PENNSYLVANIA SENATE

MAJORITY POLICY COMMITTEE AND ENVIRONMENTAL RESOURCES AND ENERGY COMMITTEE

TESTIMONY OF THAD HILL

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Good morning Chairman Argall, Chairman Yaw, Chairman Yudichak, Senator Wagner and members of the Senate Republican Policy Committee and Senate Environmental Resources and Energy Committee. Thank you for inviting me to speak this morning on the Marcellus Shale industry in Pennsylvania and trends we are seeing across the country. My name is Thad Hill. I am President and Chief Executive Officer of Calpine Corporation.

Calpine Corporation ("Calpine") is an independent power provider with a national portfolio of 80 power plants in operation or under construction, representing approximately 26,000 megawatts ("MW") of generating capacity. Calpine is the largest geothermal power producer and the largest operator of combined heat and power facilities in the U.S. Through our wholesale operations and retail business, we serve customers in 25 states, Canada, and Mexico. We are not a regulated utility receiving a guaranteed return. Rather, we compete against other generators to sell wholesale power into markets. We also compete to sell power directly to retail customers through our retail business. The economics of supply and demand are fundamental to our business.

About 95 percent of the electricity generated by Calpine's fleet is from natural gas-fired power plants. Overall, Calpine burns more than 10 percent of all natural gas consumed by the power industry, making us one of the largest consumers of natural gas in the U.S., and the largest among all power generators. Despite our size, Calpine's fleet is the cleanest among the major players in America's independent power generation sector. In the PJM market which serves Pennsylvania, Calpine owns approximately 5,000 MW of generating capacity; 1,695 MW of that generation is located in the Commonwealth, and an additional 828 MW is currently under construction in York County. Virtually all of our plants run on natural gas, and nearly 90 percent of our plants located in PJM have the capability to burn oil as a primary or back-up fuel,

with onsite oil tanks. This dual fuel capability was specifically designed into the system to allow Calpine's assets to continue generating even under extreme conditions.

My key message today is that the market-driven competitive electric sector here in Pennsylvania is on a path to transition from one supported by older, less efficient and more costly power plants to one supported by newer, more efficient, less expensive and cleaner natural gas plants. There is significant new investment occurring in the mid-Atlantic power and gas markets, especially here in the Commonwealth. There are currently seven projects under construction in the Commonwealth representing an approximate $7 billion investment, including Calpine's own gas fired power plant under construction in York County, with several additional projects progressing through the development process. This is in addition to several new plants completed over the past couple of years. These investments are being made due to the game-changing discovery of Marcellus and Utica shale gas, the existence of a competitive market with a set of rules, and a commitment by the stakeholders to seeing the market function.

Concurrent with the expansion of natural gas fired generation capacity, there is also a significant expansion of the pipeline infrastructure occurring in the Northeastern US. Since 2014, almost 4 Bcf of new pipeline capacity has been built to export Pennsylvania gas to other states, representing investment of more than $2 billion, with an additional 6 Bcf of pipeline capacity expected to be built between now and 2021, calling for investment of about $3.5 billion.

Beginning in 1996 with the passage of the Pennsylvania Electricity Generation Customer Choice and Competition Act, the state began to restructure its wholesale and retail electricity markets. State policymakers and the Public Utility Commission ("PUC") played an enormous role in guiding the transition into the successful markets we know today. As PUC Chairman Gladys's Brown said recently in a December 2016 press release commemorating the 20th Anniversary of the act, "For two decades, Pennsylvania has stood on the national forefront of electric competition, putting the power of choice in the hands of consumers and giving them greater control of their electric bills…As a result of this historic legislation, millions of electricity

customers have made choices and saved money, purchased renewable products and explored innovative new offers and plans."

During this transition, policy makers made many difficult decisions. One of these difficult decisions involved the cost of transition and the adjudication of stranded cost claims, and although $11.6 billion was a very big price for the consumer to pay, the state's policy makers thought it was a wise investment to bring the consumer the benefits of competitive generation markets and retail electric choice.

As we look back today, twenty years later, we must conclude that the results of a free and fair market-driven structure have delivered indisputable benefits to the consumer and the Pennsylvania economy. According to an October 28, 2016 study issued by the University of Pennsylvania Kleinman Energy Center, prior to restructuring, Pennsylvania's retail electricity prices were 15 percent higher than the national average, and as of 2015, they were slightly below the national average. Distribution costs have increased to offset the decrease in generation costs caused by lower wholesale prices which keeps Pennsylvania rates from being well below the national average. It is also important to note, that according to the 2016 State of the Market Report, published by the PJM Market Monitor, "The load-weighted average real-time LMP was 19.2 percent lower in 2016 than in 2015, $29.23 per MWh versus $36.16 per MWh. PJM real-time load weighted energy market prices were lower in 2016 than at any time in PJM history since the beginning of the competitive wholesale market on April 1, 1999. Energy prices were lower as a direct result of lower fuel prices and the resultant increased role of gas as the marginal fuel."

While consumers are now reaping the benefits of restructured electricity markets, we see challenges on the horizon that could threaten the foundation of competitive markets. Due to various policy goals and pressure from incumbent generators, state policymakers have been increasing their efforts to impact the generation makeup in their respective states by offering subsidies to certain preferred types of generation resources. While these policy goals may be well intended, they nevertheless are having a significant, negative impact on the wholesale electricity markets, competitive retail markets, and ultimately the cost the consumer has to

bear. If these out-of-market efforts continue, they will threaten the continued viability of competitive wholesale electricity markets.

On a related note, much is being said about our country's changing generation mix and the loss of diversity in the supply portfolio, but the facts do not support this narrative. In fact, the changes wrought by competitive markets have actually contributed to supply diversity. In PJM, for example, competition has resulted in the supply portfolio becoming *more diverse*, not less. According to PJM Market Monitor's 2016 State of the Market Report, the fuel diversity of generation, measured by the Fuel Diversity Index for Energy ("FDIe"), increased 0.9 percent over the 2015 FDIe. In 2016, coal units constituted 33.9 percent of the supply portfolio, nuclear units 34.4 percent, and natural gas 26.5 percent. As a result of competitive markets, PJM's generation mix has become more diverse.

In summary, there are two points I would like to leave you with: First, the bulk power electric system in Pennsylvania and more broadly in PJM—while undergoing a transition—is in great shape from a reliability stand point. PJM is well equipped to manage the transition. Cheap Marcellus and Utica shale gas and its associated expanding infrastructure is poised to play a much larger role than before – not only in power generation but more broadly in the state economy through various industrial efforts. Second, the power market is working well – as evidenced by the billions of dollars of new investment occurring here in the Commonwealth. It is incenting new investment – and in the case of older, less efficient generation, it is sending the appropriate retirement signals. It is clear that competition yields the best results – that relying on entrepreneurialism and the free market creates more value than central planning or government picking winners and losers. Regulatory or governmental interference in functioning markets does not lead to better outcomes – we must continue to rely on the free market to efficiently allocate resources and to benefit the consumers in the Commonwealth.

Thank you again for the opportunity to testify on these important issues.