

# Wabash Valley Power

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Dr. Bradley K. Borum  
Electricity Division Director  
Indiana Utility Regulatory Commission  
101 W. Washington St., Suite 1500 East  
Indianapolis, IN 46204

Dear Dr. Borum:

In response to the Draft Report of the IURC Regarding Wabash Valley Power's (WVPA) 2013 Integrated Resource Plan, these are our comments.

## Load Forecast Methodology

1. Does the appliance share variable included in the average use per residential customer model capture appliances other than electric air conditioning and heating market share? For example, the appliance market share discussion in section III on page 4 mentions electric water heaters and miscellaneous plug load but nothing more is said. If other appliances were included, what were they, and how were they included in the econometric model?

***Yes. A base index from a statistically adjusted engineering (SAE) model was included in the residential average use model. The base load index captures the general trend associated with increased penetration of plug appliances, lighting, and water heating in the home. The base load index takes into account use associated with the following appliances:***

- ***Water heaters***
- ***Refrigerators***
- ***Separate freezers***
- ***Electric ranges and ovens***
- ***Electric clothes washers and driers***
- ***Dishwashers***
- ***Television sets***
- ***Lighting***
- ***Miscellaneous load***

2. According to the discussion in Section III on page 4, the load forecast “captures the impacts associated with the Energy Independence and Security Act (“EISA”) of 2007, which is a federal mandate for manufacture of more efficient incandescent bulbs beginning in 2012. These effects were modeled using assumptions developed by the EIA for their Annual Energy Outlook 2012.” How was this done?

***The EIA Annual Energy Outlook 2012 report forecasts that “in 2035, delivered energy for lighting per household in the Reference case is 827 kilowatthours per household lower, or 47 percent below the 2010 level.” This assumption was incorporated into the base load index, mentioned above, which was included in the residential average use model.***

3. How are energy efficiency and DR captured in the load forecast?

***Energy efficiency was captured in the load forecast to the extent it impacted historical load data. As mentioned previously, it was also captured in the lighting assumptions used to develop residential average use.***

***WVPA modeled DR as a resource instead of a reduction in load. Appendix D. Resource Expansion Plan shows the impact of DR over the planning term. DR is expected to contribute 36MW in 2014 and grow to 60MW in 2032.***

4. Is the impact of the energy efficiency programs discussed by WVPA in Section II on pages 18-20 considered in the forecast? If yes, how?

***The impact of WVPA’s energy efficiency programs are not specifically captured in the forecast. These particular programs have only been in place since 2012. As we gather more data about the performance of these programs, we will determine the best way to incorporate them into the forecast.***

5. Is the impact of existing DR programs considered in the forecast? If yes, how?

***Please see the response to question 3.***

6. How do the member cooperatives develop their large commercial class forecast? Does WVPA check on the reasonableness of the forecast provided by its members?

***Member cooperatives use historical data as well as knowledge of expansions, new construction, etc. to develop their forecasts. Generally, new large commercial loads are only modeled if they are fixed, known and measurable. WVPA discusses the large commercial load assumptions with each member to check that they are reasonable.***

7. What were the results from the updated 2013 residential appliance saturation study? Were the results comparable to the data used for the 2011 IRP?

***Results of the 2013 residential appliance saturation study were comparable to the 2011 study. The 2013 study showed slight increases in the use of high efficiency appliances and in the use of electric heat pumps as the main source for heating and cooling homes. The 2013 study also showed a greater penetration of LED television sets and light bulbs.***

8. Why was a separate forecast for pass-through customers used in 2013? Did this treatment differ from that in the 2011 IRP and, if so, why? How is the load for each customer forecasted?

***We handled the forecast for pass-through customers the same for both the 2013 and 2011 IRP. Pass-through customer load is non-conforming and best forecasted by working with the member cooperative and individual customer. Pass-through customer load is forecasted separately because WVPA works with each customer to develop a specific customized portfolio to supply their energy and capacity needs.***

9. Did WVPA use one method to prepare a base load forecast and a different method to prepare the Optimistic Economy and Pessimistic Economy forecasts? If yes, why?

***No, the same method was used for all forecasts.***

### Scenario/Risk Analysis

1. A capacity expansion optimization model does not appear to have been used to develop resource plans that were then subject to further analysis.

***WVPA does not license a capacity expansion optimization model. However, we did evaluate various expansion plan alternatives using Ventyx's Midas Gold model. Due to our size, WVPA anticipates meeting material future capacity needs through joint operations arrangements with other regional electric utilities or developers to reduce costs and mitigate risks. We generally evaluate opportunities as they arise and our current process allows us to screen opportunities as they arise.***

2. It is not clear how the Base Resource Plan was developed? It appears that modeler judgment was the primary means, but this is not clear.

***WVPA's base resource plan was developed by modeling multiple plans against our base forecast when capacity shortages existed.***

3. Was a different resource plan developed for each scenario? If yes, why was the information not presented?

***A different plan was developed for the High Economic Growth and Low Economic Growth scenarios. WVPA intends to add supply-side resources as capacity needs require; therefore, market price changes have minimal effect on our need for new resources.***

***This information is presented in Section V.E. Scenario Analysis - Alternate Expansion Plans.***

4. Were only three expansion plans developed – the base case, high economic growth, and low economic growth?

***Only three plans were reported. WVPA modeled multiple, less favorable, plans before determining the preferred plan under each load scenario.***

5. Was the Base Resource Plan the only capacity expansion plan modeled using the nine scenarios?

**Yes.**

6. Why were only a few of the modeling results presented?

***WVPA feels that we have submitted an adequate representation of modeling results. Section V and Appendices D, E and F provide more data about our modeling results than previous IRPs.***

7. WVPA says that it contracts with ACES to provide risk management functions, including stochastic modeling. Why was stochastic modeling mentioned but not used in the development of the IRP? How does WVPA use stochastic modeling? What type of risk management functions is performed by ACES on behalf of WVPA, and how do these functions affect WVPA's long-term resource planning?

***On a monthly basis, ACES provides WVPA with a three year forecast and analysis of the key components of WVPA's portfolio using their stochastic model. This forecast is used to analyze inherent risk in WVPA's portfolio and address ways to mitigate that risk (e.g. hedging strategy).***

***ACES performs risk functions that include, but are not limited to, evaluating available changes to WVPA's portfolio with respect to market exposure, credit exposure and change in member costs.***

***Currently, WVPA does not utilize the ACES stochastic model for long-term resource planning. We feel our existing scenarios provide a suitable assessment of long-term risks.***

8. There is a statement in Section IV on page 10 that is not substantiated with any information presented in Sections IV and V:

***"Even though the majority of our scenarios identified simple-cycle combustion turbines as the best way to meet our short term and intermediate term capacity needs, it was not always the definitive answer to our capacity needs and risk portfolio. In many situations, natural gas fired combined cycle plants resulted in lower costs and risk for our Members. Wabash Valley has decided to use CTs prior to 2027 as the base case for our IRP; however, a small change in assumptions and market conditions would specify combined cycle plants as the preferred resource to meet future needs."***

Despite this statement, WVPA does little to address the flexibility of its plan going forward and no information is given to draw a different conclusion. This statement indicates that WVPA might have performed more and different types of analysis which was not discussed in the report.

***WVPA evaluated multiple expansion plan options using various combinations of CTs and combined cycle (CC) plants. These various options were evaluated against our base load and market price forecast under the following conditions:***

- ***Without excess generation sold into the market***
- ***Without any market interaction (sales or purchases)***
- ***With market interaction***

***We chose these conditions to help gauge the various plans reliance on the forecasted energy market. Without market sales, CTs more often than not proved the better option. With market sales, CCs more often than not proved the better option. WVPA chose CTs as its capacity solution for this IRP based on past market price volatility, but small changes in the energy market result in CCs being the better option for our members.***

### **Energy Efficiency Resources**

1. It is not clear how or even whether the impacts of energy efficiency are captured in the load forecast. Energy efficiency is not mentioned in Section IV of the IRP which covers the selection of resource options. Neither is energy efficiency mentioned in the Base Resource Plan discussed in Section IV, pages 10 and 11. Lastly, the three year plan discussed in Section V, pages 8 and 9 only says "Wabash Valley will continue to coordinate nine residential and six commercial/industrial EE programs."

A reader of the IRP report can only conclude that the effects of energy efficiency in general and the impacts of the WVPA-sponsored EE programs in particular are ignored in the development of the resource plan.

***Please see the response to Load Forecast Methodology question 3 and 4.***

### **DG and Renewable Energy**

1. The section of the IRP titled "Selection of Resource Options" does not discuss distributed generation or renewable energy. Nevertheless, the Base Resource Plan shows 32 MW of planned landfill gas generation being added through 2032.

***Past history demonstrates that WVPA has the ability to add a landfill gas plant approximately every other year. This forecast has been tempered a little (since the IRP was submitted) due to more conservative supply projections. However, WVPA will continue to work with fuel suppliers to supplant other generation options with landfill gas (and other distributed/alternative energy options) whenever they are determined to be the lowest cost option.***

2. The discussion of DG and renewable energy is minimal and provides no insight as to what WVPA thinks of these resource options, or how technological change and falling costs in this area might impact WVPA's resource needs going forward. Beyond landfill gas generation, it appears that WVPA gave no thought or consideration to the possibilities associated with the various DG and renewable resource options and how these possibilities might evolve given a range of potential future circumstances.

***WVPA is actively involved in both distributed generation and alternative energy. As shown in the table below, WVPA's portfolio already contains a significant portion of distributed generation and alternative energy. WVPA will continue to actively participate in this market. We will evaluate all alternative energy options after the technology has proven itself reliable and dependable. The evaluation of alternative energy options includes consideration of any associated renewable energy certificates (RECs). These RECs are either sold to our members or third parties to reduce the cost of supplying power to our membership.***

<i>Supplier</i>	<i>Type</i>	<i>kW</i>
Story Wind	Wind Turbine	21,000
Agriwind	Wind Turbine	8,000
Pioneer Trail Wind Farm	Wind Turbine	10,000
Indiana Wind Project	Wind Turbine	10,000
Waste Management	Landfill Gas	44,000
County Line	Landfill Gas	4,000
Windy Ridge	Digester	1,400
Hendricks Power Solar Project	Solar	20
Total		98,420

3. WVPA did note on page 23 in Section II that the projection of peak demand and energy is adjusted as required to reflect the impact of consumer owned distributed generation, but WVPA fails to explain how it was done.

***If a large customer is expected to add generation that will lower their load requirements, then WVPA would reduce our load forecast for that member cooperative to reflect the displaced load. The amount of peak and energy adjustment depends on the type of generation. If the facility is wind, we would make very little adjustment due to the low output and minimal peak reduction impact of intermittent wind. If, on the other hand, the facility is expected to operate at a high load factor, WVPA would remove the annual energy output and the average kW output of the generator from the load forecast.***

Sincerely,

**WABASH VALLEY POWER ASSOCIATION, INC.**



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