Appliance / Plug Load Cal TF Tier 2 Presentation



CALIFORNIA

TECHNICAL FORUM

ROGER BAKER AYAD AL-SHAIKH APRIL 2018

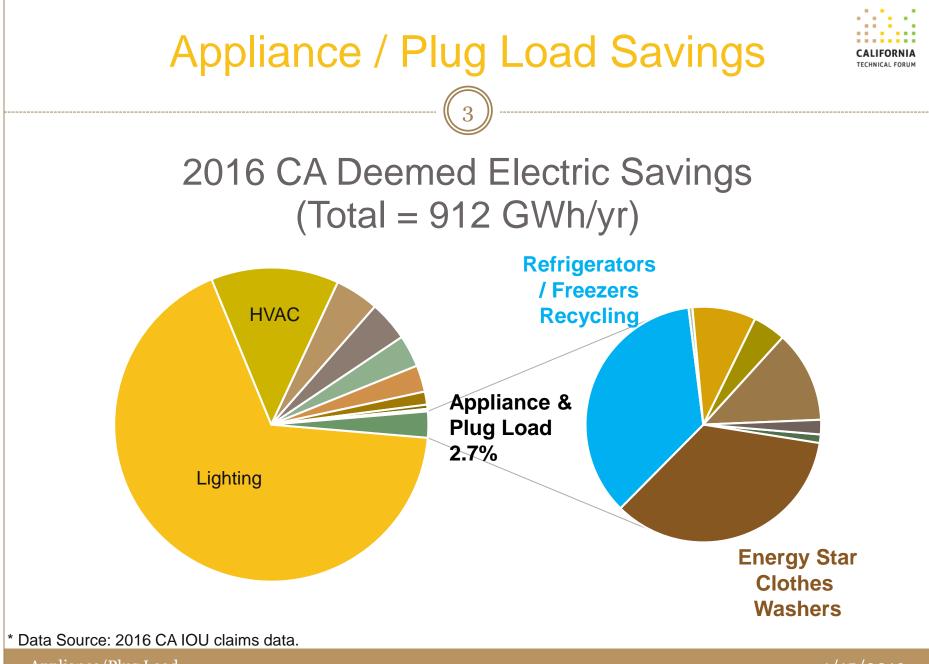
Appliance and Plug Load Category Measure Affirmation



"Cal TF affirms the subcommittee recommendations regarding 'Stage 1 Issues' for Appliance and Plug Load, as amended."

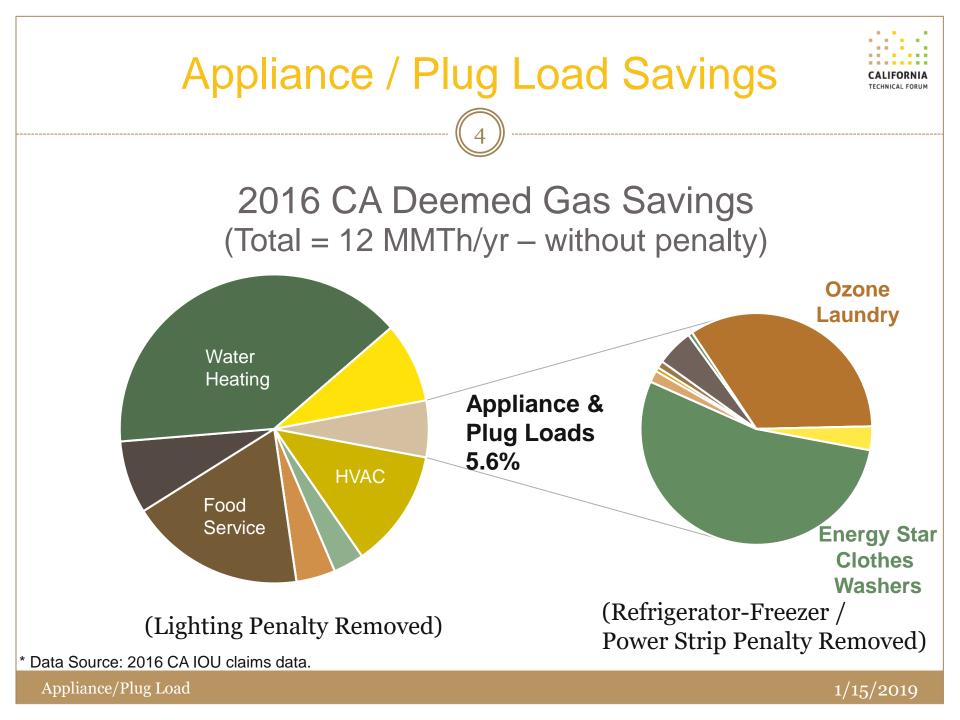
• 7.16 Smart Power Strips





1/15/2019

Appliance/Plug Load





Appliance and Plug Load

No.Measure NamesPlanNo.											
7.02Smart/Connected Refrigerator2018Image: Connected Refrigerator7.03Refrigerator and Freezer Recycling2017Image: Connected Refrigerator7.04Energy Star Clothes Dryers2017Image: Connected Refrigerator7.05Energy Star Clothes Washers2017Image: Connected Refrigerator7.06Cold Water Default Clothes WasherSunsetImage: Connected Refrigerator7.07Non Res High Efficiency Clothes Washer in MF PropertiesNo VotesImage: Connected Refrigerator7.09Ozone Laundry Nonresidential2017Image: Connected RefrigeratorImage: Connected Refrigerator7.10Res Ozone Laundry2017Image: Connected RefrigeratorImage: Connected RefrigeratorImage: Connected Refrigerator7.11Industrial CO2 LaundryNo VotesImage: Connected RefrigeratorImage: Connected RefrigeratorImage: Connected Refrigerator7.12Residential Energy Star Dishwasher2017Image: Connected RefrigeratorImage: Connected RefrigeratorImage: Connected Refrigerator7.14Room Air ConditionersAdded as part of RPPImage: Connected RefrigeratorImage: Connected RefrigeratorImage: Connected Refrigerator7.16Smart / Advanced Power Strips2017Image: Connected RefrigeratorImage: Connected Refrigerator7.18Vending and Beverage Merchandise Controller2017Image: Connected RefrigeratorImage: Connected Refrigerator	No.	Measure Names	Plan	PG&E	SCE	SDG&E	sce	POU			
7.03Refrigerator and Freezer Recycling2017IIII7.04Energy Star Clothes Dryers2017IIII7.05Energy Star Clothes Washers2017III7.06Cold Water Default Clothes WasherSunsetII7.07Non Res High Efficiency Clothes Washer in MF PropertiesNo VotesII7.08Clothes Washer RecyclingNo VotesIII7.09Ozone Laundry Nonresidential2017III7.10Res Ozone Laundry2017III7.11Industrial CO2 LaundryNo VotesIII7.12Residential Energy Star Dishwasher2017III7.13Under Counter Type Commercial Dishwasher2017III7.14Room Air ConditionersAdded as part of RPPII7.14Room Air CleanersAdded as part of RPPII7.16Smart / Advanced Power Strips2017III7.17Tier 2 Advanced Power Strips2017III7.18Vending and Beverage Merchandise Controller2017III	7.01	Energy Star Refrigerator	2017								
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	7.18		2017								

Lead Workpaper

----- 5

Support Workpaper

Missing Workpaper (typically from measures that are not moving forward)



Measure Consensus 7.16 – Smart, Advanced Power Strips



1/15/2019

- Offering
 - Smart Strips (Tier 1) shuts power off to designated devices when "master" device is shut off
 - Offerings for Res and Non-Res
 - Advanced Power Strips (Tier 2) uses multiple sensor methods and algorithms to shut off devices when non-use is detected
 - Offering for Res
 - IR, IR+OS variants
 - Tier 2 Connected
 - Offering for Res
- Stage 1 Issues
 - Consolidated both categories of power strips
 - Recognize that savings calculations will initially differ between Tier 1 and Tier 2
 - Split savings out into IR, IR+OS from blended (based on EAR disposition)
 - Added Tier 2 connected (per SCE work paper)
- Stage 2 Issues
 - Develop appropriate estimation/documentation methodology for emerging control methods
 - Develop savings methodology that is based on feature sets
 - × Permits savings determination for control methods that are either newly on market or don't' exist today
 - Networked control
 - Geo-fencing
 - Expand to 16 climate zones for interactive effects

	Blue text = First time that item is mentioned			
Appliance & Plug Loads	Italics text = Item that has not been completed			

Input Consensus 7.16 – Smart, Advanced Power Strips



Measure Permutations

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
			DMo,ECC,EUn,Gst,Htl,MF		
			m,Mtl,SFm,SUn,Asm,EPr,E		
			RC,ESe,Gro,Hsp,MBT,MLI,		
	Res		Nrs,OfL,OfS,RFF,RSD,Rt3,Rt		
BldgType	Com	Res	L,RtS,SCn,WRf	DMo,MFm,SFm	No Value
BldgVintage	Any	Any	Any	Ex	No Value
			,CZ06,CZ08,CZ09,CZ1		
			0,CZ13,CZ14,CZ15,CZ	CZ07,CZ08,CZ10,CZ14	
BldgLoc	IOU	IOU	16	,IOU,CZ06,CZ15	No Value
BldgHVAC	Any	rWtd	Any	Any	No Value

7

	eTRM Measure Value	PG&E	SCE	SDG&E	SCG
MeasureAppType	REA	REA	REA	RET	No Value
NormUnit	Each	Each	Each	Each	No Value
EUL ID	Plug-OccSens	Plug-OccSens	Plug-OccSens	Plug-OccSens	No Value
RULID	1/3 of 20 yrs	No Value	No Value	No Value	No Value
NTGR	Com-Default>2yrs Res-Default>2 Agric-Default>2yrs Ind-Default>2yrs ET-Default Res-Default-HTR-di	Res-Default>2	Com-Default>2yrs Res-Default>2 Agric-Default>2yrs Ind-Default>2yrs	EUC-Default	No Value
	PreRebDown DirInstall		PreRebDown DirInstall		
DeliveryType	NonUpStrm	DirInstall	NonUpStrm	DirInstall	No Value
GSIA	Def-GSIA	No Value	Def-GSIA	No Value	No Value

Appliance / Plug Loads

1/15/2019

7.16 – Smart, Advanced Power Stripselinical FORUM

- History
 - CaITF members generally endorsed the use of two savings estimates for Tier 2 power strips
 - × IR-only
 - × IR+OS
 - Consensus was not reached on this topic
 - IOU submitted work paper with separate savings for the two Tier 2 technologies, but proposed averaged value
 - Ex Ante Team Approved reduced savings as average for both technologies
 - EAR disposition includes IR, IR + OS, and blended technology savings EAR did not see rational basis for different savings from essentially similar products
 - Phase 2 testing was to include pre-post determinations for IR + OS strips
 - Phase 1 showed this technology to save considerably less than IR-only
 - Phase 2 testing was not done as expected
 - Work paper was revised to adopt EAR findings
- eTRM values adopt disposition values
- Additional permutations added for Tier 2 connected strips

Appliance and Plug Load Category Measure Affirmation



"Cal TF affirms the subcommittee recommendations regarding 'Stage 1 Issues' for Appliance and Plug Load, as amended."

• 7.16 Smart Power Strips







10

- Any questions, feedback, or issues, please reach out!
 - Roger Baker (<u>Roger.Baker@futee.biz</u>)
 - Ayad AI-Shaikh (<u>Ayad.AIShaikh@futee.biz</u>)

Thank You!







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Measure Consensus 7.16 – Smart, Advanced Power Strips



Savings Difference

Percent Change Within the Measure

		PGE	SCE	SDGE	SCG	Total
	kW	-31%	-26%	-43%		-32%
	kWh	-34%	-22%	-42%		-30%
	Therms	-38%	-17%	-32%		-28%
	Cost	-41%	-23%	-59%		-39%
H	kW	10%	1%			2%
Tier 1	kWh	0%	0%			0%
F	Therms	-4%	95%			43%
	Cost	-48%	1%			-17%
	kW	-36%	-44%	-43%		-41%
Tier 2	kWh	-39%	-43%	-42%		-41%
Tie	Therms	-42%	-34%	-32%		-34%
	Cost	-31%	-53%	-59%		-52%

Absolute Change & Comparison

12

		% of	% of						
	Total	Measure	Category	PGE	SCE	SDGE	SCG		
kW	(242.22)	-163%	-35%	(44.94)	(86.25)	(116.02)	-		
kWh	(1,255,538)	-114%	-32%	(260,633)	(426,703)	(592,026)	-		
Therms	14,953	-353%	1%	6,691	2,743	6,042	-		
Cost	\$ (789,040)	-102%	-12%	\$ (195 <i>,</i> 490)	\$ (199,325)	\$ (404,170)	\$ -		

Note that savings broken into Tier 1 / Tier 2 so that savings differences are more apparent. Tier 1 – little savings change Tier 2 – difference due to some claims including 2016 requirements and some claims submitted prior to disposition. Note that TRC increase because both savings and cost drop – TRC shows net effect. Tier 2 connected – newer, no claims data

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Appliance & Plug Loads

TRC Impacts

POU

120%

62%

TRC Change

Tier 1 - Res

Tier 2 - Res

1/15/2019