SOUTHERN INDIANA GAS AND ELECTRIC COMP

D/B/A

VECTREN ENERGY DELIVERY OF INDIANA, INC.

CAUSE NO. 45052

VERIFIED (CONFIDENTIAL) DIRECT TESTIMONY

OF

MATTHEW E. LIND

ASSOCIATE PROJECT MANAGER, BURNS & MCDONNELL

SPONSORING PETITIONER'S EXHIBIT NO. 6, ATTACHMENT MEL-1 (CONFIDENTIAL) FILED March 20, 2018 INDIANA UTILITY REGULATORY COMMISSION

VERIFIED DIRECT TESTIMONY

OF

MATTHEW E. LIND

ASSOCIATE PROJECT MANAGER, BURNS & MCDONNELL

1 Q. Please state your name and business address.

A. My name is Matthew E. Lind. I am an Associate Project Manager within the Business &
 Technology Solutions global practice of Burns & McDonnell. I work at the following
 address: 9400 Ward Parkway, Kansas City, MO 64114.

5 Q. Please describe Burns & McDonnell.

A. Burns & McDonnell is a family of companies made up of more than 5,700 engineers,
architects, construction professionals, scientists, consultants and entrepreneurs with
more than 40 offices across the country and throughout the world. Burns & McDonnell
offers more than 350 services with a focus on the Aviation, Commercial, Retail &
Institutional, Construction, Environmental, Government, Military & Municipal,
Manufacturing & Industrial, Oil & Gas, Power, Transportation, and Water industries.

12 Q. Please describe your educational and professional experience.

A. I have received a Bachelor of Science degree in Industrial Engineering from Iowa State
 University. I have also received a Master of Business Administration degree in Finance
 from the University of Missouri-Kansas City. I am a registered Professional Engineer in
 the state of Kansas.

17 I have worked as a professional consultant for Burns & McDonnell in the utility and 18 energy sector since 2004. During that time, I have specialized in development of 19 economic models and analyses associated with generation and transmission planning.

Petitioner's Exhibit 6 (CONFIDENTIAL)

In my previous consulting engagements, I have worked with municipal, cooperative,
 investor-owned utilities, independent generation and transmission developers and
 regional transmission organizations on projects ranging from new resource planning,
 new transmission planning, demand-side management, asset retirement, transmission
 congestion impacts, and other economic planning decisions. I have provided consulting
 support to clients in markets across the United States and some international markets.

7 Q. Are you a member of any professional organizations?

8 A. I am a member of RMEL and the Edison Electric Institute ("EEI"). I serve on the EEI
9 Transmission Executive Committee supporting the Planning and Operations track.

10 Q. Have you previously testified before the Indiana Utility Regulatory Commission

- 11 ("Commission")?
- A. Yes. I provided testimony describing Southern Indiana Gas and Electric Company d/b/a
 Vectren Energy Delivery of Indiana, Inc.'s ("Vectren South") in Cause Nos. 44446 and
 44927.

15 Q. Are you sponsoring any exhibits in support of your testimony?

16 A. Yes. I am sponsoring the following exhibits:

Exhibit	Description
Petitioner's Exhibit No. 6, Attachment MEL-1 (CONFIDENTIAL)	Power Supply Recommendation Memo

- 17
- Q. Were the exhibits identified above prepared or assembled by you or under your
 direction or supervision?
- 20 A. Yes. It is important to recognize, however, that other Burns & McDonnell and Vectren
- 21 South employees with specific areas of expertise were involved in the process of

providing inputs or creating the work product. I served the role of overseeing the project
 planning process, including coordinating, validating and documenting the modeling
 efforts.

4 Q. What is the purpose of your Direct Testimony in this proceeding?

A. My testimony has three objectives. First, I will describe the modeling Burns & McDonnell
conducted on behalf of Vectren South to evaluate its resource needs over the next
twenty years. Second, I will discuss Burns & McDonnell's role in assisting Vectren
South's solicitation of the request for proposals ("RFP") for energy and capacity. Third, I
will describe the modeling Burns & McDonnell performed to evaluate the bids received in
response to the RFP, including comparing the best bids to Vectren South's self-build
CCGT alternatives.

12

I. Vectren South Resource Needs

13 Q. Please describe Burns & McDonnell's experience in developing integrated 14 resource plans.

A. Burns & McDonnell has experience supporting a variety of clients – investor-owned
 utilities, cooperatives, municipal utilities, power agencies, independent power producers,
 and regional transmission organizations – with decisions related to power supply and
 integrated resource plans. The scope of support Burns & McDonnell has provided
 includes screening level cost estimates for new power supply resources, the use of a
 variety of software to support production cost modeling and portfolio optimization, risk
 analysis, stakeholder presentations, and regulatory filings.

Q. What role did Burns & McDonnell play in the development of Vectren South's 2016 Integrated Resource Plan?

1 Α. Burns & McDonnell provided a Technology Assessment and performed modeling in 2 support of portfolio development. The Technology Assessment provides operating 3 characteristics and investment cost for new power supply alternatives. Portfolio 4 development was supported through the use of Microsoft Excel and ABB's Strategist 5 software to screen resource alternatives and develop computer-generated portfolios.

6

What process does Burns & McDonnell utilize to model alternative resources to Q. 7 meet energy demand?

8 Α. While every client and power supply scenario is different, Burns & McDonnell tries to use 9 a standard approach in identifying a preferred long-term portfolio including new power 10 supply alternatives. The approach starts with looking at a broad list of technically 11 feasible alternatives. Typically, the list of technically feasible alternatives is too large to 12 simultaneously consider in a single portfolio optimization model. In order to manage the 13 number of alternatives to be modeled, the list of alternatives is screened based on 14 economic feasibility through a busbar or levelized cost of electricity comparison. Based 15 on this economic screening, the list of alternatives may be trimmed down to a smaller list 16 for more detailed modeling. An optimization model is then used to identify various 17 portfolios to consider that meet customer energy requirements and any other market or 18 regulatory requirements.

19

Q. Please describe Strategist.

20 Α. Strategist is comprised of several different analysis modules that allow for dynamic 21 optimization of integrated resources (supply and demand-side) in a side-by-side long 22 range planning study. Strategist uses reserve margin logic to evaluate expansion plans 23 over a defined period of time, returning plans in a ranked order according to a defined 24 objective function. Typically, the objective function is minimized utility cost. Strategist 25 uses simplified operational details to achieve quicker scenario analysis and evaluation

than a full hourly dispatch model. This allows for quicker evaluation of resource expansion plans that consider a variety of timeframes and constraints. Due to the simplifications, Strategist results are typically best interpreted as screening level rather than budgetary level. Strategist is suited for use in long range planning that involves multiple economic decision variables and can be solved against defined constraints. Model constraints can include reserve margin, emission limits, renewable energy target, or other economic targets.

8

Q. What output is produced by Strategist?

9 A. The output produced by Strategist varies based on what mode or module is run, but in
10 an optimization simulation, Strategist produces a list of portfolios ranked by the net
11 present value ("NPV") as well as operational detail associated with the NPV for the least
12 cost plan.

Q. Describe the iterative approach used to model various generation alternatives in Strategist.

15 Α. Burns & McDonnell employed an iterative simulation approach to allow for consideration 16 of a wide range of portfolio decisions and resource alternatives. This approach focused 17 on identifying key potential portfolio decisions that would have a significant impact to 18 Vectren South resource portfolio composition and/or cost and then comparing the cost 19 outcome of those decisions. For example, in Vectren South's 2016 IRP, the decision to 20 retire or cease operations at existing facilities was a key potential portfolio decision that 21 would affect the preferred resource portfolio. Multiple model iterations were designed 22 around potential operating decisions considering technical, reliability and/or regulatory 23 compliance. The portfolios developed through each iteration are then compared and the 24 lowest cost portfolio can be identified. By performing iterative simulations, Vectren South 25 is able to consider a wider range of possible portfolio decision outcomes considering unit

1	retirement timing, trade-offs between low cost capacity and or energy, and increasing
2	renewable resources with more granularity than would otherwise be possible if the focus
3	were to simply achieve a single optimization simulation.

4 Q. How can you be sure the iterative approach allows all resources equal opportunity
 5 to be selected?

A. The iterative approach allows for the consideration of more alternatives rather than fewer
 alternatives. The iterations are designed with an understanding for which resources and
 decisions are constrained and may require more iterations. The portfolio development
 iterations are created to test all modeled resources.

Q. Does generation resource modeling software exist that eliminates the need for this iterative approach?

A. There are a variety of optimization models used in the industry to support generation
 resource planning. Generally speaking, every program requires some consideration of
 trade-offs associated with considering more alternative increments along with more
 alternatives simultaneously. In my experience, every model has limits associated with
 the amount of options that can be simultaneously evaluated.

17 Q. Is the iterative approach widely used in the industry?

A. Yes. The iterative approach is widely used in the industry for resource planning. Any
 resource plan communicated with consideration or comparison of multiple portfolios
 would be an example where an iterative approach was used. Multiple portfolios/iterations
 show a broader set of portfolios evaluated as part of a resource planning process.

22 Q. Did Burns & McDonnell also utilize PROMOD in modeling for Vectren South?

A. Yes. Subsequent to using Strategist as part of portfolio development, Burns &
 McDonnell used PROMOD to compare different combined cycle generation facilities

based on different vendor operational and cost quotes, to compare congestion relative to
 Vectren South customer load associated with a new combined cycle facility built in
 different locations, and finally to compare discrete project options in an overall net
 present value portfolio comparison similar to the 2016 IRP.

5 Q. Please describe the PROMOD software.

A. PROMOD is an hourly chronological unit commitment and dispatch production cost
model software program capable of simulation under two different levels of engine
granularity. These levels are typically referred to as Zonal and Nodal. Zonal simulations
require transmission constraints be identified. Nodal simulations include transmission
topology for commitment and dispatch including transmission congestion.

11 Q. How does PROMOD differ from Strategist?

A. PROMOD has the capability to include more detailed operational granularity than
 Strategist, including consideration for unit start-up, ramp rates, and minimum run/down
 times as well as better hourly detail. Additionally, PROMOD has the capability to
 incorporate transmission thermal constraints in unit commitment and dispatch.
 PROMOD optimizes generation dispatch based on production cost and transmission
 constraints; however, it does not optimize new resource additions or retirements based
 on reserve margin requirements.

19 Q. Please explain why PROMOD was used for cost modeling for this analysis.

20 Α. PROMOD is suited for use in long range planning that involves hourly dispatch and 21 locational congestion considerations. In this case, PROMOD was used to focus on the 22 operational differences associated with various combined cycle 23 technologies/manufacturers and also congestion impacts associated with the location of 24 the facility with more granularity than Strategist.

1 Q. Is PROMOD widely used in the industry?

A. Yes. PROMOD is a widely used production cost software program in the industry –
 particularly in the Eastern Interconnection and Midcontinent Independent System
 Operator ("MISO"). Vectren South is a market participant of MISO and is located in the
 Eastern Interconnection.

6

Q. Do modelers frequently utilize both PROMOD and Strategist?

A. It is common for resource planning analysis to use multiple software programs
 depending on the particular alternative comparisons and granularity of detail required.
 Strategist is better suited for capacity expansion optimization while PROMOD is better
 suited for more detailed dispatch and transmission constraint evaluations.

11 Q. Was your use of these software programs consistent with industry practice?

12 A. Yes.

13 Q. Please explain what is meant by Vectren South's base case analysis?

A. The term base case, when used in reference to Vectren South's analysis, is meant to
convey a consensus scenario and all of the future assumptions associated with that
scenario over a 20-year period of time. The use of base case reflects Vectren South's
expectations regarding future customer energy demand, delivered natural gas prices,
delivered coal prices, carbon prices, capital cost associated with new supply and
demand side alternatives, *etc.* Further background regarding the base case is discussed
in Vectren South witness Matt Rice's testimony.

21 Q. What portfolios did the Strategist model indicate had the lowest NPV?

A. As detailed in the 2016 IRP report and stakeholder presentations and based on base
 case assumptions, Strategist identified a portfolio that ceased operations at Vectren
 South's coal fired facilities (A.B. Brown Units 1 and 2, F.B. Culley Units 2 and 3) and

replaced this capacity and energy with a combined cycle facility and a simple cycle gas
 turbine as the lowest NPV.

Q. Did Vectren South develop other portfolios with varying assumptions to account for potential different futures?

5 Α. Yes. Vectren South developed six scenarios (alternative future states). These future 6 states were designed to develop least cost portfolios for a variety of potential futures. 7 IRPs rely on assumptions about future market conditions and no one's assumptions will 8 prove completely accurate over a 20 year period. These different future states allowed 9 Vectren South to create generation portfolios that performed well under different 10 potential futures and assumptions. These computer generated portfolios, along with 11 stakeholder portfolios, diversified portfolios, and a business as usual portfolio were 12 provided to Pace Global for the risk analysis.

13 Q. Please summarize the results of Burns & McDonnell's modeling.

A. In both the 2016 IRP as well as the modeling performed using updated base case
assumptions (described later in my testimony), Strategist identified a low-cost portfolio
that ceased coal operations at Vectren South's coal fired facilities (A.B. Brown Units 1
and 2, F.B. Culley Units 2 and 3) and replaced this capacity and energy with a combined
cycle facility and a simple cycle gas turbine. The subsequent modeling using PROMOD
further identified that a new generation facility located at the A.B. Brown site would
reduce congestion risk compared to an off-system location.

Q. Did Vectren South request Burns & McDonnell update any of the modeling inputs for purposes of this proceeding?

A. Yes. Following the 2016 IRP, Vectren South requested that several modeling inputs be
updated based on more current information. The modeling inputs that were updated

included the capital cost for a new solar resource, the variable production costs and
 revenue requirements assumptions for existing units, extend the operating date of
 Warrick 4 through 2023, the cost for new wholesale market capacity and energy,
 delivered fuel prices for natural gas and coal, and cost associated with new energy
 efficiency programs.

6 Q. What scenarios did Burns & McDonnell re-evaluate?

- 7 A. Burns & McDonnell re-evaluated the base case scenario with assumption changes as
 8 discussed.
- 9 Q. Is the re-evaluated portfolio consistent with the base case portfolio in the IRP?

A. Following a similar iterative portfolio optimization approach as the 2016 IRP, and with
 updated assumptions, the re-evaluated low-cost portfolio was consistent with the low cost portfolio identified in the 2016 IRP.

- Q. Based on these evaluations, is adding a CCGT to replace some of Vectren South's
 coal-fired generation a reasonable alternative?
- 15 A. Yes.
- 16

II. VECTREN SOUTH RFP

Q. What experience does Burns & McDonnell have in assisting with RFPs for
 capacity and energy?

A. Burns & McDonnell has provided consulting services to various utilities, developers, and
 other organizations involving power supply proposal requests totaling more than 25,000
 MW. Burns & McDonnell's power supply RFP consulting experience includes
 independent management of the entire process from request development to bid
 evaluation, bid evaluation only, and assistance preparing bidder proposals.

1Q.How did Burns & McDonnell assist Vectren South in issuing an RFP for capacity2and energy?

A. With input as necessary from Vectren South, Burns & McDonnell managed the entire
power supply RFP process. This included development of the RFP and exhibits, creating
the website associated with the RFP, RFP email address, advertisement and
communication of the RFP, facilitating bidder question and answers, evaluation of bids,
and final recommendations.

8

Q. How was the RFP developed?

9 A. The RFP was developed based on the power supply need identified as part of the
10 preferred portfolio from Vectren South's 2016 IRP. RFP parameters were developed and
11 defined based on input from Vectren South and the experience of Burns & McDonnell
12 with other power supply RFPs.

Q. Was Vectren South's RFP consistent with other RFPs Burns & McDonnell has been involved with?

15 A. Yes.

16 Q. Where was the RFP advertised?

A. The RFP was advertised in Platts Megawatt Daily for five days beginning on June 22,
2017. Platts Megawatt Daily is widely known and provides utility industry news. Power
supply RFPs are frequently advertised in the publication. In addition to the
advertisement, the RFP was directly emailed to a distribution list made up of industry
contacts identified by both Burns & McDonnell and Vectren South.

22 Q. Did Vectren South receive any proposals?

A. Vectren South received a total of eleven unique proposals submitted by six differentdevelopers.

1 Q. Please summarize the proposals that were received.

2 A. The table below provides information associated with each proposal in terms of location,

3 proposal type (e.g. purchase, PPA, etc.), and proposal capacity size stated in unforced

4 capacity.

Proposal	Offer Type	
ID		
1	Purchase	
2	PPA	
3	PPA	
4	PPA	
5	System Energy Call Option	
6	Purchase	
7	Purchase & PPA	
8	PPA	
9	Purchase	
10	PPA	
11	Qualifications Letter	

5

Q. Were any of the proposals rejected from consideration for failure to comply with the requested parameters of the RFP?

8 A. Yes. Two proposals, Proposal 5 and Proposal 11, were received that did not conform to

9 the requirements of the RFP and were not evaluated as part of the RFP bid evaluation.

10 Q. What factors were utilized to evaluate proposals?

11 A. For all conforming proposals, both quantitative and qualitative evaluation factors were 12 used based on the proposal information. Clarifying questions were asked and additional 13 information was requested from the bidders via email or phone as needed. The 14 quantitative evaluation consisted of reviewing proposals, verifying inputs and 15 assumptions, and developing a Microsoft Excel spreadsheet-based levelized cost of 16 electricity ("LCOE") for each proposal. The qualitative evaluation consisted of review of 17 the non-economic qualities of each proposal to identify project risks not captured in the

- LCOE evaluation. Ten different factors were considered as part of the qualitative
 evaluation.
- Q. Were the factors utilized to evaluate proposals by Vectren South consistent with
 what other utilities utilize to evaluate RFP proposals?
- 5 Α. Yes. When evaluating power supply RFP proposals, utilities typically compare 6 quantitative and qualitative information. An LCOE is a typical quantitative measure used 7 to compare proposals with different capacity sizes, pricing, operating characteristics, 8 ownership structures, etc. on an equivalent economic basis across various capacity 9 factors. The qualitative criteria considered in this RFP evaluation were consistent with 10 criteria considered by others in proposal evaluation, however the criteria 11 weight/importance can vary according to each situation. In this situation, with the 12 proposed asset representing a significant portion of Vectren South's future power 13 supply, significant weight was placed on issues pertaining to reliability including credit 14 quality and unit proximity to Vectren South's service territory.
- 15

Q. Were the proposals ranked?

A. Yes. The proposals were ranked based on the calculated LCOE and on a composite
view for all the qualitative factors. The table below shows where each proposal ranked
under each evaluation.

Proposal ID	LCOE Ranking	Qualitative Ranking
1	8	3
2	4	6
3	7	8
4	6	7
5	N/A	N/A
6	2	1
7	1	2
8	3	4
9	9	5
10	5	9
11	N/A	N/A

1

Q. After this analysis stage, were any of the proposals carried forward for further consideration?

4 Yes. Based on the proposal ranking, considering both the rank order of LCOE and a Α. 5 composite consideration of the gualitative factors, Proposal 6 and Proposal 7 (the "Finalist Proposals") were identified as proposals meriting further analysis and 6 7 consideration. The Finalist Proposals were ranked as the top two proposals based on 8 the evaluation and both proposals were offered by the same bidder. These two 9 proposals proved to be very similar on an NPV basis. Proposal 6 provided Vectren 10 South an ownership interest in the facility. This proposal became the focus of further 11 comparison. Please see Attachment A within Petitioner's Exhibit No. 6, Attachment 12 <u>MEL-1</u> for a summary of the RFP process and proposal evaluation.

13

III. Results of Analysis

14 Q. What steps were taken to further evaluate the Finalist Proposals?

1 Α. The Finalist Proposals were further evaluated against proposals Vectren South had 2 prepared to self-build a combined cycle gas turbine (the "Self-Build Proposals"). Three 3 different analytical steps were used to compare the Finalist Proposals to the Self-Build 4 Proposals. The first step included performing a power system analysis similar to MISO's 5 generator interconnection process. The second step included performing a congestion 6 analysis. The third step included incorporating results from the generator interconnection 7 analysis as well as the congestion analysis into a power supply portfolio NPV 8 comparison similar to Vectren South's 2016 IRP.

9 Q. What factors did Burns & McDonnell and Vectren South use to compare the
 10 Finalist Proposals and Self-Build Proposals?

A. Burns & McDonnell helped Vectren South compare potential project risks and costs associated with the generator interconnection process. Additionally, Burns & McDonnell helped Vectren South compare costs associated with transmission congestion based on the project location. A summary of the analysis provided by Burns & McDonnell to support Vectren South in the evaluation of the options regarding its new combined cycle facility is included as Petitioner's Exhibit No. 6, Attachment MEL-1.

17 Q. Please summarize the results of Burns & McDonnell's generator interconnection 18 analysis.

A. Burns & McDonnell performed a generator interconnection analysis for the Self-Build
 Proposals and for the Finalist Proposals, based on each proposal's planned location.
 The results of this analysis indicated minimal transmission system impacts for the Self Build Proposals. All of the identified system impacts were resolved by mitigations
 already included as part of Vectren South's approved TDSIC program. These results
 have been confirmed by MISO's preliminary results in its evaluation of Vectren South's
 interconnection request (J708) from the February 2017 DPP Cycle for the Self-Build

Proposals. Several potential transmission system impacts were identified with the
 Finalist Proposals. The analysis estimates that more than \$100 million in system
 upgrades may be required to correct the identified issues. The results and analysis are
 discussed in further detail in Attachment B of <u>Petitioner's Exhibit No. 6, Attachment MEL-</u>

5

<u>1</u>.

6 Q. Why was a congestion analysis the second step?

7 Α. Vectren South engaged Burns & McDonnell to perform a congestion analysis in order to 8 identify and compare transmission congestion and losses based on the location of the 9 Finalist Proposals and the Self-Build Proposals. To the extent the generation is located 10 remotely from Vectren South's electric service territory, congestion costs pose a long-11 term risk of increasing the costs to procure electricity to serve customer load. Vectren 12 South was particularly concerned about congestion risk because the selected CCGT 13 would represent 70% of its baseload generation needs. The Finalist Proposals are both 14 new generation facilities located approximately 100 miles from Vectren South's electrical 15 service territory.

16 Q. Please explain transmission congestion.

17 Α. Transmission congestion is a limitation in the transmission facilities within a regional 18 market that inhibits the ability to effectively deliver the most efficient and lowest cost 19 sources of generation to a load. Transmission congestion results in the redispatch of 20 less efficient generation in order to allow transmission facilities to operate within their 21 facility ratings. In a regional market, each commercial pricing node has a locational 22 marginal price ("LMP") which consists of energy, transmission congestion, and losses. 23 To the extent LMPs are different between commercial pricing nodes, transmission 24 congestion is typically the primary factor causing the price difference.

1 Q. Did the Finalist Proposals definitively deal with congestion?

2 Α. No. An "off set" concept, which would increase the cost of the Finalist Proposals, was 3 mentioned as a potential solution for congestion, but at no point during discussions and 4 evaluations of the proposals did the owner of the Finalist Proposals suggest it would 5 assume all congestion risk if selected by Vectren South.

6 Q. Did Vectren South meet with the owners of the Finalist Proposals to explore these 7 concerns?

8 Α. Yes. Based on the analysis associated with identification of generator interconnection 9 network upgrades and transmission congestion, several concerns were identified. 10 Vectren South and Burns & McDonnell met with the owner of the Finalist Proposals to 11 discuss these concerns. During the course of those discussions, the owner indicated 12 that they were waiting for MISO to officially identify generator interconnection network 13 upgrades. Based on the current MISO study schedule, the results are not anticipated 14 until summer 2018. The significant cost (\$100 million or more) to address generator 15 interconnection network impacts identified in Burns & McDonnell's modeling raised 16 concerns for Vectren South regarding financial impacts to the Finalist Proposal. Despite 17 these concerns, the cost associated with additional network upgrades was not added to 18 the bid for evaluation purposes (i.e. the NPV does not include any amount for grid 19 upgrades). At Vectren South's request, the Finalist Proposals' owner provided a study 20 which referenced LMP price differentials for the year 2022 based on a study that a third-21 party consultant performed purporting to evaluate congestion risk to Vectren South.

22

Q. Did Burns & McDonnell review inputs purported to be used in the model prepared 23 for the Finalist Proposals' owner to assess congestion?

24 Α. Yes. The model inputs did not account for the retirement of Vectren South's A.B. Brown 25 units by 2023 (without an on system replacement at A.B. Brown) if the CCGT proposal is

1 approved. Retirement of these units would have a significant impact on the congestion 2 analysis. It was also unclear what model was used as a starting point (e.g. MTEP 3 model), however PROMOD was identified as the software program used for the 4 simulations. Because the bidder's congestion analysis was based on a model that 5 retained all of Vectren South's existing coal generation fleet, it is possible that the 6 congestion, or LMP price differential, resulting from the Finalist Proposals' owner's 7 analysis greatly understates the congestion risk. The model Burns & McDonnell 8 prepared accounted for these unit retirements and identified congestion that would 9 significantly increase load payments or require investment in new transmission 10 infrastructure or further financial hedging to resolve.

Q. Did Burns & McDonnell rely on the detailed analysis to compare the Net Present Value of the Finalist Proposals and the Self Build Alternative?

A. Yes. On a Net Present Value basis, the proposals are very close, with the Self-Build
 option having a slightly better NPV. Based on qualitative risk factors, Vectren South
 determined that the Self-Build option is the best resource for reliable, long term service.

16

IV. Conclusion

Q. Based on this experience, was Vectren South's approach in evaluating its RFP results reasonable?

- 19 A. In Burns & McDonnell's experience, Vectren South's approach to evaluate and consider
- 20 a new combined cycle project was reasonable.
- 21 Q. Does this conclude your prepared direct testimony?
- A. Yes, at this time.

VERIFICATION

The undersigned, Matthew E. Lind, affirms under the penalties of perjury that the answers in the foregoing Direct Testimony in Cause No. 45052 are true to the best of his knowledge, information and belief.

Matthew E. Lind

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Memorandum

CONFIDENTIAL

Date: February 20, 2018

To: Mr. Jon Luttrell President, Vectren Utility Holdings, Inc. Vectren Corporation

From: Matthew Lind Project Manager Burns & McDonnell

Subject: Vectren South Power Supply Recommendation Memo

Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell") was retained by Southern Indiana Gas and Electric Company d/b/a Vectren Energy Delivery of Indiana, Inc. ("Vectren South") to evaluate specific power supply options based on the recommendations out of its 2016 Integrated Resource Plan ("2016 IRP"). Vectren South's 2016 IRP recommended combined cycle gas turbine ("CCGT") technology to replace some of its existing power generation fleet in the 2023 timeframe.

Three options that would be built by Vectren South at its existing A.B. Brown site and two options identified through a competitive procurement process were evaluated. The competitive procurement process and recommendations are summarized in Attachment A. The specific options¹ considered include:

Option 1	668 MW unfired 2x1 7F.05 self-build at A.B. Brown	
Option 2	808 MW fired 2x1 7F.05 CCGT self-build at A.B. Brown	
Option 3	723 MW unfired 2x1 7HA.02 CCGT partnership at A.B. Brown	
Option 4	competitive procurement at greenfield location	
	(63% ownership)	
Option 5	competitive procurement at greenfield location	
	(52% ownership/11% power purchase agreement ("PPA"))	

Recommendation

Based on the analyses discussed herein, Burns & McDonnell recommends that Vectren South pursue development of a 2x1 7F.05 fired CCGT at A.B. Brown (Option 2) for new power supply to serve customer load. This option provides a cost effective and local power supply option that can support local economic growth and minimize congestion risk relative to serving Vectren South customer load. The offerings evaluated through the competitive procurement process (Option 4 and Option 5), while also potentially cost effective, raise some concerns in relation to

¹ The MW values specified for each option reflect Vectren's share of unforced capacity ("UCAP") assuming MISO's Pooled class average EFORd rate for CCGT technology for planning year 2016-2017.

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Memorandum (cont'd)

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operational and development considerations and show significant congestion risk in the form of increased load payments.

The net present value ("NPV") difference between each compared portfolio² to the NPV of the recommended portfolio, including Option 2, is shown below and described in further detail in this memorandum.



Option 1 (Unfired 2x1 7F.05) Option 2 (Fired 2x1 7F.05) Option 4 (Fired 2x1 7HA.02) Option 5 (Fired 2x1 7HA.02)

Option Evaluation

Several quantitative analyses were performed to determine the NPV of each power generation portfolio that interchanged each CCGT option.

Electric Transmission Generator Interconnection & Reliability Analysis

A generator interconnection study was performed using Midcontinent Independent System Operator ("MISO") developed power flow models. The models were used to determine the potential electric transmission network upgrades that would be required for each facility to generate up to its maximum generating capacity at its point of interconnection. Further analysis was performed to consider potential violations of NERC transmission planning ("TPL") reliability standards that would impact Vectren South's system. A detailed discussion of this analysis and results can be found in Attachment B.

 $^{^{2}}$ Option 3 is not shown in the final comparison of NPVs because the potential partnership arrangement was determined to be infeasible.

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Memorandum (cont'd)



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Congestion Analysis

The potential congestion, or locational marginal price ("LMP") differential between the point of generation interconnection and Vectren South's load node, was also compared for each option. This was performed using MISO-developed PROMOD models adjusted to include any network upgrades identified through the generator interconnection analysis. A detailed discussion of the Congestion Analysis and results can be found in Attachment C.

Portfolio NPV Analysis

A Portfolio NPV analysis was performed, incorporating all costs identified as part of the generator interconnection and congestion analyses. This analysis was developed using a production cost model (PROMOD) to simulate economic dispatch and purchase of generation to serve customer energy requirements. This analysis was similar to the analysis performed in the 2016 IRP in that it analyzes Vectren South's entire generation portfolio and ability to cost-effectively serve customer load over the same 20-year period (2017 through 2036). A detailed discussion of this analysis and results can be found in Attachment D.

Limitations

The recommendation as discussed herein, was developed based on a variety of analyses and assumptions. In making this recommendation, Burns & McDonnell has relied upon information provided by Vectren South and other sources. While there is no reason to believe that the information provided is inaccurate or incomplete in any material respect, Burns & McDonnell has not independently verified such information and cannot guarantee or warranty its accuracy or completeness. To the extent assumptions change from those assumed herein, for any reason, the recommendation could change.

MEL

Attachment A: Competitive Procurement Process & Summary Report Attachment B: Electric Transmission Generator Interconnection & Reliability Analysis Attachment C: Congestion Analysis Attachment D: Portfolio NPV Analysis

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VECTREN SOUTH POWER SUPPLY RECOMMENDATION MEMO

ATTACHMENT A: COMPETITIVE PROCUREMENT SUMMARY REPORT





Competitive Procurement Process & Summary Report



Vectren Corporation

Project No. 98399

2/2/2018



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Competitive Procurement Process & Summary Report

prepared for

Vectren Corporation Competitive Procurement Process & Summary Report Evansville, IN

Project No. 98399

2/2/2018

prepared by

Burns & McDonnell Engineering Company, Inc. Kansas City, Missouri

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LIST OF ABBREVIATIONS

Abbreviation	<u>Term/Phrase/Name</u>
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CCGT	Combined Cycle Gas Turbine
CO ₂	Carbon Dioxide
COD	Commercial Operation Date
DPP	Definitive Planning Phase
LCOE	Levelized Cost of Energy
LRZ	Local Resource Zone
MISO	Midcontinent Independent System Operator
NOIB	Notice of Intent to Bid
PPA	Power Purchase Agreement
РҮ	Planning Year
Q&A	Questions & Answers
RFP	Request for Proposal
SPC	Southern Power Company
Vectren	Southern Indiana Gas & Electric Company, Inc.

1.0 EXECUTIVE SUMMARY

1.1 Introduction

Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell") was retained by Southern Indiana Gas & Electric Company, Inc. (dba "Vectren") to conduct a competitive procurement process through a request for proposals ("RFP") solicitation. The RFP solicited power supply proposals from interested third parties to supply Vectren with 600 to 800 MW of capacity and associated energy. In order to be considered, the power supply product was required to have a commercial operations date ("COD") that would qualify the offered capacity for the 2023/2024 Midcontinent Independent System Operator ("MISO") planning year ("PY"). The purpose of this Competitive Procurement Process & Summary Report ("Report") is to summarize the RFP process, results, and conclusion.

1.2 RFP Process

Burns & McDonnell (with input from Vectren) managed all aspects of the RFP process. The process is further discussed and summarized in Section 2.0 of this Report. The RFP was issued on June 20, 2017 with proposals due on August 8, 2017. Proposals were received from the following six companies: Morgan Stanley, Tenaska, Invenergy, Southern Power Company ("SPC"), Ares - St. Joseph Energy Center, and Erora - HenderSun Energy.

1.3 Proposal Evaluation

Burns & McDonnell quantitatively and qualitatively evaluated all conforming proposals' ability to meet Vectren's capacity and energy needs and the corresponding costs. This is further discussed and summarized in Section 3.0 of this Report.

The quantitative evaluation consisted of developing a Levelized Cost of Energy ("LCOE") for each proposal. The calculated LCOE allows each bid to be compared on a \$ per MWh basis, which allows for better comparison of cost between bids with different amounts of offered capacity.

The qualitative evaluation included consideration of ten different factors deemed important to understand a project's potential risk to customer cost or viability that were otherwise not quantified in the LCOE for each proposal. The evaluation consisted of ranking each proposal qualitatively and then developing a weighted performance score.

For both evaluations, clarifying questions were asked and additional information was requested from the bidders via email as needed. Further follow-up with bidders including phone calls to discuss bidder proposals in more detail also took place.

1.4 Conclusion

Both quantitative and qualitative factors were considered in the evaluation of proposals.

The results of the quantitative evaluation show that the proposals received from SPC reflected lower calculated LCOEs as compared to the other proposals. This was largely a product of a lower calculated fixed cost relative to the other proposals.

The qualitative evaluation including the criteria and relative importance of those factors were discussed and jointly developed between Vectren and Burns & McDonnell. The results of the qualitative evaluation show two proposals – the SPC Purchase option and the SPC Purchase and Power Purchase Agreement ("PPA") Hybrid option – as better options compared to the other proposals based on a number of factors, particularly credit worthiness and project location. As shown in Table 3-2, these two proposals had the lowest calculated LCOEs of all proposals. The SPC proposals' quantitative and qualitative evaluations are very similar to each other and the highest ranked options, so both the SPC Purchase and Purchase/PPA Hybrid options were chosen as the most viable power supply options for Vectren to move forward for more detailed evaluations and analyses in comparison to other options.

2.0 INTRODUCTION

2.1 Background

Burns & McDonnell was retained by Vectren to conduct a competitive procurement process through an RFP solicitation. The RFP solicited power supply proposals from interested third parties to supply Vectren with 600 to 800 MW of capacity and associated energy. In order to be considered, the power supply product was required to have a COD that would qualify the offered capacity for the 2023/2024 MISO PY. This report summarizes the process and results of the RFP process.

2.2 RFP Administration

Burns & McDonnell managed the following aspects of the RFP process with input from Vectren:

- Developing the RFP solicitation parameters
- Drafting the RFP
- Issuing the RFP
- Advertising and communications
- Solicitation window administration and questions & answers ("Q&A")
- Evaluation of proposals
- Recommendation

These activities are discussed further in following sections of this report.

2.3 Drafting the RFP

Burns & McDonnell met with Vectren to discuss the desired product(s) requested under the RFP. Burns & McDonnell worked with Vectren to develop the RFP, comprised of sections which included:

- Background
- Company Information
- Minimum Requirements
- Proposal Organization
- Proposal Evaluation
- Contract Negotiations
- Reservation of Rights

Burns & McDonnell worked with Vectren to develop the final RFP. Specific proposal requirements for this RFP were as follows.

- Must offer MISO accredited or accreditable capacity and energy (including MISO Zonal Resource Credits) of 600 to 800 MW
- Must be commercially operable beginning on such a date that qualifies for the 2023/2024 MISO PY
- Must be located in MISO Local Resource Zone ("LRZ") 6
- Must be operated by a MISO market participant
- Must be based on a dispatchable resource with an availability guarantee no less than 96 percent for the summer months (June through August)
- Must deliver capacity and energy to the Vectren load zone (currently the SIGE.SIGW load node in MISO LRZ 6)

The RFP indicated that Burns & McDonnell will quantitatively and qualitatively evaluate all conforming proposals' ability to meet both capacity and energy needs and the corresponding costs. The initial quantitative evaluation is primarily based on a comparison of each proposal's LCOE. The initial qualitative evaluation is generally based on the ranking of ten qualitative criteria.

2.4 Issuing the RFP

As a part of Burns & McDonnell's normal issuance of power supply RFPs or similar solicitation, a comprehensive email distribution list of power marketers, utilities and developers was utilized based on entities who have participated in similar RFPs administered by Burns & McDonnell. This RFP email distribution list was used to provide direct notice of the RFP with RFP documents and exhibits attached for these potential respondents. The RFP email distribution list was reviewed with Vectren and modified as necessary to include parties that Vectren believed would be interested in receiving the RFP. A copy of the RFP and Exhibits is included in Appendix A.

The RFP was issued on June 20, 2017 with proposals due on August 8, 2017. The RFP and exhibits were directly emailed to the RFP email distribution list. Burns & McDonnell was the only contact for respondent questions and all correspondence related to this RFP.

2.5 Advertising and Communications

An advertisement was developed by Vectren and Burns & McDonnell and placed in Megawatt Daily beginning on June 20, 2017. The ad ran for five days. Burns & McDonnell created a web site (<u>http://VectrenRFP.rfpmanager.biz/</u>) to download the RFP and Exhibits and provide uniform communications, relevant questions and answers, including updates and other details as may be provided throughout the RFP process. Burns & McDonnell also created an email address for this RFP to manage

all communications with potential respondents (VectrenRFP@burnsmcd.com). Potential respondents directly interfaced with Burns & McDonnell for all communications including questions, RFP clarification issues, and RFP bid submittal throughout the RFP process. Questions of a general nature were received and addressed by Burns & McDonnell. Responses to other questions from respondents were drafted by Burns & McDonnell for review by Vectren before sending to the respondent. Relevant questions and answers were posted to the web site for all interested parties to view.

A Notice of Intent to Bid ("NOIB") was received from seven companies

2.6 Solicitation Window Administration and Q&A

All proposals were received by mail and through email by Burns & McDonnell. Proposals were received from the following six companies:

There were many variations of proposals that ranged in size, contract length, location, plant configurations, and other factors. A complete list of Proposers and their specific projects are shown in Table 2-1.

Table 2-1: High Level Bid Summary

In total, configurations representing eleven unique proposals were submitted from six developers. Two

proposals did not conform to the requirements of the RFP.

Neither of these two proposals conformed to the requirements of the RFP and were not further evaluated as part of the RFP process. The remaining proposals received were for asset sales and PPAs. The proposals were all based on new generation resources currently under development. Seven proposals were for projects located in

3.0 PROPOSAL EVALUATION

For all conforming proposals, Vectren considered both quantitative and qualitative evaluation factors as prescribed in the RFP document. The evaluation information was developed and summarized by Burns & McDonnell based on the proposal information. Clarifying questions were asked and additional information was requested from the bidders via email as needed. Further follow-up with bidders including phone calls to discuss bidder proposals in more detail also took place in order to facilitate bid evaluation and comparison.

3.1 Quantitative Evaluation

The quantitative evaluation consisted of reviewing proposals, verifying inputs and assumptions, and developing a spreadsheet-based LCOE for each proposal. An LCOE allows for proposals, with different sizes, pricing, operating characteristics, ownership structures, etc. to be evaluated and compared to each other on an equivalent economic basis across various capacity factors. In order to compare purchase and PPA options on a consistent time horizon, a 30-year LCOE was calculated. The following data inputs from each of the bids shown in Table 3-1 were used to calculate the LCOE for each proposal.

Performance	Costs	Economic Assumptions	Escalations
Contract Capacity	Capacity Cost	Economic LCOE Term	Capacity Escalation
Unfired Capacity	Fixed O&M	Capital Recovery Factor	Fixed O&M Escalation
Heat Rate	Variable O&M	Discount Rate	Variable O&M Escalation
CO ₂ Emissions	Start Costs	Fuel Forecasts	Start Charge Escalation
Heat Rate (Unfired + Fired)	Transmission Upgrades		General Escalation
	Total Project Cost	-	
	Fuel		

Table 3-1: LCOE Inputs

As needed, other assumptions were made in the development of each bid-specific LCOE, to consistently compare options and their associated costs relative to one another. Examples of assumptions made for comparison consistency include:

- Pre-tax discount rate: 10.09 percent
- 30-year capital recovery factor: 10.69 percent (asset purchase only)
- Escalation: 1.60 percent
- Commodity natural gas and carbon dioxide ("CO₂") pricing forecasts
- Baseload unfired operation

Natural gas basis, firm reservation, losses, and escalation for specific cost components were also included based on bid-specific information.

The LCOE analysis does not include or account for transmission congestion impacts, the value of the capacity to Vectren's portfolio and planning reserve margin, or wholesale energy market interactions. The LCOE results are shown graphically in Figure 3-1 for capacity factors ranging from 50 percent to 70 percent. A comparison table of LCOE values for 50 percent to 70 percent capacity factors are shown in Table 3-2.



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All proposals received were for new combined cycle gas turbine ("CCGT") technology facilities, and are all high efficiency units. Figure 3-2 shows the breakdown of fixed and variable components of the LCOE. The proposals are sorted from lowest to highest LCOE from left to right.

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In Figure 3-2 the summation of the fuel cost, variable operations & maintenance/start costs, and carbon cost are all variable cost components dependent on how often the unit will run. These variable costs reflect the similar efficiencies of the CCGT technology in all proposals. Thus, the differences in total cost are largely a function of the fixed costs in each proposal. The lower LCOE values, due to lower fixed costs, from the SPC proposals make these proposals more attractive from a quantitative perspective.

3.2 Qualitative Evaluation

The qualitative evaluation consisted of review of the non-economic qualities of each proposal in attempt to identify project risks not already captured in the LCOE evaluation. The qualitative evaluation considered the following factors:

- Credit and Financial Plan
- Distance and Congestion Risk
- Ownership
- Located in Indiana

- Gas Transportation
- Electric Transmission Upgrade Uncertainty
- Project Partner(s)
- Size Flexibility
- Natural Gas-fired Generation Development Experience
- MISO Interconnect Status

Other qualitative criteria were considered, but not analyzed as part of the qualitative evaluation.

3.2.1 Qualitative Rankings

The nature of any qualitative evaluation is subjective. By definition, these are factors that cannot be quantified, but are still important in terms of potential risks posed by a project. Many qualitative criteria were considered, but based on the nature of the proposals and discussions with Vectren, ten primary qualitative criteria were analyzed, discussed, and ranked for each proposal. A qualitative matrix was developed that shows the ranking for each proposal's primary qualitative criteria side by side.

- A green color generally indicates that there was very little risk associated with the proposal for that criterion.
- A yellow color generally indicates that there was a moderate risk associated with the proposal for that criterion.
- A red color generally indicates that there was significant risk associated with the proposal for that criterion.



The proposals are listed in order from lowest to highest LCOE. The criteria are generally arranged with the more important criteria toward the left and less important criteria to the right. Criterion importance is based on the potential risk to project cost or other factors that might affect the viability of the proposal. The proposals are listed in order from the lowest cost to highest cost LCOE, from top to bottom. The rating justification for each criterion for each proposal is described in the following paragraphs.

Credit and Financial Plan

The RFP states that the credit and commitment of any bid will be a critical part of the bid evaluation process. If selected, the bidder would be responsible for building a generation resource that is expected to serve the capacity and energy of more than 50 percent of Vectren customer load obligations. Therefore, creditworthiness was deemed as a prudent and important consideration in the viability of respective bidders.

Distance and Congestion Risk

The RFP indicates that transmission deliverability risk is a qualitative evaluation factor that will be considered in the evaluation of bids. As a resource that is expected to provide significant amounts of power to serve Vectren's customer load, the ability for the project to mitigate customer cost through reduced congestion is an important consideration.

Using distance from Vectren's load zone as a proxy for future transmission deliverability/congestion risk, the proposals were ranked by distance to Vectren's load zone.

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Ownership

The RFP document states that Vectren has a preference for asset purchase proposals. As a purchaser of a power generation asset, Vectren will have the opportunity to provide input as an owner in all phases of the project, including but not limited to construction, operation, maintenance, and dispatch of the facility. This was deemed to be an important consideration, providing Vectren the capability to make decisions as an owner and in the best interest of its customers.

Of the nine proposals evaluated, three were for asset purchases, five were for PPAs, and one was a hybrid of asset purchase and PPA. For this criterion, the three asset purchase proposals were given a green ranking reflecting low risk, the Purchase/PPA Hybrid proposal was given a yellow ranking reflecting moderate risk, and the five PPA proposals were given a red ranking reflecting significant risk.

Located in Indiana

The RFP document states that Vectren has a preference for projects located in the state of Indiana. As a utility regulated by the state of Indiana and with all of its electric customers located in the state as well, Vectren desires the economic benefits associated with the development of a new power generation facility to be primarily delivered to the state of Indiana.

Of the nine proposals evaluated, seven were to be located in the state of Indiana and were given a green ranking for this criterion. Two proposals were located outside the state of Indiana and given a red ranking.

Gas Transportation

The RFP states that firm gas transportation is required, and the fuel supply plan and reliability of the fuel supply will be evaluated.

Electric Transmission Upgrade Uncertainty

The RFP states that the quantity and complexity of network upgrades required by MISO will be considered in the analysis and that MISO network upgrade costs will be included in the quantitative evaluation of the proposals. Network upgrades and their cost have the potential to affect the in-service date of a project and/or the cost of the project.

Project Partner(s)

The RFP states that other owners and dispatch rights/preferences would be considered in the evaluation. While the various interests and concerns of any offtake partner(s) would likely be aligned in most cases, given the various complexities involved in this type of arrangement, as details are worked out it is likely there would be multiple differences of opinion and conflicts of interest among the parties.

Six proposals would not have any other offtake partner(s) and they were given a green ranking for this criterion. Three proposals would have one or more offtake partner(s) and they were given a red ranking.

Size Flexibility

The RFP states that capacity size options/limits/flexibility and the future option to expand would be considered in the evaluation. Given the dynamic nature of long term planning, size flexibility was considered when evaluating the proposals.

Natural Gas-fired Generation Development Experience

The RFP states that a developer's development, financing, construction, operating, maintenance, and ownership experience as it relates to utility-scale natural gas-fired power generation would be considered in the evaluation of proposals. Each proposal indicated some level of utility-scale power generation experience and some level of natural gas development experience.



The RFP states that a project's position in the MISO Generator Interconnection study process and likelihood of being interconnected by the needed in-service date would be considered in the evaluation. Per MISO business practices manual and tariff rules, related studies are performed by MISO to identify network upgrades and costs associated with a generator interconnection. These studies occur within the Definitive Planning Phase ("DPP") of MISO's Generator Interconnection process.



3.2.2 Qualitative Weighted Rankings

As stated previously, qualitative evaluations, while subjective, are used to assess a potential project's risk. As part of a qualitative assessment process, it is typical to assign weights to the various criteria then rank them and determine an overall weighted score for each proposal. Each of the ten qualitative criteria evaluated were assigned a weight of importance. Collectively, the criterion weights add up to 100 percent. A score of 1.0 - 3.0 was given for each bid's qualitative evaluation (red = 1.0, yellow = 2.0, and green = 3.0). Each bid's score for each criterion was multiplied against the criterion weighting. For each bid, the weighted scores for all criteria were added together reflecting a total weighted score. In this manner, a higher score indicates a more favorable qualitative evaluation. Table 3-4 shows the weighted quantitative score and an overall weighted qualitative percent score of the proposals (listed in order of LCOE).



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4.0 RECOMMENDATION

Both quantitative and qualitative factors were considered in the evaluation of proposals.

The qualitative evaluation including the criteria and relative importance of those factors were discussed and jointly developed between Vectren and Burns & McDonnell. The results of the qualitative evaluation show two proposals - ________ as better options compared to the other proposals based on a number of factors, particularly credit worthiness and project location. As shown in Table 3-2, these two proposals had the lowest calculated LCOEs of all proposals

5.0 STATEMENT OF LIMITATIONS

This Report is only available to parties that have executed a Confidentiality Agreement with Vectren Corporation. Any party to whom the contents are revealed or may come into possession of this document is required to request of Vectren Corporation if such Confidentiality Agreement exists. Any entity in possession of, or that reads or otherwise utilizes information herein, is assumed to have executed and be obligated to comply with the contents of such Confidentiality Agreement. Any entity in possession of this document shall hold and protect its contents, information, forecasts, and opinions contained herein in confidence and not share with others without prior written authorization from Vectren Corporation.

In preparation of this report, Burns & McDonnell has relied upon information provided by Vectren Corporation. While there is no reason to believe that the information provided is inaccurate or incomplete in any material respect, Burns & McDonnell has not independently verified such information and cannot guarantee or warranty its accuracy or completeness.

Burns & McDonnell's estimates, analyses, and recommendations contained in this report are based (in part) on professional experience, qualifications, and judgment. Burns & McDonnell has no control over weather; cost and availability of labor, material, and equipment; labor productivity; energy or commodity pricing; demand or usage; population demographics; market conditions; changes in technology; and other economic or political factors affecting such estimates, analyses, and recommendations. Therefore, Burns & McDonnell makes no guarantee or warranty (actual, expressed, or implied) that actual results will not vary, perhaps significantly, from the estimates, analyses, and recommendations contained herein.

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Request for Proposals

for

600 - 800 MW of Capacity and Energy

issued by

Vectren Corporation

Issue Date: Proposals Due: June 20, 2017 August 8, 2017

Complete Information on this RFP can be found at:

http://VectrenRFP.rfpmanager.biz/



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1.0 BACKGROUND

Vectren Corporation (Vectren) has issued this Request for Proposals (RFP) and is seeking power supply proposals for 600 to 800 MW of capacity and unit-contingent energy beginning June 1, 2023 for power purchase agreements (PPAs). For asset purchases the commercial operation date (COD) should be such date that it will qualify for the 2023/2024 Midcontinent Independent System Operator (MISO) capacity auction with the transfer of ownership taking place in the 2024 to 2025 timeframe. Only dispatchable resources located in MISO Local Resource Zone (LRZ) 6 will be considered in this RFP.

Vectren's Integrated Resource Plan (IRP) that was recently filed with the Indiana Utility Regulatory Commission (IURC) indicates the need for a large, efficient natural gas-fired generating facility in the 2023 to 2024 timeframe. Vectren's resource strategy calls for a more flexible fleet of generation resources with the capability to meet customers' needs reliably and cost effectively in an environmentally sustainable manner. The IRP is designed to provide Vectren customers with a safe, reliable, and affordable power supply while also reducing emissions.

Proposals must reflect all of the costs and characteristics of the resource necessary to deliver grid power at the indicated interconnection point. All potential agreements are subject to IURC approval and are not effective until such approval is final.

All proposals must be received by the contact designated in Section 3.3 by the Proposal Submittal Deadline date shown in Section 3.1. Vectren reserves the right in its sole discretion to modify this schedule for any reason.

The IURC's Electricity Director's Final Report on Vectren's IRP is expected in September of 2017. As reflected in its IRP, proposals will be evaluated against a potential self-build natural gas-fired combined cycle project. In connection with this RFP, Vectren has retained the services of an independent third party consultant, Burns & McDonnell, to manage the entire RFP process and work with Vectren in the quantitative and qualitative evaluations of all proposals and self-build resources. However, Vectren will make the final decision (subject to IURC review, as applicable) in Vectren's sole discretion.

All Respondents will directly interface with Burns & McDonnell for all communications including questions, RFP clarification issues, and RFP bid submittal. All correspondence concerning this RFP should be sent via e-mail to <u>VectrenRFP@burnsmcd.com</u>.

1.1 Company Information

Vectren Corporation is an energy holding company headquartered in Evansville, IN. Vectren's wholly owned subsidiary, Vectren Utility Holdings, Inc., serves as the intermediate holding company for three operating utilities: Vectren Energy Delivery of Indiana - North (Vectren North), Vectren Energy Delivery of Indiana - South (Vectren South) and Vectren Energy Delivery of Ohio (VEDO).



Vectren North provides energy delivery services to 570,000 natural gas customers located in central and southern Indiana. Vectren South provides energy delivery services to 142,000 electric customers and 111,000 gas customers located in southwestern Indiana. Vectren South also owns and operates electric generation to serve its electric customers and optimizes those assets in the wholesale power market. VEDO provides energy delivery services to approximately 314,000 natural gas customers located in west central Ohio.

Vectren's electric customers are currently served by a mixed portfolio of 1,000 megawatts (MW) of coalfired generation and up to 273 MW of gas-fired generation. Also, purchases from the Ohio Valley Electric Corporation (OVEC) of up to 32 MW, wind purchases of up to 80 MWs and additional load from the MISO power pool occasionally supplement Vectren's load requirements. Furthermore, interruptible load and demand side management initiatives can yield more than 60 MW of energy savings to meet peak demand if needed.

* * * * *

2.0 MINIMUM REQUIREMENTS

Proposals must meet the general minimum eligibility requirements described below. Burns & McDonnell will screen all proposals for compliance with these requirements. Proposals that fail to meet one or more of the general minimum eligibility requirements may be disqualified from further consideration as part of this RFP process.

2.1 Eligible Power Supply Requirements

For a proposal to be eligible under this RFP, it must:

- 1. Offer MISO accredited or accreditable capacity and energy (including Zonal Resource Credits) of
 - o no less than 600 MW up to a maximum of 800 MW,
 - be available to start commercial operations beginning on such date that it will qualify for the 2023/2024 MISO capacity auction,
 - o be located in MISO LRZ 6, and
 - o be operated by a MISO market participant.
- 2. Be based on a dispatchable resource with an availability guarantee no less than 96% for the summer months (June through August).
- 3. Deliver capacity and energy to the Vectren load zone (currently the SIGE.SIGW load node in MISO LRZ 6).

2.2 Eligible Project Structures

Vectren will consider the proposals for either a PPA or purchase and acquisition of a plant. PPA proposals may be for a new, to-be-built resource, or an existing resource with a minimum term of 20 years.

Vectren has a preference for asset purchase proposals and will consider the purchase of either an existing facility, or a new facility which is under construction or will be operational on or before such date that it will qualify for the 2023/2024 MISO capacity auction with the transfer of ownership taking place in the 2024 to 2025 timeframe. The preference is grounded in reliability and financial security considerations. Any short list acquisition proposal will be subject to specific asset acquisition terms and conditions that are acceptable to Vectren.

2.3 Power Delivery Requirements

All proposals must provide Vectren MISO accreditable capacity (Zonal Resource Credits, or ZRCs) deliverable to the Vectren load zone (currently SIGE.SIGW) within LRZ 6 as currently defined by MISO.

Proposals shall be for a Generation Resource that is deliverable to LRZ 6 within MISO's Region. The deliverability of the Generation Resource to Network Load within MISO's LRZ 6 shall be determined by System Impact Studies pursuant to the MISO Tariff that are conducted by MISO, which consider, among other factors, the deliverability of aggregate resources of Network Customers to the aggregate of Network Load. Generation Resources that pass the deliverability test receive Network Resource Interconnection Service.

Proposal pricing should include, as required, the cost of a dedicated substation and radial transmission line(s) from the generation facility to the proposed point of interconnection. Network upgrade costs that are assessed to the project will be the responsibility of the Respondent and proposal pricing should include preliminary cost estimates for any new interconnection equipment or interconnection upgrades required beyond the point of interconnection for the electrical interconnection of the proposed project to the MISO transmission system. All pricing in Respondents' proposals should reflect these costs (to the extent possible) at the time of proposal submittal. One of the goals of this RFP is to determine the overall cost to Vectren's retail customers of the selected resource(s), recognizing that the cost of interconnection and delivery of power from the chosen resource(s) to Vectren's native load is an element of cost that must be taken into account.

2.4 Firm Fuel Transportation Service

Gas-fired generation resources must be served through firm transportation service by at least one major natural gas pipeline. For each pipeline the proposal must indicate the most applicable fuel pricing hub(s), pipeline tariffs, negotiated rates, reservation rates, commodity rates, key contract terms, balancing services, storage charges and terms, usage charges, taxes, basis, any local distribution company (LDC) charges, backup fuel capability, and any other fuel-related cost (as applicable). Proposals may include either a fuel index formula or fixed fuel price. However, all proposals must supply sufficient detail to explain all the fuel cost formula components for estimation of the total cost of fuel. For evaluation purposes, the same fundamental fuel price forecast for estimates of natural gas commodity pricing will be used for each bid.

The natural gas must be supplied at a rate, compression, and pressure sufficient to run the facility at full output (including duct firing and any other capacity enhancements) on a continuous basis under any ambient conditions and still comply with all operating requirements of the pipeline or LDC system.

For natural gas pipeline capacity, provide appropriate transportation details including the Maximum Daily Transportation Quantity and any other terms, conditions, or limits necessary to explain under the deliverability of fuel and total firm transportation. If an existing facility has existing pipeline service agreements, the key terms of these contracts should be provided with the proposal if the Respondent wishes to transfer these contracts to Vectren. This information must be provided in Exhibit C: PPA/TA Data and/or Exhibit D: Asset Purchase Data and/or Exhibit E: New Build Cost Buildup (as available and applicable).

2.5 Environmental

New and existing resources must be in compliance with all applicable environmental rules and regulations.

To the extent applicable, all environmental attributes, including emission reduction credits and/or allowances, related to the power being purchased should be conveyed to Vectren. This includes, but is not limited to, any and all credits in any form (emissions credits, offsets, financial credits, etc.) or baseline emissions associated with both known and unknown pollutants, including but not limited to SO2, NOx, Hg, and CO2. Any and all environmental liabilities, including compliance with known and future or unknown regulations or laws will be the sole responsibility of the generation producer or PPA seller.

For Asset Purchase proposals, the Seller will retain all pre-closing environmental liabilities and obligations as well as all known future environmental liabilities and obligations, in each case associated with the real and personal property transferred with or as part of a Sale of the Plant. This includes both on and off-site liabilities. The Buyer will assume all other post-closing environmental liabilities and

obligations. For purposes of facility design, Seller should assume that the unit will be required to meet the proposed New Source Performance Standards for Greenhouse Gases (40 CFR part 60, subpart TTTT).

2.6 Firm Pricing

Proposals must include pricing that is firm and not subject to any revisions during the initial evaluation process. Vectren will receive all associated allowances or credits, if any. Seller agrees to transfer any Financial Transmission Rights or Auction Revenue Rights associated with the asset to the Buyer.

Escalation rates shall be fixed or set annually to the Gross Domestic Product Implicit Price Deflator (GDPIPD). The GDPIPD will be reset annually as published by the U.S. Department of Commerce, Bureau of Economic Analysis. Formulaic mechanisms will not be subject to revisions during the evaluation and negotiation process.

All pricing should be provided in Exhibit C and/or Exhibit D and/or Exhibit E in terms of US dollars as of the date the term of the contract begins and not subject to a currency exchange rate adjustment. All PPA/TA information should be provided in Exhibit C: PPA/TA Data, all Asset Purchase information should be provided in Exhibit D: Asset Purchase Data, and a cost buildup for new build projects should be provided in Exhibit E: New Build Cost Buildup; (all data should be provided as available and applicable).

Respondents are strongly encouraged to provide their best pricing with their initial submittal. Vectren is not obligated to provide an opportunity in the evaluation schedule for Respondents to refresh or update their pricing before the final selection(s) are made (if any). Respondents Proposal pricing shall remain valid until March 31, 2018.

2.7 Credit Rating

The credit and commitment of any bid will be a critical part of the bid evaluation process. A Respondent must have a credit rating for its senior unsecured debt of **BBB** or higher (for Standard & Poor's) or **Baa2** or higher (for Moody's). If a Respondent is unrated or does not meet this minimum credit rating requirement, the Respondent may provide credit support from a corporate guarantor that meets the requirement.

Alternatively, if a Respondent is unrated or does not meet the above minimum credit rating requirement and the Respondent does not provide credit support from a suitable corporate guarantor, the Respondent must certify and state in its proposal that, if selected, it will provide to Vectren (within two weeks of notification) cash or an irrevocable letter of credit in a form satisfactory to Vectren from an acceptable bank for \$5.00/kW of the proposed capacity of the project. This requirement is completely separate from any seller security or liquidated damages that would be negotiated as part of a final binding contract (see Section 5.4).

As part of a final binding contract, and depending on the structure of the transaction, Vectren will further review the credit of the Respondent and the risk associated with the transaction to determine what, if any, additional credit requirements may be necessary to protect its ability to serve its customers in a reliable manner.

2.8 Legal Certifications

A Respondent's proposal must certify that:

- 1. There are no pending legal or civil actions that would impair the Respondent's ability to perform its obligations under the proposed PPA or Asset Purchase;
- 2. the Respondent has not directly or indirectly induced or solicited any other Respondent to submit a false proposal;
- 3. the Respondent has not solicited or induced any other person, firm, or corporation to refrain from submitting a proposal; and
- 4. the Respondent has not sought by collusion to obtain any advantage over any other Respondent.

* * * * *

3.0 SCHEDULE AND RFP INSTRUCTIONS

3.1 Schedule

Vectren has retained Burns & McDonnell (Burns & McDonnell) to act as an independent third party consultant to assist with this RFP. All Respondents will directly interface with Burns & McDonnell for all communications including questions, RFP clarification issues, and RFP bid submittal. All correspondence concerning this RFP should be sent via e-mail to <u>VectrenRFP@burnsmcd.com</u>.

The schedule below represents Vectren's expected time-line for conducting this resource solicitation. Vectren reserves the right to modify this schedule as circumstances warrant and/or as Vectren deems appropriate.

Event	Anticipated Date
Release of RFP	June 20, 2017
Notice of Intent to Bid and NDA due	July 26, 2017
Proposal Submittal Deadline Date	5:00 pm CST on August 8, 2017
Selection of Short List	September, 2017
Detailed Evaluations	Third Quarter 2017
Expected Selection	Fourth Quarter 2017

Vectren 2017 RFP Schedule

An e-mail address (VectrenRFP@burnsmcd.com) has been set up to collect all communications and questions from potential Respondents as well as a web site (http://VectrenRFP.rfpmanager.biz/) to download the RFP and Exhibits and provide uniform communications, relevant questions and answers, including updates and other details as may be provided throughout the bidding process. Phone calls and verbal conversations with Respondents regarding this RFP are not permitted before the Proposal Submittal Deadline Date. All Respondents will directly interface with Burns & McDonnell through the RFP email address for all communications regarding this resource request. Proposals will be opened in private by Burns & McDonnell on a confidential basis.

Proposals will be reviewed by Burns & McDonnell for completeness and offers that do not include the information requirements of this RFP will be notified by Burns & McDonnell and allowed five business days to conform. After proposals are submitted, Burns & McDonnell will review and both quantitatively and qualitatively evaluate all conforming proposals. During the evaluation process Respondents may be contacted for additional data or clarifications by Burns & McDonnell. Any Respondents contacted for further clarifications may or may not be invited to begin further negotiations of terms and details of the offers.

To the extent Respondents are identified through the evaluation process as competitive options for Vectren to consider, Burns & McDonald may provide high level non-identifying and non-price information to Vectren before the final recommendation to allow for internal credit and reliability evaluations.

To the extent Vectren seeks to finalize a contract with a Respondent, such a contract shall be subject to approval by the IURC. The negotiation of such a contract and the timing of the required approval proceeding shall be part of the negotiations provided for in the schedule.

3.2 Exhibits

Respondents to this RFP are <u>required</u> to fill out and sign **Exhibit A:** Notice of Intent to Respond and **Exhibit B:** Non-disclosure Agreement (NDA) in its present form.

Respondents to this RFP area also <u>required</u> to complete **Exhibit C: PPA/TA Data** and/or **Exhibit D: Asset Purchase Data** and/or **Exhibit E: New Build Cost Buildup** (as available and applicable).

Respondents to this RFP are required to complete Exhibit F: General Information (as applicable).

Individual questions submitted by email to Burns & McDonnell before the submittal deadline will be answered and responses sent back via email to the Respondent as soon as practical. Responses to any questions may be placed on the RFP website for the benefit of all Respondents, with any identifying information redacted from the question.

3.3 Deadline and Method for Submitting Proposals

All proposals submitted in response to this RFP must be received by Burns & McDonnell at the address below no later than the Proposal Submittal Deadline shown in Section 3.1. Burns & McDonnell and Vectren will not evaluate proposals as part of this RFP process if submitted after this date and time. Multiple proposals submitted by the same Respondent must be identified and submitted separately. Financial statements, annual reports, technical specification documents, and other large documents can be sent electronically to the RFP email address or referenced via a web site. Each proposal must contain the following:

- 1. One original copy of signed Exhibit B: Non-disclosure Agreement (NDA) in its present form
- 2. Three hard copies of each proposal
- 3. A flash drive with:
 - a. Exhibit C: PPA/TA Data and/or Exhibit D: Asset Purchase Data and/or Exhibit E: New Build Cost Buildup (as applicable)
 - b. Exhibit F: General Information
 - c. A PDF file of the entire proposal

All proposals should be sent to the address below:

Jon Summerville Burns & McDonnell 9400 Ward Parkway Kansas City, MO 64114

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4.0 PROPOSAL ORGANIZATION

The proposal must include an executive summary, proposal limitations, relevant company data and experience, the technical proposal, along with the appropriate Exhibits. Some information may not be known at the time proposals are due.

4.1 Executive Summary

Please provide a one page executive summary of the proposal in the form of a cover letter. Include the facility's location, age or development status, size, the primary contact's name, email, and phone number, and an overview of the major features of the proposal. The Executive Summary must be signed by an officer of the Respondent who is duly authorized to commit the firm to carry out the proposed power supply transaction should Vectren accept the proposal (this does not have to be the primary contact). A Table of Contents should be the first page and immediately precede the Executive Summary.

4.2 Proposal Limitations

Please describe in reasonable detail any existing legal, economic, operational, or systematic conditions that might affect the Respondent's ability to deliver capacity and energy as offered.

4.3 Company Data, Financing Plan, and Experience

Please include information on the Respondent's corporate structure (including identification of any parent companies), the project's financing plan, the Respondent's most recent credit rating, quarterly report containing unaudited consolidated financial statements that is signed and verified by an authorized officer of Respondent attesting to its accuracy, a copy of Respondent's annual report for the prior three years containing audited consolidated financial statements and a summary of Respondent's relevant experience. Please describe any current litigation or environmental fines involving the Company within the last five years, including but not limited to, any litigation, settlements of litigation or fines, that could potentially affect the facility or its operation. Please identify all bankruptcy or insolvency proceedings relating to the Respondent in any way. Please describe any litigation related to purchase power agreements or asset purchases similar to the transactions solicited in this RFP that the Respondent or its parent company have been a party to in the last six years. All financial statements, annual reports and other large documents may be referenced via a web site address.

Proposals shall include a list of projects with a brief description of Respondent's experience in the areas of development, financing, permitting, ownership, construction, and operation of all utility-scale power generation facilities.

Please provide a list of projects with a brief description of the EPC contractor's experience as it relates to utility-scale power generation.

Please provide a list of projects with a brief description of the operator's experience as it relates to utilityscale power generation.

4.4 Technical Proposal

Proposals shall include a detailed technical description of proposed project. Please review the technical description provided in this section such that it matches up with the technical and cost information provided in the Exhibits. The technical description shall include, but not be limited to the following items as known and applicable:

- 1. Project name, size, and location. Projects are required to be located in MISO LRZ 6 and Vectren has a preference for projects located in the state of Indiana.
- 2. Commercial operation date and expected facility life
- 3. Development and construction schedule, Gantt chart (if new)
- 4. Site characteristics including zoning, site control, site map (white and aerial backgrounds), and any potential environmental or other sensitive issues
- 5. Description of all the permits needed and plan to acquiring those permits including timing and any expected contingencies or local consultants required
- 6. Site layout (white background)
- 7. Community Outreach Plan and evidence of community support
- 8. Labor source
- 9. Full description of proposed technology, cycle configuration, steam cooling technology, reliability, redundancies, critical spares and sparing philosophy, automatic generation control (AGC), engineering and design status (PDR –preliminary design review), operating capabilities, and guaranteed heat rate and output curves and other efficiencies
- 10. List and capabilities of other equipment including auxiliary boiler, energy storage, evaporative cooling, chillers, and duct firing
- 11. Description of emission control equipment and any ASTM studies
- 12. Natural gas supply and firm transportation arrangements, backup fuel capability (see below)
- 13. Please include a full description of the interconnection and firm transmission, deliverability to the delivery point, congestion, losses, the overall risk of transmission, and estimated network upgrade costs (see below)
- 14. Description of operating flexibility including start times (hot/warm/cold) and ramp rates, minimum down time, minimum output, heat rates at full duct (supplemental) firing, full load (maximum continuous rating), partial loads and minimum capacity, reactive power, voltage regulation, frequency control, other potential ancillary services, and the current market for those ancillary services
- 15. Scheduling process and flexibility
- 16. Environmental, emission and/or any other operating constraints
- 17. Water usage and discharge
- 18. Schedule of major maintenance including the number of starts before maintenance is required
- 19. Key terms of a Long-term Service Agreement (LTSA)

- 20. Key features and terms for Original Equipment Manufacturer spare parts and Long-term Parts Agreement (as applicable)
- 21. Description of control systems and building enclosure
- 22. Other owners and dispatch rights/preference, allowance for multiple offers into MISO
- 23. "Best Practices" construction, operation, and maintenance
- 24. Other future options and/or the capability to expand
- 25. Capacity size options between 600 800 MW

Any fuel "formula" provided must be in sufficient detail to explain all the formula components for estimation of the total cost of fuel (and backup fuel), in \$/MMBtu, for the Delivery Term (See Exhibit C and D). The following is an example of the structure of a fuel cost index formula: Transco Zone 3 + pipeline variables + management fee + LDC charges, all in \$/MMBtu, where the "pipeline variables," "management fee," and "LDC charges" components would need to be addressed in more detail. In addition, the Respondent should provide the publication or source for gas index information referenced by the formula, preferably Gas Daily. Respondent may also provide a fixed \$/MMBtu fuel price or a NYMEX price plus a fixed adder for each year of the Delivery Term.

Firm gas transportation is to be provided by the Respondent and the pertinent details on the firm gas transportation arrangements should be provided. If firm gas transportation is not indicated, then the Respondent should explain the reason. Details should include maximum daily quantity transportation volume, and any transportation demand rate information necessary to explain the total cost of firm gas transportation on a monthly and annual basis.

Describe the firm transmission arrangements including all transmission providers involved and the transmission services provided (terms and any ancillary services required and appropriate congestion cost). Respondents will have the responsibility to secure and provide all firm transmission services necessary for firm delivery of capacity to the Vectren MISO load node, (currently SIGE.SIGW).

For Purchase Power Agreement and Tolling Agreements, specific operational information and pricing should be provided as indicated in Exhibit C: PPA/TA Data, all asset purchase proposals shall provide the specific information requested in Exhibit D: Asset Purchase Data, and all new build projects shall provide the specific information requested in Exhibit E: New Build Cost Buildup; (as available and applicable). All Respondents to this RFP are required to complete Exhibit F: General Information (as applicable).

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5.0 PROPOSAL EVALUATION AND CONTRACT NEGOTIATIONS

5.1 Initial Proposal Review

An initial review of the bids will be performed by Burns & McDonnell. Proposals will be reviewed for completeness and proposals that do not meet or include the information requirements of this RFP will be notified. Respondents may also be contacted for additional data or clarifications by Burns & McDonnell. In general, more certain information and development progress is advised.

5.2 Proposal Quantitative Evaluation

Burns & McDonnell will quantitatively evaluate all conforming proposals' ability to meet both capacity and energy needs and the corresponding costs. During the quantitative evaluation process, Burns & McDonnell may or may not choose to initiate more detailed clarification discussions and a more thorough quantitative evaluation with one or more Respondents. Discussions with a Respondent shall in no way be construed as commencing contract negotiations. The initial quantitative evaluation will be primarily based on a comparison of each proposal's Levelized Cost of Energy. A more detailed quantitative evaluation for short listed bidders will consider Production Cost models and Nodal Analysis.

5.3 Proposal Qualitative Evaluation

Vectren will evaluate and consider both the quantitative evaluation and a qualitative evaluation developed by Burns & McDonnell of all conforming proposals' ability to meet both capacity and energy needs reliably, cost effectively, and in an environmentally sustainable manner. In general, more certain information and development progress is advised.

In evaluating proposals, the following criteria (in no particular order and without limiting consideration of other factors) will be considered.

Site Specific

- 1. General location of the facility: projects are required to be located within MISO LRZ 6, however, Vectren has a preference for projects located within the state of Indiana
- 2. Site characteristics including zoning, permits required and permit status, and any potential
 - environmental or permitting issues
- 3. Site control documentation
- 4. Community Outreach Plan and community support

Fuel

5. Fuel supply plan and firm transportation arrangements: firm transportation is required and the reliability of the fuel supply will be evaluated.

Transmission

- 6. Position in the MISO Generator Interconnection Queue and likelihood of being interconnected by the needed in-service date
- 7. Transmission interconnection risk

- 8. Transmission deliverability risk
- 9. Quantity and complexity of network upgrades required (network upgrade costs will be included in quantitative evaluation of the proposal)
- 10. Integration into Vectren's transmission system: Vectren has a preference for projects that would reduce transmission congestion

Experience

- 11. Respondent's development, financing, construction, operating, maintenance, and ownership experience as it relates to utility-scale power generation
- 12. EPC contractor's experience as it relates to utility-scale power generation
- 13. Operator's experience as it relates to utility-scale power generation

Environmental Considerations

- 14. Emission rates and control equipment
- 15. Water usage and discharge
- 16. Environmental liabilities including subsurface, remediation, reclamation and exceedances of any known hazardous concentrations

Financial Considerations

- 17. Price certainty, price volatility, and risk of price increases. For example, a fixed escalation rate of 1.5% is more certain than an index.
- 18. Respondent's or Guarantor's financial condition and creditworthiness
- 19. Respondent's financing plan
- 20. Current litigation
- 21. Tax treatment and impact on Vectren's balance sheet

Project Schedule

- 22. Development and Construction schedule and any anticipated schedule risks associated
- 23. Status of engineering and design (e.g. PDR)

Operating Flexibility

- 24. Technology and engineering design
- 25. Overall redundancy and reliability
- 26. Operating flexibility including the following attributes

- start times (hot/warm/cold)
- ramp rates (unfired and supplemental firing)
- minimum down time
- minimum output
- heat rates at less than full capacity
- reactive power
- voltage regulation capabilities
- AGC
- frequency control capabilities
- scheduling flexibility
- other potential ancillary services and the market for those ancillary services
- 27. Other power equipment enhancements including (but not limited to) an auxiliary boiler, energy storage, evaporative cooling, chillers, and duct firing
- 28. Control systems and building enclosure
- 29. Environmental constraints and any other operating constraints

Maintenance

- 30. Major maintenance schedules and duration
- 31. Labor source
- 32. Terms of LTSA
- 33. Original Equipment Manufacturer spare parts and Long-term Parts Agreement
- 34. "Best practices" maintenance

Overall Proposal

- 35. Other owners and dispatch rights/preference, allowance for multiple offers into MISO
- 36. Other purchase options
- 37. Operating history, age, and remaining life
- 38. Capacity size options/limits/flexibility and future option to expand
- 39. Overall completeness, clarity, and quality of the Proposal
- 40. Compliance of proposals with the specifications and requirements described in the RFP
- 41. Other data as may be requested prior to commencing further discussions

5.4 Contract Negotiations

Based on the quantitative and qualitative evaluations, Vectren may or may not select candidates for further discussions. Vectren will contact any selected Respondent in writing to confirm interest in commencing contract negotiations. All negotiations will begin with Vectren's standard contract as a starting point. Vectren's commencement of and participation in negotiations shall not be construed as a commitment to execute a contract. If a contract is negotiated, it will not be effective unless and until it is fully executed with the receipt of all required regulatory approvals.

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6.0 RESERVATION OF RIGHTS

Nothing contained in this RFP shall be construed to require or obligate Vectren to select any proposals or limit the ability of Vectren to reject all proposals in its sole and exclusive discretion. Vectren further reserves the right to withdraw and terminate this RFP at any time prior to the submittal deadline, selection of bids or execution of a contract. All final contracts will be contingent on IURC approval.

All proposals submitted to Vectren pursuant to this RFP shall become the exclusive property of Vectren and may be used for any reasonable purpose by Vectren. Vectren and Burns & McDonnell shall consider materials provided by Respondent in response to this RFP to be confidential only if such materials are clearly designated as "Confidential." Respondents should be aware that their proposal, even if marked "Confidential", may be subject to discovery and disclosure in regulatory or judicial proceedings that may or may not be initiated by Vectren. Respondents may be required to justify the requested confidential treatment under the provisions of a protective order issued in such proceedings. If required by an order of an agency or court of competent jurisdiction, Vectren may produce the material in response to such order without prior consultation with the Respondent.