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**Industrious Labs, Earthjustice, and Environmental Defense Fund
Comments on Draft 2023 Integrated Energy Policy Report**

Additional submitted attachment is included below.



December 1, 2023

California Energy Commission
Docket No. 23-IEPR-01
715 P Street
Sacramento, California 95814

RE: Comments on Draft 2023 Integrated Energy Policy Report

On behalf of Industrious Labs, Earthjustice, and Environmental Defense Fund, we appreciate the opportunity to comment on the Draft 2023 Integrated Energy Policy Report (IEPR). We urge the California Energy Commission (CEC) to expand its evaluation of decarbonizing the industrial sector to include readily available zero-emission electric technologies for low-temperature processes while also utilizing accurate gas rate projections for demand and gas bill prices that takes into consideration California's climate leadership through decarbonization policies.

The Draft IEPR's Treatment of Industrial Decarbonization Should Acknowledge the Significant Potential for Electrification in this Sector

As the Draft IEPR correctly notes, the industrial sector is California's second-largest source of greenhouse gas (GHG) emissions and is responsible for 23 percent of the state's total emissions.¹ Industrial emissions are also a significant source of air pollution, emitting not only GHGs but also nitrogen oxides (NOx), sulfur oxides (SOx), and particulate matter (PM). Industrial facilities pollute across the state with a heavy concentration in some of our most severely polluted regions: the San Joaquin Valley and South Coast Basin. For example, the Environmental Protection Agency's 2020 emissions reporting demonstrates that 2,500 tons (63 percent) of NOx emissions, 104 tons (21 percent) of sulfur dioxide (SO₂) and 265 tons (51 percent) of PM emissions were released from industrial facilities in environmental justice communities. Yet despite its significant climate and air quality impacts, the Draft IEPR's discussion of industrial decarbonization is limited to a single page and focuses on hydrogen potential for this sector. While we recognize the IEPR's discussion of hydrogen is pursuant to legislative direction under Senate Bill 1075, the IEPR's treatment of industrial decarbonization leaves the false impression that hydrogen is the only potential decarbonization solution for this sector.

To provide needed context for industrial decarbonization, the CEC should revise the Draft IEPR to highlight the significant potential for industrial decarbonization using readily available

¹ Draft IEPR at pg. 79.

zero-emission electric technologies. Generally, the “industrial sector” has been used to describe a wide range of manufacturing processes from food manufacturing to paper, glass, steelmaking, oil refining, and cement and concrete production. In part, the lack of uniformity across the sector has created the impression that the sector is “hard to abate” or “difficult to decarbonize.” This mischaracterization obscures cross-cutting opportunities within industry, united by shared operational needs and technology solutions.

Moreover, using such blanket labels to describe the entire sector—and instead punting the issue of industrial decarbonization to be solved by emerging technologies such as hydrogen—fails to address the full range of health, environmental, and environmental justice concerns. Unlike electric zero-emission technologies, combusting hydrogen as a fuel source generates NO_x. The decision in the Draft IEPR to only discuss hydrogen in the context of industrial decarbonization and treating the entire industrial sector as a monolithic “hard to decarbonize” segment is not only incomplete because it minimizes the opportunities that exists within that space; but also misleading since it prioritizes a partial solution over existing viable decarbonization pathways that address the full range of concerns.

Industrial facilities that utilize low-temperature heat (less than 200°C), such as food processing, breweries, and paper have feasible technological solutions to efficiently decarbonize now. Several recent papers highlight the feasibility of using industrial heat pumps and other modern, efficient technology to electrify many of the industries operating in California.² While higher-temperature processes such as cement manufacturing are more emissions intensive, California has significantly more facilities that utilize low-temperature processes. For instance, there are seven cement facilities compared to more than 6,000 food manufacturing facilities statewide. Importantly, 43 percent of California industrial heat related emissions are from equipment generating heat less than 200°C.³ Low-temperature processes can be electrified now to rapidly reduce pollution and help California meet its 2030 climate target.

Zero-emission technology is ready and available today to electrify industrial uses and eliminate climate and air pollution in the sectors that dominate California’s industrial sector. Examples range from industrial heat pumps to electric ovens and thermal storage, with more solutions on the way.⁴ However, legislative and regulatory leadership is needed to deploy these solutions at scale to support the transformation of the industrial sector.

² For three recent papers, see: Rightor, E., P. Scheihing, A. Hoffmeister, and R. Papar. 2022. Industrial Heat Pumps: Electrifying Industry’s Process Heat Supply. Washington, DC: American Council for an Energy- Efficient Economy; Zuberi, M. Jibrán S., A. Hasanbeigi, and W. R. Morrow, 2022. Electrification through Industrial Heat Pump Applications in U.S. Manufacturing. Lawrence Berkeley National Lab and Global Efficiency Intelligence.; and, Hasanbeigi, A. and C. Springer. 2023. Industrial Electrification in the Southwest States. Global Efficiency Intelligence.

³ McMillan, Colin. 2019. "Manufacturing Thermal Energy Use in 2014." NREL Data Catalog. Golden, CO: National Renewable Energy Laboratory. Last updated: September 16, 2022. DOI: 10.7799/1570008.

⁴ The authors note that the technology to cost-effectively electrify even higher degree heat is rapidly evolving. One California-based company has already installed thermal energy storage equipment in California that is providing zero-emission heat higher than 1,000°C. See more:

<https://rondo.com/news/rondo-energy-announces-worlds-highest-temperature-thermal-energy-storage>

Like other sectors, the industrial sector requires targeted and intentional policy attention, particularly to address some of the barriers relating to permitting, grid infrastructure, and rate design. Fortunately, initiatives like the CEC’s Industrial Industrial Decarbonization and Improvement of Grid Operations (INDIGO) program demonstrate a growing momentum to address these challenges. Furthermore, local air districts, such as the South Coast Air Quality Management District, are spearheading new and forthcoming rules that mandate zero-emission technologies for food manufacturing and boilers (e.g., Rules 1153.1 and 1146.2). These efforts signify significant progress in the development of rules aimed at eliminating pollution from industrial processes.

We urge the CEC to evaluate industrial processes that can be electrified in this Draft IEPR and/or begin a process to consider how to tackle the emissions from these processes. The industrial sector in California has the potential to fulfill its outsized responsibility, contributing to the state’s leadership in building a clean energy economy and addressing the climate crisis—but only if the sector is enabled to stay ahead of the decarbonization curve through accurate policy and market signals. As of 2022, the manufacturing sector employed 7.57 percent of the state’s nonfarm workforce and accounted for more than 10 percent of the total gross state product. Ignoring the potential for electrification of industrial processes in the Draft IEPR can easily be taken as a sign that California is sitting on its hands when it comes to industrial decarbonization, creating uncertainty and risk for this key sector of the state’s economy. California has a long history of leadership in both manufacturing and climate policy; it’s time to bring these two legacies together and build a new one as a leader in industrial decarbonization.

The Draft IEPR’s Assumption that Industrial Customer Gas Bills Do Not Increase Through 2050 Ignore Historical Rate Increases and Shifts in Cost Allocation

With regard to projections of gas bills, the Draft IEPR’s finding that bills for industrial customers are stable through 2050 does not withstand scrutiny.⁵ As an initial matter, just like not all industrial applications are “hard-to-electrify,” industrial users fall into different rates classes depending on whether they are core or non-core customers and if they are connected to the distribution, local, or backbone transmission system. For example, in its most recent application to charge rates for gas transportation, SoCalGas is requesting a 9.1 percent rate increase for core industrial customers, a 10.5 percent increase for non-core industrial distribution level customers, and a 19.6 increase for transmission level service and a 36.8 percent increase for backbone transportation service.⁶ In its most recent rate case, SDG&E, has proposed a rate increase of 12.6

⁵ Draft IEPR at A-9.

⁶ Notice of Application Southern California Gas Transportation (Cost Allocation Proceeding) Application Filing A.22-09-015, <https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/news-and-outreach/documents/pao/customer-notices/cn-2022/sdge--tcap.pdf>.

percent for core industrial customers, and 12.5 percent for non-core industrial customers.⁷ Similarly, in the last decision authorizing its revenue requirement for gas transmission and storage service, the CPUC approved rate increases all classes of PG&E’s industrial customers.⁸ The Draft IEPR’s assumption that the revenue requirement for industrial customers does not increase over time is untethered from reality.

In addition, the illusory result of relatively stable industrial gas bills is most likely due to the underlying assumptions of the IEPR model. As the Draft IEPR explains, sector rates are “calculated by multiplying the revenue requirement by each sector’s class allocation.”⁹ However, the preliminary price modeling previously shared by the CEC shows that the model sets the allocation among different customer classes at a constant rate for future years.¹⁰ Holding the allocation ratio constant effectively “silos” the individual customer segments since any bill impacts projected in the model would arise solely from changes of revenue requirements and throughput within each segment. Such an assumption is a significant oversight and shortcoming of the draft IEPR model. In reality, class allocation is not held constant, but instead periodically revised through cost allocation proceedings. Declines in gas throughput will also directly impact the rates of industrial gas customers that will bear an additional share of costs of the backbone transmission system. For example, SoCalGas cost allocation proceedings show the share of revenue requirement allocated to non-core customers more than doubled while transportation rates almost tripled in less than a decade, contrary to model assumptions.

Table 1: SoCalGas Transportation Rate - Cost Allocation¹¹

	2018		2022		2024 (proposed)	
	RRQ (million; %)	Rate (\$/th)	RRQ (million; %)	Rate (\$/th)	RRQ (million; %)	Rate (\$/th)
Core	\$ 2,178 (93.4%)	\$ 0.599	\$ 3,254 (91.2%)	\$ 0.919	\$ 3,055 (85.6%)	\$ 0.939
Non-Core	\$ 82.5 (3.5%)	\$ 0.054	\$ 188.0 (5.3%)	\$ 0.122	\$ 219.2 (6.1%)	\$ 0.133

⁷ A.22-05-015, SDG&E, Prepared Direct Testimony of Sharim Chaudhury at SBC-5 (May 2022) https://www.sdge.com/sites/default/files/regulatory/SDGE-47%20Direct%20Testimony%20of%20Sharim%20Chaudhury%20-%20SDGE%20Present%20and%20Proposed%20Gas%20Transportation%20Revenues%20and%20Rates_488.pdf.

⁸ D.19-09-025, Decision Authorizing PG&E’s 2019-2022 Revenue Requirement for Gas Transmission and Storage Service at Appendix H, Table 3 (Sept. 23, 2019), <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M314/K894/314894934.pdf>.

⁹ Draft IEPR at A-8.

¹⁰ Docket 23-IEPR-03, TN#249766, CEC, 2023 IEPR Preliminary Electric Generation Price Model at Tab “CA Rates 4% RR Growth” (April 18, 2023), <https://efiling.energy.ca.gov/GetDocument.aspx?tn=249766&DocumentContentId=84405>.

¹¹ A.18-07-024, Triennial Cost Allocation Proceeding Application of Southern California Gas Company and San Diego Gas & Electric Company (July 31, 2018) at Attachment C, <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M219/K357/219357935.PDF>; A.22-09-015, Cost Allocation Proceeding Application of Southern California Gas Company and San Diego Gas & Electric Company (September 30, 2022) at Attachment C-1, <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M497/K359/497359198.PDF>.

EG	\$ 70.9 (3.0%)	\$ 0.026	\$ 125.2 (3.5%)	\$ 0.049	\$ 154.8 (4.3%)	\$ 0.072
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In order to accurately capture future gas bill impacts, the IEPR model needs to account for the shifts in revenue requirement allocation that will occur between customer classes as more and more core customers shift away from the gas system. Accordingly, the CEC should revise the IEPR’s industrial bill analysis to also reflect increasing industrial customer gas rates and future shifts in revenue requirement allocation.¹²

The Draft IEPR’s Gas Demand and Gas Bill Forecasts Do Not Properly Account for California’s Decarbonization Policies

In earlier comments on the IEPR’s gas demand forecast, Environmental Defense Fund highlighted concerns with preliminary modeling holding gas demand constant after 2035 and the underestimation of gas price projections given the relationship between gas throughput and gas transportation rates.¹³ While the Draft IEPR projects increasing residential and commercial rates out to 2050 because of “increasing revenue requirements each year and declining gas demand in those sectors due to electrification and energy efficiency measures,” the results do not appear to differ from preliminary projections.¹⁴ Gas demand reductions continue to appear minimal given the role of assumed rate increases in increasing gas costs. In forecasting future gas demand, the CEC should account for reasonably foreseeable policies such as zero-emission space and water heating sales requirements adopted or under development by Air Districts and the California Air Resources Board. Based on slide presentations for the Demand Forecast Workshop that was rescheduled to December 6th, accounting for zero-emission standards under the mid-range scenario used for electricity planning reduces gas demand by 21.2 percent by 2030 and 72.3 percent by 2040.¹⁵ These assumptions, and their corresponding impact on gas rates due to significantly reduced gas throughput, should be incorporated into the IEPR’s demand and gas bill forecast.

The CEC should also ensure that its adopted demand forecast incorporating gas demand declines from implementation of zero-emission appliance regulations is used by gas utilities for gas planning purposes. In determining the need for major new gas system investments, gas utilities continue to rely on their own gas demand reports, with minimal assumed demand reductions from fuel substation. For example, in proposing to significantly expand a gas compressor station

¹² This transition in the industrial sector away from gas is already happening through a recognition in places like the South Coast Air Basin that the region needs to shift away from combustion to attain federal air quality standards. The South Coast AQMD has already adopted a revision to Rule 1153.1, which includes zero-emissions standards for some categories of commercial ovens. Moreover, the agency is in the midst of Proposed Amendments to Rule 1146.2, which will advance zero-emissions in several categories of large water heaters, small boilers and process heaters. Many pieces of equipment covered under the amendments to 1146.2 are located at industrial facilities.

¹³ Docket 23-IEPR-03, TN# 49951, Written Comments of EDF Regarding IEPR Natural Gas Preliminary Price Projections (May 2, 2023), <https://efiling.energy.ca.gov/GetDocument.aspx?tn=249951&DocumentContentId=84671>.

¹⁴ Compare CEC Presentation, 2023 Preliminary Natural Gas Cost Projections at Slide 9 (Apr. 18, 2023) with Draft IEPR at A-9.

¹⁵ Docket 23-IEPR-03, TN# 253097, CEC, Results of Incorporating the Zero-Emission Appliance Standards to AAFS, Slide 27 (Nov. 15, 2023), <https://efiling.energy.ca.gov/GetDocument.aspx?tn=253097&DocumentContentId=88301>.

in a disadvantaged community directly across from an elementary school in the City of Ventura, SoCalGas is relying on demand projections in the California Gas Report.¹⁶ The California Gas Report uses Additional Achievable Fuel Substitution (“AAFS”) Scenario 2, a more conservative scenario than the CEC proposes to use for electric planning.¹⁷ The failure to properly account for demand reductions from decarbonization policies when proposing major new capital investments in the gas system creates significant risk these investments will quickly become stranded assets and harms the communities where these oversized projects are proposed.

Finally, the Draft IEPR gas bill forecast does not account for increased gas costs from procurement of biomethane. In its *Decision Implementing Senate Bill 1440 Biomethane Procurement Program*, the California Public Utilities Commission required that by 2030, gas utilities “procure each year an amount of biomethane equivalent to 12.2 percent of its own share of 2020 annual bundled core customer natural gas demand.”¹⁸ The Decision finds the average cost of biomethane procurement is \$17.70/MMBtu, over three times IEPR’s \$5.00/MMBtu estimate for the cost of fossil gas used in the Draft IEPR.¹⁹ Because California has adopted blending fossil gas with biomethane as a climate strategy and imposed specific procurement requirements on gas utilities, the costs of this measure should be incorporated into gas bill projections.

Conclusion

Zero-emission electric technology is readily available to be deployed in the industrial sector to abate harmful pollution emissions in disadvantaged communities, particularly for low-temperature heat processes. We urge the CEC to evaluate the potential for these processes to implement feasible zero-emission electric technologies as a solution to decarbonize in the Draft IEPR and revise the gas demand and gas bill projections that take into consideration California’s climate leadership seen through its decarbonization policies and increases in gas bills already experienced by industrial customers.

Thank you again for the opportunity to comment, and for the CEC’s hard work on the Draft IEPR. We look forward to continuing our collaboration with you on these critical issues.

Sincerely,

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¹⁶ A.23-08-019, Application of Southern California Gas Company for a Certificate of Public Convenience and Necessity for the Ventura Compressor Station at 20 (Aug. 24, 2023),

<https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M518/K988/518988977.PDF>.

¹⁷ 2022 California Gas Report, at 128 (2022)

https://www.socalgas.com/sites/default/files/Joint_Utility_Biennial_Comprehensive_California_Gas_Report_2022.pdf.

¹⁸ D.22-02-025, Decision Implementing Senate Bill 1440 Biomethane Procurement Program at 60-61 (Feb. 25, 2022),

<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M454/K335/454335009.PDF>.

¹⁹ *Id.* at 26; Draft IEPR at A-6.