

The Office of Utility Consumer Counselor's Comments Regarding Vectren Integrated Resource Plan

The OUCC recognizes the importance and value of public IRP processes as established by the Indiana Utility Regulatory Commission ("Commission"). Twenty or more years ago, there was little controversy or question about resources in Indiana. Indiana had built large coal generators, taking advantage of local coal resources, with the bulk of those resources coming online in the 1980s or earlier. Unsupervised utility planning led to failed large generation projects in the 1980s, which led to a recognition of the need for oversight and the preparation of formal utility planning documents. The public IRP processes we have now give the Commission, the OUCC and various stakeholder groups a window into the planning process. The public nature of the process itself puts some pressure on utilities to take care in their analysis.

That said, the OUCC wishes to make clear, as it has in the past, that IRPs are utility documents. The selection of a preferred portfolio is not a democratic process arrived at by voting of stakeholders (which itself would probably not be a good approach), rather it is a result shaped by a myriad of choices a utility makes in preparing its analysis and selecting its preferred portfolio. Even in a public IRP process, the selection of input variables, modeling choices and weighting of resource characteristics in the selection of a preferred portfolio all run the risk of arriving at a utility's predetermined plan, rather than a plan that would result purely from the pursuit of the public interest. And public interest is the basis upon which the Commission is ultimately charged with making decisions on utility generation investments.

In spite of those limitations, the preferred portfolio resulting from the IRP process is presented in subsequent Certificate of Public Convenience and Necessity (CPCN) and Purchase Power Agreement (PPA) proceedings with a gloss of public interest, which partly arises from the statutory requirement that CPCN applications be consistent with the most recent IRP (ref: IC 8-1-8.5). Compounding that difficulty is the rise of utility proposals for smaller distributed resources, the number and individual size of which serve to reduce the amount of time and resources that can be justified in each Cause. Thus, OUCC staff must use its available time in these IRP processes to begin developing opinions and concerns about the results of the IRP—the utility's analysis, preferred portfolio and short-term action plans.

Therefore, in the following comments the OUCC begins to stake out some concerns and positions about the analysis and results of Vectren's IRP. Concerns presented here should not be interpreted as criticisms of Vectren's staff, as the OUCC found Vectren's staff to be competent and welcoming of input over the course of its IRP process.

Stakeholder Collaboration

The OUCC appreciates Vectren's stakeholder process throughout its IRP development. Vectren listened and responded to its stakeholders throughout the process by updating various scenarios with specific inputs and modifications, as requested. The OUCC would like to recognize Vectren's use of a request for proposal (RFP) in attempting to improve the pricing data for resource costs in its IRP modeling. The OUCC would also like to recognize the effort to incorporate Midcontinent

Independent System Operator's (MISO) RIIA Initiative in modeling the future capacity accreditation of solar resources.

Load Forecast

The OUCC identified a concern with Vectren's near-term projection of industrial load, as shown on pages 12-14 of the "Long-Term Energy and Demand Forecast." Page 14 of that document shows Vectren projecting industrial sales increases of 8.7% in 2020, 4.4% in 2022 and 8.4% in 2023. These large increases stand in contrast to increases ranging from 0.3% to 0.6% in all other years of the planning horizon. When compounded, those three large increases result in a 23% increase in industrial sales, which would be a highly unusual increase in sales over just a few years.

The OUCC asked for support justifying those modeled increases, and Vectren responded: "Vectren is working to secure manufacturing expansions which are energy intensive. As in previous data responses, Vectren does not share confidential customer-specific information. The increase(s) during this time period is an estimate of multiple projects including customer demand and energy, respectively" (OUCC DR 1-3). The OUCC is not satisfied this response supports a 23% increase in industrial sales. Companies can come to and leave the service territory, with such decisions being dependent on a range of eventualities. Without better justification, the OUCC is concerned Vectren's forecast of industrial sales and related need for capacity are too high. Vectren's response here also illustrates the difficulty of coming to conclusions about a utility's IRP analysis, when the IRP rules of discovery are less certain. In a docketed case, such a claim of confidential information would not serve as a bar to the OUCC obtaining relevant information. Neither should it serve as a barrier in an IRP investigation.

Flexibility and Adequacy of Gas Conversion Option Evaluation

Uncertainties abound regarding the future of the electric utility industry, including but not limited to 1) future potential regulation of carbon dioxide emissions, 2) future Regional Transmission Organization ("RTO") rules pertaining to maintaining system reliability with higher levels of intermittent resources; and 3) potential technological breakthroughs regarding future capital cost for storage resources. When facing such uncertainties, maintaining flexibility is important. This is especially true for a small utility like Vectren South. One aspect of flexibility Vectren addresses in its preferred resource plan is the option to convert its proposed combustion turbines to combined cycle facilities if the future evolves in a manner that makes combined cycle facilities economic. However, a most basic form of flexibility is provided by minimizing capital expenditures and making use of already-owned facilities—specifically, for Vectren, the potential for converting its Brown units to burning gas instead of investing in combustion turbine facilities. The OUCC is concerned Vectren may have stacked the deck against converting the Brown units to fire with gas, which would provide for flexibility through reducing near term capital expenditures.

Vectren did evaluate gas conversion as part of its IRP; however, it appears Vectren used unreasonably high conversion costs. Information provided in discovery indicates Vectren expects the capital cost of the conversion to be over \$500 per kW, whereas costs for Indianapolis Power & Light's (IPL) conversion, which occurred about 3-5 years ago, were in the range of \$150 to \$200 per kW. While there will be some effects of inflation and perhaps higher cost of bringing gas to the plant compared to IPL's situation, the conversion cost Vectren assumed seems suspect.

Further, Vectren assumes ongoing costs of operation and maintenance (O&M) after a gas conversion are even higher than if the plant continued burning gas. This higher O&M cost stands in contrast to FERC Form 1 data for IPL's Harding Street station, which showed O&M cost going down significantly after conversion. While the OUCC accepts that using more reasonable cost assumptions is not the final word on the reasonableness of a gas conversion, the potential for gas conversion needs to be reviewed more closely before any implementation of Vectren's proposed Short-Term Action Plan.

Reliability and Future Changes in MISO Rules

While Vectren modeled costs based on MISO's current and expected reliability-related rules, it should also be recognized that MISO's rules could change in unexpected ways, especially as intermittent resources increase over time. How this kind of uncertainty should be modeled is unclear at this time; however, continued monitoring and review for possible mid-course corrections as generation plans are rolled out should occur. This kind of uncertainty further raises the value of retaining as much flexibility as possible.

Demand Side Management (DSM) Modeling

Vectren assumes LED lighting measures that include obsolete baselines and exaggerated useful lives (EUL). This results in unrealistically low costs and long-lasting DSM bundles, which are selected in the modeling, but will not perform as expected due to the inflated EUL.

According to Section 9.1.1, page 254, Vectren optimized scenarios selected 0.75% of retail sales as Vectren's optimal amount of energy efficiency. Vectren hard-wired additional energy efficiency bundles to achieve 1.25% of its retail sales. In response to a data request (DR 1-12) in Cause No. 45387, Vectren stated that including these hard-wired bundles added an additional cost with a net present value (NPV) of \$4.7 million. Vectren should reduce the amount of DSM to the optimized amount after the LED measures are adjusted and remove all additional hard-wired DSM.

Avoided Capacity Costs

Vectren exaggerated its avoided capacity costs by including the cost of a gas pipeline. Including this cost in DSM programs' benefit/cost analyses is inappropriate for several reasons:

- a. It assumes the avoided capacity is gas-fired and in a certain location;
- b. This cost is not avoided in any real sense – the combustion turbines will be built at full size, (reference Cause No 45387, Public's Ex. No. 1, Direct testimony of John Haselden, Attachment JEH-1, Vectren Response to OUCC DR 2-1); furthermore, no amount of DSM savings will reduce the pipeline mileage between the turbines and the source of supply. Neither the pipeline, nor the turbines, are costs Vectren's DSM savings will "avoid"; and
- c. This is the first time the cost of a gas pipeline has been included as an input to the avoided capacity cost in Indiana. In addition, no such cost is included in Vectren's Cogeneration and Small Power Production (CSP) rate. In other words, Vectren's Case-In-Chief testimony in Cause 45387 includes the pipeline "avoided costs" when calculating what

ratepayers pay to Vectren via DSM, but excludes those identical costs when calculating rates Vectren pays to distributed generation / rate CSP participants.

It appears gas pipeline costs, including firm gas demand charges, are paid by Vectren electric customers. In view of the expectation the combustion turbines will run a small percentage of the time, there will likely be a large benefit to the Vectren gas distribution system. Vectren's gas customers should contribute to this cost since they will benefit.

Avoided Transmission & Distribution (T&D) Capacity Costs

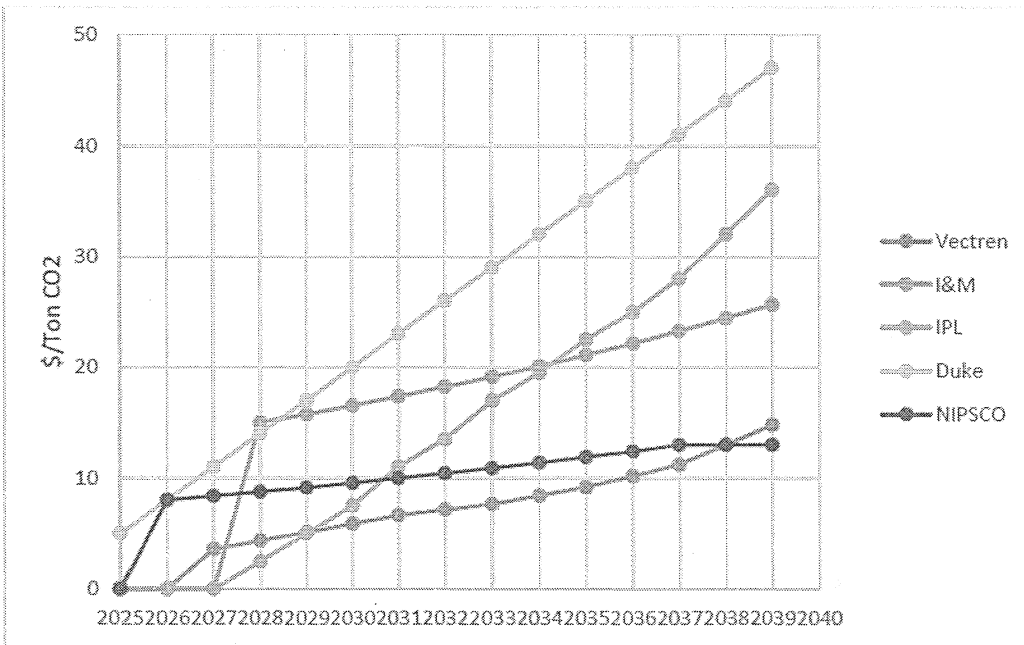
In calculating an avoided T&D avoided capacity cost, Vectren employs a "rule of thumb" of 10% of the avoided generating capacity cost. There is no relationship between reductions in demands on the T&D system and decreased demands caused by DSM activity. Presently, none of Indiana's investor-owned utilities (IOUs) approach this topic in a consistent manner. The avoided T&D costs utilities apply varies significantly and influences the amounts of Energy Efficiency resources selected. The OUCC offers the following method to quantify T&D capacity avoided costs:

- a. Identify distribution circuits requiring capacity improvements;
- b. Exclude projects addressed through Transmission, Distribution, and Storage System Improvement Charges (TDSIC) programs;
- c. Determine which situations are caused by load growth due to new customers (such as new subdivisions, shopping centers or other commercial expansion) and exclude those circuits from the analysis. These are not distribution capacity issues that can be alleviated through DSM;
- d. For the remaining circuits, estimate the portion of the project costs including only those components related to improving capacity. The concept of quantifying only those costs relating to capacity have been applied in other jurisdictions;¹ and
- e. Multiply the percentage of demand reduction based upon DSM compared to the Vectren system load by the annualized cost per kW-year of capacity improvements determined in (d) above.

Carbon Tax

Like all other Indiana IOUs, Vectren uses a carbon tax in its IRP analyses as a proxy for possible carbon legislation. However, there is little consistency among the Indiana IOUs in their attempts to estimate carbon taxes. Start dates, initial values, rates of increase, and end dates vary widely and can consequently play a decisive role in preferred plan selections:

¹ See Avoided Energy Supply Components in New England 2018 Report, pages 203-205 at <https://www.puc.nh.gov/Electric/Monitoring%20and%20Evaluation%20Reports/AESC%202018.pdf>



The OUCC recommends the Commission determine and implement a reasonable and consistent carbon tax used in IRP analyses in Indiana, including consistent beginning and ending dates and pricing.

Environmental Assumptions

It appears Vectren identified and included assumptions for all significant environmental regulations likely to impact Vectren’s existing resources at the time of the IRP Stakeholder process. The OUCC notes the EPA finalized numerous proposals to delay deadlines and relax technology requirements for the Effluent Limitation Guidelines (ELGs) and the Coal Combustion Residuals (CCR) Rule within the past year. Implementation of these regulatory changes will likely depend on the outcome of the 2020 election. However, these regulatory changes are unlikely to impact the 2023 retirement timeframe Vectren has assumed for Brown Units 1 and 2 and Culley Unit 2. The latest date the amendments to the CCR Rule allow for operation of a surface impoundment that either fails a location restriction or shows to be impacting groundwater is October 15, 2023.

Regarding A.B. Brown Units 1 and 2, the OUCC considers Vectren’s assumed compliance costs to be reasonable. Vectren assumed compliance capital costs of approximately [REDACTED] for Brown Units 1 and 2, which would correspond with installing Wet Lime Inhibited Oxidation (WLIO) Flue Gas Desulfurization (FGD) on both units.² WLIO installation would require expanded landfill capacity, as the byproduct from the scrubber would not be marketable.³ WLIO was selected as the least-cost technology for complying with Brown’s Sulfur Dioxide (SO₂) limits. All other technologies were either more expensive in terms of capital, presented much higher O&M costs, or would not meet

²Vectren’s 2019 IRP, Volume 1, pp. 316-317.

³2019 IRP, Volume 2, Attachment 6.6, A.B. Brown Scrubber Assessment and Estimate, p. 6-2.

the permitted SO₂ limits for Brown with the current coal supplied to Brown.⁴ The OUCC notes it is likely too late to begin construction on FGDs that would be compliant with the SO₂ limits by 2023, as the lead time for constructing FGDs is typically three to five years. The assumed capital spend for environmental compliance for the Brown units also includes \$138 million to comply with the ELG provisions for bottom ash transport water and FGD wastewater and approximately \$20 million to comply with the Affordable Clean Energy (ACE) Rule.⁵

While compliance costs for Culley are not as significant as the Brown units, Vectren notes this unit will need to incur approximately \$113 million for compliance with the ELGs, CCR Rule, ACE Rule, and the Clean Water Act (CWA) 316(b) Rule.⁶ Based on discussions with Vectren staff, it appears Vectren has taken a conservative approach to compliance cost inputs for Culley Unit 3. ACE Rule estimated compliance costs assume the unit would be required to implement all six candidate technologies under the rule. The ACE Rule allows state permitting authorities to take cost into account when determining what heat rate improvement (HRI) technologies a source must implement, so it is possible the Indiana Department of Environmental Management (IDEM) may not require all possible HRIs for Culley Unit 3. ACE Rule costs could potentially be less than assumed in the IRP. Additionally, costs assumed for Culley's 316(b) compliance could be less than the \$21 million assumed. The company has requested that IDEM not require additional equipment as part of its Best Technology Available (BTA) determination for Culley's compliance with 316(b). However, for the purposes of the IRP, Vectren assumed standard fine mesh and fish-friendly screens and fish return systems would be required for Culley's water intake. This is similar to the BTA determination for Alcoa's neighboring Warrick facility, which has a similar intake structure and aquatic environment,⁷ so Vectren's assumptions regarding 316(b) costs for Culley are reasonable.

The OUCC is concerned that Vectren is forcing Culley Unit 3 to remain online. The Commission has already approved the ELG/CCR compliance costs in Cause No. 45052 (\$62 million). However, the Commission's approval of these projects should not be interpreted to automatically assume Culley should continue operation. The whole point of the IRP process is to determine the most cost-effective resource plan that is flexible throughout multiple scenarios. If a resource is shown to no longer be economically viable to operate, it is important to discover this through the IRP process, even if the unit is in the process of constructing new pollution controls. There is only one scenario where Culley Unit 3 is retired early, and this does not occur until 2030. Vectren should be considering Culley Unit 3 on a level playing field with all other resources and allow its early retirement if environmental compliance partially or wholly causes it to no longer be economically viable to operate.

Regarding scenario development, Vectren appears to present a variety of scenarios with different environmental compliance futures. Most of the environmental compliance variation rests on

⁴ Vectren's 2019 IRP, Volume 1, pp. 316-317.

See also, Volume 2, Attachment 6.6, A.B. Brown Scrubber Assessment and Estimate.

⁵ 2019 IRP, Volume 1, pp. 208-209

⁶ *Id*

⁷ Alcoa Warrick 2018 NPDES Permit Renewal Fact Sheet, pp. 117-128.

https://www.in.gov/idem/cleanwater/files/permit_notice_alcoa_in0001155_draft_fact_sheet.pdf

various levels of CO₂ regulation.⁸ While future CO₂ regulation of power sources is likely the most unknown environmental compliance variable, the OUCC notes the majority of retirement decisions for coal facilities over the past few years have been the result of tightening water and waste regulations. In many utilities' past IRPs there was a heavy focus on air and climate change regulations for testing the viability of resource options and less of a focus on wastewater and waste regulations. The ELG and CCR Rules have dictated the retirement dates for many coal-fired units over the past five years. CO₂ may not be the best proxy to test the resilience of existing resources, as recently equipment necessary to treat the disposal of wastewater and waste seem to drive the long-term availability of a resource. However, Vectren included a low regulation scenario that somewhat varies the water and wastewater requirements imposed on coal-fired facilities. The low regulation scenario includes an ELG light option, whereby the ELGs are partially repealed with bottom ash conversions not required for smaller units and are delayed for two years.⁹ This is a reasonable option given the recent amendments to the ELGs and CCR Rule, and provides an opportunity to see how these rules influence the economic viability of Vectren's current coal fleet.

Electric Vehicles

The OUCC is concerned with Vectren's electric vehicle forecasts. Vectren is forecasting accelerated vehicle ownership with 255 vehicles in 2019 increasing to 5,648 in 2023.¹⁰ Using Vectren's estimates, this is roughly a 2,214% increase. The OUCC reminds Vectren and other interested stakeholders that electric vehicles are still a very small minority in Indiana. In 2018, Indiana's electric vehicle market share was only 0.82%.¹¹ A statistically significant market share is not predicted until 2040 and, even then, market forecasts vary.¹² One such market forecast, Edison Electric Institute's (EEI) November 2018 "Electric Vehicle Sales Forecast and the Charging Infrastructure Required Through 2030" report shows forecasted total electric vehicles on the road will increase only around 250% from 2019 to 2023.¹³ EEI's forecast differs drastically from Vectren's. Therefore, the OUCC is not confident in the numbers Vectren used to forecast usage in the short-term nor the long term, as Vectren's forecasts continue to accelerate this growth into future years. Additionally, Vectren's overestimated electric vehicle energy consumption artificially increases its sales growth. Specific studies for electric vehicles in Indiana have not been performed. Furthermore, utilities across the state are only beginning to develop and deploy programs and gather data. Without a reliable indicator regarding future market penetration, Vectren should be conservative in its forecasting.

⁸ 2019 IRP, Volume 1, pp. 92-103.

⁹ *Id.*, p. 92.

¹⁰ See Table 4-1 Electric Vehicle Forecast, Vectren 2018/2019 Integrated Resource Plan Volume 2 of 2, PDF page 427 attaching the "2019 Long-Term Electric Energy and Demand Forecast Report", Table 4-1 Electric Vehicle Forecast, page 29.

¹¹ <https://evadoption.com/ev-market-share/ev-market-share-state/>

¹² <https://qz.com/1620614/electric-car-forecasts-are-all-over-the-map/>

¹³ <http://www.ehcar.net/library/rapport/rapport233.pdf>