Date of Hearing: June 30, 2021

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY
Chris Holden, Chair
SB 68 (Becker) – As Amended May 20, 2021

SENATE VOTE: 35-1

SUBJECT: Building electrification and electric vehicle charging

SUMMARY: Requires the California Energy Commission (CEC) to develop and publish on their website guidance for building owners, the construction industry, and local governments on overcoming barriers to building electrification and electric vehicle (EV) charging equipment installation in new and existing buildings, and directs them to consider in their award process for the Electric Program Investment Charge (EPIC) projects that lead to lowering the cost of building electrification.

EXISTING LAW:

1) Requires the CEC to assess the potential for the state to reduce greenhouse gas (GHG) emissions from the state's residential and commercial building stock by at least 40 percent below 1990 levels by January 1, 2030. (Public Resources Code § 25403)

2) Requires the CEC to award funds to research and development projects that advance technologies critical to meeting the state's environmental and energy goals and benefit electricity ratepayers. (Public Resources Code § 25711)

FISCAL EFFECT: According to the Senate Appropriations Committee, the CEC estimates a one-time cost of $150,000 to develop a comprehensive guide on best practices for building electrification.

BACKGROUND:

Need for Building Electrification – The state has adopted various policies to reduce GHG emissions as part of its overarching climate change and air quality goals. Notably, SB 32 (Pavley, Chapter 249, Statutes of 2016) required the State Air Resources Board (ARB) to reduce statewide GHG emissions to at least 40% below the 1990 emissions level by 2030. According to ARB, residential and commercial buildings account for roughly 25% of the state's GHG emissions.[1] Recent efforts by the Legislation and agencies, including ARB and CEC, have centered on reducing emissions or decarbonizing the state's building sector. AB 3232 (Friedman, Chapter 373, Statutes of 2018) requires the CEC, in consultation with ARB, to assess the potential for California to reduce building-related emissions by at least 40% below 1990 levels by 2030. In a draft report pursuant to AB 3232, the CEC identified key strategies for building decarbonization, including building electrification, clean energy supply resources, energy efficiency improvements, and decarbonizing the gas system.[2]

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[1] https://ww2.arb.ca.gov/our-work/programs/building-decarbonization
[2] California Energy Commission. *Draft Staff Report: California Building Decarbonization Assessment*. CEC-400-2021-006-SD. May 2021

Building electrification is the replacement of gas-powered appliances (e.g. water heaters, gas ranges) with electric appliances. Although electrification also results in increased electricity demand, the state's transition to 100% carbon-free energy is projected to reduce GHG emissions over time.

Energy efficiency standards and updated building codes also provide effective means of promoting building electrification and on-site renewable energy generation. The efforts on building codes has mostly been successful for new construction, where buildings can be optimized and built from the start to accommodate electric appliances, rooftop solar panels, and/or energy storage. The CEC is required by statute to adopt energy efficiency building standards every three years that are cost-effective for occupants over the 30-year lifespan of a building. The standards ensure that builders use the most energy efficient technologies and construction, save energy, and increase electricity supply reliability. These measures are listed in Title 24, Part 6 of the California Code of Regulations.

Barriers to building electrification – The CEC identified in their *Draft AB 3232 Building Decarbonization Assesment* several barriers to building electrification, which mostly relate to cost. Though their analysis demonstrates potential cost reductions with available technology for new construction, the CEC highlights the substantial need for clean energy workforce development to meet both new construction and old building retrofit demands.

For existing and older buildings, cost remains a significant barrier to electrification and decarbonization. Older buildings are less likely to have adequately sized electric panels for new electric loads, insufficient insulation for holding cooling or heating, or roofs lacking necessary structural integrity to support rooftop solar panels. Additionally, older buildings may have structural or design issues requiring additional structural remodels that make electrification more costly. By 2030, fewer than 10% of residential buildings will have been built following 2019 or later Energy Codes.[3] Overcoming these barriers to retrofitting existing building stock is crucial for the state's ability to achieve its building decarbonization goals.

Need for EV Charging in Buildings – The state's transportation sector is currently the biggest source of GHG emissions. The state has adopted ambitious clean transportation goals such that all new passenger vehicles will be zero-emission by 2035, and all new medium- and heavy-duty vehicles will be zero-emission by 2045.[4] Roughly 8 million EVs will be needed in 2030 to meet these goals, which will require an estimated 1.2 million public and shared private chargers.[5]

In their 2021 EV Charging Infrastructure Assessment, the CEC identified building codes as a crucial policy tool to deploy sufficient charging infrastructure. Building codes that address new construction and retrofitting existing buildings to support EV charging can be an effective means of increasing EV adoption.[6]

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[3] California Energy Commission. *Draft Staff Report: California Building Decarbonization Assessment*. CEC-400-2021-006-SD. May 2021
[4] Executive Order N-79-20. https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf
[5] California Energy Commission. *Assembly Bill 2127 Electric Vehicle Charging Infrastructure Assessment.* CEC-600-2021-001-REV. May 2021
[6] *Ibid*, p.77

EPIC Program and Building Decarbonization – In December 2011, the CPUC established the EPIC fund, which is administered by the CEC.[7] The purpose of the program is to invest in research projects that "create and advance new energy solutions, foster regional innovation, and bring ideas from the lab to the marketplace."[8] The guiding principles of EPIC projects are to promote greater reliability, lower costs, and increase safety, while advancing technologies critical to achieving the state's environmental and energy goals. For their 2021-2025 Investment Plan Scoping, the CEC announced a series of workshops to solicit public input and discuss potential solutions to overcome challenges of decarbonizing existing buildings, including technologies to minimize the need for structural and electrical infrastructure upgrades to support new electrical loads (e.g. electric heat pumps and EV charging).[9]

COMMENTS:

1) *Author's statement*. "In order to achieve the state's climate goals, we need to see widespread switching away from fossil fuel use in buildings and vehicles. The technology to do this exists today, but there are major barriers to its adoption. In particular, when building owners want to install electric heating, vehicle charging, solar or energy storage, they often face unnecessarily high costs, delays in getting permits, and difficulty in finding contractors who are familiar with these new technologies.

   The first problem is information. Contractors often have little experience with electrifying buildings and give bad advice about the options available to building owners and about whether or not an electrical panel upgrade is needed. Homeowners end up being talked out of electrifying because their contractor doesn't know how to do it or they end up doing costly panel upgrades that could have been avoided. Local building departments are also unfamiliar with building electrification, and the time and cost required to get permits and inspections are causing unnecessary extra costs. This bill directs the CEC to gather and publish best practices to help get better information out there to help building owners, the construction industry, and local governments do this more efficiently.

   We also need to drive down costs, and here technology can help. There is already technology that can avoid the need for panel upgrades or make it faster and cheaper to handle panel changes, but it is relatively new and not widely deployed. This is an area where R&D funding could help, so the bill adds reducing the costs of building electrification to the list of challenges targeted by the EPIC program."

2) *Removing barriers to building and transportation electrification*. The author and proponents of this bill underscore two barriers to building electrification identified by the CEC, cost and workforce training. This bill seeks to lower these barriers in two ways: first, by providing information for building owners and the construction industry on methods to overcome cost and technical barriers of building electrification and installation of EV chargers; and secondly, by encouraging the CEC to consider projects and technological advancements that remove cost barriers to building electrification in

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[7] CPUC D. 12-05-037
[8] California Energy Commission. *Electric Program Investment Charge 2019 Annual Report.* CEC-500-2020-009. April 2020. https://ww2.energy.ca.gov/2020publications/CEC-500-2020-009/CEC-500-2020-009-CMF.pdf
[9] California Energy Commission. Docket 20-EPIC-01. https://efiling.energy.ca.gov/getdocument.aspx?tn=238093

their EPIC award process. These provisions align with current recommendations and priorities identified by the CEC and ARB, and help facilitate the state's efforts to achieve its GHG emissions goals.

3) *Related/Prior Legislation.*

AB 3232 (Friedman) requires the CEC, by January 1, 2021, to assess the potential for the state to reduce GHG emissions from the state's residential and commercial building stock by 40% below 1990 levels by January 1, 2030. Status: Chapter 373, Statutes of 2018.

SB 1477 (Stern) requires the CEC to develop a statewide market transformation initiative to transform the state's market for low-emission space and water heating equipment for new and existing residential and nonresidential buildings, and to develop an incentive program to fund near-zero emission technology for new residential and commercial buildings. Status: Chapter 378, Statutes of 2018

AB 2127 (Ting) requires the CEC to prepare a statewide assessment of the charging infrastructure needed to achieve the goal of 5 million zero-emissions vehicles by 2030. Status: Chapter 365, Statutes of 2018.

SB 32 (Pavley) requires the ARB to ensure that statewide GHG emissions are reduced to 40% below the 1990 levels by 2030. Status: Chapter 249, Statutes of 2016.

AB 32 (Nunez) requires the ARB to adopt policies to reduce statewide GHG emissions to 1990 levels by 2020. Status: Chapter 488, Statutes of 2006.

REGISTERED SUPPORT / OPPOSITION:

Support

350 Bay Area Action
350 Silicon Valley
A. O. Smith Corporation
Acterra
Ban Sup (single Use Plastic)
Bay Area for Clean Environment
Bay Area Youth Lobbying Initiative
California Democratic Party Environmental Caucus
California Efficiency + Demand Management Council
California Energy Storage Alliance
California Solar & Storage Association
Carbon Free Palo Alto
Center for Sustainable Energy
Climate Youth Ambassador Program
East Bay Community Energy (EBCE)
Greentown Los Altos
Harker Green Team
Menlo Spark
Napa Climate Now
Natural Resources Defense Council

Pacifica Climate Committee
Peninsula Clean Energy
Peninsula Interfaith Climate Action
San Jose Community Energy Advocates
Sierra Club
Silicon Valley Clean Energy
Silicon Valley Democratic Club
Silicon Valley Youth Climate Action
Sunnyvale Cool
Sunnyvale Democratic Club
Together We Will - San Jose

Opposition

None on file.

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