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Witnesses:	R. Barcinas A. Hernandez D. Rauss M. Sheriff M. Thomas

SOUTHERN CALIFORNIA EDISON®

(U 338-E)

Southern California Edison Company's (U 338-E) Surrebuttal Testimony Supporting its Building Electrification Application in Response to the April 2023 Assigned Commissioner's Ruling

Before the

Public Utilities Commission of the State of California

Rosemead, California
June 28, 2023

Southern California Edison Company's (U 338-E) Surrebuttal Testimony Supporting its Building Electrification Application in Response to the April 2023 Assigned Commissioner's Ruling

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I.

INTRODUCTION

Southern California Edison Company (SCE) submits the following sur-rebuttal testimony to address the proposed supplemental rebuttal testimony submitted by the parties pursuant to Assigned Commissioner's Ruling (Ruling) Setting Aside Submission.[1] SCE's sur-rebuttal testimony does not address testimony of the parties that are outside the scope of the Ruling or that rehash arguments already submitted on the record and briefed.[2]

SCE's Building Electrification (BE) Application fills an urgent need for a broadly available incentive program to rapidly accelerate heat pump adoption and help transform the heat pump market across SCE's service area, providing increased access to low-income and environmental and social justice (ESJ) communities. As described in SCE's testimony and briefing, California's climate change priorities require electrification of building space and water heating on a massive scale in a short timeframe.[3] The state faces significant barriers to achieving building electrification on this scale, as traditional gas appliances remain cheaper, easier to install, and much more familiar to consumers. SCE proposed a broadly available incentive program with a substantial marketing and education component because, based on SCE's analysis and experience, this is the best way to surmount the existing barriers to efficiently drive progress toward state goals. Recognizing the great environmental need, several parties have submitted supplemental testimony supporting the size and scope of the BE programs.[4]

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[1] Parties who submitted proposed supplemental rebuttal testimony as ordered by the April 19, 2023 Assigned Commissioner Ruling include Public Advocates Office (Cal Advocates), California Large Energy Consumers Association (CLECA), Natural Resources Defense Council (NRDC), Small Business Utility Advocates (SBUA), Southern California Gas Company (SoCalGas), and Wild Tree Foundation (Wild Tree).

[2] For example, Wild Tree's recommendation for the Commission to only approve SCE's proposal if it meets specific program goals, cost, modeling, efficiency and refrigerant standards etc. and NRDC's request for the Commission to adopt its "Low Cost Better Fit" scenario have already been briefed and are not within the scope of the Ruling.

[3] See SCE Opening Brief pp. 10-11.

[4] NRDC's supplemental rebuttal testimony states, "Specifically, we urge the Commission not to narrow or scale down SCE's building electrification proposed program." Exhibit NRDC-04 at 1. Sierra Club urges the Commission to "maintain[] the size and ambition of SCE's proposal." Exhibit SC-12 at 2. *See also* SCE Reply Br. at 2 (citing additional supportive statements).

SCE presented extensive testimony and analysis supporting its Application and demonstrating that, among other benefits, the Application will close the heat pump gap in SCE's service area by 15% while driving down electric rates for all residential customer classes after four years. While the cost of SCE's Application is a temporary, four-year rate increase of about $1 per month for the average residential non- California Alternate Rates for Energy (CARE) customer (that can be partially relieved by adopting SCE's proposed regulatory asset strategy), the proposed portfolio results in numerous benefits across an array of categories—greenhouse gas (GHG) emission reductions, improved health impacts, consumer and contractor education, progress toward market transformation, and reduced rates going forward. The temporary costs of the program are heavily outweighed by the long-term benefits and the costs of inaction. We acknowledge that making strategic near-term investments to support decarbonization and electrification does increase near-term electric costs. However, these efforts are necessary in order to achieve the long-term benefits that will result from carbon neutrality and widespread electrification.

Despite this thorough evidentiary showing, a few parties—Cal Advocates, CLECA, Wild Tree Foundation, and SBUA—now try to defeat the BE Application by faulting SCE for not pursuing certain variations of its BE portfolio that those parties favor or for not specifying how SCE will coordinate with new government programs that have not even launched. As explained in the testimony below, these parties' attacks are off base and unfair, and they do not alter the need for this portfolio. The changes to the program that these parties espouse (focusing on specific climate zones, cutting funding by over 85%, or making it a small business pilot) would negate most of the program's benefits and harm the state's chances of reaching its climate goals. While there may be a place for other programs focusing on zonal electrification, small business customers, or other limited pools of customers/geographies, this program serves a different, and more urgent, purpose while allowing significant room to incorporate complementary contributions from other state, federal, and market-based actors.

Cal Advocates and Wild Tree continue to argue that the Commission should delay SCE's Application and rely on state and federal programs to drive building electrification. But while federal and state programs will play an important role in BE, these programs alone do not have the scope or funding to achieve the BE needed to meet California's climate goals. And, to the extent these parties are concerned that ratepayer funding will be wasted by layering incentives with these other programs, SCE's plan to follow CPUC layering guidelines and work with program implementers to calibrate incentives will ensure that is not the case.

With this Application, the Commission has the opportunity to support California's clean energy future and provide a much-needed boost toward reaching state climate goals at a critical time to act on urgent state climate-change policies. It was never intended that these goals would rely on government action alone, but rather that the goals would inspire broad action across the spectrum of market participants, including utilities. This is similar to transportation electrification, which has funding sources from federal, state, local, utility, cap-and-trade, low carbon fuel standards and more, to all rally towards the state's transportation electrification goals. California is relying on us all to act for building electrification goals. Without the crucial support of the Commission in authorizing programs like this one, California's chances of seeing building electrification on the scale needed to reach its goals will be greatly diminished. The time for narrow programs and pilots is over. SCE encourages the Commission to approve this Application.

II.

DISCUSSION

A. BE Portfolio Properly Accounts for Other Programs and Funding

Cal Advocates and CLECA argue that SCE's Application should be rejected because it overlaps with other ratepayer, state, and federally funded programs available to SCE customers. Cal Advocates asserts that other programs already perform many activities SCE proposes in its BE Application,[5] and CLECA argues there are significant incentives available at both the federal and state level for heat pumps and electrical panel upgrades .[6] Both Cal Advocates and CLECA point to the funding that will be available under the Homeowner Managing Energy Savings (HOMES) and High-Efficiency Electric

[5] Exhibit CA-07 pp. 1-1 and 1-2.

[6] Exhibit CLE-04 p. 6.

Home Rebate (HEEHRA) programs from the Inflation Reduction Act (IRA), and the Equitable Building Decarbonization (EBD) Program from the California Energy Commission (CEC). However, Cal Advocates and CLECA offer no analysis to indicate how many heat pump installations will result from these efforts in California, let alone the SCE service area, and thus they miss the most important fact: these government programs will not come close to meeting the need on their own.

1. Available federal and state funding is not enough to address the BE need

If the CPUC follows Cal Advocates' and CLECA's shortsighted recommendations to reject the BE Application because of the availability of other BE rebate programs Cal Advocates cites like IRA's HEEHRA or HOMES program (together, "IRA"), and EBD, the state's chances of achieving the 2030 heat pump adoption targets will be greatly diminished.

As the federal and state governments have not provided heat pump installation forecasts for IRA or EBD yet, SCE leveraged external forecasts and data to create reasonable estimates. The methodology for calculating IRA heat pump installations is founded on Rewiring America's estimate of heat pump installations,[7] while EBD heat pump installations is founded on the draft program guidelines'[8] estimating budgets and cost caps per home treated. Based on these analyses, the IRA is estimated to realize 310,000 heat pumps in California and 100,000 heat pumps in SCE service area. The EBD program is estimated to realize 156,000 to 320,000 heat pumps in California and 90,000 to 190,000 heat pumps in SCE service area. These figures show that, even accounting for IRA and EBD, there will still be a significant heat pump adoption gap in SCE's service area. Based on SCE's analysis of California's 6 million heat pump goal memorialized in CARB's Scoping Plan, SCE identified a gap of 2 million heat pumps in California.[9] The statewide gap would still be 1.4 to 1.5 million heat pumps after

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[7] The Electric Explainer: Key programs in the Inflation Reduction Act and what they mean for Americans, Rewiring America, accessed on June 25, 2023, available at https://www.rewiringamerica.org/policy/inflation-reduction-act.

[8] Equitable Building Decarbonization Direct Install Program Draft Guidelines, California Energy Commission, May 4, 2023, available at https://efiling.energy.ca.gov/GetDocument.aspx?tn=249992&DocumentContentId=84725.

[9] Exhibit SCE-05, p. 4, Table II-1: Determining Budget to Close 2030 California Heat Pump Gap based on BE Application.

these government programs are fully exhausted. Based on SCE's Pathway 2045's estimated gap of 5.3 million heat pumps statewide and 1.6 million heat pumps in SCE service area, there would still be a gap of 4.7 to 4.9 million statewide and 1.3 to 1.4 million in SCE's service area after exhaustion of these programs, as shown in the following table.

Table II-1
New Heat Pump Gap After IRA and EBD[10]

	California				SCE Service Area	
Heat Pumps (M)	**CARB 6M Goal**		**Pathway 2045**		**Pathway 2045**	
2030 Gap	**2.0**		**5.3**		**1.6**	
Inflation Reduction Act - HEEHRA and HOMES	0.31		0.31		0.10	
Equitable Building Decarbonization (range)	0.32	0.16	0.32	0.16	0.19	0.09
New Gap	**1.4**	**1.5**	**4.7**	**4.9**	**1.3**	**1.4**
SCE BE Application	0.25					
SCE BE Application % of New Gap	**18%**	**16%**	**5%**	**5%**	**19%**	**17%**

Importantly, these estimates are based on assumptions that overstate the impact of these government programs. For IRA, this analysis conservatively assumes there would be no incentive layering with other federal, state, and local programs, so that all heat pump installations are driven solely by IRA funding and not other programs. This analysis also conservatively assumes that the HOMES budget will go only to electrification measures including heat pump installations, when in reality fewer heat pumps will be installed because HOMES applies to all energy efficiency measures (including gas energy efficiency which would cannibalize electrification opportunities). For EBD, this analysis conservatively assumed a low to high approximation that 25 or 75% of EBD's budget realized new heat pump installations that would not have otherwise occurred, but the guidelines state that EBD incentives

[10] Original gaps are sourced from: CA-wide - California Air Resources Board (CARB) 2M heat pump gap from SCE-05, p. 4 and CA-wide and SCE-wide Pathway 2045 (P45) heat pump gaps from SCE-01, p. 14.

will apply after other programs' incentives, so it is unlikely that EBD alone will drive nearly as many unique heat pump installations as the high range assumed here. Moreover, this analysis conservatively assumed that for EBD, SCE's service area received all of the 58% of budget allocated to the Southern Region, which includes San Diego Gas and Electric (SDG&E), Los Angeles Department of Water and Power (LADWP), and other utility service areas. Less than 58% of the EBD budget will go to SCE's service area, resulting in fewer heat pump installations than assumed here. Finally, this forecast also conservatively assumed that the entire EBD budget would be allocated to incentives, when up to 15% is expected for admin, marketing, and other non-incentive activities.

In sum, even applying conservative assumptions, IRA and EBD will not drive sufficient heat pump installations for California to reach its targets. There is still a sizable need for programs like the one SCE proposes.[11]

2. SCE will coordinate with other programs to ensure BE program funds are efficiently used

Further, any assertions that SCE "has failed to consider other relevant programs"[12] or that SCE has not thought through how the BE programs will align with existing programs and ensure that outreach and implementation is streamlined to ensure the optimization of all available program opportunities, so customers have a one-stop-shopping experience[13] are uninformed and wrong. The unrealistic demands of these parties that SCE establish detailed procedures and layering arrangements at this stage reflects a lack of understanding of the complexities of incentive layering. As SCE has explained in prior testimony, upon approval of the BE Application, SCE will work strategically with the administrators and implementers of other programs available at that time to align on respective requirements, goals, targets, cost-sharing, measure specifications and overall incentive levels, leveraging

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[11] *See* Appendix B, SCE-23, Workpaper "BEWP.SCE-23.II.A.Michelle Thomas BE Application -New Heat Pump Analysis.xlsx." for complete list of assumptions and detailed methodology.

[12] Exhibit CA-07, pp. 1-1 and 1-2.

[13] Exhibit SBUA-04, p. 6.

the Incentive Layering Guiding Principles and Requirements set forth in D.21-11-002.[14] Through this process, as explained in more detail below, SCE will ensure that BE program incentives are efficiently used and that program administration is efficiently coordinated with other existing programs.

a) SCE will use the Commission's Incentive Layering Guiding Principles to efficiently layer incentives with other programs

SCE has explained in prior testimony how it intends to put its experience to use and, relying on the Incentive Layering Guiding Principles and Requirements, ensure that ratepayer funding is efficiently used in the BE programs.[15] SCE has been a thought leader with incentive layering models, including acting as the lead architect of the IOUs' Incentive Layering framework presented at the Energy Division-hosted public workshop in June 2020 to discuss possible approaches to incentive layering for California's Building Decarbonization programs[16]. Elements from the IOUs proposal were incorporated into the Incentive Layering Guiding Principles and Requirements adopted in D.21-11-002.[17]

The Incentive Layering Guiding Principles and Requirements provide the framework for SCE to work with other program implementers to efficiently layer incentives in a data-driven manner once the program is initiated. Generally, these Guiding Principles ensure (1) ease of participation in programs, (2) complementary incentives, (3) non-duplicative attribution of program benefits, and (4) on-going coordination between program administrators and implementers.[18] As SCE has explained, it intends to follow these principles to establish efficient incentive layering arrangements.

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[14] Exhibit SCE-02, pp. 36-44 for BE Ready Home and pp. 68-80 for BE Business.

[15] *Id. See also* Exhibit SCE-06 at 34-38.

[16] CPUC Workshop on Incentive Layering for Building Decarbonization; available at: https://www.cpuc.ca.gov/about-cpuc/divisions/energy-division/building-decarbonization/workshop-on-incentive-layering-for-building-decarbonization. Incentive Layer Workshop Final Presentation, pp. 103-118; available at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/building-decarb/incentive-layering-workshop_06302020_final.pdf.

[17] Decision 21-11-002, Appendix A - Adopted Incentive Layering Guiding Principles and Requirements; available at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M421/K770/421770284.PDF.

[18] *Id.* at 24.

But establishing incentive layering arrangements is not a simple exercise that SCE can unilaterally conduct, nor can SCE predict at this stage exactly how incentive layering arrangements with other programs will play out. As the Commission recognized in D-21-11-002 when it adopted guiding principles for incentive layering, "precise formulas and implementation mandates are generally not appropriate at this time" when "building decarbonization programs are in their early stages, many programs are in a state of flux, and programs and markets are expected to continue to change over time as building decarbonization technologies and markets mature."[19] There is no "one size fits all" approach for administering incentives across multiple customer programs efficiently and effectively.

In addition to layering incentives, SCE will also consider how to leverage on-bill financing (OBF), as urged by SBUA, if and when it becomes available. On June 9, 2023, the Commission issued a Proposed Decision authorizing the expansion of OBF programs for non-residential customers to support clean energy technologies.[20] The Proposed Decision also directs the IOUs to launch a Tariff On-Bill (TOB) Working Group within 45 days of the final decision and to file a joint TOB Proposal within 180 days of the final decision. The Proposed Decision will not be final until the Commission votes to approve it, a TOB program will take time to develop and finalize, and the proposed decision indicates that TOB would first be tested as a two-year pilot.[21] As explained in SCE-22,[22] SCE can use the mid-cycle review to optimize the coordination and layering of these programs, including the optimal incentive levels when financing is utilized.

b) <u>SCE will work with other programs to coordinate administration, marketing, education, and outreach</u>

SCE also has deep experience and an established framework for coordinating marketing, education, and outreach efforts among programs. SCE has decades of experience

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[19] D-21-11-002 at p. 23.

[20] Proposed Decision on Clean Energy Financing Proposals, R.20-08-022, June 9, 2023 .

[21] *Id.* at 75.

[22] Exhibit SCE-22 at p6. 6-7. SBUA states in its testimony that bill neutrality is not a requirement of OBF. While bill neutrality is not a Commission requirement, SCE currently requires bill neutrality in its OBF program.

implementing energy efficiency and other integrated demand side management (IDSM) programs that include collaboration with other IOUs, cities, water agencies and program administrators to collaboratively implement and deliver customer programs. For example, SCE's Income Qualified Programs' team support underserved communities through partnerships with community-based organizations (CBOs) and private licensed contractors to deliver the Energy Savings Assistance (ESA) program, Family Electric Rate Assistance (FERA), and CARE. SCE collaborates with and provides training for various entities, including CBOs and licensed contractors to share information, such as Energy Education and other beneficial SCE programs (Medical Baseline, Building Electrification, etc.), and to facilitate the enrollment of households into the ESA Program within their respective communities. By augmenting the expertise and reach of CBOs and licensed contractors with training and education on available program offering, services, and eligibility requirements, SCE will optimize outreach and support to underserved communities.

The foundation for effective layering of BE incentives and coordinating ME&O with other programs is already in place. But SBUA's demand for a detailed implementation plan including program checklists and processing system details is misguided and premature. Program layering management involves key considerations of which "program checklists and systems" are just a part. It also includes, for example, program design, channel delivery, SCE's role in the program (e.g., program administrator, fiscal agent, contract agent, no direct role), contract terms with the implementer, project verification and controls, and system verifications (to prevent double counting). As SCE has stated in its testimony, it intends to establish a BE Advisory Panel that would include customers, equity and disadvantaged community advocates, industry, Environmental and Social Justice (ESJ) organizations, CBOs, contractors/installers, labor, manufacturers, local government representatives, and other electrification stakeholders, to provide input on program implementation, incentive layering, intervention, outreach, and equity strategies.[23] Additionally, SCE will implement its BE portfolio

[23] Exhibit SCE-02 at p. 29, SCE-05 at p. 9.

through a third-party implementer selected through a competitive solicitation process.[24] Through an open and transparent process with input from the proposed BE Advisory Panel, SCE and its third-party implementer will identify and assess programs and the key aspects of those programs at the time of Application approval and again at launch to strategically engage program administrators for coordination and partnering to achieve mutual program goals.

Consistent with Decision 21-11-002, the TECH Initiative Implementer has developed an online platform for developers and contractors to submit and track multi-program applications that includes approaches for layering or stacking incentives. As the contracting agent for the TECH Initiative and as a TECH Pilot partner, SCE has been working with the TECH Implementation team to discuss and develop incentive layering concepts and to understand the challenges of coordinating or integrating multiple types of programs when objectives, goals, and other program requirements are not completely aligned. Program coordination and integration considerations include alignment on equity or low-income definitions, equipment specifications, documentation and contractor requirements, data collection requirements and other implementation activities.

Furthermore, SCE already has tools available to facilitate program coordination. For example, SCE developed a customer tracking database platform to track its energy efficiency, low income, and other Integrated Demand Side Management (IDSM) programs and could serve as a partial or complete tracking system supporting SCE's incentive layering management. Further, for controls and equipment tracking purposes, SCE can track equipment by manufacturer, model, and serial numbers so program cross-over can be monitored, particularly with tracking equipment funded by multiple programs. SCE has included budget in the BE Application to perform necessary system enhancements or updates to process, monitor and track activity for multiple programs and to securely communicate, transfer or share data with other program implementer databases.

In sum, upon approval of its Application, and once the final scope of the programs has been determined, SCE will develop a process to coordinate and streamline incentive layering and

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[24] Exhibit SCE-02 at p.72, SCE-06 at p.39.

ME&O based on the programs available at that time that are consistent with the Commission's Incentive Layering Guiding Principles and Requirements. SCE will work strategically with the administrators/implementers of these programs to align on respective requirements, goals, targets, cost-sharing, measure specifications and overall incentive levels. SCE anticipates that in some cases, programs may need to adjust requirements or specifications to improve coordination and seamless delivery of joint program offerings. Once incentive layering parameters have been established and agreed upon, SCE will work with program partners to develop and implement a systematic approach to qualify and determine eligibility based on factors such as sector, building type, regional location, income, business size and available incentives. SCE will develop program implementation plans based on this input detailing the incentive layering and other participation rules for each program by measure. Ultimately, the solution will be a combination of contract provisions with program administrators and implementers, cost verification during the project review, attestations from participants, and system controls. Meanwhile, the fact that SCE does not have detailed checklists and procedures for coordinating with these programs—most of which are not yet operational—is not a reason to delay SCE's portfolio or hinder the much-needed investment in building electrification that it will provide.

B. Wild Tree's Positions Present Lack of Understanding of Heat Pumps and SCE's Bill Impact Analysis

Wild Tree continues to assert that the BE Application should be limited to specific climate zones, stating, "Any space heating incentives should be geographically focused on the colder Mountains climate zone and should not be available in the hot Southwest Desert and mild coastal climate zones where space heating is minimally used."[25] This argument shows a lack of understanding of how heat pumps work and places unnecessary precision on a climate change problem that spans all climate zones.

First, an HVAC heat pump serves as both a heating and cooling system. Most homes have a gas furnace and an electric air conditioner, so replacing both with a dual-functioning HVAC heat pump would replace the less efficient gas furnace along with the less efficient air-conditioner cooling system.

[25] Exhibit WT-3, p. 12.

This would result in significant summer electric peak demand reduction that is highest in the hotter climate zones, which would not be realized if Wild Tree's recommendation were approved and these climate zones were removed from eligibility.

Second, it is not true that "incentivizing heat pump space heaters in hot places does not further GHG reduction goals because heaters are rarely used"[26] because customers across climate zones who participate in the program will use their HVAC heat pump both when the weather is hot (with the more efficient air conditioning function) and when the weather is cold (with the more efficient space heating function). Heat pump HVAC technology reduces significant GHG emissions year-round, not just during the winter.

Third, this attempt to perfect geographic targeting by limiting it to certain climate zones would harm the program by preventing participation from many ESJ communities, undermining SCE's goal to quickly accelerate heat pump adoption in an equitable and market transformational manner. For example, Wild Tree proposes excluding the South Coast climate zone group (CZs 6, 8, 9, and 10) from the program, but approximately 91% of SCE residential accounts in disadvantaged communities (DACs) are in those climate zones. Excluding these climate zones would seriously undermine equitable access to the program.

Fourth, Wild Tree's basis for not electrifying gas space heating in Southern Desert and South Coast climate zone groupings is based on inapplicable data. Wild Tree's data dramatically understates the electricity and gas consumption of homes in the Southern Desert and South Cast climate zone groups (and thus the impact of the BE programs) because Wild Tree used new build 2019 Title 24 building standards' energy consumption and GHG emissions baselines.[27] These new homes consume 81-88% less space heating gas usage and 82-90% less space cooling electricity usage in the Southern Desert and South Coast climate zone groupings than the building type targeted by the BE Ready Home program—

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[26] Exhibit WT-03, p. 6.

[27] Exhibit WT-01, p. 29.: "In R.19-01-011, Public Utilities Commission and California Energy Commission Staff analyzed mixed fuel homes built to the 2019 Title 2019 standards to establish a GHG emission baseline."

pre-1978 homes[28] which are estimated to make up approximately 75% of all homes in SCE's service area.[29] Not only are homes built in 2019 not the target building type, but these homes would likely not participate in the BE Ready Home program. The appliances in these homes would only be five or so years old when the program starts in 2024 or 2025, so the proposed incremental incentives (only addressing the cost above normal appliance replacement) would dissuade these homes from participating. With plenty of useful life remaining in their 2019 appliance, these customers would likely not pay the baseline cost for a new appliance.

Fifth, Wild Tree's critique of SCE's bill impact analysis[30] demonstrates a lack of understanding of SCE's methodology and E3's 2019 BE bill analysis. For instance, Wild Tree asserts that SCE's modeling was flawed because it "selected what appear to be arbitrary 'parameters' for different buildings such as pre-1978 low- rise multi-family buildings in climate zone 7 for heat pump space heating and 1990's single family homes in climate zone 9 for water heating."[31] This is wrong. SCE was simply stating the set of starting parameters used in the foundational 2019 E3 residential bill impacts study, which SCE described in Table B-1 in Exhibit SCE-21.[32] Wild Tree apparently misread the table, which expressly states in the heading that "[r]esults are available for *all combinations* of these parameters," and instead thought that the 2nd and 3rd rows were the only combinations of parameters that were modeled (Wild Tree also misstated the table as including "climate zone 7," which does not exist in SCE's service area, instead of "6"). Wild Tree then states that SCE used outdated climate zone data (CZ2010) for its bill impacts analysis,[33] but, on the contrary, SCE used the CZ2010 data in order to be consistent with the original 2019 study, which used that same data.

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[28] See BEWP.SCE-23.II.B.Michelle Thomas BE Application - Code HVAC Analysis.xlsx and BEWP. SCE-23.II.B.Michelle Thomas _BE Application - Code HVAC Analysis Methodology.docx.

[29] Exhibit SCE-02, p. 38.

[30] Exhibit WT-03, p. 8.

[31] *Id.*

[32] Exhibit SCE-21, Appendix B-1.

[33] *Id*.

Next, Wild Tree claims SCE's "flawed analysis is demonstrated as unreliable"[34] because Wild Tree does not believe SCE accurately stated the 2019 study's result for non-CARE CZ 9 customers and speculates that it may be a typo. Wild Tree could simply have looked at the 2019 study to see that this was not a typo, but an accurate transcription of data from the original study. Instead, Wild Tree tries to justify its claim by stating that "there should be little difference between other climate zones especially in climate zones 5-10 which are all coastal yet, SCE's analysis shows significantly divergent savings for water heating in each climate zones including 5-10."[35] This assertion is uninformed given the vastly different climates of Climate Zone 10 (Southern California's Inland Empire that includes Riverside and San Bernardino Counties) and say, Climate Zone 6 (coastal areas such as Santa Monica, Long Beach, Huntington Beach, Newport Beach, etc.). Wild Tree also ignores the fact that Heat Pump Water Heater (HPWH) efficiency does change, whether it's in an unconditioned or conditioned space. In an unconditioned space, HPWH energy consumption fluctuates significantly based on outside air temperature. An NREL report confirms that: "…increasing the ambient air temperature from 50F to 80F can increase the COP of the [HPWH] units from around 2 to nearly 3"[36]. If the HPWH is in a conditioned space, its impact on energy consumption would be contingent on the efficiency of whatever energy system (furnace or heat pump HVAC) that is bringing heat into the building, which would be weather dependent in the case of a heat pump HVAC.

Finally, Wild Tree claims SCE should have been able to do a bill impact analysis using customer's actual electric and gas data instead of using modeling, but SCE has explained that it could not do so.[37] As stated previously on record, SCE is an electric-only utility with limited gas utility data. It has requested coordination and level sharing between SCE and relevant gas utilities, but that was not in place for modeling this Application.[38]

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[34] Exhibit WT-03, p. 8.

[35] Exhibit WT-03, p. 9-10.

[36] US Department of Energy Field Performance of Heat Pumps, *available at* https://www.nrel.gov/docs/fy16osti/64904.pdf, p. 19.

[37] Exhibit WTF, p. 10.

[38] Exhibit SCE-06, p. 45.

C. The Building Electrification Application Includes Necessary Distribution Facilities in its Request that Are Distinct from SCE's GRC request

CLECA admits they did a "brief examination" of the capital expenditures proposed in SCE's General Rate Case (GRC) and concluded that they are primarily driven by "electrification." Without providing any objective analysis, CLECA concludes that SCE's rate analysis supporting the BE Application is illusory because it does not account for infrastructure upgrades such as the capital expenditures in the GRC.[39] CLECA is partially correct, in that capital expenditures in the GRC are not included in the BE Application's rate analysis, but, for several reasons, the rate analysis is not "illusory" and is reasonable for CPUC decision-making. First, the infrastructure upgrades proposed in the GRC encompass all forms of load growth, of which electrification is a subset, and only up to 0.3% of the forecasted future load is associated with this Application (and up to 2% for building electrification from *all* BE programs, policies, state building codes, etc.).[40] Second, SCE must plan for this increased load regardless of the BE Application because state climate goals require widespread BE and the CEC's latest Integrated Energy Policy Report (IEPR) forecasts a major increase in BE; the BE Application will merely accelerate progress toward these state goals. Thus, even if it were possible to attribute a dollar amount of infrastructure upgrades to building electrification, it would not be accurate to assume that the BE Application will cause upgrades that would not otherwise be required. Third, the upgrades included in the Load Growth volume of SCE's GRC are focused on SCE's primary distribution and sub-transmission networks, not the secondary distribution investments identified in the BE Application. Given that BE was part of the forecast used to support SCE's GRC request, this Application is not expected to require additional T&D infrastructure investments beyond those already included in the GRC. As stated, SCE's BE Application is anticipated to help *alleviate* grid burden by reducing system

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[39] Exhibit CLE-04, p. 5.

[40] SCE conducted this analysis in WP SCE-02, Vol.07 – TEGR Forecast Development Workpaper, prepared for SCE's GRC. Out of the TEGR baseload of approximately 100,000 GWh/yr, the BE Application would be 286 GWh/yr, or 0.3%.

peak usage (minus 18 MW[41]), and that's before any additional peak reduction from demand response participation.

CLECA also argues that "SCE completely ignores the risk that upgrading panel sizes will require costly upgrades to the upstream distribution system"[42], pointing to a PG&E analysis that "panel upgrades can in turn require an upgrade in the customer's utility service line with an associated cost of between $2,850-$30,000".[43] On the contrary, SCE already included secondary distribution costs, i.e. line and service extensions, in the $69.2M budget item for utility-side infrastructure.[44] This budget will cover the wide range of line and service extension scenarios expected with an average budget based on the standard utility residential allowances. Even when these capital costs are fully assumed to be incurred, SCE's proposal realizes net downward rate pressure. SCE also deliberately proposed how to handle the rarer customer situations with unusually high utility service costs by preparing to implement limits on allowable costs in the program.[45]

CLECA then mischaracterizes the BE program design and the point of the downward rate pressure analysis when it states, "SCE seems completely uninterested in minimizing upgrade costs for both the panel itself, and the connected service line."[46] This is a gross mischaracterization of SCE's position and the record in this proceeding. SCE has stated, repeatedly, that it will only install panel upgrades and associated utility service upgrades if it is the only viable solution for the customer after the electrification readiness assessment.[47] SCE has also agreed to include demand response and other load modifying technologies for the BE technologies in this Application, which when leveraged can lessen the grid impact

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[41] See BEWP.SCE-02.I.F.Carter Prescott BE Application – Portfolio Benefits October Update.xlsx.

[42] Exhibit CLE-04, p. 3.

[43] *Id.*

[44] Exhibit SCE-02, p. 31: "SCE forecasts that approximately $69 million of this request will be capital, which consists primarily of utility service upgrade allowances.". See also SCE-02, p. 49-51 for more details.

[45] Exhibit SCE-02, p. 51: "During the program, SCE will implement and update limits on project service connection and line extension costs as the average unit cost may change or increase."

[46] Exhibit CLE-04, pp. 3-4.

[47] Exhibit SCE-06, pp.43-46.

and potentially modify grid and customer upgrades required.[48] Far from implying that SCE will needlessly provide panel upgrades, SCE's downward rate pressure analysis was intended to demonstrate that at the maximum possible costs, where all the estimated panel upgrade and utility service upgrade costs are incurred, there is still net downward rate pressure. The actual downward rate pressure will show better results than the modeled highest cost scenario if even one panel/utility service upgrade is mitigated through the above solutions.

D. Cal Advocates' Requests for a Pilot Budget is Ill-Advised and Would Result in Limited Long-Term Benefits and Potentially Permanent Increases to all Non-CARE Customers

Cal Advocates argues that Scenarios 7a and 7b (SCE's proposed BE Application, with and without regulatory asset, respectively), should not be adopted because they would create unreasonable near-term bill increases.[49] Specifically, Cal Advocates states that the $14.04 and $21.12 *annual* increases to residential non-CARE bills for Scenarios 7.a and 7.b respectively, are "significantly higher than the estimated bill increases for all other scenarios."[50] Cal Advocates also asserts that SCE's BE program "makes it that much more difficult for customers to absorb further, unexpected rate increases."[51]

It should not be surprising that the larger, high-impact portfolio proposed by SCE requires an upfront investment bigger than the smaller, low-impact program proposed by Cal Advocates. That does not mean that Cal Advocates' small program is a superior option. In reviewing these scenarios, it is important to consider not only the immediate costs (as Cal Advocates emphasizes), but also the substantial and permanent long-run benefits (which Cal Advocates largely ignores). Here, as seen in

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[48] Exhibit SCE-06, pp. 40-41.

[49] Exhibit CA-07, pp. 1-13 and 1-16.

[50] *Id.* pp. 1-14 These annual amounts are derived by multiplying the monthly bill impacts of $1.17 and $1.76 by 12 months to approximate an annual amount.

[51] *Id*. p. 4.

Table II-2,[52] only SCE's proposals 7a and 7b offer long-term rate reductions for the non-CARE residential customer class. All the other proposals result in likely permanent rate increases because all other customers pay the CARE rate subsidy, which is not entirely offset by the benefits of additional sales.

Table II-2
Select Years: Residential (non-CARE) Monthly Bill Comparison

Select Years: Residential (non-CARE) Monthly Bill Comparison

	2025	Change from Current	2028	Change from Current	2038	Change from Current	Average Long Run (Years 2028 and 2038)
Current Bill	$151.21		$151.21		$151.21		
Scenario 7.a	$152.38	$1.17	$150.79	($0.42)	$150.63	($0.58)	($0.50)
Scenario 7.b	$152.98	$1.76	$150.44	($0.77)	$150.41	($0.81)	($0.79)
Scenario 7.c	$151.47	$0.26	$151.33	$0.11	$151.33	$0.11	$0.11
Scenario 7.d	$151.46	$0.25	$151.39	$0.18	$151.33	$0.12	$0.15
Scenario 7.e.1	$151.52	$0.31	$151.33	$0.12	$151.33	$0.12	$0.12
Scenario 7.e.2	$151.48	$0.27	$151.33	$0.12	$151.33	$0.11	$0.12
Scenario 7.e.3	$151.28	$0.07	$151.29	$0.07	$151.29	$0.07	$0.07

More to the point, in annual terms, by 2038 the permanent long-run decreases average to about $6.00 for 7a, SCE's request, and $9.48[53] for 7b (SCE's request without reg asset). These bill savings continue indefinitely.

On the other hand, Cal Advocates' modest, low-income focused proposal (Scenario 7.c in Table II-2) would potentially result in long-run annual increases of about $1.43 for the non-CARE residential customer class.[54] Even if the customer share is 70% on the CARE rate for a 100% ESJ program, Scenario 7c still results in an approximate $0.24 annual long-run increase.[55] For this reason, Cal Advocates' proposal is unreasonable in that it is too narrowly focused on serving only ESJ communities

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[52] This table is repeated from Figure II-1 in SCE's Supplemental testimony, with the with the addition of a column that provides a simple average of the impacts for years 2028 and 2038. The results in this table present *monthly* bill impacts for the non-CARE residential customer class, and while simple in presentation, rely on extensive and robust financial modeling that Cal Advocates has used extensively.

[53] These annual amounts are derived by multiplying the monthly decreases of ($0.50) for 2028 and ($0.79) for 2038 by 12.

[54] Note that all other non-residential customer classes realize rate increase also.

[55] SCE's confidential rate impact models used in Exhibit SCE-21 are available to parties upon request. This adjustment of the share of residential CARE customers from 100% to 70% can be made in the model Confidential BEWP.SCE-21.II.A.7 Rate and Bill Impact Model Scenario 7.c , tab BE Home Ready Calc, cell I3.

and is too small to be impactful in the long-run. SCE's BE request accomplishes much more—driving heat pump adoption, lowering GHG emissions, avoiding installation of new gas appliances, educating contractors and customers on heat pump technology, and more—while also delivering lower rates in the long term. This is the portfolio the state needs.

E. SCE's Scenarios and Rate Impact Modeling Assumptions are Reasonable and Consistent

Cal Advocates also argues that its low-budget, low-impact proposal should be adopted because there are "issues with SCE's analysis and the uncertainty in assumptions and impacts,"[56] but Cal Advocates grossly overstates that uncertainty by nitpicking SCE's modeling in ways that would not meaningfully affect the results. SCE's rate modeling fulfills its purpose of providing reasonable estimates to evaluate portfolio options.

For example, Cal Advocates claims that SCE "makes assumptions that conflict with the types of customers that will benefit from the BE program scenarios and how rates are set in practice," and that SCE "continues to incorrectly assume that only CARE customers would enroll in the BE programs if the funding was limited to ESJ customers." But SCE's model assumed that 100% of ESJ customers would be CARE participants to conservatively estimate portfolio benefits, particularly when the actual percentage of ESJ customers who are CARE participants is difficult to accurately quantify. Indeed, Cal Advocates admits that it is difficult "to confidently estimate the percentage of CARE and non-CARE customers that would enroll in a BE program that requires residency in an ESJ community based on current data." For this reason, for all scenarios requiring that the budget be allocated 100% to ESJ communities (Scenarios 7c – 7.e.3 in Table II-1 above), which is also consistent with how SCE presented all of the scenarios in SCE's Rebuttal testimony,[57] SCE assumed that 100% of those customers would take service on the reduced CARE rates for rate impact modeling purposes. Far from creating uncertainty, as Cal Advocates asserts, this modeling provided useful directional information on

[56] Exhibit CA-07 at pp.1-18.

[57] Exhibit SCE-06 at pp.64-67.

expected rate impacts. Indeed, even if the percentage of ESJ customers on CARE rates were assumed to be 70%, Scenarios 7.c-7.e.3 would still result in long-term rate increases.[58]

Cal Advocates also states that CARE rates are not calculated in isolation to non-CARE, and that SCE distinguishes the impacts between CARE and non-CARE customers by incorrectly, "calculating CARE rates as the revenues collected from CARE customers, divided by the CARE electricity consumption sales."[59] Again, SCE's rate impact model is a tool to compare program options. It does not fully mirror rate-setting methods, which are far more complex and infeasible for a simplified modeling tool. SCE's rate impact model provides broadly accurate results for comparing various levels of ESJ participation. Cal Advocates has presented no evidence contradicting SCE's analysis or the general principle that greater CARE participation results in relatively higher rates for non-CARE customers.[60]

Finally, Cal Advocates explains "previously, CARE rates were calculated as a flat line discount on non-CARE rates that accounted for charges CARE customers are exempt from paying. AB 205 changed this formula by excluding the CARE exempt charges from the discounting process." Rate design elements included in AB 205 such as Income Graduated Fixed Charges and the corresponding change in the CARE discount are currently being vetted in Track A of the Demand Flexibility Rulemaking.[61].

F. <u>Catalina Can Be a Preliminary Focus for Zonal Electrification</u>

Because zonal electrification requires a transparent process between gas and electric utilities, SCE agrees with SoCalGas that Catalina may present a unique opportunity given SCE's function as both the gas and electric utility on the island. As explained in testimony, SCE has recently initiated a zonal electrification study for its Catalina operations. The study is anticipated to be completed in Q4 2023.

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[58] *See supra* at p. 18, n.55.

[59] Exhibit CA-07 at pp. 1-17.

[60] Exhibit CA-07 at pp. 16-18.

[61] Demand Flexibility Rulemaking, R.22-07-005.

Pursuing zonal electrification on Catalina could be a supplemental electrification recommendation from this study.

Targeting Catalina as one of the first zonal electrification opportunities within SCE's geography would be an equitable effort, as it is an underserved community where the residents struggle with logistical challenges.[62] With the median income at 70% of the median household income for Californians in general,[63] a zonal electrification effort would mainly serve Catalina year-round residents who are mostly locally employed renters, not seasonal tourists.[64] BE Ready Catalina will help lay the foundation for any such zonal electrification efforts.

G. SBUA's Insistence That the BE Application Include a Small Business Pilot Is Misplaced

SBUA's rebuttal testimony aggressively attacks SCE's BE Application for not including a small business pilot, which, SCE has repeatedly explained, is outside the scope of the Application and not tailored to the same objectives of broad, cost-effective GHG reduction and heat pump market transformation. In making its arguments, SBUA repeatedly distorts the strategy and goals of the Application and minimizes the effort SCE has undertaken to design a well-balanced portfolio and model its outcomes, simply because SCE does not acquiesce to SBUA's call for a small business pilot.

SCE supports small businesses and appreciates SBUA's mission, but the BE Application is not meant to be a small business pilot. The guiding principles and core goals of SCE's BE portfolio of maximizing GHG reduction, prioritizing equity and inclusion, improving customer affordability, improving reliability and enhancing load flexibility, and following a least-cost market transformation approach was crystalized in its opening testimony, and restated in its supplemental testimony, opening briefs, reply briefs, and again in supplemental testimony.[65] SCE designed its BE portfolio using a data-

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[62] SCE, Hernandez, Tr. Vol. II at 256:17-257:26.

[63] SCE, Hernandez, Tr. Vol. II at 257:27-258:6; *see* City of Avalon 2021-2029 Housing Element, Public Review Draft, Dec. 2021, at 23 (noting that "[a]ccording to the City of Avalon Community Wide Income Survey, commissioned in 2016, the city has a median household income closer to $42,000"), available at http://www.cityofavalon.com/filestorage/3310/3732/Avalon_Housing_Element_Public_Draft.pdf.

[64] Exhibit SCE-02, p. 56.

[65] Exhibits SCE-02, p. 4; SCE-06, p. 6; *see also* SCE's Opening Brief, p. 24; SCE's Reply Brief, pp. 2 & 6; Exhibit SCE-21, p. 2.

driven approach, and the greatest opportunity for cost-effective GHG reduction and the greatest need for heat pump market transformation, at the speed needed to get within reach of the state's ambitious GHG reduction targets, were in the residential sector. Thus, SCE allocated the majority of its portfolio resources to that sector. The 2030 gap according to SCE's Pathway 2045, which identified a least-cost path to achieving state decarbonization goals across sectors, is 81% residential, 19% commercial, so the proportion of the BE Application budget intentionally aligns with this split.[66] Of the commercial gap, approximately 99% is heat pump HVAC.[67] Electrification of space heating is designed to replace the gas space heater along with the existing electric air conditioner, resulting in reduced electric peak demand[68] and thus not necessitating any electrical infrastructure upgrades. By choosing to incentivize only electrification of commercial HVAC, there are further cost savings by not needing incentives for commercial infrastructure upgrades, or free commercial assessments to identify infrastructure upgrade needs to electrify all commercial end uses. This results in the most cost-efficient commercial Heat Pump HVAC program focused on the priority commercial BE technology up to 2030. While SCE cannot blame SBUA for fervently advocating for its chief interest—small businesses—SCE had to consider numerous other interests in designing the BE portfolio—most urgently, the need for equitable, widespread, and rapid building electrification in the residential sector to meet California's climate goals.

SCE is not ignoring the longer-term needs of the commercial sector, as the BE Business program design explains its market theory that electrification of space heating can be the "viable first phase of BE that can spur other efforts to electrify equipment for water heating and cooking."[69] With incentive layering with

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66 See BEWP.SCE-01.III.B.Laura Renger BE Application – Gap Analysis.xlsx.

67 SCE-01, p. 13, SCE estimates that by 2030 there will be a gap in heat pump adoption of 5.3 million heat pumps statewide (5.3 million = 4.3 million residential space and water heat pump gap + 1 million commercial heat pump HVAC gap) and 1.63 million heat pumps in SCE's service territory. This estimate was developed using forecasts and targets from Pathway 2045, forecasts of rebate programs, and projections for local and state building code adoption.35 Footnote 35: "It is important to note that Pathway 2045 projected a small 10,000 unit increase of commercial heat pump water heaters by 2030, with most of the adoption occurring after 2030. The targets, adoption, and gaps discussed herein do not include the potential gap in commercial water heater adoption."

68 BE Business peak demand impact: -14 MW, see BEWP.SCE-06.III.A.3.Carter Prescott BE Application - Portfolio Benefits October Update.xlsx.

69 SCE-02, p. 66.

any other commercial BE programs that may offer incentives for electrifying HVAC and other commercial gas end uses, the BE Business program can free up those other program's budget to focus on improving the economics for decarbonizing non-HVAC end uses or electrical infrastructure upgrades, such as the Inflation Reduction Act's Section 13303 Commercial EE Tax Credit.

SBUA also argues that SCE should use Geographic Information System (GIS) targeting to "align with gas system retirement" because "small business customers, especially food-oriented businesses, are particularly dependent on gas and at a high risk of being burdened with the cost of stranded gas assets."[70] But SCE and other parties have explained (with near unanimity) why the BE Application cannot drive gas system retirement and why it makes no sense to target decommissioning opportunities at this stage.[71] Stranded gas assets for small business customers may be dealt with by SCE's gas decommissioning approach proposed in SCE-21, but should not detract from the objectives of this Application designed to drive widespread adoption of, and to help transform the market for, newer space and water heating technology.

SBUA then states, in an incomplete and misleading manner, that "SCE portrays the application as a valuable first step that will gather data and pave the way for future efforts,"[72] and, based on this flawed characterization of the Application, argues "[a] nearly-$1B program is not the best way to learn how to do a better future building electrification program."[73] This argument is grossly off base. Again, the BE Application is *not* a pilot program. SCE never said that the primary purpose of this program was to gather information for future programs, and SBUA's insinuation otherwise shows that it misunderstands the purpose of the Application. Rather, in response to SBUA's repeated demands that the BE Application include an expensive, out-of-scope small business pilot, SCE has explained that, in servicing thousands of commercial customers through the BE Business program, SCE will gather data that may be helpful for future programs like the one SBUA wants. The fact that the BE Application may

[70] Exhibit SBUA-04, p. 3.

[71] *See* Exhibit SCE-02 at 2 (citing party testimony).

[72] Exhibit SBUA-4, p. 5.

[73] *Id.*

have an incidental benefit of producing data that could be useful in a future small business BE program does not mean the purpose of the BE Application is to collect that data. Nor does it mean that SCE does not have sufficient data to support the program as it is currently designed. SBUA's testimony on this point is incorrect and should be disregarded.

VERIFICATION

I, Katie Sloan, declare and state:

I am Vice President of Customer Programs and Services for Southern California Edison Company. Pursuant to Rule 2.1 and Rule 1.11 of the Rules of Practice and Procedure of the CPUC, I am authorized to make this Verification on its behalf. I am informed and believe that the matters stated in the foregoing pleading are true.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on June 28, 2023 at Rosemead, California.

/s/ Katie Sloan
Kathleen "Katie" Sloan Moody
Vice President, Customer Programs & Services
Southern California Edison Company

Appendix A

Witness Qualifications

SOUTHERN CALIFORNIA EDISON COMPANY
QUALIFICATIONS AND PREPARED TESTIMONY
OF ROSALIE BARCINAS

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

A. My name is Rosalie Barcinas and my business address is 1515 Walnut Grove Avenue, Rosemead, California 91770.

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

A. I am the Director of Electrification and Customer Services Policy within the Regulatory Affairs and Strategy organizational unit of SCE. My responsibilities include overseeing the teams responsible for SCE's regulatory and legislative policy regarding transportation and building electrification, climate change mitigation, energy efficiency, demand response and energy equity. I have had this role since July 2022, and prior to this role, was the Director of SCE's Catalina Operations and Strategy within the Generation organizational unit of SCE from April 2021 to June 2022. My responsibilities included overseeing operations of the electric, water, and gas systems, special projects, and overall strategy for the long-term sustainability of the Catalina Island operations.

Q. Briefly describe your educational and professional background.

A. I graduated with a B.S. in Mathematics from the California State University of Long Beach in 2009. I have over twenty years of experience that spans across multiple areas of Southern California Edison (SCE) which includes policy development and advocacy, operations, external engagement, permitting for major infrastructure projects and land rights management.

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

A. The purpose of my testimony in this proceeding is to sponsor portions of Exhibit SCE-23, titled Southern California Edison Company's Surrebuttal Testimony Supporting its Building Electrification Application in Response to the April 2023 Assigned Commissioner's Ruling, as identified in the Table of Contents thereto.

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.

SOUTHERN CALIFORNIA EDISON COMPANY

QUALIFICATIONS AND PREPARED TESTIMONY

OF ANTHONY R. HERNANDEZ

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

A. My name is Anthony R. Hernandez, and my business address is 6020 Irwindale Avenue, Irwindale, California 91702.

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

A. I am the Director of Catalina Operations & Strategy team in the Generation Department at Southern California Edison Company. In this position, I lead a team responsible for the operations of the electric, water, and gas systems, special projects, and overall strategy for the long-term sustainability of the island operations. I have held this position since July 18, 2022.

Q. Briefly describe your educational and professional background.

A. I hold a Master of Science in Engineering Management (Combined Master's degree: MBA & Industrial Engineering) and a Bachelor of Science in Electrical Engineering, both from California State Polytechnic University, Pomona. I am also a licensed Professional Electrical Engineer in the State of California, and a LEED® Accredited Professional. Prior to my present position, I have held many leadership roles throughout SCE's Customer Service, and Energy Procurement & Management organizations. In Energy Procurement & Management, I led a team responsible for the negotiation and execution of short-term, mid-term, and long-term structured energy procurement transactions and power purchase agreements (PPAs) on behalf of SCE's customers. In Customer Service I have led teams responsible for the successful management and implementation of various Demand Side Management (DSM) products and services. I also led teams responsible for the evaluation, development, and launched emerging DSM products and services. I have also led teams responsible for successful support of our billing and call center operations, as well as teams responsible for customer program eligibility and technical support, working directly with our non-residential customers to address their energy management goals and needs.

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

A. The purpose of my testimony in this proceeding is to sponsor portions of Exhibit SCE-23 titled Southern California Edison Company's Surrebuttal Testimony in Support of its Application for Approval of its Building Electrification Programs, as identified in the Table of Contents thereto.

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

A. It was prepared under my supervision.

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.

SOUTHERN CALIFORNIA EDISON COMPANY
QUALIFICATIONS AND PREPARED TESTIMONY
OF DEVIN RAUSS

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

A. My name is Devin Rauss, and my business address is 2244 Walnut Grove Ave, Rosemead, CA.

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

A. I am the Principal Manager of Grid Strategy & Policy team within the Asset Strategy and Planning organizational unit of Southern California Edison (SCE). Grid Strategy & Policy is focused on implementing our Reimagining the Grid vision, developing the long-term strategy for the Grid Modernization Program, and engaging in related regulatory proceedings and policy discussions to achieve that vision.

Q. Briefly describe your educational and professional background.

A. I hold a Bachelor of Science Engineering in Mechanical Engineering from the University of Michigan. I have spent my entire professional career at SCE, starting in 2007 and spending 6 years as an Engineer within our Customer Service (CS) organization, focused on evaluating customer technologies in support of energy efficiency and demand response programs. In 2013 I became a project manager in CS focused on policy activities inside and outside the company, managing strategic initiatives for CS and participating in various CPUC rulemakings. In 2015 I joined our Regulatory Affairs organization as a senior project manager and spent my time there working on our Charge Ready program and the IDER proceeding. In 2016, I then joined our Corporate Technology Strategy team, focused on developing a capability roadmap that helped to guide our technology demonstration work across the company. In 2020, I became Senior Manager of the Strategy & Business Objectives team within T&D, building action plans to guide T&D in support of key objectives. In 2021, as part of a reorg, I was promoted to Principal Manager and placed into my current position.

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

A. The purpose of my testimony in this proceeding is to sponsor the portions of Exhibit SCE-23, titled: Southern California Edison Company’s Surrebuttal Testimony Supporting its Building Electrification Application in Response to the April 2023 Assigned Commissioner's Ruling, as identified in the Table of Contents thereto.

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.

SOUTHERN CALIFORNIA EDISON COMPANY
QUALIFICATIONS AND PREPARED TESTIMONY
OF MATTHEW D. SHERIFF

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

A. My name is Matt Sheriff, and my business address is 2244 Walnut Grove Avenue, Rosemead, California 91770.

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

A. I am currently Senior Advisor in SCE's CPUC Revenue Requirements and Tariffs Department. As such, I am primarily responsible for preparation of SCE's Consolidated Revenue Requirements showing and forecasting SCE's system average rate and additionally serve as witness for cost recovery in various proceedings.

Q. Briefly describe your educational and professional background.

A. I graduated from the University of Maryland Baltimore County in May of 1995 with a Bachelor of Arts Degree in Political Science. For the next seven years I worked at several venture-backed new media startups in marketing and business development roles. In 2004, I earned a Master of Business Administration (MBA) from the University of Southern California. In April of 2007, I joined the Southern California Edison Company as senior financial analyst in the Financial Planning and Analysis group of the Treasurer's department. I began my current position in the Regulatory Operations department in January of 2014. I have previously testified before the California Public Utilities Commission.

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

A. The purpose of my testimony in this proceeding is to sponsor portions of Exhibit SCE-23, titled Southern California Edison Company's Surrebuttal Testimony Supporting its Building Electrification Application in Response to the April 2023 Assigned Commissioner's Ruling as identified in the Table of Contents thereto.

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.

SOUTHERN CALIFORNIA EDISON COMPANY
WITNESS QUALIFICATIONS
OF MICHELLE THOMAS

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

A. My name is Linda Michelle Thomas, and my business address is 1515 Walnut Grove Avenue, Rosemead, California 91770.

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

A. I am the Principal Manager of the Building Electrification organization within the Customer Service operational unit. In this position, I oversee the staff responsible for the developing the strategy and program plans for SCE's building electrification initiatives, as well as the energy Codes & Standards programs. I have held this position since March 2020.

Q. Briefly describe your educational and professional background.

A. I hold a bachelor's degree in journalism from California State University, Long Beach. I am currently working toward a Master of Science in Energy Policy and Climate from Johns Hopkins University. I have over 20 years of work experience at SCE. I started at SCE as an account representative for residential builders in SCE's Energy Services in 1990, (leaving the company from 2004 – 2010) and have held a variety of positions within the Customer Service organization. Prior to my current role as the Principal Manager of Building Electrification, I was senior manager of Codes & Standards, where I oversaw the development and implementation of building energy efficiency and appliance standards program activities.

Q. What is the purpose of presenting your witness qualifications?

A. The purpose of my testimony in this proceeding is to sponsor portions of Exhibit SCE-23, titled Southern California Edison Company's Surrebuttal Testimony Supporting its Building Electrification Application in Response to the April 2023 Assigned Commissioner's Ruling, as identified in the Table of Contents thereto.

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.

Appendix B

Workpapers

Workpapers supporting SCE-23 are:

1. BEWP.SCE-23.II.A.Michelle Thomas BE Application - New Heat Pump Analysis.xlsx.
2. BEWP.SCE-23.II.B.Michelle Thomas BE Application - Code HVAC Analysis Methodology.docx
3. BEWP.SCE-23.II.B.Michelle Thomas BE Application - Code HVAC.xlsx

All workpapers for this Application are available in the following link. Please click on the link, select the zipped folder labeled "A2112009 SCE Workpapers re BE Application-Public.zip," then click "Download."

https://edisonintl.sharepoint.com/:f:/t/Public/regpublic/ErNeqEudiF9DsD9_p0R4p-kBNFiIUl0r7MUwTQrCrPBQWA