CVRP: Projected Funding Need and Program-Change Scenarios

CVRP Work Group #2 (22 Mar. 2019, Sacramento CA)

Brett Williams, PhD – Senior Principal Advisor, EV Programs, CSE

John Anderson – Research Analyst, CSE

With thanks to others at CSE and CARB

CALIFORNIA CLEAN VEHICLE REBATE PROJECT℠

Outline

I. FY 2019–20 Funding Need (including FY 18–19 shortfall)

II. Three-Year Funding Need (SB 1275)
- Summary
- Approach: Methods, Factors Not Addressed
- Results

III. Funding Need for 5M EVs ('18–'19 Budget Act)
- Trajectory toward state goals

IV. Discussion: Projections

V. Program-Change Scenario Estimates

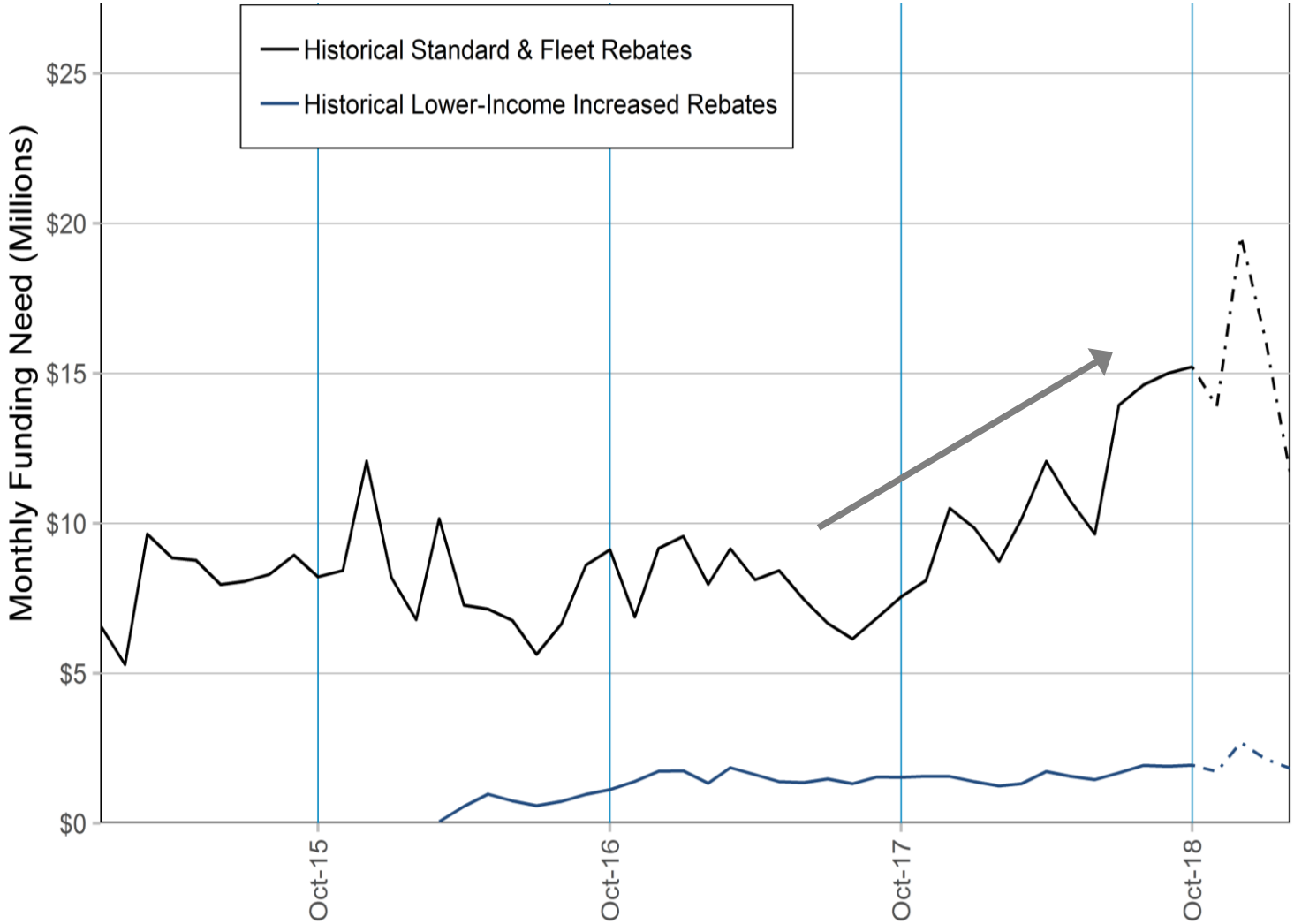
VI. Discussion: Funding Needs and Program Changes

Appendix
- Additional Findings, Online Resources

FY 2019–20 Funding Need

Including FY 2018–19 Shortfall

Times have changed (good problem to have)



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Current Shortfall (as of 2/28/19)

Funding Cycle (Oct.– Sep.)	Rebate Type (All = Standard + Increased)	Funding Requirements (millions)			Rebates (thousands)		
		Low	Middle	High	Low	Middle	High
FY 2018–19	*Standard and DAC-Fleet Increased*	$90	$109	$110	34	86	87
	Lower-Income Increased Rebates (surplus)	-$8	-$6	-$4			
	Net Shortfall	**$82**	**$103**	**$106**	**34**	**86**	**87**

*Note: $60 M of FY 2018–19 funding was needed to fund FY 2017–18 rebates.

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FY 2019–20	*Standard and DAC-Fleet Increased*	$273	$385	$394	108	150	153
	Lower-Income Increased Rebates	$35	$43	$48	8	10	11
	Total Need	**$308**	**$428**	**$442**	**116**	**160**	**164**

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Grand total need thru Sep. 2020: $390 $531 $546

Budget: $200

*Note: $60 M of FY 2018–19 funding was needed to fund FY 2017–18 rebates.

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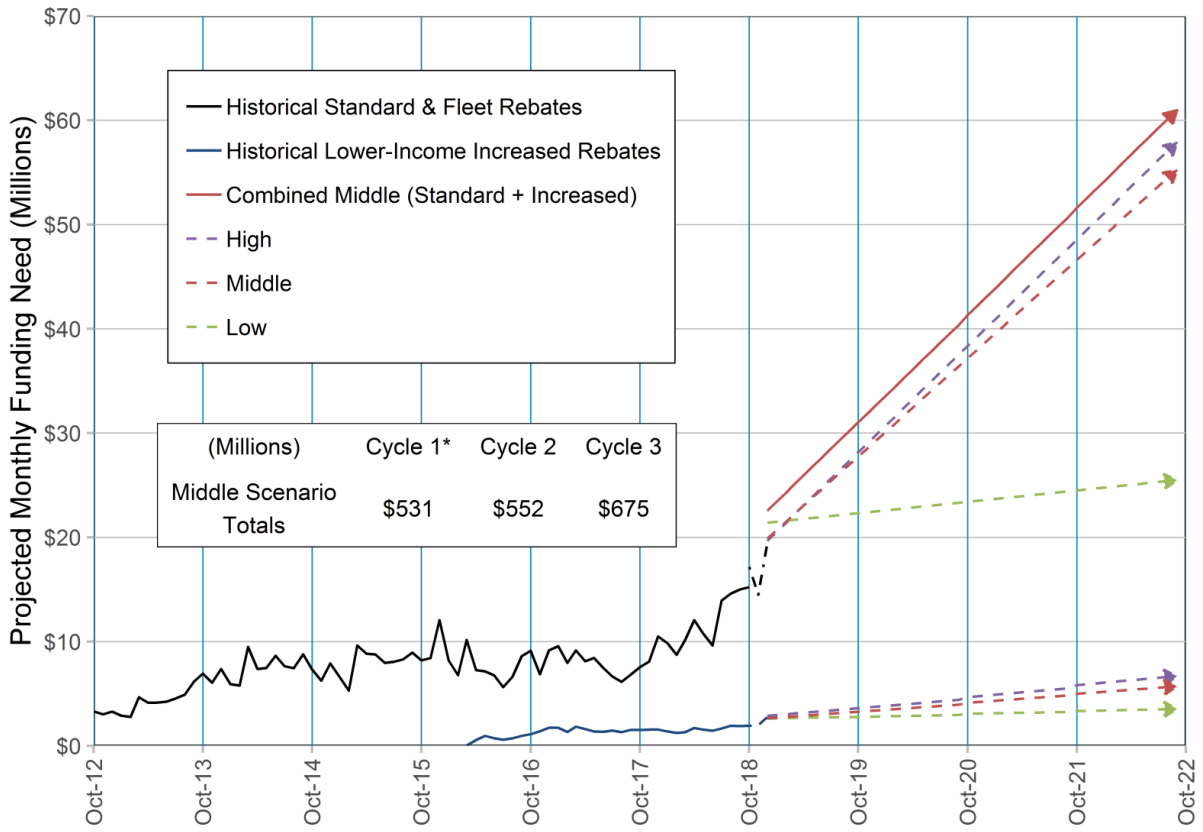
Three-Year Funding Need (SB 1275)

Updates December Workshop and FY 2018–19 Funding Plan Appendix C

Summary

Three-Cycle* Funding Need Summary



Projected Demand: 401,000—726,000 rebates
Funding Need: $1.1–1.8 billion

*Funding Cycles = October–September

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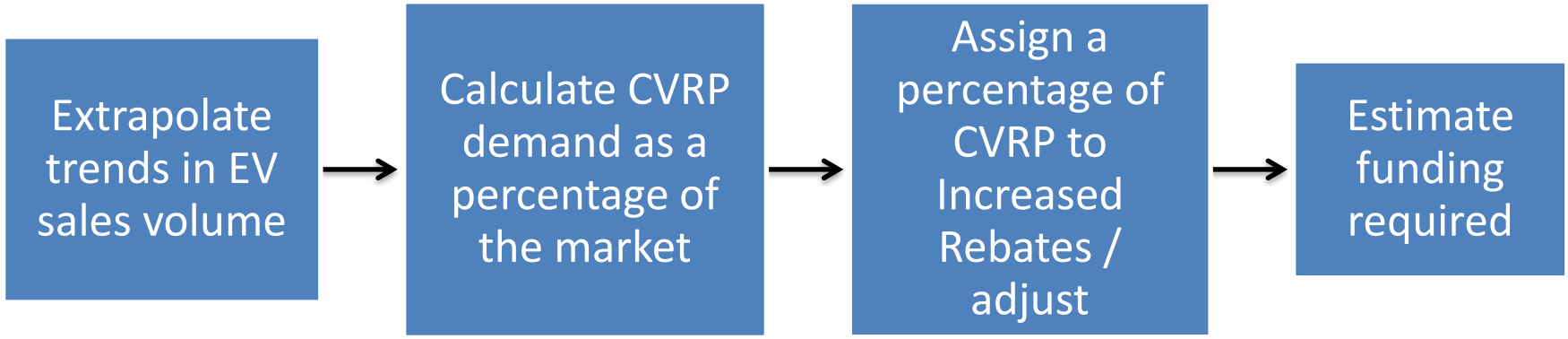
Approach: Methods

Method *"…all models are wrong; some are useful" –George Box*



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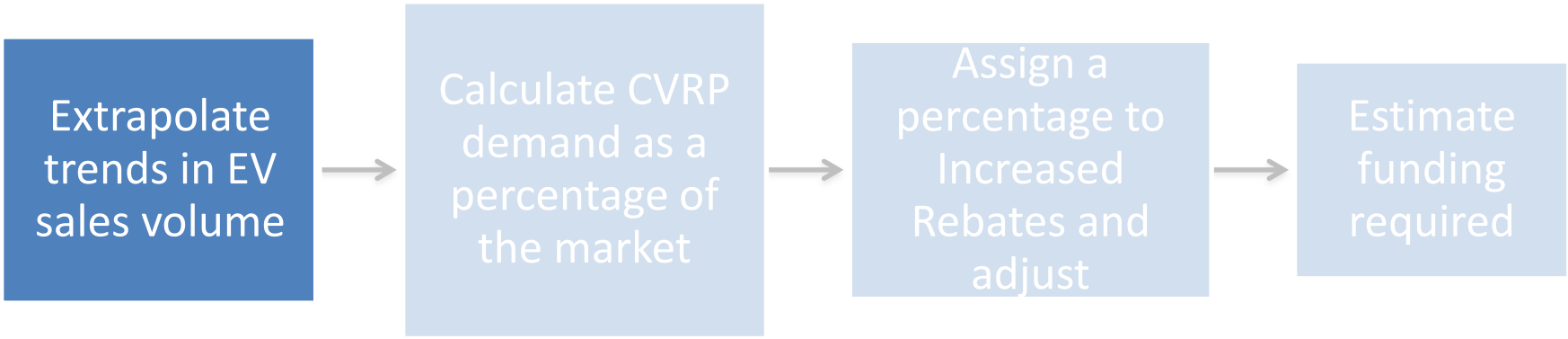

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Extrapolations

Monthly sales data

- Source: new-vehicle registrations (IHS), March 2010 – November 2018
- Vehicle categories created:
  1. Plug-in hybrid electric vehicle (PHEV)
  2. Range-extended battery electric vehicle (BEVx)*
  3. Tesla Model 3: “Medium” scenario
  4. Tesla Model S
  5. Tesla Model X
  6. Chevrolet Bolt
  7. Other battery electric vehicles (BEV)
  8. Fuel-cell electric vehicle (FCEV)

Rebate data

- Source: CVRP rebates (public dashboard), March 2010 – October 2018
- Vehicle Categories created:
  10. Zero-emission motorcycle (ZEM)
  11. Tesla Model 3: “High” scenario

* Receives a BEV rebate. See CleanVehicleRebate.org for more detail. To date = BMW i3 REx.

Extrapolation Technique

For each vehicle category (see previous slide):

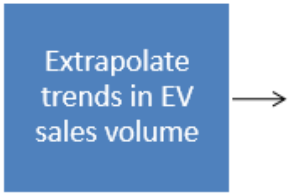
- Linear extrapolations
  (chosen over curve-fitting and ARIMA)
- Data range: "Life" of each vehicle category
  (chosen over most recent 12 months)
- Sensitivity tested (see appendix)

Exception: Tesla Model 3

Low = *Constant* at best past sales month

Medium = Extrapolated *sales* data

High = Extrapolated rebate data



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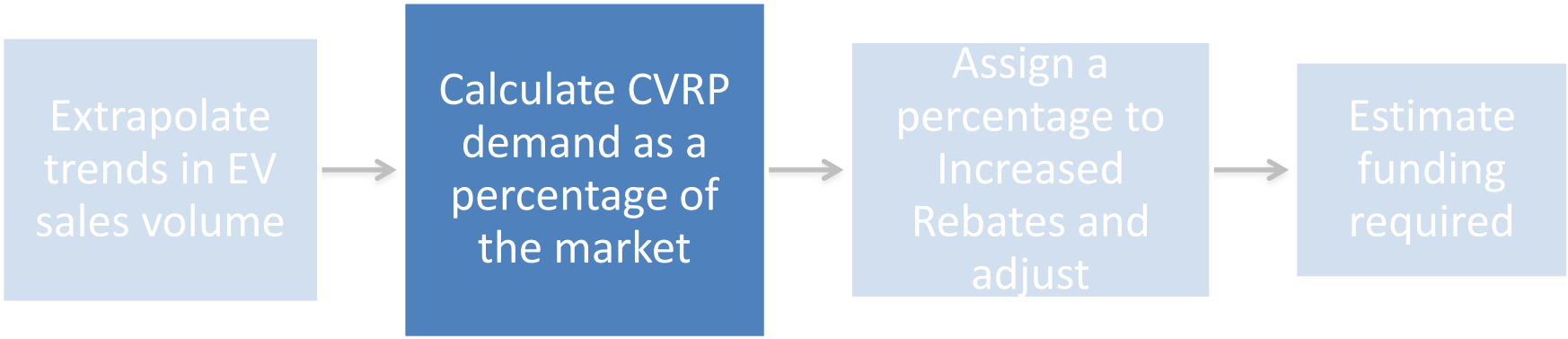

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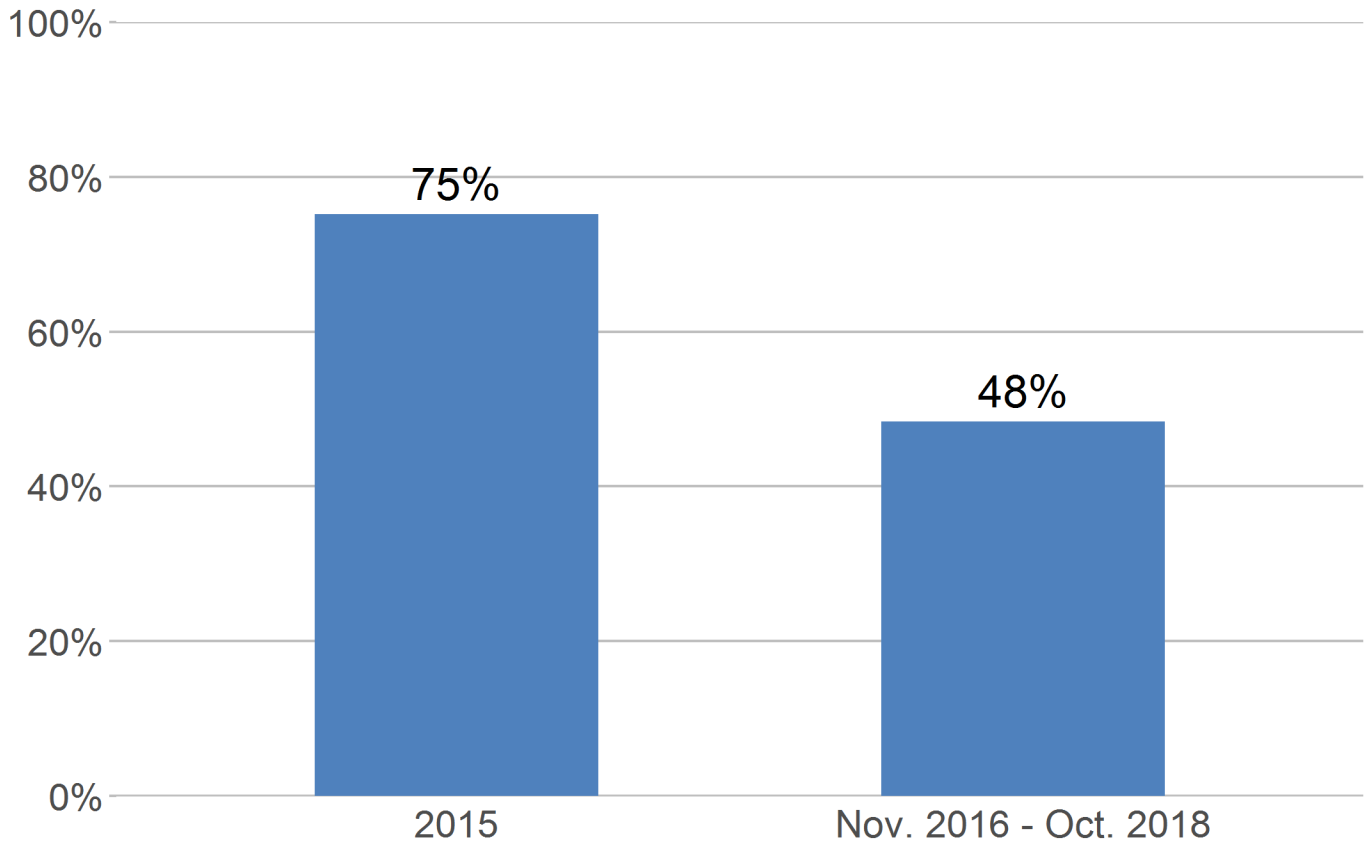
Percent of Market Rebated Before and After the Income Cap (illustrative eras)



"Before" era excludes anomalous run-up to income cap
"After" = after the most recent change in income cap
Includes all PHEV, BEVx, BEV, and FCEV rebates from CVRP

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Calculate CVRP demand as a percentage of the market

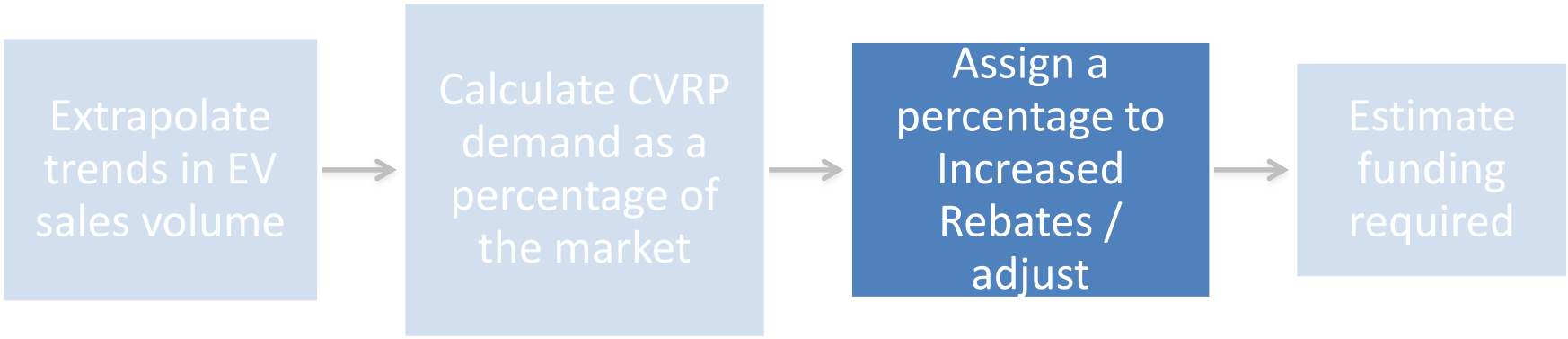
Percentage of the EV market rebated: November 2016 – October 2018

PHEV	44%
BEVx	43%
Tesla Model 3	48%
Tesla Model S	31%
Tesla Model X	30%
Chevrolet Bolt	54%
Other BEV	72%
FCEV	90%
ZEM	n.a.*

Extrapolate trends in EV sales volume → Calculate CVRP demand as a percentage of the market

* Data not available to calculate a percentage for the ZEM category; the overall BEV percentage is assumed for the ZEM category in the projections

Method *"…all models are wrong; some are useful" –George Box*



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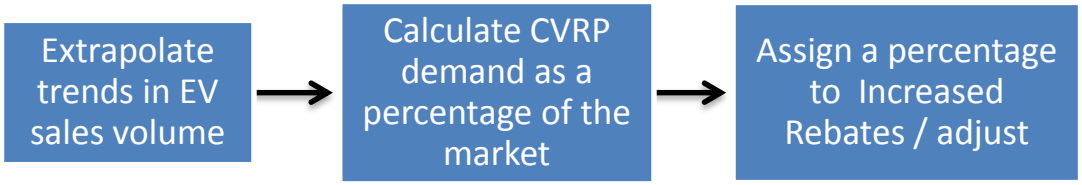
Percentage Assumed to Be Increased Rebates for Lower-Income Consumers

Participants that received an *Increased Rebate:* Nov. 2016 – Oct. 2018

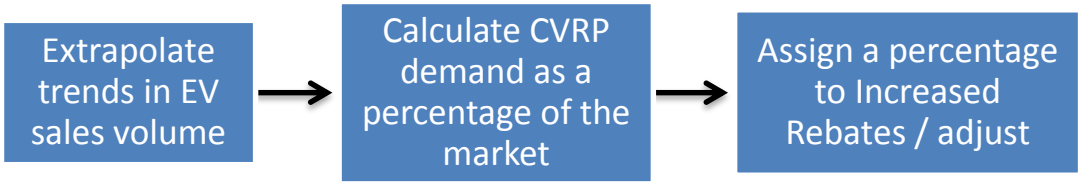
	Increased Rebate Percentage
PHEV	10.3%
BEVx	7.9%
Tesla Model 3	3.3%
Tesla Model S	2.1%
Tesla Model X	2.9%
Chevrolet Bolt	6.5%
Other BEV	12.5%
FCEV	5.5%
ZEM	*Not eligible for increased rebates*



Add *Growth* to Increased Rebate Percentage

Assumed *additions* to Increased Rebate Percentage

	Low	Middle	High
Cycle 1*	+0%	+5%	+15%
Cycle 2	+3%	+8%	+20%
Cycle 3	+5%	+10%	+25%



Funding Cycles: October–September

Increased Rebate for Public Fleets in DACs

Public Fleet Pilot Project monthly average:

January 2017 – October 2017

PHEV	~10
BEVx	0
BEV	~21
FCEV	~1
ZEM	not eligible

Extrapolate trends in EV sales volume → Calculate CVRP demand as a percentage of the market → Assign a percentage to Increased Rebates / adjust

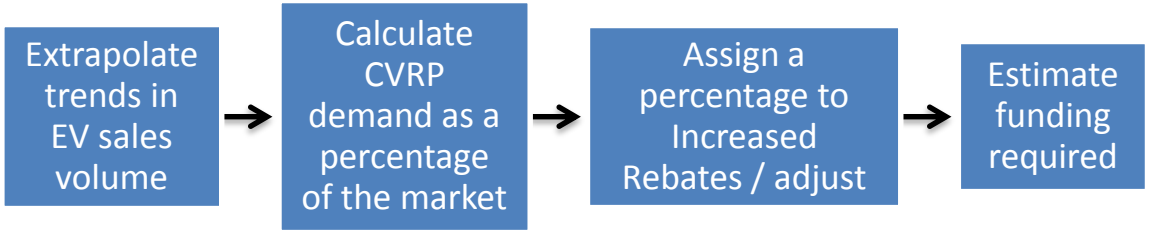
Scenarios Recap

	Low	Middle	High
Data	Registration data (IHS)	*Registration* data	***Model 3: Rebate*** data; Others: registration data
Method	***Model 3: constant*** at highest past sales month; Others: linear extrapolation	Linear extrapolation	Linear extrapolation
Assumed *additions* to historical percentage of lower-income increased rebates*	1st cycle: +0%, 2nd cycle: +3% 3rd cycle: +5%	1st cycle: +5% 2nd cycle: +8% 3rd cycle: +10%	1st cycle: +15% 2nd cycle: +20% 3rd cycle: +25%

* To account for *greater* uptake of the increased rebate compared to *current* levels, i.e., increased "induction"

Factors Not Addressed

- Disruptive future EV releases (Kona, pickups, etc.)
- Federal Tax Credit phase out (reduced after 200,000 vehicles)
  - Tesla
  - General Motors
- Rebate Now
  - Greater reservation funding requirements, uncertain rates of conversion from reservation to rebate, and uncertain market impact
  - Pilot in San Diego County
- Other incentives and supportive policies
  - e.g., ZEV regulations, LCFS POP, Clean Cars for All
- New public-fleet features
  - Access to procurement-friendly application/reservation
  - $1M DGS grant
- Choice: HOV or rebate [AB 544 (Bloom, Stats. 2017, Ch 630)]



Results

Three-Year Funding Need (as of 2/28/19)

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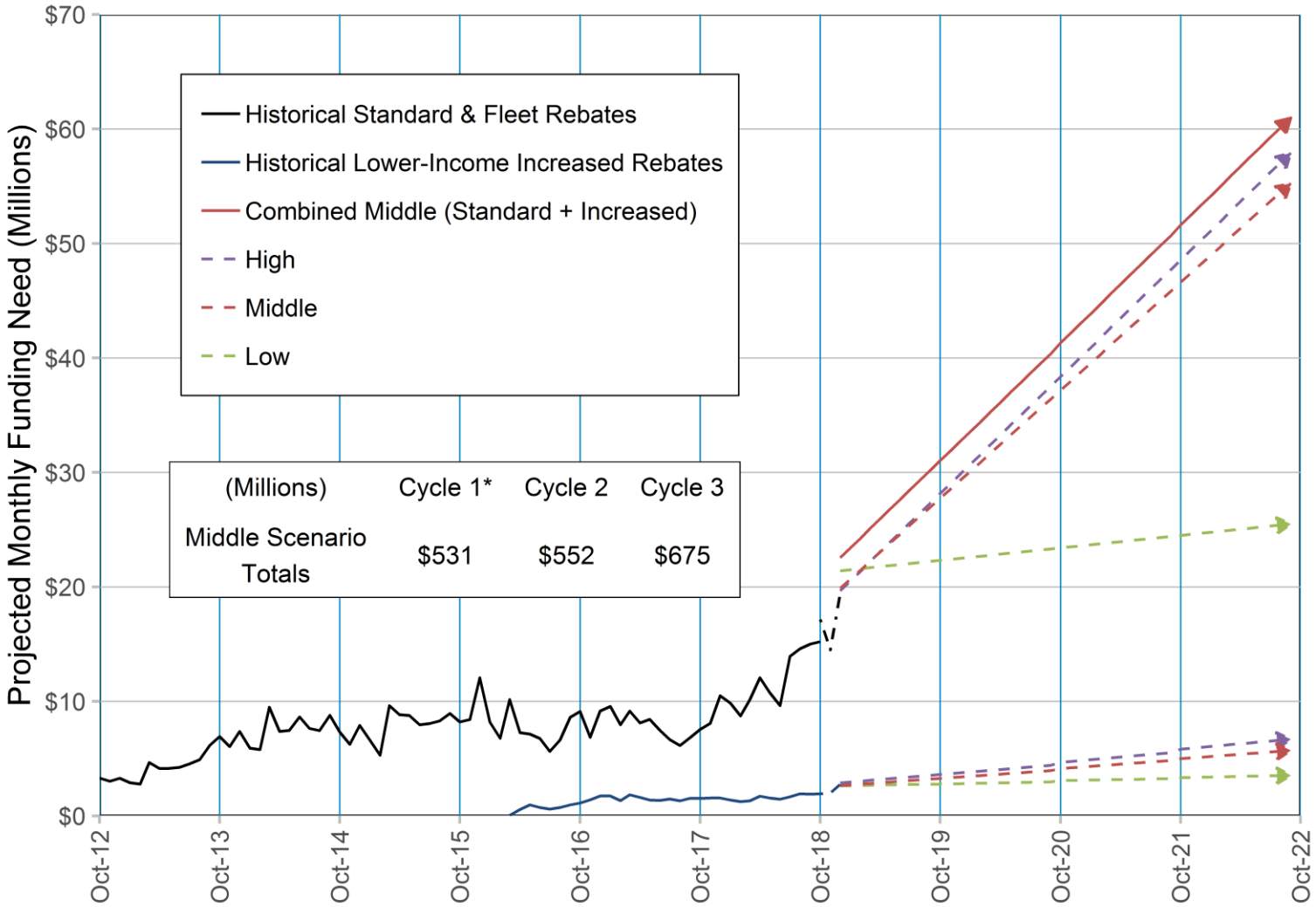
FY 2019–20	*Standard and DAC-Fleet Increased*	$273	$385	$394	108	150	153
	Lower-Income Increased Rebates	$35	$43	$48	8	10	11
	Total Need	**$308**	**$428**	**$442**	**116**	**160**	**164**
FY 2020–21	*Standard and DAC-Fleet Increased*	$287	$498	$517	114	193	200
	Lower-Income Increased Rebates	$38	$54	$61	8	12	13
	Total Need	**$325**	**$552**	**$578**	**122**	**205**	**213**
FY 2021–22	*Standard and DAC-Fleet Increased*	$300	$611	$639	120	236	246
	Lower-Income Increased Rebates	$41	$64	$75	9	14	16
	Total Need	**$341**	**$675**	**$714**	**129**	**250**	**262**
3-Year Average (Middle Scenario, *excl. shortfall*)		**$552 M**			**205,000**		
Grand Total Need thru Sep. 2022		**$1.1 B–$1.8 B**			**401,000–726,000**		

*Note: $60 M of FY 2018–19 funding was needed to fund FY 2017–18 rebates.

Results: 3-Year Funding Projections



*Includes $103 M shortfall

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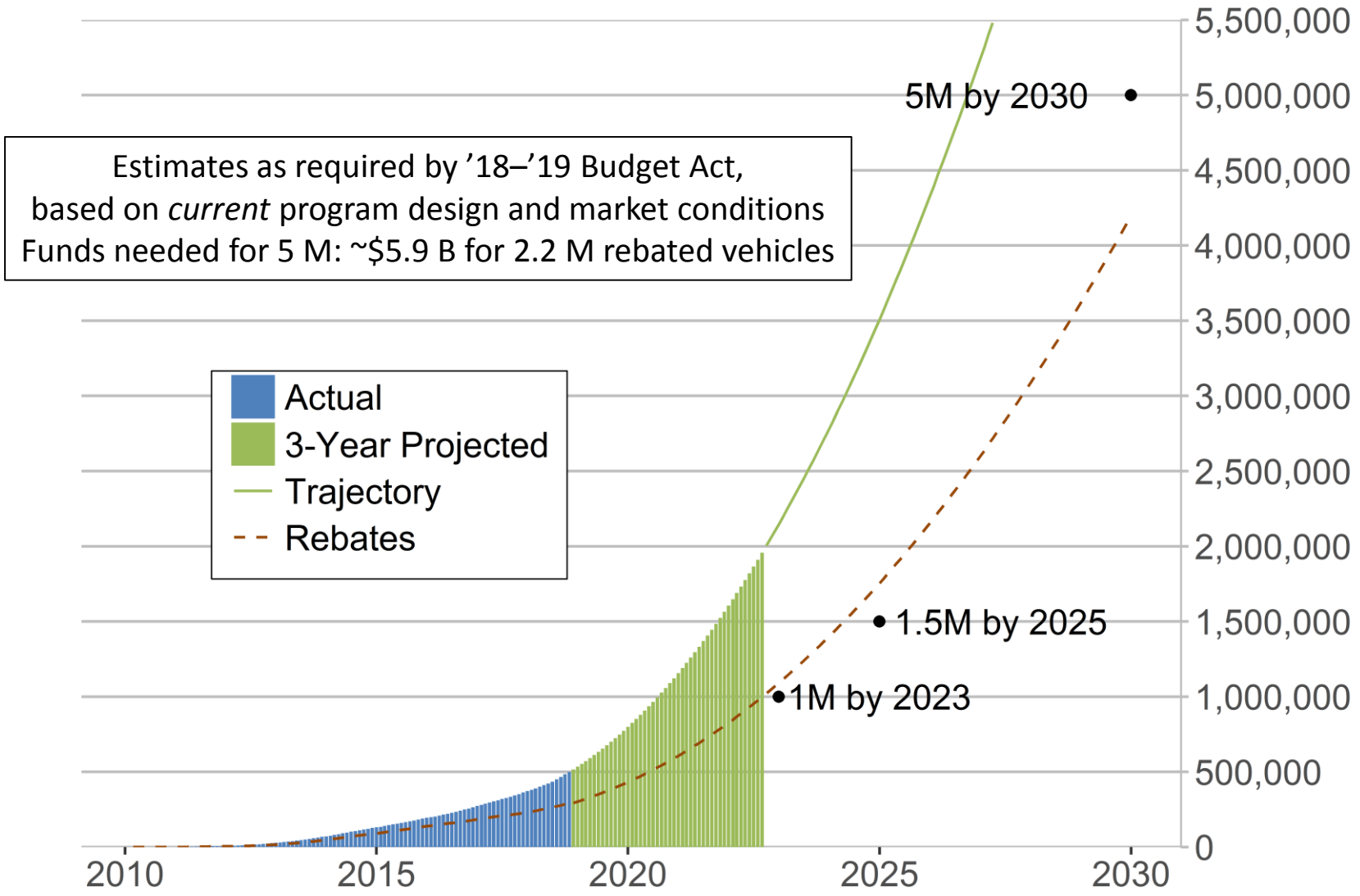
Funding Need for 5M EVs & Trajectory Relative to State Goals

Continuing the Trajectory
(caution: assumes recent trends continue “as are”)

Estimates as required by ’18–’19 Budget Act, based on *current* program design and market conditions	**Middle Scenario**	
	Funding Need	Vehicles Rebated
3-year Total	$1.8 B	701,000
1 Million	$531 M	246,000
1.5 Million	$1.2 B	489,000
5 Million	$5.9 B	2.2 M

Cumulative EV Sales Relative to State Goals: Actual, 3-Year Projected, and Current Trajectory



Includes content supplied by R.L. Polk & Co, © 2018;
Projections may underestimate PHEVs.
Does not include vehicles added to the market by lower-income increased rebates.

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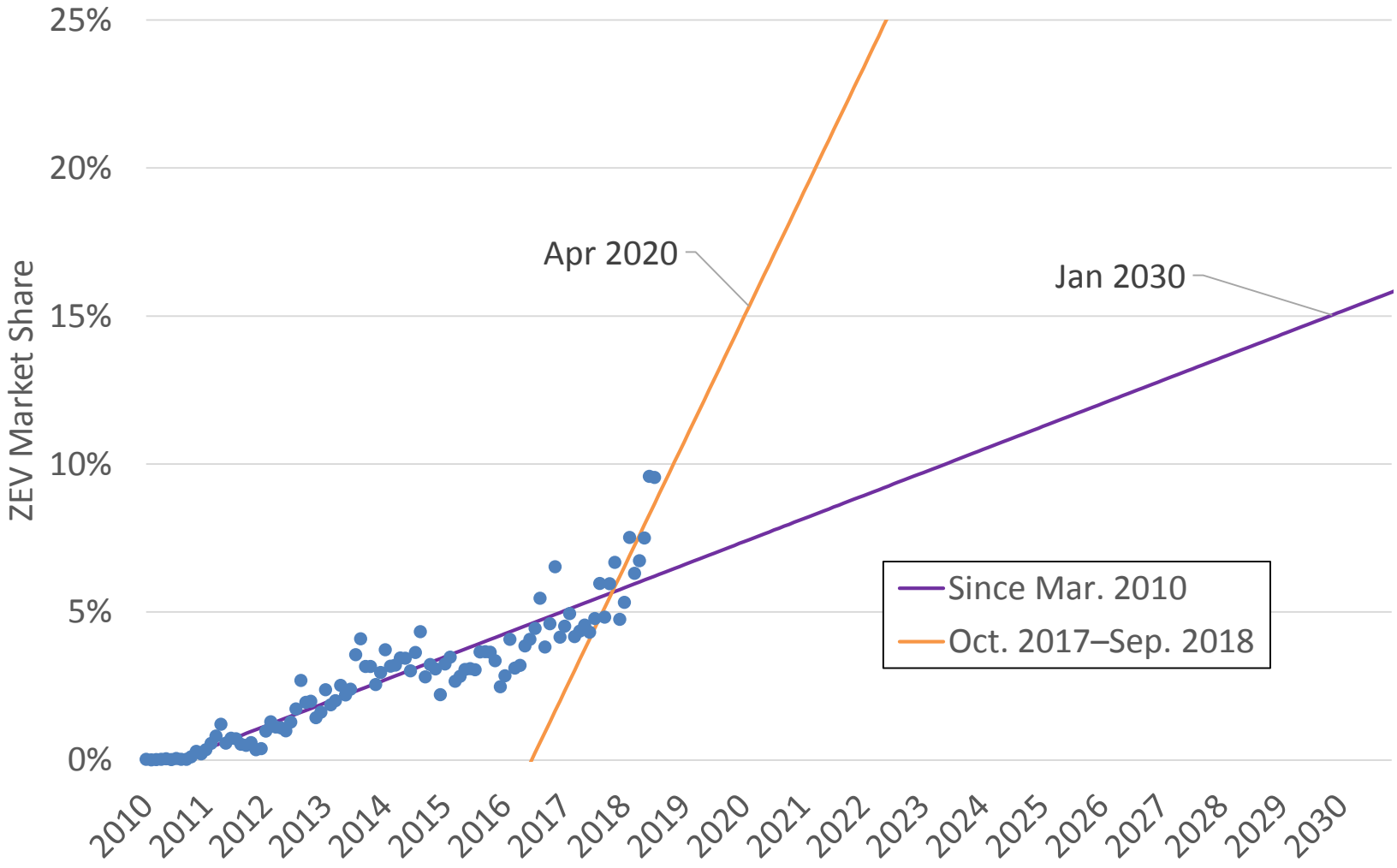
EV Market Share Extrapolation



Includes content supplied by R.L. Polk & Co, © 2018;
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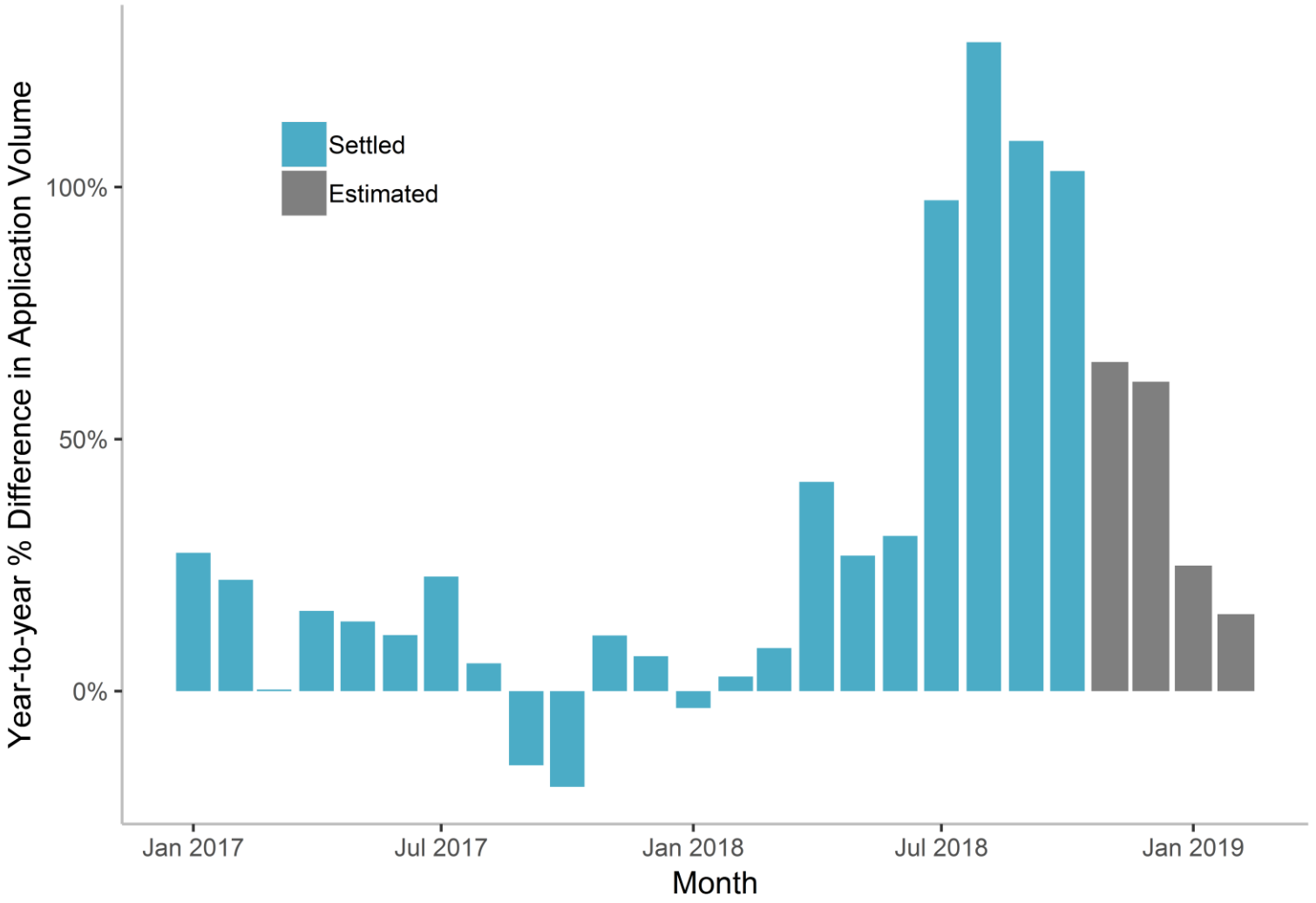
Discussion: Projections

Tesla Model 3 Extrapolations Considered

- Linear extrapolation:
  - All data (selected, = “Middle” scenario)
  - 3 months (↓)
  - 6 months (↑)
  - 9 months (↑)
  - 12 months (↑)
- Second-order polynomial:
  - All data (↑)
  - 3 months (↓)
  - 6 months (↓)
  - 9 months (↓)
  - 12 months (↑)

Is this the calm after the storm, or before the $35k Model 3 (and Kona, etc.)?



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Discussion Questions: Projections Modeling

- How best to treat:
  - Tesla Model 3 / future disruptions
    - Near term ok?
    - Long-term maturation/limits of production?
  - Lower-price long-range BEVs generally?
  - New releases?
    - Additions (evolutionary) vs. cannibalization ?
    - Market saturation?
  - Phase-out of federal tax credit?
  - Other policies/programs?
  - Other “not addressed” items of policy priority?

Program-Change Scenario Estimates

Statewide Electric Vehicle Rebates (as of Jan. 2019)

	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	$1,500	$5,000	e-miles ≥ 120 $2,000
All-Battery EVs 	$2,500	$1,500	e-miles ≥ 200 $2,000 ≥ 120 $1,500 < 120 $500	≥ 40 $1,700 ≥ 20 $1,100 < 20 $500
Plug-in Hybrid EVs 	$2,500 (i3 REx) $1,500	BEVx only: $1,500	≥ 45 $1,000 < 45 $500	
Zero-Emission Motorcycles 	$900	$450		
	e-miles ≥ 20; Consumer income cap; Increased rebates for lower-income	MSRP ≤ $50k, no fleet rebates	MSRP ≤ $50k (PHEV & BEVs), MSRP ≤ $60k (FCEVs); dealer assignment; $150 dealer incentive	MSRP > $60k = $500 max.; point-of-sale via dealer

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Levels exploring so far

- MSRP Cap (FCEV exempt)
  $60k, $50k, $40k
- EPA All-Electric Range (AER) Minimum
  >25, >30, >40, >50, >100
- Income Cap (FCEV exempt)
  Tax-filing status: $250k, $204k, $150k
- Rebate amounts
  -$500 for standard rebates, no Standard Rebates, no PHEV rebates, no Standard PHEV rebates
- Application limitations
  Limit one per person, limit three or six months to apply

Electric Vehicles by Electric Range & Base MSRP

Vehicle Make and Model	AER (EPA)	Base MSRP
BMW 530e xDrive iPerformance	14	55700
Audi A3 e-tron	16	39500
BMW 530e iPerformance	16	53400
Volvo XC60 T8	17	55300
Volvo XC90 T8	17	67000
Volvo S90 T8	21	63900
Mitsubishi Outlander PHEV	22	34595
Toyota Prius Prime	25	27350
Ford Fusion Energi	26	34595
Kia Niro Plug-in Hybrid	26	28500
Hyundai Sonata Plug-in Hybrid	28	32400
Hyundai Ioniq PHEV	29	25350
Kia Optima Plug-in Hybrid	29	35390
Chrysler Pacifica	32	39995
Honda Clarity Plug-In Hybrid	47	33400
smart Electric Fortwo Cabriolet	57	28100
smart Electric Fortwo Coupe	58	23900
FIAT 500e	84	32995
Honda Clarity Electric	89	37540
BMW i3 REx	97	48300
Kia Soul EV	111	33950
Ford Focus Electric	115	29120
Hyundai Ioniq Electric	124	30315
Volkswagen e-Golf	125	30495
BMW i3s REx	126	51500
Nissan LEAF	150	29990
BMW i3	153	44450
BMW i3s	153	47650
Tesla Model 3	215	35000
Chevrolet Bolt	238	36620
Tesla Model X	238	88000
Tesla Model S	310	85000

Sources:

MSRP:

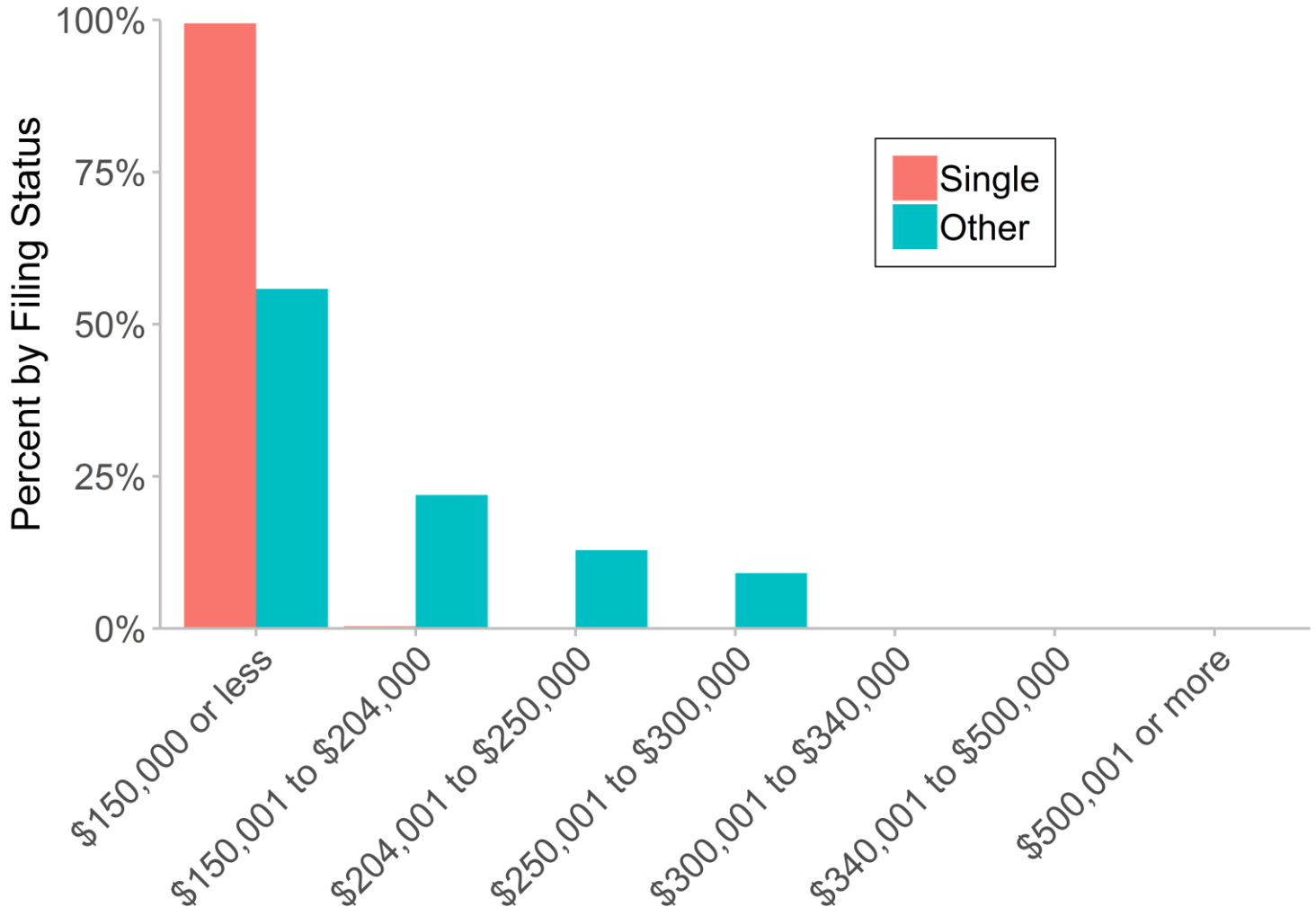
- Manufacturer websites, FuelEconomy.gov, Kelley Blue Book

EPA all-electric range:

- FuelEconomy.gov, manufacturer websites
- Most recent model year

Note: ZEMs, FCEVs, and discontinued PEVs not included.

Current Program Income Distribution



"Current Program" = since last major program change on 11/1/2016

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Program-Change Scenarios: Individual Measures

Increasing savings

#	Scenario
1	Middle (baseline)
2	Limit one per person
3	Limit three months between purchase and application
4	<$50k MSRP
5	>30-mi EPA all-electric range (AER)
6	<$40k MSRP
7	Income cap—single filers: ≤$150k, other filers: ≤$250k
8	>50-mi AER
9	>30-mi AER for PHEV/BEVx, >100-mi for others
10	>50-mi AER for PHEV/BEVx, >100-mi for others
11	Standard rebates lowered $500
12	>100-mi AER
13	Income cap—single filers: ≤$150k, other filers: ≤$204k
14	Income cap—all filers: ≤$150k

Includes FY 18–19 shortfall
assuming changes effective 1 Jan. 2020

Program-Change Scenarios: Combos

Increasing savings

#	Scenario
1	Middle (baseline)
A	<$60k MSRP; limit one per person
B	PHEV: lower-income increased rebates only, others: >100-mile AER
C	<$40k MSRP, no PHEVs, limit one
D	<$60k MSRP; inc. cap—single filers: ≤$150k, other filers: ≤$204k
E	<$40k MSRP; no PHEVs; limit one; inc. cap—single filers: ≤$150k, other filers: ≤$204k
F	<$40k MSRP; >100-mi AER (all); limit one per person; st. reb. -$500
G	<$40k MSRP; >50-mi AER; inc. cap—all: ≤$150k
H	<$40k MSRP; >50-mi AER; inc. cap—all: ≤$150k; st. reb. -$500

Includes FY 18–19 shortfall
assuming changes effective 1 Jan. 2020

Program-Change Scenarios: Aggressive Combos

Increasing savings →

#	Scenario
1	Middle (baseline)
L1	Limit one; three months to apply; $<40k MSRP; inc. cap—single filers: ≤$150k, other filers: ≤$204k; PHEVs >50-mile AER, others: >100-mile AER
L2	Limit one; three months to apply; $<40k MSRP; LMI-only program (300% FPL); PHEVs >50-mile AER, others: >100-mile AER
L3	Limit one; three months to apply; $<40k MSRP; LMI-only program (300% FPL); >25-mile AER

Includes FY 18–19 shortfall
assuming changes effective 1 Jan. 2020

Program Change Methodology

- Historical percent of program that would have been excluded under new program design calculated by rebate type (standard/fleet and lower-income-increased rebates)
- Percent excluded removed from projected rebates
- Rebate essentiality calculated for excluded participants
- Rebate essential percentages used to calculate market losses based on future excluded rebates

Not addressed:

- Market losses due to lower rebate amounts in some scenarios
- Market-loss rebound effect due to increased resources subsequently available due to program changes for remaining, more-rebate-essential consumers

Data

- Sources:
  - CVRP rebates
    - November 2016 – October 2018
- Model Details:
  - MSRP:
    - Manufacturer websites, FuelEconomy.gov, Kelley Blue Book
  - EPA all-electric range:
    - FuelEconomy.gov, manufacturer websites
    - Most recent model year

Program-Change Scenarios: Individual Measures

#	Scenario	Savings (% of Middle)	First-cycle cost (incl. shortfall)
1	Middle (baseline)	0%	$531 M
2	Limit one per person	2%	$520 M
3	Limit three months between purchase and application	3%	$515 M
4	<$50k MSRP	4%	$512 M
5	>30-mi EPA all-electric range (AER)	4%	$510 M
6	<$40k MSRP	4%	$507 M
7	Income cap—single filers: ≤$150k, other filers: ≤$250k	5%	$505 M
8	>50-mi AER	5%	$506 M
9	>30-mi AER for PHEV/BEVx, >100-mi for others	7%	$494 M
10	>50-mi AER for PHEV/BEVx, >100-mi for others	8%	$489 M
11	Standard rebates lowered $500	10%	$480 M
12	>100-mi AER	11%	$474 M
13	Income cap—single filers: ≤$150k, other filers: ≤$204k	12%	$469 M
14	Income cap—all filers: ≤$150k	22%	$414 M

Includes FY 18–19 shortfall
assuming changes effective 1 Jan. 2020

Program-Change Scenarios: Combos

#	Scenario	Savings (% of Middle)	First-cycle cost
1	Middle (baseline)	0%	$531 M
A	<$60k MSRP; limit one per person	5%	$503 M
B	PHEV: lower-income increased rebates only, others: >100-mile AER	10%	$478 M
C	<$40k MSRP, no PHEVs, limit one	13%	$462 M
D	<$60k MSRP; inc. cap—single filers: ≤$150k, other filers: ≤$204k	14%	$456 M
E	<$40k MSRP; no PHEVs; limit one; inc. cap—single filers: ≤$150k, other filers: ≤$204k	23%	$411 M
F	<$40k MSRP; >100-mi AER (all); limit one per person; st. reb. -$500	24%	$406 M
G	<$40k MSRP; >50-mi AER; inc. cap—all: ≤$150k	28%	$381 M
H	<$40k MSRP; >50-mi AER; inc. cap—all: ≤$150k; st. reb. -$500	35%	$346 M

Preliminary, subject to verification

Includes FY 18–19 shortfall
assuming changes effective 1 Jan. 2020

Program-Change Scenarios: Aggressive Combos

#	Scenario	Savings (% of Middle)	First-cycle cost
1	Middle (baseline)	0%	$531 M
L1	Limit one; three months to apply; $<40k MSRP; inc. cap—single filers: ≤$150k, other filers: ≤$204k; PHEVs >50-mile AER, others: >100-mile AER	15%	$449 M
L2	Limit one; three months to apply; $<40k MSRP; LMI-only program (300% FPL); PHEVs >50-mile AER, others: >100-mile AER	59%	$218 M
L3	Limit one; three months to apply; $<40k MSRP; LMI-only program (300% FPL); >25-mile AER	58%	$225 M

Preliminary, subject to verification

Includes FY 18–19 shortfall
assuming changes effective 1 Jan. 2020

Program Change Scenarios (assuming effective 1 Jan. 2020)

#	Scenario	% of Middle	First-cycle cost	% of first-cycl. veh. lost	$ saved per vehicle lost
1	Middle (baseline)	100%	$531 M	NA	NA
2	>20-mi e-range	99%	$527 M	0%	$3,141
3	Limit 6 months between purchase and application	99%	$526 M	0%	$3,999
4	Limit one per person	98%	$520 M	1%	$3,834
5	<$60k MSRP	97%	$513 M	1%	$4,232
6	<$50k MSRP	96%	$512 M	1%	$4,027
7	>30-mi e-range	96%	$510 M	2%	$3,095
8	>40-mi e-range	96%	$509 M	2%	$3,043
9	<$40k MSRP	96%	$507 M	2%	$3,955
10	Income cap—single filers: ≤$150k, other filers: ≤$250k	95%	$505 M	2%	$3,843
11	<$60k MSRP; limit one per person	95%	$503 M	2%	$4,188
12	>30-mi e-range for PHEV/BEVx, >100-mi for others	93%	$494 M	3%	$3,491
13	>50-mi e-range for PHEV/BEVx, >100-mi for others	92%	$489 M	4%	$3,341
14	Standard rebates lowered $500	90%	$480 M	NA	NA
15	PHEV: lower-income increased rebates only, others: >100-mile e-range	90%	$478 M	NA	NA

Includes FY 18–19 shortfall

Program Change Scenarios (assuming effective 1 Jan.)

#	Scenario	% of Middle	First-cycle cost	% of first-cycl. veh. lost	$ saved per vehicle lost
16	>100-mi e-range	89%	$474 M	5%	$3,281
17	Income cap—single filers: ≤$150k, other filers: ≤$204k	88%	$469 M	5%	$3,749
18	<$40k MSRP, no PHEVs, limit one	87%	$462 M	6%	$3,518
19	<$60k MSRP; inc. cap—single filers: ≤$150k, other filers: ≤$204k	86%	$456 M	6%	$3,845
20	Income cap—all filers: ≤$150k	78%	$414 M	10%	$3,732
21	<$40k MSRP; no PHEVs; limit one; inc. cap—single filers: ≤$150k, other filers: ≤$204k	77%	$411 M	10%	$3,729
22	<$40k MSRP; >50-e-mi; inc. cap—all: ≤$150k	72%	$381 M	12%	$3,695
23	<$40k MSRP; >50-e-mi; inc. cap—all: ≤$150k; st. reb. -$500	65%	$346 M	NA	NA

Preliminary, subject to verification

Includes FY 18–19 shortfall

Program-Change Scenarios: Combos

#	Scenario	Savings (% of Middle)	First-cycle cost	% of first-cycl. veh. lost	$ saved per vehicle lost
A	<$60k MSRP; limit one per person	5%	$503 M	2%	$4,188
B	PHEV: lower-income increased rebates only, others: >100-mile AER	10%	$478 M	NA	NA
C	<$40k MSRP, no PHEVs, limit one	13%	$462 M	6%	$3,518
D	<$60k MSRP; inc. cap—single filers: ≤$150k, other filers: ≤$204k	14%	$456 M	6%	$3,845
E	<$40k MSRP; no PHEVs; limit one; inc. cap—single filers: ≤$150k, other filers: ≤$204k	23%	$411 M	10%	$3,729
F	<$40k MSRP; >100-mi AER (all); limit one per person; st. reb. -$500	24%	$406 M	NA	NA
G	<$40k MSRP; >50-mi AER; inc. cap—all: ≤$150k	28%	$381 M	12%	$3,695
H	<$40k MSRP; >50-mi AER; inc. cap—all: ≤$150k; st. reb. -$500	35%	$346 M	NA	NA

Preliminary, subject to verification

Includes FY 18–19 shortfall
assuming changes effective 1 Jan. 2020

Bridge Funding

- Bridge Funding = Funding needed to get to January 1st, 2020 program change
  - = FY 2018–19 shortfall + 3 months FY 19–20
  - = $103 M + $96 M = $198 M

Rounding makes sum appear inaccurate

Discussion:
Funding Needs and Program Changes

CARB/Stakeholder Discussion Agenda

- Current FY budget (and shortfall)
- Next FY budget and Bridge Funding to keep program running to January 1st, 2020
- Plan for future changes

Appendix

Caveats

- Data include
  - Lease-only vehicles
    - Honda Clarity Fuel Cell
    - Honda Clarity Electric
  - Fleet-only vehicles
    - Bolloré Blue Car
  - Out-of-production vehicle models
    - Cadillac ELR
    - Chevrolet Spark EV
    - Ford C-MAX Energi
    - Hyundai Tucson Fuel Cell (also lease only)
    - Mercedes-Benz B250e
    - Mercedes-Benz S550e
    - Mitsubishi i-MiEV
    - Toyota Prius Plug-in Hybrid (< 2016 model year)
    - Victory Empulse TT
- Market-loss estimates utilize rebate essentiality data from the time of application and excludes non-responses, which may overestimate market impacts

Sensitivity Testing (version: February 2018)

% of Middle Scenario	Name	Scenario	First-cycle total need
138%	Curve fit	All categories: polynomial growth, 2nd order	$734 M
123%	Main-streaming	Percent of market rebated +10 points	$655 M
120%	Increased access	LMI increased rebates = 25% of total for each eligible vehicle type	$636 M
103%	High	Tesla Model 3 extrapolated from rebate data	$548 M
100%	**Middle**	**Middle (baseline)**	**$531 M**
95%	Recent trends	All categories: linear growth based on latest 12 months	$506 M
89%	Not-as-recent trends	All categories: linear growth based on latest 36 months	$473 M
77%	Left behind	Percent of market rebated -10 points	$407 M
74%	Low	Tesla Model 3 based on high sales month	$391 M

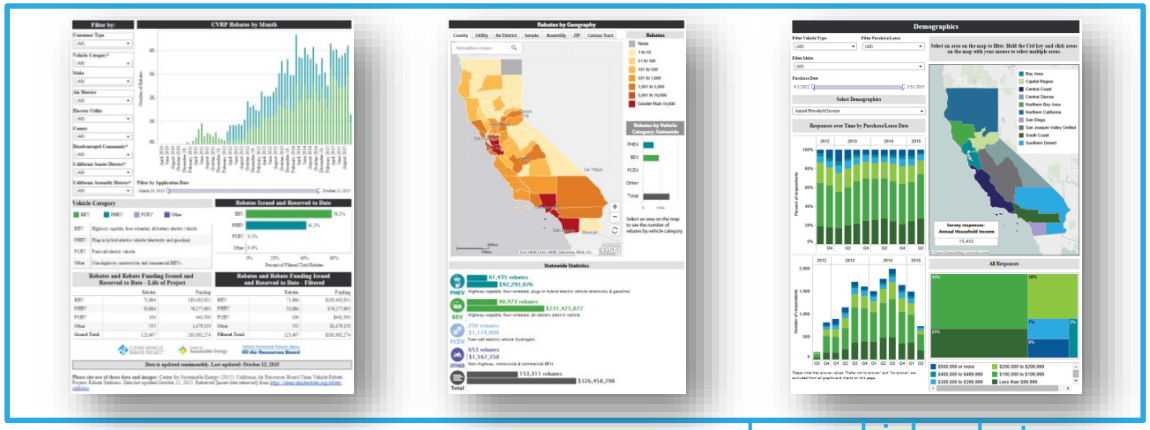
EV Incentive Programs: Previous Rebate Designs

	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 for lower-income households	MSRP ≥ $60k = $1,000 max., no fleet rebates	MSRP ≤ $60k only; dealer assignment; $150 dealer incentive ($300 previous)	MSRP > $60k = $500 max.; point-of-sale via dealer

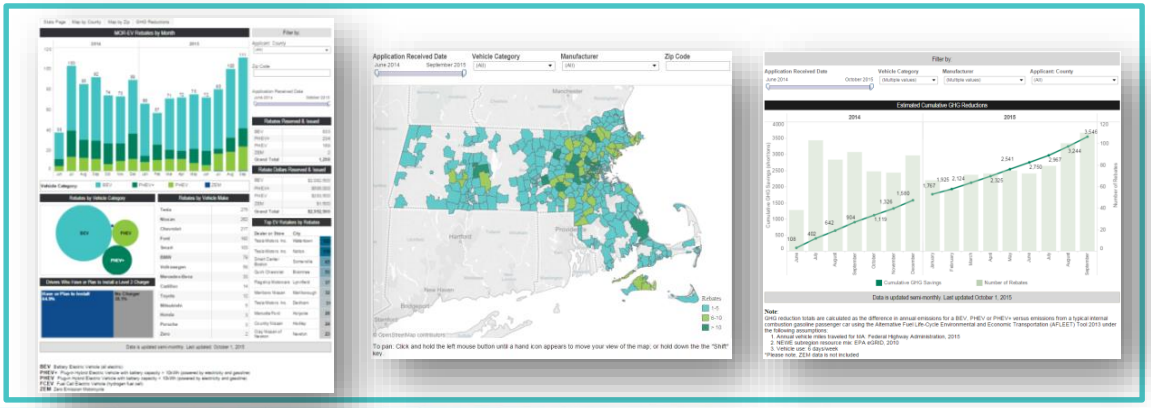
Center for Sustainable Energy™

Public dashboards and data facilitate informed action

- >285,000 EVs and consumers have received >$630 M in rebates
- >19,000 survey responses online, statistically represent >91,000 consumers
- Reports, presentations, and analysis growing



cleanvehiclerebate.org



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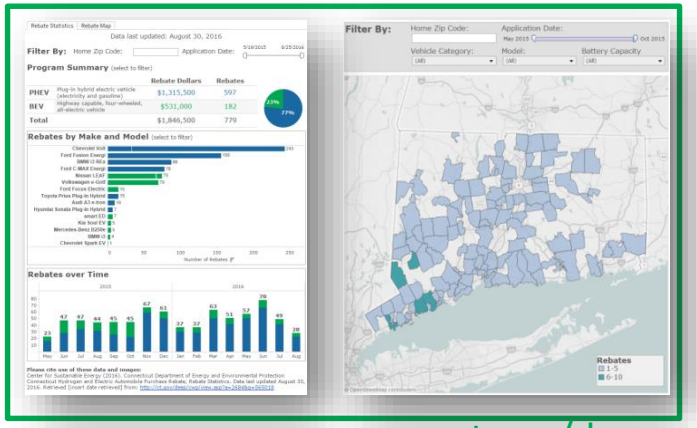

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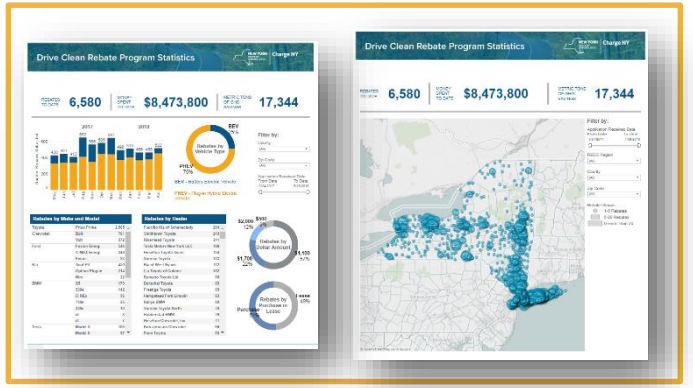

nyserda.ny.gov/All-Programs/Programs/Drive-Clean-Rebate

Center for Sustainable Energy™

brett.williams@energycenter.org
john.anderson@energycenter.org

CleanVehicleRebate.org

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