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SoCalGas Comments on CEC 2025 IEPR Draft Scoping Order

Additional submitted attachment is included below.

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February 11, 2025

Chair David Hochschild
California Energy Commission
Docket Unit, MS-4
Docket No. 25-IEPR-01
715 P Street
Sacramento, CA 95814-5512

Subject: Comments on the 2025 IEPR Draft Scoping Order Workshop

Dear Chair Hochschild,

Southern California Gas Company (SoCalGas) appreciates the opportunity to provide comments on the California Energy Commission (CEC) 2025 Integrated Energy Policy Report (IEPR) Draft Scoping Order, which was released on January 28, 2025. The IEPR provides a critical foundation for broadly assessing California's energy system and how future energy demand will evolve as the state decarbonizes. The 2025 IEPR will build upon important analyses developed in the 2023 IEPR and other related proceedings. These analyses include continued assessment of the potential for hydrogen use in the electric generation, transportation, and industrial sectors, an update of the electricity and natural gas demand forecast, and further assessment of firm, zero-carbon resources under Senate Bill (SB) 423.

SoCalGas's comments are as follows:

1) The 2025 IEPR should continue assessing demand for hydrogen production for transportation, electric generation, and industrial decarbonization as the CEC's previous IEPRs indicated will occur;
2) The 2025 IEPR should clearly define renewable natural gas (RNG), renewable hydrogen, and carbon capture and sequestration (CCS) in SB 100 scenario planning, and the SB 423 report should continue considering both dispatchable and baseload resources to maintain and improve energy system reliability and resiliency;
3) Topics the CEC electricity and natural gas forecast should consider:

a. Localized energy system planning is needed to prepare for future load growth from data centers and electrolytic hydrogen production;
b. The CEC's natural gas demand forecast needs to account for interdependencies in the energy system;
c. Acknowledging the inherent challenges of electricity price forecasts and incorporating recent trends and infrastructure investment needs can help provide a more robust and useful price forecast;
d. Electricity and natural gas forecasts should consider regulatory updates regarding energy efficiency and emissions standards, and;

4) Energy planning for multi-day outages and localized forecasting is important in light of extreme weather events in California. It is critical to base this planning on forward-looking data-driven expectations of the frequency and severity of these events over the next several decades.

1) **The 2025 IEPR should continue assessing demand for hydrogen production for transportation, electric generation, and industrial decarbonization as the CEC's previous IEPRs indicated will occur.**

The 2024 IEPR Update stated that the 2025 IEPR will assess fuel substitution in the industrial and agricultural sectors, including the potential for hydrogen to assist with state decarbonization goals.[1] We support the CEC's development of hydrogen demand scenarios in the 2025 IEPR including for hard-to-electrify sectors. The 2025 IEPR should also evaluate all hydrogen production and conversion pathways, such as producing hydrogen from biomass gasification and reforming biogas as well as electrolysis. The IEPR should also consider the potential use of fuel cells and linear generators for both supply-side and behind-the-meter electric generation as an alternative to combustion.

For electric generation, the 2023 IEPR estimated the amount of electrolytic hydrogen needed to replace the 2022 Scoping Plan's entire forecasted natural gas generation in 2045 (0.226 exajoules of energy), as the IEPR upper bookend of hydrogen demand in the electric sector.[2] For its lower bookend, the 2023 IEPR used a University of California, Irvine (UCI) Study that considered projected resource buildouts where hydrogen could provide on-call or dispatchable electricity.

For the transportation sector, the 2023 IEPR made similar estimates for upper and lower bookends of the amount of the new renewable electricity and generation capacity that could be required if electrolyzers produced all hydrogen consumed in the transportation sector in 2040. The 2023 IEPR based this analysis on projections from the California Air Resources Board (CARB's) 2022 Scoping Plan and CEC's demand forecast Additional Achievable Transportation Electrification Scenario 3.

[1] CEC 2024 IEPR, November 26, 2024, p. 38, available at: https://www.energy.ca.gov/publications/2024/2024-integrated-energy-policy-report-update.
[2] CEC 2023 IEPR, February 14, 2024, p.78, available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=254463.

These two scenarios captured a potential range of electrolytic hydrogen needed at single points in time in 2040 and 2045. SoCalGas recommends as a next step that the 2025 IEPR provide a detailed year-by-year forecast of potential hydrogen demand from 2026 to 2045. If possible, the 2025 IEPR should use estimates from the 2025 SB 100 report, if it is available to be incorporated into the 2025 IEPR.

In addition, infrastructure is crucial for a comprehensive renewable hydrogen network at state, regional, and national levels. Current policies and funding primarily focus on renewable hydrogen production and certain end uses in California such as transportation. There must likewise be consideration of the necessary infrastructure for hydrogen delivery that leverages existing pipelines, storage options, and distribution networks as part of an integrated infrastructure to connect supply and various end use demand sectors. Addressing this gap as part of 2025 IEPR will help California to successfully integrate renewable hydrogen across various sectors. This process will in turn enhance energy security, reduce greenhouse gas emissions, and foster economic growth through job creation and technological innovation.

The CEC should consider SoCalGas's Angeles Link proposal in the 2025 IEPR and SB 100 Demand Scenarios hydrogen pipeline sensitivity modeling. Angeles Link is envisioned as a non-discriminatory, open-access pipeline system dedicated to public use, transporting up to 1.5 million metric tons per year of clean renewable hydrogen from regional third-party production and storage sites to end users across Central and Southern California, including the Los Angeles Basin and the Ports of Los Angeles and Long Beach.[3] Transporting clean renewable hydrogen[4] by pipeline can provide an efficient and affordable[5] means of supporting the State's decarbonization, air quality improvement, and environmental justice goals.

There are several important benefits of clean renewable hydrogen. It can serve as a decarbonized fuel alternative to traditional natural gas and diesel in the hard-to-electrify power generation, transportation, and industrial sectors. It can also support electrification and renewable energy expansion by providing clean firm dispatchable power with long duration and seasonal storage capabilities that can help minimize the inefficient curtailment of renewable energy. Clean renewable hydrogen can play multiple useful, beneficial, and necessary roles with its broad application and reach. A pipeline system to transport clean renewable hydrogen could thus efficiently support multiple decarbonization pathways.

[3] SoCalGas Angeles Link, available at: https://www.socalgas.com/regulatory/angeleslink.
[4] CPUC D.22-12-055 defines clean renewable hydrogen as "hydrogen that does not exceed a standard of four kilograms of carbon dioxide-equivalent produced on a lifecycle basis per kilogram of hydrogen produced."
[5] SoCalGas Angeles Link, Angeles Link Phase 1 Framework for Affordability Considerations, December 2024, available at: https://www.socalgas.com/sites/default/files/alproject/Angeles-Link-Phase-1-Final-Framework-for-Affordability-Considerations.pdf.

2) **The 2025 IEPR should clearly define RNG, renewable hydrogen, and CCS in SB 100 scenario planning, and the SB 423 report should continue considering both dispatchable and baseload resources to maintain and improve energy system reliability and resiliency.**

The CEC furthers the public interest by assessing emerging firm zero-carbon resources that support a decarbonized, reliable, and resilient electric grid in California, pursuant to SB 423. Many public written comments were submitted in response to the Draft SB 423 report, which was released in August 2024. Some comments include important perspectives which were not necessarily accounted for in the Draft SB 423 report. The next version of the SB 423 report would benefit from the incorporation of these comments particularly with respect to reliability and resiliency considerations from multi-day and seasonal perspectives.

The 2023 IEPR states that "analysis in the SB 100 report and the 2022 Scoping Plan identifies the need for a more diverse portfolio of clean energy resources beyond those currently being interconnected, particularly those that can provide electricity when solar and wind cannot."[6] Renewable hydrogen is identified as one of these resources. SB 423 has identified RNG, renewable hydrogen, and carbon capture paired with combined cycle gas turbines (CCGT) as eligible firm zero-carbon resources to meet SB 100 goals. Therefore, future SB 100 analysis should include definitions of these resources in scenario planning.[7] The 2025 IEPR should also thus incorporate the latest SB 100 scenario planning and modeling results.

In addition, the SB 423 report focuses on energy resources capable of addressing both system-wide and local reliability needs, including those that are capable of multi-day operations during extreme weather events. The SB 423 report also focuses on resiliency and the system's ability to respond to, adapt to, and promptly recover from system disruptions and localized outages.[8] The report further notes that resources should be dispatchable while operating on a schedule that ensures reliability. The report identifies these dispatchable resources as fuel cells, hydrogen combustion systems, and RNG.[9] Both dispatchable resources and baseload resources[10], which can also include RNG and hydrogen combustion power plants, play integral roles in supporting a reliable and resilient energy system. Therefore, the SB 423 assessment within the 2025 IEPR should continue to evaluate baseload and dispatchable energy resources.

The SB 423 report also recommends considering existing market structure redesign and introducing incentive and compensation mechanisms. This goal can be implemented through developing a system to capture the value of resiliency, using metrics such as Value of Loss Load

[6] *Ibid.*, CEC 2023 IEPR, p.62.
[7] CEC Draft SB 423 report, August 2, 2024, p. 1, available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=258290&DocumentContentId=94286.
[8] *Ibid.*, CEC Draft SB 423 report, p. 6 -7.
[9] Hydropower technologies (pumped storage hydropower, and large and small hydropower), and virtual power plants (VPPs) were also identified as dispatchable resources.
[10] Geothermal, modular fission reactors (SMRs), fusion, and hydropower technologies were identified as baseload resources.

(VoLL) or customer interruption costs. The SB 423 report notes that RNG and hydrogen provide resiliency benefits. For example, microgrids utilizing hydrogen, RNG, or natural gas can complement existing systems and enhance reliability and resiliency at local levels.

3) **Topics the CEC electricity and natural gas forecast should consider**

a) Localized energy system planning is needed to prepare for future load growth from data centers and electrolytic hydrogen production.

The CEC's electricity demand forecast forms the foundation for important electricity planning processes, such as California Independent System Operator's (CAISO) Transmission Planning Process (TPP) and the California Public Utilities Commission's (CPUC) Integrated Resource Planning (IRP) proceeding. The electricity demand forecast incorporates many types of data, ranging from economic recovery, population changes, household growth rates, and energy efficiency, to fuel substitution, transportation electrification, and new emerging technologies. Consequently, forecasting has become more difficult and complicated than ever before. Because the CEC forecast forms the foundation of energy planning, it is imperative to consider all factors that would have an impact on load growth within the 15-year forecast timeframe. These factors include data center growth (as well as the granularity detailing the location of the load growth) and the need for grid-connected electrolytic hydrogen production.

California's role as a leader in the energy transition should include maintaining its strong manufacturing economy. To achieve this, the state must continue to attract and retain the industrial sector, preventing business from relocating out of state. Enhancing the state's appeal as an economic hub can be accomplished by supporting growth in new in-state data centers, hydrogen production, and transport facilities.

From an overall energy planning perspective, it is important to delineate where this new load growth will occur on a regional level, so the state and local communities can plan for it. The scale of load growth in certain regional areas is unprecedented at the electric grid substation level. California state agencies already recognize this. During the 2023 IEPR Demand Forecast Results workshop[11], CPUC Commissioner Houck expressed concern about the CEC Demand Forecast's large forecast zones and highlighted localized capacity constraints, especially in environmental justice communities. We recommend the CEC consider localized forecasting for data centers and hydrogen production in the 2025 Electricity forecast.

[11] CEC IEPR Commissioner Workshop on the California Energy Demand Forecast Results, December 6, 2023, transcript p.33-35, available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=253847.

b) The CEC's natural gas demand forecast needs to account for uncertainties and interdependencies in the energy system.

The CEC's natural gas demand forecast should align with the values of safety, affordability, and energy reliability for all Californians. The CEC maintains several Additional Achievable Fuel Substitution (AAFS) and Additional Achievable Energy Efficiency (AAEE) scenarios for forecasting future natural gas demand that are updated during the IEPR process. These scenarios represent a range of reductions in gas demand premised on levels of energy efficiency and end-use electrification. While projections of electrification rates have become more ambitious in recent years, this has translated to increasingly aggressive projected declines in natural gas demand outlooks across the AAFS scenarios. Because these scenarios are ultimately used to inform gas system planning, overstating the level of projected electrification compared to actual places gas system reliability at risk – as future reliability design standards may fall short of actual gas demands. Accordingly, the CEC should continue to produce a conservative outlook for gas demand, so gas system reliability is not jeopardized in the event electrification does not materialize to the degree or on the timeframe suggested across more ambitious AAFS projections.

Relatedly, it is crucial that any AAFS scenarios are properly integrated with electric demand forecasts and an assessment of how this electric load will be served, including by natural gas fired generation. This electric generation outlook should also consider potential electric load growth as a result of vehicle electrification and data center deployment.

An integrated planning approach that accounts for the interdependencies between the electric and gas systems is imperative. Energy system planning should consider how much this growth in electric demand will result in changes in demand for fuel-based electric generation as well as the shape and timing of this increased demand. Without an integrated approach to energy modelling that can correlate these relationships, the risk of creating insufficient gas reliability design standards will be exacerbated. We look forward to continuing to develop an integrated approach to energy planning with the CEC, CPUC, CARB and other stakeholders in this and other venues.

c) **Acknowledging the inherent challenges of electricity price forecasts and incorporating recent trends and infrastructure investment needs can help provide a more robust and useful price forecast.**

The energy transition has impacted the cost of residential electricity retail rates and will continue to do so. Residential electricity rates have increased by an unprecedented 29 percent in the last five years from 2018 to 2023 as shown in Figure 1 below. In order to meet the additional electricity demands of fuel substitution, data centers, and electric vehicle charging, electric infrastructure will need to continue to be built out. Building this infrastructure requires high costs of capital. The cost of these investments will be passed

on to electricity customers. These investment costs should be represented as realistically as possible in the CEC's electricity rate forecast as the electric rate forecast is used as the basis for other energy planning processes.

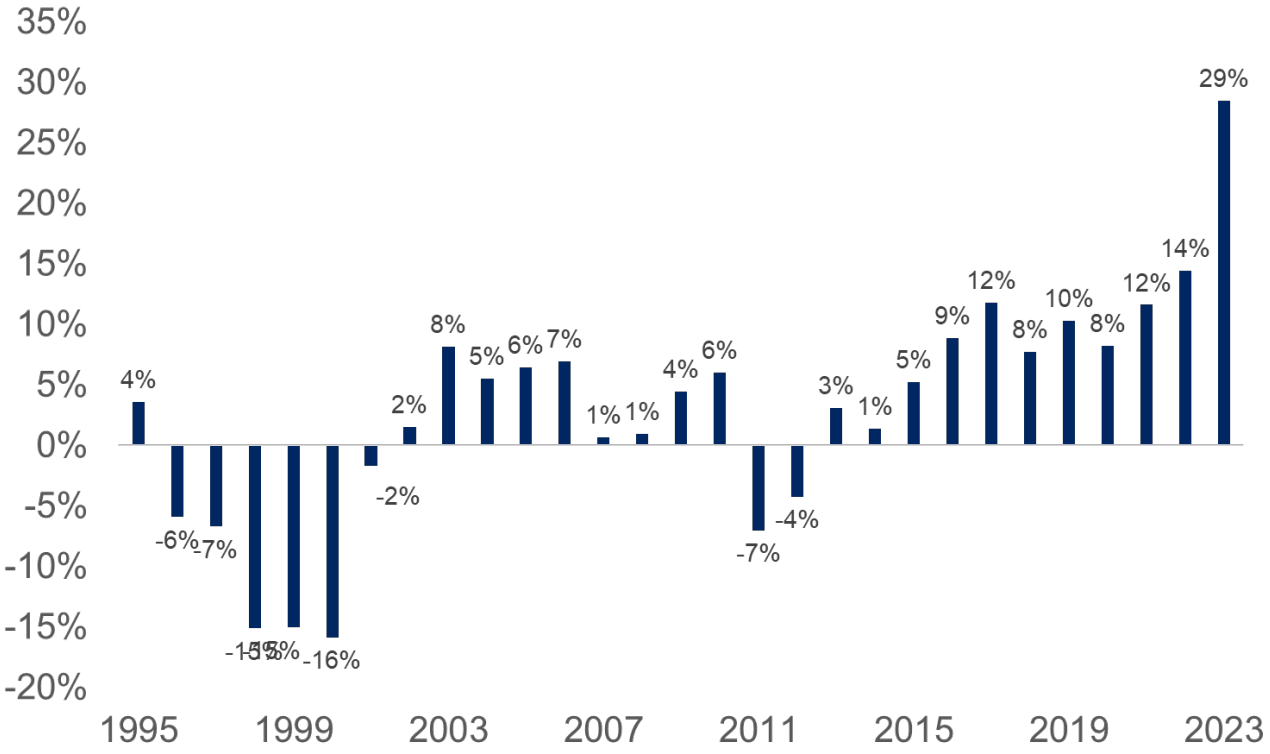

Figure 1: 5-year Deltas of Historical Residential Electricity Price[12]

The past CEC IEPR residential electricity price forecasts did not anticipate the scale of recent price increases, even for forecasts out to 2035 (see Figure 2 below). Forecasts may not always foresee these kinds of unprecedented increases. However, acknowledging the inherent limitations of current forecasts and focusing on incorporating recent trends and infrastructure investment needs can help provide a more robust and useful price forecast.

[12] CEC, 1995-2004 data based on 2019 IEPR Demand Forecast Form 2.3 and 2005-2023 data based on 2024 IEPR Demand Forecast Form 2.3, at https://efiling.energy.ca.gov/GetDocument.aspx?tn=231523&DocumentContentId=63336 and https://efiling.energy.ca.gov/GetDocument.aspx?tn=260931.

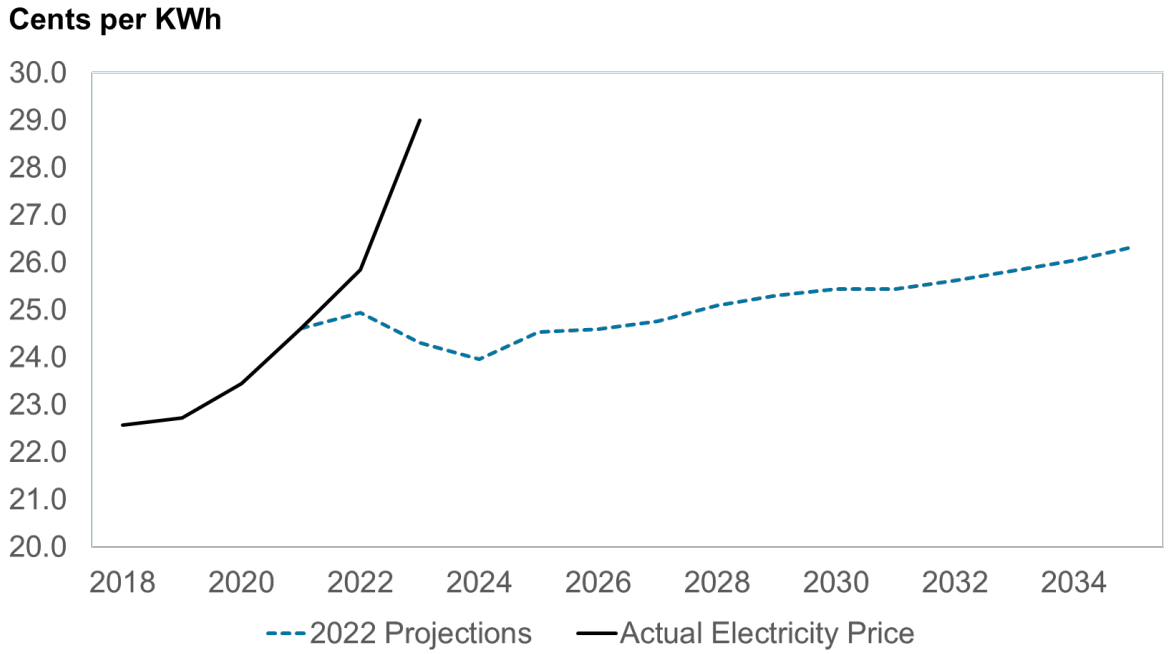

Figure 2: Residential Electricity Price Projections from 2022 IEPR[13] versus Actual Price (2023$)[14]

Another key factor to consider is the unprecedented infrastructure buildout California seeks to achieve to meet state policies. Table 1 below outlines some of the studies of cost estimates for upgrading the State's electric distribution and transmission infrastructure. Just to support electrification of the transportation sector alone, the cost estimate for upgrading the transmission system falls between $30 to 60 billion and the cost estimate for upgrading the distribution system falls between $15 to 50 billion. The wide range of cost estimates from these studies highlights the uncertainties of costs associated with the energy transition and potential issues of electricity rate affordability. Inevitably, ratepayers will bear some of these costs as part of electricity pricing. These costs do not include potential increases in cost for compliance with cap and trade, which could also add additional pass-through costs that are not fully alleviated with the climate credit. A more robust projection of these costs can improve the State's electricity planning process.

[13] CEC, 2022 IEPR Demand Forecast Electricity Rate Forecast, Statewide Rates, converted to 2023$ using conversion factor based on 2021 residential price from 2022 and 2024 Forecast files (24.61 cents/kWh divided by 23.42 cents/kWh=1.0509), at https://efiling.energy.ca.gov/GetDocument.aspx?tn=248366&DocumentContentId=82794.

[14] CEC, 2024 IEPR Demand Forecast Baseline Forecast Form 2.3, at https://efiling.energy.ca.gov/GetDocument.aspx?tn=260931.

Date	Source	Amount ($B)	Description
May 2022	CAISO 2022 20-year Transmission Outlook[15]	30.5	Transmission upgrade for SB 100 Starting Point Scenario
July 2024	CAISO 2024 20-year Transmission Outlook[16]	45.8-63.2	Transmission upgrade for 2045 Scenario
May 2023	Kevela CPUC Electrification Impacts Study Part 1[17]	50	Distribution grid requirements for California to meet transportation electrification goals by 2035
May 2023	CPUC Public Advocates Office-Preliminary Study[18]	15-20	The costs of upgrading the distribution grids of the three largest investor-owned electric utilities (IOUs) to meet California's transportation electrification goals by 2035
August 2023	CPUC Public Advocates Office-Distribution Grid Electrification Model[19]	26	The costs of upgrading the distribution grids of the three largest investor-owned electric utilities (IOUs) to meet California's transportation electrification goals by 2035
April 2024	UC Davis Study[20]	6-20	A quantification of electric vehicles' (EVs) impact on distribution grids

Table 1: Electricity Grid Infrastructure Upgrade Cost Studies

d) Electricity and natural gas forecasts should consider regulatory updates regarding energy efficiency and emissions standards.

Since the last update of the CEC electricity and natural gas demand forecasts, several issues have arisen that require the CEC's consideration. Earlier this month, to address the public's concerns with affordability and the lack of consumer choice, the South Coast Air Quality Management District (South Coast AQMD) announced a revised approach for its Proposed Amended Rules 1111 and 1121, which regulate emissions from natural gas furnaces and residential natural gas water heaters.[21] South Coast AQMD's prior proposed rule concept

[15] CAISO, CAISO 2022 20-year Transmission Outlook, May 2022, available at: https://stakeholdercenter.caiso.com/initiativedocuments/20-yeartransmissionoutlook-may2022.pdf.
[16] CAISO, CAISO 2024 20-year Transmission Outlook, July 31, 2024, available at: https://www.caiso.com/documents/2024-20-year-transmission-outlook-jul-31-2024.pdf.
[17] Kevala, Kevela CPUC Electrification Impacts Study Part 1, May 9, 2023, available at: https://www.kevala.com/resources/electrification-impacts-study-part-1.
[18] CPUC, CPUC Public Advocates Office- Preliminary Study, June 14, 2023, available at: https://www.publicadvocates.cpuc.ca.gov/-/media/cal-advocates-website/files/press-room/reports-and-analyses/230614-cal-advocates-distribution-grid-impacts-study-fact-sheet.pdf.
[19] CPUC, CPUC Public Advocates Office- Distribution Grid Electrification Model, August 2023, available at: https://www.publicadvocates.cpuc.ca.gov/-/media/cal-advocates-website/files/press-room/reports-and-analyses/230824-public-advocates-distribution-grid-electrification-model-fact-sheet.pdf.
[20] Li and Jenn, "Impact of electric vehicle charging demand on power distribution grid congestion," PNAS, March 26, 2024, available at: https://www.pnas.org/doi/10.1073/pnas.2317599121.
[21] There is also active litigation challenging South Coast AQMD Rule 1146.2, which regulates small boilers, commercial water heaters, tankless water heaters, and pool heaters in new and existing buildings and requires a transition to zero-emissions appliances. *See Rinnai America Corp. v. South Coast Air Quality Management District*,

required, by specified dates, zero-emission appliances in new buildings and when replacing appliances in existing buildings. The new rule concept appears to offer a manufacturer alternative compliance option that would set compliance goals for manufacturers to reduce the percentage of gas units over time by imposing a mitigation fee for all gas units sold, with the stated goal of addressing affordability concerns, grid reliability technology readiness, and consumer choice to purchase gas or electric units.[22] In addition, U.S. Secretary of Energy Chris Wright recently issued a Secretarial Order promoting affordability and consumer choice in home appliances, which aims to avoid regulating "products that consumers value out of the market."[23] In light of these recent developments and the growing acknowledgment about the need to address affordability, consumer choice, and grid sustainability, we recommend the CEC revisit assumptions on additional achievable fuel substitution that are being used in its electric and natural gas demand forecast.

4) **Energy planning for multi-day outages and localized forecasting is important in light of extreme weather events in California. It is critical to base this planning on forward-looking data-driven expectations of the frequency and severity of these events over the next several decades.**

As the CEC's 2025 IEPR reevaluates the electric grid to accommodate accelerated interconnection, energization, and associated system upgrades, it is in the public interest for CEC to consider the impact of extreme weather events, including wildfires, heatwaves, mudslides, sea level rise, winter storms, and floods. These events can and have caused multi-day outages that impact California residents. These types of events can lead to an increase of localized gas grid connected technologies like fuel cells, linear generators and back up generation that could be dispatched during Public Safety Power Shutoff events or localized grid balancing, including broader region-wide events needing all available resources for system balancing.

As large investments will continue to be made to upgrade electric infrastructure and build out decarbonized fuels infrastructure in the coming years, the state has a great opportunity to harden and weatherize both energy systems whenever possible. The CEC, along with the CPUC, and CAISO, could hold a proceeding to determine the most cost-effective ways to plan for multi-day outages and harden energy infrastructure while maintaining affordable energy prices for customers. Given the rising frequency and intensity of extreme weather events, the CEC should use quantitative analysis to develop a robust data-driven assessment of these events in the next several decades, incorporate the results into its demand forecast and annual summer and winter

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2:24-cv-10482-PA-PD in which ten parties allege the South Coast AQMD's rule is preempted by the Energy Policy Conservation Act (EPCA).

[22] SCAQMD Working Group Meeting #8, released February 7, 2025, available at: https://www.aqmd.gov/docs/default-source/rule-book/Proposed-Rules/1111-and-1121/par-1111-and-1121-wgm8-february-2025.pdf?sfvrsn=16.

[23] Department of Energy Secretarial Order, "Unleashing the Golden Era of American Energy Dominance," available at: https://www.energy.gov/articles/secretary-wright-acts-unleash-golden-era-american-energy-dominance.

reliability planning, and add grid and pipeline hardening and weatherization to its IEPR scope in the upcoming or future cycles.

Conclusion

SoCalGas looks forward to actively engage in the development of the 2025 IEPR and supports the CEC's continued focus on stakeholder engagement, which contributes to robust policy discussions and analyses. SoCalGas appreciates the CEC for its leadership on this critical initiative and consideration of our comments.

Respectfully,

/s/ Kevin Barker

Kevin Barker
Senior Manager
Energy and Environmental Policy