Application No.: A.19-12-008
Exhibit No.: SCE-01A
Witnesses: H. Elgin

An *EDISON INTERNATIONAL* Company

(U 338-E)

EXCERPTED PORTIONS OF SOUTHERN CALIFORNIA EDISON'S DECEMBER 16, 2019 TESTIMONY IN SUPPORT OF ITS 2019 RATE DESIGN WINDOW APPLICATION

Before the

Public Utilities Commission of the State of California

Rosemead, California
August 5, 2020

SCE-01A: EXCERPTED PORTIONS OF SOUTHERN CALIFORNIA EDISON'S DECEMBER 16, 2019 TESTIMONY IN SUPPORT OF ITS 2019 RATE DESIGN WINDOW APPLICATION

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IV.

STUDY ON APPLICABILITY OF ALL-ELECTRIC BASELINE TO HEAT PUMP WATER HEATER CUSTOMERS

A. Background

1. 2018 GRC Phase 2 Settlement Agreement

As part of the Residential and Small Commercial Rate Design Settlement Agreement in SCE's 2018 GRC Phase 2 proceeding, SCE agreed to conduct a study on the applicability of All-electric baseline allowances to customers who adopt heat pump water heaters (HPWHs).[27] The study results, and any proposed changes to the All-electric baseline requirements, were to be included in SCE's next GRC Phase 2 or RDW application.[28] The agreement to study the application of All-electric baseline allowances to HPWHs emerged from a joint desire between SCE and other parties to the settlement agreement to find an appropriate rate that would encourage the use of HPWHs as a GHG-reducing technology.

2. Policy Context

In 2016, Senate Bill 32 updated the California Global Warming Solutions Act of 2006 to require that GHG emissions in the state be reduced to at least 40 percent below 1990 levels no later than 2030. In June 2018, the California Energy Commission (CEC) published the report, Deep Decarbonization in a High Renewables Future.[29] The report concluded that HPWHs play a role in meeting that goal:

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[27] A.17-06-030, Motion Of Southern California Edison Company And Settling Parties For Adoption Of Residential and Small Commercial Rate Design Settlement Agreement, Attachment A, Settlement Agreement, p. A-17.

[28] *Id.*

[29] Report available at https://ww2.energy.ca.gov/2018publications/CEC-500-2018-012/CEC-500-2018-012.pdf (p. 67).

> To meet the state's 2030 climate goals, business and household decisions will play a pivotal role: from vehicle purchases, to water heater and heating, ventilation and air conditioning (HVAC) purchase and installation decisions, to vehicle driving behavior. Market transformation is necessary to bring down the cost and improve the performance of customer-facing zero-emissions technologies, primarily zero-emission vehicles and electric heat pumps in buildings.[30]

3. California Public Utilities Code Section 739

California Public Utilities Code Section 739 provides for separate baseline quantities for Basic customers (those with both electric and gas service) and for All-electric customers. Customers are eligible for All-electric baseline quantities if they either: (1) have electric service only, or (2) have electric space heating. However, the use of a HPWH alone does not qualify a customer for the All-electric baseline quantities. In addition to the quantities varying between these two groups of customers, the quantities are also set at different levels for each group. The Basic customers have baseline quantities "based on from 50 to 60 percent of average residential consumption" whereas the All-electric baseline quantities are "established at 60 to 70 percent of average residential consumption during the winter season."[31]

An additional standard allowance, referred to as a Medical Baseline Allowance, is provided for residential customers who are dependent on life support equipment or who are being treated for a life-threating illness or have a compromised immune system. This allowance is intended to cover all of the additional usage necessitated by most customers with qualifying conditions. Additional Medical Baseline standard allowances can be provided in cases where a single allowance is deemed insufficient.

4. Study Overview

Customers in existing building stocks who retrofit gas water heating with HPWHs require more electric energy usage than they did with gas water heating. SCE's study investigates the impact of this additional load and whether the All-electric baseline quantities are appropriate for these customers. Additionally, SCE investigates whether there are alternative means for providing additional baseline

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[30] *Id.*

[31] Pub. Util. Code § 739(a)(1).

quantities for HPWH customers that would reduce the electric bill impact component associated with the increased electric usage from HPWHs more effectively than making HPWH customers eligible for the All-electric baseline quantities.

For its study, SCE examined whether the All-electric baseline quantities are well suited to the operational usage of HPWH customers. As discussed in Section B.2 below, SCE found that the increased electric consumption for residential customers who install HPWHs would not be properly accounted for by the All-electric baseline quantities, which led SCE to then examine two alternative options for providing appropriate levels of additional baseline quantities to these HPWH customers: an "Increased Consumption Allowance Option" and an "Incremental Baseline Option."

Based on this study, SCE does not recommend that the All-electric baseline requirements be changed to make HPWH customers eligible for All-electric baseline quantities as the use of those baseline quantities would increase bill volatility for HPWH customers and result in disparate bill impacts across the various climate zones which are not commensurate with the additional HPWH load. Instead, as discussed in Sections B.3 and B.4 below, SCE prefers the Increased Consumption Allowance Option and Incremental Baseline Option alternatives (preferring the latter more than the former) to changing the All-electric baseline requirements as these alternatives would provide consistent bill savings for HPWH adopters without increasing bill volatility. SCE plans to continue to review these options and may make a formal proposal for a HPWH baseline allowance solution in its 2021 GRC Phase 2 Application based on that continued review.

B. SCE's HPWH Study

1. HPWH Usage Findings

In this study, SCE employed the HPWH hourly loads estimated by Energy and Environmental Economics, Inc. (E3) for their study "Residential Building Electrification in California."[32] E3 produced HPWH usage estimates for SCE climate zones 6, 9, and 10. These zones

[32] https://www.ethree.com/wp-content/uploads/2019/04/E3_Residential_Building_Electrification_in_California_April_2019.pdf.

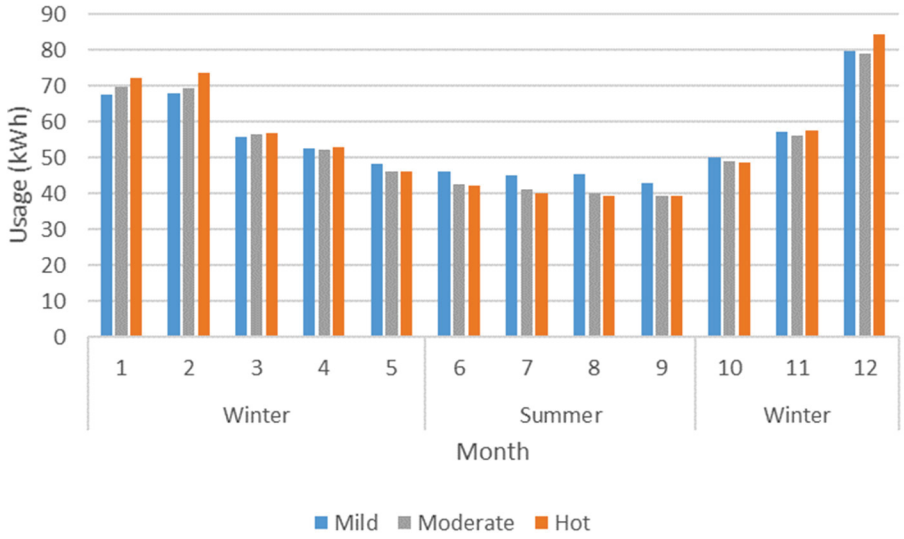
represent mild, moderate, and hot climate, respectively. A map of all climate zones in SCE's territory can be referenced in Appendix G. Based on this data and SCE's study, SCE finds the following.

- **While HPWHs do not use much energy at a given time, HPWHs consume energy every day, year-round.** Based on the E3 load estimates, the total annual usage from HPWHs is about 650 kWh, or roughly 10% of the average residential customer's annual usage.[33]
- **Because HPWHs transfer heat from surrounding air into water, they use less energy in the summer due to the higher ambient temperatures.** Figure IV-1 shows that the least amount of energy consumed monthly during the summer by HPWHs is as little as half the energy consumed in the winter.[34] It also illustrates that HPWHs typically require less energy in the winter in the mild climate zone than they do in the hot climate zones which typically have colder winters. Conversely, HPWHs require less energy in the summer in the hot climate zone than they do in the mild climate zone.

[33] *See* Appendix E.

[34] SCE's summer season is June through September; winter season is October through May.

Figure IV-1
Monthly Heat Pump Water Heater Energy Usage



- **HPWHs have the potential to allow for flexibility in the consumption of electricity given that the heated water is stored for use at a later time.** If the time of heating is modulated to occur outside of peak times, customers may be able to take advantage of low-cost periods and reduce their bill. This flexibility can be enhanced by heating the water above standard temperatures and then mixing it with cold water at the outlet at the time of consumption. This practice allows the energy consumption necessary to provide the required volume of hot water to be concentrated in the times of lowest cost.

2. <u>Suitability of the All-Electric Baseline Quantities for HPWH Customers</u>

The increased electric consumption for residential customers who install HPWHs would not be properly accounted for by the All-electric baseline quantities. Table IV-4 below shows the current All-electric baseline quantities that a Basic customer might receive if eligible. This table illustrates that a HPWH customer would receive a lower baseline allocation in the summer under the All-electric baseline in all zones except 5 and 13 even though that customer's summer consumption would increase with a HPWH. Moreover, while it is true that customers in all zones would receive additional baseline quantities in the winter under the All-electric baseline, the additional amount

received varies significantly based on the climate zone. For example, in Zone 9 customers would receive an additional 2 kWh/day, while in Zone 14 customers would receive an additional 9.3 kWh/day. In Zone 13, the daily baseline quantity would nearly double from 12.6 kWh/day to 24.3 kWh/day. These differences between the Basic and All-electric baseline quantities result from the differing existing energy consumption patterns of the customers underlying each group. Consumption of Basic customers is dominated by A/C usage during the summer while All-electric customers' consumption is dominated by heating loads during the winter.

Table IV-4
Current Basic and All-electric Baseline Quantities

	Summer		Winter	
Zone	Basic	All-electric	Basic	All-electric
5	17.2	17.9	18.7	29.1
6	11.4	8.8	11.3	13.0
8	12.6	9.8	10.6	12.7
9	16.5	12.4	12.3	14.3
10	18.9	15.8	12.5	17.0
13	22.0	24.6	12.6	24.3
14	18.7	18.3	12.0	21.3
15	46.4	24.1	9.9	18.2
16	14.4	13.5	12.6	23.1

Table IV-5 shows that the primary result of applying All-electric baseline quantities to customers with HPWHs is increased bill volatility. Bills would increase during the summer in most zones for these customers and would decrease during the winter. While the net effect would be an annual savings for most customers, the amount would vary widely depending on the climate zone. As shown in Table IV-5, the total bill impacts expected from applying All-electric baseline quantities to customers with HPWHs range from a 1.9% annual increase (Zone 15) to a 5.9% annual decrease (Zone 13).

Table IV-5
Seasonal and Annual Bills with Various Baseline Quantities

Basic Average Usage Profile including HPWH

		Current Basic Baseline	Current AE Baseline	Total Bill Impact
Zone 5	**Summer**	$611	$558	
	Winter	$1,142	$1,142	
	Annual	$1,753	$1,700	-3.0%
Zone 6	**Summer**	$500	$522	
	Winter	$720	$692	
	Annual	$1,220	$1,214	-0.5%
Zone 8	**Summer**	$648	$671	
	Winter	$700	$665	
	Annual	$1,348	$1,336	-0.9%
Zone 9	**Summer**	$753	$787	
	Winter	$795	$762	
	Annual	$1,549	$1,550	0.1%
Zone 10	**Summer**	$901	$927	
	Winter	$834	$760	
	Annual	$1,736	$1,687	-2.8%
Zone 13	**Summer**	$939	$917	
	Winter	$867	$782	
	Annual	$1,806	$1,699	-5.9%
Zone 14	**Summer**	$932	$935	
	Winter	$932	$822	
	Annual	$1,864	$1,757	-5.7%
Zone 15	**Summer**	$1,140	$1,317	
	Winter	$972	$836	
	Annual	$2,112	$2,153	1.9%
Zone 16	**Summer**	$711	$719	
	Winter	$900	$802	
	Annual	$1,611	$1,521	-5.6%

This volatility is primarily driven by the fact that customers who currently qualify for All-electric baseline quantities have different energy use patterns than Basic customers with a HPWH. The former's dependence on electric space heating leads to a large increase in energy usage that is confined to the winter, while the latter's dependence on a HPWH leads to an increase in energy usage

that is both more moderate and year-round. As a result, the All-electric baseline quantities for winter, which are currently set at 70% of average residential usage, are generally substantially larger than required by HPWH customers, while the All-electric baseline quantities for summer are generally smaller than required.

3. Alternative Options to Provide Additional Baseline Quantities to HPWH Customers

Because the All-electric baseline quantities themselves are not well suited to the operational usage of HPWH customers, SCE considered alternative means of providing additional baseline quantities to HPWH customers.[35] For this analysis, the HPWH customers are treated as a sub-group in that the estimated HPWH loads were added to each Basic customer's bill and the baseline quantities re-calculated.

First, SCE examined the results of applying the All-electric average consumption range (i.e., 60-70% of average usage) to come up with baseline quantities that could be specific to Basic customers with a HPWH. SCE refers to this as the "Increased Consumption Allowance Option." SCE examined two scenarios under this option. First, SCE, calculated the baseline quantities for these customers at 60% of the average residential customer. This corresponds to the current Basic quantities but adjusts for the HPWH loads. Second, SCE calculated the baseline quantities for these customers at 70% of the average residential customer. This quantity corresponds to the level permitted for all-electric customers. Critically, in both cases, SCE allowed for baseline quantities to be set at the specified percentage of average residential consumption (60% for scenario 1, 70% for scenario 2) in the summer in addition to the winter because HPWHs are in use throughout the year.

In addition to considering applying the All-electric average consumption range to the sub-group of HPWH customers, SCE also examined the results of calculating the amount of incremental baseline quantity necessary to keep the customer's average rate unchanged by additional HPWH load. SCE refers to this as the "Incremental Baseline Option." SCE calculated the incremental allowance by applying the current Basic baseline percentage of 60% to the average daily HPWH usage in each season.

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[35] *See* Appendix F.

The sensitivity of the additional baseline quantities provided under both the Increased Consumption Allowance Option scenarios and the Incremental Baseline Option is shown in Table IV-6 below. SCE notes that the additional baseline quantities provided at 70% of the average sub-group are *greater* than the additional HPWH load, and thus 70% provides excessive baseline quantities for HPWH customers. SCE also notes that the Incremental Baseline Option quantities are determined solely on the HPWH load and result in baseline quantities about twice the size as the additional amount produced by Increased Consumption Allowance Option at 60% of the average customer's consumption.

Table IV-6
Baseline Quantity Alternatives for HPWH Customers

Zone	Basic @60%	Basic+HPWH @60%	Basic+HPWH @70%	Basic+HPWH Incremental
	Summer			
5	17.2	17.1	23.5	18.0
6	11.4	11.6	15.0	12.2
8	12.6	13.0	16.5	13.4
9	16.5	16.9	21.6	17.2
10	18.9	19.4	24.3	19.6
13	22.0	22.4	27.9	22.7
14	18.7	19.3	24.1	19.4
15	46.4	46.8	59.7	47.1
16	14.4	14.7	18.9	15.2
	Winter			
5	18.7	18.7	25.4	20.0
6	11.3	11.8	15.1	12.6
8	10.6	11.1	14.0	11.9
9	12.3	13.0	16.4	13.6
10	12.5	13.2	16.5	13.8
13	12.6	13.2	16.5	13.9
14	12.0	12.8	15.8	13.3
15	9.9	10.1	12.8	11.2
16	12.6	13.1	16.5	13.9

As shown in Table IV-7, the results of calculating the baseline quantities at 60% for the sub-population with HPWH results in only small bill savings for HPWH customers over the current Basic baseline quantities. However, these small savings would be realized without the bill volatility

experienced if the All-electric baseline quantities were used. Indeed, both the summer bills and the winter bills for HPWH customers under the Increased Consumption Allowance Option at 60% are lower than when using the current baseline quantities. As expected, the resulting baseline quantities using 70% of the average customer loads are considerably more. This provides HPWH customers with considerable benefit in the winter. This is similar to the benefit provided by the use of the All-electric baseline quantities, except that under this option each zone now receives a similar benefit in the winter due to the mild zones receiving greater allocation and the hot zones receiving less. Additionally, by providing summer baseline quantities at 70% as well, HPWH customers also receive a considerable benefit during summer under this option, unlike when using the All-electric baseline quantities. This results in larger net savings and avoids bill volatility. Finally, the Incremental Baseline Option also reduces both summer and winter bills for HPWH customers with a consistent net impact across weather zones. The bill savings resulting from the Incremental Baseline Option are about twice as large as those realized under the Increased Consumption Allowance Option at 60%, although not as large as those realized under the Increased Consumption Allowance Option at 70%. However, SCE notes again that additional baseline quantities provided at 70% of the average sub-group are more than needed to offset the additional HPWH load.

Table IV-7
Seasonal and Annual Bills with Various Baseline Quantities

Basic Average Usage Profile including HPWH

		Current Basic Baseline	Subgroup @ 60% Baseline	Subgroup @ 70% Baseline	Incremental Baseline
Zone 5	**Summer**	$611	$564	$521	$557
	Winter	$1,142	$1,142	$965	$1,135
	Annual	$1,753	$1,706	$1,486	$1,692
Zone 6	**Summer**	$500	$498	$470	$494
	Winter	$720	$711	$658	$702
	Annual	$1,220	$1,209	$1,128	$1,196
Zone 8	**Summer**	$648	$645	$616	$642
	Winter	$700	$691	$644	$681
	Annual	$1,348	$1,336	$1,260	$1,323
Zone 9	**Summer**	$753	$750	$711	$748
	Winter	$795	$784	$728	$777
	Annual	$1,549	$1,534	$1,439	$1,525
Zone 10	**Summer**	$901	$897	$857	$896
	Winter	$834	$823	$768	$816
	Annual	$1,736	$1,720	$1,625	$1,712
Zone 13	**Summer**	$939	$935	$890	$933
	Winter	$867	$857	$802	$849
	Annual	$1,806	$1,792	$1,692	$1,782
Zone 14	**Summer**	$932	$927	$887	$926
	Winter	$932	$919	$870	$914
	Annual	$1,864	$1,846	$1,757	$1,840
Zone 15	**Summer**	$1,140	$1,130	$1,130	$1,130
	Winter	$972	$970	$925	$954
	Annual	$2,112	$2,100	$2,055	$2,084
Zone 16	**Summer**	$711	$709	$674	$705
	Winter	$900	$892	$835	$882
	Annual	$1,611	$1,601	$1,509	$1,587

4. Preferability of the Incremental Baseline Option Over the Increased Consumption Allowance Option

Of all the alternatives considered, SCE finds the Incremental Baseline Option to be the most preferable. First, providing an incremental allowance may not require a statutory change whereas

either changing the eligibility requirements for the All-electric baseline quantities or increasing the percent of average customer consumption that applies to Basic customers with HPWHs would require changes to statute.

Second, implementing an incremental baseline quantity adder would provide an amount of baseline quantity commensurate with HPWH usage but would leave an incentive for customers to operate the HPWH in a manner that takes advantage of low-cost periods. Table IV-8 below quantifies the current impact of the HPWH load on bills for the average customer on TOU-D-4-9PM in Zone 9 (Basic+HPWH Current Baseline column) and then shows both how adding incremental baseline quantities can affect that customer's bill (Basic+HPWH Incremental Baseline column) and how that customer can operate a HPWH to achieve further bill savings (Basic+HPWH Shifted Incremental Baseline column).

This table shows that, by adding a HPWH, the average Basic customer's bill would increase approximately $144 annually and their average rate would increase from 20.5 cents/kWh to 20.8 cents/kWh. However, providing an incremental baseline quantity would increase this average customer's bill credit from $339 to $363 annually and decrease their average rate back down to 20.5 cents/kWh. This should render the customer indifferent to the incremental usage. Additionally, if the customer were to shift 33% of her HPWH usage to the middle of the day when energy charges are lowest, the customer could further reduce her annual bill by $13 and achieve an average rate lower than they had without the HPWH. The example illustrates the results for an incremental baseline amount to make the average rate indifferent. However, to overcome for near-term customer hesitation in adopting this new technology, the indifference base line amount can be set to a higher level for a specified transitory period (i.e., a certain number of years) in order to encourage HPWH adoptions.

In sum, the Incremental Baseline Option not only renders a customer indifferent to the incremental usage required by a HPWH but also allows for the customer to reduce the additional energy cost resulting from a HPWH even further by shifting usage. This load-shifting behavior incentive is an advantage that is not provided under the Increased Consumption Allowance Option. Finally, the

quantity provided by the Incremental Baseline Option could also be adjusted to reflect any additional value associated with reduced carbon dioxide emissions.

Table IV-8
Example of Bill Savings Mechanisms

Zone 9 TOU-D (4-9 PM)		Basic Current Baseline	Basic+HPWH Current Baseline	Basic+HPWH Incremental Baseline	Basic+HPWH, Shifted Incremental Baseline
Summer	On	$282	$293	$293	$289
	Mid	$74	$78	$78	$77
	Off	$491	$515	$515	$518
$/Month		$4	$4	$4	$4
Winter	Mid	$281	$314	$314	$303
	Off	$394	$439	$439	$424
	Super-Off	$210	$237	$237	$253
$/Month		$8	$8	$8	$8
Total		$1,744	$1,887	$1,887	$1,875
Annual Bill Credit		($339)	($339)	($363)	($363)
Summer Bill Credit		($136)	($136)	($142)	($142)
Winter Bill Credit		($202)	($202)	($221)	($221)
Total w/Bill Credit		$1,405	$1,549	$1,525	$1,512
HPWH Annual			$144	$120	$108
HPWH Sum/Month			$9.54	$8.10	$7.64
HPWH Win/Month			$13.17	$10.91	$9.62
HPWH Savings				-17%	-25%
Avg. Rate		$0.205	$0.208	$0.205	$0.203

5. Final Considerations

Stakeholders should also be mindful that, although only HPWH load is under consideration in this study, there are additional appliances which customers could choose to electrify which would also support Building Electrification initiatives to reduce carbon dioxide emissions. Thus, it is worth considering whether Section 739 should be amended to provide for additional consumption allowances (in the range of 60-70% of average customer consumption in both summer and winter) in order to allocate adequate baseline quantities to customers with any qualifying appliances, such as a HPWH, electric range, or dryer.

Finally, SCE notes that stakeholders should also keep in mind the future direction of baseline quantities when considering how best to address the cost of additional HPWH loads. In Chapter III of this testimony, SCE describes the proposed joint IOU study to determine residential essential use. It is not clear at this time what implications, if any, this essential use study could have on the baseline statute.

Appendix A

Witness Qualifications

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY OF

HANK ELGIN

Q. Please state your name and business address for the record.

A. My name is Henry Elgin, and my business address is 8631 Rush Street, Rosemead, California 91770.

Q. Briefly describe your present responsibilities at the Southern California Edison Company.

A. I am a Load Research Analyst in the Pricing, Design & Research Group of State Regulatory Operations Department. In this position, I am responsible for the development, analysis and reporting of load research studies supporting regulatory proceedings, primarily involving rate design.

Q. Briefly describe your educational and professional background.

A. I hold a Bachelor of Science in Statistics and a minor in German from the California Polytechnic State University, San Luis Obispo, and a Master of Science degree in Statistics and Econometrics from the University of Essex, UK. I joined the Load Research group at Southern California Edison in 2013. I perform load research activities including sample selection, data management and estimation of energy consumption characteristics for rate groups and customer classes.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to sponsor *SCE's 2019 Rate Design Window Application, Exhibit SCE-01A, Chapter III, entitled Residential Essential Use Study Plan and Chapter IV, entitled Study on Applicability of All-electric Baseline to Heat Pump Water Heater Customers.*

Q. Was this material prepared by you or under your supervision?

A. Yes, it was.

Q. Insofar as this material is factual in nature, do you believe it to be correct?

A. Yes, I do.

Q. Insofar as this material is in the nature of opinion or judgment, does it represent your best judgment?

A. Yes, it does.

Q. Does this conclude your qualifications and prepared testimony?

A. Yes, it does

Appendix E

Average Basic Customer Load (kWh) and Estimated Heat Pump Water Heater Load (kWh) and Relative Size (%)

	Mild Climate Zones					Moderate Climate Zones				Hot Climate Zones		
Month	05	06	08	16	HPWH	09	13	14	HPWH	10	15	HPWH
1	661	432	397	557	67	448	491	561	70	468	457	72
2	673	378	340	487	68	419	418	511	69	417	404	74
3	732	402	360	516	56	441	436	520	56	450	460	57
4	550	366	354	466	53	419	446	473	52	446	637	53
5	639	375	379	488	48	458	578	528	46	488	722	46
6	615	386	451	603	46	560	878	807	43	656	1,103	42
7	721	612	854	920	45	1,031	1,270	1,241	41	1,226	1,648	40
8	692	628	823	804	45	961	1,082	1,088	40	1,114	1,561	39
9	536	457	555	622	43	644	779	800	39	804	1,247	39
10	549	416	449	488	50	497	490	473	49	514	628	49
11	589	394	388	478	57	451	455	464	56	452	416	58
12	651	457	442	581	80	517	559	572	79	534	443	84
Annual	7,609	5,303	5,793	7,011	658	6,845	7,883	8,039	642	7,567	9,725	654
1	10%	16%	17%	12%		16%	14%	12%		15%	16%	
2	10%	18%	20%	14%		17%	17%	14%		18%	18%	
3	8%	14%	15%	11%		13%	13%	11%		13%	12%	
4	10%	14%	15%	11%		12%	12%	11%		12%	8%	
5	8%	13%	13%	10%		10%	8%	9%		9%	6%	
6	7%	12%	10%	8%		8%	5%	5%		6%	4%	
7	6%	7%	5%	5%		4%	3%	3%		3%	2%	
8	7%	7%	6%	6%		4%	4%	4%		4%	3%	
9	8%	9%	8%	7%		6%	5%	5%		5%	3%	
10	9%	12%	11%	10%		10%	10%	10%		9%	8%	
11	10%	14%	15%	12%		12%	12%	12%		13%	14%	
12	12%	17%	18%	14%		15%	14%	14%		16%	19%	
Annual	9%	12%	11%	9%		9%	8%	8%		9%	7%	

Appendix F

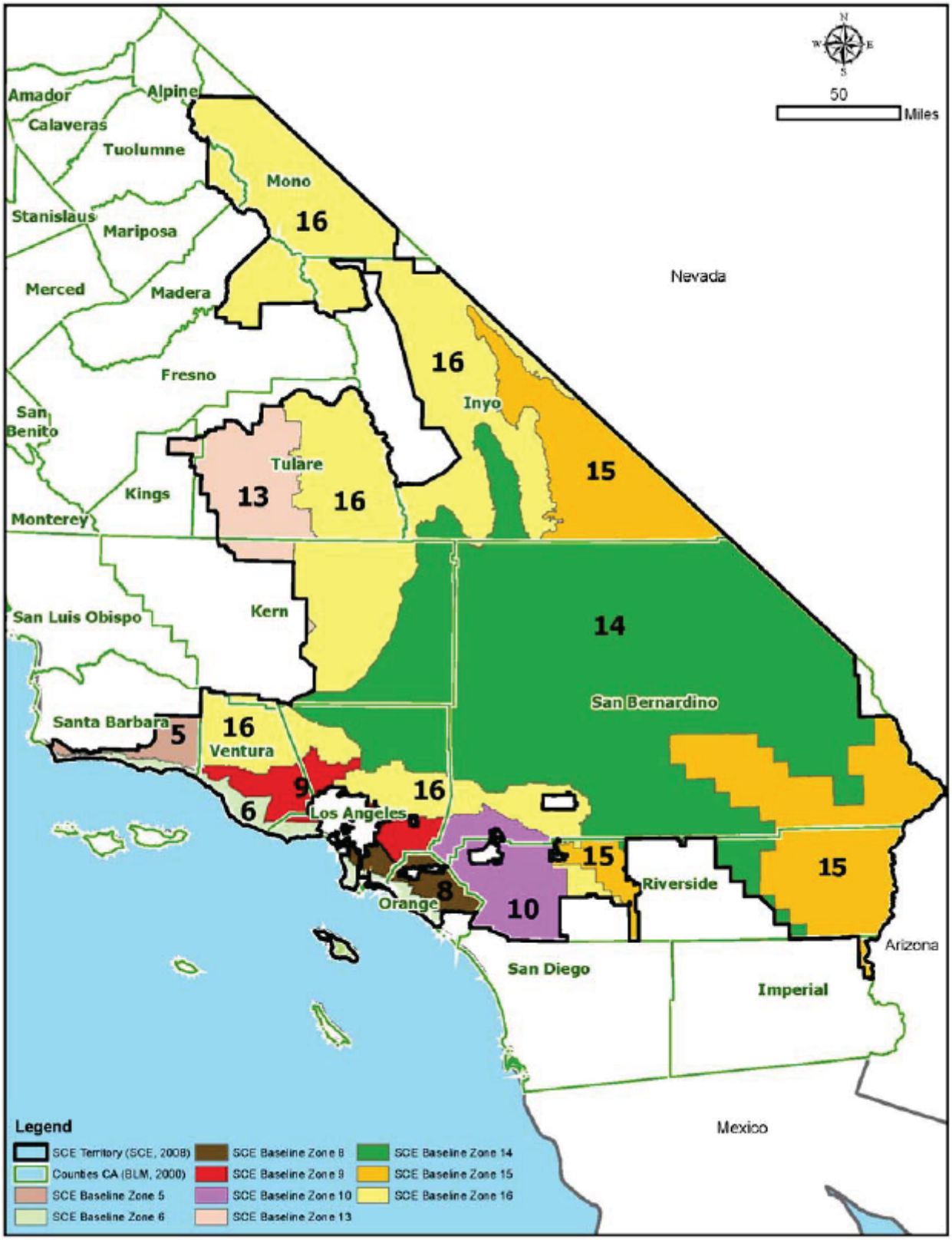
Current and Alternative Baseline Quantities (kWh/day)

	Current DBA		Subgroup with HPWH DBA @ 60%		Subgroup with HPWH DBA @ 70%*		Subgroup with HPWH Rate Indifferent DBA	
Basic								
ZONE	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter
05	17.2	18.7	17.1	18.7	23.5	25.4	18.0	20.0
06	11.4	11.3	11.6	11.8	15.0	15.1	12.2	12.6
08	12.6	10.6	13.0	11.1	16.5	14.0	13.4	11.9
09	16.5	12.3	16.9	13.0	21.6	16.4	17.2	13.6
10	18.9	12.5	19.4	13.2	24.3	16.5	19.6	13.8
13	22.0	12.6	22.4	13.2	27.9	16.5	22.7	13.9
14	18.7	12.0	19.3	12.8	24.1	15.8	19.4	13.3
15	46.4	9.9	46.8	10.1	59.7	12.8	47.1	11.2
16	14.4	12.6	14.7	13.1	18.9	16.5	15.2	13.9
All Electric								
05	17.9	29.1	17.8	29.1	24.6	29.1	18.7	30.4
06	8.8	13.0	9.3	13.6	11.7	13.6	9.6	14.3
08	9.8	12.7	10.4	13.4	13.0	13.4	10.6	14.0
09	12.4	14.3	12.8	14.9	16.3	14.9	13.1	15.6
10	15.8	17.0	16.3	17.2	20.7	17.2	16.5	18.3
13	24.6	24.3	25.0	24.7	31.6	24.7	25.3	25.6
14	18.3	21.3	18.8	21.8	23.7	21.8	19.0	22.6
15	24.1	18.2	24.5	18.5	31.2	18.5	24.8	19.5
16	13.5	23.1	13.8	23.7	17.7	23.7	14.3	24.4

* In both summer and winter

Appendix G

Map of SCE Baseline Regions


N
W
E
S
50
Miles
Amador
Alpine
Calaveras
Tuolumne
Mono
16
Stanislaus
Mariposa
Merced
Madera
Nevada
16
Fresno
Inyo
San
Benito
Tulare
15
13
16
Kings
Monterey
San Luis Obispo
Kern
14
San Bernardino
Santa Barbara
5
16
Ventura
9
16
6
Los Angeles
15
15
Riverside
8
Orange
10
Arizona
San Diego
Imperial
Mexico
Legend
SCE Territory (SCE, 2008)
Counties CA (BLM, 2000)
SCE Baseline Zone 5
SCE Baseline Zone 6
SCE Baseline Zone 8
SCE Baseline Zone 9
SCE Baseline Zone 10
SCE Baseline Zone 13
SCE Baseline Zone 14
SCE Baseline Zone 15
SCE Baseline Zone 16