

Date of Hearing: April 2, 2025

ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY

Cottie Petrie-Norris, Chair

AB 1280 (Garcia) – As Amended March 25, 2025

SUBJECT: Energy

SUMMARY: Qualifies thermal energy storage for multiple financial incentive programs administered by the California Infrastructure and Economic Development Bank (IBank) and the California Energy Commission (CEC) and expands programmatic language to include project labor agreements and community benefits agreements, among other additions.

Specifically, **this bill:**

- 1) Includes thermal energy storage in the Climate Catalyst Revolving Loan Fund Program.
- 2) Outlines specific requirements for thermal energy proposals to gain priority access to the Climate Catalyst Program, including:
 - a. Achieve emissions reductions.
 - b. Achieve reductions in pollutants and progress toward federal air quality standards.
 - c. Create project labor agreements and implement other labor protections.
 - d. Create a community benefit fund or community benefits agreement.
- 3) Establishes the Industrial Facilities Thermal Energy Storage Program within the existing Long Duration Energy Storage Program allowing eligible thermal energy projects to qualify for existing financial incentives.
- 4) Includes thermal energy storage under the Industrial Decarbonization and Improvement of Grid Operations Program (INDIGO).
- 5) Includes additional priorities within the INDIGO program language, including the creation of project labor agreements, pollution remediation plans and community benefit funds or agreements.

EXISTING LAW:

- 1) California Global Warming Solutions Act of 2006, directs the California Air Resources Board (CARB) to achieve emissions reductions and to complete a scoping plan for achieving those reductions. (Health and Safety Code § 38560)
- 2) Creates the Climate Catalyst Revolving Loan Fund Program at the IBank and prescribes which projects are eligible for funding within the program. (Government Code § 63048.9-63048.100)
- 3) Establishes and prescribe requirements for the Long Duration Energy Storage Program at the CEC. (Public Resources Code §§ 25640-25642 and 25645)

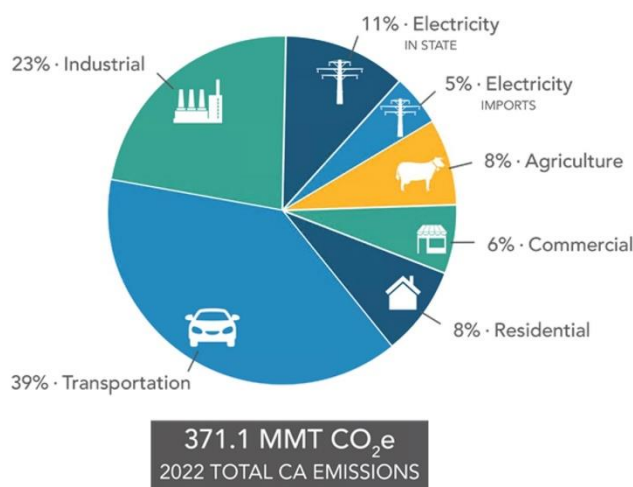
- 4) Establishes and prescribes requirements for the INDIGO Program at the CEC. (Public Resources Code § 25662)

FISCAL EFFECT: Unknown. This bill is keyed fiscal and will be referred to the Assembly Committee on Appropriations for its review.

CONSUMER COST IMPACTS: Unknown.

BACKGROUND:

California's greenhouse gas emissions in 2022 broken out by economic sector¹



California's Industrial Sector – According to CARB's 2024 report tracking trends in emissions by economic sector, the industrial sector generated 23% of total Greenhouse Gas (GHG) emissions in the state.² The industrial sector emissions are primarily driven by refining and hydrogen production, oil and gas, cement production, and cogeneration emissions attributed to industrial process heat. Industrial process heat is defined as heat energy (thermal energy) used for preparation or treatment of materials that produce manufactured goods.³

What is Thermal Energy Storage? –

Thermal energy storage is a technology that stores thermal energy, or heat, for use at a later time.^{4,5} There are several ways that thermal energy can be stored for later use, including changing temperature of a specific material like steel slag or volcanic rock that retains the heat, or by performing a chemical reaction that can release energy at a later time. These types of technology can enable industrial waste heat recovery.⁶ For example, the painting process in automobiles is one of the highest energy consumption steps in manufacturing, where the painting and curing involve significant consumption of electricity (fans, volatiles removal), fuel (curing ovens), and hot or chilled water.⁷ Thermal energy storage can be used to make this procedure more energy efficient by reusing waste heat elsewhere by warming raw materials or heating renewable desiccant. However, advances in thermal energy storage technology are beginning to

¹ California Air Resources Board, *California Greenhouse Gas Emissions from 2000 to 2022: Trends of Emissions and Other Indicators*, 2024

² Ibid.

³ Office of Energy Efficiency & Renewable Energy, DOE, "Process Heat Basics." <https://www.energy.gov/eere/iedo/process-heat-basics>

⁴ Ma, Zhiwei, et al. "Integration of thermal energy storage in industrial processes: challenges and opportunities." *Green Energy and Sustainability* 5.1 (2025).

⁵ Jouhara, Hussam, et al. "Waste heat recovery technologies and applications." *Thermal science and engineering progress* 6 (2018): 268-289.

⁶ Miró, Laia, Jaume Gasia, and Luisa F. Cabeza. "Thermal energy storage (TES) for industrial waste heat (IWH) recovery: A review." *Applied energy* 179 (2016): 284-301.

⁷ Giampieri, A., et al. "A review of the current automotive manufacturing practice from an energy perspective." *Applied Energy* 261 (2020): 114074.

function similar to other long duration battery storage technologies. Just this January the CEC published a large scale sulfur thermal battery demonstration that could be deployed in industrial settings.⁸ These technologies could function similarly to other batteries and shift industrial energy consumption away from peak grid times. Thermal energy storage technologies have the possibility to be implemented across multiple industries, including the food, textile, chemical, and petrochemical industries, among others.⁹

Carbon Catalyst Program – The Carbon Catalyst Program is intended to provide financial support for infrastructure projects that work toward the State’s climate goals. The Climate Catalyst Act,¹⁰ passed in 2020, established the Climate Catalyst Revolving Loan Fund to be administered by IBank. This fund is available to Climate Catalyst Projects, defined broadly as any in-state improvement that furthers the state’s climate goals.¹¹ Statute has added specificity to this broad mandate by identifying sustainable vegetation management and forestry practices,¹² agricultural improvements,¹³ electric transmission projects,¹⁴ and projects that can draw down federal dollars¹⁵ as eligible funding recipients. As of January 23, 2025, the U.S. Environmental Protection Agency deposited \$446,257,500 into the Climate Catalyst Fund at IBank as part of the federal Inflation Reduction Act of 2022.

Long Duration Energy Storage Program – The Long Duration Energy Storage Program was established in 2022 by AB 205 (Committee on Budget, Chapter 61, Statutes of 2022). The program administered by the CEC provides financial incentives for projects that have power ratings of at least one megawatt and are capable of reaching a target of at least eight hours of continuous discharge of electricity. The goal of the program is to encourage energy storage to build resiliency in the grid and avoid generation issues during hours of peak energy usage in the state. AB 227 (Gabriel, 2025), has designated \$2,600,000 for the Long Duration Energy Storage Program.

Industrial Decarbonization and Improvement of Grid Operations (INDIGO) Program – In 2022, the Legislature enacted AB 209, which created INDIGO under the CEC to provide incentives for projects that:

- 1) Enhance electrical grid reliability
- 2) Electrify processes that use fossil fuels
- 3) Incorporate renewable resources
- 4) Increase energy efficiency
- 5) Develop and deploy novel decarbonization technologies¹⁶

⁸ CEC, Large-Scale Sulfur Thermal Battery Demonstration for Enhanced Grid Flexibility and Increased Renewable Penetration, CEC-500-2025-006, January 25, 2025.

⁹ Turek, Vojtěch, et al. "Industrial waste heat utilization in the European Union—An engineering-centric review." *Energies* 17.9 (2024): 2084.

¹⁰ Government Code § 63048.9-63048.100

¹¹ Government Code § 63048.92(b)

¹² Government Code § 63048.93 (f)(1)

¹³ Government Code § 63048.93 (f)(2)

¹⁴ Government Code § 63048.93 (f)(3)

¹⁵ Government Code § 63048.93 (f)(4-5)

¹⁶ Committee on Budget, AB 209, Chapter 251, Statutes of 2022

As of March 2025, all funding allocated for grants within the INDIGO program is fully committed.¹⁷ Some INDIGO programs are funded by federal cost-shared projects under the Department of Energy.¹⁸ Currently, these federal funds are paused.

COMMENTS:

- 1) *Author's Statement.* According to the author, “The Inland Empire (IE) is home to over 4,000 warehouses, taking up 1 billion square feet of the region. The IE ranks among the worst in the nation for air pollution, particularly ozone and particulate matter. While California’s industrial sector helps to employ more than 1.1 million people and generates roughly 10% of the state’s total economic output, it is also responsible for nearly 25% of all greenhouse gas emissions in California. Many of these facilities are concentrated in regions that already suffer from poor air quality and can have disproportionate health impacts on historically disadvantaged and environmentally burdened communities. Not to mention, many facilities are placed near resident neighborhoods and children’s schools, exposing students and families to pollution, especially for students who walk to school. To improve air quality and help achieve our climate goals, AB 1280 would expand three existing state incentive programs to encourage new thermal energy storage projects without reducing in-state jobs or raising prices for consumers.”
- 2) *Purpose of the Bill.* This bill is specifying that thermal energy storage technology is eligible for three state programs: the Climate Catalyst Program, the Long Duration Energy Storage Program (discussed in greater detail below), and the INDIGO program. By including thermal energy projects, the bill will encourage further investment in this technology by the industrial sector. As a result, this new designation may build on existing technological contributions to curbing the industrial sector’s GHG emissions by increasing efficiency and shifting peak load on the grid.
- 3) *Long Duration Energy Storage Program* – Thermal energy storage is a promising technology that is growing in usage for industrial purposes. It is a broad term, inclusive of many technologies, such as recycling waste heat or storing heat to be extracted at a later time.¹⁹ Currently, much of this thermal energy storage is implemented for increased efficiency but technologies to convert waste heat to electricity are an emerging and growing implementation. This bill places “thermal energy storage” as a specified subprogram within the CEC’s Long Duration Energy Storage Program. Thermal energy storage is currently eligible for the program, as the definition of “energy storage system” is inclusive of thermal storage, therefore this added language does little to change the current statute.²⁰ The bill supports “high-road jobs” and “community benefits” within the Long Duration Energy Storage Program, but does not mandate these provisions. To date, the Long Duration Energy Storage program has awarded approximately \$120 million in

¹⁷ Reported by the Energy Commission, March 27, 2025

¹⁸ DE-FOA-0002936 Industrial Decarbonization and Emissions Reduction Demonstration-to-Deployment Funding Opportunity

¹⁹ Jeff St. John, “Heat-based batteries are a surprisingly versatile tool”, Canary Media, August 16, 2024.

²⁰ Public Utilities Code § 2835(a)(4)(B)

funding to almost all non-lithium-ion battery installations.²¹ As of January, approximately \$94 million remained, though the CEC was actively seeking federal cost share agreements.²²

- 4) *Double Referral*. This bill is double-referred. Should it pass out of this committee, it will next be considered in the Assembly Committee on Natural Resources.

5) *Related Legislation*:

AB 1095 (Papan, 2025) adds waste heat energy as an eligible resource in the Renewables Portfolio Standard but specifies eligibility only for data center use. Status: Referred to the Committees on Utilities and Energy and Natural Resources.

SB 787 (McNerney, 2025) would establish the Task Force on Industrial Policy and Clean Energy Development to identify policies and make recommendations on industrial policies that accelerate decarbonization. Status: Referred to Senate Committee on Energy, Utilities & Communications.

6) *Prior Legislation*:

AB 2109 (Carrillo) exempts large industrial customers from paying certain surcharges on their reductions in electricity if that reduction is achieved through an industrial process heat recovery technology with specified requirements. Status: Chapter 700, Statutes of 2024.

AB 2083 (Berman, 2024) requires the CEC to assess the potential for achieving an 85 percent reduction below 1990 levels in emissions from industrial heat application processes by January 1, 2045. Status: Held under submission in the Senate Appropriations Committee.

AB 841 (Berman, 2023) would have required CEC to create a roadmap for electrifying industrial processes, including processes requiring heat, as specified. Status: Held under submission in the Senate Appropriations Committee.

AB 205 (Budget), among its many provisions, established the Long-Duration Energy Storage Program at the CEC. This program provides financial incentives for projects that have power ratings of at least one megawatt and are capable of reaching a target of at least eight hours of continuous discharge of electricity in order to deploy innovative energy storage systems to the electrical grid, as specified.

²¹ CEC LDES program website; <https://www.energy.ca.gov/programs-and-topics/programs/long-duration-energy-storage-program>, accessed 03/26/2025.

²² \$120 million from the ~\$213 million awarded in the 2023-2024 budget

AB 209 (Budget) established the INDIGO program, which provides incentives for industrial projects that provide benefits to the electrical grid, reduce emissions and local air pollution. Status: Chapter 251, Statutes of 2022.

SB 596 (Becker) would require the state board to establish interim targets for reductions in the greenhouse gas intensity of cement used within the state relative to the average greenhouse gas intensity of cement used within the state during the 2019 calendar year, with the goal of reducing the greenhouse gas intensity of cement used within the state to 40% below the 2019 average levels by December 31, 2035. Status: Chapter 246, Statutes of 2021.

AB 78 (Budget), among its multiple provisions, established the Climate Catalyst Revolving Loan Fund at the IBank. This allowed the state to receive funds from non-state governmental entities and private sources to make loans for projects that further the state's climate goals. Status: Chapter 10, Statutes 2020.

REGISTERED SUPPORT / OPPOSITION:**Support**

360 Humboldt
Brightline Defense
California for Disability Rights
Center for Community Action and Environmental Justice
Clean Coalition
Clean Power Campaign
Climate Action California
Climate Action Campaign
Climate Reality Project - Silicon Valley
Coalition for Clean Air
Earthjustice
Industrious Labs
NorCal Elders Climate Action
People's Collective for Environmental Justice
Physicians for Social Responsibility – San Francisco Bay Area
San Francisco Baykeeper
Santa Cruz Climate Action Network
Sierra Club California
SoCal Elders Climate Action
Sunflower Alliance
Sustainable Mill Valley
ThirdAct Sacramento
Vote Solar

Opposition

None on file.

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