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SoCalGas Comments on June 29, 2017 IEPR Workshop

Additional submitted attachment is included below.

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California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
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Subject: Comments on 2017 Integrated Energy Policy Report, Docket Number: 17-IEPR-12, Joint Agency Workshop on Application of Distributed Energy Resources on the California Grid

Dear Chairman Weisenmiller and fellow Commissioners:

The Southern California Gas Company (SoCalGas) appreciates the opportunity to submit comments in response to the California Energy Commission's (CEC) 2017 Integrated Energy Policy Report (IEPR) Joint Agency Workshop on the Application of Distributed Energy Resources on the California Grid, held on June 29, 2017.

The natural gas system is a critical resource that will enable California to achieve its climate goals. As the State continues to develop plans and protocols for increasing the use of distributed energy resources, SoCalGas highlights the importance of Power-to-Gas storage technology, which we believe presents a large, as-of-yet untapped opportunity for California to reach these goals.

If California is to meet these climate goals, fundamental changes in how we create, distribute, store, and use energy are needed across all sectors—not just within the energy sector itself. Deep greenhouse gas (GHG) reductions are needed in sectors in which energy uses are often difficult to electrify, especially transportation and industry. To achieve these reductions, the State will need to use an "all of the above" approach, rather than relying solely on one technology type. So long as a technology meets the necessary environmental and cost-effectiveness criteria, it should be considered as a solution. Power-to-Gas (P2G) is one such technology that can meet these requirements.

SoCalGas has informed the CEC and other agencies of the fundamental science behind P2G and its benefits in other venues on several occasions. Here, we address three key features of P2G related to the California grid:

1) its ability to smooth the "duck curve,"
2) its cost-effectiveness, and
3) its capacity to help with future transmission planning.

1) P2G can help smooth the "duck curve" by absorbing excess renewable generation.
The now-infamous "duck curve" represents a serious challenge to further renewables integration. As was discussed at the Workshop, the "belly" of the duck—the lowest part of the curve—is increasing faster than expected, with actual net load in 2017 already surpassing the actual net load forecast for 2020. According to the California Independent System Operator (CAISO), the amount of energy being curtailed on the grid—especially in spring—has risen sharply since 2014, with March 2017 representing almost a 100% increase over March 2016.[1]

If we are to reach ever-higher penetration rates of renewable generation sources on the grid, energy storage solutions, like P2G, will be crucial in absorbing the large amounts of excess energy that would otherwise be curtailed and discharging it when demand is highest. This will help reduce volatility in the wholesale electricity market, where overgeneration can lead to negative pricing. In a June 2017 report, Bloomberg New Energy Finance examined P2G viability in Germany and found that it could be used to smooth out the nation's excess wind supply, "thereby reducing the peakiness of wholesale power prices."[2]

Despite what was claimed at the June 27 IEPR Workshop on Renewable Gas, Germany is, in fact, committed to using P2G, stating that it occupies a "prominent place" in their energy plans for the future.[3] A network of over 100 utilities are currently conducting tests on a P2G pilot, and initial results show that the levels of energy storage could reach 17 TWh by 2020, and up to 50 TWh by 2050.[4] This would allow for tremendous amounts of renewable energy to be absorbed, rather than curtailed, providing stability to their wholesale market.

2) P2G can be cost-effective, and increasing its use will drive down costs over time.
When considering which technologies to deploy to address energy issues, the State must consider the cost-effectiveness of those technologies. The core components of P2G systems—namely, electrolyzers and fuel cells—already exist; both technologies have been around for decades and are tried-and-true. P2G is now in "early commercialization," and will need assistance to be brought fully to market. As was done with solar panels, wind turbines, and other technologies, California should invest now in bringing P2G into full commercialization in order to realize its benefits to the grid.

In their comments submitted to the IEPR Renewable Gas docket (Docket 17-IEPR-10), the California Hydrogen Business Council (CHBC) stated that P2G is "[m]ore cost-effective and geographically efficient than Li-ion batteries at high capacity and more geographically flexible than pumped hydro and compressed air."[5] We could not agree more. In fact, when looking at the actual levelized cost of storage, CHBC stated that P2G systems remain cost-competitive with batteries.[6] Since P2G can provide utility-scale, seasonal energy storage in a cost-effective manner, it should be counted among the technologies considered by the State and appropriately integrated into ongoing and future planning efforts.

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[1] http://www.caiso.com/Documents/HistoricalCurtailment.pdf
[2] "Hydrogen as a source of grid flexibility." Bloomberg New Energy Finance. June 28, 2017. (4)
[3] "Fact Sheet: The Energy Storage Market in Germany." Germany Trade and Invest (GTAI). March, 2017. (4). https://www.gtai.de/GTAI/Content/EN/Invest/_SharedDocs/Downloads/GTAI/Fact-sheets/Energy-environmental/fact-sheet-energy-storage-market-germany-en.pdf?v=9
[4] Ibid.
[5] http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-10/TN219923_20170626T180524_Emanuel_Wagner_Comments_Economics_of_Power_to_Gas.pdf
[6] Ibid.

3) P2G can help defer or even eliminate need for new transmission investments.
The old paradigm of centralized transmission infrastructure planning, which is based on peak load design, is evolving. The new paradigm is based on a smart grid infrastructure composed of a diverse portfolio of distributed energy resources. Hence, it is imperative that transmission and distribution (T&D) planners evaluate all types of distributed energy resources that are adept and resilient to serve rapidly fluctuating loads across multiple grid (transmission, distribution, customer) and service (wholesale market and resource adequacy) domains.

The rapid response characteristics of electrolyzers with inverter-based interconnection, along with large energy storage, can assist T&D planners in providing many ancillary services and reducing congestion on transmission lines. Responsive systems like electrolyzers can potentially defer or even eliminate the need for additional transmission line infrastructure.[7]

Conclusion
SoCalGas appreciates the opportunity to submit these comments on the role gaseous energy can play in enabling California's clean energy future.

We believe P2G can truly provide a "system solution"—as it is often called in Europe—because it provides the flexibility the electric grid needs to fully integrate intermittent renewable resources, improving overall system efficiency and resiliency. As we move towards greater amounts of renewable generation on the grid, a diverse portfolio of energy storage options will be required to maintain reliable, affordable energy for all Californians. P2G should be included as part of that portfolio.

Please do not hesitate to contact us for more information on the safe reliability of the natural gas system and the opportunity for P2G storage technology.

Sincerely,

/s/ Tim Carmichael

Tim Carmichael
Agency Relations Manager
Southern California Gas Company

[7] Novel Electrolyzer Applications: Providing More Than Just Hydrogen, NREL, 2014, www.nrel.gov/docs/fy14osti/61758.pdf