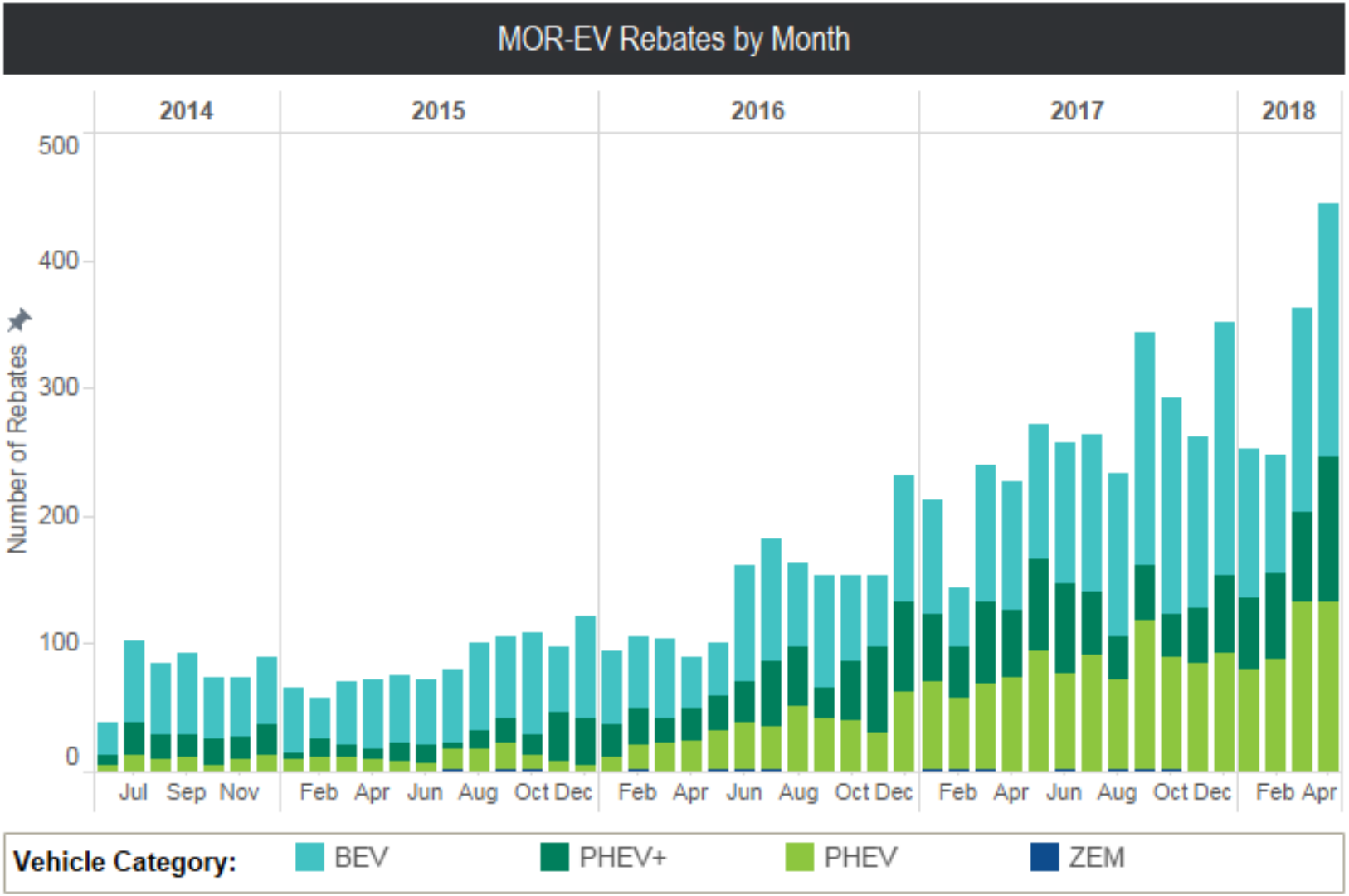


20 models available at program start
> 40 models available today

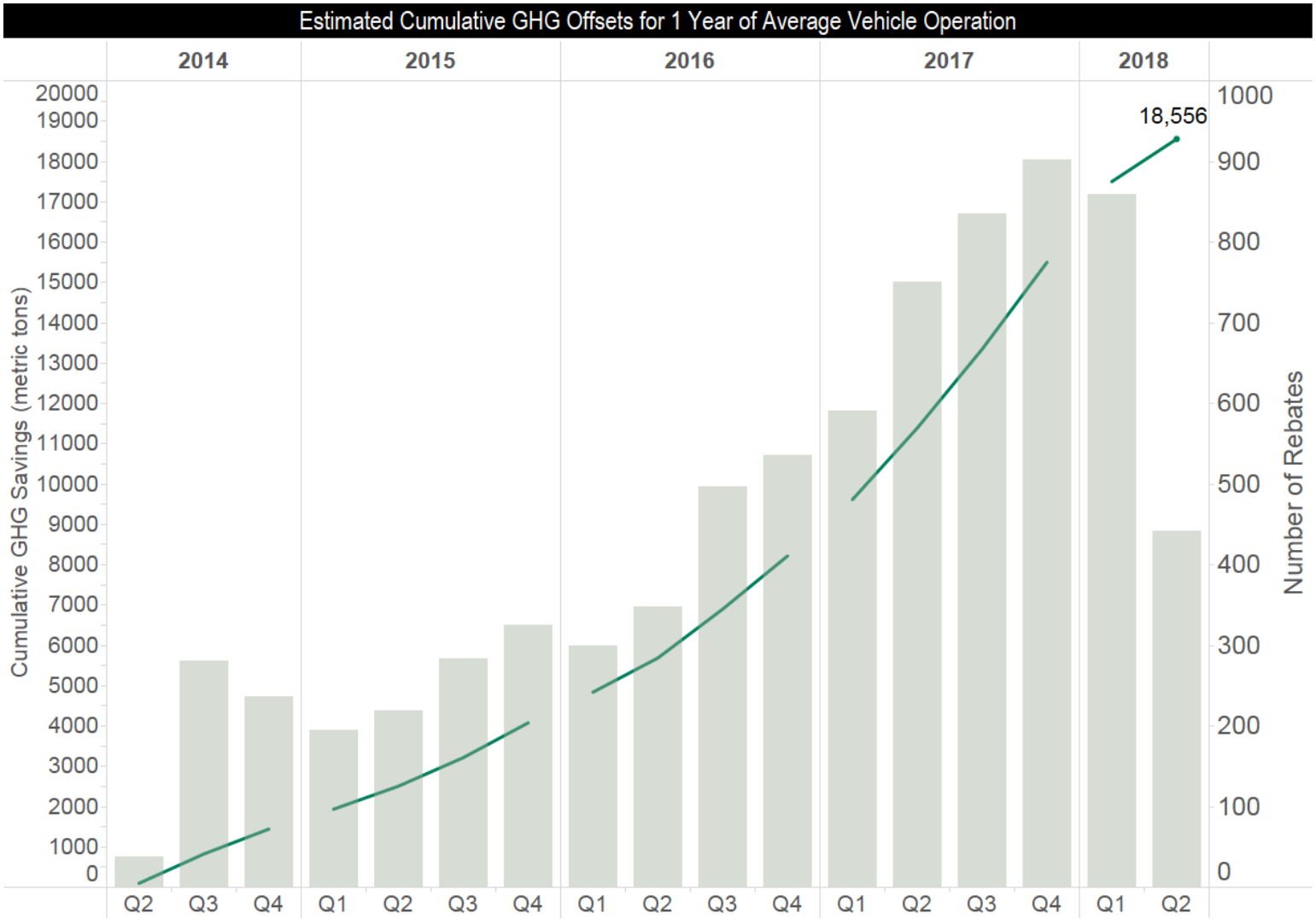
Fuel-cell EVs

All models pictured had > 100 national sales in Q1 2017
(http://insideevs.com/monthly-plug-in-sales-scorecard/)

Status Update: Rebate Trends

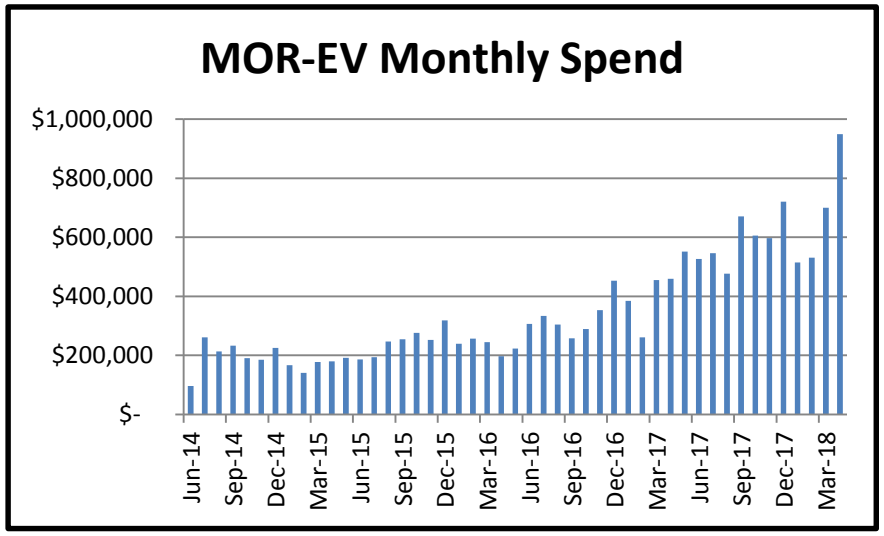


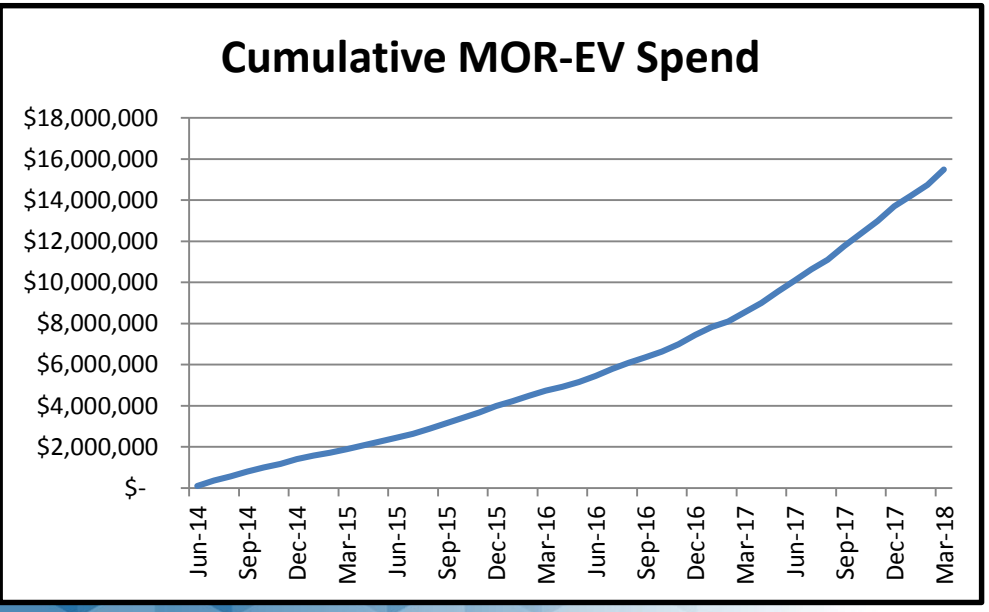
Status Update: GHG Reduction Trends

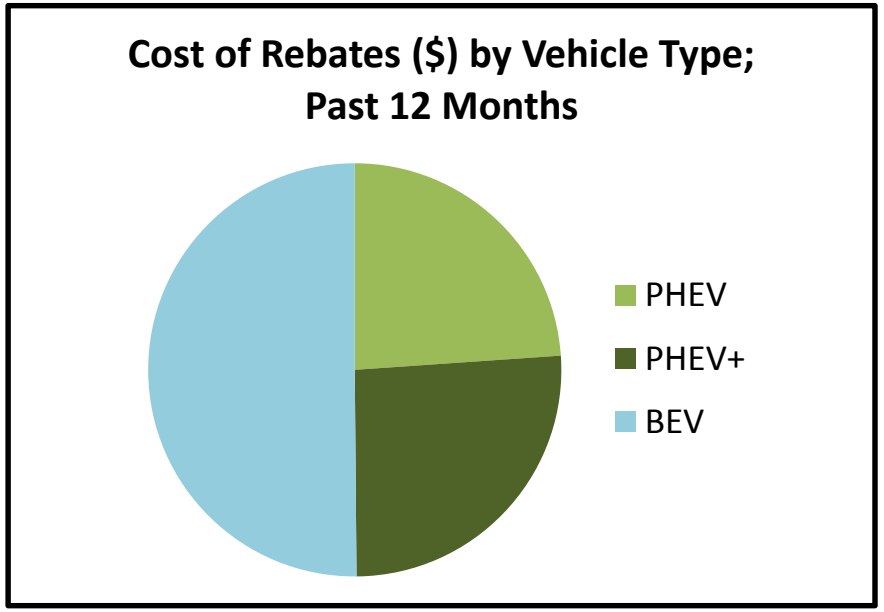


Status Update: Funding & Spend Rate

- $20M Total Program Commitment
- **March 2017-** DOER awarded CSE $12M to continue MOR-EV program.
- As of April ‘18, $8.3M of $12M reserved/spent
- April ‘18, $949k single month spend
- At current spend rate, may reach contract ceiling late August early September ‘18







Program Design & Effectiveness Considerations

Brett Williams, PhD (CSE) – brett.williams@energycenter.org

Section Objectives

- Bring evidence and experience to bear
- Provide data to support program decisions on how to use funds effectively in the face of growing demand
- Anticipating and trying to balance a variety of program goals and stakeholder priorities
- Can lead to tough trade-offs and choices

Program Effectiveness: Considerations

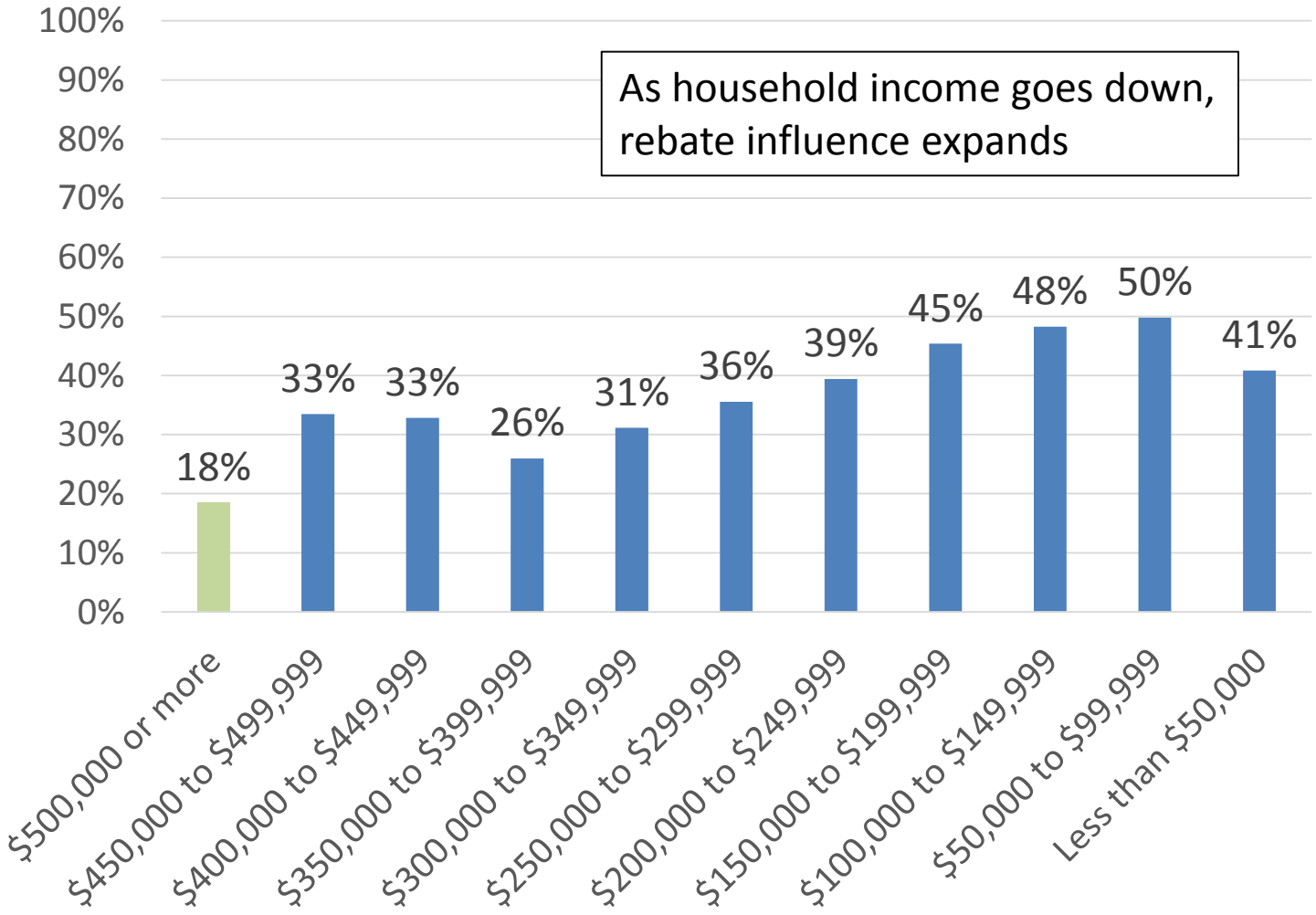
- Income level
- MSRP
- Electric range
- Rebate level

Program Effectiveness: Income Level

Limiting consumer eligibility based upon income is a theoretically attractive way to direct program funds to where they are needed most.

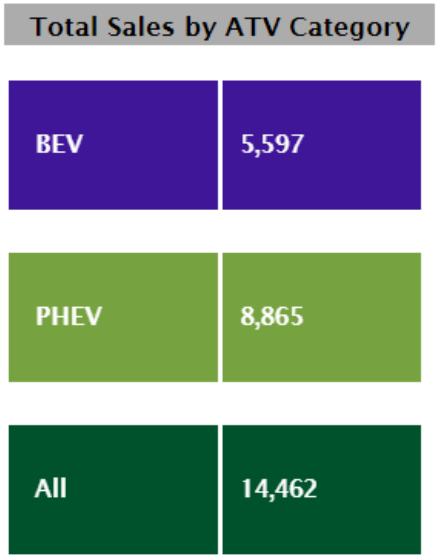
Income caps were required by legislation in California, providing CSE (which administers the CA rebate) with first-hand insight into implementation challenges

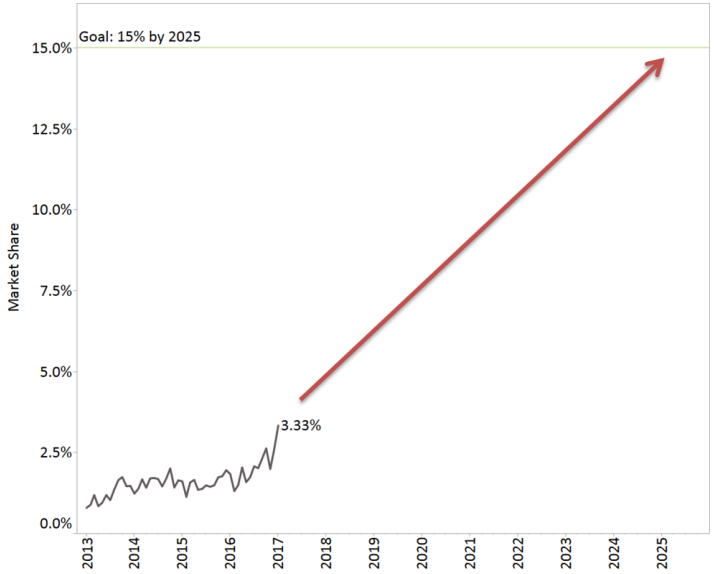
Percent of MOR-EV Respondents that are "Rebate Essential" by Household Income

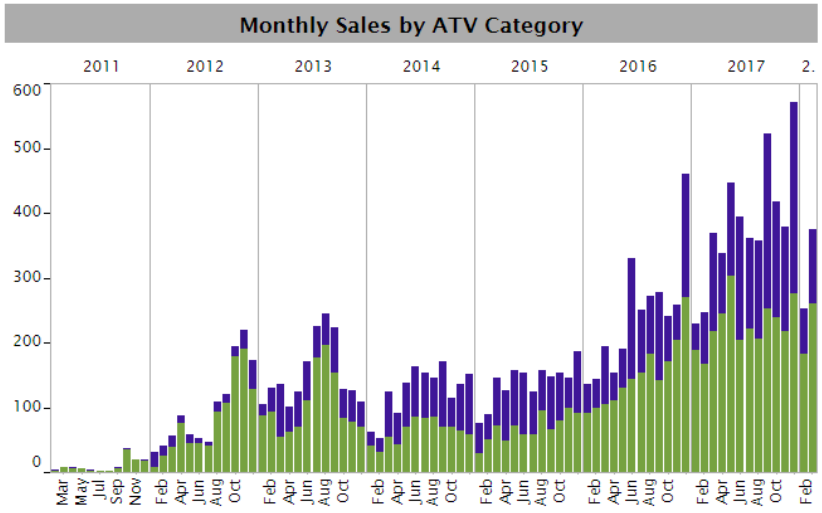


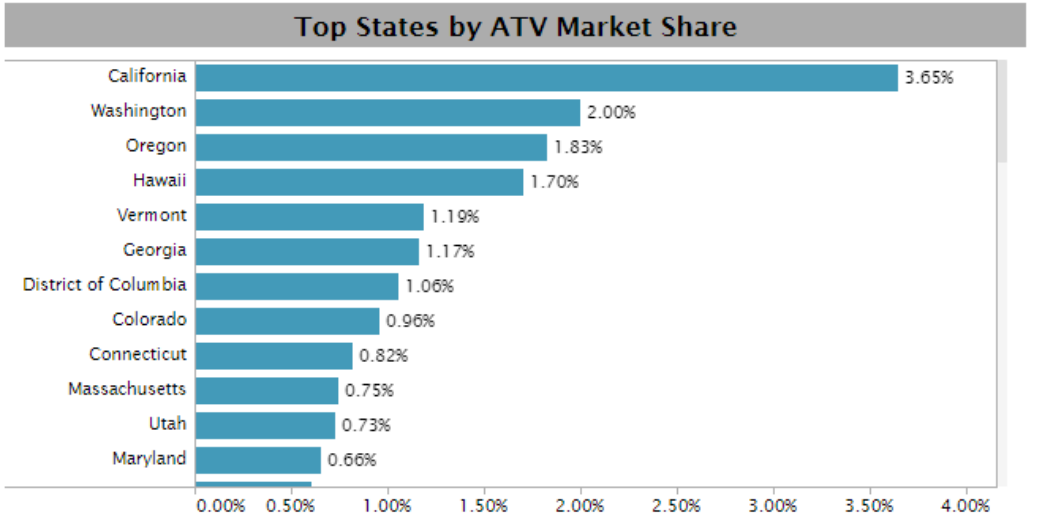
MOR-EV Survey, 2014–17:
n = 2,549 total respondents, weighted to represent N=5,754 participants

Why do vehicle volumes matter?









thru February 2018, https://autoalliance.org/energy-environment/zev-sales-dashboard/

Income-Based Eligibility: Implementation Considerations

- **Outreach complexity**, consumer confusion
- **Dealer reluctance**, fears about liability
- **Application complexity**, affects all applicants
- **Intrusiveness**, tax forms
- **Fraud**
- **Loopholes**
- **Investment** in processing systems, **labor**
- **Wait times**, even for priority applicants
- **Precludes a point-of-sale rebate**, which would benefit those that need the rebate most

MSRP may be a better proxy to use for program eligibility…

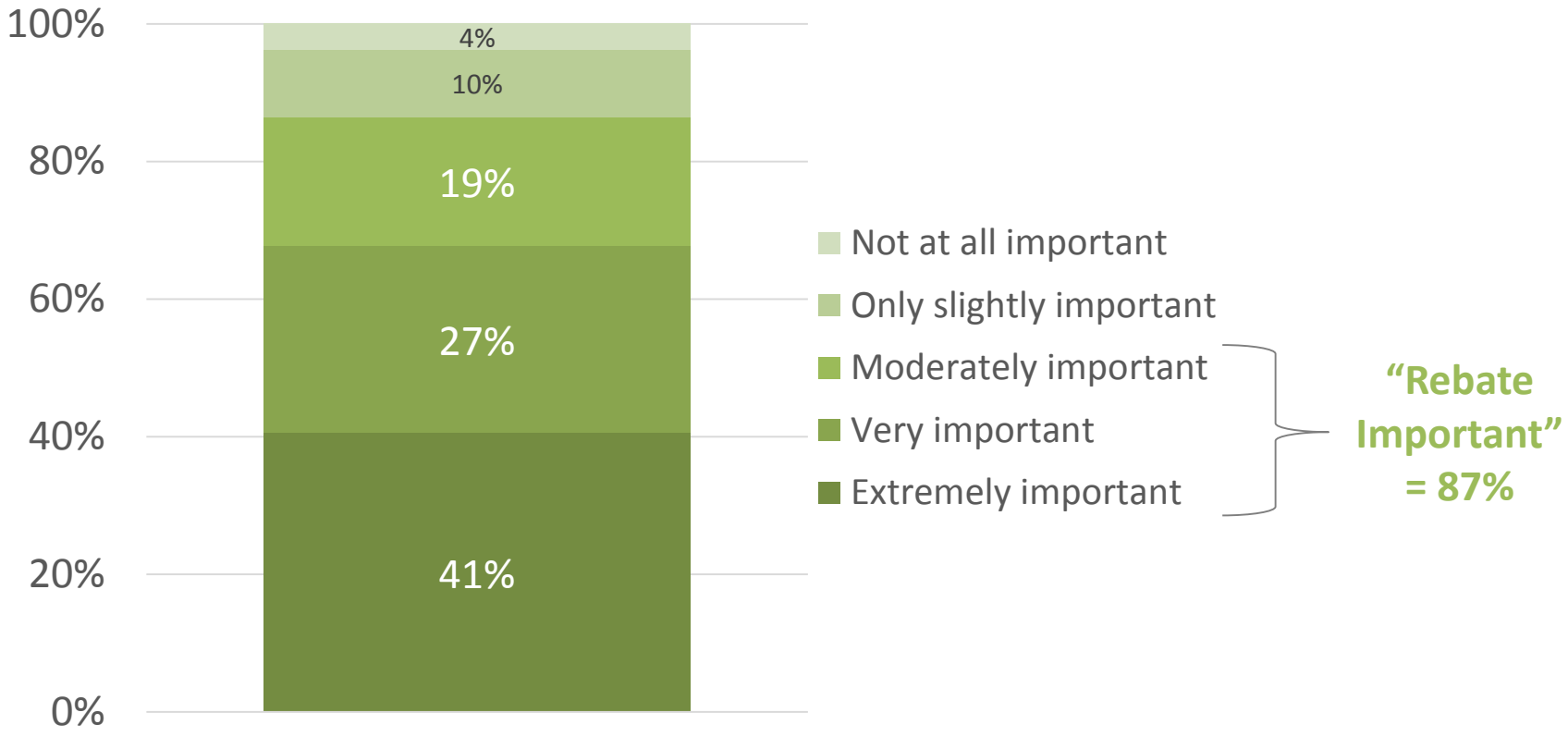
Program Effectiveness: MSRP criteria

- Are trivial to implement, already a program concept
- Avoid public investment in luxury products
- Direct private investments made by remaining rebate-motivated higher-income participants towards increasing the volume of mainstream products
- Reduce the cost of mainstream vehicles
- Reduce free ridership in a similar, if somewhat different manner
- “Optimal” thresholds are easier to identify

In brief, increases equity and reduces free ridership with minimal program costs (and market impacts are focused on luxury products with greater margins)

Program Effectiveness: Indicators of rebate influence?

How important was the State Rebate (MOR-EV) in making it possible for you to acquire your clean vehicle?



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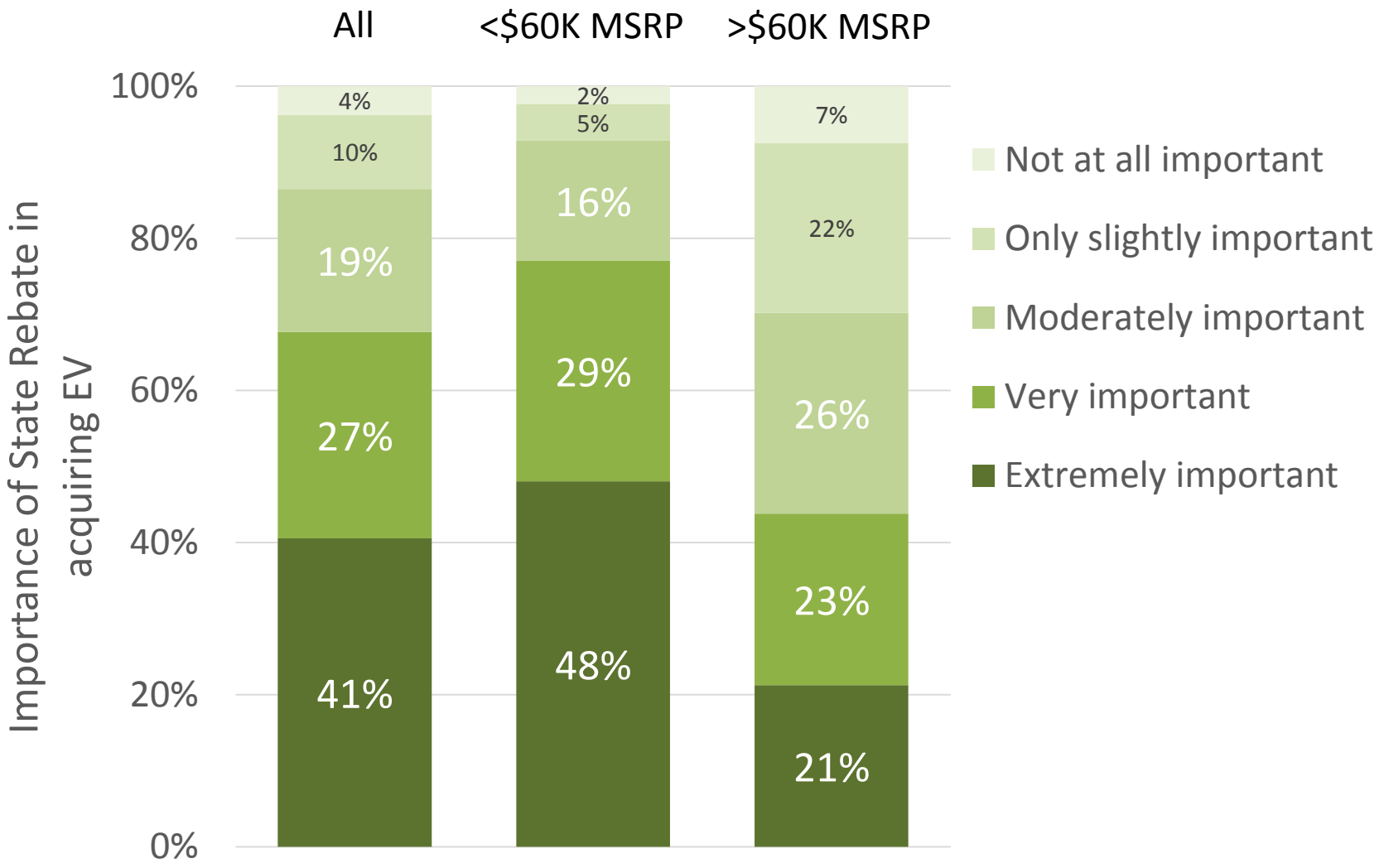
Program Effectiveness: MSRP Caps



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Electric range considerations

- PHEVs:
  - Low-e-range vehicles may not be plugged in as frequently, ZEV operation limited, often luxury/performance tuned
- BEVs:
  - Cold-weather performance
  - Need for emergency buffer
  - Range anxiety may lead to EV being left home in favor of combustion-engine car, reducing total e-VMT

EV Incentive Programs: Rebate Design

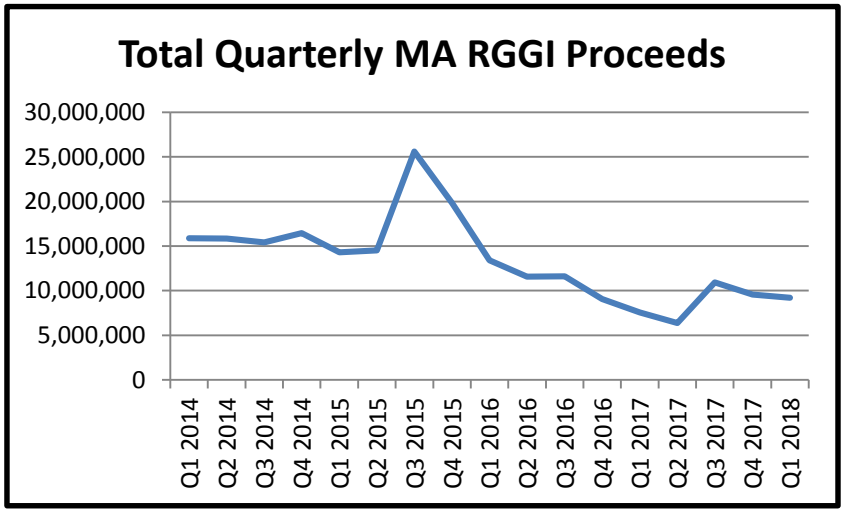
	CALIFORNIA CLEAN VEHICLE REBATE PROJECT	MOR-EV Massachusetts Offers Rebates for Electric Vehicles	CHEAPR Connecticut Hydrogen and Electric Automobile Purchase Rebate	NEW YORK STATE
Fuel-Cell EVs 	$5,000	$2,500	$5,000	e-miles ≥ 120 $2,000 ≥ 40 $1,700 ≥ 20 $1,100 < 20 $500
All-Battery EVs 	$2,500	$2,500	e-miles ≥ 175 $3,000 ≥ 100 $2,000 < 100 $500	
Plug-in Hybrid EVs 	$2,500 (i3 REx) $1,500	≥10 kWh $2,500 <10 kWh $1,500	≥ 40 $2,000 < 40 $500	
Zero-Emission Motorcycles 	$900	$750		
	e-miles ≥ 20 only; Consumer income cap and increased rebates	MSRP ≥ $60k = $1,000 max., no fleet rebates	MSRP ≤ $60k only; dealer assignment; $150–300 dealer incentive	MSRP > $60k = $500 max.; point-of-sale

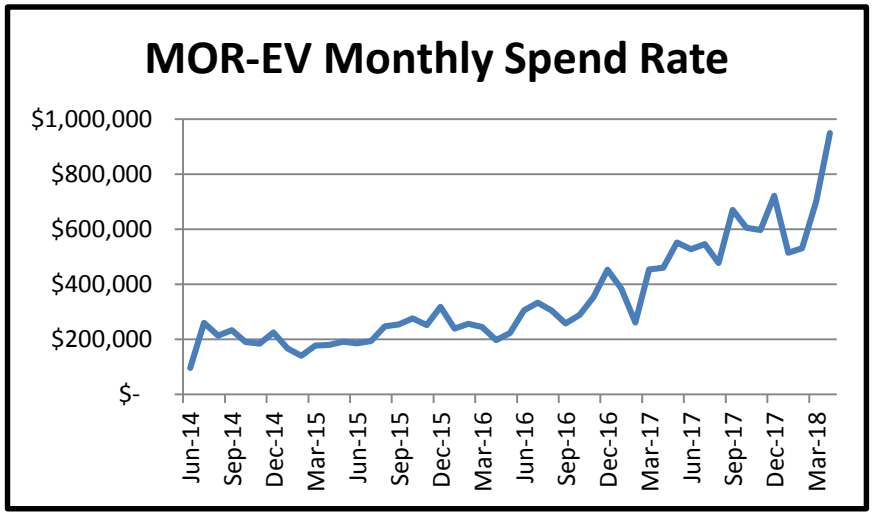
Sustainable MOR-EV Design

DOER and EEA

Program Funding

- DOER funds the MOR-EV program from RGGI auction proceeds
  - DOER recently supplemented RGGI funds to maintain MOR-EV





- Absent significant additional funding, program design changes will be required to maintain rebate sustainability

Sustainable Program Design Discussion

- Expect a desire for program continuation

- Absent additional funds, seeking ZEV Commission perspectives on potential program design changes to sustainably continue a MOR-EV program:
  - MSRP cap eligibility
  - Income eligibility / incentive differentiation
  - Limit number of rebates per household
  - Reduced rebate amounts
  - Reduced vehicle type eligibility

- Program continuity and sustainability on current revenues requires significant program cost reductions

Next Steps

- Next ZEV Commission June 27
- Stakeholder input on sustainable program design

Appendix

Data Summary (Rebates to Individuals)

MOR-EV Consumer Survey

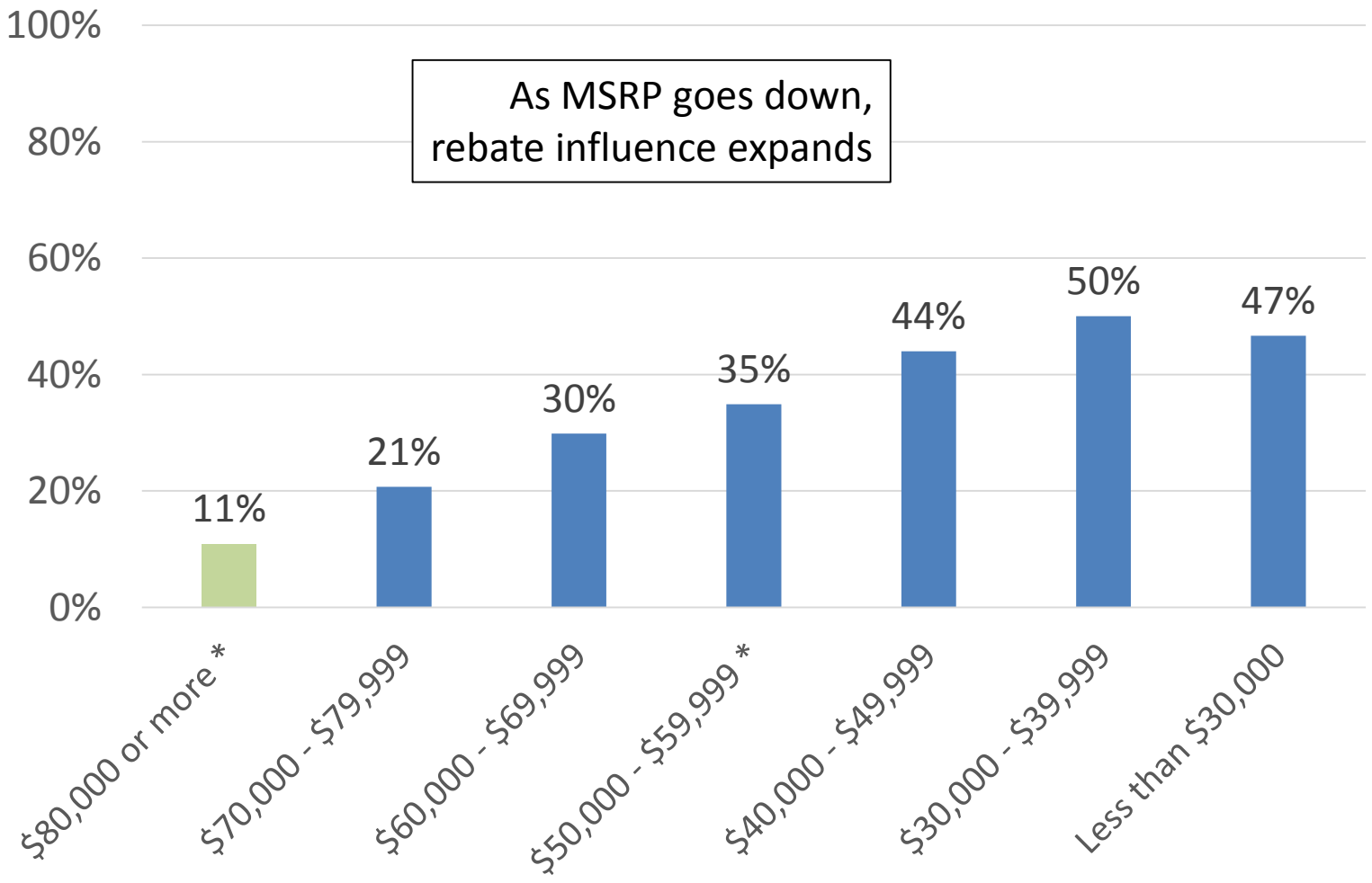
Responses	n = 2,549
Vehicle Purchase/ Lease Dates	July 2014 – October 2017

MOR-EV Program Population (application data)

Participants survey was weighted to represent*	N=5,754

* Along the dimensions of vehicle category, vehicle model, buy vs. lease and county, (using raking method)

Percent of MOR-EV Respondents that are "Rebate Essential" by MSRP



* = small sample size in bin. MOR-EV Survey, 2014–17:
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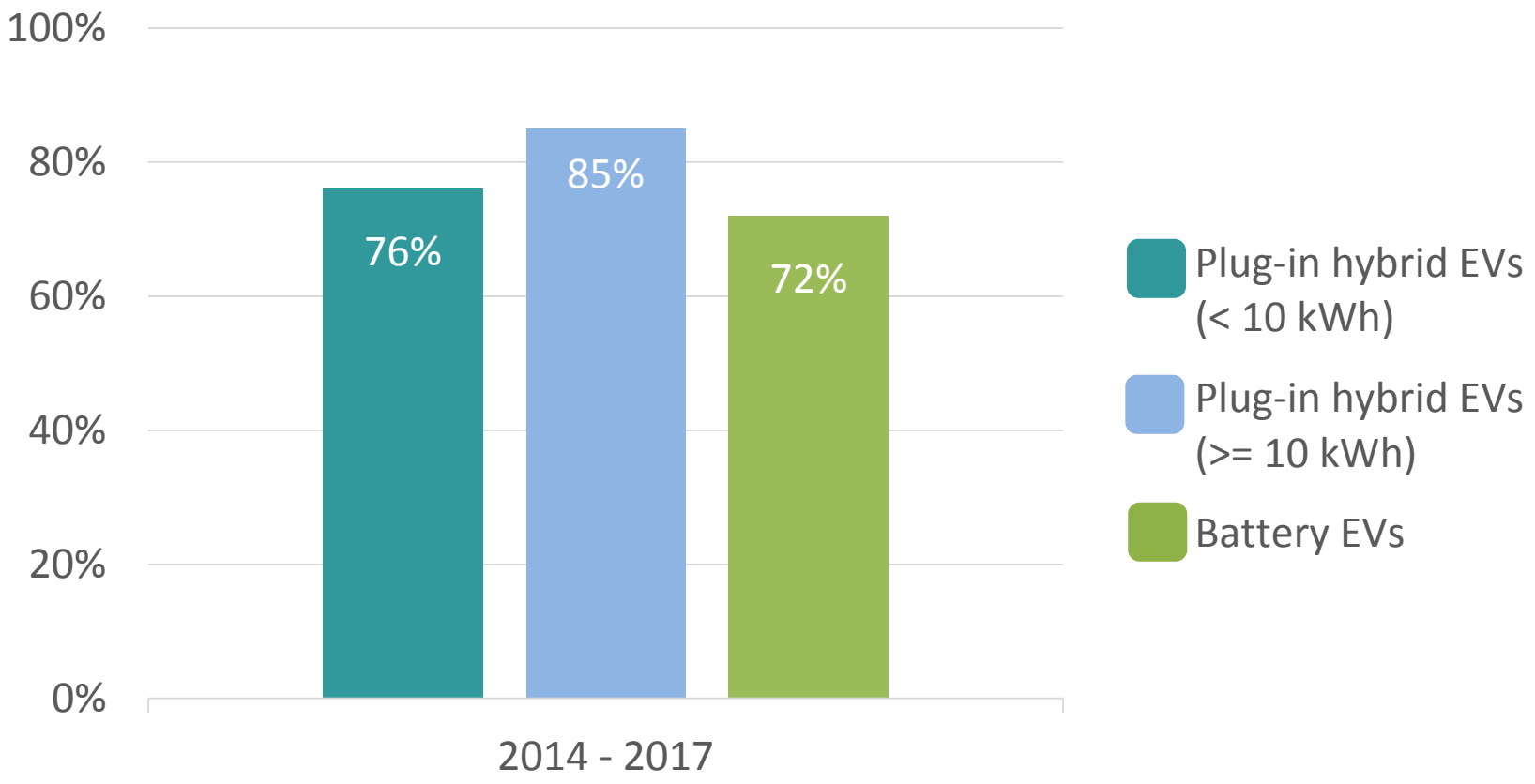
Do EVs get used?

Replaced a vehicle with their rebated EV



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