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Statement of

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California Public Utilities Commission

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Thank you for the opportunity to participate in this workshop. I'd like to address several issues in these comments that are the subject of today's workshop:

- A brief overview of California's comments and approach to the Clean Power Plan (CPP)
- How best to integrate the CPP with reliability planning and assurance
- How FERC can assist in infrastructure planning and implementation
- How FERC-jurisdictional markets can assist in CPP implementation

State of California comments and ongoing activity on 111d

In analyzing and responding to the proposed Clean Power Plan (CPP), the California Public Utilities Commission (CPUC) works very closely with the California Air Resources Board, the California Energy Commission, and the Independent System Operator. Along with our sister agencies, the CPUC strongly supports the proposed Clean Power Plan. We recognize US EPA's clear legal obligation to regulate the carbon pollution from electricity production that is already causing significant harm to the health and well-being of Californians, and from our long experience we know the federal Clean Air Act is an effective, proven tool to control such air pollution.

Secondly, we support the structure and goals of the proposed rule. We appreciate that in designing it, the U.S. Environmental Protection Agency (U.S. EPA) considered that the electrical grid operates as a system and set its emission guidelines accordingly. This holistic approach will provide much needed flexibility and still ensure emission reductions are achieved. We also appreciate the flexibility provided in the proposed rule for states to show compliance. This approach will drive continuing pollution reductions from the varying energy resources in the states and support the operational needs of electricity grids across the nation.

Specifically, California supports U.S. EPA's determination that the Best System of Emission Reductions (BSER) for existing EGUs recognizes the complex interactions of generation, renewable energy and demand side reductions in the power grid. Because of this complexity, innovative approaches such as those in the proposed Clean Power Plan are needed in order to reduce GHG emissions while ensuring the reliability of the electric grid is maintained. We commend U. S. EPA for providing states multiple options in designing their compliance plans that can be tailored to ensure this reliability, as well as encouraging a multi-state approach for regional cooperation.

States throughout the country have succeeded at reducing the emissions of existing EGUs through the use of the strategies that U. S. EPA identifies in the "building blocks" supporting its emission guidelines. California's own experience demonstrates that states can prosper *because* they are reducing emissions and building a cleaner, more modern power sector, driving research and development, creating jobs, and protecting public health.

Lastly, we have been impressed by the thoughtful engagement of states with the proposed rule and the willingness of US EPA to work with states on rule implementation. In our region of the West, states are working together to understand the rule, investigate compliance options, including

opportunities for multi-state cooperation, and examining how to integrate compliance scenarios in existing and evolving reliability planning processes. California is participating in several multi-state initiatives to this end, notably including initiatives with the Western Interstate Energy Board and Western Electricity Coordinating Council.

Reliability

One primary subject of today's workshop is the reliability impacts of the Clean Power Plan, and how to coordinate reliability planning with CPP compliance planning. Coordination is a key consideration, since neither the Clean Power Plan nor reliability are single, static quantities. Reliability cannot be defined except through a dynamic balancing of generation and load, voltage, and frequency at multiple time scales, and the Clean Power Plan cannot be defined at all until a state puts forward a final implementation plan – a plan that will be crafted from a wide array of potential compliance strategies and actions over a timescale of more than a decade. Thus, "the reliability impact of the Clean Power Plan" must be assessed as a *process*, and that process is the coordination of reliability planning with CPP compliance planning.

There is every reason to be optimistic about this coordination of CPP compliance and reliability planning. Existing reliability planning processes have proven successful in addressing the continuing changes to the electric grid for decades. The changes contemplated by the CPP are changes that are already occurring and will continue to occur regardless of the CPP. These changes are driven by existing economic and environmental forces, including the retirement of obsolete and inefficient coal plants, construction of modern gas plants, and the arrival of economic utility-scale renewable generation. These changes are modernizing and strengthening the US electric system, supporting vigorous energy economies across the country, and reducing pollution emissions at the same time. The kind of reliability planning that is already successfully addressing this grid modernization can continue to do so as the CPP is implemented.

In fact, there is more reason to feel confident that existing reliability processes will be able to integrate planning for CPP compliance. Unlike most other environmental rules, the CPP is not facility-specific, allowing ample flexibility in the timing and mix of strategies that may be employed to reach system-wide targets while preserving reliability. Simply put, with adequate planning and coordination, states can develop CPP compliance plans that do not threaten reliability.

More communication and coordination between state and regional energy and environmental planners, market participants, and economic and reliability regulators will assist in ensuring changes are adequately foreseen and coordinated across jurisdictions. Such collaboration should be ongoing and dynamic, responsive to the flexibility of the Clean Power Plan and the evolution of the grid itself, so as to preserve administrative flexibility and feasibility.

California currently has a successful program for planning and assuring reliability that is addressing unprecedented changes to our grid (most of which are the result of existing economic and environmental forces other than greenhouse gas regulation), including the retirement of 2,000 megawatts of baseload nuclear power in a transmission-constrained area and more than 10,000

megawatts of inefficient legacy fossil generators, and the addition of roughly 15,000 megawatts of utility-scale variable energy resources and 5,000 of distributed energy resources.

To address the challenges of our evolving resource mix, we at the CPUC have developed new planning processes, including resource adequacy and flexible resource adequacy programs, new resource products such as demand response and energy storage, new infrastructure including fast-start, flexible natural gas combined cycle generators, new transmission and non-generating grid support, improved technical analyses and forecasting, and most importantly, our inter-agency communication. These improvements ensure we have ample energy capacity and transmission infrastructure far into the future.

One of our closest partners is the Independent System Operator, which, in addition to operating the electric grid reliably in real-time, provides reliability assurance and complements CPUC-jurisdictional planning and procurement with energy, capacity, and ancillary services markets. These innovative markets and products include a real-time energy market with 5-minute scheduling, flexible ramping constraint and proposed FlexiRamp product, and an Energy Imbalance Market to share resources with our neighbors in the Pacificorp, and soon NV Energy, service territories.

Infrastructure

There is no doubt that modernization of the Western electric grid, including the retirement of obsolete coal plants, the construction and increased utilization of modern gas plants, and widespread development of utility-scale renewables, will necessitate new infrastructure investments. Both electricity and natural gas transmission and storage are sure to be growth industries for several years to come.

In 2014, the Western Interstate Energy Board commissioned a study of interactions between natural gas and electricity industries, including the adequacy of natural gas infrastructure and markets to support both increased and more variable natural gas electricity generation. This study examined several scenarios, including both high coal retirement and greater renewables penetration, which highlighted continuing changes to the electric grid that could be expected to continue under the Clean Power Plan.

These scenarios did find, common-sensically, that a future of more gas generation would likely require more gas infrastructure. However, the study found that the scale and pace of such infrastructure needs would be relatively modest in comparison with the growth of the past decade. Further, the study found that the effect of increased renewables could substantially offset natural gas demand, suggesting that the replacement of coal generation with both gas and renewables, as could be expected under the CPP, could require relatively modest changes to total gas supply.

FERC has an obvious role to play in assuring the timely provision of natural gas infrastructure by remaining responsive to market signals and expeditiously managing the open season process to trigger new pipeline capacity.

California and our neighbors in the Desert Southwest are highly interdependent in natural gas and electricity infrastructure. Conditions in Arizona and New Mexico can have important effects on the availability of both gas and electric power for users in California. For this reason, we support regional planning efforts to not only consider infrastructure within our region but the conditions and market forces in neighboring regions as well.

At the same time, the interconnectedness of the West is also a source of resiliency. For instance, if gas infrastructure were to be constrained in one region, electric system operators may be able to schedule electric imports from their neighbors to avoid loss of electric load. Hence the activities that FERC takes to foster coordination of operations within and between regions of the West, from interregional planning, to coordinated scheduling practices, to market integration, will help mitigate any risks that constraints on gas infrastructure pose to the electricity system. FERC's ongoing docket to examine the gas-electric interface has encouraged such coordination and provides a foundation for continued investigation of issues that may emerge in the future.

Markets

FERC's support for market innovations to improve the availability and flexibility of both natural gas and electricity resources will support the modernization of the Western grid and the achievement of CPP objectives.

Regarding natural gas markets, the same 2014 Western Interstate Energy Board Study identified needs for innovation in natural gas markets and market behavior that could improve the reliability of natural gas supplies for electricity generators, and in turn, bulk power supply reliability. These innovations include a better variety of tariff and contract types to facilitate greater pipeline capacity utilization and to ensure firm transportation services when it is needed most. FERC should also support innovation and best practice in the nomination and scheduling process. FERC's ongoing gas-electric coordination docket can help identify and mitigate the frictions between these two industries arising from the nominations and scheduling process.

FERC's Order 764 is an example of FERC action that bolsters reliability and reduces costs. Fifteen minute scheduling is very valuable to integrating renewables cost-effectively, and moreover the kind of information sharing required of Variable Energy Resources (VERs) under the rule is an example of improved coordination that would be helpful across electric generators, balancing authorities and grid operators, and across gas and electric industries.

As operations become increasingly variable in both gas and electric industries, FERC can assist in identifying best practices for both improved forecasting methods and reliable and timely communications between the two to assist each in adapting to rapidly changing conditions in daily operations.

Based on our experience in California, FERC can also continue its mission of enhancing reliability and assist implementation of the Clean Power Plan through supporting market innovations in electricity

markets. Of greatest need are innovations to make scheduling more flexible, improve the capability of markets to compensate flexible resources, and provide for more cooperation across balancing authorities. One tool to accomplish these goals is the FERC-jurisdictional Energy Imbalance Market, through which CAISO's real-time market is available to participants throughout the West, making more efficient use of resources generally and promising the integration of renewable resources across a broader geographic footprint.

Lastly, it is important to emphasize that while FERC can play a very helpful supporting role in encouraging collaboration between industries and market actors, and a very direct role in opening markets for new infrastructure and new resources, there remains a critical role for states in resource planning and procurement that is more important than ever under the Clean Power Plan. As the Clean Power Plan places even more responsibility on state energy planners to craft resource plans to meet greenhouse gas pollution reduction goals, it becomes even more important for the balance between state-regulated power procurement and FERC-regulated wholesale power markets to be carefully managed.

In conclusion, thank you for the opportunity to contribute these comments to this important discussion. Along with my colleagues in the energy and environmental agencies in California, I support the thoughtful implementation of the Clean Power Plan. Based on our experience, the transition in the electric system contemplated by the CPP are already occurring across the country in response to economic and environmental forces and are succeeding in making our electricity system cleaner, more resilient, and economically resurgent.

FERC can assist in this transition by modifying tariffs and markets to be more flexible to accommodate variable energy resources, by continuing to encourage analysis and communication between the gas and electric industries and between regional grid operators and balancing authorities, and by encouraging regional cooperation and integration in infrastructure and resource planning and markets. FERC should also be vigilant and responsive in permitting the construction and expansion of gas and electric infrastructure. At the same time, states and FERC must maintain the appropriate balance to ensure that states have the authority and discretion to plan their resources necessary to meet the goals of the Clean Power Plan.