ORIGINAL

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

VERIFIED PETITION OF SOUTHERN INDIANA GAS AND ELECTRIC COMPANY D/B/A VECTREN ENERGY DELIVERY OF INDIANA, INC. REQUESTING THE INDIANA UTILITY REGULATORY COMMISSION TO APPROVE CERTAIN DEMAND SIDE MANAGEMENT PROGRAMS AND GRANT COMPANY AUTHORITY TO RECOVER COSTS, INCLUDING PROGRAM COSTS, INCENTIVES AND LOST MARGINS, ASSOCIATED WITH THE DEMAND SIDE MANAGEMENT PROGRAMS VIA THE COMPANY'S DEMAND SIDE MANAGEMENT ADJUSTMENT	)	**CAUSE NO. 44927**
		APPROVED: DEC 28 2017

ORDER OF THE COMMISSION

Presiding Officers:
David E. Ziegner, Commissioner
Loraine L. Seyfried, Chief Administrative Law Judge

On April 10, 2017, Southern Indiana Gas & Electric Company d/b/a Vectren Energy Delivery of Indiana, Inc. ("Petitioner" or "Vectren South") filed with the Indiana Utility Regulatory Commission ("Commission") a Verified Petition seeking approval of Vectren South's 2018–2020 Energy Efficiency Plan ("2018–2020 Plan" or "Plan"). Vectren South also filed the direct testimony and exhibits of Rina H. Harris, Richard G. Stevie, Matthew E. Lind, J. Cas Swiz, and Scott E. Albertson.

On April 10, 2017, the Citizens Action Coalition of Indiana, Inc. ("CAC") filed a Petition to Intervene, which was granted on May 2, 2017.

On July 5, 2017, Vectren South filed supplemental testimony of witness Harris and M. Sami Khawaja. On July 18, 2017, Vectren South filed corrections to the direct testimony of witnesses Harris and Swiz.

On July 26, 2017, the Indiana Office of Utility Consumer Counselor ("OUCC") filed the direct testimony of Edward T. Rutter and Crystal L. Thacker. On that same day, CAC filed the direct testimony and exhibits of Anna Sommer, Karl R. Rábago, and Elizabeth A. Stanton. On August 7, 2017, CAC filed corrections to CAC Exhibit 1 and Attachment EAS-2.

On August 16, 2017, Vectren South filed the rebuttal testimony and exhibits of witnesses Harris, Albertson, Stevie, and Lind, K. Chase Kelley, and Gary Vicinus. On August 29, 2017, Vectren South filed corrections to the rebuttal testimony of witnesses Harris and Stevie.

On September 5, 2017, CAC filed corrections to CAC Exhibit No. 3.

An evidentiary hearing was held in this Cause on September 6, 2017, at 9:30 a.m. in Room 222 of the PNC Center, 101 W. Washington Street, Indianapolis, Indiana. At the hearing, Vectren South, the OUCC and CAC appeared by counsel and offered into the record their respective prefiled testimony and exhibits, which were admitted into evidence.

On December 5, 2017, Petitioner filed a Motion for Interim Authority to Continue Offering DSM Programs and Associated Cost Recovery. Because we are issuing this Order prior to the expiration of Petitioner's current DSM authority, Petitioner's Motion is moot.

Based upon the applicable law and the evidence of record, the Commission now finds:

1. **Notice and Jurisdiction.** Proper notice of the evidentiary hearing in this Cause was given as required by law. Vectren South is a public utility within the meaning of Ind. Code § 8-1-2-1 and an electricity supplier under Ind. Code § 8-1-8.5-10. Pursuant to Ind. Code §§ 8-1-2-4, -42, -68, -69, Ind. Code ch. 8-1-8.5 and 170 IAC 4-8, the Commission has jurisdiction over Petitioner's demand side management ("DSM") program offerings and associated cost recovery. Accordingly, the Commission has jurisdiction over Petitioner and the subject matter of this Cause.

2. **Petitioner's Organization and Business.** Petitioner is an operating public utility, incorporated under the laws of the State of Indiana, with its principal office and place of business in the City of Evansville, Indiana. Petitioner has both an electric division and a gas division. Petitioner provides electric utility service to approximately 140,000 customers in six counties in southwestern Indiana. Vectren South renders such electric utility service by means of utility plant, property, equipment, and related facilities owned, leased, operated, managed, and controlled by it that are used and useful for the convenience of the public in the production, treatment, transmission, distribution, and sale of electricity.

3. **Relief Requested.** Vectren South requests Commission approval of its 2018–2020 Plan. The Plan includes proposed energy efficiency ("EE") goals; EE programs to achieve the EE goals; program budgets and costs; and procedures for independent evaluation, measurement, and verification ("EM&V") of programs included in the Plan. The Plan has an estimated cost of $28.6 million, with $9.5 million in 2018, $9.6 million in 2019, and $9.5 million in 2020. The proposed Plan includes a portfolio of programs designed to achieve 111 million kilowatt hours ("kWh") in energy savings and 26 thousand kilowatts ("kW") in demand reduction during the three-year period.

Vectren South requests authority to recover all program costs, including lost revenue and financial incentives via its existing Demand Side Management Adjustment mechanism ("DSMA"). Vectren South requests that all of the components of the DSMA remain in place, unchanged, except Vectren South requests approval to recover lost revenues based upon the weighted average measure life ("WAML") of programs included in the Plan less a 10% saving reduction and annual depreciation and operating expenses associated with the proposed conservation voltage reduction ("CVR") program investment via the DSMA. Vectren South also

proposes approval of a financial incentive mechanism consistent with the methodology approved in Cause No. 44645, which would be applicable to all programs except for the CVR program, the smart thermostat program[1], and the income qualified weatherization ("IQW") program.

Vectren South requests that the Vectren Oversight Board ("Oversight Board") continue to remain in place unchanged during the 2018–2020 Plan period, with authority to (a) roll forward unused funds from year to year; (b) exceed Commission-approved budgets for DSM programs by up to 10% without having to seek additional approval from the Commission; and (c) continue shifting funds from sector to sector, provided gas and electric funds are not commingled.

4. **The 2018–2020 Plan.** Petitioner's Plan includes the following DSM programs, the majority of which are current programs and many of which are integrated with Vectren South's gas programs:

Residential

- Residential Lighting
- Residential Prescriptive
- Residential New Construction
- Home Energy Assessment & Weatherization
- Income Qualified Weatherization
- Food Bank – LED Bulb Distribution
- Energy Efficient Schools
- Residential Behavioral Savings
- Appliance Recycling
- Smart Thermostat
- Conservation Voltage Reduction
- SmartDLC – WiFi DR/DLC Change-out
- BYOT (Bring Your Own Thermostat)

Commercial & Industrial ("C&I")

- Commercial Prescriptive
- Commercial Custom
- Small Business Direct Install
- Commercial New Construction
- Building Tune-up
- Multi-Family Retrofit
- CVR Commercial

5. **Evidence.**

A. **Petitioner's Case-in-Chief.** Rina H. Harris, Director of Energy Efficiency for Vectren Utility Holdings, Inc. ("VUHI"), testified that Vectren South is requesting authority to implement the EE and demand response ("DR") programs included in the Plan beginning January 1, 2018, through December 31, 2020, with the goal of achieving approximately 111 million kWh in energy savings and 26 thousand kW in demand reduction during the three-year period. She said this level of energy savings is roughly equal to a 1% reduction in eligible energy consumption from current customer usage levels. This amount also excludes the approximately 74% of large C&I customer load that has opted out of participation in Petitioner's EE programs.[2] She said that along with approval of the 2018–2020 Plan, Petitioner seeks to recover all costs associated with offering the DSM programs. This cost recovery includes a request for accounting

[1] The smart thermostat program is separate and distinct from the SmartDLC – Wifi DR/DLC Change-out program for which Vectren South is seeking an incentive.

[2] In 2015, Vectren South reported that approximately 80% of eligible load had opted out of participation. The 74% opt-out level reflects the impact of a large customer conversion to a combined heat and power system.

and ratemaking procedures to recover, through Vectren South's DSMA, all program costs, including direct and indirect program costs, lost revenues, and financial incentives.

Ms. Harris testified that the 2018–2020 Plan has an estimated cost of $28.6 million, with $9.5 million in 2018, $9.6 million in 2019, and $9.5 million in 2020. These amounts include anticipated evaluation costs. In addition, she confirmed that Petitioner is proposing to capitalize and defer for future recovery the costs associated with installing CVR technology and to recover through the annual DSMA filings carrying costs and annual depreciation expense on CVR program investments.

With respect to lost revenues, Ms. Harris initially indicated that Vectren South anticipates approximately $4 million of incremental lost revenues associated with the Plan and was seeking authority to collect lost revenues for the life of the measure. Subsequently, however, Ms. Harris stated that Petitioner seeks authority to implement lost revenue recovery based upon the WAML of all programs included in the 2018–2020 Plan, with a 10% reduction in annual savings. Under this method, Vectren South would recover the amount of lost revenues associated with the WAML of its EE programs or the measure life, whichever is less. The WAML is the average life, weighted by savings in years, of all the various measures installed or actions taken in a portfolio of programs. She said that capping recovery of lost revenues based upon WAML is reasonable because it limits lost revenue recovery based on the average equipment life and measure persistence of the entire Plan. In addition, only 90% of annual savings would be recovered, reflecting the statistical certainty EM&V providers can obtain for lost revenues. She said that as explained by witness Khawaja, the EM&V process utilizes at minimum a 90% confidence interval (an industry accepted standard). She testified that all inputs in the WAML (less 10% for statistical certainty) are grounded on evaluation and Technical Reference Manuals and provide a methodical cap to lost revenue recovery.

In response to a pending alternative proposal by CAC in Cause No. 44645, Ms. Harris testified a three- or four-year cap is arbitrary and not tied to EM&V, cost effectiveness, or any study suggesting a four-year cap is a reasonable time period. She stated that for the 2018–2020 Plan, a four-year cap would cause approximately $52 million of financial harm to Vectren South in lost revenues over the life of the programs, which equates to approximately 70% of lost revenues. She said that a four-year cap would also incent utilities to offer programs with a shorter measure life, as it is in the utility's best interest to recover its fixed costs associated with the life of the measure.

Ms. Harris stated that allowing a utility to collect lost revenues based upon verified savings for the life of the measure is reasonable. However, providing a cap based upon the WAML, with a 10% reduction in savings to account for the verification uncertainty that exists, provides even greater assurance of a reasonable recovery approach. Ms. Harris testified that for the Plan, the WAML approach would reduce lost revenue recovery by approximately $18.8 million over the life of the programs included in the Plan as compared to recovery using full measure life. Lost revenues would be reduced by 26% with a 12-year weighted average cap plus 10% savings reduction.

Ms. Harris described all of the programs included in the Plan and concluded that the proposed Plan satisfies the requirements of Ind. Code § 8-1-8.5-10 ("Section 10") so as to be found reasonable. Ms. Harris testified that approval of the 2018–2020 Plan is in the public interest and its approval will allow Petitioner to continue providing opportunities for customers to reduce their energy usage and make more educated choices about how they consume energy.

Richard G. Stevie, Vice President, Forecasting, at Integral Analytics, Inc., presented the results of the cost-effectiveness analysis of the Plan and confirmed that the Plan is cost effective. He described each of the tests, the costs considered, and the information provided by each of the tests. In addition, he reviewed and commented on the long-term impact of the 2018–2020 Plan on the rates and bills of participants and non-participants. Dr. Stevie said that the long-term effect on rates and bills of participants are demonstrated through the Participant Test, which compares the benefits to the participant through bill savings plus incentives from the utility relative to the incremental costs to the participant for implementing the EE measure. A score greater than one indicates the customer is saving more money than expended, thus reducing the participant's energy bill over the life of the measure. All of the programs included in Vectren South's Plan have a Participant Test score greater than one, except for those programs where the Participant Test score could not be calculated because there were no costs to participants for participating in the program.

Dr. Stevie discussed the process used to project the cost of Vectren South's EE portfolio for use in the development of the Petitioner's Integrated Resource Plan ("IRP"). Dr. Stevie testified that Vectren South chose to make available up to 2% of eligible retail sales as DSM resource options for selection in the IRP process for each year beginning in 2018 and explained the rationale behind the decision. He said that to facilitate the IRP resource selection process, the 2% of eligible retail sales was broken into eight blocks of 0.25% each. Taking this over the 18-year horizon means that over 144 incremental blocks of 0.25% each were available to be selected in the IRP process. From this structure, Vectren South expected that the appropriate IRP-determined, cost-effective level of EE would be identified. He then discussed how Vectren South projected the cost of its DSM resource options over a 20-year horizon with increasing market penetration. He said that the EE literature does not provide adequate guidance. He said that based upon his research into this issue, he provided Vectren South with a methodology to estimate how the cost to achieve an increment of EE could change as the cumulative EE market penetration rises. He testified that his study found that EE program costs per kWh increase as the cumulative penetration of EE increases, as measured by the percent of retail sales.

Matthew E. Lind, Associate Project Manager within the Business & Technology Services global practice of Burns & McDonnell, provided information concerning Vectren South's modeling of EE programs within its 2016 IRP through the use of the optimization software program Strategist. He said that Strategist is a dynamic optimization program that uses reserve margin requirement logic to identify portfolios of electric supply resources based on an identified objective function. For purposes of the 2016 IRP analysis, the objective function was to minimize cost to customers. He confirmed that EE was included as an electric demand side resource that Strategist could select to serve customer energy requirements. He testified that at a high level, up to a maximum of 2% per year of eligible retail sales were considered for possible conservation through an incremental block of EE which was divided into eight equal blocks

(0.25% per block). The savings associated with each block was initially based on the characteristics associated with current EE programs with consideration for changes over time.

Mr. Lind described the EE modeling assumptions and how EE competes with supply side resources in the model. He testified that once Strategist selects EE, it assumes that level of EE throughout the study horizon. This was required to consider the many power supply alternatives evaluated in the IRP including EE, new power supply, and individual unit plant retirement decisions. He said there could be eight different possible combinations of EE blocks that could be selected in an individual year over the course of 19 years (2018–2036).

Mr. Lind testified that after an October 14, 2016 meeting with the Oversight Board and staff from the Commission, Vectren South requested that Burns & McDonnell conduct additional analyses whereby EE was not held constant throughout the applicable IRP planning period. Burns & McDonnell evaluated selecting EE blocks for only a three-year period beginning in 2018. This would align with the timeframe the Plan would cover and indicate whether increasing costs over time would discourage the economic selection of EE blocks in a shorter duration. He said the results of this analysis are provided in Vectren South's 2016 IRP and confirmed that the additional analysis did not change the results of the low cost portfolio identified under base assumptions.

J. Cas Swiz, Director, Rates and Regulatory Analysis for VUHI, discussed Petitioner's proposed accounting and rate making treatment and bill impacts of Vectren South's 2018–2020 Plan. Specifically, he addressed how Petitioner will account for carrying costs and depreciation expense associated with the capital expenditures Petitioner plans to make related to the CVR program and the associated deferral authority related to CVR. He testified that Vectren South will calculate the monthly carrying costs using its approved weighted average cost of capital ("WACC"), grossed up for income taxes, and multiplied by the net plant balance (gross investment less accumulated depreciation) as of the end of the prior month. The WACC rate used will be based upon the current capital structure balances, with the cost of equity fixed at the 10.40% approved in Cause No. 43839. This calculation reflects the incremental pre-tax cost, both debt and equity, of financing the investment.

Ms. Swiz also addressed the Section 10 requirement specific to the short-term impact on electric rates and customer bills resulting from a proposed EE plan. He testified that Petitioner plans to continue using its DSMA to recover costs associated with customer participation in the DSM programs, including direct load control programs. He then discussed the estimated rates and bill impacts of the Plan on Petitioner's Rate Schedules and how the estimated rates were derived.

Scott E. Albertson, Vice President, Regulatory Affairs and Gas Supply for VUHI, summarized the legislative and regulatory foundation supporting the recovery of lost revenues associated with implementation of utility-sponsored EE programs and measures. Mr. Albertson testified that in simple terms, lost revenues are the fixed costs previously approved by the Commission and included in rates that are not recovered as a result of the implementation of EE programs. He stated this definition is consistent with his understanding of Section 10 and prior Commission decisions.

Mr. Albertson described the history of lost revenue recovery and noted that the Commission has consistently provided recovery of lost revenue due to utility sponsorship of EE programs. He testified that from the 1990s through program year 2015, the Commission consistently authorized Vectren South's recovery of lost revenues for the life of each utility-sponsored EE measure that was implemented.

Mr. Albertson testified that in the 2015 Indiana Legislative session, the Legislature passed Senate Enrolled Act 412, which required electric utilities to submit EE plans to the Commission at least every three years, and confirmed that IRPs must assess DSM in meeting service requirements. For the first time, the Legislature also made the recovery of reasonable lost revenues associated with EE Programs mandatory.

Mr. Albertson testified that in its Order in Cause No. 44645, the Commission for the first time placed a four-year recovery cap on Vectren South's lost revenue adjustment mechanism ("LRAM").[3] He described the implications of the cap on Petitioner's collection of lost revenue. He stated Section 10 does not provide for a cap on lost revenues. Citing to Section 10(o) and its requirements for an LRAM that uses forecasted data, he said the Legislature envisions that lost revenue will be determined using EM&V for the specific EE programs implemented by customers. Mr. Albertson also discussed the legislative history associated with the passage of Section 10.

Finally, Mr. Albertson discussed the concept of pancaking and testified that the pancaking of lost revenues is not inappropriate and should not be viewed in a negative light. He said EE benefits and lost revenues build over time (i.e., they "pancake") and so too should the corresponding levels of lost revenue recovery. He then discussed the relationship between rate case frequency and lost revenues. He said that while the costs recovered via an LRAM would be lessened if rate cases were filed more frequently, the revenues lost as a result of EE are included in base rates each time the utility files a rate case. In either case, the appropriate level of fixed costs will be included in customers' bills. Thus, via an LRAM or new base rates, he said the utility should recover the revenues needed to recover the approved level of fixed costs.

Dr. M. Sami Khawaja, Chief Economist at The Cadmus Group ("Cadmus"), an EE evaluation firm, testified that confidence and precision energy program evaluation is typically based on estimating energy impacts using a representative sample of program participants to determine how measures are installed and used. The results of these efforts are then used to estimate savings for the program. Dr. Khawaja testified that for Vectren South, program evaluations are in line with the industry standard of obtaining estimates with a confidence level of 90% with a relative precision of ±10%. He stated that it is appropriate to recover lost revenues for the life of the measure because as long as the measure is installed and is saving energy, the utility is losing revenue. He acknowledged that measures may be removed for many reasons, but that effective useful life ("EUL") estimates account for measure failure. He said that although measure removal is still a risk, Petitioner's proposed safeguard is sufficient to compensate for the lost savings.

[3] The Commission's March 23, 2016 Order was reversed and remanded by the Court of Appeals for additional findings with respect to Petitioner's request for lost revenue recovery.

Dr. Khawaja testified that it is appropriate to cap lost revenues based upon the WAML of a plan. He said that lost revenues will take place for the duration of the measure life, which is the time upon which recovery should be based. He said it is important to appreciate that EUL is not an actual end of life metric for a measure, but simply the median of life. So, while 50% of all measures will fail before that date, 50% will also live long after the EUL. Dr. Khawaja stated that the survival rate of measures is not linear; most of the 50% that will fail by the EUL will actually be operational for the great majority of the EUL. During that time period, revenues are lost almost consistently. In addition, for a time period after the EUL, revenues will continue to be lost for some period of time. As such, Dr. Khawaja concluded that the EUL, including those currently used by Petitioner, is a conservative estimate of the length of the revenue lost period.

Dr. Khawaja testified that the EM&V impacts were estimated at 90% confidence and ±10% precision. He recommended going to the low end of the confidence interval and using those estimated savings to calculate the WAML. He said this approach will, in essence, conservatively use values that have a 95% chance of being at that level or higher. This will reduce the WAML calculation by 10%.

Dr. Khawaja discussed his concerns with a three- or four-year measure life cap. He said that utilities should be allowed a reasonable opportunity to recover their program cost and lost revenues. Otherwise, demand side and supply side options are not comparable from a financial perspective (the playing fields are not level). He said that failure to recover these costs will reduce utility earnings. In addition, a three- or four-year cap will incent utilities to pursue measures with short lives at the expense of more deep-reaching, long-lasting measures (e.g., insulation).

B. OUCC's Case-in-Chief. Edward T. Rutter, Chief Technical Advisor in the Resource Planning and Communications Division of the OUCC, testified that Vectren South's 2018–2020 Plan is unreasonable and should be rejected by the Commission for several reasons. He described the cost per kWh saved under the Plan and concluded that a residential customer using 1,000 kWh at an average cost of $0.16 who saves 10% a month or 100 kWh will experience a bill savings of approximately $16.00. However, the cost of those savings, based on the overall cost to the customer of $0.65 per kWh saved, would be $65.00. He said that legacy DSM costs are creating an enormous disincentive to participate in the energy savings programs proposed by Vectren South in the 2018–2020 Plan.

Mr. Rutter testified that the definition of "lost revenue" is established in Section 10 and provides recovery of both fixed costs and net operating income not realized by the electricity supplier. He stated the Section 10 definition generously allows the utility to recover fixed costs for unrealized sales despite the fact that the fixed costs approved in the last rate case do not vary with an increase or decrease in the amount of energy sold. Accordingly, the Commission should not continue to allow recovery of fixed costs associated with DSM energy saved because it is unreasonable and seriously imbalances the relationship between the ratepayer interest and the investor interest. Mr. Rutter testified that to return the utility to the position it would have been in absent the implementation of a DSM measure, the utility should be entitled to recover the "lost margin" associated with the lost sale, not the revenue associated with the lost sale. He said that if

lost revenue recovery provides the utility with anything more than the return opportunity, or margin lost, this creates a bias in favor of DSM over what would be experienced by the utility if it were to build, own, and operate a supply-side resource.

Mr. Rutter testified that fixed costs embedded in base rates have been audited, vetted, and approved as being instrumental and appropriate in the delivery of energy service. Fixed costs do not change with an increase or decrease in the amount of energy sold, but are expenses that must be paid by Vectren South independent of any business activity. He testified that when Vectren South's fixed costs rise, the utility may find it more difficult to achieve its authorized return. The traditional remedy for this is to file a base rate case, not a DSM lost revenue tracker. Mr. Rutter discussed his analysis of Vectren South's fixed costs approved in Petitioner's most recent base rate case compared to actual past and forecasted future sales. He concluded that Vectren South has historically been able to recover all fixed costs approved by the Commission in Cause No. 43829 and should continue to recover all approved fixed costs through the term of the 2018–2020 Plan.

Mr. Rutter concluded that Vectren South's proposed recovery of lost revenues is unreasonable and should be denied. He said a reasonable method of balancing ratepayer and shareholder interests would be to share the Utility Cost Test ("UCT") net benefit 50-50. He said that program costs, lost revenue recovery, and financial incentives awarded should not total more than $19,334,837. He said that it is only fair that the consumers and the utility receive their benefits at the same time. He said a 50-50 split does a better job of balancing the interests of the investor and customer and results in a sharing of the benefits produced through investments in DSM. Vectren South is seeking to collect 97.44% of the UCT net benefit from implementation of the Plan. He said that does not balance the interests of the consumer and the shareholder and that given the imbalance, the rates and charges sought by Vectren South in this proceeding are skewed in Vectren South's favor and are not just and reasonable.

Mr. Rutter testified that the OUCC supports the concept of financial incentives, but not the amount proposed by Vectren South. He said it may not be unreasonable to award some financial incentive to programs that meet or exceed savings goals approved by the Commission, but there is no logical reason to award an incentive that is greater than the WACC approved in Petitioner's last rate case. In addition, he testified that financial incentives should not be calculated at the portfolio level, but rather on the savings achieved at the program level, and only for programs achieving 100% of the estimated savings contained within the Plan. Mr. Rutter testified that the Commission is required to determine whether the Plan is consistent with Vectren South's most recent IRP and that this requirement impacts the OUCC's recommended financial incentive treatment. He said that given the 2016 IRP selected a DSM energy savings level of 1% of eligible retail sales as part of its preferred portfolio plan, to reward Vectren South for achieving something less than what was selected in the 2016 IRP and what the future generation mix is based upon is irresponsible.

Mr. Rutter testified that Vectren South's Plan does not comply with Section 10's reasonableness requirements set forth in subsection (j). In addition to the issues with lost revenues and financial incentives, he said that the proposed Plan does not provide a cost and benefit analysis provided for in subsection (j)(2) that includes program costs defined in

subsection (g). Furthermore, the Plan does not consider the long-term and short-term effect on non-residential customers that participate in EE programs compared to non-residential customers that do not participate in EE programs, which is required under subsection (j)(7). He said that lack of compliance with this subsection is another reason the proposed Plan is unreasonable in its entirety.

Crystal Thacker, a Utility Analyst in the OUCC's Electric Division, testified that the design and mechanics of Vectren South's DSM tracker are reasonable.

C. **CAC's Case-in-Chief.** Elizabeth A. Stanton, Director and Senior Economist of the Applied Economics Clinic, testified that Petitioner's Plan is unreasonable because the IRP does not provide an optimal balance of energy resources. She stated that the projected increases in EE costs modeled in the Plan are the result of an analysis performed by Petitioner's witness Stevie that is based upon faulty data, an incorrect interpretation of statistical results, and a deeply flawed application of those results to predicted costs.

Dr. Stanton agreed with Dr. Stevie that current EE literature does not provide guidance on how EE costs change over time as the size of EE programs/market penetration increases, but disagreed with Dr. Stevie's analysis. Specifically, she claimed that: (1) Dr. Stevie's analysis is not replicable (a fundamental expectation of such analysis); (2) Dr. Stevie used incorrect data and correcting his data changes his results; (3) correcting Dr. Stevie's data also renders his results statistically insignificant (i.e., not discernable from happenstance); and (4) Dr. Stevie's analysis is not robust (i.e., his data are of low quality and removing inaccurate entries changes the results). She also identified the four errors she found in the application of Dr. Stevie's regression findings to EE cost projections. Dr. Stevie's errors include: (1) the basis for his efficiency cost growth factors are artificially inflated; (2) he uses his regression results selectively, ignoring certain findings; (3) his EE costs are erroneously based on expected cumulative savings in 2036, and (4) he confuses the effects of changes over time with the effects of differing policy choices within a single year.

Dr. Stanton concluded that Dr. Stevie's methodology is not sound and that the flaws in his analysis undermine Vectren South's 2016 IRP and its usefulness in guiding DSM decisions. She said that instead of the increasing EE cost assumptions used by Petitioner in its DSM modeling within the IRP, the correct cost assumption is that inflation-adjusted EE costs remain constant over time.

Anna Sommer, President of Sommer Energy, LLC, also recommended the Commission reject Vectren South's Plan because it is based upon a flawed IRP. She said that rather than being a well-developed and reasoned IRP, Vectren South's 2016 IRP lacks the background information that would let stakeholders understand Vectren South's reasoning. She said the IRP gives no insight into: why Vectren kept some resources but not others; how and in what order each resource was evaluated; or how one should interpret the results of any of the scenarios. She also challenged Vectren South's scorecard analysis. She said that use of a scorecard approach is not the problem, but the metrics Vectren chose to use in the development of the preferred plan is the issue. She said that a scorecard analysis must be deployed in a logical and coherent manner and the chosen metrics should have a direct relationship to costs and reliability.

Ms. Sommer also testified that Petitioner's deal with Alcoa to keep Warrick Unit 4 open until 2024 undermines the validity of the 2016 IRP modeling because every scenario produced assumed that Vectren South exits joint operations of Warrick Unit 4 starting in 2020. She said that continued operation of Warrick Unit 4 puts Vectren South in a position of significant excess capacity that is not modeled in the IRP. She stated that Petitioner also failed to take seriously some important near-term decisions, including whether to retire uneconomic units and whether to build renewables before the sunset of the renewable tax credits.

Ms. Sommer reiterated some of the claims made by Dr. Stanton related to EE costs and said the EE programs do not simply reduce the dispatch of existing units on the revenue, but can also avoid the need to add new capacity or decrease capacity necessary in the future. She concluded that Vectren South's DSM Plan does not reconcile proposed DSM savings with savings in its 2016 IRP and the Commission should reject Vectren South's DSM plan.

Karl R. Rábago, principal of Rábago Energy LLC, recommended the Commission reject Vectren South's Plan because the lost revenues associated with the plan are unreasonable. He explained the purpose of lost revenue recovery and discussed the laws and principles that should guide the Commission in evaluating an LRAM. He discussed the issues of pancaking and single-issue rate making, which he said creates serious problems of fairness and reasonableness if an LRAM is used for the entire useful life of the EE measure. He compared the dollar amounts between the various lost revenue proposals and recommended a four-year cap on lost revenue recovery. He encouraged the Commission to make findings rejecting Vectren South's DSM Plan as unreasonable due to its unreasonable LRAM.

Mr. Rábago disagreed with Vectren South's claim that a four-year cap would result in a perverse incentive for Petitioner not to include measures with longer lives. He also testified that Vectren South's modified approach to lost revenues (use of the WAML, less 10%) is not appropriate for consideration or adoption without additional scrutiny. He said the WAML is a mathematical solution to the rate volatility that results from long-term pancaking and potentially creates greater problems in terms of rate fairness. In addition, without further analysis, it is impossible to determine how the weighted average value would change depending on the relative size and useful life of portfolio components.

Finally, Mr. Rábago testified that Dr. Khawaja's appearance in this proceeding on behalf of Petitioner is a conflict of interest because Petitioner has retained Cadmus to perform evaluation services for the past eight years. He said Dr. Khawaja's advocacy casts doubt on the integrity of Cadmus's work as an independent evaluator and Petitioner should be directed to seek a new firm to serve as an independent evaluator for its EE programs and plans on a going forward basis. In the alternative, he suggested the Commission adopt a third party Independent Evaluation Monitor model, like the one in Arkansas.

D. Petitioner's Rebuttal. Ms. Harris responded to claims by the OUCC and CAC that the Commission should reject Petitioner's Plan. She testified that neither the OUCC nor CAC provided a basis to find the Plan unreasonable and explained why the Plan is consistent with the IRP. She identified flaws with the OUCC's lost revenue proposal and addressed the criticisms raised concerning Vectren South's WAML proposal. She said the following two key

factors make the WAML proposal a superior approach to other recommendations: (1) lost revenue recovery remains connected to measure life; and (2) lost revenue recovery remains connected to EM&V, which has been relied upon for decades in the determination of lost revenues.

Ms. Harris discussed witness Rábago's assertions concerning program costs, financial incentives, and lost revenues for the 2018–2020 Plan. She said that while there are no concerns with the mathematical calculation of the figures, there is an inherent bias in Mr. Rábago's illustrations, as they compare the program costs and financial incentive for the Plan period to various other periods of LRAM without acknowledgement of lifetime/ongoing savings. She provided a diagram illustrating the costs associated with the Plan.

Ms. Harris testified that the OUCC's 50% UCT cap proposal is flawed because the UCT net benefits have already accounted for program costs. She said capping the recovery of program costs based on the UCT net benefits is a form of double counting. In other words, because program costs are already accounted for in the calculation, the net benefits of the UCT reflect the difference between the costs avoided and costs incurred by DSM. She stated that Mr. Rutter's approach also ignores the other benefits to customers, including bill savings that occur as part of program implementation and incentives paid to encourage customer participation.

Ms. Harris also described Petitioner's current financial incentive mechanism and said it is reasonable and should remain in place, unchanged. She said it is based on a shared savings approach, as it is tied to both a tiered level of energy savings achieved and the net present value of UCT benefits. She testified that the OUCC's recommended approach creates a disincentive to offer new programs, which the financial incentives under Section 10 were meant to avoid, and discourages the utility from allocating resources toward hard to reach markets due to the difficulty in reaching goals within those markets.

Mr. Albertson addressed issues raised regarding Petitioner's proposed lost revenue recovery associated with the Plan. He testified that neither CAC nor the OUCC explain why Vectren South's continued reliance on EM&V to determine the amount of lost revenues associated with Vectren South's DSM programs is unreasonable. They do not dispute that EM&V appropriately measures the amount of energy that a customer will not consume as a direct result of implementation of an EE measure. Instead, they contend that it is not reasonable for Vectren South to recover lost revenues that are demonstrated to result from implementation of DSM measures.

Mr. Albertson testified that Vectren South's modified LRAM proposal sets a reasonable limit on the collection of lost revenues for several reasons. First, unlike an arbitrary cap not linked to measure life, Petitioner's WAML proposal is EM&V-based, and thus inherently takes into account the corresponding savings being provided to customers via the EE measures implemented. Second, it limits recoveries to the weighted average life of the EE programs by rate class, and in turn limits the time period for lost revenue recovery to a period less than the full life of some of the measures – in many cases about six to seven years for residential programs. Third, by reducing the results of the EM&V calculation by 10% to reflect statistical uncertainty in the EM&V process, it produces a conservative calculation of savings to be used to determine

lost revenue. Mr. Albertson said that, in this manner, the objective of addressing the throughput incentive is properly balanced with the need to establish a reasonable level of revenue recovery that still has a logical and important relationship to the lost sales driven by EE programs.

Responding to Mr. Rábago's assertion that the WAML proposal would result in constantly changing charges, Mr. Albertson testified that since 2011, customers have seen a very slow and relatively small increase in average monthly bills and a proportionately small and steady increase in the DSM component of the monthly bill. The data shows that the year-over-year impact on the average monthly residential customer bill as a result of Vectren South's DSMA averaged (or is expected to average) an increase of $1.15 per month during the period 2011-2018, and an increase of $0.43 per month during the period 2019-2020.[4] He said neither the average total bill nor the DSM component of the average bill has been erratic during this period.

Finally, Mr. Albertson testified that CAC has not provided any factual support demonstrating that a four-year cap will allow Vectren South to recover reasonable lost revenues as provided in Ind. Code § 8-1-8.5-10(o). He addressed the other parties' concerns with pancaking of lost revenues by noting that lost revenues will accumulate in step with EE savings and a four-year cap fails to send an appropriate price signal to customers. He also addressed the OUCC's concerns with recovering lost revenues associated with the lost sale and argument that a utility experiencing above test year level sales should face caps on lost revenue recovery.

K. Chase Kelley, Vice President, Marketing and Communications for VUHI, disagreed with CAC that Dr. Khawaja and Cadmus are no longer independent. She explained that Vectren South maintains an arms-length relationship with Cadmus, Cadmus does not benefit from the findings of the evaluation, and Vectren South does not influence Cadmus's evaluation. She said that Vectren South approached Dr. Khawaja to address concerns that had been raised about the reliability of the EM&V results for purposes of determining lost revenues. His conclusions on the effective useful lives of EE measures support Vectren South's decision to self-impose a cap tied to the WAML of the EE measures proposed in the Plan. She noted that Petitioner also decided to modify its proposal even further based on Dr. Khawaja's conclusions on statistical EM&V confidence level/uncertainty. Ms. Kelley also explained the reasons she disagrees with CAC regarding implementation of an Independent Evaluation Monitor.

Dr. Stevie responded to CAC's criticisms of Vectren South's methodology for modeling EE in its IRP. He said Petitioner acted reasonably in modeling EE as becoming more expensive as greater quantities are called for in any one year and explained the rationale for Petitioner's EE cost modeling approach. Dr. Stevie testified that CAC witnesses Stanton and Sommer made several faulty and unfounded assertions and conclusions about his research and cost projection. He said their concerns are largely based on their inability to replicate his analysis, which was driven by two errors. One, they did not utilize the same econometric technique he utilized. Two, they included the wrong data from the sources he relied upon.

Dr. Stevie responded to criticisms made by Dr. Stanton regarding application of his regression analysis. In addition, Dr. Stevie responded to claims made by Ms. Sommer related to

[4] Based on average usage of 1,000 kWh per month.

Vectren South's decision to model EE at 40% of retail sales as well as her proposed alternative approach to determining whether a DSM Plan is consistent with an IRP.

Mr. Lind also responded to CAC's criticisms regarding certain aspects of the modeling of EE programs within Vectren South's IRP. Mr. Lind addressed CAC's claims that Petitioner's 2016 IRP does not provide an optimal balance of energy resources and constrained Strategist from selecting certain resource options. He also addressed the three questions raised by Ms. Sommer related to the iterative process as well as other issues related to EE modeling in the IRP. With regard to CAC's criticisms related to Warrick Unit 4, Mr. Lind explained that extending operation of the plant by approximately three to four years is not a material change. Mr. Lind also responded to claims that Vectren South did not take seriously decisions regarding whether to retire uneconomic units or whether to build renewables before the sunset of the renewable tax credits. He testified that Vectren South considered the earliest retirement dates for all of its coal facilities with the exception of Warrick Unit 4 based on the availability of replacement capacity and the time needed for transmission reliability upgrades that would be required with retirements. He stated resources that could take advantage of renewable tax credits were considered as early as possible based on construction timelines. Moreover, the preferred portfolio adds 54 MWs of solar resources early on in the resource plan.

Gary Vicinus, Regional Director at Pace Global, responded to three issues raised by CAC witness Sommer: (1) the use of a balanced scorecard to select the preferred portfolio; (2) the selection of metrics; and (3) the manner of differentiation of the metrics for making recommendations.

Mr. Vicinus testified that Pace Global is a leading consultant for integrated resource planning. He said that because utilities have multiple objectives in planning (e.g., competitive costs, stability of costs, reliability, environmental stewardship, and diversity), a balanced scorecard approach allows the utility to find the right balance between competing objectives. He explained the balance scorecard methodology and color rankings. He also discussed the selection of metrics and testified that each utility has its own objectives, priorities, and metrics for judging the success of meeting its objectives. He testified the business process that Pace Global follows in developing an IRP is the same for all clients, but the selection of objectives and metrics will always vary from utility to utility. He noted that the metrics selected by Vectren South are generally consistent with those used by other utilities.

Mr. Vicinus testified that cost and risk are not the only appropriate measures that should be considered and that the metrics were not distorted to create nonexistent differences. He said there are clear differences between groups of portfolios for nearly every metric and explained why he disagreed with Ms. Sommer's criticisms.

6. Commission Discussion and Findings. Section 10(h) requires electricity suppliers to petition the Commission not less than one time every three years for approval of an EE plan. Once a plan has been submitted, the Commission is required to consider the ten factors identified in Section 10(j) in determining the overall reasonableness of the proposed plan. After making a determination of overall reasonableness, Sections 10(k), (l), and (m) establish three possible actions that the Commission may take concerning the proposed Plan.

A. **Presentation of a Plan.** The evidence demonstrates that Vectren South is an electricity supplier as defined by Section 10(a) and has petitioned for approval of its proposed 2018–2020 Plan pursuant to Section 10. Section 10(h) requires a plan to include: (1) EE goals; (2) EE programs to achieve EE goals; (3) program budgets and program costs; and (4) EM&V procedures that include independent EM&V.

Petitioner's Exhibit 1, Attachment RHH-4 sets forth Petitioner's Plan, which addresses each of the elements required by Section 10(h). However, CAC asserts that the 2018–2020 Plan fails to satisfy all four criteria. Therefore, we begin by addressing whether the Plan satisfies the requirements identified in Section 10(h).

1. **EE goals.** Section 10(c) defines "energy efficiency goals" as:

> All energy efficiency produced by cost-effective plans that are:
> (1) reasonably achievable;
> (2) consistent with an electricity supplier's integrated resource plan; and
> (3) designed to achieve an optimal balance of energy resources in an electricity supplier's service territory.

Vectren South's 2018–2020 Plan is designed to save approximately 1% of adjusted retail sales, excluding the roughly 74% of eligible load that has opted out of participation in utility-sponsored DSM programs under Ind. Code § 8-1-8.5-9. Petitioner expects approximately 111 million kWh in energy savings and 26 thousand kW in demand reduction during the three-year period. The EE goals are based on Petitioner's 2016 IRP and an update to their 2013 Market Potential Study ("MPS") for the period 2015–2019. The update to the MPS reevaluated the achievable potential for 2018–2019 and defined the 2020 achievable potential.

Ms. Harris testified that the goals established in the 2018–2020 Plan are realistic and achievable. Based on the evidence presented, we agree that the proposed energy savings goals appear reasonably achievable as they are consistent with historical savings that we have previously approved for Petitioner.

CAC argues that the Plan is inconsistent with the 2016 IRP. However, we note that many of the claims made by CAC's witnesses related to EE modeling in the IRP largely impact years outside the 2018–2020 Plan, which is of little relevance to our decision here. CAC witness Sommer also asserted that Vectren South failed to provide the rationale for limiting EE savings to 2% per year in the IRP modeling and assumed an end goal of achieving 40% EE over the period 2018–2038. Ms. Harris, however, explained that the 2% level is reasonable based upon Petitioner's MPS and past experience. It also applies to the level of retail sales after reduction for the level of load that has opted out of EE programs.

Ms. Sommer also claimed that the 2016 IRP and Plan are not consistent because the gross savings modeled in the IRP and the EE Plan savings are not the same. However, we do not find Section 10's requirement that a proposed EE plan be consistent with the utility's IRP to mean that they must be identical. Rather, we believe that the proposed plan must be generally

compatible with or supported by the utility's IRP. Ms. Harris explained that Petitioner's 2016 IRP supported a targeted level of 1% of eligible annual savings for 2018–2020. As the Plan is designed to deliver approximately 1% of eligible annual savings for 2018–2020, we find the proposed Plan and 2016 IRP to be consistent.

CAC witness Dr. Stanton claimed that the costs modeled in the 2016 IRP are different from the costs in the 2018–2020 Plan. However, Table RGS-1 in Petitioner's Exhibit 2 demonstrates that the levelized cost of the Plan is $0.032/kWh without financial incentives and $0.36/kWh with financial incentives. The levelized cost of DSM in the IRP is $0.036/kWh. Accordingly, we find these costs are consistent and closely aligned.

CAC also argues that Petitioner's 2016 IRP is flawed and therefore Petitioner has failed to demonstrate the proposed EE goals provide an optimal balance of energy resources. Dr. Stanton argued that Petitioner's methodology for estimating the cost to implement EE programs over the IRP planning period is based on faulty data. In addition, she argued that Petitioner inappropriately constrains resources in the IRP modeling and improperly weights the risks and benefits of various resource options.

Vectren South modeled generic EE savings in 0.25% blocks as a resource in its IRP modeling, enabling Strategist to select each block over the modeling period as a resource. The price of each block increased because Vectren South concluded that as EE goals become more aggressive, it costs more money to induce more customers to install EE measures. This conclusion was based on a study conducted by Dr. Stevie using Energy Information Administration data to evaluate whether utilities had to spend more to induce more customers to install EE measures. Dr. Stanton argues Dr. Stevie's study should be disregarded because she could not reproduce its results and her own results contradicted Dr. Stevie's analysis. However, the evidence reveals that her inability to reproduce Dr. Stevie's analysis stemmed from errors in her data and the use of a different econometric technique.

CAC generally expressed concerns about the EE bundle methodology implemented by Vectren South because it required a forecast of EE bundle cost trajectories over a 20-year period, and resulted in a forecast with which CAC disagreed. The Commission notes that the projection of EE bundle costs over a 20-year planning horizon is both necessary for long-term resource planning but also fraught with a large degree of uncertainty. This uncertainty cannot be eliminated nor can it be ignored. The EE bundle price modeling methodology implemented by Vectren South is different from that used by other utilities, but it is not clear if Vectren South's method is better than another. As Dr. Stevie noted in his study, his results are at a "very high level" and there is much room for additional research. The alternative EE bundle modeling methodology proposed by CAC might avoid some of the problems associated with Vectren South's methodology, but CAC's proposal has too many unanswered questions for us to determine whether it is better in any sense relative to the method used by Vectren South.

Even if it could be shown that Vectren South's base cost escalation assumption for the EE bundles is on the high side, Vectren South conducted sensitivities to determine whether a lower price would result in the selection of more EE. Also, the amount of EE selected in the IRP over time changed depending on the specific scenario being optimized in the planning model.

The amount of EE selected ranged between zero and 2%, with 1% being the most frequent. Further, Vectren South used the same methodology in its 2014 IRP to analyze and model EE, which the Draft Director's Report for the 2016 IRPs found to be a reasonable approach to modeling DSM resources in a manner reasonably comparable to supply-side resources. CAC Exhibit CX-1 at 35.

CAC also argued that the Strategist model inappropriately constrained the selection of resources, such as varying levels of wind, solar, DR, and EE, from consideration within the model; that Vectren South's decision to continue operating Warrick Unit 4 until 2023 undermines the validity of the 2016 IRP; and that Vectren South did not take seriously some important near-term decisions, including whether to retire uneconomic units and whether to build renewables before the sunset of the renewable tax credits. Mr. Lind testified that the Strategist runs did not unduly constrain resources. He explained that CAC's contrary conclusion was based on Ms. Sommer's misunderstanding of the output files and the iterative process necessary to evaluate many different resources. He further explained that the decision to continue operating Warrick Unit 4 until the end of 2023 is not a material change and the IRP addressed the uncertainties related to this unit. In addition, Vectren South also considered the earliest retirement dates for all of its coal facilities and introduced additional portfolios that included additions of renewable resources. Based on the evidence presented, we do not find that Vectren South unreasonably constrained resources in its IRP modeling.

Finally, CAC raised three main concerns with Vectren South's risk analysis: (1) the use of the scorecard to support selection of the preferred portfolio, (2) the selection of metrics, and (3) the manner of differentiation of the metrics for purposes of making recommendations. Over the last few IRP cycles, the Commission has encouraged utilities to perform more risk analysis and sensitivities testing. Vectren South responded to those recommendations and engaged Pace Global, a world-wide leader in planning and risk analysis to assist with this effort. We find Vectren South's use of the scorecard, including manner of differentiation of the metrics, is an acceptable approach to presenting these issues. Further, the selected metrics represent the risks Vectren South has identified to its business and its customers and we see no reasonable basis for discounting those metrics. Mr. Vicinus confirmed that Petitioner's selected metrics are generally consistent with those used by other utilities. The IRP represents a fluid process that evolves over time and we fully expect that Vectren South may continue to adjust its review of risk. Based on the evidence presented, we find that Vectren South's risk analysis is much improved over the last IRP and provides reasonable support for Vectren South's 2016 IRP.

For the reasons discussed above, we find that Vectren South's Plan provides for EE that is reasonably achievable, consistent with its 2016 IRP, and reasonably designed to achieve an optimal balance of energy resources over time.

2. **EE Programs.** The 2018–2020 Plan includes 13 residential programs and seven C&I programs designed to achieve its EE goals. The Plan continues many current program offerings, while expanding and modifying some program designs and adding three new residential programs. No party took issue with any of the particular programs proposed for inclusion in the Plan.

Therefore, based on the evidence presented, we find that the Plan includes EE programs designed to achieve the EE goals.

3. **Program Budgets and Costs.** Ms. Harris identified the annual program budgets and program costs for the 2018–2020 Plan, which are reflected below.

Portfolio Participation, Impacts & Budgets						
Program Year	Participants/ Measures	Annual Energy Savings (kWh)	Annual Peak Demand Savings (kW)	Total Program Budget ($,000)	Incremental Lost Revenue Resulting from Plan Savings ($,000)	Financial Incentive, 10% Maximum Payout, ($,000)*
2018	334,626	36,656,341	7,430	$9,488	$1,395	$1,355.4
2019	354,120	38,069,188	7,607	$9,593	$1,405	$1,264.5
2020	225,065	36,347,642	7,750	$9,531	$1,332	$995.8
Total	**913,811**	**111,073,171**	**22,787**	**$28,612**	**$4,132**	**$3,615.7**

*Vectren South is not requesting financial incentives on the 2016 Smart Thermostat, CVR, and Income Qualified Weatherization Programs.

The Plan's estimated cost of $28.6 million includes anticipated evaluation costs. Vectren South also requested authority to roll forward, into the next program year, any unused and approved budget funds from the Plan that remain unspent, if any, at the end of the year. In addition, if budget funds are rolled forward within the 2018–2020 program years, the funds shall be incremental and not reduce approved flex funding available to obtain savings. Because Petitioner uses an Oversight Board to supervise its programs, if funds are unspent in one program year, they will be eligible to be rolled forward and added to the budget of the next program year upon the Oversight Board's approval. If the Oversight Board does not vote to approve the increase in the budget, the funds shall be returned to customers through Petitioner's DSMA. We find this approach provides the utility with needed flexibility and allows programs that may be slow to ramp-up in initial years to fulfill their potential in later years. The Oversight Board also serves to ensure funds are appropriately spent. Any disagreement regarding the appropriateness of spending may be raised with the Commission.

In addition, although no party raised any concerns in its prefiled case-in-chief with respect to a specific amount included in the Plan budget, the OUCC questioned Ms. Harris about Petitioner's request for approval of an Emerging Markets budget at the evidentiary hearing and expressed concern about this funding in its post-hearing filings. Ms. Harris explained that the Emerging Markets funding will allow Petitioner to work with the Oversight Board to make modifications and additions to its portfolio for leading edge design changes during the Plan years. She explained the funding will support new program development or new measures within an existing program. Like the spending flexibility authorized to Petitioner with Oversight Board approval, we find that the proposed Emerging Markets budget provides Petitioner with ability to keep pace with the rapidly changing technology in the market place and conduct pilot programs to ensure Petitioner meets its EE goals and should be approved. The use of the Emerging Markets budget will be subject to the direction and approval of the Oversight Board and any disagreement with the Oversight Board's approval may be brought to the Commission for resolution.

Based on the evidence presented, we find Vectren South's Plan includes proposed program budgets and programs costs. The impact and effect of those proposed budgets and costs are discussed further below in our consideration of the factors specified in Section 10(j).

4. Independent EM&V. The 2018–2020 Plan includes EM&V with a process for independent evaluation of the programs. CAC raised concern that Dr. Khawaja's testimony in this Cause presented a conflict of interest because Dr. Khawaja is the Chief Economist for Cadmus, which is the firm that performs Petitioner's EM&V. CAC recommended that Petitioner be required to replace Cadmus or adopt an Independent Evaluation Monitor.

Vectren South explained that Cadmus is completely independent from the design, approval, and delivery of the EE programs. Program design and delivery is informed by EM&V results, but there is an arms-length relationship between program vendors and Cadmus. Mr. Kelley stated that Petitioner pays Cadmus for work performed, not the results delivered so long as the work is performed consistent with the scope of work in the contract, and that such reports are reviewed by the Oversight Board. In addition, Mr. Kelley stated that neither Vectren South nor program administrators have any influence over the development and implementation of the Cadmus Group's study approaches or analysis.

Dr. Khawaja's testimony was largely limited to addressing the reasonableness of EM&V results over time and how the issues of uncertainty and persistence are accounted for in the EM&V processes and methodology. While it may have been more prudent for Petitioner to retain an EM&V witness not associated with Cadmus, we lack sufficient evidence to find that EM&V independence has been undermined – particularly given another request for proposals is planned to select an EM&V vendor to evaluate the 2018–2020 Plan and the ongoing participation by members of the Oversight Board in the review of the EM&V analysis and reports.

Accordingly, we find that the Plan includes EM&V procedures that include independent EM&V.

B. Reasonableness of the Plan. Section 10(j) identifies ten factors the Commission must consider when determining whether a plan submitted under Section 10(h) is reasonable. Although the 2018–2020 Plan includes programs that may be considered DR or have DR components, the factors enumerated in Section 10 are similar to the factors the Commission has historically considered in determining whether to approve DSM programs and associated cost recovery under Ind. Code ch. 8-1-8.5 and 170 IAC 4-8. Accordingly, we consider all of the proposed DSM programs included in the Plan under the following factors.

1. Projected Changes in Customer Consumption. Ms. Harris identified the annual projected energy and peak demand savings resulting from implementation of the 2018–2020 Plan, which are reflected below.

	Annual Energy Savings (kWh)	Peak Demand Savings (kW)
2018	36,656,341	7,430
2019	38,069,188	7,607
2020	36,347,642	7,750
Total	**111,073,171**	**22,787**

This projected energy and demand savings along with Petitioner's expected load forecast in its 2016 IRP enable us to consider projected changes in customer consumption of electricity resulting from implementation of the Plan. Because Vectren South's proposed DSM programs are designed to result in energy savings of approximately 1% of eligible retail sales over the three-year period of the Plan, we find it is reasonable to expect a corresponding decrease in customer consumption of electricity compared to what it would be without the programs.

2. **Cost-Benefit Analysis.** Vectren South evaluated the cost effectiveness of its proposed portfolio and individual DSM programs using the UCT, Total Resource Cost Test ("TRC"), Ratepayer Impact Measure Test ("RIM"), and the Participant Cost Test ("PCT"). Each of these tests are standard in the industry for measuring the cost effectiveness of DSM programs. Dr. Stevie described the various tests, their purpose, and the test results for each of the DSM programs and the Plan portfolio. All of the programs pass the UCT and TRC. For those programs where the PCT could be calculated, the programs also passed that test. While only one of the programs passed the RIM, Dr. Stevie explained that programs which target EE generally tend to fail the RIM.

The Commission, as well as other state utility commissions, have traditionally required the use of the UCT, TRC, RIM and PCT in evaluating the cost effectiveness of DSM programs. The Commission's IRP rule at 170 IAC 4-7-7 also requires the use of at least one of these four tests, or any other test the Commission may find to be reasonable, when evaluating DSM resource options. As noted by the parties, each of these tests is designed to compare various costs and benefits from a different perspective. The TRC helps determine whether EE is cost effective overall, whereas the PCT, UCT, and RIM help to determine whether the program design and efficiency measures provided by the program are balanced from the perspective of the participant, utility, and non-participants, respectively. The purpose of applying several different tests is to provide a more comprehensive analysis of the cost effectiveness than that which can be accomplished with just one of the tests. Hence, consideration of multiple cost-effectiveness tests allows us to better evaluate the reasonableness of individual programs and the overall DSM portfolio as a whole.

The OUCC recommends the Commission reject Petitioner's Plan because its cost-effectiveness tests do not follow the definition of program costs found in Ind. Code § 8-1-8.5-10(g), which defines program costs as inclusive of lost revenues and financial incentives. Although we agree with the OUCC that Section 10(g) defines program costs to include lost revenues and financial incentives, we disagree that Section 10(j)(2) requires a cost-benefit analysis to simply consist of a comparison between the quantifiable monetary benefits of an EE program and its program costs as defined in Section 10(g). First, the plain language of Section 10(j)(2) only requires a "cost and benefit analysis" of the Plan. It does not require a comparison of the program costs as defined in Section 10(g) with any specific benefit. Second, such an

interpretation would lead to unintended results, such as very few EE programs passing the cost-effectiveness hurdle.

Based on the evidence presented, we find that Petitioner has demonstrated that its 2018–2020 Plan is reasonably cost effective.

3. **Consistent with State Energy Analysis and Utility IRP.** Ind. Code § 8-1-8.5-3 requires the Commission to develop, publicize, and keep current an analysis of the long-range need for the expansion of electric generation facilities and sets forth certain requirements that the analysis must include. There is currently no state energy analysis that meets all the statutory criteria.

As discussed earlier in this Order, we find that Petitioner's Plan is consistent with its 2016 IRP.

4. **EM&V.** Evaluation for all programs in the 2018–2020 Plan will be conducted by an independent evaluator every year for the prior year's programs. Ms. Harris described the EM&V process, which includes a process evaluation, impact evaluation, and an assessment of the program market effects.

Other than CAC's concerns with the submission of testimony by Petitioner's current EM&V provider, which we addressed above, no other concerns with Petitioner's proposed EM&V were raised by the parties. Therefore, based on the evidence presented, we find that Vectren South's proposed EM&V processes for the Plan are reasonable.

5. **Undue or Unreasonable Preference to Customer Classes.** There was no evidence presented identifying any undue or unreasonable preference to any customer class resulting, or potentially resulting, from the implementation of a proposed program or from the overall design of the Plan, and we find none.

6. **Stakeholder Comments.** This provision requires the Commission to consider comments provided by customers, customer representatives, the OUCC, or other stakeholders concerning the adequacy and reasonableness of the proposed Plan. The OUCC and CAC provided such comments through the evidence they presented in this proceeding, which the Commission has considered and addressed in making its determinations in this Order.

7. **Effect or Potential Effect of the Plan on Electric Rates and Customer Bills of Participants and Non-Participants.** Vectren South provided evidence demonstrating the short-term bill impacts for all rate schedules and provided a bill impact analysis for a standard residential customer using 1,000 kWh per month. The monthly bill of such a customer would increase in 2018 by 0.77% or $1.23, in 2019 by 0.35% or $0.57, and in 2020 by 0.18% or $0.28. Vectren South also presented various cost-effectiveness tests, some of which are designed specifically to evaluate the long-term effect of the EE programs on the electric rates and bills of both participating and non-participating customers.

The OUCC argued that Vectren South ignored the long-term and short-term effect on non-residential customers that participate in EE programs compared to non-residential customers that do not participate in EE programs, but that assertion is not supported by the evidence of record. Vectren South provided bill impacts of all rate schedules. In addition, the primary measurement used in determining the effect of DSM programs is the TRC, which assesses the benefits and costs of EE from the perspective of all utility customers (both participants and non-participants) in the utility's service territory. The TRC results for each individual program in the Plan as well as the portfolio of programs, were greater than one. Therefore, ratepayers that are assessed the DSM charge are expected to receive more benefits than costs over time. While opt-out customers do not participate in the DSM programs, they will benefit from lower utility rates over time as a result of avoided capacity-related costs and environmental and non-energy benefits.

Based on the estimated bill impacts and cost-effectiveness test results, we find that the effects or potential effects of the Plan on electric rates and customer bills of participants and non-participants to be reasonable.

8. Lost Revenues and Financial Incentives. In addition to being a factor under Section 10(j) for determining the "overall reasonableness" of a plan submitted under Section 10(h), Section 10(o) provides that if the Commission finds such a plan to be reasonable, then we shall allow the utility to recover or receive the following:

(1) Reasonable financial incentives that:
(A) encourage implementation of cost effective energy efficiency programs; or
(B) eliminate or offset regulatory or financial bias:
(i) against energy efficiency programs; or
(ii) in favor of supply side resources.
(2) Reasonable lost revenues.

a. Lost Revenues. Section 10(e) defines lost revenues as the difference between the revenues lost and the variable operating and maintenance costs saved by the utility as a result of implementing the EE programs. Historically, lost revenues in Indiana (and across the country) have been recovered based on a measure's EUL and the energy savings confirmed by EM&V. The purpose of allowing lost revenue recovery is to assist in removing any disincentive a utility may have in promoting DSM, as opposed to pursuing a supply-side resource. *See, Indianapolis Power & Light Co.*, Cause No. 43911 (IURC Nov. 4, 2010); 170 IAC 4-8-3.

Vectren South initially requested approval to recover lost revenue for the life of each EE measure implemented pursuant to the 2018–2020 Plan. However, Petitioner subsequently modified its request and now seeks approval to recover lost revenues based upon the WAML of the Plan programs with a 10% reduction in savings to account for measure persistence. The effect of this change is to reduce lost revenue recovery based strictly on measure lives by 26% or $18.8 million. Thus, under the modified approach, Vectren South would recover approximately $54.8 million of lost revenues over the 12-year WAML of the Plan.

Both the OUCC and CAC encouraged the Commission to reject Vectren South's WAML proposal. CAC recommended the use of a four-year cap on lost revenue recovery. CAC argues this recovery is reasonable because a term greater than four years creates unreasonable difficulties in tracking the accuracy of lost revenues, the pancaking or cumulative effect of lost revenues over time on rates, and lost revenue policies were created at a time when the period between rate cases was shorter. The OUCC recommended a lost revenue recovery cap based on the UCT.

Under the modified proposal, Vectren South would recover the amount of lost revenues associated with the WAML of the Plan portfolio of programs or the measure life of the EE program, whichever is shorter. Dr. Khawaja explained that it was appropriate to cap lost revenue based on the WAML because lost revenue will take place for the duration of the measure life. The WAML is based on the EUL, which is the median of a measure's life. Dr. Khawaja testified that the EUL values used by Petitioner are conservative for an overall WAML of 12 years. Further, the proposed 10% reduction in annual energy savings reflects the use of the lower end 90% confidence level estimate of savings and equates to an even more conservative 10.7 year measure life cap.

In addition to the use of the 12-year WAML, Vectren South proposes to recover only 90% of the annual energy savings. CAC and other parties, in their post-hearing filing, argue that because EM&V is only conducted once for each Plan year, the initial determination of energy savings and lost revenue becomes progressively less reliable and more uncertain in successive years and therefore should not be relied upon. Further, they argue that the proposed 10% reduction in energy savings only addresses the degree of confidence in the threshold EM&V determination, not the eroding reliability of assumed savings.

EM&V is the most established approach to reasonably estimating energy savings and lost revenues associated with EE programs. Vectren South's approach appears reasonably designed to ensure it recovers only the lost revenues that EM&V can establish, with a high degree of confidence, will result from savings driven by EE measures. Recognizing that estimates are more certain in the immediate (as opposed to the distant) future, Vectren South's evaluation process for estimating net energy savings utilizes at minimum a 90% confidence interval and supports a 10% degradation of annual savings within its lost revenue calculation, which results in a statistically conservative estimate. While we recognize that EM&V degrades over time based on accumulating changes, this degradation is built into the EM&V process. We further find that the approximate 26% reduction in recovered lost revenues compared to Petitioner's initial proposal is intended to strike a reasonable balance in terms of offsetting the inherent financial harm to a utility caused by EE sales reductions, while also ensuring the recoveries are fully supported by conservative EM&V estimates that safeguard the cost and benefit analysis relied upon to determine that the EE Plan provides short- and long-term benefits to customers.

As indicated above, CAC offered no basis on which we could make factual findings that a four-year cap would allow Vectren South to recover reasonable lost revenues. In fact, Ms. Harris testified that implementing a four-year cap on the Plan would cause approximately $52 million of financial harm to Vectren South in lost revenues over the life of the programs, which

equates to approximately 70% of lost revenues. Rather than providing a reasoned explanation or analysis to support ending lost revenue recovery after four years regardless of measure life or evidence related to the financial effects of such a proposal on Petitioner, CAC instead offers a conclusory opinion that the magnitude of lost revenues exceeds the program costs and therefore this must result in it being an unreasonable proposal. CAC provided no factual basis to support its contention that lost revenues should not exceed program costs. It is inherent that energy savings validated by EM&V will create lost revenues. Consequently, cost-effective EE programs should have lower programs costs with larger energy savings, which does result in higher lost revenues relative to program costs.

The OUCC recommended the Commission cap recovery of all costs associated with the 2018–2020 Plan, including lost revenues and shareholder incentives, at 50% of the UCT net benefit. Mr. Rutter said a reasonable method of balancing shareholder and customer interests would be to share the UCT net benefit 50-50. However, as noted by Ms. Harris, the UCT compares a future stream of benefits of avoided cost to an annual cash return and does not provide the utility with cash funds. She said that under the OUCC's approach, Vectren South would recover only 21% of the incremental lost revenues and shared incentives associated with the Plan. The OUCC never explains how this 50% cap on all EE cost recovery appropriately addresses lost sales in a reasonable manner from the utility perspective, nor how such a cap would incorporate reliance on EM&V to fairly influence such a calculation. Therefore, we again lack sufficient evidence from which to make the necessary factual findings that such a cap would allow Petitioner to recover reasonable lost revenues.

Accordingly, we find that Vectren South's modified lost revenue recovery proposal, which has a strong nexus to the EM&V process, will allow the recovery of reasonable lost revenues. Our conclusion is consistent with the Commission's DSM rules at 170 IAC 4-8 and Section 10's requirement that EM&V are included in any EE plan. Section 10(o) similarly recognizes the importance of subjecting lost revenues to EM&V in its reconciliation requirements when using forecasted data. Vectren South's proposal recognizes that the EM&V process is not an exact science, and employs limitations on EM&V quantification of savings (and thus lost revenues) that assures customers are billed for lost revenues based on a conservative determination of achieved savings to ensure the highest level of confidence in the energy savings that are attributed to EE measures. Neither CAC nor the OUCC provided us with sufficient evidence demonstrating that Vectren South's proposal is unreasonable. Nor did they provide us with sufficient facts from which we could determine that either of their alternative proposals for caps on lost revenue recovery would allow Vectren South to recover reasonable lost revenues.[5] Therefore, we find Vectren South's modified proposal for lost revenue recovery is reasonable.

b. Financial Incentives. Vectren South requests approval to recover financial incentives using the same shared savings approach approved in Cause No. 44645. The calculation is based on the net present value of the UCT multiplied by the achievement level percentage. Petitioner proposes to recover financial incentives for all

[5] It is clear from the Court of Appeals decision in *S. Ind. Gas & Elec. Co. v. Ind. Util. Reg. Comm.*, 2017 WL 899947 (Ind. Ct. App. 2017) that any decision to cap lost revenue recovery would have to be supported by specific facts that demonstrate the cap would allow the utility to recover reasonable lost revenues.

programs, except the CVR, Income Qualified Weatherization, and Smart Thermostat programs. The proposed incentives are set forth below.

Financial Incentives	
Achievement Level (kWh)	Incentive Level (NPV of net benefits of UCT)
110%	10%
100-109.99%	8%
90-99.99%	7%
80-89.99%	6%
75-79.99%	5%
0-74.99%	0%

The OUCC recommended that the financial incentives be calculated at the program level, rather than the Plan portfolio, and awarded only if Vectren South achieves 100% or more of the program's goal. He testified that financial incentives should never be greater than the WACC approved in Vectren South's last rate case and that any reasonable financial incentive should be subject to an overall 50% of UCT cap on the sum of lost revenues recovered and incentives.

Requiring incentives to be awarded on the program level does not align with how Vectren South manages its portfolio or goes about achieving its overall EE goals. Vectren South manages its Plan at the portfolio level because it strives to achieve its kWh target at the portfolio level. When EE programs underperform, Petitioner responds by shifting efforts and resources to other programs, with Oversight Board approval, so that the portfolio as a whole achieves its targets or goals. The OUCC's financial incentive approach creates a disincentive to offer new programs and discourages the utility from allocating resources toward hard to reach markets due to the difficulty in reaching goals within those markets. The OUCC's recommended approach does not promote a well-balanced portfolio and fails to recognize the utility's primary objective, which is to achieve an overall portfolio savings goal that aligns with its IRP.

We also find that a tiered approach that allows a smaller incentive amount for a base level of achievement and that increases as the level of achievement increases, as opposed to awarding financial incentives only after the utility achieves 100% or more of its goal, appropriately encourages attaining EE and is reasonable. In addition, because the OUCC failed to explain or support why limiting performance incentives to the WACC is reasonable or appropriate, we decline to adopt those limitations.

Based on the evidence presented, we find Vectren South's proposed financial incentives are reasonable.

9. Petitioner's IRP. The Plan's consistency with Petitioner's 2016 IRP and underlying resource assessment is discussed and addressed above.

C. Conclusion on 2018–2020 Plan. Based on the evidence presented as discussed above, having assessed the overall reasonableness of the Plan based on a consideration of the factors enumerated in Section 10(j), we find that Vectren South's 2018–2020 Plan is reasonable and approve it.

D. Oversight and Stakeholder Input. As discussed above, Vectren South requests that the Oversight Board continue to remain in place with all of the same authority previously granted. This authority includes the ability to authorize exceedances of the Commission-approved budgets for DSM programs by up to 10% without having to seek additional approval from the Commission and authority to continue shifting funds between programs, provided gas and electric funds are not commingled. Based on the evidence presented, we approve the continued use of the Oversight Board as discussed in this Order.

E. Program Cost Recovery. Section 10(k) provides that once an EE plan is approved, the Commission shall allow the utility to recover all associated program costs on a timely basis through a periodic rate adjustment mechanism. Because we approve Vectren South's 2018–2020 Plan, we find that Vectren South shall be authorized to recover its associated program costs, including direct and indirect program costs, lost revenues based upon the WAML less a 10% reduction in savings, and financial incentives through its DSMA mechanism.

7. Scorecard Reporting Requirements. In an effort to better monitor and understand the energy savings being achieved by the Plan, we find that Vectren South shall file quarterly scorecards. The following quarterly reporting requirements shall be effective immediately upon Commission approval of this Order. A scorecard containing the required reporting information shall be submitted on a quarterly basis (i.e., April 30, July 30, October 30, and January 30) with the fourth quarter scorecard also including the information for the full year. Vectren South's first scorecard associated with the Plan approved herein should be filed on April 30, 2018. Scorecards shall be filed in Petitioner's DSM tracker proceedings. If a DSM tracker is not pending before the Commission, then the scorecard shall be filed in Petitioner's most recently concluded DSM tracker case.

Quarterly scorecards shall provide for each program gross MWh savings at the meter and gross MW savings at the meter. The savings to be reported are to include: ex ante savings, audited savings, verified savings, ex post gross, and net energy savings as these numbers become available. Minimally, this will require Vectren South to provide information from the year in which the quarterly reporting occurs as well as the previous year so that net energy savings information can be captured. The actual savings as a percent of the annual goal shall also be presented. The savings shall be compared to the Commission-approved amount of savings for the program as well as an updated goal, if applicable, to reflect program adjustments authorized by the Oversight Board consistent with Commission-approved budget flexibility. It shall be noted if the savings goal is not what the Commission originally approved and the change shall be explained.

To provide clarity and ensure receipt of consistent DSM information across utilities, Vectren South shall use the following definitions for each type of savings: (a) ex ante savings – energy savings from program tracking system, as reported by the third-party administrator or the utility; (b) audited savings – ex ante savings after deemed calculations and project/measure counts have been confirmed by the evaluation administrator; (c) verified savings – savings estimated following confirmation of the installation and use of a sample of a project/measure installations; (d) ex post gross – evaluated savings resulting from the installation and use of all

program-incented or provided technologies; and (e) net energy savings – evaluated savings resulting from the installation and use of incented or provided technologies directly attributable to the program.

Information presented in the scorecard shall also include the amount of: customer incentives by program, direct program expenditures by program, total expenditures by program, indirect program expenditures, and EM&V expenditures. Direct costs will include vendor implementation costs and program-specific administrative costs incurred by the utility. Indirect costs are those costs not tied directly to a single program, but rather to multiple programs or an entire portfolio. Customer incentives and EM&V expenditures are not to be included in either the direct or indirect program expenditure data; each is to be presented separately. Actual expenditures for each cost type as a percent of the total annual budget should also be presented. Actual expenditures shall be compared to the Commission-approved budget for the program as well as an updated budget, if applicable, to reflect program adjustments authorized by the Oversight Board consistent with Commission-approved budget flexibility. It shall be noted if the budgeted amount is not what the Commission originally approved and the change shall be explained.

The scorecards for the portfolio shall also separately identify lost revenues and shared savings corresponding to ex ante savings, audited savings, verified savings, ex post gross, and net energy savings as these numbers become available. Minimally, this will require Vectren South to provide information from the year in which the quarterly reporting occurs as well as the previous year so that net energy savings information can be captured.

8. Confidential Information. Petitioner filed a Motion for Protection and Nondisclosure of Confidential and Proprietary Information, which was supported by an affidavit, showing certain testimony and exhibits to be submitted by CAC contained trade secret information of Petitioner that was within the scope of Ind. Code §§ 5-14-3-4(a)(4) and 24-2-3-2. On August 10, 2017, the Presiding Officers granted confidentiality to the information on a preliminary basis, after which such information was filed under seal. Having reviewed the information, we find that all such information should continue to be held confidential pursuant to Ind. Code § 5-14-3-4(a)(4).

IT IS THEREFORE ORDERED BY THE INDIANA UTILITY REGULATORY COMMISSION that:

1. Vectren South's 2018–2020 Plan is approved.

2. Vectren South's request for timely recovery of costs, including the direct and indirect costs of the DSM programs, lost revenues based upon weighted average measure life less a 10% savings reduction, and financial incentives associated with the 2018–2020 Plan, through its DSMA is approved.

3. Vectren South's request for continued authority to use deferred accounting on an ongoing basis until such costs are reflected in retail rates through its DSMA is approved.

4. Vectren South's request for authority to recover, via its DSMA, annual depreciation and operating expenses associated with the proposed CVR program investment along with recovery in the DSMA of the annual carrying costs on this capital investment is approved.

5. Vectren South shall file quarterly scorecards as required in Finding Paragraph 7 above.

6. This Order shall be effective on and after the date of its approval.

ATTERHOLT, FREEMAN, HUSTON, WEBER, AND ZIEGNER CONCUR:

APPROVED: DEC 28 2017

I hereby certify that the above is a true and correct copy of the Order as approved.

Mary M Becerra

Mary M. Becerra
Secretary of the Commission