DOCKETED				
Docket Number:	19-IEPR-03			
Project Title:	Electricity and Natural Gas Demand Forecast			
TN #:	229850			
Document Title:Additional Achievable Energy Efficiency (AAEE) Preliminary Definitions for 2019 CED Forecast				
Description:	Presentation by Ingrid Neuman, California Energy Commission			
Filer:	Raquel Kravitz			
Organization:	California Energy Commission			
Submitter Role:	Commission Staff			
Submission Date:	9/25/2019 3:57:26 PM			
Docketed Date:	9/25/2019			

IEPR Commissioner Workshop Emerging Topics in Energy Demand Forecasting

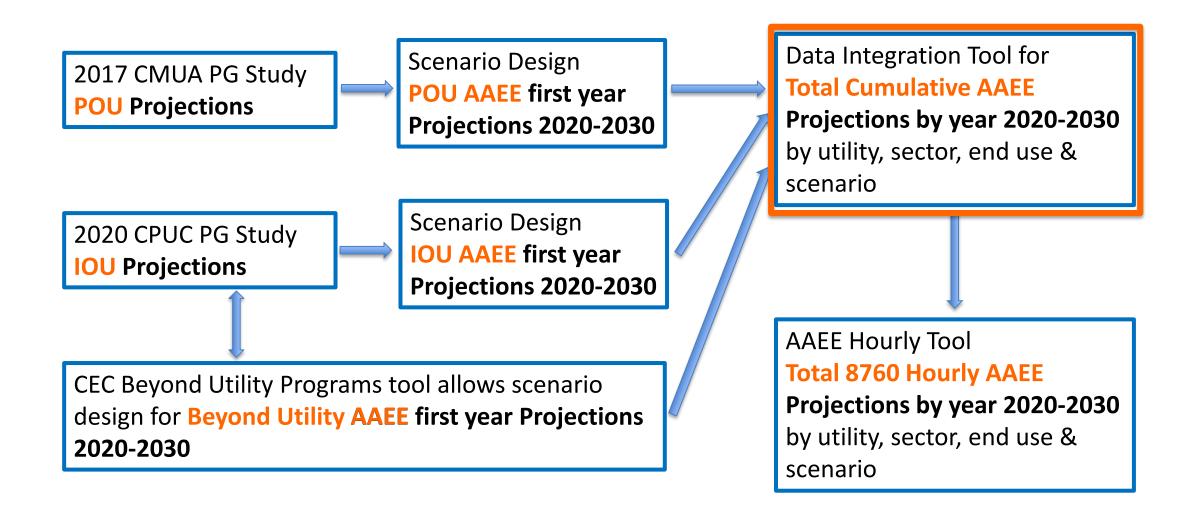
Additional Achievable Energy Efficiency (AAEE) Preliminary Definitions for 2019 CED Forecast



Ingrid.Neumann@energy.ca.gov September 26, 2019 California Energy Commission



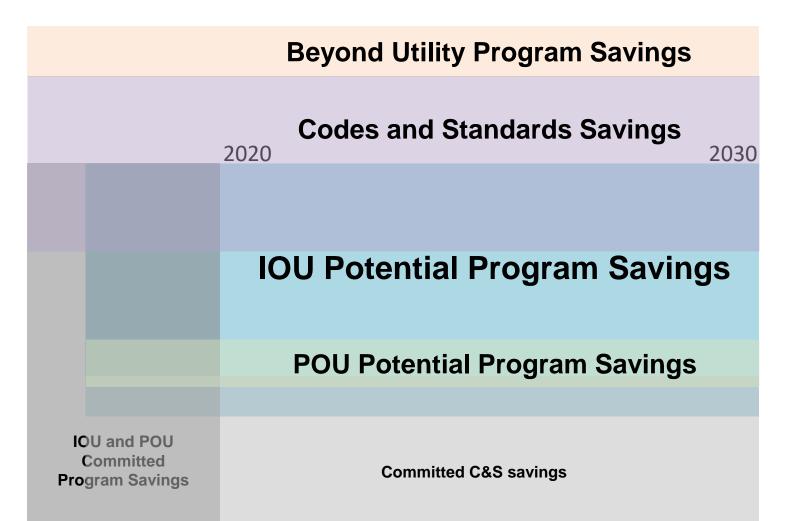
Additional Achievable Energy Efficiency (AAEE) 2019 Process Flow Overview



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)	
2017 (500	Building	g Stock			2017 IEDD 14:4 Corre		2017 IEDD Law 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	2017 IEPR Mid-Case	
				1			1		
	AIMS	ETs	Reference		Reference	Average of Refe	erence & Aggressive	Aggressive	
	Incentive		capped at 25% of incremental cost	ped at 25% of incremental cost capped at 50% of incremental cost capped at			of incremental cost	capped at 75% of incremental cost	
Neuriseant C	C-E Measure Screening Threshold	(TRC						0.65	
Navigant & CEC Processing	using 2019 Av			IOU ¹ Potentia ¹ Program Savings					
of 2020 PG	Marketing 8	& Outreach	Deputit cali bred value			MIGIII		3	
Study	Financing Programs			ed impacts	No modeled impacts		cing programs broadly available to Res and	m customers	
	Low In	ncome	PG Study Res	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						-	
	7711.04	Enhancement		20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements		
	Title 24	Code Cycles (Vintages)	no additional included	2022 Nopresid	dential New Construction and A&A 2022 Resider	ntial A&A BUNNE	same scope through 2025 Standards	same scope through 2028 Standards	
Navigant & CEC Processing		Code Cycles (Villages)		2022 Nonresit			BU WB	BU WB	
of 2020 PG		Compliance Reduction or		20% Compliance Rate Reduction	Beference Case Compliance		Compliance Enhancements		
Study AND CEC	Title 20	Enhancement	io additio		Stond	ordo S			
Processing of		Code Cycles (Vintages)		Selected Stds Fire gh 2 22	Statistics Pour 1220	E Selictul Stud. Thillug, 2022	Selecte Stor Though 2027	PG Study & BU WB	
WA#2 Results									
for BU		Compliance Reduction or Enhancement			Reference Case Compliance		Compliance Enhancements		
Programs WB	Federal Standards	Lindrochient	no additio	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 <i>PG Study</i>	Pump (including 2020 GSL Std expanded	selected standards through 2030 PG Study	
					Water Source Heat Pump PG Study	& BU WB	scope) PG Study & BU WB	& BU WB	
	Prop								
	DGS Energ		mid	established programs with historical per	formance data and expected future funding allo	ocations			
	ECAA Fir GGRF: Water						-		
	GGRF: Low Income						h	igh	
	Local Governme	ent Ordinances			mid: limited historical data on a pilot or ot	ther subset of programs and reasoned			
CEC Processing	PACE Fir	<u>_</u>			assumption on future f	funding allocations			
of WA#2	Benchmarking and Fuel Subs			\mathbf{n}	assumption on future f	o arom	Sovin		
Results for BU	Behavioral, Retrocommissio								
Programs WB	Local Governm					- 3. ~		mid: assumptions based on pilot or	
	Energy Ass		-	r	not included	-	low	proposed programs	
	Smart Meter D								
	Air Quality Mana	<u> </u>							
	Agricu Indus				not included			mid: limited assumptions based on pilot or proposed programs	
	Conservation Vo							proposed programs	
	Expand Me	0	Refe	rence			Add new measures		
CEC Processing	Incentiv						Reference		
of WA#1	Promotional I	· · · · · · · · · · · · · · · · · · ·			ntia [®] Pro		Reference x 125%		
Results based	Behavioral	-	erøve r wi				lei re ze		
on 2017 CMUA PG Study	Early Retireme	0				y y will	1 ole ent Propar	90	
Fostudy	Re-participa					IOU		3	
	ne-participa							J	



Additional Achievable Energy Efficiency (AAEE) 2019 Scenario Design





Additional Achievable Energy Efficiency (AAEE) 2019 Scenario Design

2030

•

Beyond Utility Program Savings

Codes and Standards Savings

2020

eliminate duplication with baseline forecast

eliminate any other duplication between savings streams

IOU Potential Program Savings

POU Potential Program Savings



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 IEDD Mid Coso			
Retail Prices			2017 IEPR Mid-Case			
AIMS ETs			Reference			
Incentive Levels			capped at 50% of			
			incremental cost			
C-E Measure Screening Threshold			1			
(TRC using 2019 Avoided Costs)			-			
Markating & Outroach			Default calibrated			
Marketing & Outreach			value			
Financing Programs			No modeled impacts			
Low Income			PG Study Result			
Eow mcome			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 IVIIU-Case			
AIMS ETs			Reference			
Incentive Levels			capped at 50% of			
			incremental cost			
C-E Measure Screening Threshold			1			
(TRC using 2019 Avoided Costs)			1			
Marketing & Outreach			Default calibrated			
Marketing & Outreach			value			
Financing Programs			No modeled impacts			
			PG Study Result			
Low Income	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 calib	orated value	Default calibrated value	Inci	reased marketing stren	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 Program 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	Refei	rence			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	rence		Implement ER Programs			
Net to Gross							
Re-participation Rates			IOU				

 Goal was to design a spread of POU Program 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

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)
	Compliance Reduction or Enhancement			Reference Case Compliance			
Title 24	Code Cycles (Vintages)			2022 Nonresidential New Construction and A&A 2022 Residential A&A			
	Compliance Reduction or Enhancement			BUWB Reference Case Compliance			
Title 20	Code Cycles (Vintages)			Selected Stds. Through 2022 <i>PG Study</i>			
	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

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	no odditional	20% Compliance Rate Reduction	Reference Case Compliance	C	Compliance Enhancements			
Title 24	Code Cycles (Vintages)	no additional included	2022 Nonresidential 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			Reference Case Compliance					
Title 20	Code Cycles (Vintages)			Selected Stds. Through 2022 <i>PG Study</i>					
	Compliance Reduction or Enhancement			Reference Case Compliance					
Federal Standards	Code Cycles (Vintages)			through 2023 (excluding 2020 GSL Std) + 2026 Water Source Heat Pump					
				PG Study		2			

T24 Building Standards ratchet end years						
New Con	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	/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)
	Compliance Reduction or Enhancement		20% Compliance Rate Reduction	Reference Case Compliance	Compliance Enhancements		
Title 24	Code Cycles (Vintages)		2022 Nonresidential New Construction and A&A 202 Residential A&A <i>BUWB</i>			same scope through 2025 Standards BU WB	same scope through 2028 Standards <i>BU WB</i>
	Compliance Reduction or Enhancement		20% Compliance Rate Reduction	Reference Case Compliance	Co	Compliance Enhancements	
Title 20	Code Cycles (Vintages)		Selected Stds. Through 2022 <i>PG Study</i>	Selected Stds. Through 2022 <i>PG Study</i>	Selected Stds. Through 2022 <i>PG Study</i>	Selected Stds. Through 2027 PG Study & BU WB	
	Compliance Reduction or Enhancement			Reference Case Compliance	Compliance Enhancements		
Federal Standards	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>	

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



Code and Standards 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)
	Compliance Reduction or Enhancement	no additional included	20% Compliance Rate Reduction	Reference Case Compliance	Compliance Enhancements		
Title 24	Code Cycles (Vintages)		2022 Nonresidential New Construction and A&A 2022 Residential A&A <i>BUWB</i>			same scope through 2025 Standards BU WB	same scope through 2028 Standards <i>BU WB</i>
Compliance Reduction or Enhancement	no additional	20% Compliance Rate Reduction	Reference Case Compliance	Compliance Enhancements			
Title 20	Code Cycles (Vintages)	included	Selected Stds. Through 2022 PG Study	Selected Stds. Through 2022 <i>PG Study</i>	Selected Stds. Through 2022 <i>PG</i> <i>Study</i>		s. Through 2027 y & <i>BU WB</i>
	Compliance Reduction or Enhancement			Reference Case Compliance	Compliance Enhancements		nents
Federal Standards	Code Cycles (Vintages)	no additior	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 <i>PG</i> <i>Study & BU WB</i>	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



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				
DGS Energy Retrofit	iniu. Estabilsi	expected future f				
ECAA Financing						
GGRF: Water Energy Grant						
GGRF: Low Income Weatherization			mid: limited his	torical data on a	h	igh
Local Government Ordinances	le le	w	pilot or other su	bset of programs		
PACE Financing		J v v	and reasoned assumption on future funding allocations			
Benchmarking and Public Disclosure	-					
Fuel Substitution						
Behavioral, Retrocommissioning,						mid:
Operational Savings					assumptions	
Local Government Challenge		not in	low	based on pilot or		
Energy Asset Rating				proposed		
Smart Meter Data Analytics						programs
Air Quality Management District						mid: limited
Agricultural	not included					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	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			2017 IEPR High-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Low-Case	2017 IEPR Mid-Case	
	Retail F	rices		1	1		1		
	AIMS	ETs	Refe	rence	Reference	Average of Refe	rence & Aggressive	Aggressive	
									
	Incentive	Incentive Levels		capped at 25% 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		1.25		1	0.85		0.65	
Navigant &	using 2019 Avoided Costs)				1	0.85 0.65		0.05	
CEC Processing	Marketing & Outreach		Default calibrated value		Default calibrated value	Increased marketing strength			
of 2020 PG Study	Financing Programs		No modeled impacts		No modeled impacts	1011 finan	cing programs broadly available to Res and Co	om customers	
Study	Financing	Tograms	Nomodel		No modeled impacts	100 11181			
	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	rence & Aggressive	Aggressive	
		Compliance Reduction or Enhancement		20% Compliance Rate Reduction	Reference Case Compliance	Compliance Enhancements			
	Title 24	Ennancement	no additional included			1	same scope through 2025 Standards	same scope through 2028 Standards	
Navigant &		Code Cycles (Vintages)		2022 Nonresi	dential New Construction and A&A 2022 Reside	ntial A&A BUWB	BU WB	BU WB	
CEC Processing		Compliance Reduction or							
of 2020 PG		Enhancement		20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements		
Study AND CEC	Title 20		no additional included	Selected Stds. Through 2022	Selected Stds. Through 2022	Selected Stds. Through 2022 PG			
Processing of WA#2 Results		Code Cycles (Vintages)		PG Study	PG Study	Study	Selected Stds. Through 2027	PG Study & BU WB	
for BU	Compliance Reduction or			·	Beference Coce Compliance	Compliance Enhancements			
Programs WB	Federal Standards	Enhancement			Reference Case Compliance		Compliance Enhancements		
			no additior	nal included	through 2023 (excluding 2020 GSL Std) + 2026	through 2023 (excluding 2020 GSL Std) +	through 2023 + 2026 Water Source Heat	all through 2026 Water Source Heat Pump +	
		Code Cycles (Vintages)			Water Source Heat Pump PG Study	2026 Water Source Heat Pump PG Study	Pump (including 2020 GSL Std expanded	selected standards through 2030 PG Study	
	Prop	20			1	& BU WB	scope) PG Study & BU WB	& BU WB	
-	DGS Energy		mid:	established programs with historical pe	rformance data and expected future funding allo	ocations			
	ECAA Financing								
	GGRF: Water Energy Grant		- low		mid : limited historical data on a pilot or other subset of programs and reasoned assumption on future funding allocations				
	GGRF: Low Income Weatherization								
	Local Government Ordinances								
CEC Processing	PACE Financing Benchmarking and Public Disclosure								
of WA#2	Fuel Substitution								
Results for BU	Behavioral, Retrocommissioning, Operational Savings				mid: assumptions based or				
Programs WB	Local Government Challenge			r		mid : assumptions based on pilot or proposed programs			
	Energy Asset Rating			'					
_	Smart Meter Data Analytics								
	Air Quality Management District Agricultural		mid-limited accumptions has						
	Industrial		not included				mid: limited assumptions based on pil proposed programs		
	Conservation Voltage Reduction						proposed programs		
	Expand Measure List		Reference			Add new measures			
CEC Processing	Incentive Level		Reference x 75%		Reference	Reference			
of WA#1	Promotional Expenditures					Reference x 125%			
Results based	Behavioral Programs Early Retirement Programs		Remove newly planned BROs Reference			Reference Implement ER Programs			
on 2017 CMUA PG Study	Early Retirement Programs IOU or POU Net to Gross								
. G Study	Re-participa		18						
								10	

			-						
Source	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)	
2017/500	Building	Stock							
2017 IEPR	Retail F	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		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 (TRC using 2019 Avoided Costs)		1.25		1	0.85		0.65	
CEC Processing	Marketing & Outreach		Default calibrated value		Default calibrated value	Increased marketing strength			
of 2020 PG Study	Financing Programs		No modeled impacts		No modeled impacts	IOU financing programs broadly available to Res and Com customers			
	Low Inc	come	PG Study Resu	ult Unchanged	PG Study Result Unchanged		PG Study Result Unchanged		
	BROs Program Assumptions		Refei	rence	Reference	Average of Refe	Average of Reference & Aggressive Aggressiv		
	Title 24	Compliance Reduction or Enhancement	no additional included	20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements		
Navigant &	Hue 24	Code Cycles (Vintages)		2022 Nonresid	ential New Construction and A&A 2022 Reside	itial A&A BUWB	same scope through 2025 Standards BU WB	same scope through 2028 Standards BU WB	
CEC Processing 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 PG Study & BU WB	
	Prop								
	DGS Energy Retrofit		mid: established programs with historical performance data and expected future funding al			cations			
	ECAA Financing GGRF: Water Energy Grant		low		mid : limited historical data on a pilot or other subset of programs and reasoned assumption on future funding allocations		high		
	GGRF: Water Energy Grant GGRF: Low Income Weatherization								
	Local Government Ordinances								
CEC Processing	PACE Financing								
of WA#2	Benchmarking and Public Disclosure								
Results for BU	Fuel Substitution Behavioral, Retrocommissioning, Operational Savings								
Programs WB	Local Government Challenge					mid: assumptions based on pilot or			
	Energy Asset Rating			r	low	proposed programs			
	Smart Meter Data Analytics								
	Air Quality Management District								
	Agricultural Industrial		not included			mid: limited assumptions based on pilot or proposed programs			
	Conservation Voltage Reduction								
	Expand Measure List		Reference			Add new measures			
CEC Processing	Incentive Level		Reference x 75%		P. (Reference			
of WA#1 Results based	Promotional Expenditures Behavioral Programs		Remove newly planned BROs		Reference	Reference x 125% Reference			
on 2017 CMUA	Early Retirement Programs		Reference Reference Implement ER Programs						
PG Study	IOU or POU Net to Gross								
	Re-participation Rates		100						

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 IEPR	Building	g Stock	2017 IEPR High-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Mid-Case	2017 IEPR Low-Case	2017 IEPR Mid-Case	
2017 IEPK	Retail I	Prices	2017 IEPK High-Case	2017 TEPR Mild-Case	2017 IEPR MID-Case	2017 TEPR IVIId-Case	2017 TEPR LOW-Case	2017 TEPR IVITO-Case	
		Notari Filites							
	AIMS ETs		Reference		Reference	Average of Refe	rence & Aggressive	Aggressive	
	Incompting to see by				anned at 50% of incremental cost			connect at 70% of incremental cost	
-	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 (TRC using 2019 Avoided Costs)			Datan				0.65	
CEC Processing	Marketing & Outreach		Dei ult cali	ated value 1	D au calibra ed value		Are sea V ike ig rer h	S	
of 2020 PG	~				ia Program Saviergs				
Study	Financing	Programs	No mode	led impacts	No modeled impacts	IOU financ	IOU financing programs broadly available to Res and com customers		
	Low In	lcome	PG Study Res	sult Unchanged	PG Study Result Unchanged		PG Study Result Unchanged		
-					,		, controllinged		
	BROs Program Assumptions		Refe	erence	Reference	Average of Refe	rence & Aggressive	Aggressive	
		Compliance Reduction or Enhancement		20% Compliance Rate Reduction	Reference Case Compliance		Compliance Enhancements		
	Title 24	Ennancement	no additional included				same scope through 2025 Standards	same scope through 2028 Standards	
Navigant &		Code Cycles (Vintages)		2022 Nonresi	dential New Construction and A&A 2022 Resider	ntial A&A BUWB	BU WB	BU WB	
CEC Processing		Compliance Reduction or		20% Compliance Pate Reduction	Beference Coce Compliance		Compliance Enhancements		
of 2020 PG Study AND CEC	Title 20	Enhancement		20% compliance kate keduction			compliance cimancements		
Processing of		Code Cycles (Vintages)		Selected Store are gh 1 22	ed Strice arough 22 Ctt Store ou n2 2 Search Start Thoug 202				
WA#2 Results			20% Compliance Reduction Condesseted storage and 22 Compliance Reduction Condesseted storage and 22 Compliance Compliance Compliance Enhancements Compliance Reduction Compliance						
for BU	Compliance Reduction or Enhancement		Reference Case Compliance Compliance Enhancements						
Programs WB	Federal Standards	Enhancement	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	
					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						
-	DGS Energy Retrofit ECAA Financing		mid: established programs with historical performance data and expected future funding allocations						
-	ECAA Financing GGRF: Water Energy Grant								
	GGRF: Low Income Weatherization		high mid: limited historical data on a pilot or other subset of programs and reasoned				igh		
	Local Government Ordinances								
CEC Processing	PACE Financing				assumption on future f	unding allocations			
of WA#2	Benchmarking and Public Disclosure Fuel Substitution			nd 11		n arom	Savin		
Results for BU -	Fuel Substitution Behavioral, Retrocommissioning, Operational Savings		DEVL				JAVHH		
Programs WB	Local Government Challenge		Beyond Utility Program Savings						
	Energy Asset Rating		-	r		-	IOW	proposed programs	
-		Smart Meter Data Analytics							
	Air Quality Management District								
	Agricultural Industrial		not included mid: limited assumptions bas proposed program					mid: limited assumptions based on pilot or proposed programs	
	Conservation Voltage Reduction							highered highering	
	Expand Measure List		Refe	erence			Add new measures	·	
CEC Processing	Promotional Expenditures		Refere	nce x 75%			Reference		
of WA#1			Por My pie Protential Program State of an Ostantial Program State						
Results based on 2017 CMUA	Behavioral Programs Early Retirement Programs		er ve r wl			HHAIN			
PG Study								3~	
,			100 20						



Additional Achievable Energy Efficiency (AAEE) Summary

- Conceptually theses AAEE Scenario definitions are very similar to those implemented in the 2017 IEPR
- The main improvement for 2019 is in the analysis of various EE savings streams
 - Avoid duplication
 - Fill in gaps
- Software improvements allow greater scenario deign capability
 - Reduce manual processing
 - More rapid implementation



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 Revised Electricity and Natural Gas Forecast IEPR Workshop