California ISO
Shaping a Renewed Future

California Independent System Operator Corporation

Keith E. Casey, Ph.D.
VP, Market and Infrastructure Development

September 12, 2017

The Honorable Fred Upton
Chairman, Subcommittee on Energy
Committee on Energy and Commerce
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515-6115

Dear Chairman Upton:

Attached are my responses to the additional questions submitted for the record from the July 26, 2017 Subcommittee on Energy hearing entitled "Powering America: A Review of the Operation and Effectiveness of the Nation's Wholesale Electricity Markets."

I very much appreciated the opportunity to represent the California Independent System Operator Corporation at this important examination of wholesale electricity markets in the U.S. and would be happy to provide any additional information that would be helpful to the Subcommittee.

Respectfully submitted,

[redacted]

Keith E. Casey, Ph.D.
Vice President, Market and Infrastructure Development
California Independent System Operator Corporation

cc: Elena Brennan

The Honorable Fred Upton

1. **It has been more than 7 years since FERC embarked on its efforts to promulgate new transmission planning reforms which resulted in Order No. 1000. Your RTO is designated as "Order 1000 transmission planning regions." Now that you have had real-world experience with these reforms, do you think FERC's efforts at reforming transmission planning and cost allocation have succeeded, failed or landed somewhere in between?**

Overall, we believe the Order No. 1000 reforms have resulted in a more effective transmission planning process. The California ISO comprehensively revised its transmission planning process prior to the adoption of Order No. 1000. The revised planning process included conducting competitive solicitations for economic and policy-driven transmission projects, which was subsequently expanded under Order No. 1000 to include reliability projects. As a result of Order No. 1000, planning regions formed to take on the functional role of planning and coordination at the regional and interregional levels. The California ISO is an Order No. 1000 planning region. To date, as I noted in my July 26 testimony to the Subcommittee, the California ISO conducted numerous competitive solicitations as part of our regional planning process that evaluated competing project sponsors' proposals and selected approved transmission project sponsors. The California ISO has awarded several projects to project sponsors that proposed cost containment measures. Based on our experience, we acknowledge that the project selection process is complex and requires a holistic approach that considers numerous factors. After each competitive solicitation, the California ISO has evaluated its competitive solicitation process, and conducted an extensive "lessons learned" stakeholder process to share these lessons and provide opportunities for stakeholder input. These efforts have resulted in process enhancements and improvements. With respect to inter-regional coordination, we have adopted a common cost allocation process for inter-regional transmission projects with neighboring planning regions in the West and continue to coordinate with them to identify potential transmission projects that will provide benefits to the region. As of this date, the planning regions have not yet approved any inter-regional projects.

2. **In your testimony you mention that California ISO intends to rely on natural gas-fired generation in the near future for reliability services such as voltage support and frequency response. You also describe how California's natural gas power plants are being displaced due to economic pressure caused by depressed energy market prices.**

    a. **Do you have concerns that California's electricity system will face reliability challenges in the future due to the early retirement of natural gas power plants?**

As stated in my July 26 testimony before the Subcommittee, one of the California ISO's most significant challenges is to maintain the resources needed to provide essential reliability services during the transformation of the California ISO's resource mix to include a larger percentage of variable energy resources.

b. Does California ISO have any tools to ensure that essential natural gas power plants will continue to operate and provide needed ancillary services?

The California ISO has tariff rules that support implementation of California's resource adequacy program. The California ISO plays a central role in in determining local capacity and flexible capacity requirements, and also has backstop capacity procurement authority under its tariff. If necessary for reliability, the California ISO may also designate a resource as a reliability must run unit and contract with that unit to provide necessary electric service. Under specified circumstances to maintain reliability, the California ISO can procure backstop capacity pursuant to its capacity procurement mechanism. In particular, the California ISO can procure capacity that is needed in the next resource adequacy year but is at risk of retirement in the current resource adequacy year if it does not have a contract to remain economically viable. The California ISO is currently working with stakeholders and state agencies to evaluate regulatory and market options to ensure resources needed to maintain reliability remain in service.

We also continue to explore means to evolve our markets to value resource capabilities to support reliable grid operation. For example, the California ISO has implemented a flexible ramping product that compensate resources for their capability to support the increasing ramping requirements associated with supply and load variability.

3. Your RTOs and ISO play a central role in operating the wholesale electricity markets and (with the exception of ERCOT) your primary regulator is the Federal Energy Regulatory Commission. Do you believe FERC is appropriately engaged in overseeing wholesale electricity markets?

The California ISO operates its wholesale market pursuant to a tariff approved by the Federal Energy Regulatory Commission. In our experience, FERC undertakes thorough review of revisions we propose to our tariff and closely monitors the performance of our market. As part of these efforts, FERC has facilitated the implementation of enhancements that have improved the efficiency of our markets and reduced the need for out of market resource commitments. In addition, FERC has supported the development of a well-functioning energy imbalance market in the West for which the California ISO serves as market operator. FERC has initiated comprehensive reviews, such as those involving price formation, across all wholesale markets and adopted targeted reforms. We believe these efforts have led to all RTOs and ISOs assessing how to improve the efficiency and transparency of their markets.

a. **Are there additional areas of regulatory oversight that requires the attention of this Subcommittee?**

The Subcommittee on Energy plays a critical role in developing national energy policy, as well as ensuring that energy infrastructure, security and reliability receive appropriate attention. In the case of wholesale electricity markets, we do not believe there are specific issues that require immediate attention of the Subcommittee at this time.

The Honorable John Shimkus

1. **If, as we learned at the hearing, markets were structured to build only the least expensive generation, we would build nothing but natural gas plants right now.**

    a. **Is that correct? Is that what's happening?**

In the case of the California market, the spot energy market operated by the California ISO is not the primary driver for new generation investment. State policies and procurement mandates are the main drivers and have led to most new resource investment being zero emission technologies (e.g., renewables, demand response, energy efficiency, storage) though some new gas-fired generation is being built to address local reliability needs in constrained areas of the grid. Natural gas-fired plants continue to provide significant value to the California ISO, particularly in their ability to help manage ramps related to variability of supply and load. However, the need for development of new gas-fired generation has been impacted by a number of factors, including flat demand and the influx of increasingly affordable, zero-carbon resources such as solar and wind generation. We anticipate that technology advancements providing greater flexibility, such as state-of-the-art storage, plug-in electric vehicles, and dispatchable demand response will also reduce the need for significant new conventional generation.

    b. **If not, how do you explain other generation sources entering the market?**

California's Renewables Portfolio Standard requires load-serving entities to procure specific percentages of energy from renewable resources. The CPUC has also adopted a storage procurement policy that requires a total of 1325 MW of small-scale energy storage by 2020. These procurement directives have supported market entry by new resources. The California ISO is working with utilities and policy makers to ensure they can achieve their procurement targets in a manner that preserves reliable operation of the electric grid.

The Honorable Billy Long

1. **RTO development began in late 1999 with ISO development soon to follow. Both organizations help to monitor our electric power system. There are still a number of gaps in our electric system where problems could occur. What are your thoughts about the creation of another RTO that could include the states of Nevada, Arizona, Colorado and other western states? Should it be an RTO or an ISO?**

Wholesale regional electricity markets administered by an ISO or RTO provide important reliability and cost benefits to consumers. As a requirement of California Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015, the California ISO has evaluated the potential effects of creating a multi-state, regional electric market in the West. The studies were conducted by leading experts in energy, environment and economics. The studies found that establishing a regional market and interconnected electric grid in the West would be expected to lower power purchasing costs, optimize transmission planning, increase market and operation efficiency, improve the utilization of renewable resources west-wide, reduce carbon emissions

and greatly reduce the redundancies needed to meet reliability requirements. Full grid and market integration could potentially save billions of dollars in energy costs to consumers and improve reliability throughout the region as compared with the current structure that includes 38 separate balancing authority areas.

The Western Energy Imbalance Market (EIM) provides a partial view of the benefits that could be obtained from a wider regional bulk power market. EIM participants engage in a broad real-time dispatch across multiple states, but retain their role as separate balancing authorities. The EIM uses the ISO's advanced, automated system to select the most efficient dispatches in the real-time balancing market, considering resources, congestion, outages and economic costs. Initial participants have included PacifiCorp which operates in six states, NV Energy of Nevada, Puget Sound Energy of Washington, and Arizona Public Service. Through the second quarter of 2017, the estimated total benefits of the Western EIM have exceeded $200 million. Work is underway to enable seven more utilities in the West to join the EIM by 2020, serving consumers in California, Arizona, Oregon, Washington, Utah, Idaho, andWyoming with the most efficient real-time power sources. To support this regional market and with the support of a broad range of stakeholders, the California ISO enhanced its governance structure to allow for a governing body with delegated authority over EIM-specific matters.

Each of the nation's wholesale electric market operators has a number of unique features including market design, resource adequacy practices, regulatory requirements, and stakeholder participation. As a practical matter, there does not seem to be any functional distinction between whether such an organization is constituted as an ISO or an RTO.

2. How are you planning to manage the growing surplus of generation in your respective regions?

The California ISO is refining its strategies to address oversupply conditions and has identified an array of specific, proactive mitigation strategies to help deal with over supply and managing the evolving power mix. These strategies include:

- Designing market rules changes to obtain more flexible resources to increase overall generation availability and ramping capability. This effort targets participation by all resources, including natural gas fired plants, variable energy resources, electric storage and demand response.

- Obtaining more accurate load, wind and solar forecasting in both the day-ahead and real-time.

- Increasing coordination with other grid balancing areas in the region, including providing support to entities seeking to join the Western Energy Imbalance Market

<u>The Honorable Frank Pallone, Jr.</u>

1. Consumer advocates have identified the resource imbalance between the stakeholder members of the RTO/ISO Boards and the small consumer community as a major

barrier to having meaningful representation of consumer viewpoints included in decisions about grid operation and capital project evaluation and approvals. What mechanisms, reductions in costs of stakeholder participation, or other support does your RTO/ISO provide to the small consumer community to facilitate their participation in RTO/ISO governance?

The California ISO is a not-for-profit, public benefit corporation that was established to ensure efficient use and reliable operation of the state's electricity transmission system on behalf of California consumers, with the goal of ensuring reliable electricity service with lowest cost dispatch. The California Public Utilities Commission and its Office of Ratepayer Advocates regularly participate in the ISO's stakeholder process. In addition, individual consumers and their representatives can fully participate in the ISO stakeholder process. In the context of the Western EIM and other regional efforts, we have had participation from other state consumer interests as well.

The California ISO's board and stakeholder meetings are open and transparent to all stakeholders. This allows all stakeholders, including consumers, to participate in the policy development and approval process. The California ISO has taken several steps to facilitate meaningful participation in its stakeholder and board processes, while reducing the cost of participation. To keep stakeholders informed, the California ISO publishes market notices at each stage of the stakeholder process and for all board meetings. The California ISO posts all materials for board and stakeholder meetings, including meeting dates and agendas, on its website in advance of the meeting. This ensures that remote participants have access to the same materials as in-person attendees. Stakeholders can participate in board and stakeholder meetings in-person or remotely. Stakeholders who are unable to attend a board meeting can listen to the meetings either through a conference call number or through streaming audio on the internet. Streaming audio of Board proceedings is available via both internet and phone, and audio recordings are available on the California ISO website for 30 days. All interested parties may address the board during open meetings. Further, persons who cannot attend a board meeting are able to submit their positions to the board in writing if they desire. The Board accepts and considers written comments from any interested party, and consumer advocacy groups participate in informing their deliberations. This ensures that the Board considers all stakeholders' input. Similarly, every step of the stakeholder process typically involves an in-person meeting or conference call. For in-person stakeholder meetings, the California ISO facilitates remote participation via a conference call with web-conferencing. Thus, stakeholders that are not physically present can actually participate in the meeting, not just listen. Today the majority of stakeholders participate in California ISO stakeholder meetings by phone. Even if stakeholders are unable to attend a stakeholder meeting in person or participate by tele-conference or web-conference, they still have an opportunity to inform the process by submitting written comments on issue papers, straw proposals, and proposed tariff language. The California ISO posts all written stakeholder comments to its website; so stakeholders are aware of others' positions and can respond. The California ISO takes all written comments into account in crafting proposals and responds to all written comments through a stakeholder comments matrix. As a result of these practices, taking time to travel to or participate in a stakeholder meeting is not necessary for a stakeholder to stay abreast of developments with a particular initiative or inform the California ISO's policy development. More information about the

California ISO's stakeholder process is available on the following website: http://www.caiso.com/informed/Pages/StakeholderProcesses/Default.aspx

2. You indicated at the hearing that California ISO had a formal structure (e.g. committee or liaison position) for obtaining input on consumer views and concerns on grid management. Please provide detail about how consumer views are incorporated into decision-making at your RTO/ISO.

I want to note that, at the Subcommittee hearing on July 26, I testified that the California ISO does not have a formal structure for obtaining consumer views, specifically. We do, however, have open, transparent, and easily accessible Board and stakeholder processes as described above. As stated in the ISO's Bylaws, any member of the public may attend and observe Board of Governors meetings. The Board also provides an opportunity for the public to comment on any general and decisional matters at these meetings.

a. Do consumer advocates have voting representation on the Board?

The Board of Governors of the California ISO is appointed by the Governor of California and subject to approval by the California State Senate. Board positions are filled by highly expert individuals selected from a nationwide pool and have no specific sector affiliations and no financial interests in market participants' operations or policies. Both California ISO management and its Board of Governors incorporate the perspectives of consumers in their decision-making process.

b. Do consumer advocates participate actively in the development and approval of grid planning?

Yes, representatives of the CPUC's Office of Ratepayer Advocates and other consumer interest groups provide input through the California ISO's stakeholder and Board processes as they determine appropriate.

c. Are there funds available to support full-time staff that serve the interests of consumer advocates? If so, what is the source of these funds?

The California ISO does not provide specific funding support dedicated to consumer interests. However, the California ISO maintains a robust, full-time office of Customer and Stakeholder Affairs, which provides support to all interested parties, including consumer advocates.