SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
D/B/A VECTREN ENERGY DELIVERY OF INDIANA, INC.
A CENTERPOINT ENERGY COMPANY
(VECTREN SOUTH)

IURC CAUSE NO. 45387

DIRECT TESTIMONY
OF
RICHARD MORGAN
PRESIDENT, MORGAN MARKETING PARTNERS,

ON

COST EFFECTIVENESS OF VECTREN SOUTH'S
2021-2023 DEMAND SIDE MANAGEMENT PLAN

SPONSORING PETITIONER'S EXHIBIT NO. 2,
ATTACHMENT RM-1

DIRECT TESTIMONY OF RICHARD MORGAN

I. INTRODUCTION

Q. Please state your name, title and business address.

A. My name is Richard Morgan. I am the President and owner of Morgan Marketing Partners (MMP). My business address is 6205 Davenport Drive Madison, Wisconsin 53711-2447. I am submitting this testimony on behalf of Southern Indiana Gas and Electric Company d/b/a Vectren Energy Delivery of Indiana, Inc. ("Vectren South" or the "Company"), a subsidiary of CenterPoint.

Q. Please describe Morgan Marketing Partners.

A. MMP is a professional services firm formed in 1995 that partners with utility and governmental clients to provide energy efficiency consulting services including program design and development, cost-effectiveness modeling, strategic marketing consulting, implementation and operations assistance, new product and service development, management assistance, and evaluation and assessments. MMP has worked with clients including, but not limited to, Consumers Energy, DTE Energy Company, Duke Energy, California Public Utility Commission, Energy Trust of Oregon, Entergy, Missouri River Energy Services, Kansas City Power & Light, Jacksonville Electric Authority, Rochester Public Utilities, MidAmerican Energy, Hawaii Electric, Northwest Energy Efficiency Alliance, and Wisconsin Focus on Energy.

One of the programs MMP designed for Duke Energy was recognized by The American Council for an Energy Efficient Economy ("ACEEE") as an award-winning program for low-income customers. From 2001 to 2011, MMP served as planner and advisor to the State of Wisconsin on the statewide residential and business public benefits efficiency program, Wisconsin Focus on Energy. MMP has also developed comprehensive energy efficiency program portfolios for DTE Energy Company, Kansas City Power & Light, NIPSCO, Upper Peninsula Power Company, Duke Energy and Missouri River Energy Services among others. MMP served as one of two principal auditors to complete a management audit of the Energy Trust of Oregon. As part of the audit, MMP reviewed all aspects of the

Trust, including organizational structure, program design/delivery, support systems, public involvement, and overall management. The California Public Utility Commission retained MMP to participate on an independent review team to provide advice regarding the portfolio of utility energy efficiency programs developed for 2006-2008. In 2012, MMP also completed a portfolio program assessment with a team of evaluators to assess all the energy efficiency programs offered by utilities in California.

Q. Please briefly describe your educational background and business experience.

A. I earned a Bachelor of Science degree in Resource Management from Ohio State University, School of Natural Resources in 1976. I am the past President of the American Marketing Association, Madison Chapter, a past Board Member and Vice President, Business Development, for the Association of Energy Services Professionals ("AESP"), and a past board member of the Midwest Energy Efficiency Alliance. I have had numerous papers and research published at AESP and ACEEE. I am also the winner of the *2002 AESP B.H. Prasad Outstanding Contributor of the Year*.

I have over forty years of management, planning, program design, implementation, low-income program, and marketing experience in the energy field. Prior to starting MMP in 1995, I spent four years as a manager and consultant with A&C Enercom, a leading energy services and consulting company. I was also Marketing Manager for EWI Engineering, a one-hundred-person engineering consulting firm. Before joining EWI Engineering, I spent over eleven years with Wisconsin Power & Light Company, a combined gas and electric company now a part of Alliant Energy, in its marketing and energy efficiency department. I held numerous positions managing many different services including low-income programs, residential services, commercial and industrial gas services, demand-side management programs, and marketing/sales initiatives. Within my various positions my responsibilities included program planning, evaluation oversight, new product/service development, program design, market research, advertising/promotion planning, implementation and operations management, evaluation, budgeting, tracking, training, government

interface, sales, field customer service support, quality control, and business center operations. Prior to joining Wisconsin Power and Light, I worked for the Oregon Department of Energy and the Western SUN, a federally funded regional solar center.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to present the results of the cost-effectiveness analysis of the Vectren South 2021 - 2023 Electric Energy Efficiency Plan ("2021 - 2023 Plan") which was developed under the direction of Vectren South.

Q. Are you sponsoring any attachments?

A. Yes. I am sponsoring Petitioner's Exhibit No. 2, **Attachment RM-1**, which is a Benefit/Cost Test Matrix.

II. COST-EFFECTIVENESS MODELING

Q. What are the cost effectiveness tests you performed?

A. As required by the Indiana Utility Regulatory Commission ("IURC" or "Commission"), the 2021 - 2023 Plan considers the Utility Cost Test ("UCT" also known as the Program Administrator Cost Test), the Total Resource Cost Test ("TRC Test"), the Ratepayer Impact Measure Test ("RIM"), and the Participant Test.

Q. How were these tests evaluated?

A. The tests were evaluated using the DSMore model.

Q. What is the DSMore model?

A. DSMore is a financial analysis tool designed to evaluate the costs, benefits, and risks of energy efficiency programs and measures. Developed and licensed by Integral Analytics based in Newport, Kentucky, DSMore estimates the value of an energy efficiency measure at an hourly level across distributions of weather and/or energy costs or prices. By examining energy efficiency performance and cost effectiveness over a wide variety of weather and cost conditions, the Company is

in a better position to measure the risks and benefits of employing energy efficiency measures versus traditional generation capacity additions, and further, to ensure that demand side resources are compared to supply side resources on a level playing field.

The analysis of energy efficiency cost-effectiveness has traditionally focused primarily on the calculation of specific metrics, often referred to as the California Standard tests: UCT, RIM Test, TRC Test, Participant Test, and Societal Test. For this proceeding, test results will be reported for the previously mentioned set of tests required by the IURC. DSMore can be utilized to provide the results of those tests for any type of energy efficiency program (demand response and/or energy saving).

Test results are also developed for a range of weather conditions, including normal weather, and under various cost and market price conditions. Because DSMore is designed to be able to analyze extreme conditions, one can obtain a distribution of cost-effectiveness outcomes or expectations. Avoided costs for energy efficiency tend to increase with increasing market prices and/or more extreme weather conditions due to the covariance between load and costs/prices. Understanding the way energy efficiency cost effectiveness varies under these conditions allows a more precise valuation of energy efficiency programs and demand response programs.

Generally, the DSMore model requires the user to input specific information regarding the energy efficiency measure or program to be analyzed as well as the cost and rate information of the utility. These inputs enable one to then analyze the cost-effectiveness of the measure or program.

Q. What energy efficiency program or measure information is input into the model?

A. The information required on an energy efficiency program or measure includes, but is not limited to:

- Number of program participants, including free ridership or free drivers;

- Projected program costs, contractor costs and/or administration costs;
- Customer incentives, demand response credits or other incentives;
- Measure life, incremental customer costs and/or annual maintenance costs;
- Load impacts (kWh, kW and the hourly timing of reductions); and
- Hours of interruption, magnitude of load reductions or load floors.

Q. What utility information is input into the model?

A. The utility information required for the model includes, but is not limited to:

- Discount rate;
- Loss ratio, either for annual average losses or peak losses;
- Rate structure, or tariff appropriate for a given customer class;
- Avoided costs of energy, capacity, transmission & distribution; and
- Cost escalators.

Q. How are programs or measures modeled?

A. An analyst or program manager at Vectren South provides the inputs for the program or measure using information on expected program costs, load impacts, customer incentives necessary to drive customers' participation, free rider expectations, and expected number of participants. Past program experience and results of measurement and verification studies can also add reliability to the program or measure values. Once this information has been compiled, it is used in runs of the DSMore model to determine cost-effectiveness.

In DSMore, the load impacts of the program or measure may be analyzed as a percent of savings reduction from the current level of use, as proportional to the load shape for the customer, or as an hourly reduction in kWh and/or kW. These approaches apply to energy saving programs and measures. For demand response programs, the analyst must provide information on the amount of the expected load reduction and the possible timing of the reduction.

Q. What is the source of the data for the program or measure?

A. Program managers and analysts at Vectren South provide the inputs for each program or measure for the DSMore runs. Measure impacts are based on evaluations and the Indiana Technical Resource Manual.

Q. What is the source for the utility inputs to the model?

A. Vectren South staff provided information on the required utility inputs with guidance from MMP.

III. COST-EFFECTIVENESS TESTS

Q. Please describe how energy efficiency programs and measures are analyzed.

A. Evaluating cost-effectiveness of energy-efficiency programs involves estimating the net present value of the financial stream of costs versus benefits, *e.g.*, the cost to implement the measures is valued against the savings or avoided costs. The resultant benefit/cost ratios, or tests, provide a summary of each program's cost-effectiveness relative to the benefits of the projected load impacts. The principal tests for screening energy efficiency measures are the Participant Test, the UCT, the RIM Test, and the TRC Test. The following paragraphs provide a summary of the applicable tests.

- The Participant Test 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 energy efficiency measure. The costs can include capital cost as well as increased annual operating cost, if applicable.
- The UCT compares utility benefits (avoided costs) to incurred utility costs to implement the program and does not consider other benefits such as participant savings or societal impacts. This test compares the cost (to the utility) to implement the measures with the savings or avoided costs (to the utility) resulting from the change in magnitude and/or the pattern of electricity consumption caused by implementation of the program. Avoided costs are considered in the evaluation of cost-effectiveness based on the

projected cost of power, including the projected cost of the utility's environmental compliance for known regulatory requirements. The cost-effectiveness analyses also incorporate avoided transmission and distribution costs, and load (line) losses.

- The RIM Test, or non-participants test, indicates if rates increase or decrease over the long-run as a result of implementing the program. The RIM Test compares the same benefits as the UCT (utility avoided costs) to the total costs to the utility including the utility costs to implement the programs and utility lost revenues.
- The TRC test compares the total benefits to the utility and to participants relative to the costs to the utility to implement the program along with the costs to the participant. The benefits to the utility are the same as those computed under the UCT. The benefits to the participant are the same as those computed under the Participant Test; however, customer incentives are a pass-through benefit to customers. As such, customer incentives or rebates are not included in the TRC. The TRC Test represents a combination of the Participant Test and the RIM or non-participants test.

Petitioner's Exhibit No. 2, Attachment RM-1 provides a more detailed summary of the items included in the respective tests.

Q. Would you discuss information provided by each of the tests?

A. Yes. Each one of the tests provides an insight into the cost-effectiveness of the programs from the perspective of different stakeholders: participant (Participant Test), non-participants (RIM), the utility and ratepayers (UCT), and society as a whole (TRC). The use of multiple tests can ensure the development of a reasonable set of energy efficiency programs, indicate the likelihood that customers will participate, and protect against cross-subsidization.

In general, programs must pass the Participant Test, as applicable, or the programs will not be successful in the marketplace, i.e., will not be adopted by potential participants. The bill savings (see line 1 on Petitioner's Exhibit No. 2, Attachment RM-1) that provide a benefit to the program participants represent lost

revenues to the utility (see line 21 on Petitioner's Exhibit No. 2, Attachment RM-1).

The UCT provides the same type of information as the benefit cost analysis conducted by Integrated Resource Planning (IRP) models. The UCT evaluates the long-run implications for utility revenue requirements, just like in an IRP. For example, if a program passes the UCT, it means that long-run requirements for customers will be lower than if the utility did not implement the program.

The RIM Test is like the UCT except that the lost revenues, the bill savings from the Participant Test, now show up as a cost[1]. These lost revenues must be spread for recovery across all the utility's customer sales to enable the utility to cover its costs. That is why the RIM Test is called the non-participants test. If a program fails the RIM Test, it indicates that rates would likely have to increase. What the RIM Test does not tell us is whether rates would increase more if the program were not implemented. That is why this test is viewed with a significant level of skepticism. While having a program pass the RIM Test is a positive outcome, the value of the test is limited. Generally, programs that target energy efficiency tend to fail the RIM Test.

Finally, there is the TRC Test. The TRC Test represents the sum of the components of the Participant Test and the non-participants or RIM Test. Therefore, it is viewed as a comprehensive test since impacts on participants and non-participants are considered. One point to note is that while the TRC Test does not explicitly include lost revenues, in combining the components of the two tests, the utility bill savings and the incentives paid to customers by the utility which are benefits in the Participant Test are offset by the lost revenues and customer incentives (costs in the RIM Test). These components cancel each other out and are not included in the calculation of the TRC Test. Typically, if a program passes the UCT, it will pass the TRC Test unless the participant's cost to implement the

[1] The RIM Test net of fuel removes lost revenues associated with fuel costs. However, revenues associated with fuel costs would still be counted as a benefit in the calculation of the Participant Test.

energy efficiency measure is large relative to the program benefits. Note that one deficiency in the TRC test data is that all the benefits that the participant receives beyond bill savings are not included in the total benefits. These total benefits should include all the utility benefits and the participant benefits including the non-bill related savings.

Again, each test provides insights into a very complex issue. Understanding the implications when a program passes or fails a test helps in deciding whether to implement the program or judge its success.

Q. What were the results of the cost-effectiveness analysis?

A. The Company seeks, in part, approval to implement the following set of programs.

RESIDENTIAL CUSTOMER PROGRAMS

- Residential Specialty Lighting;
- Residential Prescriptive;
- Residential New Construction;
- Home Energy Assessment;
- Income Qualified Weatherization;
- Community Based – LED Specialty Bulb Distribution;
- Energy Efficient Schools;
- Residential Behavioral Savings;
- Appliance Recycling;
- Conservation Voltage Reduction Residential;
- Smart Cycle (DLC Changeout);
- Bring Your Own Thermostat (BYOT);
- Residential Midstream;
- Home Energy Management Systems;

COMMERCIAL & INDUSTRIAL PROGRAMS

- Commercial Prescriptive;
- Commercial Midstream;
- Commercial Custom;

- Small Business Energy Solutions;
- Conservation Voltage Reduction Commercial.

Table RM-1 below provides the cost-effectiveness test results for each program as well as the portfolio in total. All the programs pass the TRC and UCT cost effectiveness Tests, but not the RIM Test. While there are programs that do not pass the RIM Test, this should not be interpreted to mean the programs fail cost-effectiveness. In these cases, one should look to the UCT test as passage of that test reveals whether one can expect the long-run revenue requirements for ratepayers would increase or decrease as a result of program implementation. All programs with participant costs past the Participant Test. For several programs, the Participant Test could not be calculated since there were no costs to participants for adopting the program. These are represented by "NA" on the table.

The table also provides two estimates of the projected cost per kWh saved. The first is on a levelized cost basis, while the second is on a cost per first year kWh basis.

Table RM-1 – Vectren South 2021-2023 Electric Energy Efficiency Plan – Cost Effectiveness Results

Residential	TRC	UCT	RIM	Participant	TRC NPV $	UCT NPV $	Levelized Cost/kWh	Cost/kWh
Residential Specialty Lighting	3.19	3.65	0.62	8.51	$ 3,967,261	$ 4,193,963	$0.02	$0.12
Residential Prescriptive	1.08	1.40	0.65	1.71	$ 300,270	$ 1,164,193	$0.09	$0.69
Residential New Construction	1.16	2.14	0.74	1.08	$ 72,542	$ 281,636	$0.08	$0.54
Home Energy Assessment	1.05	1.05	0.35	n/a	$ 37,257	$ 37,257	$0.04	$0.44
Income Qualified Weatherization	0.46	0.46	0.28	n/a	$ (1,078,445)	$ (1,078,445)	$0.14	$1.41
Community Based - LED Specialty Bulb Distribution	5.79	5.79	0.66	n/a	$ 2,336,936	$ 2,336,936	$0.01	$0.15
Energy Efficient Schools	3.67	3.67	0.60	n/a	$ 865,233	$ 865,233	$0.02	$0.16
Residential Behavioral Savings	1.62	1.62	0.44	n/a	$ 459,597	$ 459,597	$0.03	$0.04
Appliance Recycling	1.58	1.31	0.39	n/a	$ 335,377	$ 214,881	$0.03	$0.18
CVR Residential	1.05	1.05	0.51	n/a	$ 55,675	$ 55,675	$0.08	$0.00
Smart Cycle (DLC Change Out)	2.30	2.01	1.44	n/a	$ 3,407,118	$ 3,031,604	$0.19	$2.71
BYOT (Bring Your Own Thermostat)	4.76	4.76	4.45	n/a	$ 1,643,293	$ 1,643,293	$1.12	$0.00
Residential Midstream	1.78	3.38	1.11	1.26	$ 1,888,023	$ 3,034,364	$0.08	$0.48
Home Energy Management Systems	1.01	1.01	0.43	n/a	$ 5,611	$ 5,611	$0.07	$0.40
Residential Portfolio	**1.79**	**2.01**	**0.72**	**4.53**	**$14,295,750**	**$16,245,800**	**$0.05**	**$0.28**

Commercial & Industrial	TRC	UCT	RIM	Participant	TRC NPV $	UCT NPV $	Levelized Cost/kWh	Cost/kWh
Commercial Prescriptive	2.70	3.71	0.53	4.84	$ 15,853,125	$ 18,417,119	$0.02	$0.16
Commercial Midstream	2.64	1.77	0.46	0.00	$ 48,350	$ 33,814	$0.02	$0.49
Commercial Custom	2.23	4.06	0.53	3.85	$ 5,822,944	$ 7,947,156	$0.03	$0.15
Small Business Energy Solutions	1.96	3.93	0.62	2.45	$ 4,661,100	$ 7,084,994	$0.03	$0.25
CVR Commercial	1.04	1.04	0.39	n/a	$ 21,853	$ 21,853	$0.05	$0.00
Commercial & Industrial Total	**2.35**	**3.69**	**0.54**	**4.00**	**$26,407,372**	**$33,504,937**	**$0.02**	**$0.18**
Indirect Portfolio Level Costs					$ (3,744,371)	$ (3,744,371)		
Total Portfolio	**1.90**	**2.43**	**0.58**	**4.16**	**$36,958,750**	**$46,006,366**	**$0.04**	**$0.26**

* Cost per Kwh is calculated by dividing program cost by total savings and do not include carry forward costs related to smart thermostat, BYOT and CVR programs. The Levelized Costs per kWh excluding CVR and IQW costs, the cost per kwh is $0.03/Kwh.

Q. What does your analysis show concerning the long-term effect, or potential effect, of the 2021-2023 Plan on the electric rates and bills of customers that participate in Vectren South's energy efficiency programs compared to the electric rates and bills of customers that do not participate in the Company's energy efficiency programs?

A. 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 energy efficiency measure. A score greater than 1 indicates the customer is saving more money than expended, thus reducing the participant's energy bill over the life of the measure. All the programs included in Vectren South's 2021-2023 Plan have a Participant Test score greater than 1, 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. As a result, all participants would benefit from the programs. The long-term effect on

rates and bills of non-participants may be considered by the RIM Test, which is also called the non-participant test. It implies that lost revenues would be spread across all the utility's customer sales to enable the utility to cover its costs. If a program's RIM Test has a score lower than 1, it indicates that rates would likely have to increase over time. However, a rate increase in and of itself should not be viewed negatively given that DSM programs create a demand side resource that allows utilities to avoid the cost of a supply side resource, which has its own costs that would increase rates. As I stated earlier, the RIM Test does not tell us whether rates would increase more if the programs were not implemented, which is one reason the value of the RIM Test is limited. This is where the UCT Test provides greater insight on the long-run revenue requirements. As shown through the IRP, if a program passes the UCT then it is less than the cost of current supply and in the long run would reduce all customers' revenue requirements.

Q. Given your review of Vectren South's 2021-2023 Plan, the analysis of the goals and cost benefit modeling results, do you believe that the Company's 2021-2023 Plan is cost effective?

A. Yes.

IV. CONCLUSION

Q. Does this conclude your direct testimony?

A. Yes.

BENEFIT/COST TEST MATRIX

Component	TRC	UCT	RIM	PCT	SCT
Energy- and capacity-related avoided costs	Benefit	Benefit	Benefit		Benefit
Additional resource savings	Benefit				Benefit
Non-monetized benefits					Benefit
Incremental equipment and installation costs	Cost			Cost	
Program overhead costs	Cost	Cost	Cost		Cost
Incentive payments		Cost	Cost	Benefit	
Bill savings			Cost	Benefit	

VERIFICATION

I, Richard Morgan, President, Morgan Marketing Partners, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information and belief.

Richard Morgan

Date: June 1, 2020