

CORE METRICS

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PREPARED STATEMENT BY FRANKLIN NEUBAUER
NEW JERSEY ENERGY MASTER PLAN HEARING – AUGUST 2015

I am Franklin Neubauer, Principal at Core Metrics. I have eleven years' experience in energy efficiency planning, energy modeling and demand analysis. I contributed to regional power plans, and analyzed utility plans to identify problems. I will address key issues in energy efficiency planning and forecasting, and estimate the economic impact of failing to pursue more energy efficiency. I will have handouts later with footnotes and references.

New Jersey has not had clear, long-term, energy efficiency goals since 2011. The Administration blurred a distinction that analysts make between savings from energy efficiency (EE) programs, and lower power system loads due to other causes. It was after the recession. The 2011 master plan said, "The State's energy use goal remains the same as the 2008 EMP, but the 2020 target now represents a smaller percentage reduction relative to the most recent PJM forecast."¹ The Administration pointed to declining PJM forecasts, but it failed to look at PJM's data, or it deliberately misled the public about the aggressiveness of the energy savings goal. 2011 data revealed a major drop in the electric load forecast (12,734 GWH), implying New Jersey would cut its target for energy program savings by the same amount. That would effectively cut future energy efficiency programs by 85%.² I explained this consequence of PJM's forecast in EMP comments on August 25, 2011.³ To be certain the BPU understood those comments, on September 1, 2011, I had a long, follow up phone call with Mary Beth Brenner of the BPU staff.

¹ See page 30 of the final 2011 EMP. Original goals were set in 2008 to be achieved in 2020.

² Based on PJM data, what the Administration called aggressive energy efficiency in the EMP would have cut program savings to roughly 15% of the energy savings goal set in 2008. As it happens, a March 2011 graph from Rutgers Center for Energy, Economic & Environmental Policy (CEEPP) illustrates this point.

³ Those comments on the draft 2011 EMP are attached.

But the Administration never corrected its claim, sticking to its story that we would have aggressive energy savings⁴, and it never reported my official comments, which it was obligated to disclose.

Since 2011, I learned PJM's net energy forecast is unsuitable for New Jersey's direct use. It gives an incomplete view of the state. It only includes energy supplied over PJM's grid, and excludes the following: rooftop solar, CHP, other distributed generation, backup generators, "behind-the meter generation", and generation which power plants consume on-site. Trends in these types of generation, in addition to the recession, all contributed to a decline in PJM's energy forecasts from 2008 to 2015.⁵ But that generation I just categorized still occurs in New Jersey, it just bypasses PJM's grid. The resulting load forecast should not be tied to an energy savings goal.

Just to clarify a point, when the 2011 EMP referred to a load forecast, that could only mean PJM's forecast. PJM's was the only up-to-date, power sector forecast shown in the plan⁶.

I cannot tell how far New Jersey's misinterpretation of PJM's forecast extends. I am concerned about renewable energy targets being set based on PJM data and concerned with the possibility that New Jersey is relying on use of PJM data to demonstrate compliance with other laws.⁷

Whatever load forecast New Jersey uses in the future, a goal linked to the forecast would bounce around so much that it could not be used to plan programs. In short, there is no sensible way to calculate an energy savings goal based on the 2011 EMP. However, the 2011 plan mentions this goal and the Energy Master Plan statute requires goals. A specific energy savings goal of 15,000 GWH was the top priority in 2008. Going back to an achievable and truly

⁴ The claim of aggressive energy efficiency appears on pages 30, 110, 111, 116 and 120 of the final 2011 EMP.

⁵ See PJM's Load Forecasting and Analysis Manual and PJM Load Forecasts. My interpretation is based on econometric modeling, and was confirmed in an August 5, 2015 discussion with John Reynolds, Chair of PJM's Load Analysis Subcommittee.

⁶ See Figure 11 and Figure 10 in the final 2011 EMP. I am not addressing peak load issues at this time, though I discussed the graph of peak load goals in attached comments from August 25, 2011.

⁷ E.g., the Global Warming Response Act

aggressive target would be consistent with planning practices elsewhere in the U.S. However, to be effective in New Jersey, that needs to be combined with annual milestones and funding that cannot be diverted.

Besides changes in the 2011 EMP, other developments have led to New Jersey's decline from its former status as a leader in energy efficiency. Major clean energy investments in response to global warming are more urgent than ever, but New Jersey continues to overlook energy efficiency, which is the lowest cost resource, in favor of natural gas.

In 2008, New Jersey commissioned an energy efficiency strategy from national experts⁸ which offered many new ways to save energy cost-effectively – in other words, at a fraction of the cost of new gas generation. Unfortunately, their 2009 report sat on a shelf. Not only were the experts' recommendations ignored, but existing funding was raided or eliminated – wasting billions of dollars in benefits that would have come to New Jersey. Based on the 2009 study by Northeast Energy Efficiency Partnerships for New Jersey's BPU, I estimate the value of direct benefits that New Jersey missed by not pursuing aggressive EE (during 2010-2015) at \$11.5 billion. Those benefits are attributable to lower utility bills lasting over many years. That is \$11.5 billion in net benefits (\$19.1 billion in lower energy costs minus investments of \$7.6 billion), measured in 2015 dollars. That estimate excludes benefits from job creation, the stimulus effect on NJ's economy, and public health benefits.

In addition, the BPU and state agencies have lost experienced people (Commissioner Fox and others) and expert consultants who knew about energy planning nationally and internationally. The efficiency experts whose work New Jersey ignored are now busy helping other states.

In the final 2011 EMP, the Administration should have provided clear, specific goals, and corrected its misleading use of the load forecast. I documented those issues and followed up with BPU staff to assure the Administration understood prior to the final EMP. Besides my own comments from August 2011, official comments from outside energy efficiency experts were

⁸ See references for Northeast Energy Efficiency Partnerships (NEEP) and Sue Coakley of NEEP.

not published in the EMP records.⁹ That includes letters from the American Council for an Energy Efficient Economy (August 10, 2011) and Northeast Energy Efficiency Partnerships (August 25, 2011). If you were not a specialist in power planning in 2011, or did not learn about it from specialists, there was no way to put the energy efficiency part of the plan into context. The EMP's claims about the aggressiveness of energy efficiency and a hugely exaggerated graph¹⁰ in the EMP report were key information that people relied on.

Thank you. I want to respond to related questions.

References

- Coakley, S. (2009). An Energy Efficiency Strategy for New Jersey: Achieving the Energy Master Plan Goals. Slide presentation to the NJ BPU on April 16, 2009. Available at www.njcleanenergy.com/files/file/Library/O41609%20PresntatnNeep.ppt and elsewhere.
- New Jersey Energy Master Plan (2008). www.state.nj.us/emp/docs/pdf/081022_emp.pdf.
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- PJM Resource Adequacy Planning Department (August 2015). Load Forecasting and Analysis Manual, Revision 28. www.pjm.com/~media/documents/manuals/m19.ashx
- PJM Resource Adequacy Planning Department (2011 - 2015). Load Forecasts. Reports are at www.pjm.com/documents/reports.aspx.

⁹ Based on all assembled comments posted on the EMP website in 2011.

¹⁰ Figure 11 in the final 2011 EMP makes an “apples and oranges” comparison showing energy savings more than 8 times bigger than the numbers indicate. This comparison is explained in attached comments submitted on August 25, 2011.

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August 25, 2011

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Energy Master Plan
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RE: Corrections needed to the Draft EMP

Dear Commissioners and Staff:

This is a supplement to my prepared statement of July 26. The supplement covers misleading graphics used to communicate energy efficiency goals, and a dubious claim the EMP makes about the relationship between New Jersey's economic growth and electric rates.

As described in my July 26 statement, the draft lacks sufficient information for readers to understand changes to energy efficiency goals from 2008. Consequently, readers are left to rely on graphic displays (Figures 11 and 10), which plot the wrong data and convey that the plan's impacts are much greater than numbers based on the plan's text. In Figure 11, impacts appear more than 8 times as big as numbers derived from the text explanation. Impacts also look exaggerated in Figure 10, but not as much (around 35-40% too big).

I'll address Figure 11 first. In this graph which is used to convey the energy savings goal, 2 sets of lines need to be shown: the EMP goal and load forecasts under all the same assumptions as the EMP but without the actions proposed in the EMP. PJM's forecasts don't belong on this graph because they make different assumptions than those used in EMP analysis. The correct forecasts that belong on this graph are the 2008 Business As Usual forecast (2008 BAU) and the updated version of BAU from 2010-2011 (which I believe CEEEP called the 2010 Baseline). Please verify the forecast assumptions with Rutgers' CEEEP. Readers will look at the gap between forecasts and goals and attribute it to your plan, so what readers think from seeing Figure 11 is that the 2011 plan saves about 20,000 GWH in 2020. That's entirely wrong.

How many GWH does the plan save in 2020? I tried answering this question based on the corresponding text, which is wrong. It says:

“The State's energy use goal remains the same as the 2008 EMP, but the 2020 target now represents a smaller percentage reduction relative to the most recent PJM forecast. Notwithstanding the

reduction in PJM's load forecasts, New Jersey's energy and peak demand reduction targets remain aggressive."

After downloading PJM's load forecasts for 2008 and 2011 from PJM's website, I added up New Jersey's energy use for 2020. Between 2008 and 2011, PJM's load forecast fell 12,734 GWH. Since energy use in 2020 remains the same as the 2008 EMP, that 12,734 GWH drop significantly reduces savings due to energy efficiency. You may recall that the 2008 electric energy savings goal measured 15,000 GWH. The result is that the electric energy savings goal implied by this explanation is only

$$15,000 \text{ GWH} - 12,734 \text{ GWH} = 2,266 \text{ GWH}$$

That is anything but aggressive; it's only 15% of the previous 15,000 GWH goal. But Figure 11 makes the impact appear more than 8 times bigger.

Figure 10 is used to convey the peak demand reduction goal. As the text explains, the 2008 peak reduction goal was 5,700 MW, which is correctly portrayed on the graph based on the vertical distance between the two triangles labeled 2008. Figure 10 should include two triangles for 2011 but one of the triangles is missing. The vertical distance between the 2011 PJM forecast and the 2011 triangle representing the target suggests the plan's impact is about 5000 MW, which is comparable to 2008's goal, but the 2011 goal is only 3,634 MW. Again, the graphic display of data exaggerates impacts that are based on the numbers.

Finally, the draft EMP makes an assertion about economic growth that is almost certainly untrue. Twice it claims the following (or a variation of this): "For New Jersey's economy to grow, electricity costs must be comparable to costs throughout the region, and ideally to the U.S. as a whole." I am highly skeptical about a correlation between electric rates or energy prices and state economic growth. There are counterexamples, such as Connecticut, California and West Virginia. The draft EMP's assertion seems to be an attempt to generalize from the local level to the state level, making invalid assumptions. Economic growth sometimes occurs under rising energy costs that promote new technology and adaptation. I understand that lower rates are a priority for the Governor, but this should not be presented in the guise of economic growth. Administration priorities must not be hidden behind bogus claims about the economy. I am due to receive economic research on this issue using the latest GDP data should the Administration persist in making this highly dubious claim.

Yours truly,
Franklin Neubauer
Principal