CALIFORNIA ENERGY COMMISSION

CALIFORNIA NATURAL RESOURCES AGENCY

January 1, 2025

California Energy Commission Response to Executive Order N-5-24

Overview

The California Energy Commission (CEC), as the state's energy policy and planning agency, is responsible for advancing state energy policy, investing in energy innovation, overseeing energy infrastructure, and preparing for energy emergencies. The CEC is also responsible for advancing energy efficiency and developing renewable energy and has done so in part through longstanding building and appliance efficiency programs, as well as more recent, nation-leading energy research, renewable energy, and load flexibility programs. These programs support California's energy and environmental policies, including the transition to entirely clean energy sources by 2045.

The CEC administers dozens of programs funded by a variety of revenue sources. Outside of the recent one-time state and federal funds dedicated to expediting the state's transition to clean energy, most CEC programs are funded by dedicated revenue sources from special funds. One example is the Clean Transportation Program (CTP), which invests up to $100 million annually, leveraging public and private investments to accelerate the development of zero-emission and near-zero-emission technologies and reduce petroleum dependence. The CTP receives revenue from vehicle registration, vehicle identification plates, and smog abatement fees. Another example is fees paid by power plant developers to support the CEC's power plant licensing and compliance activities.

The main fund supporting CEC's operational activities is the Energy Resources Programs Account (ERPA). The revenues in ERPA are linked to the sale of metered electricity, and ERPA revenues support activities at the CEC such as building and appliance standards that have helped California consistently rank as a leading state in energy efficiency – including the #1 ranking in the latest assessment of the American Council for an Energy-Efficient Economy (ACEEE).[1] Since their inception in the late 1970s, these standards have significantly reduced energy consumption and ratepayer bills.

The clean energy programs of the CEC are critical to helping the state rise to meet the energy and climate challenges of today and tomorrow, from grid decarbonization to reliability and affordability. The state has made great strides in decarbonizing the California grid. From January to September 2024, for example, the grid reached 100 percent clean energy for a portion of the day in two out of every three days. The grid's struggles with reliability seemed insurmountable only a couple years ago when extreme weather events, more limited flexible resources, and market dynamics, among other influences, led to outages that disrupted lives and the economy.[2] In contrast, this past summer was the hottest in modern history, and ratepayers experienced no outages from supply shortfalls and zero flex alerts. These

[1] ACEEE State Energy Efficiency Scorecard. https://www.aceee.org/state-policy/scorecard

[2] CAISO, CPUC, CEC (2021) Root Cause Analysis: Mid-August 2020 Extreme Heat Wave. https://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf

outcomes reflect tremendous progress. And, while the challenges related to affordability are substantial and impactful, particularly to the state's low-income and disadvantaged communities and tribes, they too are solvable.

The CEC's electric ratepayer-funded programs seed the innovations, deploy the resources and infrastructure, and enable the statewide action needed to mitigate electricity affordability challenges while continuing to decarbonize, modernize, and strengthen the grid. The value of these programs is tangible in the deep efficiencies unlocked through codes, standards, and technology innovation. Moreover, the load growth facilitated through the continued electrification of California's economy could help to stabilize rates and potentially counteract the higher fixed costs on utility bills, depending on rate design and other factors. Ratepayer-supported programs and initiatives advance energy technologies across the economy – including electric vehicles, heavy-duty fleets, and transit; residential, commercial, and industrial heat pumps for space and water heating and highly efficient appliances; advanced renewable energy generation; and integrated controls and battery and thermal storage that enable the state to shape and shift its demand. In this way and more, the CEC programs are integral to a just, clean energy future.

In response to Executive Order N-5-24,[3] the CEC examined all electric investor-owned utility (IOU) ratepayer-supported programs that it oversees and administers, and reports the following:

- **Energy Efficiency:** California's efficiency programs are highly cost-effective to ratepayers and have long been key to achieving affordable bills and meeting the state's energy and environmental goals. The Statewide Codes & Standards Program is funded by electric and gas ratepayers at $56.7 million per year as of 2024, whereas efficiency standards for buildings and appliances are saving billions annually, have saved Californians over $200 billion since inception in the late 1970s, and are set to reach $300 billion in total cumulative economic value to the state by 2030. The CEC recommends retaining the ratepayer supported programs that directly contribute to these foundational efforts, in particular the California Public Utilities Commission (CPUC)-overseen and IOU-managed Statewide Codes & Standards Program. However, the Legislature should consider if the costs of this foundational program should be borne more broadly by electric and gas ratepayers across all of California, given the statewide customer benefits these programs provide.
- **California Schools Healthy Air, Plumbing, and Efficiency (CalSHAPE) Program:** The CalSHAPE program was authorized in 2020 as a COVID-19 urgency measure to re-open schools and improve indoor air quality. Since program implementation, other non-ratepayer funding sources have become available, including the $10 billion Proposition 2 of 2024 and local bond measures. Given the availability of non-ratepayer funding, the Governor and Legislature may consider refunding $196.1 million of unencumbered CalSHAPE funds to electric and gas IOU ratepayers before December 31, 2026.
- **Solar Equipment Lists:** The CEC's Solar Equipment Lists (SELs) provide a standardized, streamlined and cost-effective process for equipment identification that is relied upon by equipment manufacturers, IOUs, publicly-owned utilities (POU), providers of permitting platforms, local governments, certain CPUC and CEC programs, the National Renewable Energy Laboratory (NREL) and other entities across the country. In Spring 2023, the CEC released a public request for information (RFI) to better assess the use cases and benefits of its SELs. California electric utilities' responses to the RFI indicated that by leveraging SELs for interconnection application review, the utilities achieve tremendous cost savings, due to

[3] Executive Order N-5-24 (2024). https://www.gov.ca.gov/wp-content/uploads/2024/10/energy-EO-10-30-24.pdf

reduced review times and labor hours, exceeding the cost to administer the SELs program by several factors. Information from the SELs is utilized in software platforms that assist local governments in streamlining the permitting processes for distributed energy resources (DER). Without information from the SELs, challenges to interconnection and permitting of DERs would increase, potentially slowing down deployment significantly and adversely impacting the growth of the DER industry. However, the IOUs maintain their own SELs list as required by CPUC's Rule 21. Therefore, the CEC recommends identifying an alternate funding source.

Information is also provided on the CPUC-overseen and CEC-administered Electric Program Investment Charge (EPIC).

Energy Efficiency

Program Background and Objectives

Since 1978, building and appliance energy efficiency standards have saved Californians over $200 billion and served as a foundational, highly cost-effective strategy for meeting the state's climate action goals. Appliance standards are estimated to save over 40,000 GWh of annual electricity demand while delivering sizeable reductions in water use and fossil gas consumption. The term "energy" as used below encompasses direct electricity and fossil fuel consumption, embodied energy in the delivery and treatment of potable water, and indirect avoided fuel consumption by power plants due to lowering peak demands. If the state were to credit just the electricity savings at the wholesale price, as opposed to the retail value, energy efficiency from appliance standards alone would be worth $2 billion annually to ratepayers, which is more than the entire annual CPUC budget for energy efficiency and entire annual CEC staff budget combined.

The building code adopted by the CEC in 2024 is estimated to provide California with 30-year benefits of at least $4.8 billion[4] — or over 20 times the roughly $200 million cost of the entire 3-year Statewide Codes & Standards budget, including Energy Commission expenditures, appliance standards, and other energy efficiency standards activities. These highly impactful building and appliance energy efficiency standards are enabled by the electric IOU ratepayer-supported Statewide Codes & Standards Program, which is implemented by the IOUs and delivers critical analytical support for standards development. The Los Angeles Department of Water & Power (LADWP) and the Sacramento Municipal Utility District (SMUD) have also historically contributed to the program. The Statewide Codes & Standards Program is funded at $56.7 million per year as of 2024.[5]

Research and Development (R&D) in energy efficiency and incentive programs for energy efficient technologies ultimately result in new, cost-effective energy efficiency technologies and practices that can be adopted into the state's mandatory building energy code, resulting in significant cost savings to ratepayers in the form of reduced energy bills. In other words, California's national and global leadership in building and appliance energy standards is made possible by ratepayer-funded initiatives on both the code adoption side – in particular the Statewide Codes & Standards Program – and on the research and product development side, such as EPIC.

[4] CEC (2024) Form 399 for the Proposed Changes to the 2025 Building Energy Efficiency Standards. https://efiling.energy.ca.gov/GetDocument.aspx?tn=255315-5&DocumentContentId=90999

[5] CEDARS California Energy Data and Reporting System. https://cedars.cpuc.ca.gov/filings/list/

Program Impact

Energy efficiency has been key to affordable customer electric and gas bills. While California has long had above-average electricity rates, until recent years, Californians still enjoyed some of the lowest bills in the country thanks to their low energy usage. Program expenditures for CEC's building and appliance standards programs have not substantially increased in recent years and are not responsible for the recent increase in energy bills.

California's energy efficiency programs are working. The residential electricity consumption between 2009 and 2019 increased by only 2 percent despite the population growing by 7 percent (which would be expected to cause a matching 7 percent growth in energy demand, all else being equal) as well as a major increase in consumer electronics and air conditioner saturation.[6]

Codes and standards rely on a complex pipeline of market transformation efforts. New energy efficient technologies and techniques are studied and developed in the state's R&D programs such as EPIC. At the next stage of market transformation are voluntary programs that include inducements, marketing, and labeling that drive the new technology to a larger market share. Only once the technology is developed, proven, and has reasonable customer acceptance will it typically be considered for a code or standard, which is further supported by "above code" programs operated by IOUs, community choice aggregators (CCA), and other private groups. Therefore, the significant energy and financial savings achieved through the codes and standards programs depend on – and should be partially attributed to – an ecosystem of R&D programs and energy efficiency inducement programs.

As an example, consider the process of essentially eliminating incandescent bulbs from residential households. R&D funding was spent on developing compact fluorescent and light emitting diode (LED) lighting, measuring their characteristics and their acceptance by consumers. Based on resulting products, labels and inducements were provided to drive the initial scale in the market. Finally, appliance standards required that only efficient, quality bulbs be allowed for sale in the state.

Appliance Efficiency Program

Appliance standards set by the CEC, first adopted in the late 1970s, have transformed the national appliance market and many have since been adopted as national standards. California standards become de facto national standards, and in most cases literally become national standards; the federal legislation instituting the U.S. Department of Energy's (DOE) national program was a direct response to California's standards and a concern from manufacturers that other states would follow California's lead and create a patchwork of requirements. California's standards became the starting point for DOE's consideration and adoption of national standards,[7] a pattern that has repeated for the majority of federal standards now applicable nationwide. This is further supported by "above code" programs operated by IOUs, CCAs and other private groups. California developed the first efficiency standards for all major electricity and gas appliances in the home — refrigerators, air conditioners, furnaces, water heaters, etc. The impacts of early actions continue to be observed in the market. Appliance standards that became effective after 2015 are still accelerating in their energy and financial savings impact given that it takes an average of 10 years for full market turnover of a given appliance. This includes standards for the following:

[6] See the Residential Appliance Saturation Surveys conducted for 2003, 2009 and 2019. https://www.energy.ca.gov/data-reports/surveys/2019-residential-appliance-saturation-study

[7] See Public Resources Code § 25402.

Appliance	Annual avoided GWh (2024)[8]	2024 cost savings (wholesale - $50/MWh)	2024 cost savings (retail - $0.31/kWh)
Battery Chargers	5,290	$ 264.5 M	$ 1,640 M
Lighting	2,331	$ 116.6 M	$ 722.6 M
Computers	1,932	$ 96.6 M	$ 598.9 M
Televisions	1,391	$ 69.6 M	$ 431.2 M
Computer Monitors	347	$ 17.4 M	$ 107.6 M
Portable Electric Spas	35	$ 1.8 M	$ 10.9 M

Combined, these recent standards are responsible for 11,000 GWh of the 40,000 GWh annual total savings attributable to the Appliance Efficiency Program, with the remainder occurring from standards adopted over 10 years ago (for which full stock turnover has effectively taken place). Battery chargers are the largest single contributor to this total, contributing 5,290 GWh in 2024, and these standards are growing rapidly in impact as more products come to use rechargeable battery technology. In fact, CEC staff anticipates a doubling of their impact by 2030.

The Appliance Efficiency Program also reduces gas and water used in equipment, with similarly impressive results. CEC staff estimate annual savings of 127 billion gallons of water resulting from standards adopted in 2015, another 152 billion gallons of annual savings from standards adopted in 2019, and project another 76 billion gallons in annual savings through standards planned for 2025 (after full stock turnover). Additionally, staff estimate annual savings of 1.9 billion therms in direct provision of gas by utilities.

Building Energy Efficiency Standards

The CEC updates the statewide Building Energy Efficiency Standards every three years to improve the energy efficiency of California's buildings, reduce operational costs, lower greenhouse gas emissions, and enhance the resilience of buildings to extreme weather linked to climate change. Recently, the CEC adopted the 2025 code updates, applicable to newly constructed residential and commercial buildings, renovations, and certain other existing buildings, which will advance California's economic, clean energy, climate, and public health goals. This new code is expected to save Californians $4.8 billion in energy costs over its lifetime of 30 years, make homes and buildings more climate-resilient, and reduce

[8] Figures projected to 2024 consistent with published reports, as follows: for lighting, reports published in dockets 16-AAER-04, 15-AAER-06, 17-AAER-07 and 19-AAER-04; for battery chargers, 11-AAER-2 and 18-AAER-02; for computers, computer monitors and televisions, 14-AAER-02 and 16-AAER-02; for portable electric spas, 12-AAER-02G, 15-AAER-02, 18-AAER-01, 18-AAER-02, and 20-AAER-04. All documents available at: https://www.energy.ca.gov/proceedings/dockets/california-energy-commission-dockets

greenhouse gas emissions by about 4 million metric tons—equivalent to the annual energy consumption of over half a million homes.[9]

Finding

The CEC found California's efficiency programs are highly cost-effective to ratepayers and have long been key to achieving affordable bills and meeting the state's energy and environmental goals. The Statewide Codes & Standards Program is funded by electric and gas ratepayers at $56.7 million per year as of 2024, whereas efficiency standards for buildings and appliances are saving billions annually, have saved Californians over $200 billion since inception in the late 1970s, and are set to reach $300 billion in total cumulative economic value to the state by 2030. The CEC recommends retaining the ratepayer supported programs that directly contribute to these foundational efforts, in particular the CPUC-overseen and IOU-managed Statewide Codes & Standards Program. However, the Legislature should consider if the costs of this foundational program should be borne more broadly by electric and gas ratepayers across all of California, given the statewide customer benefits these programs provide.

Without these programs, California's energy efficiency standards for buildings and appliances would be significantly diminished. For instance, 25 highly technical reports were developed to demonstrate the cost-effectiveness and technical feasibility of the updates adopted in the 2025 Building Energy Efficiency Standards; the Statewide Codes & Standards Program prepared and published 19 of these reports. Without the substantial contributions of the Statewide Codes & Standards Program — which includes the three major investor-owned utilities (IOUs), along with support from the LADWP and the SMUD — the statewide impact of the 2025 code updates would have been greatly reduced. This program serves as a cornerstone for advancing energy efficiency standards across the state.

California Schools Healthy Air, Plumbing, and Efficiency (CalSHAPE) Program

Program Background and Objectives

The California Schools Healthy Air, Plumbing, and Efficiency (CalSHAPE) Program was established by Assembly Bill 841 in September 2020 as an urgent energy efficiency measure during the COVID-19 pandemic to help schools improve air quality and reduce energy use while meeting current classroom ventilation requirements, and to assist local educational agencies (LEA) in making much needed upgrades to school infrastructure. Pursuant to Public Utilities Code (PUC) Section 1615(e)(1), the CEC must return all unspent CalSHAPE Program funds to the electric and gas IOU ratepayers by December 1, 2026. The CEC set an encumbrance deadline of October 31, 2024, for new grant agreements to ensure funds are reverted by this date.

CalSHAPE includes two grant programs: the Ventilation Program and the Plumbing Program. The Ventilation Program provides funding for LEAs to assess, maintain, repair, and replace ventilation systems in schools. As required by PUC Section 1631, the Plumbing Program provides funding for LEAs and state agencies to replace aging and water-inefficient plumbing fixtures and appliances with water-conserving plumbing fixtures and appliances. The CalSHAPE Program also creates work opportunities for a skilled and trained workforce and prioritized awards to schools in underserved communities, consistent with the goals of the program.

[9] Estimated utilizing U.S. Environmental Protection Agency Greenhouse Gas Equivalencies Calculator. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator-calculations-and-references#houseenergy

The CalSHAPE Program is funded by all electric and gas IOU ratepayers with funding collected in calendar years 2021, 2022, and 2023. Public Utilities Code (PUC) Section 1615 (a)(1)(A) required each IOU to allocate a portion of their energy efficiency budgets plus any unspent and uncommitted energy efficiency funds carried over from the previous calendar year to the CalSHAPE Program. This resulted in additional funding being collected from all electric and gas IOU ratepayers. The IOUs transferred $993 million between 2021 and 2023. PUC Section 1616 required 75 percent of the program funding be directed to the Ventilation Program and 25 percent to the Plumbing Program. No additional funding is being collected by the IOUs for the CalSHAPE Program, and the program must return any unused funds to all electric and gas ratepayers by December 1, 2026.

PUC Section 1617 automatically deems these programs cost-effective without ex-post evaluation of the expended funding and specifies that the programs shall not be considered by the CPUC when calculating the overall cost-effectiveness of the IOUs' energy efficiency portfolios. This is uncommon. Standard best practice would be for energy efficiency programs that encourage the deployment of complex energy efficiency projects with varying degrees of energy and costs savings to be evaluated to measure their efficacy and determine the value of these ratepayer-funded investments. The Legislature should consider requiring that these types of programs undergo a robust cost-effectiveness evaluation to ensure the benefits delivered are sufficient to merit the ratepayer contributions that make these programs possible.

The CalSHAPE Program was also allocated $20 million from the Greenhouse Gas Reduction Fund in the Budget Act of 2022, which includes $19 million for grants and $1 million for program administration. The Budget Act of 2022 (Section 2 3360-001-3228 and 3360-101-3228) states that funds shall be used only for HVAC system replacement in the Ventilation Program, as described in PUC Division 1, Part 1, Chapter 8.7 (commencing with Section 1600).

The CalSHAPE Program accepted applications from fall 2021 through summer 2024. As of November 1, 2024, the CalSHAPE Program encumbered $786.8 million, or 78 percent, of the total funding. PUC Section 1615 (d) states that the CEC can use up to $5 million per year for program administration, and since the program runs for six years (January 2021 to December 2026), the CEC has reserved $30 million for administration costs. The CEC has expended $7.5 million on administration through Fiscal Year (FY) 2023-2024 and expects to expend an additional $5 million in FY 2024-2025. The CalSHAPE Program currently has $196.1 million in remaining (unencumbered) funds, which, per statute, will be returned to all electric and gas IOU ratepayers with any additional unspent funds by December 1, 2026.

Program Funding and Impact

For the Ventilation Program, $654 million of $741 million in available funding has been encumbered, and the remaining or unallocated balance is $87 million. Encumbered funding has enabled 625 LEAs to assess, maintain, repair, and replace HVAC systems at 4,676 schools, with 32,035 MTCO2e in forecasted greenhouse gas emission reductions.

For the Plumbing Program, $131.9 million of $241 million in available funding has been encumbered and the remaining or unallocated balance is $109.1 million. Encumbered funding has enabled 228 LEAs to replace aging and water inefficient plumbing fixtures and appliances at 1,489 schools, with an estimated 2.5 billion gallons in water savings with the replacement of 58,974 plumbing fixtures and appliances.

Regarding the program administration, $7.5 million of $30 million in allocated administrative costs have been expended. Administrative tasks include program oversight, application and report review, issuing of checks, technical contract implementation, and completion of program status reports. CEC estimates in order to effectively complete the program, administrative funds would be needed for a minimum of 2 years after final project completion, which is estimated to be December 1, 2028.

CEC Oversight and Quality Control

The Ventilation Program has detailed project requirements, outlined in PUC Section 1620-1627, which include the use of qualified technicians and a skilled and trained workforce to assess and maintain HVAC systems, make minor adjustments and repairs as needed, and produce an HVAC Assessment Report. The HVAC Assessment Report includes information on the condition of the HVAC systems and the filtration and ventilation provided to each classroom as found during the assessment. The CEC has a robust compliance process for Ventilation Program projects, which includes conducting field audits and performing a thorough review of the HVAC Assessment Reports. This oversight is needed to provide quality control of the projects and ensure that grant funds are being used appropriately. However, the detailed oversight may result in some LEAs having to resubmit the HVAC Assessment Report or require the contractor to redo portions of the project if issues are found and may extend the lifetime of the projects.

Finding

The CalSHAPE program was authorized in 2020 as a COVID-19 urgency measure to re-open schools and improve indoor air quality. Since program implementation, other non-ratepayer funding sources have become available, including the $10 billion Proposition 2 of 2024 and local bond measures. Given the availability of non-ratepayer funding, the Governor and Legislature may consider refunding $196.1 million of unencumbered CalSHAPE funds to electric and gas IOU ratepayers before December 31, 2026.

California Solar Equipment Lists (SELs) Program

Program Background and Objectives

Senate Bill 1 (2006) directed the CEC to establish criteria and standards for solar incentive programs under the California Solar Initiative (CSI). In response, the CEC established the Solar Equipment Lists (SELs), which set rating standards for equipment components and systems to assure reasonable performance and facilitate safe and reliable interconnection with California's electricity grid and distribution systems. Over time, while the CSI programs sunset, the broader industry came to rely on the SELs as a primary source for determining equipment compliance with standards required for local government permitting and grid interconnection of DERs across the state. The SELs include thousands of unique equipment models, including solar modules, meters, smart inverters, batteries, energy storage systems, and power control systems that have been validated as meeting national standards. The SELs facilitate substantial improvements in processing of DER interconnection application requests and local government permitting of DERs.

Program Funding and Impact

The Solar Equipment List is currently funded with approximately $1.3 million annually. The CEC continuously receives requests from equipment manufacturers to have the manufacturer's products added to the relevant SEL. The CEC updates the SELs three times each month. In 2024, approximately 8,000 unique models of equipment were validated to meet all requirements and were added to the SELs.

Finding

The CEC's SELs provide a standardized, streamlined and cost-effective process for equipment identification that is relied upon by the equipment manufacturers, IOUs, POUs, providers of permitting

platforms, local governments, certain CPUC and CEC programs, NREL and other entities across the country. In Spring 2023, the CEC released a public RFI to better assess the use cases and benefits of its SELs. California electric utilities' responses to the RFI indicated that by leveraging SELs for interconnection application review, the utilities achieve tremendous cost savings, due to reduced review times and labor hours, exceeding the cost to administer the SELs program by several factors. Information from the SELs is utilized in software platforms that assist local governments in streamlining the permitting processes for DERs. Without information from the SELs, challenges to interconnection and permitting of DERs would increase, potentially slowing down deployment significantly and adversely impacting the growth of the DER industry. However, the IOUs maintain their own SELs list as required by CPUC's Rule 21. Therefore, the CEC recommends identifying an alternate funding source.

Electric Program Investment Charge (EPIC)

Program Background and Objectives

In 2011, the CPUC established the Electric Program Investment Charge (EPIC), a ratepayer funded research, development, and deployment program, and authorized the CEC as one of four administrators alongside California's three largest IOUs, whose ratepayers fund the program – Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric, and Southern California Edison (SCE). The CEC administers 80 percent of the program's total funds, investing in clean energy technologies and approaches to help benefit California IOU ratepayers. All demonstration projects are sited in electric IOU service territories because they are funded by electric IOU ratepayers. The CEC funds projects in all three investment areas of the EPIC program: applied research and development, technology demonstration and deployment, and market facilitation.

The EPIC program is the leading state energy research and development program in the United States. The intent of EPIC is to deliver a range of important benefits to IOU ratepayers including improving energy affordability, incubating lower-cost energy technologies, and reducing the disproportionate burdens of climate change and energy-related emissions on disadvantaged and low-income communities.

Program Funding

EPIC is funded by a ratepayer surcharge on bills of customers of the state's electric IOUs, providing approximately $148 million per year for the CEC's implementation of EPIC – equivalent to approximately 1 cent per person per day. With that contribution, EPIC has provided a stable, sustained source of public investment in energy innovation – critical to supporting the pipeline of technology development from early stages through commercialization and deployment in the state. EPIC endeavors to drive innovation and advances science and technology in energy efficiency, load flexibility, renewable energy and advanced clean generation, transportation, grid transmission and distribution, and energy-related environmental protection, among other areas important to California's electricity system and ratepayers.

In August 2020, the CPUC renewed EPIC program funding for an additional 10 years, through December 31, 2030.[10] All grant funding under the current 2021-2025 EPIC Investment Plan (EPIC 4) is either encumbered or designated for use according to CPUC Decision 22-06-004,[11] Decision 21-07-006,[12] and

[10] CPUC Decision 20-08-042 (2020). 346225760.PDF

[11] CPUC Decision 22-06-004 (2022). 482684526.PDF

[12] CPUC Decision 21-07-006 (2021). 394265545.PDF

related decisions,[13] and will be used accordingly. Future funding under the 2026-2030 EPIC Investment Plan (EPIC 5) will be designated for use according to the upcoming CPUC decision under the EPIC Proceeding (anticipated in 2025) and deployed accordingly.

Program Impact Assessment

The CEC integrates the assessment of benefits into each stage of the funding life cycle. Each R&D topic included in the investment plan includes a summary of potential impacts and expected outcomes if successful, as well as high-level metrics and performance indicators. These impacts and metrics are refined through competitive solicitations and assessed through scoring criteria on impacts and benefits for ratepayers. During project implementation, CEC staff collects data via recipient questionnaires to measure and verify performance. The final report for each project documents technical performance, outreach, technology transfer, and lessons learned. After project completion, CEC staff continues to collect data to assess ratepayer benefits, including through annual surveys and online resources, including Pitchbook and Google Scholar. Because the full impact of clean energy innovations can take several decades, the CEC assesses both achieved and projected benefits.

[13] CPUC EPIC decisions available at: Energy Research Development and Deployment