

D&L Realty Company	:	A-2009-2088340
Kenneth Powell and Linda Powell	:	A-2009-2088359
Rudolph Saporito and Maria Saporito	:	A-2009-2088312
David Murphy	:	A-2009-2088360

SURREBUTTAL TESTIMONY

ROBERT M. FAGAN

On Behalf of the Pennsylvania

Office of Consumer Advocate

August 24, 2009

1 **Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.**

2 A. My name is Robert M. Fagan. I am a Senior Associate at Synapse Energy Economics,
3 Inc., 22 Pearl Street, Cambridge, Massachusetts, 02139.

4 **Q. ARE YOU THE SAME MR. FAGAN THAT SUBMITTED DIRECT TESTIMONY**
5 **IN THIS PROCEEDING?**

6 A. Yes.

7 **Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?**

8 A. I address the rebuttal testimonies of Messrs. Herling, Krall, and Tranen.

9 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

10 A. I address the rebuttal testimonies of Mr. Herling, Mr. Krall, and Mr. Tranen. In
11 particular, I focus on issues of demand-side resource uncertainty, energy efficiency
12 potential, generation capacity retirement assessment and the PJM Reliability Pricing
13 Model (“RPM”), the New Jersey Energy Master Plan (“EMP”), the nature of my
14 recommendation for PJM to conduct a “retool” analysis, and renewable resources in PJM.

15 **Q. MR. HERLING AND MR. TRANEN BOTH STATE A CONCERN THAT**
16 **INCREASED ENERGY EFFICIENCY AND DEMAND RESPONSE COULD**
17 **LEAD TO INCREASED GENERATION RETIREMENT, ARISING FROM**
18 **REDUCED PROFITABILITY FOR SOME GENERATORS THAT MIGHT RUN**
19 **LESS OFTEN. MR. TRANEN EXTENDS THIS CONCERN TO EFFECTS ON**
20 **THE PJM GENERATION INTERCONNECTION QUEUE.¹ PLEASE**
21 **COMMENT ON THESE CONCERNS.**

¹ Herling Rebuttal, 12:11 - 14:2. Tranen Rebuttal, 13: 10-14.

1 A. Both of these stated concerns are surprising. PJM has, in numerous reports, publications,
2 and press releases, touted the success of its Reliability Pricing Model's (RPM) construct
3 in actually preventing retirement of generation required for reliability reasons, and in
4 incenting the construction of generation and demand-side resources needed for reliability
5 reasons. Furthermore, Mr. Herling discusses the fact that some generators might receive
6 lower revenues from the energy market if energy efficiency successfully reduces energy
7 consumption. Yet, he does not explain that the RPM market, or capacity market, is
8 designed in large part to provide a supplemental revenue stream for generators that are
9 not expected to run frequently and thus generally do not derive the bulk of their revenue
10 from the energy market, but rather from the RPM or capacity market. And, PJM can pay
11 generators to prevent their retirement if they are needed for reliability reasons.

12 **Q. DOES PJM PRESENT EVIDENCE IN ITS REPORTS TO SHOW THAT**
13 **GENERATION IN PJM HAS BEEN RETAINED RATHER THAN RETIRED?**

14 A. Yes. PJM's report on the results of its most recent Base Residual RPM auction shows
15 that PJM clearly sees the RPM structure as contributing to the retention of generation
16 capacity that would otherwise have retired. The following excerpt is from that report:

17 *Table 6* shows the changes that have occurred regarding resource deactivation and
18 retirement since the RPM was approved by FERC. The MW values illustrated in
19 *Table 6* represent the quantity of unforced capacity cleared in 2012/2013 Base
20 Residual Auction that came from resources that have either withdrawn their
21 request to deactivate, postponed retirement, or been reactivated (i.e., came out of
22 retirement or mothball state for the RPM auctions) since the RPM Settlement.
23 This total accounts for 3,276.8 MW of cleared UCAP [unforced capacity, or
24 capacity net of assumed outage rates] in the 2012/2013 BRA which equates to
25 3,825.6 MW of ICAP [installed capacity, or the actual maximum capacity
26 available from the unit when online] Offered.
27
28

Table 6 – Changes to Generation Retirement Decisions Since RPM Approval

Generation Resource Decision Changes	RTO*	
	ICAP Offered	UCAP Cleared
Withdrawn Deactivation Requests	2121.1	1798.7
Postponed or Cancelled Retirement	1523.5	1302.9
Reactivation	181.0	175.2
Total	3825.6	3276.8

Values Represent Offered ICAP and Cleared UCAP in the 2012/2013 BRA

* RTO numbers include all LDAs

Note: Not all survey data has been returned by participants. Values represent latest totals.

Excerpt Source: PJM, 2012/2013 RPM Base Residual Auction Results, pages 19-20, available at [http://www.pjm.com/markets-and-operations/rpm/~media/markets-ops/rpm/rpm-auction-info/2012-13-base-residual-auction-report-document-pdf.ashx](http://www.pjm.com/markets-and-operations/rpm/~/media/markets-ops/rpm/rpm-auction-info/2012-13-base-residual-auction-report-document-pdf.ashx).

Q. MR. HERLING ALSO INDICATES THAT OLDER, SMALL COAL UNITS IN THE EASTERN MID-ATLANTIC AREA ARE AT RISK FOR RETIREMENT.² PLEASE COMMENT.

A. Mr. Herling states that “if energy use is significantly reduced, it will be very difficult to justify the investment required to operationally maintain these resources.”³ As with his more general comment that units receiving less revenue in the energy market are at risk of retirement, the presence of the RPM market design by PJM is intended to cover revenue needs even when these units operate less frequently. Also, the PJM Market Monitor, Monitoring Analytics, expects that such units would be replaced by cleaner, gas-fired units. As noted in the recently released “2009 Quarterly State of the Market Report for PJM: January through June”:

Planned Generation. • If current trends continue, it is expected that older steam units in the east will be replaced by units burning natural gas and the result has potentially significant implications for future congestion, the role of firm and interruptible gas supply and natural gas supply infrastructure.

² Herling Rebuttal, 13: 10-15.

³ Id.

1 Source: Monitoring Analytics, “2009 Quarterly State of the Market Report for PJM”,
2 Section 3, Energy Market Part 2, August 14, 2009, page 42. Available at
3 http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2009.shtml.
4

5 **Q. DOES PJM OFFER OTHER EVIDENCE IN SUPPORT OF ITS RPM MARKET?**

6 A. Yes. PJM released a report by the Brattle Group in 2007 that included an assessment that
7 the RPM construct had resulted in considerable increases in generation capacity in the
8 PJM region. That report indicated the importance of the RPM in retaining capacity that
9 might otherwise have retired:

10 “While we have a number of concerns and recommendations for possible
11 improvement of various RPM design parameters, which we present in
12 Sections IV and V of this report, we find that the five base residual auctions
13 conducted to date have been quite successful in achieving the stated reliability
14 and economic objectives of RPM. These auctions have attracted and retained
15 about 14,500 MW of resources that likely would not have been made
16 available to PJM otherwise, including new capacity of various types, uprates
17 and other investments in existing capacity, a reduction in net exports, and
18 unprecedented growth in demand response. As a result, target reserve margins
19 have been achieved even as load has grown. Reliability requirements within
20 LDAs also have been achieved through a combination of capacity retentions,
21 new resources, and planned transmission upgrades. RPM has stimulated an
22 unprecedented amount of potential new resources, which include
23 approximately 33,000 MW of effective capacity from new generation projects
24 in PJM’s interconnection queue that have not already been committed through
25 past auctions, but are eligible to offer into future RPM auctions.¹¹ The vast
26 majority of these proposed generation projects did not exist before 2006, the
27 year during which RPM was approved and finalized.”

28
29 Source: Review of PJM’s Reliability Pricing Model (RPM), June 30, 2008. Page 13.

30
31 While there are legitimate questions regarding the cost-effectiveness of the RPM
32 mechanism for procurement or retention of capacity, there is little dispute that PJM has
33 viewed it as effective in helping to ensure reliability through capacity retention, new
34 capacity construction, and significant demand-side resource commitment.

1 **Q. MR. KRALL AND MR. HERLING BOTH ASSERT THAT THE NEW JERSEY**
2 **ENERGY MASTER PLAN RECOGNIZES THE NEED FOR THE SR500 LINE.⁴**
3 **IS THIS CORRECT?**

4 A. No. The NJ EMP does not state that the proposed SR500 line is needed, nor that it is a
5 critical part of New Jersey’s plan. In fact, the New Jersey EMP makes the opposite point.
6 The modeling conducted by New Jersey included the line not because New Jersey made
7 an independent determination that the line was needed, but because they utilized PJM’s
8 RTEP document. The New Jersey EMP is not an exercise in transmission planning.
9 New Jersey conducted production cost modeling (not load flow modeling, which is what
10 PJM undertakes for reliability assessment) in part to determine the locational energy
11 prices that would arise from their plan. They also wanted to take into account planned
12 transmission facilities. That in no way indicates either that the SR500 line is a “critical”
13 part of their plan, or that New Jersey “recognizes the need for the line.”

14 **Q. DOES NEW JERSEY’S EMP FAVOR PREDOMINATELY COAL-FIRED**
15 **IMPORTS FROM WESTERN PJM?**

16 A. No. In fact, the body of the NJ EMP states the following, indicating that New Jersey’s
17 preference is *not* to import more electricity from predominately coal-fired resources.
18 Rather its preference is to rely on in-state supply and demand reduction:

19 **“Help to shape PJM’s planning of the electric transmission system to better**
20 **protect New Jersey’s economy and the environment.** PJM has determined that
21 the reliability of our supply of electricity will be jeopardized over the next several
22 years, unless steps are taken to address the state’s energy demand and supply.
23 Since PJM is responsible for planning and operating the transmission grid
24 reliably, it is in the process of directing upgrades to the grid that will enable New

⁴ Herling Rebuttal, 15: 22-23, “The Susquehanna-Roseland line apparently is a critical part of the New Jersey Plan”; Krall Rebuttal, 12: 8-9, “Clearly, the New Jersey EMP recognizes the need for the line even with significant levels of energy efficiency and demand response.”

1 Jersey to import more electricity. These imports will come primarily from coal
2 production regions where coal-based electric generation is prevalent. *In other*
3 *words, our efforts to cut greenhouse gas emissions within New Jersey’s borders*
4 *will be undermined if the shortage of electricity supply is solved by importing*
5 *more coal-based electricity.*
6

7 The prospect of increased greenhouse gas emissions is only one reason to avoid
8 increasing our reliance on imports of coal-based electricity. Just as importantly,
9 hopes that these imports would bring us greater reliability and lower prices are
10 likely to be dashed. The prospect of federal limits on power plant emissions of
11 greenhouse gases is creating major uncertainty about what coal-based power will
12 cost. In addition, demand for coal is increasing, as coal is becoming more difficult
13 and expensive to mine and transport, and recent history has featured disruptions in
14 coal supply and spikes in coal prices. *All of these factors suggest that it would be*
15 *irresponsible to stake our energy future on increased imports of coal-based*
16 *electricity.*
17

18 New Jersey will continue to work closely with PJM, *to ensure that the*
19 *transmission planning will reflect real State actions to increase in-state supply*
20 *and reduce demand, and that transmission planning does not undermine the*
21 *State’s economic and environmental goals.”*
22

23 Source: New Jersey Energy Master Plan, pages 93-94 (italicized emphasis added).
24

25 **Q. WHAT ARE NEW JERSEY’S “EFFORTS TO CUT GREENHOUSE GASES”?**

26 A. New Jersey passed a “Global Warming Response Act” in 2007 that details targets for
27 reducing greenhouse gas emissions. In December of 2008, New Jersey released a draft
28 “Global Warming Response Act Recommendation Report.” This information is available
29 at <http://www.state.nj.us/globalwarming>.

30 **Q. WHAT ARE NEW JERSEY’S GLOBAL WARMING RESPONSE ACT**
31 **GREENHOUSE GAS REDUCTION TARGETS?**

32 A. The statute, enacted in 2006, mandates that the state:

33 “...limit the level of Statewide greenhouse gas emissions, *and greenhouse gas*
34 *emissions from electricity generated outside the State but consumed in the*
35 *State, to the 1990 level or below, of those emissions by the year 2020, and to*
36 *reduce those emissions to 80% below the 2006 level by the year 2050.”*⁵
37 (italicized emphasis added).

⁵ Global Warming Response Act (GWRA) (P.L. 2007, c.112), signed by Governor Corzine on July 6, 2007.

1 **Q. MR. KRALL OFFERS THE OPINION THAT IT IS NOT APPROPRIATE TO**
2 **INCLUDE THE EFFECT OF PA ACT 129 ENERGY CONSERVATION AND**
3 **DEMAND REDUCTION IN TRANSMISSION LINE PLANNING UNTIL IT IS**
4 **MORE CERTAIN THAT THEY WILL ACTUALLY REDUCE DEMAND**
5 **DURING PEAK DEMAND PERIODS.⁶ PLEASE COMMENT.**

6 A. All planning includes assessment of uncertainties. To completely ignore even a fraction
7 of the PA Act 129 peak demand reduction standards is not appropriate planning. Mr.
8 Krall offers no evidence on why PPL fully discounts the statutory requirement now in
9 place on PA utilities. Notably, not achieving the standards for energy conservation and
10 demand reduction will lead to penalties of between \$1 and \$20 million on these PA
11 utilities.

12 **Q. MR. KRALL CITES THE AGGRESSIVENESS OF THE PA ACT 129**
13 **STANDARDS WHEN DISCUSSING THE RISKS AND UNCERTAINTIES OF PA**
14 **UTILITIES MEETING STATUTORY REQUIREMENTS FOR ENERGY**
15 **EFFICIENCY SAVINGS.⁷ PLEASE COMENT ON THE NATURE OF THE**
16 **ENERGY EFFICIENCY STANDARDS WITH RESPECT TO WHAT OTHER**
17 **STATES ARE PLANNING TO ACHIEVE, OR HAVE ACHIEVED.**

18 A. A recent report by the American Council for an Energy Efficient Economy (“ACEEE”)⁸
19 identified the fourteen leading states in electric utility sector energy efficiency
20 performance. Those states achieved, in 2006, incremental annual energy efficiency
21 savings that ranged from 0.1% to 1.9% of state kWh sales (each year, the “incremental

⁶ Krall Rebuttal, 4: 15-18.

⁷ Krall Rebuttal, 7: 1-6.

⁸ ACEEE, “Meeting Aggressive New State Goals for Utility-sector Energy Efficiency,” pages 16-20.

1 annual” savings continue to accumulate, so that over time the cumulative savings from a
2 benchmark year continues to rise). The top four states achieved 0.7% (CA), 0.8% (MA),
3 1.0% (CT), and 1.9% (VT) in incremental, annual reductions. Pennsylvania’s standard is
4 for a cumulative 3% gain by 2013, or on the order of a 1% incremental annual gain
5 depending on exactly when the benchmark period begins.

6 Future plans by these states and the other ten leading states indicate incremental
7 annual savings goals on the order of 1.0% to 1.5% of annual retail kWh sales. The
8 detailed “Energy Efficiency Resource Standard” requirement is listed in the report and
9 includes different timeframes, targets and specific requirements, but generally PA’s
10 standard is not extraordinary in comparison to these states. Rather, the PA standard is on
11 par with these states.

12 **Q. WHAT IS THE POTENTIAL FOR ENERGY EFFICIENCY AND DEMAND**
13 **RESPONSE TO REDUCE SUMMER PEAK DEMAND IN PENNSYLVANIA?**

14 A. A recent ACEEE report on energy efficiency and demand response savings in
15 Pennsylvania indicates that energy efficiency and demand response has the potential to
16 reduce peak demand by 35% of the 2025 forecast levels.⁹

17 **Q. MR. KRALL COMMENTS ON THE FACTORS THAT WILL HELP SHAPE**
18 **THE “ULTIMATE IMPACT” OF THE ENERGY EFFICIENCY AND**
19 **CONSERVATION PLANS IN PENNSYLVANIA.¹⁰ PLEASE COMMENT.**

20 A. Mr. Krall identifies a host of factors, including customer willingness to implement energy
21 efficiency measures, the state of the economy, and the limited time to develop program

⁹ ACEEE et al., Report # E093, “Potential for Energy Efficiency, Demand Response and Onsite Solar in Pennsylvania,” April 2009. Executive Summary pages iv- vi.

¹⁰ Krall Rebuttal, 9: 1-7.

1 infrastructure when discussing the elements he believes are important for energy
2 efficiency program success. However, Mr. Krall makes no mention of the role that the
3 utilities themselves can play to help ensure program success. As has been demonstrated
4 by utility-sector energy efficiency in the leading states in the country, the program design
5 and implementation roles executed by utilities themselves can be critical. If the
6 Pennsylvania Electric Distribution Companies (EDCs) do not set out to help ensure the
7 success of such programs by investing in required resources, then a large part of the
8 responsibility of any shortfall towards the targeted savings can reasonably be placed with
9 the utilities themselves.

10 **Q. MR. KRALL AND MR. HERLING BOTH REFERENCE THE CURRENT PJM**
11 **GENERATION INTERCONNECTION QUEUE OF 86,000 MW OF POTENTIAL**
12 **RESOURCES, AND THE FACT THAT 44,000 MW OF THAT QUEUE ARE**
13 **WIND RESOURCES.¹¹ PLEASE COMMENT.**

14 A. First, both Mr. Krall and Mr. Herling say that state-based alternative energy obligations
15 require delivery of such resources to the state.¹² This is incorrect. Renewable supply
16 obligations do not require delivery to the state; renewable supply regulations in New
17 Jersey and Pennsylvania¹³ generally require delivery to the PJM region, not specifically

¹¹ Krall Rebuttal, 15: 7-19. Herling Rebuttal, 16: 7-15.

¹² Krall Rebuttal, 15: 16-19. Herling Rebuttal, 16: 11-15.

¹³ New Jersey: New Jersey Renewable Portfolio Standards, New Jersey Administrative Code, Title 14. Public Utilities, Chapter 8. Renewable Energy And Energy Efficiency, Subchapter 1. Renewable Energy General Provisions And Definitions, N.J.A.C. 14:8-1.1 Et Seq. (2009), § 14:8-2.7 Requirements that apply to both class I and class II renewable energy: (a) To qualify as class I or class II renewable energy for the purposes of this subchapter, energy shall meet the requirements in N.J.A.C. 14:8-2.5 and 2.6, and in addition shall meet the requirements of this section. (b) To qualify as class I or class II renewable energy for the purposes of this subchapter, energy shall be generated within or delivered into the PJM region, as defined in N.J.A.C. 14:4-1.2. Energy shall be considered delivered into the PJM region if it complies with the energy delivery rules established by PJM Interconnection. Pennsylvania: The Alternative Energy Portfolio Standards Act of 2004, 73 P.S. §§ 1648.1 – 1648.8. “Energy derived only from alternative energy sources inside the geographical boundaries of this Commonwealth or within

1 to eastern PJM. Neither Pennsylvania nor New Jersey alternative energy supply
2 regulations mandate “deliverability” to the state. Pennsylvania and New Jersey could
3 contract for the all of their requirements for renewables for the foreseeable future by
4 purchasing renewable energy credits (“RECs”) associated with wind projects in Illinois
5 alone (which make up over 11,000 MW of the 44,000 MW of wind). None of those
6 projects would need to secure transmission deliverability to Pennsylvania and New Jersey
7 in order for the states to meet their targets.

8 Second, both Mr. Krall and Mr. Herling either state directly or imply that
9 backbone projects such as Susquehanna-Roseland are required to bring on renewable
10 energy supply to meet renewable standard requirements. The statements are overly broad
11 and wholly unsupported, as there are many potential scenarios where renewable supply
12 obligations can be met without necessarily having to build a new backbone transmission
13 project such as SR500, and it is only the SR500 line that we are even examining in this
14 case, not other proposed backbone projects. For example, significant amounts of the
15 44,000 MW of wind in PJM’s generation interconnection queue are located offshore in
16 New Jersey and Delaware, and such projects, if developed, would not necessarily require
17 SR500 in order to be interconnected and operated; and significant amounts located in
18 western PJM could likely be interconnected without necessarily having to build SR500.
19 A much greater level of analysis than has been conducted by the applicant in this case
20 would be required to determine the type, location and timing of any incremental
21 transmission requirements needed to bring on increasing levels of renewable energy in
22 the region. As other examples, to the extent that some of that renewable energy is

the service territory of any regional transmission organization that manages the transmission system in any part of this Commonwealth shall be eligible to meet the compliance requirements of this act.” Section 1648.4.

1 provided by distributed photovoltaic resources, no new transmission is required. To the
2 extent that some of the renewable energy requirements are met by other renewable
3 distributed generation, no new transmission may be required. To state that the SR500 is
4 needed to meet renewable supply requirements in New Jersey and Pennsylvania without
5 doing the requisite analyses is improper.

6 **Q. MR. HERLING TESTIFIES THAT YOU SUGGEST A “PIECEMEAL”**
7 **APPROACH TO THE RTEP UPDATE, AND THAT YOU RECOMMEND**
8 **CHANGING “INDIVIDUAL ISOLATED ASSUMPTIONS” WHEN**
9 **CONSIDERING THE NEED FOR THE LINE.¹⁴ PLEASE COMMENT.**

10 A. I do not advocate a piecemeal approach. I explicitly recommend a “retool” using PJM
11 protocol, which does not address assumptions piecemeal but rather uses the most up-to-
12 date information available on all relevant assumptions. I focus on demand-side
13 assumptions because the purported year of need for SR500 is 2012, and PJM just
14 completed an RPM auction that resulted in significant 2012 demand-side resources. To
15 the extent that those resources push back the year of need, then PJM should reassess the
16 project – using the retool analysis mechanism – and as appropriate, incorporate updated
17 assumptions relevant to any revised year of need. In particular, this means that if the
18 effect of the RPM auction alone is to shift the year of need from 2012 to 2013 or 2014,
19 then PJM must re-evaluate whether the SR Line is a proportionate response to the need
20 that exists. Accordingly, PJM should also use 2013 or 2014 assumptions for the other
21 critical modeling elements – namely, additional RTEP transmission that is likely to be in
22 place in those years, and an updated assessment as to the mix of generation resources to

¹⁴ Herling Rebuttal, 7:9 and 6: 5-6.

1 use in the model. I think the PA PUC deserves nothing less than the best and most timely
2 information available, especially considering that the Company is requesting to spend
3 approximately \$1.2 billion of the ratepayers' money.

4 **Q. MR. HERLING STATES THAT THE OCA WITNESSES ACCEPT THE RTEP**
5 **AS A REASONABLE TOOL AND PROCESS FOR TRANSMISSION LINE**
6 **PLANNING, AND THAT THE OCA WITNESSES ACCEPT THE RESULTS OF**
7 **THE 2008 RTEP AND MARCH 2009 UPDATE, BASED ON THE ASSUMPTIONS**
8 **USED IN THOSE ANALYSIS.¹⁵ IS THIS A CORRECT CHARACTERIZATION**
9 **OF YOUR TESTIMONY?**

10 A. No. My direct testimony focused on the need for the SR500, and some of the underlying
11 assumptions used by PJM/PPL in assessing that need. My testimony did not attempt to
12 characterize the whole of the RTEP planning process, and did not address numerous
13 analytical aspects of the planning process. My testimony focused on the impact of
14 certain assumptions used by PJM/PPL, and did not include a detailed examination of all
15 other assumptions also utilized by PJM/PPL in the RTEP process. My testimony also did
16 not address other non-SR500-need aspects or the results of either the 2008 RTEP or the
17 March 2009 update to that RTEP.

18 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

19 A. Yes.

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¹⁵ PPL Statement 7-R, Herling Rebuttal, 5: 10-13