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SoCalGas Comments on the Senate Bill 100 Modeling Inputs and Assumptions Workshop

Additional submitted attachment is included below.

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Subject: Comments on the Senate Bill 100 Modeling Inputs and Assumptions Workshop, Docket #19-SB-100

The Southern California Gas Company (SoCalGas) appreciates the opportunity to comment on the Senate Bill (SB) 100 Modeling Inputs and Assumptions Workshop held on February 24, 2020 by the California Energy Commission (CEC), California Air Resources Board and California Public Utilities Commission (CPUC) (Joint Agencies). SoCalGas believes a portfolio approach, utilizing all energy sources and technologies to meet our climate goals, will best serve Californians and those that follow our lead. Natural gas and renewable gases (such as hydrogen, synthetic natural gas, and renewable natural gas such as biomethane) are clean, reliable, affordable, and resilient sources of energy that should be part of the solution to California's energy concerns. California should be thinking about how we can get more diversity into the energy portfolio.[1] We should not be removing the diversity that is already there, by eliminating eligible resources to meet our greenhouse gas (GHG) emissions reduction goals.

SoCalGas appreciates the Joint Agencies' efforts to engage stakeholders throughout the SB 100 process. In response, SoCalGas offers information on the following:

1. *Stakeholders need greater transparency on all model inputs, assumptions (especially costs), and calculation methodologies*
2. *Joint Agencies must include a comprehensive risk management plan*
3. *Hydrogen is a means for long-duration energy storage*
4. *Studies support hydrogen as an energy option and solution*
5. *California's energy future must be affordable; should not exclude natural gas*
6. *California needs gas-fired electric generation with carbon capture*

1. *Stakeholders need greater transparency on all model inputs, assumptions (especially costs), and calculation methodologies*

[1] As explained by the representative of the California Wind Energy Association at the SB 100 Modeling Inputs and Assumptions Workshop held on February 24, 2020.

If the Joint Agencies intend to use Energy and Environmental Economics, Inc.'s (E3's) research to inform policymaking in a low-carbon future, then the assumptions relied upon must be transparent, accurate, and technically sound. Achieving a low-carbon future will have large scale, economy-wide cost impacts to all residents and businesses, as well as potential impacts on the reliability and resilience of the energy supply.

The Joint Agencies must support robust and broad technical research and lifecycle/disposal analysis that is fully supported by the research community. To do this, SoCalGas believes the Joint Agencies should establish an advisory group with a broad set of stakeholders from the electric, gas, renewable generation, and renewable fuels sectors to ensure model inputs and assumptions are accurately included in modeling. This was also suggested by Southern California Edison in response to the SB 100 Technical Workshop held in November 2019: "…establish a forum for technical discussions and consensus-building on the analytical efforts underlying the SB 100 report." [2] Potential models include the CEC's Demand Analysis Working Group and the CPUC's Modeling Advisory Group for the Integrated Resource Plan (IRP), with the addition of natural gas, hydrogen and renewable fuels experts.

Also, SoCalGas believes additional public workshops where all inputs and assumptions are shared and discussed in an open forum to reconcile data differences should be held. Furthermore, this information should be provided with sufficient time for meaningful review and discussion.

2. Joint Agencies must include a comprehensive risk management plan

SoCalGas recommends the inclusion of a comprehensive risk management plan, including risk identification, impact assessment, and mitigation strategies as part of the model to be used for the quantitative SB 100 analysis, including inputs, assumptions, and planned scenarios.

SoCalGas appreciates the Joint Agencies' efforts to use the PATHWAYS model and linking it with the IRP's RESOLVE model and SB 100 assumptions to develop analytically derived scenarios. It is unclear from the workshop if the SB 100 analyses will be utilizing the Strategic Energy Risk Valuation Model (SERVM) along with the RESOLVE and PATHWAYS models to address reliability related risks. The current version of the RESOLVE model and SERVM used in the IRP (2019-2020 procurement cycle) should incorporate a modeling framework to account for addressing risks associated with unplanned detrimental events, such as unusual weather patterns, wildfires, and natural disasters. Although already robust, consideration should be given to enhancing the modeling framework to incorporate risk assessment-related variables, algorithms and measures to help mitigate potential impacts to public safety and the local economy. With the additional data that will be gathered over time, the models could

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[2] Southern California Edison in response to the SB 100 Technical Workshop held in November 2019. At p.2. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=230964&DocumentContentId=62590

potentially become "smarter," help reduce climate-related impacts and improve energy system resiliency.

SoCalGas also requests the Commission consider establishing a risk-based assessment and management framework (like the Risk Assessment Mitigation Phase or RAMP framework)[3] to complement the modeling framework. It would be "incomplete" for the SB 100 analyses to evaluate energy portfolios of the future for California without including the associated risk components as part of the modeling efforts. SoCalGas envisions the SB 100 modeling efforts to solve for cost optimal, balanced, and risk averse attributes to meet the required GHG emission constraints and is not optimized only for least cost. Even though SERVM addresses reliability risks to a certain extent over the short term, it does not address the overall technology, environmental, and electric system operational risks that can arise in the future due to a multitude of reasons as discussed above.

3. Hydrogen is a means for long-duration energy storage

The candidate resources identified[4] includes pumped storage (serving as a potential resource for long-duration storage). The RESOLVE model's capacity expansion planning analyses for the 2019-2020 cycle is indicating the need for long-duration energy storage (as discussed in Table 5 of the PD)[5] with roughly one GW of pumped storage or other long-duration storage with similar attributes by 2026.

Long-duration energy storage will be a critical resource component to address the limitations of short-duration energy storage solutions (up to 4 hours of discharge) when coupled with increasing renewable fractions of solar and wind resources integrating into the California's electric grid. Relying on intermittent and seasonal variability in energy generation will be a major challenge since these resources cannot be ramped up and down to serve demand over the course of a day, across a few days, and even from season to season. As the renewable energy mix on the gird increases to over 60%, resource planning models are predicting that energy production will exceed "*demand in over 20% of the hours of the year, totaling between 5% and 10% of all renewable power produced*".[6] Addressing this seasonal imbalance will require large-scale storage resources capable of storing power over longer durations cycles (days, months, etc.). The long-duration and seasonal storage challenges of storing renewable energy will increase as California move towards 100% clean energy goals.

In a recent net-zero emissions energy systems study, Davis et al., (2018) notes that many essential energy services (across multiple sectors of the economy) including long-duration

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[3] CPUC Website. Utility Risk Assessment and Safety Advisory. Available at: https://www.cpuc.ca.gov/riskassessment/

[4] Introduction to PATHWAYS and RESOLVE - E3 Presentation, slide 28 of the SB 100 Modeling and Assumptions Workshop

[5] IRP – R.16-02-007, Proposed Decision dated 2/21/2020

[6] University of California, Irvine. Advanced Power & Energy Program. *Integrating Clean Energy Technologies with Existing Infrastructure.* Available at: http://www.apep.uci.edu/PDF_White_Papers/Integrating_Clean_Energy_013020.pdf

storage at 100% Renewable Portfolio Standard cannot be accommodated without the use of resources that can be produced, stored, transmitted, distributed, and converted back to electricity with zero emissions when needed.[7] Renewable hydrogen as a long-duration storage resource will act as a highly capable resource to serve this strategic need.

Hydrogen-based energy storage systems tends to have high power rates (in the range of several MWs)[8] and is suitable for meeting seasonal/long-term energy storage needs. Pumped long-duration storage with its specific geographical requirements and possible environmental impacts can be a constraint as it cannot be deployed, scaled, nor mapped to a specific electrical substation or a transmission system node to meet the locational reliability or resiliency needs. Renewable hydrogen produced using a renewable energy source such as solar, wind, etc. can be stored in large pressurized hydrogen storage systems (either in gaseous or liquid states) with better locational granularity and can be blended, stored, and transmitted in the existing natural gas infrastructure or utilizing geological formations like salt caverns.

In their recent article titled, *Projecting the Future Levelized Cost of Electricity Storage Technologies*, Schmidt et.al., (2019) have qualitatively assessed nine electricity storage technologies and its technology suitability across 12 different energy end use attributes (as shown in the Table 1 below).[9] Hydrogen energy storage is only one of the two storage technologies that is uniquely capable to satisfy all the 12 energy end use applications.

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[7] Davis et. al. Net-zero emissions energy systems. Available at: https://www.researchgate.net/publication/326049153_Net-zero_emissions_energy_systems

[8] MDPI. Energies. *Hydrogen as a Long-Term Large-Scale Energy Storage Solution to Support Renewables*. Available at: https://www.mdpi.com/1996-1073/11/10/2825/pdf

[9] Schmidt et. al. Projecting the Future Levelized Cost of Electricity Storage Technologies. Joule. Volume 3, Issue 1, 16 January 2019, Pages 81-100. Available at: https://www.sciencedirect.com/science/article/pii/S254243511830583X

Table 1: Qualitative Description of Electricity Storage Applications and Technology Suitability[10]

Role	Application	Description	Pumped Hydro	Compressed Air	Flywheel	Lithium Ion	Sodium Sulfur	Lead Acid	Vanadium Redox Flow	Hydrogen	Supercapacitor
	1. Energy arbitrage	Purchase power in low-price and sell in high-price periods on wholesale or retail market	✓	✓		✓	✓	✓	✓	✓	
System Operation	2. Primary response	Correct continuous and sudden frequency and voltage changes across the network			✓	✓	✓	✓	✓	✓	✓
	3. Secondary response	Correct anticipated and unexpected imbalances between load and generation	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4. Tertiary response	Replace primary and secondary response during prolonged system stress	✓	✓		✓	✓	✓	✓	✓	
	5. Peaker replacement	Ensure availability of sufficient generation capacity during peak demand periods	✓	✓		✓	✓	✓	✓	✓	
	6. Black start	Restore power plant operations after network outage without external power supply	✓	✓	✓	✓	✓	✓	✓	✓	✓
	7. Seasonal storage	Compensate long-term supply disruption or seasonal variability in supply and demand	✓	✓					✓	✓	
Network Operation	8. T&D investment deferral	Defer network infrastructure upgrades caused by peak power flow exceeding existing capacity	✓	✓		✓	✓	✓	✓	✓	
	9. Congestion management	Avoid re-dispatch and local price differences due to risk of overloading existing infrastructure	✓	✓		✓	✓	✓	✓	✓	
Consumption	10. Bill management	Optimise power purchase, minimize demand charges and maximise PV self-consumption				✓	✓	✓	✓	✓	
	11. Power quality	Protect on-site load against short-duration power loss or variations in voltage or frequency			✓	✓	✓	✓	✓	✓	✓
	12. Power reliability	Cover temporal lack of variable supply and provide power during blackouts				✓	✓	✓	✓	✓	

Hydrogen as an energy carrier is gaining acceptance in the United States. For example, Los Angeles Department of Water and Power is currently working on a project to convert a Utah power plant (Intermountain Power Project) from coal to natural gas, to 100% hydrogen by 2045.[11] This project, can serve as a foundation of the Sustainable City Plan[12] for Los Angeles, Southern California, and the Western region (as shown in Figure 1). Hydrogen will make up 30% of an estimated 840 MW natural gas plant's generation on day one of its operation beginning in 2025. The Intermountain Power Project exports power to municipalities across Nevada and California as well as Utah, and is interconnected to 370 MW of wind, with 1,500 MW more under discussion. The region is also expected to significantly increase renewable energy production in the future (2,300 MW of solar in the queue),[13] to produce renewable

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[10] Ibid.

[11] Utility Drive. Natural gas plant replacing Los Angeles coal power to be 100% hydrogen by 2045: LADWP. December 12, 2019. Available at: https://www.utilitydive.com/news/natural-gas-plant-replacing-los-angeles-coal-power-to-be-100-hydrogen-by-2/568918/

[12] L.A.'s Green New Deal. Sustainability Plan 2019. Available at: https://plan.lamayor.org/

[13] Utility Drive. Natural gas plant replacing Los Angeles coal power to be 100% hydrogen by 2045: LADWP. December 12, 2019. Available at: https://www.utilitydive.com/news/natural-gas-plant-replacing-los-angeles-coal-power-to-be-100-hydrogen-by-2/568918/

hydrogen through electrolysis.[14] The project is situated directly above an underground salt dome that would be able to store high pressure hydrogen for long-term or seasonal storage needs. The power turbines for the project will be hydrogen compatible and will accommodate an incremental increase in hydrogen blends (up to 40% from 2031-2035, 50% through 2040, and 100% by 2045).

Figure 1: Intermountain Power Project Site Serving Los Angeles and Southern California[15]

According to a recent study titled, *Integrating Clean Energy Technologies with Existing Infrastructure* (Advanced Power and Energy program, University of California at Irvine) geological storage offers a very low cost per unit of stored energy in comparison to others storage solutions).[16] Geological storage systems (unlike other storage systems) incur a cost to provide a given rate of charge or discharge (rate) but incur very little additional cost for storing more energy (quantity).[17] Stored hydrogen in large quantities offer longer discharge duration cycles beyond the traditional four hours, and can be used to produce electricity in multiple ways: blended hydrogen-natural gas feedstock for existing natural gas combined-cycle power plants, in

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[14] Electrolysis is a process of splitting water with renewable electricity to produce renewable hydrogen is a scalable and comprehensive, long-term energy storage solution that can play a vital role in supporting the growth of the RPS by optimizing and synchronizing California's energy resources.
[15] Picture sourced from University of California, Irvine. Advanced Power & Energy Program. *Integrating Clean Energy Technologies with Existing Infrastructure.* Available at: http://www.apep.uci.edu/PDF_White_Papers/Integrating_Clean_Energy_013020.pdf
[16] Ibid.
[17] Ibid.

turbines retrofitted to run on pure hydrogen or mixtures of hydrogen with natural gas, or using fuel cells on site.

Blending and storage of hydrogen in the existing natural gas pipeline networks can also provide a significant boost towards achieving pipeline decarbonization in California without incurring the investment costs and risks of developing new hydrogen transmission and distribution infrastructure. International Energy Association (IEA) *Future of Hydrogen* study states that "Pipelines can be one of the most cost-effective long-term choice for local hydrogen distribution and storage if there is sufficiently large, sustained, and localized demand."[18] Hydrogen stored in existing natural gas pipeline infrastructure offers strategic locational and geographic grid benefits when compared to other types of long-duration storage resources.

SoCalGas urges the Joint Agencies to include hydrogen as a candidate resource for long-duration energy as part of the SB 100 modeling effort.

4. Studies support hydrogen as an energy option and solution

There are multiple reports and studies from around the world that demonstrate the current and future value of hydrogen as a clean energy option and solution for energy storage. The recently published executive summary of a *Roadmap to a US Hydrogen Economy*, developed by a coalition of companies in energy, hydrogen, automotive, and fuel cells, detailed how the county could develop a "hydrogen economy" and provided a multi-year roadmap for achieving it. The executive summary, as described by the Fuel Cell and Hydrogen Energy Association,[19] is a "…comprehensive Road Map [that] details how the U.S. can expand its global energy leadership, by scaling up activity in the rapidly emerging and evolving hydrogen economy, as policy makers and industry work together and take the right steps."[20] They continue to explain that the "Road Map stresses the versatility of hydrogen as an enabler of the renewable energy system, an energy vector that can be transported and stored, and a fuel for the transportation sector, heating of buildings and providing heat and feedstock to industry."[21] And finally, they state that hydrogen "can reduce both carbon and local emissions, increase energy security and strengthen the economy, as well as support the deployment of renewable power generation such as wind, solar, nuclear and hydro."[22]

Several countries and international energy agencies have started their efforts to develop strategic roadmaps or evaluate the potential for hydrogen over the long term. For example, Australia's National Hydrogen Roadmap, does not only speak to the benefits of hydrogen energy options, but also explains how the market may now be ripe for the mass introduction of this clean energy source. As stated in the report:

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[18] The Future of Hydrogen, June 2019, At p. 67. Available at https://www.iea.org/reports/the-future-of-hydrogen
[19] FCHEA website, description of the US hydrogen roadmap: executive summary available at http://www.fchea.org/us-hydrogen-study. Full report to be released soon.
[20] Ibid.
[21] Ibid.
[22] Ibid.

> "While interest levels in the development of global hydrogen industries have fluctuated over recent decades, today there are a number of trends and activities that distinguish the renewed focus on hydrogen from what has been observed previously. This includes policy commitments from countries across Europe and Asia as well as increasing investment from multinational technology manufacturers and energy companies.
>
> The primary difference however is that the hydrogen value chain is now underpinned by a series of mature technologies that are being demonstrated in pilot projects globally. Although there is considerable scope for further R&D, this level of maturity has meant that the narrative has shifted from one of technology development to market activation. This involves the transition from emerging technologies to bankable assets, similar to what has recently been observed in the solar PV industry."[23]

The IEA, on behalf of the Japanese government for the 2019 G20 summit, produced the "Future of Hydrogen – Seizing today's opportunities."[24] The report provides status of where things are today, opportunities and some of the challenges facing the hydrogen landscape. But primarily, it provides key recommendation and steps for enabling its full potential to provide clean, resilient, secure, and affordable energy into the future.

The report speaks to the current momentum for hydrogen applications from both a business and political perspective. It emphasizes how the coordinated "scaling-up" and acceleration of growth between companies and governments, as well as their ability together to address current regulatory constraints, could drive down costs and boost hydrogen on the path to widespread use. By 2030, IEA's analysis finds that the production costs for low-carbon hydrogen could drop by 30%.[25] They attribute this reduction to not only the declining costs of renewable energy, but also to the effect of scaled-up production. One valuable example is the use of countries' existing gas infrastructure for scaling-up demand and driving down costs over time. Replacing just 5% of the volume of countries' natural gas supplies would significant boost demand and have a positive impact on price, while decarbonizing the gas grid and providing a solution for long-duration storage and long-distance transport.

Supporting the case for expected costs reductions for hydrogen solutions is a study from the Hydrogen Council.[26] The report shows that with scale, costs will drop sharply over the next decade, which is sooner than previously expected. The timeline of hydrogen's cost competitiveness, as shown below (Figure 2), shows the point at which hydrogen becomes the most cost-competitive low-carbon solution for each application across multiple energy sectors over the long term. It is evident that hydrogen might be the only option to decarbonize sectors such as heavy-duty transportation and industrial applications.

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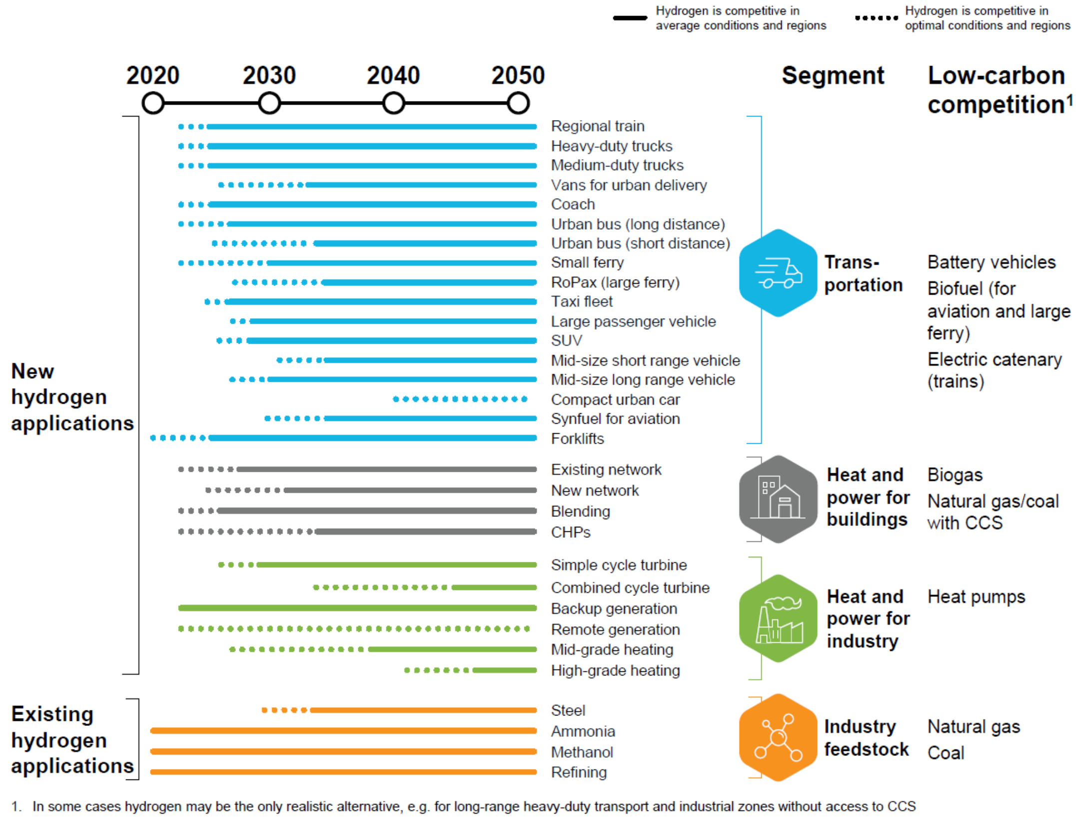
[23] CSIRO. National Hydrogen Roadmap. At p. 4. Available at: https://www.csiro.au/en/Do-business/Futures/Reports/Hydrogen-Roadmap

[24] Ibid.

[25] Detailed data and assumptions on hydrogen for the IEA study is provided on the IEA website: https://www.iea.org/reports/the-future-of-hydrogen

[26] Hydrogen Council. *Path to Hydrogen Competitiveness: A Cost Perspective.* Available at: https://hydrogencouncil.com/en/path-to-hydrogen-competitiveness-a-cost-perspective/

Figure 2: Cost competitiveness trajectories of hydrogen applications[27]



The report also identifies three key drivers behind these reductions and provides key indicators for hydrogen's momentum which includes significant cost reductions in the cost of producing low-carbon and renewable hydrogen; lower distribution and refueling costs with higher load utilization and scale effect on infrastructure deployment and utilization; and a dramatic drop in the cost of components for end-use equipment under scaling up of manufacturing.

SoCalGas appreciates the Joint Agencies' consideration of these comments and looks forward to continuing to collaborate with the Joint Agencies, E3, and other stakeholders to appropriately reflect the value of hydrogen and its end use scenarios as part of SB 100 modeling.

5. California's energy future must be affordable; should not exclude natural gas

SoCalGas asks the Joint Agencies not to disregard natural gas, renewable natural gas, hydrogen and gas infrastructure as part of the solution to meet the goals of SB 100.

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[27] Ibid.

During the workshop, Matthew Freedman from the Utility Reform Network (TURN) made important comments about not excluding combustion options,[28] affordability, and electrification. In summary, he said:[29]

- It's not reasonable to categorically exclude combustion; it's not called for in the [SB 100] legislation.
- We shouldn't place too much confidence in modeling because its one-directional. He then gave examples of how previous modeling efforts did not turn out to be accurate. Modeling misses unexpected developments and innovation. Keeping all the options on the table makes sense. We should look for no regrets actions we can do within five years. Modeling needs to look at west-wide impacts, not just California.
- Electrification and reducing gas service will increase rates. He cited Gridworks recent paper on gas infrastructure/rates, *California's Gas System in Transition*.[30]
- Assumptions on behind the meter resources are likely to be key driver of costs in SB 100 compliance.

SoCalGas agrees with Mr. Freedman's comments.

The Gridwork's study, which is also referenced in the 2019 Integrated Energy Policy Report and the CPUC's Gas Transmission Order Instituting Rulemaking, supports the adoption of all-electric residential and commercial buildings as well as accelerated depreciation of gas assets to reduce future natural gas rates. In the near-term, the latter will increase the cost of natural gas service, and will also impact the cost of electric service, which continues to rely on in-state natural gas generation for reliability. Artificially setting high natural gas and electric rates during a growing crisis in housing affordability and energy insecurity is counter-productive and will likely receive significant consumer push back. The Joint Agencies should work to mitigate energy price increases and not reduce options, like natural gas appliances, for consumers.

At the workshop, Delphine Hou, Director of California Regulatory Affairs at California Independent System Operator said again[31] that the Joint Agencies should "[c]onsider strategically maintain gas fleet to provide both energy and other grid services during transition. This includes maintain gas transmission infrastructure. We need to consider and implement a

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[28] At the workshop, Julia Levin of the BioEnergy Association of California also commented that California is not ready to ban combustion.

[29] Joint Agencies. SB 100 Modeling Inputs and Assumptions Workshop. February 24, 2020.

[30] Gridworks. *California's Gas System in Transition, Equitable, Affordable, Decarbonized, and Smaller.* August 2019. Available at: https://gridworks.org/wp-content/uploads/2019/09/CA_Gas_System_in_Transition.pdf

[31] SB 100 Redding Scoping Meeting held October 2019, Delphine Hou (CAISO) recommended the Joint Agencies consider during the SB 100 process, "[s]trategically maintain[ing] gas fleet as alternatives develop and are proven to meet the system operational needs." CAISO. Presentation by Delphine Hou. At p.6. SB 100 Redding Scoping Meeting. October 24, 2019. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=230343&DocumentContentId=61895

plan that ensures local capacity areas maintain reliability before shutting down local gas resources."[32]

For other compelling reasons why California should maintain and decarbonize gas infrastructure, SoCalGas recommends the Joint Agencies review Lawrence Livermore National Laboratory (LLNL) comments in response to CEC's Workshop on The Natural Gas Infrastructure and Decarbonization Targets.[33]

For these reasons, SoCalGas asks the Joint Agencies not to disregard natural gas renewable natural gas, hydrogen, and gas infrastructure as part of the solution to meet the goals of SB 100.

6. California needs gas-fired electric generation with carbon capture

During the workshop, CPUC Commissioner Randolph asked the reliability panel if any of them had considered gas-fired generation with carbon capture—and no one had. California must decarbonize the States' dispatchable energy resources, by using the same policy model used to decarbonize the electric system as they work together to provide safe, affordable, and reliable energy service. California needs reliable, dispatchable gas-fired electric generation with carbon capture.

Energy Futures Initiative estimates there are 37 natural gas-fired power plants in California that could be potential candidates for carbon capture, utilization, and storage (CCUS).[34] The Joint Agencies should consider how best to incentivize industry to invest in CCUS at these facilities. Additionally, as per the recommendation of LLNL, the SB 100 Report should: 1) explicitly define zero-carbon resource to include CCUS; 2) review and summarize existing literature on CCUS; 3) explore and document further benefits of CCUS could yield in the industrial sector; 4) consider up-to-date CCUS costs in the IRP process; and 5) review policy/permitting/regulatory barriers to the deployment of CCUS.[35] SoCalGas supports these recommendations. The benefits of utilizing CCUS include utilizing the existing gas grid, contributing to grid resiliency, facilitating vehicle to grid integration, and meeting climate goals like SB 100.

Conclusion

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[32] Joint Agencies. SB 100 Modeling Inputs and Assumptions Workshop. February 24, 2020.
[33] Lawrence Livermore National Laboratory Comments. CEC's Workshop on The Natural Gas Infrastructure and Decarbonization Targets. June 21, 2019. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=228811&DocumentContentId=60143
[34] Energy Futures Initiative. *Optionality, Flexibility, & Innovation. Pathways for Deep Decarbonization in California.* 2019. At p.70. Available at: https://energyfuturesinitiative.org/s/EFI_CA_Decarbonization_Full-b3at.pdf
[35] Lawrence Livermore National Laboratory Comments- SB 100 Joint Agency Report. September 9, 2019. Available at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=229802&DocumentContentId=61246

Moving forward, California's focus should be to maintain optionality and flexibility as well as to decarbonize both gas and electric supplies. The Joint Agencies, through the SB 100 process and Report, should support an inclusive energy strategy—including natural and renewable gases—that objectively considers all options and encourages and allows for current and future innovation. Specifically, SoCalGas urges the Joint Agencies to support policies and projects to increase the investment in a portfolio of options to meet our climate goals.

SoCalGas' subject matter experts are eager to work with staff so the Joint Agencies have a better understanding of the SB 100 modeling inputs and assumptions.

Sincerely,

/s/ Tim Carmichael

Tim Carmichael
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Southern California Gas Company