

Date of Hearing: April 17, 2024

**ASSEMBLY COMMITTEE ON UTILITIES AND ENERGY**

Cottie Petrie-Norris, Chair

AB 2109 (Juan Carrillo) – As Introduced February 5, 2024

**SUBJECT:** Electricity: surcharge exemption: industrial process heat recovery

**SUMMARY:** Defines industrial process heat recovery to mean a process that reuses waste heat and exempts energy efficiencies achieved at an industrial facility using this form of heat recovery from nonbypassable or departing load charges. Specifically, **this bill:**

Specifically, **this bill:** Exempts any reduction in industrial customer electricity consumption from nonbypassable or departing load charges imposed by an electrical corporation if that reduction is achieved due to an industrial process heat recovery technology, as defined.

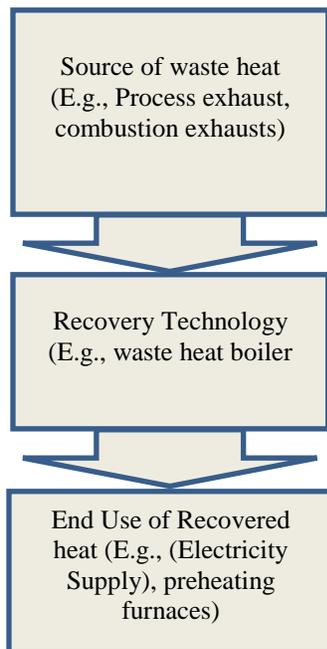
**EXISTING LAW:**

- 1) Requires California Air Resources Board (CARB) to prepare and approve a Scoping Plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions and to update the Scoping Plan at least every five years. (Health & Safety Code (HSC) § 38561(h))
- 2) Requires an electrical corporation to purchase from an eligible customer-generator, excess electricity that is delivered to the grid that is generated by a combined heat and power. (Public Utilities Code § 2840)
- 3) Requires the California Public Utilities Commission (CPUC) to apply specific uneconomic costs to each customer based on the amount of electricity purchased by the customer from an electrical corporation or alternate supplier of electricity, subject to changes in usage occurring in the normal course of business. (Public Utilities Code § 371(a))
- 4) Defines "change in usage" to generally mean changes occurring in the normal course of business resulting from changes in business cycles, termination of operations, departure from the utility service territory, weather, reduced production, modifications to production equipment or operations, changes in production or manufacturing processes. (Public Utilities Code § 371(b))
- 5) Provides authorization for cost recovery to accommodate implementation of direct access (Public Utilities Code § 376)

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

## BACKGROUND:

*California's Industrial Sector.* California's industry sector includes a diverse range of facilities, including cement plants, metal processors, oil and gas producers, refineries, paper and glass manufacturers, mining operations, and food processors.<sup>1</sup> According to CARB's 2022 Scoping plan, the industrial sector accounts for the second largest source of California's emissions after transportation.<sup>2</sup> Approximately, 80 percent of the industrial sector's emissions come from combustion-based processes, and 20 percent of its emissions come from fugitive emissions<sup>3</sup> associated with chemical conversions intrinsic in some industrial processes. Combustion of fossil gas and fossil fuels provides energy to meet three broad industry needs: electricity, steam, and process heat. Industrial process heat is defined as heat energy (thermal energy) used for preparation or treatment of materials that produce manufactured goods. Process heat is reportedly the most significant source of energy use and greenhouse gas emissions (GHGs) in the industrial sector, accounting for about 50% of all onsite energy use and 30% of GHGs.<sup>4</sup> In 2020, California's industrial sector was ranked the second-largest total second-largest total energy consumer in the nation.<sup>5</sup>



**Figure 1:**<sup>6</sup> Three Essential Components Required for Waste Heat Recovery

There have been various efforts to reduce energy consumption to improve industrial energy efficiency such as the use of energy efficient equipment for processes used in manufacturing such as boilers, furnaces, dryers, pumps or changing the processes or techniques to manufacture products.<sup>7</sup> An alternative approach has been to capture and reuse the lost or "waste heat" that is inherent to all industrial manufacturing.<sup>8</sup> Industrial waste heat is the energy that is generated in industrial processes which is not put into any practical use and is lost, wasted and dumped into the environment. Sources of waste heat include combustion gases discharged to the atmosphere, heated products exiting industrial processes, and heat transfer from hot equipment surfaces. The exact amount of industrial waste heat is not clearly quantified, but various studies have estimated that as much as 40 - 50 percent of industrial energy consumption is ultimately discharged as waste heat. This waste heat can be repurposed through waste heat technologies to generate electricity preheat furnaces, and for space heating.

As shown in Figure 1, the three essential components required for waste heat recovery are: the source of waste heat, a recovery technology, and an end use for the recovered heat. Emerging technologies may hold promise for replacing existing technologies

<sup>1</sup> Pg.165,CARB, "DRAFT 2022 SCOPING PLAN UPDATE," MAY 10, 2022

<sup>2</sup> Pg.30, CARB; "California Greenhouse Gas Emissions for 2000 to 2020 Trends of Emissions and Other Indicators;

<sup>3</sup> Fugitive emissions refer to the unintentional release of gases or vapors into the atmosphere from industrial processes, equipment, or infrastructure. These emissions can occur during the extraction, production, processing, storage, transportation, and distribution of various substances, including fossil fuels like oil and natural gas. Fugitive emissions contribute to air pollution and can include greenhouse gases such as methane and volatile organic compounds.

<sup>4</sup> Office of ENERGY EFFICIENCY & RENEWABLE ENERGY, "Process Heat Basics."

<https://www.energy.gov/eere/iedo/process-heat-basics>

<sup>5</sup> U.S Energy Information Administration, "California State Profile; <https://www.eia.gov/state/?sid=CA>

in some cases, enabling heat recovery from “new” heat sources not typically considered for recovery, and increasing “end use” options for heat recovery.

*Distinct charges for an electricity Bill.* A variety of charges appear on a typical electricity bill and each of the electrical corporations (PG&E, SCE, SDG&E) present the charges differently, depending on the format of their billing system. Some of these charges apply only to certain types of customers, such as industrial customers. Some apply to nearly all customers, and some customers have received statutory or CPUC exemptions from these charges as illustrated below.

*Nonbypassable charges.* Nonbypassable charges, which included but are not limited to departing load charges, are mandated volumetric customer charges to be assessed on each kilowatt-hour of electricity used by a customer. These charges provide funds for a variety of purposes, including:

- a) Public Purpose Program charges fund a variety of programs, including the California Alternate Rates for Energy (CARE) low-income rate assistance program, the Energy Savings Assistance program that provides energy efficiency retrofits for low-income households, Energy Efficiency Procurement, and the Electric Program Investment Charge. Since these charges are assessed based on the amount of electricity used, large energy users tend to contribute a proportionally larger amount of money to these programs.
- b) Other nonbypassable charges have been authorized to address specific purposes, such as stranded investments during electricity deregulation, procurement costs incurred by the Department of Water Resources on behalf of electrical corporation customers during the Electricity Crisis of 2000-2001, and to fulfill ratepayers’ portion of broader payments into the Wildfire Fund created to settle claims related to certain types of wildfires.

These charges are not considered nonbypassable charges and, depending on the tariff (the customer's rate schedule), they may or may not be assessed:

- a) *Demand charges.* These charges are typically applied to customers who use large amounts of electricity. They are based on a customer’s maximum demand incurred during a monthly period. They can also be based on customers’ maximum demand over on-peak and over partial-peak hours of the month.
- b) *Standby charges.* They serve like an insurance premium. As such they are dollar-per-kilowatt charges typically assessed to customers who regularly meet their own load (or a portion of their load) every hour of the month via on-site generation, but who pay the serving utility to “stand by” with immediate power if/when their generator has an unexpected outage. The charges are owed each month, whether or not the customer actually has a generator failure that month.
- c) *Other charges.* Fund renewable electricity program procurement and other programs, such as the Self Generation Incentive Program are among the charges assessed, along with other charges, in monthly distribution service charges.

*State Initiatives.* Electric Program Investment Charge (EPIC) and Gas R&D programs at the California Energy Commission (CEC) are ratepayer funded. These programs have funded energy efficiency and decarbonization projects affecting the industrial, agriculture, and water sectors,

among others. For FY 2023/2024, the budget for its Industrial, Agriculture, and Water R&D program was \$40 million. The CEC does not have an industrial energy efficiency program funded with ratepayer funds to directly subsidize the deployment of commercially available industrial decarbonization technologies. However, the Industrial Decarbonization and Improvements to Grid Operations Program (INDIGO) established by Assembly Bill 209 (Committee on Budget, Chapter 251, Statutes of 2021), can fund industrial projects that increase energy efficiency, among other purposes. Among other criteria, the program can provide incentives for industrial projects that develop and deploy novel decarbonization technologies.

*Federal Opportunities.* On March 25, 2024, the U.S. Department of Energy (DOE) announced up to \$6 billion from the Infrastructure and Investment Jobs Act (IIJA) for 33 projects across different U.S. 20 states to support the decarbonization of energy-intensive industries.<sup>6</sup> This announcement is the largest investment in industrial decarbonization in American history.<sup>7</sup> The projects will focus on the highest emitting industries where decarbonization technologies will have the greatest impact, including cement and concrete, glass, iron, and steel. Additionally, in February 2024, the DOE in partnership with Treasury and Internal Revenue Service (IRS) announced the intent to release \$ 4 billion for tax credits to industrial or manufacturing facilities with equipment designed to reduce GHGs by at least 20 percent through the installation of industrial technology designed to reduce GHGs.

#### COMMENTS:

- 1) *Author's statement.* According to the author, "It is critical for California to identify and remove hurdles to decarbonize industry sectors to abate the effects of climate change. Specifically, the cement industry must achieve carbon neutrality by 2045, as defined in SB 596 (Becker) chapter 246 of the statutes of 2021. Industrial Process Heat Recovery (IPHR) technologies, which are treated as energy efficiency everywhere but California, is a process of capturing high heat generated as part of the industrial manufacturing process and converting that heat into carbon-free electricity to be self-consumed on site. AB 2109 would treat IPHR as energy efficiency in California, and will encourage new investment in zero-carbon IPHR technology, keeping good paying jobs and clean manufacturing throughout the state."
- 2) *What is industrial process heat recovery?* There are different kinds of industrial process heat recovery (IPHR) According to the author, industrial process heat recovery (IPHR) technology or industrial waste heat recovery can be used interchangeably to mean a form of energy efficiency. As such, this bill specifically defines industrial process heat recovery as a form of energy efficiency. This bill further allows industrial users using IPHR to achieve energy efficiency to avoid charges assessed for specific purposes that would otherwise apply in the case of substantially-reduced electricity demand under these circumstances.
- 3) *The Case of Departing Load Charges.* This bill seeks to exempt electrical corporation customers who use industrial process heat recovery technology during their normal business hours from departing load charges. According to a California Energy

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<sup>6</sup> Office of Clean Energy Demonstrations, "OCED Announces \$6 Billion to Transform America's Industrial Sector, Strengthen Domestic Manufacturing, and Slash Planet-Warming Emissions." March 25, 2024

<sup>7</sup> Ibid

Commission Report, “Standby rates and departing load charges are significant barriers to combined heat and power (CHP) technologies in California.”<sup>8</sup> As such, the author contends that these charges serve as a significant disincentive to investing in zero-carbon emissions IPHR technologies.

- 4) *Cost shifting*. This bill would allow IPHR technology to be exempt from departing load charges. In order to provide this exemption, other ratepayers will be obliged to fund the shortfall in charges (utility revenues) that this exemption would create. The overall revenue each utility is collecting will have already undergone review by the CPUC to determine if it is just and reasonable, so choosing not to collect it in one part of the rate base necessitates collecting it elsewhere. These increased collections would be obtained from other customers, such as residential, small commercial, large commercial, government, agricultural, and industrial customers. Furthermore, as eluded earlier, these departing load charges provide funding for a variety of public purpose programs that serve low-income ratepayers. According to a 2023 report by the California State Auditor, California has the seventh-highest average electricity rates and the 10th-highest average residential natural gas prices in the nation.<sup>9</sup> For context, about 2.4 million customers of California’s three largest utilities are behind on their bills, accounting for approximately \$1.8 billion in energy debt.<sup>10</sup> Sadly, these trends show no indication of slowing down.

*As such, the committee recommends that residential customers and non-residential customers with peak loads no greater than 20 kW are exempt from any lost revenues that are directly attributable to the nonbypassable charges that would otherwise be paid by customers receiving the exemption for industrial process heat recovery pursuant to subdivision (a).*

5) *Prior Legislation*

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.

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

AB 1365 (Bonta, 2021) would require the Department of General Services to establish a maximum acceptable global warming potential for concrete, as specified, and require an awarding authority to require an environmental product declaration prior to the installation of any concrete products. Died in Assembly Natural Resources Committee.

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<sup>8</sup> Pg. 91, “A Comprehensive Assessment of Small Combined Heat and Power Technical and Market Potential in California.” March 2021

<sup>9</sup> Pg. 7, California State Auditor; *Electricity and Natural Gas Rates*; Report 2022-115; August 2023.

<sup>10</sup> November 2023 Disconnection Settlement Monthly Reports of PG&E, Southern California Edison, and SDG&E (R.18-07-005).

AB 966 (Bonta, 2019) would have required the state's cement plants to submit a facility-specific Environmental Product Declaration to ARB to disclose the environmental impacts of the plant. Status: Held in the Assembly Appropriations Committee.

AB 1452 (Skinner, 2009) would have required ARB to develop and adopt limitations on GHG emissions that result from the production of all cement sold in the state. Status: Held in the Assembly Appropriations Committee.

AB 32 (Nunez) - California Global Warming Solutions Act of 2006 designates CARB, as the state agency responsible for monitoring and regulating sources emitting greenhouse gases (GHGs). Requires CARB to prepare and approve a scoping plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions and to update the scoping plan at least once every five years. Status: Chapter 488, Statutes of 2006.

## **REGISTERED SUPPORT / OPPOSITION:**

### **Support**

Argyle Earth  
California Construction & Industrial Materials Association  
California Large Energy Consumers Association  
California Manufacturers and Technology Association  
California Nevada Cement Association (CNCA)  
Electratherm by Bitzer Group  
Environmental Defense Fund  
Heat Is Power (HIP)  
Kanin Energy  
Mavericks Microgrids, INC.  
Mitsubishi Cement Corporation  
New Buildings Institute  
Nrdc  
Rmi  
Sierra Club California  
The Low Carbon Initiative  
Turboden  
Vacom Technologies

### **Opposition**

Sempra Energy and Its Affiliates: San Diego Gas & Electric Company and Southern California Gas Company

The Utility Reform Network (TURN)

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