Demand Analysis Working Group (DAWG)

Additional Achievable Energy Efficiency (AAEE) Preliminary Definitions for 2019 CED Forecast



Ingrid.Neumann@energy.ca.gov
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California Energy Commission

SB 350 vs. AAEE

Element	SB 350 Projections	AAEE Projections
Purpose	Identify whether the potential of programmatic targets achieve the doubling goal	Create EE projections incremental to baseline demand forecast to serve resource planning and procurement needs

SB 350 vs. AAEE

Element	SB 350 Projections	AAEE Projections
Purpose	Identify whether the potential of programmatic targets achieve the doubling goal	Create EE projections incremental to baseline demand forecast to serve resource planning and procurement needs
Accounting framework	Fixed 2015 base year	Rolling base year relative each IEPR cycle
Treatment of Uncertainty	Used a single reference case in 2017 but for 2019 a limited scenario capability exists.	Elaborate scenario design to condense uncertainty of specific elements into scenarios ranging from conservative to optimistic

SB 350 vs. AAEE

Element	SB 350 Projections	AAEE Projections
Purpose	Identify whether the potential of programmatic targets achieve the doubling goal	Create EE projections incremental to baseline demand forecast to serve resource planning and procurement needs
Accounting framework	Fixed 2015 base year	Rolling base year relative each IEPR cycle
Treatment of Uncertainty	Used a single reference case in 2017 but for 2019 a limited scenario capability exists.	Elaborate scenario design to condense uncertainty of specific elements into scenarios ranging from conservative to optimistic
Use by Other Agencies	Some agencies use SB 350 as a proxy for a very high efficiency scenario.	Explicit agreements to use specific AAEE scenarios in various resource planning and transmission planning studies
Implications of Targets Falling Short of Goals	CEC searches for additional efforts that might close the gap	NA

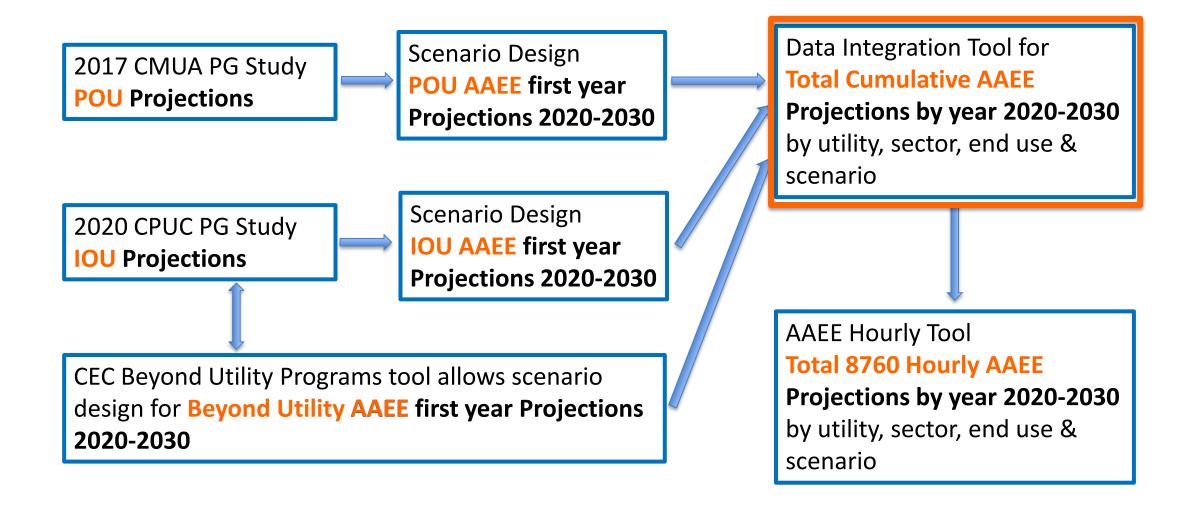


Additional Achievable Energy Efficiency (AAEE) Improvements from 2017 to 2019 IEPR Cycle

- Improved analysis of decay and re-participation
 - Using cumulative results from IOU PG Study
 - Using POU model cumulative results from work on potential savings
 - expansion of the number of POU AAEE element scenarios from the one case that is submitted in the CMUA report
- Update and expand the Beyond Utility Program workbooks originally developed in 2017 for SB 350
 - Workbooks are embedded in a tool that assigns end use level decay based on EUL
 - total of 20 workbooks including:
 - Fuel Substitution (% of new construction only)
 - Conservation Voltage Reduction
 - Agricultural and Industrial Sectors
- Improved attribution to sector/end-use
- development of an hourly tool utilizing updated load shapes to generate 8760 hourly projections from annual AAEE savings for the ten year forecast period
- Improving natural gas demand analysis
 - building decarbonization is an emerging policy emphasis



Additional Achievable Energy Efficiency (AAEE) 2019 Process Flow Overview



Source	Lev	ver	High Low (Scenario 1)	Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)		
2047 IEDD	Buildin	g Stock	2047 IEBB III ah Casa	2047 ISDD Mid Cook	2047 IFDD MAIL Co	2047 IEDD M. d. Co	2047 IEDD Lavy Care	2047 IFPD Mild Cove		
2017 IEPR	Retail	Prices	2017 IEPR High-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Low-Case	2017 IEPR Mid-Case		
	AIMS	S ETs	Reference Reference Average of Reference & Aggressive		rence & Aggressive	Aggressive				
	Incentiv	ve Levels	capped at 25% of incremental cost	capped at 50% of incremental cost	capped at 50% of incremental cost	capped at 50% c	of incremental cost	capped at 75% of incremental cost		
	C-E Measure Screening Threshold	(TRC						0.65		
Navigant & CEC Processing		voided Costs)		Patan	1 D C au calibra ed value C	aram '	Sawina	C 55		
of 2020 PG	Marketing	& Outreach	De Jult cali	ated value	D au calibra ed value	Мань	cre sed Wike high ren th	3		
Study	Financing	Programs	No model	ed impacts	No modeled impacts	IOU finance	ring programs broadly available to Res and est	n customers		
	Low I	ncome	PG Study Res	ult Unchanged	PG Study Result Unchanged		PG Study Result Unchanged			
	BROs Program	n Assumptions	Refe	rence	Reference	Average of Refe	rence & Aggressive	Aggressive		
	Title 24	Compliance Reduction or Enhancement	no additional included	20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements			
Navigant &	Tide 24	Code Cycles (Vintages)			dential New Construction and A&A 2022 Resider		same scope through 2025 Standards BU WB	same scope through 2028 Standards BU WB		
of 2020 PG Study AND CEC	Title 20	Compliance Reduction or Enhancement		20% Compliance Rate Reduction	Peserence Case Compliance		Compliance Enhancements			
Processing of WA#2 Results	Title 20	Code Cycles (Vintages)	COGE	Sected Stos rough 1. 27	Sta State Out 12 2	at Ist Ous 5	Selecte Std T our 202	PG Study & BU WB		
for BU Programs WB		Compliance Reduction or Enhancement					Compliance Enhancements			
	Federal Standards	Code Cycles (Vintages)	no addition	nal included	through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump <i>PG Study</i>	through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump PG Study & BU WB	through 2023 + 2026 Water Source Heat Pump (including 2020 GSL Std expanded scope) PG Study & BU WB	all through 2026 Water Source Heat Pump + selected standards through 2030 PG Study & BU WB		
	Pro	·								
	DGS Energ ECAA Fi	<u> </u>	mid	established programs with historical pe	rformance data and expected future funding allo	ocations				
	GGRF: Water									
	GGRF: Low Incom						hi	gh		
	Local Governm		- Ic	w	mid: limited historical data on a pilot or ot	ther subset of programs and reasoned				
CEC Processing	PACE Fi Benchmarking and	d Public Disclosure	D		assumption on future for the property of the p	unding anocations	0!			
of WA#2		stitution	HAVC	na lit	IIIItV/ Pr	odram	Savin	ne I		
Results for BU Programs WB	Behavioral, Retrocommissi			ma Ot	IIILY I I	ogram	Oaviii	43		
i rogramo tro	Local Governm		J	r	not included		low			
	Energy As Smart Meter I	Data Analytics	_					proposed programs		
		agement District								
		ultural			not included			mid: limited assumptions based on pilot or		
	Indu							proposed programs		
	Conservation Vo	easure List	Pofo	rence			Add new measures			
CEC Processing		ve Level					D-f			
of WA#1		Expenditures	Referen		Reference		Reference x 125%			
Results based		I Programs	er ove r wh	y pla RCA TANA	ITIZI Pri		del te de			
on 2017 CMUA PG Study	Early Retirem	nent Programs Net to Gross	- Gefe	rend	ntialePro	y grain	I gle ent Pro ar	10		
rd Study	100 01 F00	1101 10 01033				IOU				



Additional Achievable Energy Efficiency (AAEE) 2019 Scenario Design

	Beyond Utility Program Savings	
	Codes and Standards Savings	2030
	IOU Potential Program Saving	gs
	POU Potential Program Savings	
IOU and POU Committed Program Savings	Committed C&S savings	



Additional Achievable Energy Efficiency (AAEE) 2019 Scenario Design

Beyond Utility Program Savings

Codes and Standards Savings

2020 2030

IOU Potential Program Savings

POU Potential Program Savings

 eliminate duplication with baseline forecast

 eliminate any other duplication between savings streams



IOU AAEE Scenario Design

Lever	High Low (Scenario 1)	Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)
Building Stock			2017 IEPR Mid-Case			
Retail Prices			2017 IEPK IVIIU-Case			
AIMS ETs			Reference			
Incentive Levels			capped at 50% of			
incentive Levels			incremental cost			
C-E Measure Screening Threshold			1			
(TRC using 2019 Avoided Costs)			•			
Marketing & Outreach			Default calibrated			
Warketing & Oddieach			value			
Financing Programs			No modeled impacts			
Low Income			PG Study Result			
Low income			Unchanged			
BROs Program Assumptions			Reference			

 Design IOU Program AAEE Scenarios around the scenario chosen by the CPUC as the Goal from the IOU PG Study Scenarios



IOU AAEE Scenario Design

Lever	High Low (Scenario 1)	Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)
Building Stock			2017 IEPR Mid-Case			
Retail Prices			2017 IEPK Wild-Case			
AIMS ETs			Reference			
Incentive Levels			capped at 50% of			
incentive Levels			incremental cost			
C-E Measure Screening Threshold			1			
(TRC using 2019 Avoided Costs)			•			
Marketing & Outreach			Default calibrated			
ivial ketting & Outreach			value			
Financing Programs			No modeled impacts			
Low Income			PG Study Result			
Low income			Unchanged			
BROs Program Assumptions			Reference			

- Began with sensitivity analysis
 - of various levers within the Rebate and Financing Programs
 - then separately two savings options for AIMS ETs
 - and BROs Programs



IOU AAEE Scenario Design

Lever	High - Low (Scenario 1)	Mid - Low (Scenario 2)	Mid - Mid (Scenario 3)	Mid - High (Scenario 4)	Low - High (Scenario 5)	Mid - High Plus (Scenario 6)
Building Stock Retail Prices	2017 IEPR High-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Low-Case	2017 IEPR Mid-Case
AIMS ETs	Refer	ence	Reference	Average of Reference & Aggressive		Aggressive
Incentive Levels	capped at 25% of incremental cost	capped at 50% of incremental cost	capped at 50% of incremental cost	capped at 50% of incremental cost		capped at 75% of incremental cost
C-E Measure Screening Threshold (TRC using 2019 Avoided Costs)	1.:	25	1	0.	85	0.65
Marketing & Outreach	Default calik	orated value	Default calibrated value	Increased marketing strength		gth
Financing Programs	No modele	ed impacts	No modeled impacts	IOU financing pro	grams broadly availabl	e to Res and Com
Low Income	PG Study Result Unchanged		PG Study Result Unchanged	PG Study Result Unchanged		ed
BROs Program Assumptions	Refer	ence	Reference	Average of Refere	ence & Aggressive	Aggressive

Goal was to design a spread of IOU Program AAEE
 Scenarios from conservative to optimistic



POU AAEE Scenario Design

Lever	High - Low (Scenario 1)	Mid - Low (Scenario 2)	Mid - Mid (Scenario 3)	Mid - High (Scenario 4)	Low - High (Scenario 5)	Mid - High Plus (Scenario 6)
Expand Measure List						
Incentive Level						
Promotional Expenditures			Reference			
Behavioral Programs						
Early Retirement Programs						
Net to Gross						
Re-participation Rates						

 Design POU AAEE Scenarios around the single potential savings case presented in the CMUA's 2017 PG Study



POU AAEE Scenario Design

Lever	High - Low (Scenario 1)	Mid - Low (Scenario 2)	Mid - Mid (Scenario 3)	Mid - High (Scenario 4)	Low - High (Scenario 5)	Mid - High Plus (Scenario 6)
Expand Measure List						
Incentive Level						
Promotional Expenditures			Reference			
Behavioral Programs						
Early Retirement Programs						
Net to Gross						
Re-participation Rates						

- savings projections for the largest 16 POUs were based on three sets of assumptions, consistent across all POUs run through the ELRAM model
- potential savings for the remaining 23 small POUs were extrapolated from the potential savings of the 16 larger POUs
- the decision was made for savings to be uniformly scaled by applying IOU rather than POU re-participation rates and net-to-gross ratios



POU AAEE Scenario Design

Lever	High - Low (Scenario 1)	Mid - Low (Scenario 2)	Mid - Mid (Scenario 3)	Mid - High (Scenario 4)	Low - High (Scenario 5)	Mid - High Plus (Scenario 6)		
Expand Measure List	Reference				Add new measures			
Incentive Level	Reference x 75%				Reference			
Promotional Expenditures			Reference	Reference x 125%				
Behavioral Programs	Remove newly	planned BROs		Reference				
Early Retirement Programs	Refe	ence		Ir	mplement ER Progra	ms		
Net to Gross								
Re-participation Rates		IOU						

 Goal was to design a spread of POU AAEE Scenarios from conservative to optimistic



Begin C&S
 Scenario
 design around
 the scenario
 chosen by the
 CPUC as the
 Goal from the
 IOU PG Study
 Scenarios

Le	ver	High Low (Scenario 1)	Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)
	Compliance Reduction or Enhancement			Reference Case Compliance			
Title 24	Code Cycles (Vintages)			2022 Nonresidential New Construction and A&A 2022 Residential A&A BUWB			
	Compliance Reduction or Enhancement			Reference Case Compliance			
Title 20	Code Cycles (Vintages)			Selected Stds. Through 2022 PG Study			
	Compliance Reduction or Enhancement			Reference Case Compliance			
Federal Standards	Code Cycles (Vintages)			through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump <i>PG Study</i>			



savings from future Title 24 code cycles are modeled according to anticipated future ratchets in energy efficiency assessed as part of the Beyond Utility analysis

Lev	Lever		Mid - Low (Scenario 2)	Mid - Mid (Scenario 3)	Mid - High (Scenario 4)	Low - High (Scenario 5)	Mid - High Plus (Scenario 6)
	Compliance Reduction or Enhancement	no additional	20% Compliance Rate Reduction	Reference Case Compliance Compliance Compliance			nents
Title 24	Code Cycles (Vintages)			ntial New Constructio Lesidential A&A <i>BUW</i>	•	same scope through 2025 Standards <i>BU WB</i>	same scope through 2028 Standards <i>BU WB</i>
	Compliance Reduction or Enhancement			Reference Case Compliance			
Title 20	Code Cycles (Vintages)			Selected Stds. Through 2022 PG Study			
	Compliance Reduction or Enhancement			Reference Case Compliance			
Federal Standards	Code Cycles (Vintages)			through 2023 (excluding 2020 GSL Std) + 2026 Water			
	. 5 ,			Source Heat Pump PG Study			

T24 Building Standards ratchet end years							
New Cor	struction	Additions & Alterations					
Residential Sector	Commercial Sector	Residential Sector	Commercial Sector				



- savings for the Federal
 Appliance Standards
 and Title 20 are modeled
 by measure
- utilize both savings reported in IOU PG Study as well as additional measures analyzed as part of the BU assessment
- measure savings gleaned from the IOU PG Study were analyzed in a total savings mode and scaled up to statewide savings

Lev	Lever		Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)	
	Compliance Reduction or Enhancement	no additional included	20% Compliance Rate Reduction	Reference Case Compliance	Compliance Enhancements			
Title 24	Code Cycles (Vintages)			ntial New Constructio Residential A&A <i>BUW</i>	•	same scope through 2025 Standards <i>BU WB</i>	same scope through 2028 Standards <i>BU WB</i>	
	Compliance Reduction or Enhancement		20% Compliance Rate Reduction	Reference Case Compliance	Co	ompliance Enhancements		
Title 20	Code Cycles (Vintages)		Selected Stds. Through 2022 PG Study	Selected Stds. Through 2022 PG Study	Selected Stds. Through 2022 PG Study	Selected Stds. Through 2027 PG Study & BU WB		
	Compliance Reduction or Enhancement	no additional included		Reference Case Compliance	Compliance Enhancements			
Federal Standards	Code Cycles (Vintages)			through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump <i>PG Study</i>	through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump <i>PG</i> Study & BU WB	through 2023 + 2026 Water Source Heat Pump (including 2020 GSL Std expanded scope) PG Study & BU WB	all through 2026 Water Source Heat Pump + selected standards through 2030 PG Study & BU WB	

additional appliance measures modeled in the Beyond Utility analysis yield statewide savings



Le	Lever		Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)
	Compliance Reduction or Enhancement		20% Compliance Rate Reduction	Reference Case Compliance	Compliance Enhancements		
Title 24	Code Cycles (Vintages)	no additional included		2 Nonresidential New Construction and A&A 2022 Residential A&A <i>BUWB</i>		same scope through 2025 Standards <i>BU WB</i>	same scope through 2028 Standards <i>BU</i> <i>WB</i>
	Compliance Reduction or Enhancement no additi		20% Compliance Rate Reduction	Reference Case Compliance	Compliance Enhancements		nents
Title 20	Code Cycles (Vintages)	included	Selected Stds. Through 2022 <i>PG</i> Study	Selected Stds. Through 2022 PG Study	Selected Stds. Through 2022 <i>PG</i> Study	Selected Stds. Through 2027 PG Study & BU WB	
	Compliance Reduction or Enhancement			Reference Case Compliance	Compliance Enhancements		
Federal Standards	Code Cycles (Vintages)	no additional included		through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump <i>PG Study</i>	through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump PG Study & BU WB	through 2023 + 2026 Water Source Heat Pump (including 2020 GSL Std expanded scope) PG Study & BU WB	all through 2026 Water Source Heat Pump + selected standards through 2030 PG Study & BU WB

- statewide savings are allocated to each IOU, IRP POU or smaller POU grouping
 - essential for the small POU's inside CAISO planning area



Beyond Utility AAEE Scenario Design

Large contractual effort this cycle to update and expand the Beyond Utility Program workbooks

- Workbooks vary in level of sophistication but all have various savings parameters that can be adjusted
 - staff is able to design scenarios using low, mid, and high 2017 IEPR econ/demo drivers
 - Conservative, reference, and aggressive savings estimates defined for each program in the individual workbooks
 - individual weights are assigned for each of the BU programs included

Beyond Utility Programs
Prop 39
DGS Energy Retrofit
ECAA Financing
GGRF: Water Energy Grant
GGRF: Low Income Weatherization
Local Government Ordinances
PACE Financing
Benchmarking and Public Disclosure
Fuel Substitution
Behavioral, Retrocommissioning,
Operational Savings
Local Government Challenge
Energy Asset Rating
Smart Meter Data Analytics
Air Quality Management District
Agricultural
Industrial
Conservation Voltage Reduction



Beyond Utility AAEE Scenario Design

Program Savings Scenario	High Low (Scenario 1)	Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)	
Prop 39	mid : actablich	ed programs with	historical perform	nanco data and	,		
DGS Energy Retrofit	illia. Establisi	expected future f					
ECAA Financing		expected ruture i	anding anocations				
GGRF: Water Energy Grant							
GGRF: Low Income Weatherization			mid: limited his	torical data on a	h	igh	
Local Government Ordinances	· Ia	ow .	pilot or other subset of programs				
PACE Financing	IOW		and reasoned assumption on future funding allocations				
Benchmarking and Public Disclosure							
Fuel Substitution							
Behavioral, Retrocommissioning,						mid:	
Operational Savings						assumptions	
Local Government Challenge		not in	cluded		low	based on pilot or	
Energy Asset Rating						proposed	
Smart Meter Data Analytics						programs	
Air Quality Management District						mid: limited	
Agricultural			assumptions				
Industrial			based on pilot or				
			proposed				
Conservation Voltage Reduction						programs	

 Program specific levers are adjusted within each Beyond Utility program workbook and are grouped to define low, mid and high BU AAEE Scenarios.

Source	Lev	er	High Low (Scenario 1)	Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)			
2017 IEDD	Building Stock		2017 IEDD High Coop	2017 IEDD Mid Coop	2017 IEDD 84:4 Coop	2017 IEDD Mid Coop	2017 IFDD Law Case	2017 IEPR Mid-Case			
2017 IEPR	Retail	Prices	2017 IEPR High-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Low-Case	ZOT) IERK MIG-Case			
	AIMS	ETS	Reference		Reference	Average of Reference & Aggressive		Aggressive			
	Incentive Levels		capped at 25% of incremental cost	capped at 50% of incremental cost	capped at 50% of incremental cost	capped at 50%	of incremental cost	capped at 75% of incremental cost			
Navigant &	C-E Measure Screening Threshold using 2019 Av	(TRC roided Costs)	1.	25	1		0.85	0.65			
CEC Processing	Marketing 8	& Outreach	Default cali	brated value	Default calibrated value		Increased marketing strength				
of 2020 PG Study	Financing	Programs	No model	ed impacts	No modeled impacts	IOU finan	cing programs broadly available to Res and Co	m customers			
	Low In	come	PG Study Resi	ult Unchanged	PG Study Result Unchanged		PG Study Result Unchanged				
	BROs Program	Assumptions	Refe	rence	Reference	Average of Refe	erence & Aggressive	Aggressive			
	Compliance Reduction or Enhancement		no additional included	20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements				
Navigant &	11110 24	Code Cycles (Vintages)	no additional included	2022 Nonresid	dential New Construction and A&A 2022 Resider	ntial A&A <i>BUWB</i>	same scope through 2025 Standards BU WB	same scope through 2028 Standards BU WB			
of 2020 PG	Title 20	Compliance Reduction or Enhancement	no additional included	20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements				
Study AND CEC Processing of WA#2 Results		Code Cycles (Vintages)		Selected Stds. Through 2022 PG Study	Selected Stds. Through 2022 PG Study	Selected Stds. Through 2022 PG Study	Selected Stds. Through 2027	PG Study & BU WB			
for BU Programs WB		Compliance Reduction or Enhancement			Reference Case Compliance		Compliance Enhancements				
	Federal Standards Code Cycles (Vintages)		no additional included		through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump <i>PG Study</i>	through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump PG Study & BU WB	through 2023 + 2026 Water Source Heat Pump (including 2020 GSL Std expanded scope) PG Study & BU WB	all through 2026 Water Source Heat Pump + selected standards through 2030 <i>PG Study</i> & <i>BU WB</i>			
	Prop										
	DGS Energ ECAA Fit		mid:	established programs with historical pe							
	GGRF: Water	-									
	GGRF: Low Income	e Weatherization						high			
	Local Governme		lo	ow	mid: limited historical data on a pilot or ot						
CEC Processing	PACE Fit Benchmarking and				unding allocations						
of WA#2	Fuel Sub										
Results for BU Programs WB	Behavioral, Retrocommissi										
1 TOGICITIS VVD	Local Governm			r	low	mid: assumptions based on pilot or					
	Energy Ass Smart Meter I	<u> </u>	not included					proposed programs			
	Air Quality Mana						1				
	Agricu				not included			mid: limited assumptions based on pilot or			
	Indus				not mauded			proposed programs			
		Conservation Voltage Reduction									
CEC Processing	Expand Measure List Incentive Level		Reference			Add new measures Reference					
of WA#1	Promotional		Referen	nce x 75%	Reference		Reference x 125%				
Results based	Behavioral	•		y planned BROs			Reference				
on 2017 CMUA	Early Retirem	· ·	Refe	rence			Implement ER Programs				
PG Study	IOU or POU	Net to Gross				IOU		22			

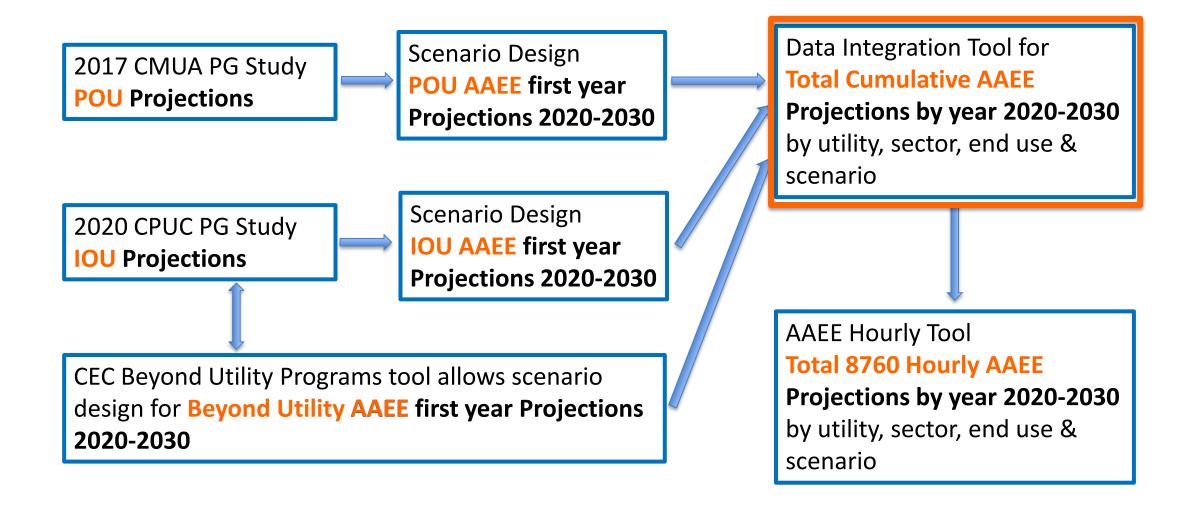
Re-participation Rates

Source	rce Lever		High Low (Scenario 1)	Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)	
	Building	n Stock			•				
2017 IEPR		Retail Prices		2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Low-Case	2017 IEPR Mid-Case	
	Retail	Prices							
	AIMS ETS		Reference		Reference	Average of Reference & Aggressive		Aggressive	
Navigant &	Incentive	e Levels	capped at 25% of incremental cost	capped at 50% of incremental cost	capped at 50% of incremental cost	capped at 50% of	of incremental cost	capped at 75% of incremental cost	
	C-E Measure Screening Threshold using 2019 Av	(TRC roided Costs)	1.	25	1	,	0.85		
CEC Processing	Marketing 8		Default calib	orated value	Default calibrated value		Increased marketing strength		
of 2020 PG Study	Financing	Programs	No modele	ed impacts	No modeled impacts	IOU financ	cing programs broadly available to Res and Cor	m customers	
	Low In	come	PG Study Resu	ult Unchanged	PG Study Result Unchanged		PG Study Result Unchanged		
	BROs Program	Assumptions	Refe	rence	Reference	Average of Refe	rence & Aggressive	Aggressive	
	Title 04	Compliance Reduction or Enhancement		20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements		
Navigant &	Title 24	Code Cycles (Vintages)	no additional included	2022 Nonresio	ential New Construction and A&A 2022 Reside	itial A&A <i>BUWB</i>	same scope through 2025 Standards BU WB	same scope through 2028 Standards BU WB	
of 2020 PG		Compliance Reduction or Enhancement	no additional included	20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements		
Study AND CEC Processing of WA#2 Results	Title 20	Code Cycles (Vintages)		Selected Stds. Through 2022 PG Study	Selected Stds. Through 2022 PG Study	Selected Stds. Through 2022 PG Study	Selected Stds. Through 2027	PG Study & BU WB	
for BU Programs WB		Compliance Reduction or Enhancement			Reference Case Compliance		Compliance Enhancements		
	Federal Standards Code Cycles (Vintages)		no additional included		through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump <i>PG Study</i>	through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump PG Study & BU WB	through 2023 + 2026 Water Source Heat Pump (including 2020 GSL Std expanded scope) PG Study & BU WB	all through 2026 Water Source Heat Pump + selected standards through 2030 PG Study & BU WB	
	Prop 39								
	DGS Energ		mid:	established programs with historical per	ocations				
-	ECAA Fii								
	GGRF: Water GGRF: Low Income				mid: limited historical data on a pilot or other subset of programs and reasoned		high		
-	Local Governme								
CEC Burney	PACE Fit		lo	w	assumption on future f				
of WA#2	Benchmarking and								
Results for BU	Fuel Subs								
Programs WB	Behavioral, Retrocommissi Local Governm					mid: assumptions based on pilot or			
	Energy As:	ŭ		n	low	proposed programs			
	Smart Meter I		proposed programs						
	Air Quality Mana								
	Agricu				not included			mid: limited assumptions based on pilot or	
	Indus		not included proposed programs					proposed programs	
	Conservation Voltage Reduction Expand Measure List		Reference			Add new measures			
CEC Processing	Expand Me						Reference		
of WA#1	Promotional		Referen	ce x 75%	Reference		Reference x 125%		
Results based	Behavioral	•	Remove newly	planned BROs			Reference		
on 2017 CMUA	Early Retirem	Ţ	Refer	rence			Implement ER Programs		
PG Study	IOU or POU					IOU		22	
	Re-participa	ation Rates						23	

Source	Lev	rer	High Low (Scenario 1)	Mid Low (Scenario 2)	Mid Mid (Scenario 3)	Mid High (Scenario 4)	Low High (Scenario 5)	Mid High Plus (Scenario 6)		
2017 1500	Building	g Stock	2017 IEDD III-la Cara	2017 IEDD 141 C	2047 IFDD 541-1 C	2017 IFDD M. J. Co.	2017 IEDD 1 0	2017 IEDD MALL Con-		
2017 IEPR	Retail	Prices	2017 IEPR High-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Low-Case	2017 IEPR Mid-Case		
	Notali i Hoco									
	AIMS ETs		Refe	rence	Reference	Average of Refe	rence & Aggressive	Aggressive		
			1 1050/ 5:	I	1 5.	1.1500		1.1750/ 5:		
-	Incentive		capped at 25% of incremental cost	capped at 50% of incremental cost	capped at 50% of incremental cost		of incremental cost	capped at 75% of incremental cost		
Navigant &	C-E Measure Screening Threshold (TRC using 2019 Avoided Costs)		1					0.65		
CEC Processing	Marketing & Outreach		Dei ult cali	ated va a first a first	D at calibra ed value	1012111	offe seg vike up ren h			
of 2020 PG					t au calibrated value C			9		
Study	Financing	Programs	No model	ed impacts	No modeled impacts	IOU financ	ting programs broadly available to Res alia est	n customers		
	Low In	come	PG Study Resi	Ilt Unchanged	PG Study Result Unchanged		PG Study Result Unchanged			
			. ostaay nest		. Cottal, nesare citatiangea		. Cottady result official angel			
	BROs Program	Assumptions	Refe	rence	Reference	Average of Refe	rence & Aggressive	Aggressive		
		Compliance Reduction or Enhancement		20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements			
	Title 24		no additional included				same scope through 2025 Standards	same scope through 2028 Standards		
Navigant &		Code Cycles (Vintages)		2022 Nonresid	dential New Construction and A&A 2022 Resider	ntial A&A <i>BUWB</i>	BU WB	BU WB		
CEC Processing		Compliance Reduction or		200/ Compliance Date Deduction	Beforence Core Compliance		Compliance Enhancements			
of 2020 PG Study AND CEC	Title 20	Enhancement	adutio Clud	20% Comphance Rate Reduction	erence case compitance		Compilate Emancements			
Processing of		Code Cycles (Vintages)		Selected State rough 22	cte State ou 12 2	Se ct d St d Th ug 2022	Sel tte Sto T our 202	PG Study & BU WB		
WA#2 Results	7 \ 7 /		20% Compliance Rate Reduction Compliance Enhancements PG Study & BU WB							
for BU		Compliance Reduction or Enhancement	Reference Case Compliance Compliance Compliance Enhancements							
Programs WB	Federal Standards	Lillancement	no addition	nal included		through 2023 (excluding 2020 GSL Std) +	through 2023 + 2026 Water Source Heat	all through 2026 Water Source Heat Pump		
		Code Cycles (Vintages)			through 2023 (excluding 2020 GSL Std) + 2026	2026 Water Source Heat Pump PG Study	Pump (including 2020 GSL Std expanded	selected standards through 2030 PG Study		
	Code Cycles (vintages)				Water Source Heat Pump PG Study	& BU WB	scope) PG Study & BU WB	& BU WB		
		Prop 39		mid actablished programs with historical performance data and expected future funding allocations						
l	DGS Energ ECAA Fit		mid: established programs with historical performance data and expected future funding allocations							
	GGRF: Water	0								
	GGRF: Low Income	e Weatherization					hi	gh		
	Local Governme		lo	w	mid: limited historical data on a pilot or other subset of programs and reasoned					
CEC Processing	PACE Fir Benchmarking and				assumption on future for	unding allocations				
of WA#2	Fuel Subs		HOVA	na lit	IIIt\/ Dr/	aram	Savin	NC		
Results for BU - Programs WB -	Behavioral, Retrocommission		Beyond Utility Program Savings Beyond Utility Program Savings Savings							
FIOGRAIIIS WB	Local Governm									
	Energy Ass							proposed programs		
	Smart Meter D Air Quality Mana									
	Agricu	<u> </u>			mak terduda d			mid: limited assumptions based on pilot or		
	Indus				not included			proposed programs		
	Conservation Voltage Reduction									
CEC Processing	Expand Me Incentiv		Refe				Add new measures			
of WA#1	Promotional I		Referen	ce x=75°/	Reference		Reference x 125%			
Results based	Behavioral	<u> </u>	er ove n wly	pla	tialPro	Mram	Re re le	76		
on 2017 CMUA	Early Retireme		efe	rend	luai Fil	Julaiii	I 16 ent Pro ar	43		
PG Study	IOU or POU I					IOU		24		
	Re-participa	ation Rates								



Additional Achievable Energy Efficiency (AAEE) 2019 Process Flow Overview





Additional Achievable Energy Efficiency (AAEE) Hourly Tool Development

AAEE Hourly Tool

Total 8760 Hourly AAEE Projections by year 2020-2030 by utility, sector, end use & scenario

- Have mapped 48 named end uses to new ADM load shape profiles and supplemented with Navigant load profiles used in 2017 CED Forecast as needed
- Input menu allows for selection of:
 - Forecast start and end years
 - Utility: IOU's, named POU's, North and South small POU groupings
 - Simple by Sector or Detailed by End Use
 - include or omit Transmission and Distribution Losses
- Outputs are 8760 hourly results for each scenario for each forecast year



Additional Achievable Energy Efficiency (AAEE) 2019 Schedule

- 9/26 CEC presents preliminary <u>AAEE Scenario Designs</u> at IEPR Workshop
- 10/1 internal deadline for CEC EE team to provide draft

 AAEE Annual Projections results to CEC Forecast Team
- 10/? DAWG Webinar on draft AAEE Projections
- 11/1 internal deadline for <u>final AAEE Hourly Projections</u> for use in revised 2019 Demand Forecast
- 11/21 DAWG Meeting on revised 2019 Demand Forecast including AAEE in Managed Forecast
- 12/2 Final Electricity and Natural Gas Forecast IEPR Workshop