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BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
Chairman
JIM IRVIN
Commissioner
MARC SPITZER
Commissioner

IN THE MATTER OF THE GENERIC PROCEEDINGS CONCERNING ELECTRIC RESTRUCTURING	DOCKET NO. E-00000A-02-0051
IN THE MATTER OF ARIZONA PUBLIC SERVICE COMPANY'S REQUEST FOR VARIANCE OF CERTAIN REQUIREMENTS OF A.A.C. 4-14-2-1606	DOCKET NO. E-01345A-01-0822
IN THE MATTER OF THE GENERIC PROCEEDINGS CONCERNING THE ARIZONA INDEPENDENT SCHEDULING ADMINISTRATOR	DOCKET NO. E-00000A-01-0630
IN THE MATTER OF TUCSON ELECTRIC COMPANY'S APPLICATION FOR A VARIANCE OF CERTAIN ELECTRIC POWER COMPETITION RULES COMPLIANCE DATES	DOCKET NO. E-01933A-98-0471
ISSUES IN THE MATTER OF TUCSON ELECTRIC POWER COMPANY'S APPLICATION FOR A VARIANCE OF CERTAIN ELECTRIC COMPETITION RULES COMPLIANCE DATES	DOCKET NO. E-01933A-02-0069

DIRECT TESTIMONY OF WILLIAM HALL

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is William F. Hall III. I am Senior Vice President Corporate Energy Policy for Duke Energy Corporation. My business address is 526 S. Church St., Charlotte, NC, 28202.

Q. PLEASE STATE YOUR EDUCATIONAL HISTORY.

A. I am a graduate of the University of Virginia with a Bachelor of Science in Mechanical Engineering. I am a registered professional engineer.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.

A. I am senior vice president of energy policy and strategy for Duke Energy. I am involved in developing corporate positions on key national and regional energy policy issues. Prior to my current assignment I was vice president of asset management for Duke Energy North America (DENA), responsible for Duke's generating assets in the west region (WSCC). I have been employed with Duke for 27 years.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. I am testifying for the Arizona Competitive Power Alliance, of which Duke is a member.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I discuss what I believe to have been the causes of the electricity situation faced by California in 2000-2001, and whether Arizona is at risk for similar price volatility and supply shortages after Arizona Public Service Company ("APS") begins procuring 100% of its Standard Offer Service requirements from the competitive wholesale market, beginning in 2003. In addition, I discuss the commitment of independent power producers to system reliability and examine the performance of generation units

purchased and leased from Pacific Gas & Electric Company ("PG&E") and San Diego Gas and Electric Company by DENA in 1998 and 1999.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. I believe that the California energy situation was caused by an imbalance of supply and demand, flawed market design and unusually high temperatures in the west. I believe these conditions are unlikely to occur simultaneously in Arizona, so there is little reason to believe that Arizona ratepayers will be exposed to the circumstances that prevailed in California in 2000 and 2001. Finally, I conclude that independent power producers have great incentive to maintain system reliability, and, if Duke's experience is any guide, operate generation facilities with greater reliability than vertically integrated utilities.

III. THE CALIFORNIA EXPERIENCE WAS THE RESULT OF ISOLATED FACTORS, AND IS NOT LIKELY TO RECUR IN ARIZONA.

Q. APS CLAIMS ON PAGE 2 OF ITS VARIANCE REQUEST THAT THE "WILD PRICE VARIABILITY" SEEN IN THE WEST, PARTICULARLY CALIFORNIA, DEMONSTRATES THAT APS'S RATEPAYERS WILL SUFFER IF APS IS REQUIRED TO PROCURE ITS STANDARD OFFER SERVICE REQUIREMENTS FROM THE COMPETITIVE MARKET. DO YOU AGREE?

A. No, I do not, for the reasons explained below.

Q. WHAT ARE VIEWED AS THE CAUSES OF THIS PRICE VOLATILITY IN CALIFORNIA?

A. A number of entities have examined the events that occurred in California. One of the most comprehensive, and least biased, assessments was produced by the Federal Energy Regulatory Commission ("FERC") Staff in a report issued November 1, 2000. FERC Staff observed that "hot weather, coupled with continued demand increases without corresponding increases in power production capability" combined to lead to tight

supply and demand conditions throughout the West. Staff Report to the Federal Energy Regulatory Commission on Western Markets and the Causes of the Summer 2000 Price Abnormalities ("Staff Report") at 2-1. From 1996 to 1999, California's peak load increased by 5,522 MW, but only 672 MW of new generation was added in the same period. Thus, California increasingly relied on power imports, rather than new generation.

Q. WAS CALIFORNIA ABLE TO RELY HEAVILY ON IMPORTS?

A. Yes, at least in the short term. As long as weather conditions provided significant water flows in the Pacific Northwest, sufficient power was available for export to California. California's power imports increased from 30,814,000 MWh in 1990 to 51,125,000 MWh in 1998, an increase of 66%. California's internal generation, however, declined from 208,350,000 MWh to 205,246,000 MWh over the same period. This approach could only be successful so long as weather conditions allowed sufficient exports to California. When weather conditions changed (i.e. water flows decreased), an imbalance of supply and demand and rising prices were inevitable, as California had constructed no new generation.

Q. WHAT HAPPENED IN THE SUMMER OF 2000?

A. Areas throughout the West experienced significant economic and population growth throughout the 1990s economic expansion. California's population grew by 13.6% (about the national average of 13.1%), but other Western regions experienced even greater growth. The 2000 Census showed that the fastest-growing state in the country was Nevada, with population growth exceeding 66%. This growth significantly reduced power available for export to California.

In addition, as FERC Staff observed, hydroelectric output was less than normal, due in part to the fact that spring run-off was the lowest in several years. Outside

California, June 2000 generation from hydropower was 23.2 percent below June 1999 levels.

In addition, California's reserve margins were slowly being eroded during periods of high demand In 2000, California reserve margins fell to 17.5 percent for June, 10.2 percent for July and 8.98 percent for August. As FERC Staff noted, "spot prices spike when reserve margins fall below the 15 to 20 percent range."

Coupled with an unseasonably warm summer in 2000, there simply was not enough available power to export to California to make up for supply shortages.

Q. WERE THERE OTHER CAUSES OF PRICE VOLATILITY IN CALIFORNIA?

A. Yes. The California regulatory environment limited the ability of California utilities to hedge market risk. In addition, generators relying on natural gas for fuel faced increasing natural gas prices.

Q. HOW DID CALIFORNIA'S REGULATORY AND INSTITUTIONAL ENVIRONMENT CONTRIBUTE TO PRICE VOLATILITY?

A. California utilities were required to rely on the spot market. At one time, the three California utilities were required to purchase their power through the California Power Exchange, with strict limits on the ability to enter into forward contracts to mitigate market risk. The limits on forward contracts were eased in August 2000, but the utilities did not extensively use the rights they did have to enter into forward contracts.

Furthermore, as FERC Staff noted, customers had little information regarding the actual cost of power, especially in those areas of the state where price freezes remained in place. Without accurate price signals, customers did not know to reduce demand during high-price periods. In such a situation, during periods of tight supply, price increases could be expected.

Q. WHAT WAS THE RESULT OF ALL OF THE FACTORS YOU HAVE DISCUSSED?

The end result was that there was an imbalance of supply and demand in California in 2000. As is always the case when demand exceeds supply, prices increased. Because there were regulatory restrictions on hedging against the risk of increased prices, the utilities were exposed to the volatility seen in the spot markets.

Q. WILL RELIANCE ON THE WHOLESALE MARKET IN ARIZONA CAUSE THE SAME DISLOCATIONS SEEN IN CALIFORNIA IN 2000?

A. No. Arizona is very different from California, in a number of ways. Arizona generators have added, and continue to add, significant new generation facilities to the Arizona power portfolio. Competitive power suppliers have put into commercial operation, are constructing, or have announced more than 20,000 MW of new generation. APS's generation affiliate, Pinnacle West Energy Corporation, has built new combined-cycle facilities at Redhawk and West Phoenix. The new generation scheduled to come on line in 2003 in Arizona exceeds the generation placed on line in California in the last decade.

Furthermore, Arizona, unlike California, does not require utilities to rely solely on the spot energy market. APS is permitted to enter into long-term supply contracts. The proposed PPA with APS's affiliate, while certainly an egregious example of a non-competitive contract with above-market prices, demonstrates that APS is not required to rely on the volatility of the spot markets.

Arizona also does not rely on energy imports the way California does. Arizona utilities rely on in-state, fossil-fueled generation, and thus will not be as adversely affected by dry weather conditions that reduce hydroelectric output.

Finally, Arizona should not face the volatile natural gas prices seen in California. Gas prices overall have dropped from the highs seen in 2000. In addition, the natural gas delivery infrastructure in Arizona is superior to that of California. New pipelines are being constructed, and several entities are exploring gas storage in suitable

locations. While gas prices are subject to some volatility, I would not expect the price swings in Arizona to be nearly what they were in California, and customers should be able to hedge price fluctuation with long-term fuel contracts.

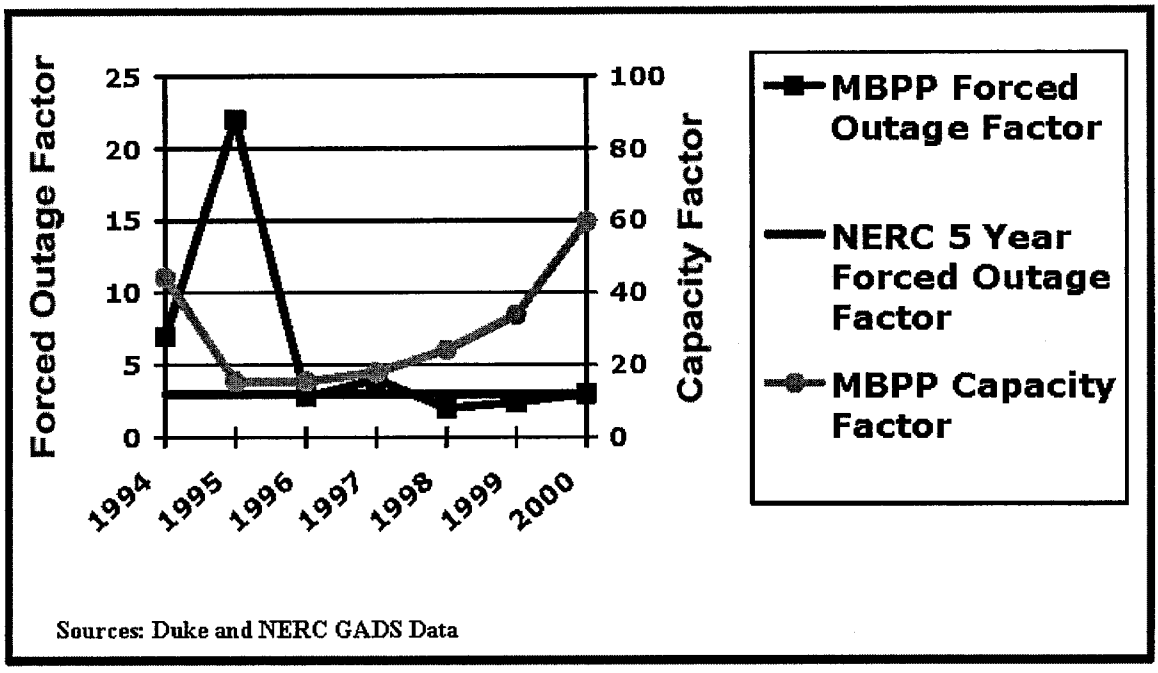
IV. RELIABILITY OF INDEPENDENT POWER PRODUCERS

Q. APS CLAIMS THAT COMPETITIVE SUPPLIERS DO NOT HAVE A COMMITMENT TO MAINTAINING APS SYSTEM RELIABILITY. DO YOU AGREE?

A. No, for the simple reason that competitive suppliers must contribute toward transmission system reliability in order to continue selling their plant's output. If the transmission system or a generation facility goes down, the generator has no way to deliver power to load, and may be forced to rely on the more expensive spot market to fulfill its responsibilities under a contract (or contracts). Duke hedges the output of its facilities in forward energy markets. For example, 85% of Duke's total nationwide output for 2002 is committed in forward contracts. This gives Duke great incentive to keep its generators running, in order to fulfill its obligations under the forward contracts. I expect that other competitive suppliers have similar incentives to reliably operate their plants.

Q. SOME PARTIES HAVE ARGUED THAT GENERATORS PURPOSELY WITHHELD ENERGY FROM THE CALIFORNIA MARKET TO DRIVE UP PRICES. DID THAT HAPPEN?

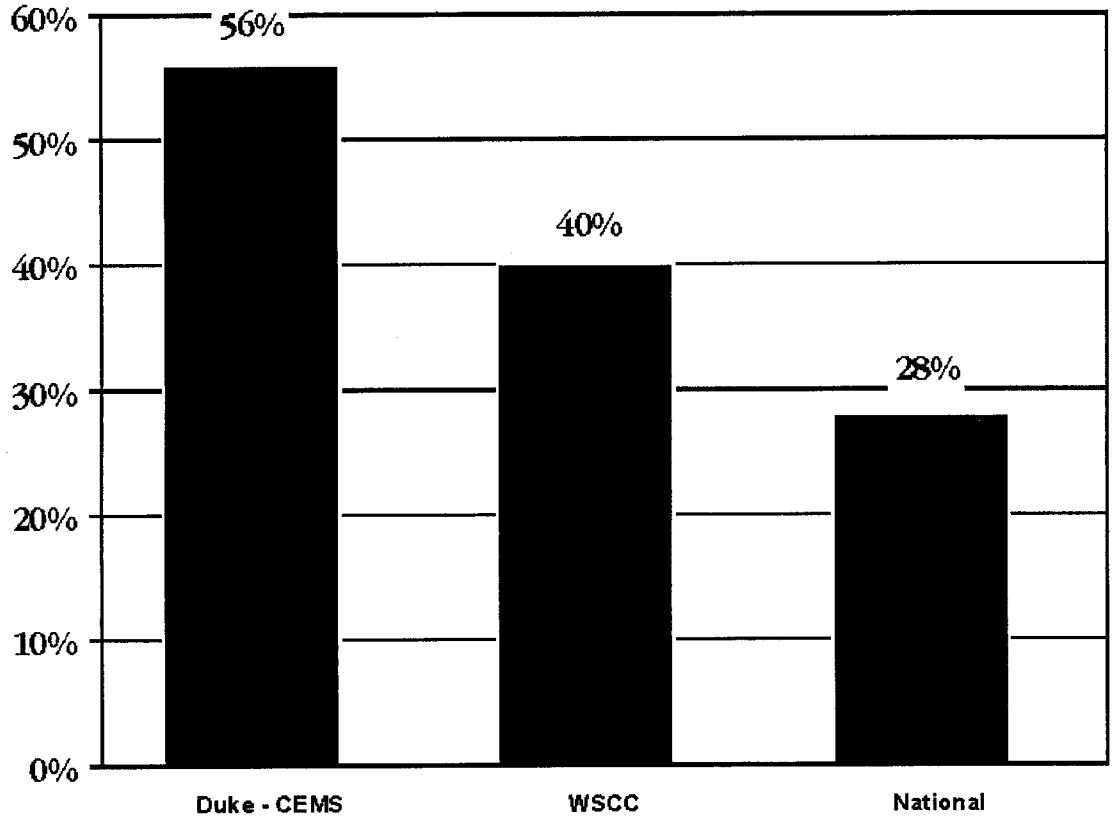
A. Certainly not as far as Duke is aware. Duke took over operations of three generation facilities in 1998 (Morro Bay, Moss Landing, and Oakland) and of a facility in South Bay in 1999. In each case, Duke operated the facilities at a higher capacity factor and with greater availability than did the previous utility owner of the plants. The following graph, dealing with Morro Bay, is illustrative:



Even though Morro Bay was a fifty year old facility, Duke was able to steadily increase the plant's capacity factor, while reducing the plant's forced outage factor.

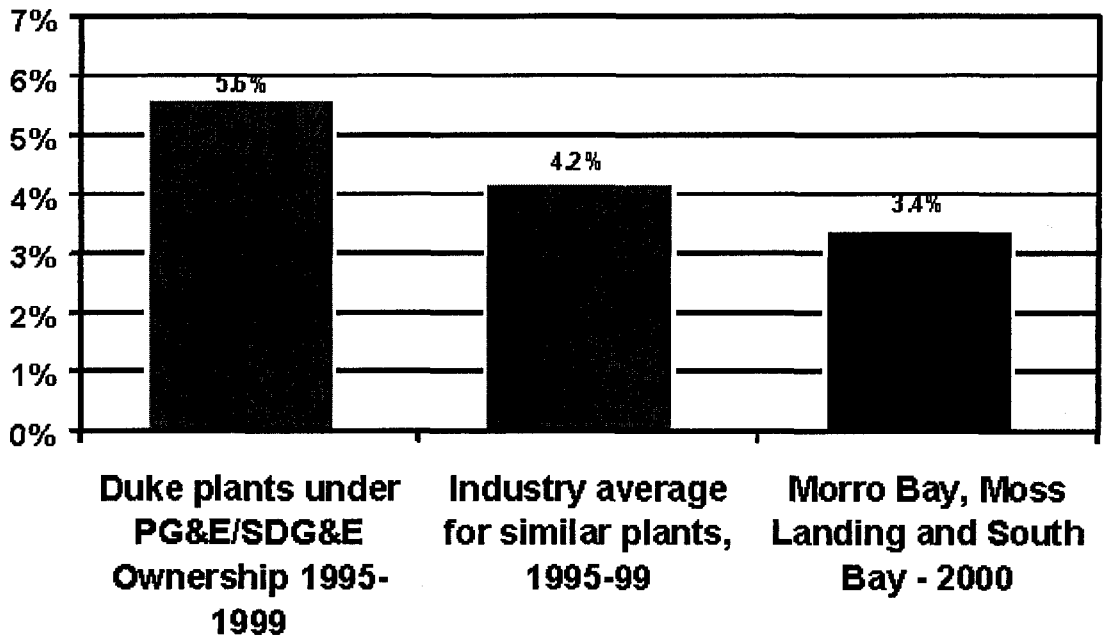
In addition, the Duke plants overall had a higher capacity factor and lower forced outage factor than the regional average, as shown in the following charts:

Comparison of Duke Capacity Factor with Regional and National Averages



Source: CEMS Data and NERC GADS Data for gas-fired thermal plants

Comparison of Duke Outages With Industry Averages



Sources: Duke and NERC GADS Data

I do not believe Duke's experience is atypical of other competitive suppliers – clearly competitive suppliers and non-utility generators have an incentive to reliably operate their plants and deliver power to customers.

Q. PLEASE DISCUSS THE RELIABILITY OF COMBINED-CYCLE GENERATION FACILITIES.

A. Combined-cycle facilities are state of the art, and should operate more efficiently than other, more "conventional" technologies. Greater efficiency produces two immediate benefits. First, more efficient plants cost less to operate, so they are able to sell power to customers at lower prices. Second, more efficient facilities have lower emissions, reducing the environmental costs eventually incurred by generation facilities. Under the proposed PPA, all of these environmental costs will be passed through to the ratepayer,

so use of efficient technologies provides clear benefit to the ratepayers. Eventually, I would expect competitive forces to drive many "conventional" units from the market, to be replaced by more efficient technology.

Q. APS ALSO CLAIMS THAT ONLY ITS AFFILIATE PPA OFFERS ITS STANDARD OFFER SERVICE CUSTOMERS THE NECESSARY FUEL AND GEOGRAPHIC DIVERSITY TO ENSURE THE LIGHTS STAY ON. DO YOU AGREE?

A. Diversity of supply alternatives can be a noble goal. It is, however, no reason to foreclose wholesale competition. I am certain that, through a combination of competitive bid solicitation and bilateral contract negotiation, APS can assemble a diverse portfolio with a mix of fuel sources and an appropriate combination of baseload and peaking units. It may be that some of these facilities will be APS's own units – if the competitive bid process were fair, APS's affiliates could submit bids for each of the APS units. Other power would come from competitive suppliers.

Q. WILL SUFFICIENT GAS SUPPLIES BE AVAILABLE TO FUEL ALL OF THE GAS-FIRED FACILITIES BEING CONSTRUCTED IN ARIZONA?

A. Yes. As I discussed earlier, the natural gas shortage and resulting price volatility were the result of California market forces. The natural gas infrastructure elsewhere in the West is more robust than that in California, so customers should be better able to move gas supplies to the generation facilities. Any price volatility can be mitigated in large part by long-term fuel contracts. In sum, I believe that competitive suppliers will be able to provide Arizonans with efficient, reliable and competitively-priced generation to serve APS's Standard Offer Service requirements.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes.