DOCKETED

Docket Number:	17-IEPR-03
Project Title:	Electricity and Natural Gas Demand Forecast
TN #:	221979
Document Title:	Presentation - Role of SB 350 Energy Efficiency Savings in 2017 IEPR AAEE Scenarios
Description:	Role of SB 350 Energy Efficiency Savings in 2017 IEPR AAEE Scenarios by Michael R Jaske
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Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	12/14/2017 3:36:53 PM
Docketed Date:	12/14/2017

Role of SB 350 Energy Efficiency Savings in *2017 IEPR* AAEE Scenarios

2017 IEPR Workshop

December 15, 2017

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Segments of Presentation

- SB 350 Background
- Adapting SB 350 Projections
- Supplemental Results
- Composite AAEE Scenarios

SB 350 BACKGROUND

Background

- In past IEPR cycles, AAEE developed solely from CPUC-funded potential and goals studies for IOUs.
- In this cycle, study by Navigant Consulting for the CPUC included no analyses of ratchets of T24 building codes further than 2019.
- The SB 350 effort did address future T24 building codes and other programs.

Basic Question

- How should the analyses undertaken in the SB 350 energy efficiency target setting process be used in developing AAEE projections for use in electricity procurement, integrated resource planning, and transmission studies?

SB 350 Projections

- SB 350 requires a doubling of projected AAEE electricity and natural gas savings in the 2015 CEDU report and comparable savings from a 2013 POU study.
- Programs evaluated:
  - Future ratchets of T24, T20 and federal standards
  - PACE, Prop 39, AB 802 benchmarking, asset rating
  - GGRF programs, and numerous other programs with smaller scale savings

Divergent Purposes

- SB 350 EE projections scale up existing and foreseeable EE programs to meet the SB 350 doubling goal by 2030.
- AAEE projections subtract savings incremental to a baseline demand forecast resulting in a managed demand forecast.

Interagency Agreements

- CEC, CPUC and CAISO have agreed on the use of various managed demand forecasts (baseline less specific scenarios of AAEE savings) for particular electricity studies.
- SB 350 EE goal setting language has caused the CPUC and CARB to propose various interim projections to be used in their proceedings (1.5x AAEE, 2x AAEE, etc.).
- Initial SB 350 sub-target projections require rethinking these agreements.

The Challenge for SB 350 EE

- Many of the program-specific analyses are based on “what if” assumptions rather than firm program plans satisfying the “reasonably expected to occur” criteria.
- Many program-specific analyses develop 2029 savings estimates and then interpolate to get intermediate year savings values.
- Despite attempts to make adjustments, double counting is present in SB 350 values, especially with the baseline demand forecast.

Challenge, cont'd

- NORESCO projections have limitations from a procurement planning perspective:
  - No peak demand savings projections were developed
  - Only the statewide level, not geographic regions used in AAEE projections
  - Some programs have no specific end-use savings, challenging to prepare peak and 8760 hourly savings.

ADAPTING SB 350 PROJECTIONS

Approach

- Track 1
  - Augment traditional AAEE scenarios with future T24 and T20 savings estimates
  - Adjust these revised estimates for uncertainty
- Track 2
  - Create a new scenario using 2018 P&G results and scaled down SB 350 projections
  - Create a methodology to develop peak savings and other necessary granularity
- Track 3
  - Use SB 350 target projections for POUs

AAEE Scenario Design/Analyses

		Demand Case	High	Mid	Mid	Mid	Low	Mid
	Modeling Approach	Savings Scenario	Low (Scenario 1)	Low (Scenario 2)	Mid (Scenario 3)	High (Scenario 4)	High (Scenario 5)	High Plus (Scenario 6)
		Scenario Uses	define highest demand case	ISO uses for local capacity studies and near-term local RA requirements	ISO uses for bulk transmission studies and near-term system RA requirements; most commonly used scenario for general planning studies	available if higher energy efficiency is desired	define lowest demand case	Replacement for CPUC 1.5xEE and CARB 2.5xEE assumptions in planning studies
Global Inputs		Building Stock	High Demand Case	Mid Demand Case	Mid Demand Case	Mid Demand Case	Low Demand Case	Mid Demand Case
		Retail Prices	High Demand Case	Mid Demand Case	Mid Demand Case	Mid Demand Case	Low Demand Case	Mid Demand Case
Equipment	Post-process Navigant P&G results to eliminate duplication with baseline fcst	Res/Com ETs	50% of model Results	50% of model Results	100% of model results	150% of model results	150% of model results	150% of model results
		AIMS ETs	Reference	Reference	Reference	Reference	Reference	Aggressive
		Incentive Level	Reference	Reference	Reference	Reference	Reference	Aggressive
		C/E Threshold	1	1	0.85	0.75	0.75	0.75
		ET C/E Threshold	0.85	0.85	0.5	0.4	0.4	0.4
		Cost-Effectiveness Test	mTRC(GHG Adder #1)	mTRC(GHG Adder #1)	mTRC(GHG Adder #1)	mTRC(GHG Adder #1)	mTRC(GHG Adder #1)	PAC
		Marketing Effect	Reference	Reference	Reference	Aggressive	Aggressive	Aggressive
		Financing	Reference	Reference	Reference	Aggressive	Aggressive	Aggressive
BROs	same as above	BROs Interventions	Reference	Reference	Reference	Reference	Reference	Aggressive
Low Income	same as above	Low Income	First Time + 50% Retreatment	First Time + 50% Retreatment	First Time + Retreatment	First Time + Retreatment	First Time + Retreatment	First Time + 150% Retreatment
Codes and Standards	Use Navigant C&S model	Compliance Reduction	20% Compliance Rate Reduction	20% Compliance Rate Reduction	No Compliance Reduction	No Compliance Reduction	No Compliance Reduction	No Compliance Reduction
		Standards Compliance	No Compliance Enhancements	No Compliance Enhancements	No Compliance Enhancements	Compliance Enhancements	Compliance Enhancements	Compliance Enhancements
		Title 24	No additional Codes	2019 T24 NC (R/NR) + R A&A	2019 T24 NC (R/NR) + R A&A	2019 T24 NC (R/NR) + R A&A	2019 T24 NC (R/NR) + R A&A	2019 T24 NC (R/NR) + R A&A
		Title 20	2018 T20	2018 T20	2018-2024 T20	2018-2024 T20	2018-2024 T20	2018-2024 T20
		Federal Standards	On-the-books	On-the-books	On-the-books	On-the-books	On-the-books	On-the-books
	Extract Results from Noresco Modeling	Compliance Reduction			Compliance Rate Reduction	Compliance Rate Reduction	Compliance Rate Reduction	Compliance Rate Reduction
		Title 24			2019 T24 NR A&A	2019 T24 NR A&A plus T24 NC ratchets	2019 T24 NR A&A plus T24 NC ratchets	2019 T24 NR A&A plus T24 NC ratchets
		Title 20				SB 350 T20 < 2025 start	SB 350 T20 < 2025 start	SB 350 T20 scaled down
		Federal Standards				SB 350 Fed < 2025 start	SB 350 Fed < 2025 start	SB 350 Fed scaled down
Addnl SB 350 Programs	Scale and Extend Noresco Analyses of SB 350 Programs Using Energy Scaling Factor Approach	Savings from additional SB 350 programs that are not utility programs or standards that are considered likely	Prop 39	Prop 39	Prop 39	Prop 39	Prop 39	Prop 39, Local Government Ordinances, Local Government Challenge, GGRF: Low Income and GGRF: Water-Energy Grant, DGS Energy Retrofits, ECAA, PACE, Benchmarking, and BROs

Approach – Track 1

- Review Navigant 2018 P&G results and NORESCO SB 350 more intensively
- Modify adjustments NORESCO made for double counting
- Separate some NORESCO projections into specific ratchets of T24 codes or T20 standards
- Apply the same uncertainty adjustments Navigant used for the 2018 P&G study

Approach – Track 2

- Develop method to review each program and create energy scaling factor to scale down savings and disaggregate to utility, sector, and use category
- Create peak demand savings based on energy at the sector/use-category level and sum up pieces
- Augment traditional AAEE scenarios
- Create a new scenario that consists of CPUC Program Administrator Cost results augmented by scaled down SB 350 program projections

SB 350 Program Review

- Evaluate each program using three criteria:
  - Program Scalability Likelihood
  - Potential for Double Counting
  - Year-Specific Savings Pattern Credibility
- Create Energy Scaling Factor based on judgment that would reduce published SB 350 savings projections

Adjusted Standards Results (GWh)

		SB 350 Projections					Energy	AAEE Supplement		
Program	Bldg Sector(s)	2016	2017	2018	2025	2029	Scaling Factor	2017	2025	2029
2016 & 2019 T24 ratchets	Res, new	0	0	0	0	0	0.68	0	0	0
T24 - 2019 ratchet	NR, A&A	0	0	0	1074	1790	0.68	0	730	1217
T24 - 2022, 2025, 2028 ratchets	Res, A&A	0	102	195	681	935	0.68	69	463	636
T24 - 2022, 2025, 2028 ratchets	NR, new	0	0	0	78	452	0.68	0	53	307
T24 - 2022, 2025, 2028 ratchets	NR, A&A	0	0	0	430	1360	0.68	0	292	925
Future T20 incr. to 2018 P&G	Res, NR	0	0	0	1128	3641	0.632	0	713	2301
Fed. Appl. Incr. to 2018 P&G	Res, NR	0	0	0	648	4595	0.632	0	410	2904
Future T20 < 2025	Res, NR	0	0	0	1128	3113	0.632	0	713	1967
Fed Appliances < 2025	Res, NR	0	0	0	54	162	0.632	0	34	102

Adjusted Program Results (GWh)

		SB 350 Projections				AAEE Supplement	
Program	Bldg Sector(s)	2016	2017	2025	Scaling Factor	2017	2025
Local Government Ordinances	RES, NR	1	3	14	0.5	1	6
Air Quality Districts	RES, NR	0	11	191	0	0	0
Local Government Challenge	RES, NR	0	0	22	0.25	0	5
Proposition 39	NR	299	448	1210	0.5	75	456
GGRF: Low Income Weather	RES	89	133	459	0.25	11	93
GGRF: Water-Energy Grant	RES, NR	54	82	282	0.5	14	114
DGS Energy Savings	NR	8	13	46	1	4	38
ECAA	RES, NR	0	0	7	0.75	0	5
PACE	RES, NR	1063	1594	5509	0.3	159	1334
Electrification	RES, NR	0	0	-314	0	0	0
Benchmarking	RES, NR	0	0	1464	0.25	0	366
BRO's	RES, NR	39	47	234	0.25	2	49
Energy Asset Rating	RES, NR	0	0	560	0	0	0
Smart Meter and Controls	RES, NR	0	0	19	0	0	0
Industrial	NR	20	35	14	0	0	0
Agricultural	NR	13	23	62	0	0	0
Rev. Prop 39 (funding tailoff)	NR	299	448	581	1	149	282

Track 3 - POU Projections

- POUs submitted 2018 to 2027 energy and peak EE savings in March 2017
- Energy Commission reviewed them as part of the SB 350 target setting process, adjusting:
  - Remove codes and standards savings (if any)
  - Select net savings (if gross submitted)
  - Augment with 2015-2017 savings estimates and extrapolate to 2029
- Use SB 350 POU savings targets for AAEE

POU Projections, cont'd

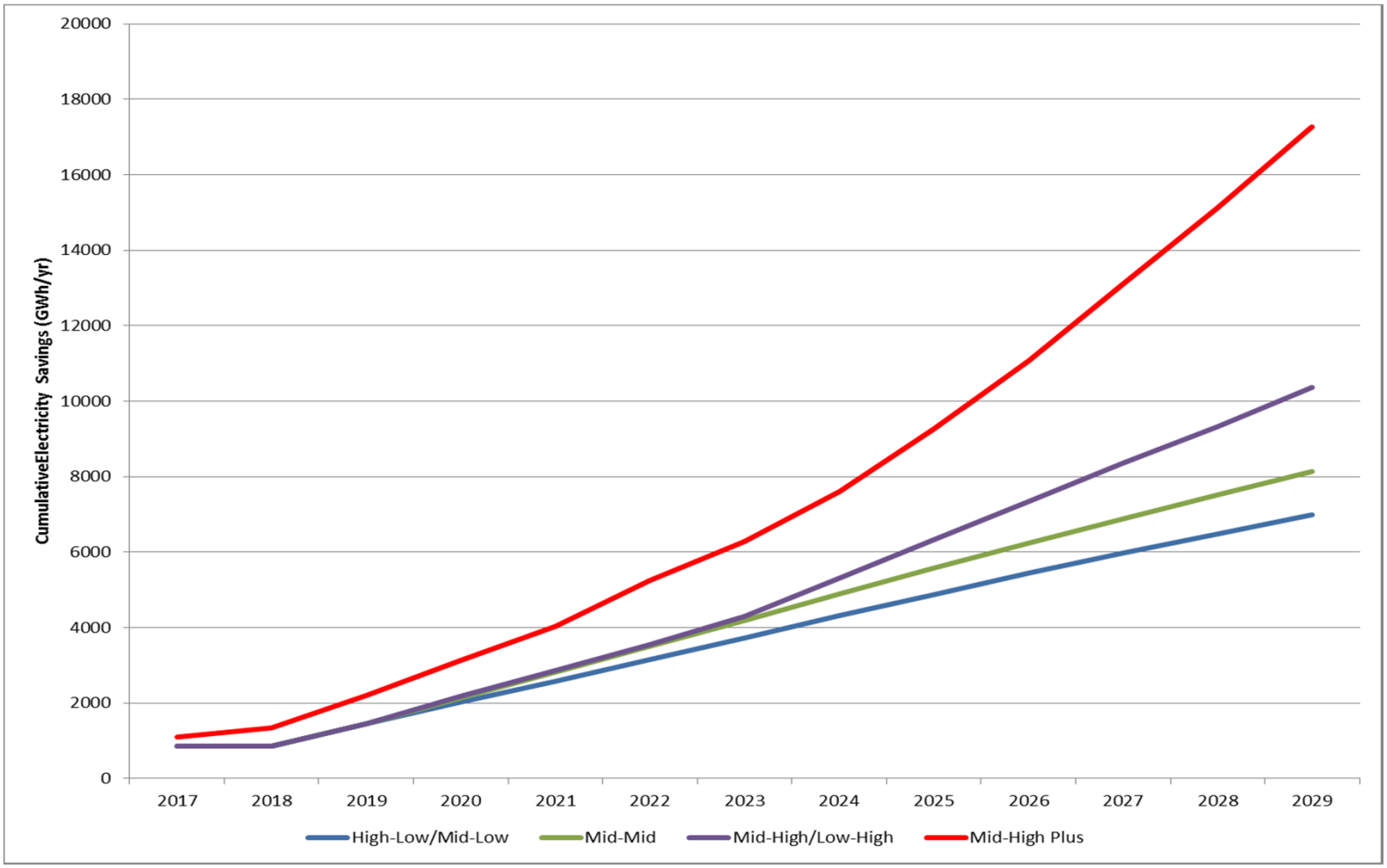
- Projected savings developed for four areas:
  - LADWP, SMUD, POU-ISO-N, POU-ISO-S
- Two remaining components are not yet complete:
  - Further analysis of T24 building and T20 appliance standard impacts paralleling Navigant's analysis for IOU service areas
  - Disaggregating savings into sector/use category values in order to develop 8760 hourly impacts

PRELIMINARY SUPPLEMENTAL RESULTS

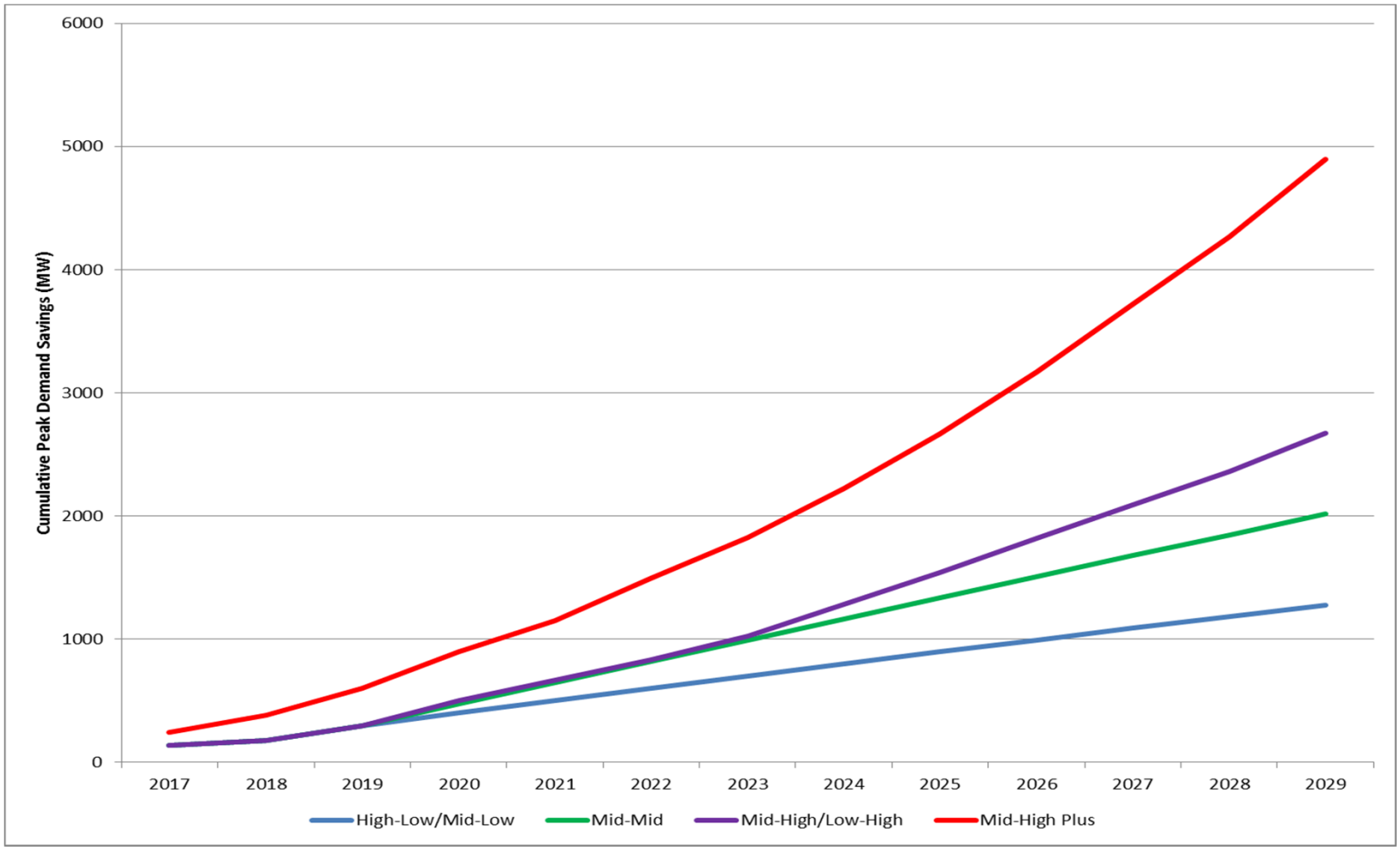
SB 350 Supplements to AAEE

AAEE Scenario	Program Bucket	Specific Programs Included
(1) High-Low and (2) Mid-Low	POU Programs	POU Programs
	SB 350 - Bldg Stnds	None
	SB 350 - Appl Stnds	None
	SB 350 - Prop 39	Prop 39
	SB 350 - Other	None
(3) Mid-Mid	POU Programs	POU Programs
	SB 350 - Bldg Stnds	T242019AA
	SB 350 - Appl Stnds	None
	SB 350 - Prop 39	Prop 39
	SB 350 - Other	None
(4) Mid-High and (5) Low-High	POU Programs	POU Programs
	SB 350 - Bldg Stnds	T242019AA, T24NRNC
	SB 350 - Appl Stnds	Future T20<2025, Fed Appliances<2025
	SB 350 - Prop 39	Prop 39
	SB 350 - Other	None
(6) Mid-High Plus	POU Programs	POU Programs
	SB 350 - Bldg Stnds	T242019AA, T24NRNC, T24AA
	SB 350 - Appl Stnds	Future T20, Fed Appliances
	SB 350 - Prop 39	Prop 39
	SB 350 - Other	PACE, Benchmarking, and MinorPrograms

SB 350 Additions to AAEE Scenarios (GWh)

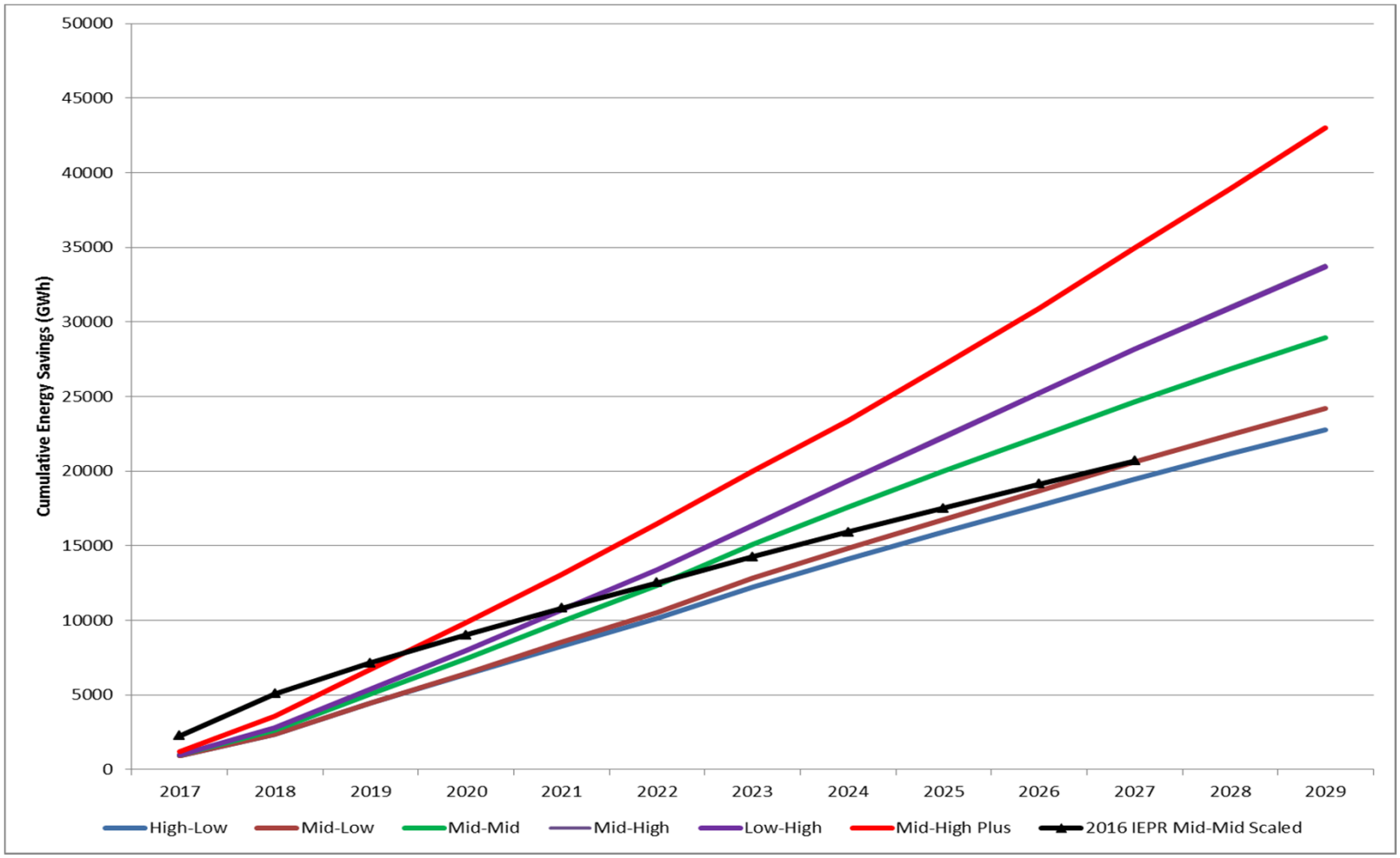


SB 350 Additions to AAEE Scenarios (MW)



COMPOSITE AAEE SCENARIOS

Composite AAEE Scenarios (GWh)



Remaining Effort

- Reassess SB 350 natural gas savings in parallel to electricity savings
- Adapt Navigant analyses of standards to develop savings for POUs

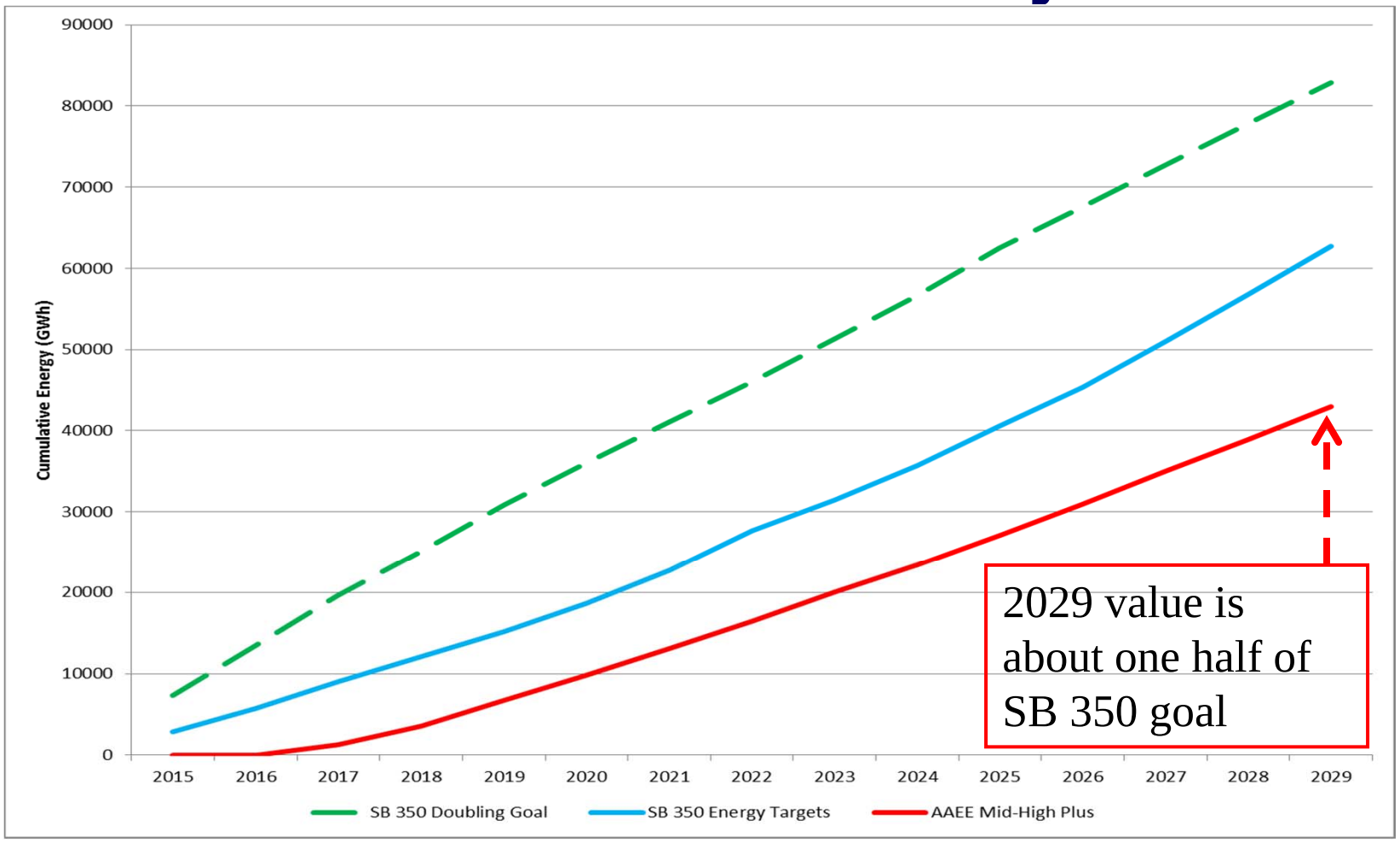
Summary of Issues

- Divergent purposes require adjustments to SB 350 EE projections for use in AAEE cases
- Quantitative analyses prepared for SB 350 create challenges in developing detailed projections needed for CAISO studies or production simulation modeling
- Staff proposal creates an interim approach that informs procurement and procurement planning until SB 350 analytic improvements are complete

Role of Scenario 6

- Initial response to SB 350 EE “doubling” requirements was to literally double projections from old AAEE projections
- Energy Commission SB 350 report documents challenge of achieving doubling of electricity savings
- Even SB 350 projected electricity targets use “what if” assumptions
- Scenario 6 uses more cautious approach

Scenario 6 vs. SB 350 Projections



Pros/Cons of Scenario 6

- Advantages
  - Clearly more in line with the “realism” of the adopted SB 350 study rather than rudimentary 2xoldAAEE assumptions
  - More specific program mix and therefore 8760 hourly and load bus translations much better than just doubling old AAEE translations
  - Carefully developed to be truly incremental to the most recent baseline demand forecast
- Disadvantages
  - Political issues from not being “double” something – more like 1.5x
  - May not be consistent with assumptions used in CPUC IRP reference system plan analyses

Recommendation

- Staff recommends that *2017 IEPR* AAEE scenarios 1-5 be used by CPUC and ISO in accordance with existing “demand forecast set” agreements
- Staff recommends Scenario 6 be used by CPUC and ISO when assessing high EE savings futures in IRP and transmission planning studies, and by CARB in GHG Scoping Plan assessments