



Electric Power Supply Association  
Advocating the **power** of competition

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## EPSA DETAILS FATAL FLAWS IN APPA NUCLEAR REPORT

### *APPA's Own Data Undercuts Its Incorrect Conclusion that Electric Restructuring and Competition Did Not Improve Power Plant Performance*

In May 2007, the American Power Public Association (APPA) released a paper titled, "Nuclear Plant Performance: What does restructuring have to do with it?" The paper attempted to show that competitive market forces are not responsible for the substantial improvement in the operation of nuclear power plants in restructured states. EPSA replied with a press release on May 29, 2007, ["EPSA Rebukes APPA Report on Nuclear Power and Competition."](#)

The APPA report asked a good question, although one already answered in the affirmative by numerous comprehensive studies (see EPSA PowerFact, ["Facts Show Competition Improves Plant Performance,"](#) dated May 29, 2007, summarizing just some of them). The public and policymakers deserve to know the correct answer. This is important at a time when the nation must urgently focus on how best to meet future electricity requirements in an environmentally responsible manner. The operating improvements at nuclear and coal-fired power plants due to competition have put more power on the grid from existing sources, a significant consumer benefit.

Unfortunately, through incorrect data, incomplete designation of which power plants operated in restructured markets, and manipulation of the data by excluding the most improved plants, the APPA paper erroneously concluded that nuclear power plant performance did not improve as a result of restructuring. The APPA approach would be akin to saying that the league leading hitter in baseball really isn't the leader, a result achieved only by artificially altering the batting average when some of the player's games are thrown out – statistically true, but proving nothing other than the lack of analytical integrity.

The APPA's approach of looking at plant performance by reliability region is not the proper way to determine if plants were subject to restructuring's benefits since many reliability regions contain both states that restructured and states that did not. However, what is most illuminating is that even with that flaw, the very data in the APPA paper clearly shows better performance in reliability regions with more restructured states than those with fewer.

Attached is a detailed EPSA analysis that outlines the debilitating deficiencies in the APPA paper.

## **EPSA FORCEFULLY REBUTS APPA PAPER ON “NUCLEAR POWER PLANT PERFORMANCE: WHAT DOES RESTRUCTURING HAVE TO DO WITH IT?”<sup>1</sup>**

### ***Correct Analysis Using APPA Charts and EIA Data Prove Restructuring and Related Competitive Developments Had A Great Deal to Do With Improved Nuclear Power Plant Performance***

**June 2007**

APPA asked the right overarching question in its May 2007 paper as restated above, but came to the wrong conclusion. In fact, even with its many flaws, the data in the APPA paper confirm what EPSA and others (see EPSA PowerFact dated May 29, 2007) have argued for years: the impacts of electric industry restructuring, wholesale competition and nuclear operator industry consolidation caused nuclear power plant performance to improve to the benefit of consumers. This is important because the higher capacity factors resulting from restructuring and competition provided consumers with needed electricity without building additional power plants.

#### **Summary: APPA Paper Has Fatal Methodological and Factual Flaws**

The APPA paper has fatal methodological flaws and factual errors that resulted in the paper incorrectly concluding that restructuring did not have anything to do with improved nuclear power plant performance.

- The paper bases its conclusions on an APPA analysis of nuclear power plant performance data as reported by NERC region. As is widely known, NERC regions are not created on the basis of restructuring or non-restructuring in the states comprising each region. In other words, grouping power plants by reliability region does not correspond to organized markets operated by RTOs and ISOs or to the status of restructuring and regulatory systems in individual states. The comprehensive studies cited by EPSA in the PowerFact dated May 29, 2007, among others, and EPSA’s own analysis of the data (see below) actually group the power plants studied by what the analysis is trying to capture – the relationship between restructuring and plant performance. If the plants are not examined on the basis of whether they were subject to restructuring or not, the analysis cannot correctly answer the question. (Even with this flaw, the chart on page one of the APPA paper undercuts the paper’s conclusions – see below.)
- In addition, the APPA paper openly and brazenly disregards data from plants that do not support the preconceived conclusion that the paper was written to reach. In order to “prove” that most regions of the country achieved relatively high and stable capacity factors regardless of restructuring, the paper on its face admitted that it simply removed from its calculations the plants that did not show stability.

As a result, every “finding” on page 3 and the top of page 4 is contaminated as the fruit of data manipulation. Specific examples are outlined in this rebuttal.

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<sup>1</sup> This paper was prepared by EPSA President & CEO John E. Shelk with assistance from EPSA staff and from EPSA members who are among the nation’s leading nuclear power plant operators, including the plants in question.

- The APPA paper purports to show that most plants that moved from a rate-regulated regime to a restructured market-driven system showed plant performance improvement 2-3 years before that change in status. The paper, however, contains factual errors in specifying the year when the change in status occurred. This is true for 7 of the 12 plants the APPA paper cited. When the correct year is used, it is clear that the plant's improved performance was coincident with, and not a predecessor to, restructuring that introduced competitive incentives and market discipline. Examples are outlined below.

### **Even With Flaws, APPA Data Shows Plant Performance Linked to Restructuring**

While the chart on page 1 of the APPA paper – “Average Capacity Factors for Nuclear Plants” – is grouped by NERC reliability region and not by the nature of the regulatory structure under which the plants operated, it is appropriate to draw general conclusions about the relative restructuring in a given NERC region based on the states within the region. When viewed in this light, and without the subsequent “cherry picking” and exclusion of plants that didn't fit what APPA wanted to conclude, the unvarnished data is consistent with EPSA's assertions and those of others that restructuring resulted in improved nuclear power plant performance.

The chart on page 1 contains nine NERC regions. Based on state restructuring, regional wholesale markets, and other indicia of competition, five of the nine regions had the benefit of competitive market forces: NPCC, MAAC, MAIN, ECAR and ERCOT. The average capacity factors between 1995 and 2005 as shown in the APPA paper – the time period during which restructuring and competition occurred – increased: NPCC went up from 62.3 percent to 92.5 percent; MAAC went up from 74.1 percent to 93.2 percent; MAIN went up from 72.2 percent to 89.8 percent; ECAR went up from 78.1 percent to 91.0 percent; and ERCOT went from 87.1 percent to 91.9 percent.

By sharp contrast, one honestly seeking to answer the question posed should look at the data as presented in the APPA paper for the remaining four reliability regions where there was much less in the way of restructuring and competition, if any. The relatively minor to modest differences between 1995 and 2005 are as follows: FRCC actually went down slightly from 84.6 percent to 84.1 percent; MRO went from 83.9 percent to 86.8 percent; SERC went up from 82.5 percent to 90.9 percent; and WECC went from 79.5 percent to 85.4 percent. While nuclear plants also improved in these regions, the improvement was not as great as in the five NERC regions where restructuring occurred. In addition, the APPA paper ignored the widely held view that measures taken by competitive nuclear power plant operators due to restructuring became industry “best practices” that were employed by utilities in non-restructured areas, which accounts for much if not most of the improvements in the non-restructured areas in the latter half of the decade covered by the APPA data.

### **Examples of the APPA Paper's Fatal Flaws and Factual Errors**

Given that the data in APPA's own paper shows the causal correlation between electric industry restructuring and improved nuclear power plant performance, the question becomes how did the paper reach the opposite and wrong conclusion? The answer is in factual errors, data exclusion, and torturing of the remaining data.

- First, APPA erred in establishing the time period in which certain plants “transferred from regulated to non-regulated affiliates.” The paper’s table on page 6 identifies as 2001 the year in which Dresden, Quad Cities, Byron, Braidwood, LaSalle, Limerick, and Peach Bottom made that transfer. That is incorrect. While 2001 was the first full year of the operation of Exelon, the owner and operator of these plants and the newly merged company into which each of those plants moved, 2001 was not the year that the plants began to operate in a competitive, restructured environment. The correct years were at least two years prior to 2001. The use of the incorrect date led to the incorrect conclusion in the APPA paper that, “in most cases, the plant’s capacity factor showed improvement before it was transferred.” When accurate dates are used to compare plant performance before and after restructuring, it is clear that plant performance improvement occurred primarily because of more competition.
- Second, to support its claim that “for most plants, the sale to a non-regulated entity did not significantly affect capacity factors,” the APPA paper looked only at single year capacity factors for single unit plants. This flaw entirely disregarded the impact of biennial refueling outages – which explains how APPA reached erroneous conclusions for Vermont Yankee, Pilgrim, and Fitzpatrick. APPA’s general focus on single year performance disregards the importance of sustained performance year-over-year. EPSC’s review of the data contained in the table on page 4 of the APPA study examined year-over-year performance – the 5 years before sale and the three to five years after transfer to a competitive market to examine more reliable trends. Using this correct approach, it is clear that plants sold to a competitive supplier experienced an average improvement in performance of 18.7%, compared to average industry improvement of only 13% (using capacity factor data published by the Energy Information Administration).
- Third, the APPA paper simply took out and ignored data from plants that did not fit the mold, thus creating an artificial self-selected subset of power plants to “prove” its conclusion. There are numerous examples on page 3 of the paper:
  - “..... Recalculating regional averages without these few plants shows that the remaining plants in the region achieved relatively high and stable capacity factors..... Thus it does not appear the switch to deregulated wholesale markets resulted in significantly improved capacity factors...” *APPA removed from the calculation the plants that would disprove its hypothesis.*
  - “In MAAC .... **if** Salem is removed (Note: a large 2 unit station).... Average capacity factor remains relatively stable.” (emphasis added) *APPA removed from the calculation the plant that would disprove its hypothesis.*
  - “In the NPCC region ... removing these two plants (Note: Millstone – 3 units, and Indian Point 2 – a large single unit) results in a relatively steady capacity factor.” *APPA removed from the calculation the plants comprising four full units that would disprove its hypothesis.*

- “In the MAIN region...if the Clinton, LaSalle and Zion plants were removed, average capacity factor improves.” (emphasis added) (Note: these three plants constitute 5 units.) *APPA removed from the calculation the three plants that would disprove its hypothesis.*

### **EPSA: Correct Data and Proper Analysis Confirm the Benefits of Competition and Restructuring in Yielding Improved Nuclear Power Plant Performance**

In a comparison of nuclear plants grouped as operating in organized markets (PJM, MISO, NEPOOL, NYISO, ERCOT and California) compared to plants not in such markets, the clear advantage goes to those in organized markets. Average capacity factors for plants in organized markets increased from about 70 percent in 1995 to 92 percent in 2006. By contrast, other nuclear plants averaged 75 percent in 1995 and were 88 percent in 2006. In sum, as plants were operated in organized markets their performance improved at nearly twice the rate as others and achieved a higher overall capacity factor.

When grouped by state regulatory structure (grouping together plants where generation was separated from other functions and cost-based rate of return was eliminated), the answer is the same. From 2000 to 2006, nuclear plants operating in rate-regulated cost-of-service states maintained a relatively flat capacity factor – basically 88 percent in each year. By contrast, nuclear plants in restructured states improved from an average of 83 percent in 2000 to nearly 91 percent in 2006. The same is true for other measures of safety and operational excellence. For example, World Association of Nuclear Operators data show faster performance improvement and better absolute performance levels at plants in restructured states. The reason is clear – economic incentives and competitive pressures have proven to be successful motivators.

### **Conclusion**

The May 2007 APPA paper asked a good question – although one asked and answered in the affirmative long ago. However, for all the reasons outlined in this rebuttal, the paper came to the wrong answer. More fundamentally, the APPA paper, as with much of its “Electric Market Reform Initiative,” did not address what policy response they seek from issuing reports seeking to undermine electricity competition just as it is needed most to address looming infrastructure investment needs across the country.