Sempra Energy®

September 25, 2014

To: U.S. Department of Energy Office of Energy Policy and Systems Analysis
Submitted via electronic mail: QERComments@hq.doe.gov

Re: **Natural Gas-Electricity Interdependence; formal comments**

Sempra Energy, on behalf of its subsidiaries, San Diego Gas and Electric Company (SDG&E), Southern California Gas Company, (SoCalGas) and Sempra U.S. Gas & Power,[1] supports the U.S. Department of Energy's (DOE) efforts to promote energy safety, reliability and affordability and appreciates the opportunity to comment on DOE's public meeting regarding natural gas and electricity interdependence. DOE's support in coordinating synergies among federal agencies and driving innovation through its role as a convener will be invaluable in supporting stakeholders in meeting the goal of providing safe, reliable and affordable energy; as further discussed in our comments below.

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Key Questions from the Department of Energy with responses provided by Sempra Energy.

1. **Are there additional gas-electric interdependencies, in both directions, and both now and through 2030, that are not mentioned in this paper? What are they?**

   More discussion of the impacts of intermittent resources is needed. The problem with intermittent resources is that they often stop suddenly, requiring very quick replacement with new quick-start flexible ramping gas-fired electric generation. Natural gas infrastructure is generally able to accommodate these quick-start and rapid ramping requirements, particularly on the large diameter transmission pipeline system. However, on smaller diameter, lower pressure systems, such as those of an LDC, the pressure loss resulting from the quick-start operation can threaten the system integrity of the pipeline network. Infrastructure development and operational changes necessary to accommodate intermittent supplies like wind and solar generation should be included in the analysis.

2. **There are a number of national, regional and local efforts underway, both by industry and government, to improve forecasting, nominations, schedules and other forms of operational coordination between the two sectors. Are those efforts sufficient? If not, what additional efforts may be needed, and by whom? Are there any actions that the Federal government should take, and if so, please identify.**

   SoCalGas and SDG&E are active participants in national, state and local efforts to improve coordination between gas control, gas scheduling and electric grid operators located in Central

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[1] Sempra U.S. Gas & Power, LLC is not the same company as the California utilities San Diego Gas & Electric Company (SDG&E) or Southern California Gas Company (SoCalGas), and Sempra U.S. Gas & Power, LLC is not regulated by the California Public Utilities Commission.

and Southern California. We believe that those efforts to improve coordination to date have been sufficient to maintain reliability. Current initiatives underway to improve reliability include the implementation of a Low Operational Flow Order[2] and a Southern Gas System Reliability Project.[3] Both initiatives are California Public Utilities Commission (CPUC) jurisdictional and have been filed for approval at the CPUC.

3. What, if any, reforms should happen in RTO/ISO electricity markets to both improve operations and ensure adequate future pipeline capacity?

SDG&E does not believe that any "market reforms" are necessary in the California Independent System Operator (CAISO)[4] market to improve operations and ensure adequate future pipeline capacity. SDG&E does recognize the need for expanded intrastate pipeline capacity to move gas north to south during times when there are insufficient supplies entering California from the east. This would allow the San Diego and Imperial County region to access gas supplies held in gas storage facilities in the Los Angeles region.

SDG&E believes that it is appropriate when supplies from the east are tight, for the CAISO to engage in the dispatch of generation to ensure that gas generators on the south side of the existing constrained north-to-south supply are not counted on to generate and that gas generation on the north side of the constraint area are relied upon instead to meet demand and deliver that power over the existing electric transmission facilities under conditions when local reliability or contingency conditions are not in place. Rationalizing the dispatch order to account for these rare occurrences ensures reliability of delivery of both gas and electricity to customers.

SDG&E also notes that demand management and energy efficiency can assist in the resiliency of the electric system to disruptions on the natural gas system. Allowing the inclusion of demand response into wholesale markets provides the RTO/ISO with additional tools with which to deal with natural gas shortages affecting electric generators.

4. Same question, but for non-RTO/ISO electricity regions, if any.

No Comment.

5. Are there any transferable practices from some electric utilities in regions outside of RTO/ISOs, such as those in the southeast, who note little if any interdependency issues

[2] SoCalGas and SDG&E filed an application for low operational flow order (OFO) requirements to ensure deliveries of natural gas to the SoCalGas and SDG&E systems are sufficient to continue reliable service when deliveries are lower than usage.

[3] The Southern Gas System Reliability project involves installing new pipeline between the town of Adelanto and our Moreno Pressure Limiting Station, and rebuilding the Adelanto Compressor Station. Approximately 60 miles of 36-inch diameter pipeline must be installed from the Adelanto Compressor Station to the Moreno Pressure Limiting Station.

[4] The CAISO oversees the operation of California's bulk electric power system, transmission lines, and electricity market generated and transmitted by its member utilities.

due to how they contract for gas service, or other business practices? If so, what are they?

No Comment.

6. **Are efforts underway in your region to assure the appropriate amount and type of natural gas infrastructure, or alternatively, appropriate changes in electricity infrastructure, operations or end use, now, and through to 2030, sufficient for both sectors to reliably and affordably meet their evolving needs? If not, what additional efforts and steps may be needed, and by whom? Are there any actions that the Federal government should take, and if so, please identify.**

SoCalGas and SDG&E have proposed to the California Public Utilities Commission (CPUC) an $800 million investment in infrastructure improvements in order to improve the reliability of service to our customers in Riverside, Imperial, and San Diego Counties. These areas, which have a large concentration of electric generation demand as well as core customers, are currently primarily dependent upon supply delivered from a single intrastate pipeline system. When supplies are insufficient for the level of demand in the area, customer curtailments become likely and the integrity of the electric grid is put at risk. With our proposed improvements, these areas will have ready access to supplies delivered from three other interstate pipelines and five other receipt points, as well as access to storage supplies.

In addition, SoCalGas and SDG&E are considering whether to propose construction of a new pipeline in San Diego County that would provide additional capacity to address reliability concerns. San Diego currently is primarily dependent upon a single pipeline which transports 90% of its gas supply, and a significant portion of its gas-fired electric generation capacity exceeds the current gas system's capacity to serve. A new pipeline, based upon current forecasts, would sufficiently increase the system capacity to be able to reliably serve the electric generation demand through at least 2036 as well as mitigate the risk of curtailments to all customers in the event of an outage of the existing 30-inch pipeline. This future potential project is still being developed and evaluated.

SoCalGas and SDG&E have also filed for authority to implement a "low OFO" procedure, under which the utilities can incentivize customers and shippers to deliver gas supply to the system during periods of shortfall. This will help SoCalGas and SDG&E maintain the integrity of the gas system, and in turn, reduce the risk to the electric grid.

Interdependency issues that arise between natural gas and electricity generators arise from the lack of adequate infrastructure, not from specific practices of electric utilities. In the West, the issues have not, for the most part, been pipeline capacity issues but rather a lack of supply caused by well head freeze-in and high demand, particularly east of California. These supply shortages are a direct result of weather conditions which leads to reduced supplies and higher demand.

To address this lack of supply, one solution would be storage located near load centers. Whether such storage is feasible and cost effective depends on a number of factors, and might

not be warranted to address an intermittent problem. For example, as noted above, SDG&E and SoCalGas are proposing a prudent expansion of the intrastate pipeline system in Southern California to facilitate movement of gas from storage located in the Los Angeles area, south to serve consumers, including electric generators, with reliable supply during times when disruptions may hinder the available supply.

7. Are the current types of gas storage used the right kind for expected increased use of natural gas for electric generation, and additionally with new gas-fired generation now becoming available with faster ramping availability? If no, what is needed?

There is only so long that storage and in-state supplies can fully support a system and customer base as large as ours and efforts are underway in southern California to assure the sufficiency of natural gas infrastructure. SDG&E and SoCalGas are proposing to construct the Southern Gas System Reliability Project to maintain reliability and alleviate the potential for curtailments of customers served by a portion of the transmission system known as the "Southern System" due to a potential discrepancy between customer demand and the volume of flowing supplies delivered to the Southern System to meet that demand.

Unlike other parts of SoCalGas' system, the Southern System requires minimum flow volumes at the Blythe and/or Otay Mesa receipt points to maintain service to its customers, including Electric Generators in the Imperial Valley and San Diego load centers and other communities in San Bernardino and Riverside Counties. The Southern Gas System Reliability Project would create a pipeline interconnection allowing the efficient transportation of 800 million cubic feet per day (MMcfd) of natural gas supplies into the Southern System from interstate and intrastate receipt points located outside of the Southern System. These additional receipt points include North Needles, South Needles, Kramer Junction, Wheeler Ridge, and Kern River and storage supplies from the SoCalGas Honor Rancho natural gas storage facility. This would reduce the dependency of consumers, including Electric Generators, located in San Diego and Imperial Valley on supply from any one single interstate pipeline.

SoCalGas and SDG&E are seeking approval of this infrastructure from state regulators. Because these are intrastate facilities covered under the Hinshaw Amendments, approval and regulation of this additional infrastructure is the jurisdiction of the California Public Utilities Commission rather than federal regulators. However, the proposed pipeline crosses federal lands under the jurisdiction of the U.S. Forest Service and the Bureau of Land Management. Approximately 10.1 of the 95 miles of the project are on federal lands. Timely review and approval of any permitting required for the construction of these facilities would hasten the development of this important infrastructure, which will improve the reliability of the natural gas and electricity systems for millions of customers in Southern California

SoCalGas and SDG&E customers will always be at risk of curtailment if there are significant problems on one or more of the interstate pipelines connected to our system. As previously stated, there is only so long that storage and in-state supplies can fully support a system and customer base as large as ours. No portion of our system should be at the mercy of limited interruptions on the upstream interstate pipelines. Currently, however, any problem with

upstream supplies on the El Paso system will potentially result in curtailments for Southern System customers, including Electric Generators. SDG&E believes that the El Paso system is essential for the reliability of the Bulk Electric System.

8. **Are there greater opportunities for efficiency in the end uses of natural gas that could alleviate demand, and thus free up some natural gas? For example, several states have natural gas energy efficiency resource standards (EERSs). Are there lessons from these state experiences? Similarly, are there other opportunities to increase electric grid flexibility besides new fast ramping natural gas-fired generation that will be needed should wind and solar generation expand?**

Natural gas is an important part of the energy composition in Southern California. Much of our region's electric generation comes from natural gas-fired plants, and these plants also play a key role in integrating increasing amounts of renewable energy as California moves closer to achieving a 33 percent renewable portfolio standard.

There are promising opportunities to achieve further efficiencies in end uses for natural gas that have the potential to reduce customers' bills and enhance reliability. California's statewide Codes & Standards energy savings program, which is administered by the four investor owned utilities (IOUs), advocates to code-setting agencies at all levels of government to enhance efficiency requirements for natural gas and electric end uses. This program, along with incentive and rebate programs, has greatly improved end use efficiencies in this state. In addition, the Emerging Technologies (ET) programs support increased energy efficiency market demand and technology supply by contributing to the development and deployment of new and under-utilized energy efficiency measures (i.e., technologies, practices, and tools). The ET program also facilitates the Emerging Technologies Coordinating Council, which is a collaborative forum focused on identifying, assessing, and supporting the commercialization of energy-reducing technologies, and includes the IOUs, the Sacramento Municipal Utility District, the California Energy Commission, and the CPUC. There is still room for further advances. For example, improvements to building envelopes have been studied and have been found to be cost effective. In addition, work is being done to help end users modify behaviors to maximize cost and energy savings. Various pilot programs are underway to test the viability and success of different approaches to educational and behavioral programs. Other pilot programs are also being deployed that will provide financing for energy efficiency projects that are anticipated to result in greater access and better terms for capital with focus in the residential and small business markets.

Complimentary to advancing energy efficiency, California utilities offer demand response programs, which can be deployed in response to periods of peak usage. California utilities have also invested in smart grid technologies and smart meters to increase reliability and enable customers to use energy more wisely. For example, SDG&E launched the Borrego Springs Microgrid, which interconnects battery energy storage, local generation and automated switches to create a more robust, self-sustaining grid that can manage outages and enhance local reliability. SDG&E is also in the process of developing and rolling out new time differentiated rate options for all customer classes to encourage customers to shift usage to off-peak hours.