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Subcommittee on Energy
Hearing on “Powering America: Examining the State of the Electric Industry through Market Participant Perspectives”

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Good morning Chairman Upton, Ranking Member Rush and members of the Subcommittee. Thank you for inviting me to testify today on the topic of “Powering America: Examining the State of the Electric Industry through Market Participant Perspectives.” My name is Steven Schleimer and I serve as the Senior Vice President of Government and Regulatory Affairs of Calpine Corporation (“Calpine”).

The most important message I can deliver today is that the deregulated markets are working and there is no action needed from you. This is not to say that the markets are perfect, but FERC and the ISOs have the tools they need to fine tune them. But, more about that later. First, let me introduce Calpine, which is an independent power producer (“IPP”) that owns more than 26,000 megawatts (MW) of generation capacity from 80 power plants across the country, and we sell wholesale electricity in most of the regional markets, as well as directly to retail customers in 25 states. Calpine’s Geysers plant in California is the largest geothermal power generating facility in the United States, which allows us to sell more renewable power than anyone else in the state. Importantly, Geysers is a dependable renewable resource that generates 24 hours per day, 365 days per year. In addition, within the United States, Calpine is the largest operator of combined heat and power facilities, the largest consumer of natural gas in the electricity sector, and through our affiliated companies is one of the largest suppliers of electricity to retail (end use) customers. We are not a regulated utility receiving a guaranteed return. Rather, we compete against other generators and retail suppliers to sell power directly to

wholesale and retail customers. So the economics of supply and demand are fundamental to our business.

As a result of our generation and retail customer portfolio, Calpine is actively involved in virtually all the regional competitive markets, with a focus on PJM and ISO-NE (hereinafter referred to as “East Coast Markets”), CAISO, and ERCOT. Our public policy advocacy in these regions rests on two fundamental principles: reliance on markets to provide the most efficient outcomes as well as environmental stewardship. In fact, despite our size, Calpine’s fleet is environmentally the cleanest among the major players in America’s IPP sector.

My two key messages today are: First, the competitive electric sector, in particular the East Coast Markets and Texas are successful and functioning well. Significant new resource investment is occurring at a pace that is creating an increasingly reliable system, wholesale prices are generally at historic lows, and environmental emissions are down. These new resource investments are being made due to the game-changing discovery of shale natural gas, the existence of a competitive market with clearly defined rules, and a commitment by the stakeholders to seeing the market function.

Second, the East Coast Markets are now facing serious challenges. Due to various goals and pressure from incumbent generators, state policymakers have been increasing their efforts to pick winners and losers through out-of-market mandates and subsidies in their respective states. If left unchecked, these state efforts threaten the continued viability of competition in these regions. A “hybrid” market, where a state relies in part on the competitive wholesale electricity market to meet its resource needs, but also retains the right to select and subsidize preferred generation resource types to meet certain public policy goals, does not work and destroys all new competitive investment. Investors are simply not going to put their money into new infrastructure

if they believe their direct competitors will receive out-of-market subsidies. A coordinated effort between all the stakeholders, particularly between the states and FERC, is needed to develop solutions that allow states to achieve their policy goals while at the same time protecting the wholesale market. The good news is efforts are already underway in those regions to address the issue.

Before going deeper into the specific issues, let me first note that the competitive electricity markets across the country are different from each other because of varying resource mixes, market structures, and policy goals. As a result, the defining issues in the East Coast Markets are different than the issues in California, which are different than those in Texas. For this reason, I will spend the rest of my time focusing on each region individually, starting with the East Coast.

The East Coast Competitive Markets Have Been Overwhelmingly Successful Thus Far, but There Are Storm Clouds Brewing On the Horizon

By any measure, the results produced by the East Coast Markets have been a benefit to consumer's pocketbooks, to the environment, as well as to the maintenance of a reliable grid. The market-driven competitive electric sector is on a transitional path from one supported by older, less efficient, and more costly power plants to one support by newer more efficient, less expensive, and cleaner natural gas plants. For the Base Residual Auctions in PJM's capacity market occurring between 2010-2015, approximately 24,000 MW of new generation were cleared and committed, of which 87 percent were natural gas resources.¹ This represents tens of billions of dollars of new investment in the region, including a new plant Calpine brought online in Delaware a few years ago, and another one currently under construction in Pennsylvania.

¹ <http://www.pjm.com/~media/library/reports-notice/special-reports/20160505-resource-investment-in-competitive-markets-paper.ashx>

Concurrent with the expansion of natural gas fired generation capacity, there is also a significant amount of pipeline infrastructure occurring in the Northeastern US. For example, since 2014, almost 4 Billion Cubic Feet (“Bcf”) of new pipeline capacity has been built to export Pennsylvania gas to other states, representing investment of more than \$2 Billion. Almost 6 Bcf more is expected to be built between now and 2021, calling for investment of another \$3.5 Billion.²

In PJM, wholesale prices today are lower in real terms than they were in 2000. Emissions are down significantly as well: Between 2005 and 2015, on a pounds of emissions per MWh basis, CO₂ emissions have decreased by 21%, NO_x emissions decreased by 70%, and SO₂ emissions decreased by 81%.³ At the same time, the grid has become more fuel diverse, not less as some claim. In 2005, coal and nuclear represented 55% and 34% of PJM generation, respectively, with natural gas at only 5.3%. In 2015, the system was more well balanced and diverse, with coal and nuclear each at about 35% market share, and natural gas at approximately 23%.⁴ Finally, PJM’s market enjoys a reserve margin, which is a measure of grid reliability, that is significantly higher than its target.

Similarly, in ISO-NE, wholesale prices dropped 52 percent between 2006 and 2016, and are at historic lows since the current competitive market was established.⁵ Since 2001, regional generator air emissions are down as the region shifted away from burning coal and oil to natural gas with NO_x falling by 68 percent, SO₂ by 95 percent, and CO₂ by 24 percent.⁶ The investment in 15,000 MW of new generation, of which 87 percent is natural gas, has been largely

² Calpine Company Analysis. FERC aggregated reports. <https://www.ferc.gov/industries/gas/industry/pipelines/approved-projects.asp>

³ <http://kleinmanenergy.upenn.edu/paper/electricity-competition>

⁴ Id.

⁵ https://www.iso-ne.com/static-assets/documents/2017/02/20170227_pr_2016_price_release.pdf

⁶ https://www.iso-ne.com/static-assets/documents/2017/02/2017_reo.pdf

responsible for this significant long-term reduction.⁷ ISO-NE's market also enjoys a reserve margin which is significantly higher than its target.

However, as I noted earlier, due to various goals and pressure from incumbent generators, state policymakers have been increasing their efforts to impact the generation mix in their respective states. Specific examples include the New York and Illinois "Zero Emissions Credit" programs, along with recent attempts to create subsidies for targeted generation units in Ohio and Connecticut. In New England, Massachusetts has established aggressive renewable mandates, calling for the utilities in the region to issue requests for proposals from certain types of preferred resources such as Canadian hydro and offshore wind, and to enter into long-term contracts with those resources if authorized by the state regulator. If executed, these contracts will obligate New England consumers to spend billions of dollars on high priced renewable generation outside of the competitive market structure. While these policy goals may be well intended, they nevertheless are having a significant, negative impact on the East Coast Markets. If not addressed, out-of-market subsidies will undermine competition, investment will dry up, and these states will be back in the business of mandating when, where, and what type of new generation will be built through long-term ratepayer guarantees, which is exactly the structure we moved away from several decades ago.

In a very helpful move, FERC recently held a technical conference to provide a forum for interested parties to participate and share views on ways to address the impact of state policies on the wholesale markets operated by PJM, ISO-NE, as well as NYISO. While many participants agreed that recent state actions are threatening the viability of the East Coast Markets, there was little agreement on the appropriate path forward to address these actions. Calpine's view is that FERC and the RTOs must create new market rules that allow a state to meet its public policy

⁷ <https://www.iso-ne.com/about/key-stats/resource-mix>

goals, but at the same time protects the integrity of the wholesale market. The good news is that the regional organizations are actively engaged on these issues and have developed market proposals that would allow state policy intervention and competitive wholesale markets to exist side by side. Both proposals have significant promise and may well result in workable solutions.

Now I will move on to discuss the California electricity market.

California Has Moved Away From a Competitive Wholesale Market Model, and the Key Issue is How to Compensate Competitive Generators Needed for Ongoing Reliability

In 1998, California opened its wholesale and retail electricity markets, which prompted significant investment in generation by competitive suppliers. However, as a result of the state's energy crisis in 2000/2001, as well as the desire to significantly decarbonize the grid, the state moved back to a more centrally planned electricity system in the mid-2000's. On the one hand, this initiative has been highly successful in bringing resources online -- since that time over 10,000 MW of conventional gas fired generation has been built, in addition to another approximately 20,000 MW of renewables.⁸ The state currently has a reserve margin more than twice needed to meet its target. The downside is that all this investment is supported by mandate-driven long-term contracting programs. These long-term contracting practices have decimated the competitive market, and competitive suppliers (who are still dependent on the market for their revenue) are no longer willing to make any investment without a guaranteed payment. In addition, since the policies that bring about this substantial investment are divorced from competitive wholesale markets, it has led to the paradox that while retail rates are amongst the highest in the country as a result of these contracting mandates, wholesale prices are so low that the economic viability of the remaining generation that is dependent on competitive

⁸http://www.cpuc.ca.gov/uploadedFiles/CPUC_Website/Content/Utilities_and_Industries/Energy/Reports_and_White_Papers/Q4_2016_RPS_Report_to_the_Legislature_FINAL.pdf

wholesale markets (generally existing conventional generation resources acquired or built when the market was competitive) is increasingly threatened.

To put the issues in context relative to Calpine, in its February 2016 earnings call, Calpine presented a graphic which showed that the approximately 3,500 MW of currently uncontracted, gas-fired CCGT generation it owns in California produces approximately \$20 million of free cash flow per year.⁹ While \$20 million may sound like a lot, keep in mind this is relative to an unrecovered investment representing several billion dollars, so is actually a very small amount. If one of these units suffers a major mechanical breakdown, it is unclear whether anything beyond a nominal investment would make sense to bring the unit back into service.

To be clear, unlike what other companies are pursuing in the Eastern markets, Calpine is not seeking a bailout for these resources. In fact, we have already removed one 578 MW facility from service, and are scheduled to remove two other peaking facilities at the end of the year. Interestingly, the facility Calpine already removed from service was the Sutter Energy Center, an efficient combined cycle natural gas fired facility that was the first power plant to come online during the summer of 2001, helping to ease California's energy crisis. So, while competitive resources are struggling to cover their costs, current CAISO analyses indicate that some of them are absolutely critical for maintaining reliability in specific locations. We are urging state policymakers to identify which of those resources are needed to maintain reliability, and to apply existing mechanisms in the California ISO tariff that provides sufficient compensation to ensure the ongoing viability of this critical infrastructure.

Finally, I will cover the Texas electricity market.

⁹ http://s2.q4cdn.com/871785789/files/doc_presentations/2016/CPN-4Q15-Earnings-Presentation.pdf

Texas' Market is Fundamentally Working Well, but Some Improvements are Needed

Over the last 5 years, wholesale electricity prices have declined by over 13 percent in Texas, and are at historic lows.¹⁰ Emissions are down significantly as well. Between 2010 and 2016, on a pounds of emissions per MWh basis, CO₂ emissions have decreased by nearly 5 percent, NO_x emissions have decreased by 24 percent, and SO₂ emissions are down nearly 40 percent.¹¹ Between 2012 and 2016, Texas' competitive wholesale market spurred the construction of more than 14,000 MW of new generation, consisting of both wind and natural gas fired resources.¹²

Unlike the East Coast Markets, Texas does not have a capacity market, which is a structure in which the grid operator compensates generators for being available to provide power at some point in the future. This mechanism creates a forward price that signals to competitive generators when and where to invest. Instead, Texas relies on spot energy prices alone to signal the need for generation investment. While Calpine believes that a capacity market is a much more efficient and reliable structure over the longer term, Texas decided a couple of years ago to stay with its current energy-only design. We are confident this decision will be revisited at some point in the future. In the meantime, however, the Texas Public Utilities Commission recently opened a proceeding to examine improvements to the energy market structure, and we are hopeful changes can be made to make the market even more efficient and beneficial for consumers.

¹⁰ <https://www.potomaceconomics.com/wp-content/uploads/2017/06/2016-ERCOT-State-of-the-Market-Report.pdf>

¹¹ <http://www.ercot.com/mktinfo/retail/electric>

¹² [May 2017 CDR Report](#)

Conclusion

Competitive wholesale markets have produced phenomenal benefits for consumers. Thousands of megawatts of new generation have been built, thus ensuring reliability, and old, inefficient generation has retired. Wholesale prices have decreased dramatically over the last 10 years, and investors, rather than ratepayers, are bearing the economic risk for the success or failure of generation facilities. The markets have done exactly what they were intended to do. These achievements, however, are in jeopardy. Due to state policymaker actions to subsidize certain generation, competition is being threatened. A hybrid model, where the states subsidize some generation but leave the remaining generation to rely on the market for their revenue, is unsustainable. A coordinated effort is needed between all the states, FERC, and market participants to develop solutions that allow states to pursue their policy goals while also protecting the wholesale markets. Such an effort will require leadership and a commitment to competitive markets, but if we have both, we will be able to develop solutions that ensure the continued viability of these markets.