

FILED
June 17, 2021
INDIANA UTILITY
REGULATORY COMMISSION

**SOUTHERN INDIANA GAS AND ELECTRIC COMPANY
d/b/a CENTERPOINT ENERGY INDIANA SOUTH
(CENTERPOINT INDIANA SOUTH)**

IURC CAUSE NO. 45564

**DIRECT TESTIMONY
OF
F. SHANE BRADFORD
DIRECTOR OF POWER SUPPLY SERVICES**

ON

ALL-SOURCE REQUEST FOR PROPOSALS AND CAPACITY AND ENERGY MARKETS

SPONSORING PETITIONER'S EXHIBIT NO. 11

ATTACHMENTS FSB-1 THROUGH FSB-2

DIRECT TESTIMONY OF F. SHANE BRADFORD

1 **I. INTRODUCTION**

2

3 **Q. Please state your name and business address.**

4 A. My name is F. Shane Bradford. My business address is 211 NW Riverside Drive,
5 Evansville, Indiana, 47708.

6

7 **Q. On whose behalf are you submitting this direct testimony?**

8 A. I am submitting testimony on behalf of Southern Indiana Gas and Electric Company d/b/a
9 CenterPoint Energy Indiana South ("Petitioner", "CenterPoint Indiana South", or
10 "Company"), which is an indirect subsidiary of CenterPoint Energy, Inc.

11

12 **Q. What is your role with respect to Petitioner?**

13 A. I am Director of Power Supply Services.

14

15 **Q. Please describe your educational background.**

16 A. I received a Bachelor of Science in Civil Engineering (1992) from the University of Dayton
17 and a Master's in Business Administration (2002) from Indiana State University.

18

19 **Q. Please describe your professional experience.**

20 A. I began my career in the utility industry at Dayton Power and Light Co. performing various
21 maintenance and production roles within the electric generation division from 1992 to
22 1999. In 1999, I joined Cinergy's electric generation division and carried out various
23 maintenance and production responsibilities until 2003 when I became a plant manager
24 for one of its subsidiaries – Trigen Cinergy Solutions LLC. In 2004, I was employed by the
25 Company as a Power Plant Director responsible for providing leadership and management
26 focused on safe, environmentally responsible, reliable, and efficient electric generation. I
27 was named to my current position in May 2021.

28

29 **Q. What are your present duties and responsibilities as Director of Power Supply
30 Services?**

31 A. I have responsibility for the following functions: Wholesale Power Marketing, Market

1 Settlements, and Market Development; and serve as the Commercial Lead for
2 negotiations and dealings with generation resources. This aligns areas related to
3 generation and wholesale market initiatives and our future generation plans.
4

5 **Q. Have you previously testified before the Indiana Utility Regulatory Commission (the**
6 **“Commission”)?**

7 A. Yes, I have provided written testimony before the Commission in Cause No. 45501 in
8 support of Petitioner's request for: (i) a Certificate of Public Convenience and Necessity
9 (“CPCN”) to purchase and acquire, indirectly through a Build Transfer Agreement (“BTA”),
10 a solar facility in Posey County, Indiana (“Posey County Solar Project”); and (ii)
11 authorization to enter into a Power Purchase Agreement (“PPA”) to purchase energy and
12 capacity from a 100 megawatts alternating current (“MWac”) solar project in Warrick
13 County (“Warrick County Solar Project”).
14

15 **Q. Are you sponsoring any attachments to your direct testimony in this proceeding?**

16 A. Yes. I sponsor the following attachments:

- 17 ▪ Petitioner's Exhibit No. 11, Attachment FSB-1: All-Source RFP
 - 18 ▪ Petitioner's Exhibit No. 11, Attachment FSB-2: All-Source RFP Stakeholder Slides
- 19

20 **Q. Were these attachments prepared by you or under your supervision?**

21 A. No, these attachments were prepared before I was named to my current position;
22 however, I have reviewed and confirmed both attachments in my role as Director, Power
23 Supply Services.
24

25
26 **II. PURPOSE & SCOPE OF TESTIMONY**
27

28 **Q. What is the purpose of your testimony in this proceeding?**

29 A. My testimony describes the All-Source Request for Proposals (“RFP” or “2019 All-Source
30 RFP”) conducted by CenterPoint Indiana South in conjunction with its most recent
31 Integrated Resource Plan (“IRP”). I will also describe how this CPCN request for the CTs
32 fits within the overall capacity composition forecast for the Midcontinent Independent
33 System Operator (“MISO”) footprint and any congestion impacts.

1 **III. OVERVIEW OF GENERATION TRANSITION PLAN AND ALL-SOURCE RFP**
2 **PROCESS**

3
4 **Q. Please provide an overview of CenterPoint Indiana South's Generation Transition**
5 **Plan (the "Plan").**

6 A. Consistent with the Company's 2019/2020 IRP findings, CenterPoint Indiana South
7 developed a Generation Transition Plan focused on implementation of the Preferred
8 Portfolio in its IRP which concluded that timely retirement of certain identified existing
9 generation and replacement with new generation resources provides a lower cost and
10 reduced risk future for customers. The Plan required an initial step of identifying and
11 selecting approximately 700 MWac of solar generation, 300 MW of wind generation, and
12 approximately 460 MW of natural gas Combustion Turbine generation.

13
14 Timing of this initial step is important since a generation transition period can take a
15 minimum of 3.5 years based on: project selection, the MISO Interconnection Queue
16 process, site permitting, and various other factors. As such, there will be a period, between
17 when the Company's coal generation units are retired and the new generation comes
18 online, where the Company will need to rely on the capacity and wholesale energy
19 markets. To minimize this dependence period and cost to customers, CenterPoint Indiana
20 South evaluated proposals submitted as part of the 2019 All-Source RFP and selected
21 projects that come online in the 2023 – 2025 timeframe. The CTs proposed in this
22 proceeding, combined with the Posey and Warrick County Solar Projects proposed in
23 Cause No. 45501, fulfill the initial step of obtaining approximately 400 MWac of solar
24 generation and 460 MW of natural gas generation. The timeframe in which the Solar and
25 CT Projects come on-line is critical since, as discussed later in my testimony, additional
26 units in MISO Local Resource Zone 6 (CenterPoint Indiana South's Local Resource Zone)
27 are expected to be taken offline by 2023, thereby increasing the risk of reliance on the
28 capacity and wholesale energy markets.

29
30 **Q. Please briefly describe the Company's All-Source RFP process.**

31 A. Use of an All-Source RFP within the context of the IRP process was different from previous
32 processes used by the Company. The Commission encouraged use of an RFP for the
33 2019/2020 IRP in its Order in Cause No. 45052. Other Indiana utilities have also used an

1 RFP within the IRP process as the primary means to determine the price and availability
2 of renewables and other new sources of generation. In response to Commission guidance
3 and to ensure a robust IRP process that entailed market data representative of current
4 pricing and opportunity, CenterPoint Indiana South issued an All-Source RFP for 10 to
5 700 MW of capacity on June 12, 2019. The Company engaged 1898 and Company, a
6 Burns and McDonnell company ("Burns and McDonnell"), as an independent third-party
7 consultant and the direct interface for all RFP communications.
8
9

10 **IV. ALL-SOURCE RFP PROCESS**

12 **Q. How was the RFP process managed and advertised?**

13 A. Burns and McDonnell managed the RFP process, served as a direct interface for all RFP
14 communications, and worked with the Company to evaluate all RFP proposals
15 quantitatively and qualitatively. Burns and McDonnell has provided consulting services to
16 various utilities, developers, and other organizations involving power supply proposal
17 requests totaling more than 25,000 MW. Burns and McDonnell issued the All-Source RFP
18 on behalf of the Company on June 12, 2019. It was distributed by: (1) posting notice on
19 the Company's IRP website¹; (2) sending notice of its issuance to known IRP
20 stakeholders; (3) advertising notice of its issuance across multiple media outlets, including
21 Megawatt Daily (which has approximately 20,000 recipients), North American Energy
22 Markets Association (150 members), and Midwest Energy Efficiency Alliance Minute (161
23 members); and (4) directly emailing notice to the Company's 2017 RFP participants,
24 CenterPoint Indiana South's industry contacts and stakeholders as well as to an internal
25 Burns and McDonnell RFP contact list (containing more than 450 industry contacts).
26

27 The RFP was issued as part of the 2019/2020 IRP process to achieve greater optionality
28 and obtain market data representative of current pricing in the building blocks that would
29 aid in identifying the Preferred Portfolio. Based on a previously identified potential capacity
30 need of approximately 700 MW of accredited capacity beginning in the 2023/2024
31 planning year and CenterPoint Indiana South's desire for flexibility when defining potential
32 resource combinations, the All-Source RFP was issued for a wide range of capacity (10

¹ www.vectren.com/IRP

1 MW – 700 MW) and respondents were encouraged to offer available projects of 700 MW,
2 or less, of nameplate capacity. Bid submittals were due August 9, 2019, to ensure
3 technology and generation pricing could be included in the 2019/2020 IRP modeling inputs
4 used to help select the Preferred Portfolio, and were required to remain valid as offers for
5 12 months to accommodate completion of the 2019/2020 IRP, subsequent due diligence
6 review, and vetting of the proposals and vendors. Respondents were directed to interface
7 with Burns and McDonnell for all RFP communications including questions, clarification of
8 RFP issues, and all other matters related to RFP bid submittal.

9
10 The RFP process, timing, grouping, and evaluation is described in detail in Section 6.1 of
11 the 2019/2020 IRP attached to Petitioner's Witness Matthew A. Rice's testimony as
12 Petitioners Exhibit No. 5, Attachment MAR-1; in the All-Source RFP attached to my
13 testimony as Petitioner's Exhibit No. 11, Attachment FSB-1; and in the All-Source RFP
14 Stakeholder Slides attached to my testimony as Petitioner's Exhibit No. 11, Attachment
15 FSB-2.

16
17 **Q. How many responses did the Company receive to the All-Source RFP?**

18 A. Twenty-two individual respondents submitted complete responses resulting in 110
19 proposals, 91 of which were for projects located in Indiana. The proposal types were
20 broken out as follows: eight battery storage, two coal, seven combined cycle, one Load
21 Modifying Resource ("LMR")/Demand Response ("DR"), 57 solar, 19 solar plus storage,
22 three system energy, and 13 wind. While the proposals contained approximately 21 GW
23 of total installed capacity, many of the projects were included in multiple proposals such
24 that there were approximately 10 GW of unique project installed capacity. Section 6.1.3 of
25 the 2019/2020 IRP sponsored by Petitioner's Witness Rice includes an overview of
26 proposals received. These various proposals assisted the Company in developing the IRP
27 in two ways: first, we were able to use prices from actual proposals for purposes of our
28 pricing assumptions in the IRP; and second, some of these proposals led to actual
29 generation proposals for the Company, which are the subject of Cause No. 45501.

30
31 **Q. Did you receive any bids for a CT?**

32 A. No.

33

1 **Q. Did you receive any bids for fossil fuel resources?**

2 A. Yes, a few bids were received for combined cycle gas turbines ("CCGTs") or coal
3 resources; however, none met the Tier 1 bid criteria. As explained in the IRP and further
4 discussed by Petitioner's Witness Rice, only Tier 1 bids were modeled within the IRP.
5 Petitioner divided responses into Tier 1 and Tier 2 bids, where Tier 1 bids included binding
6 pricing and either a delivered price of energy to CenterPoint Indiana South's service area
7 or were within CenterPoint Indiana South's service area.

8

9 **Q. How were All-Source RFP proposals utilized in IRP modeling?**

10 A. Burns and McDonnell initially reviewed proposals for completeness and contacted
11 respondents, as needed, to clarify proposal attributes or request additional information
12 where details were incomplete using a dedicated RFP e-mail address.² Given the volume
13 of proposals received, it was impractical to model each individual project. Thus, RFP
14 proposals were divided into groups based on characteristics such as technology type,
15 ownership structure, and contract duration. Seventeen groups were formed.

16

17 In addition to grouping, proposals were divided into two tiers, based on factors that could
18 add cost risk to CenterPoint Indiana South customers. As I explained, Tier 1 proposals
19 were those that included binding pricing and either delivered price of energy to
20 CenterPoint Indiana South load node or were physically located in CenterPoint Indiana
21 South's service territory. Tier 2 included the remaining proposals that did not provide a
22 binding bid price and/or were located off CenterPoint Indiana South's system.

23

24 From this, the aggregated cost and performance information of each group containing Tier
25 1 proposal(s) were provided to the IRP team to facilitate portfolio modeling, resulting in 49
26 Tier 1 proposals being used in IRP analysis. A summary of the proposal grouping and
27 costs for Tier 1 proposals are outlined in Tables FSB-1 and FSB-2 below.

² VectrenRFP@burnsmcd.com

Table FSB-1: Proposal Grouping

Grouping		RFP Count	Tier 1	Tier 2
1	Coal PPA	2	0	2
2	LMR/DR PPA	1	1	0
3	CCGT PPA	2	0	2
4	CCGT Purchase	5	0	5
5	Wind Purchase	2	0	2
6	12-15 Year Wind PPA	9	4	5
7	20 Year Wind PPA	2	1	1
8	Storage Purchase	4	4	0
9	Storage PPA	4	4	0
10	Solar + Storage PPA	6	5	1
11	Solar + Storage Purchase	9	5	4
12	Solar + Storage Purchase/PPA	4	1	3
13	Solar Purchase/PPA	6	1	5
14	12-15 Year Solar PPA	8	3	5
15	20 Year Solar PPA	16	10	6
16	25-30 Year Solar PPA	9	3	6
17	Solar Purchase	18	7	11
N/A	Energy Only	3	0	3
	Total	110	49	61

Table FSB-2: Tier 1 Cost Summary³

	Group	# Proposals	# Projects	Proposal ICAP (MW)	Project ICAP (MW)	Capacity Weighted Average LCOE (\$2019/MWh)	Capacity Weighted Purchase Price (\$/kW) ⁴
1	Coal PPA	0					
2	LMR/DR PPA	1	1	50	50		
3	CCGT PPA	0					
4	CCGT Purchase	0					
5	Wind Purchase	0					
6	12-15 Year Wind PPA	4	1	800	200		
7	20 Year Wind PPA	1	1	300	300		
8	Storage Purchase	4	2	305	152	\$157	
9	Storage PPA	4	2	305	152	\$135	
10	Solar + Storage PPA	5	3	902	526	\$44	
11	Solar + Storage Purchase	5	3	862	486	TBD ⁵	\$1,417 ⁶
12	Solar + Storage Purchase/PPA	1	1	110	110		
13	Solar Purchase/PPA	1	1	80	80		
14	12-15 Year Solar PPA	3	2	350	225	\$32	
15	20 Year Solar PPA	10	8	1,522	1,227	\$35	
16	25-30 Year Solar PPA	3	2	400	275	\$34	
17	Solar Purchase	7	6	902	732	TBD ⁵	\$1,262

1 Scoring of the individual RFP proposals was not part of the IRP process. The proposals
2 were scored to aid in the project selection process after the Generation Transition Plan
3 was identified. During the Scoring Process, again, which was used for determining which
4 projects to pursue, the Company, assisted by Burns and McDonnell, evaluated, and

³ Note that proposals based on one project do not include capacity weighted Average LCOE or Capacity Weighted Purchase Price to maintain confidentiality of the bid.

⁴ \$/kW costs are in COD\$, purchase option cost is the purchase price unsubsidized by applicable tax incentives and does not reflect ongoing operations and maintenance costs.

⁵ The method for realizing tax incentives was not established at the time of the IRP.

⁶ Cost based on simultaneous MW injectable to the grid.

1 scored, each complete proposal based on established scoring criteria that assessed
2 reliability, cost, and certainty. This scoring assessment included: Levelized Cost of Energy
3 ("LCOE"); energy settlement location; interconnection and development status; MISO
4 Zone 6 Local Clearing Requirements ("LCR"); and project risk factors like credit
5 worthiness, development experience, ownership structure, delivery date, and site control
6 status.

7
8 **Q. Does the competitive procurement evaluation process have value for customers?**

9 A. Yes. The All-Source RFP and resulting evaluation process benefited customers by
10 achieving greater optionality and obtaining market data representative of current pricing
11 for use in the building blocks of the IRP modeling process and ultimately selecting
12 resources defined in the Company's Generation Transition Plan. Moreover, the
13 competitive All-Source RFP process provided a pool of competitive market choices that
14 increased CenterPoint Indiana South's optionality during project negotiation for generation
15 proposals which are subject to Cause No. 45501, serving as a benchmark for each
16 generation project's terms and characteristics.

17
18
19 **V. MISO RESOURCE ADEQUACY REQUIREMENTS**

20
21 **Q. Please describe MISO's Resource Adequacy Requirements.**

22 A. Achieving reliability, in the bulk electric system, requires capacity resources that meet
23 customer demand considering scheduled and reasonably expected unscheduled outages
24 by an adequate margin. Per MISO requirements, CenterPoint Indiana South must hold
25 adequate generating capacity to serve the annual peak demand of our customer base
26 plus a Planning Reserve Margin Requirement ("PRMR"). If the Company does not have
27 the required capacity, it would be obligated to procure the capacity through MISO's
28 Planning Resource Auction or purchase from a third party and designate in a Fixed
29 Resource Adequacy Plan ("FRAP"). If capacity is not available in the long-term, based on
30 current MISO rules, CenterPoint Indiana South would need to pay a penalty in the form of
31 Cost of New Entry ("CONE"). CONE is determined annually by MISO which has
32 traditionally been the cost to construct a new natural gas combustion turbine. The 2020-

1 2021 CONE price for MISO Zone 6 was set at \$254.88 per MW year. At this price,
2 purchasing 460 MWs of capacity at CONE would cost approximately \$43 million annually.
3

4 **Q. Does the MISO PRMR change from year to year?**

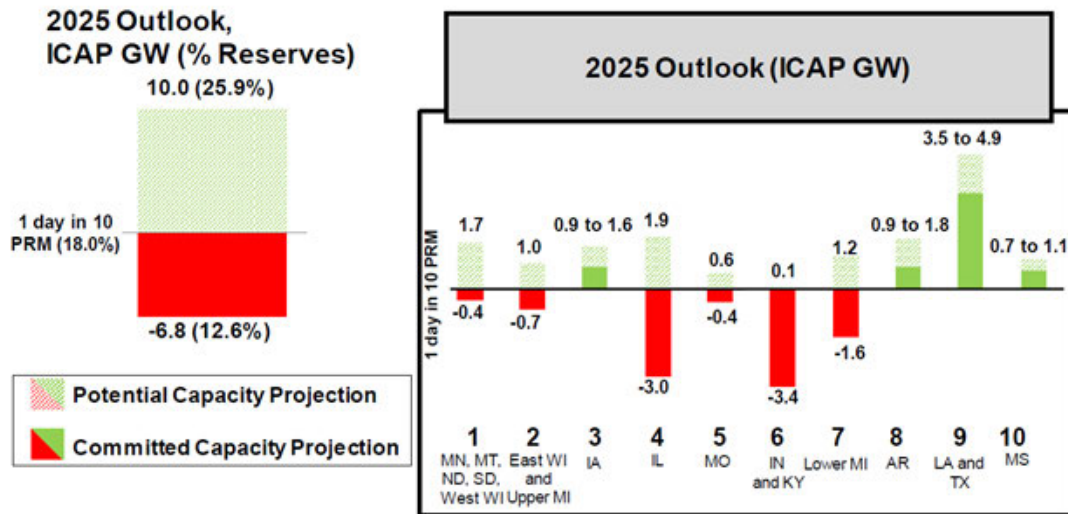
5 A. Yes. Within the past five years, MISO's PRMR, based on installed capacity, has swung
6 between 14.3 percent and 17.1 percent and has been trending upward. In one year, the
7 Unforced Capacity ("UCAP") Planning Reserve Margin ("PRM") changed by 30 percent.
8 The PRMR calculation is driven by four factors: external non-firm support, load forecast
9 uncertainty, load, and generation performance. External non-firm support refers to the
10 diversity of load between MISO and neighboring systems and areas outside of MISO that
11 allow for limited support and transfer of capacity through transmission. An example would
12 be generators in Pennsylvania, Jersey, Maryland Power Pool ("PJM") providing capacity
13 to MISO load. Load forecast uncertainty exists due to the variability of economics, weather
14 and customer behavior that impact the demand for energy and increases the uncertainty
15 of forecasts. The greater the load forecast uncertainty, the greater the PRMR. Finally,
16 generation as it is modeled in terms of capacity and firm imports, impacts the PRMR
17 calculation based on the size and outage history of the generators.
18

19 **Q. Please describe the latest resource adequacy projection in MISO.**

20 A. The Organization of MISO States ("OMS") and MISO began an annual survey in 2013 to
21 capture 10-year resource adequacy projections. The survey is used to compare load
22 projections with generation portfolio plans and measure the two against the annual PRMR.
23 The PRMR is the amount of resources MISO requires in order to meet a North American
24 Electric Reliability Corporation ("NERC") standard of one loss of load event in 10 years.
25 The survey is sent to MISO members, has a 97% response rate, and is the primary tool
26 MISO uses for resource adequacy projections. This past June, the 2020 OMS-MISO
27 Resource Adequacy Survey was released and demonstrated a potential capacity shortfall
28 beginning as early as 2022. This potential shortfall increases and could be as much as
29 6,800 MW by 2025. With respect to Zone 6 (CenterPoint Indiana South's Zone), the survey
30 shows a potential shortfall of 3,400 MW by 2025, the largest projected shortfall of any of
31 MISO's 10 internal zones. The tightening of supply in MISO that is demonstrated in the
32 2020 OMS-MISO Resource Adequacy Survey coupled with current market reforms that
33 have been proposed to FERC and/or are being discussed at MISO stakeholder meetings

1 make it unreasonable to assume that capacity and energy will be available in future years
 2 and at an economic price. The survey’s 2025 outlook, by zone, is represented below:

Figure FSB-1: 2020 OMS-MISO Survey Results, 2025 Outlook (ICAP GW)⁷



- Regional surpluses and potential resources will be critical for all zones to serve their deficits while meeting local requirements
- Positions include reported inter-zonal transfers, but do not reflect other possible transfers between zones
- Exports from Zones 8, 9, and 10 were limited by the Sub-regional Power Balance Constraint

3 **Q. How is potential new generation accounted for in the OMS-MISO Resource**
 4 **Adequacy Survey?**

5 A. The survey recognizes that historically less than 25% of generator interconnection
 6 requests lead to projects getting built. This is especially relevant now as a record number
 7 of requests are in front of MISO by renewable developers rushing to meet tax incentive
 8 deadlines. For instance, a developer may submit one project to be studied in several
 9 locations that is represented as multiple projects when only one location may be selected.
 10 As a result of the speculative nature of interconnection requests, the survey allows
 11 respondents to receive tiered capacity credit for projects based on project status in the
 12 MISO Generator Interconnection (“GI”) Queue. Accreditation for these potential new
 13 resources is as follows:

- Not entered in the queue, but planned: 10% of Installed Capacity (ICAP/nameplate)
- Phase 1 of Queue Process: 10% of ICAP

⁷ 2020 OMS-MISO Survey Results at 8, located at <https://cdn.misoenergy.org/20200612%20OMS-MISO%202020%20Results%20Webinar451924.pdf>.

- 1 • Phase 2 of Queue Process: 50% of ICAP for non-intermittent and 25% for intermittent
2 (renewables)
- 3 • Phase 3 of Queue Process: 75% of ICAP for non-intermittent and 50% for intermittent
- 4 • Signed Generator Interconnection Agreement: 90% of ICAP

5

6 **Q. What is your observation from the latest OMS-MISO Resource Adequacy Survey**
7 **Results?**

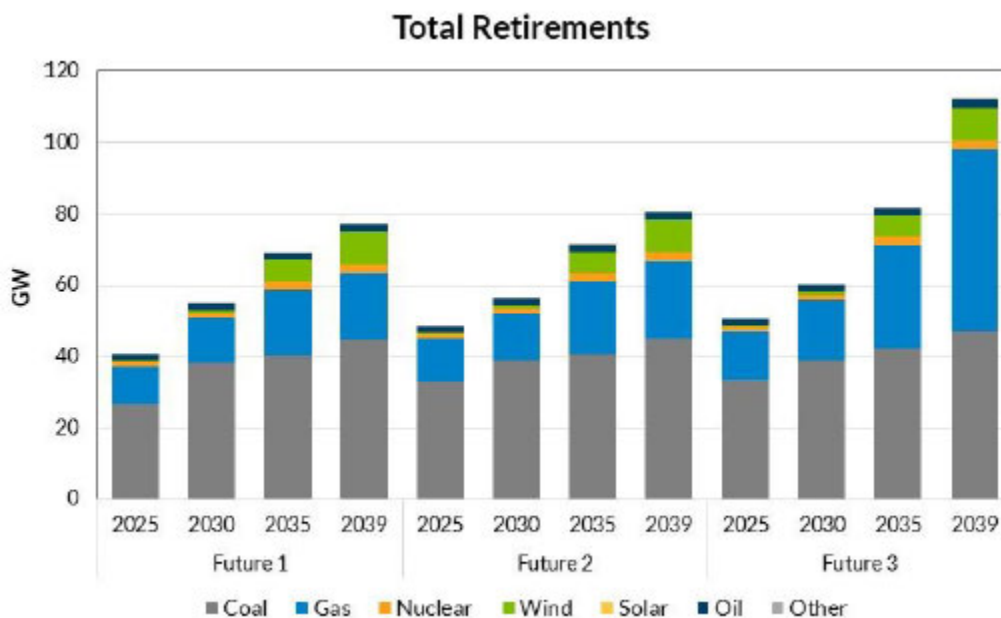
8 A. The results show deterioration of MISO's current capacity surplus of 800 MW, which is
9 only .04% above the required capacity level, to a sizeable shortfall of 6,800 MW in 2025.
10 There are a multitude of factors causing this decrease in capacity, such as age of the
11 generation fleet, environmental compliance requirements, increased Resource Adequacy
12 requirements, and competition from new and more efficient generation. This demonstrates
13 that MISO as a whole is experiencing the same challenges that CenterPoint Indiana South
14 is; and the reality that older, less efficient units are set to retire prior to environmental
15 compliance deadlines. It is not a coincidence that 2023 shows the largest year over year
16 decline in available resources. Additionally, the results show a range of potential outcomes
17 based on uncertainty that exists in both the timing of retirements and the nature and timing
18 of replacement capacity.

19

20 **Q. Is it fair to say that in the coming years, there will be considerable retirement of**
21 **dispatchable generation that will not be replaced with fossil fuel generation?**

22 A. Yes. According to MISO's April 2021 Futures Report, MISO anticipates approximately 40
23 – 50 GWs of dispatchable generation potentially retiring by 2025 using age-based,
24 announced retirements and stakeholder feedback to MISO assumptions across various
25 future scenarios. This represents approximately 33% of MISO's 2021/2022 PRMR. To
26 put that in perspective, 33% of the PRMR is represented by dispatchable generation that
27 could potentially retire by 2025 and it is slated to be replaced with proposed generation in
28 the MISO queue made up of 93% renewables. As of June 4, 2021, there are 80.6 GW of
29 new summer rated installed capacity in the MISO GI Queue. Of that 80.6 GW, 74.6 GW,
30 or 93%, is renewable (solar, wind, storage, waste heat). Therefore, it is clear that
31 renewable, mostly intermittent resources, will be filling the deficit for the foreseeable
32 future, demonstrating the need for generation diversity in the MISO footprint.

Figure FSB-2: Total Retirements Per Future (Cumulative by Year), Equal to Age-Based + Base⁸



1 **Q. With mostly renewable intermittent resources currently in the MISO GI queue, how**
 2 **essential is dispatchable generation to meet customer demand and maintain**
 3 **reliability?**

4 A. Immensely essential. As Petitioner's Witness Wayne D. Games explains in his direct
 5 testimony, the proposed CTs are quick start, fast ramping and dispatchable generation
 6 that will support the intermittent nature of renewables to effectively meet customer needs.
 7 However, it's also essential across the MISO footprint to maintain dispatchable generation
 8 for grid reliability; the responsive dispatchability of the proposed CTs restores a portion of
 9 generation lost with the projected retirements. In other words, these CTs are not only an
 10 integral part of CenterPoint Indiana South's generation transition strategy and fulfillment
 11 of its PRMR, but they also will play a vital role across the entire MISO footprint to help
 12 maintain grid reliability as the complete MISO generation portfolio transitions to one made
 13 up of significantly more renewable resources.

14

⁸ MISO's April 2021 Future Report at 15, located at <https://cdn.misoenergy.org/MISO%20Futures%20Report538224.pdf>.

1 **Q. Is it important that a certain level of generation diversity be maintained within the**
2 **MISO footprint?**

3 A. Yes, it is extremely important that a certain level of generation be dispatchable and fast
4 ramping. MISO acknowledges this through recent market reforms and products that pay
5 a premium for resources that can be called on quickly. These reforms include short-term
6 reserves, raising the Emergency Locational Marginal Pricing ("ELMP") offer floor, and the
7 Value of Loss Load ("VOLL"). Additionally, due to the vast benefits and popularity of solar
8 development, MISO's Independent Market Monitor ("IMM") notes in its 2020 State of the
9 Market Report that: "Given the timing of the expected increases and decreases in the
10 output from solar resources in MISO, a large quantity of these resources would likely lead
11 to significant changes in the system's ramping needs."⁹

12
13 **Q. Why construct combustion turbines in this case?**

14 A. There are several benefits to constructing the combustion turbines in this case, some of
15 which include: meeting MISO's PRMR, interconnection cost avoidance, increased
16 reliability support, and lessening congestion impacts to the customer.

17
18 As described in Witness Rice's testimony, the retirement of A.B. Brown units 1 & 2 will
19 create a capacity gap to achieve the PRMR. The CTs will help fill this gap when they are
20 placed in service at the end of 2024, thereby contributing to the Company's ability to satisfy
21 PRMR while also avoiding too much reliance on market capacity or potential exposure to
22 CONE. Consistent with the 2019/2020 IRP Preferred Portfolio findings, CenterPoint
23 Indiana South will need another 300 – 400 MW of UCAP beyond the proposed 460 MW
24 these CTs would provide to meet its PRMR. Thus, CenterPoint Indiana South is in the
25 process of securing capacity to fill this void as well as secure a small amount of capacity
26 for the 2025/2026 through the 2027/2028 time periods. Capacity needs beyond 2027/2028
27 time period will be evaluated in future IRPs in comparison with other resources to ensure
28 competitiveness because, as previously explained above, due to potential MISO-wide unit
29 retirements, it is uncertain if capacity will be available to purchase and if so, at what cost.
30 The capacity from the proposed CTs contributes to achieving the PRMR without
31 considerable reliance on a potentially volatile capacity market or exposure to CONE. The

⁹ 2020 State of the Market Report at 21, located at
<https://cdn.misoenergy.org/2020%20State%20of%20the%20Market%20Report549473.pdf>.

1 construction of the CTs will support reliability in CenterPoint Indiana South's territory as
2 well as support the reliability of the MISO footprint. As I explained previously, with the
3 intermittency of renewable resources, combustion turbines complement these resources
4 with their ability to be dispatched quickly and their fast ramping capability which increases
5 the reliability of the system.

6
7 In addition, the CTs can be added with little or no congestion risk. CenterPoint Indiana
8 South's Transmission Planning group has performed initial System Impact Study ("SIS")
9 analysis and found no material adverse impact to the CenterPoint Indiana South
10 transmission system. The project is located within the A.B. Brown site and with the planned
11 retirement of the A.B. Brown units 1 & 2, this project is considered replacement generation.
12 The designation of replacement generation allows the project to forego certain steps in
13 MISO's Generation Interconnection process and mitigates the risk of transmission
14 upgrade costs. And, as referenced in Witness Game's testimony, the A.B. Brown site
15 interconnection rights can only be held for a three-year period after retirement of the unit
16 and otherwise would be lost if not used within that three-year timeframe. Thus, if one or
17 both CTs are delayed beyond the three-year time period, CenterPoint Indiana South would
18 be required to submit a MISO Generation Interconnection request that could take up to
19 three years resulting in potential transmission upgrade expense.

20
21 Congestion impacts are an important aspect of a project's location. The nearer the
22 generator is to the load it serves, the less variables exist to cause the generator to become
23 constrained thereby creating economic detriment to the customer via congestion. The
24 intermittent attributes of renewable energy can create constraints on the transmission
25 system causing congestion; both physical and economic. By constructing the combustion
26 turbines, congestion can be eased by their ability to be dispatched quickly and the fast
27 ramping capabilities of these types of resources.

28
29 **Q. What do you mean by congestion?**

30 A. I specifically mean transmission congestion in the economic sense. Electric transmission
31 congestion can be categorized as either physical or economic, although the two usually
32 go hand in hand. Physical congestion represents an actual limitation or constraint on the
33 transmission system that usually results in economic congestion that is reflected in added

1 or discounted Locational Marginal Pricing ("LMP"). Depending on the location of the
2 generator node and the load node, this price separation can be significant for our
3 customers.

4

5 **Q. For purposes of assuring a diverse generation mix in conjunction with the**
6 **development of renewables, is there a role for this Commission to play through the**
7 **regulation of vertically integrated electric utilities operating in MISO?**

8 A. Yes. For consistent reliable generation to Indiana customers, renewable generation must
9 be supported by dispatchable generation. The two CTs, for which CenterPoint Indiana
10 South is requesting approval, will not only support renewables in CenterPoint Indiana
11 South's service territory but further supports renewables in and around MISO's Zone 6.
12 Therefore, the Commission should consider dispatchable generation at the individual
13 utility as well as across Indiana's footprint to ensure customers are provided generation
14 without disruption.

15

16

17 **VI. CONCLUSION**

18

19 **Q. Does this conclude your direct testimony?**

20 A. Yes, at the present time.

VERIFICATION

I, F. Shane Bradford, under the penalty of perjury, affirm that the answers in the foregoing Direct Testimony are true to the best of my knowledge, information, and belief.



F. Shane Bradford

Director, Power Supply Services

Dated: June 9, 2021



All-Source Request for Proposals



Vectren

6/12/2019

All-Source Request for Proposals

for

**Power supply generation facilities, power purchase
agreements, and demand resources**

**Issued
6/12/2019**

**Proposals due
7/31/2019**

prepared by

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

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LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
COD	Commercial Operating Date
CSP	Curtailment Service Providers
DA	Definitive Agreement
DIR	Dispatchable Intermittent Resource
DR	Demand Resource
EFORd	Equivalent Forced Outage Rate Demand
EPC	Engineering, Procurement and Construction
ERIS	Energy Resource Interconnection Service
FERC	Federal Energy Regulatory Commission
GDPIPD	Gross Domestic Product Implicit Price Deflator
GI	Generation Interconnection
GIA	Generator Interconnection Agreement
Hg	Mercury
ICAP	Installed Capacity
IRP	Integrated Resource Plan
IURC	Indiana Utility Regulatory Commission

kW	Kilowatt
lb	Pound
LCOE	Levelized Cost of Energy
LCR	Local Clearing Requirement
LMR	Load Modifying Resource
LRZ	Local Resource Zone
LSE	Load Serving Entity
MISO	Midcontinent Independent System Operator
MMBtu	Million British Thermal Units
MW	Megawatt
MWh	Megawatt-Hour
NDA	Non-Disclosure Agreement
NO _x	Nitrogen Oxide
NPDES	National Pollutant Discharge Elimination System
NRIS	Network Resource Integration Service
OEM	Original Equipment Manufacturer
OVEC	Ohio Valley Electric Corporation
PM	Particulate Matter
PPA	Power Purchase Agreements
PRM	Planning Reserve Margin
RFP	Request for Proposal
SO ₂	Sulfur Dioxide

UCAP	Unforced Capacity
Vectren	Vectren Energy Delivery
VOC	Volatile Organize Compounds

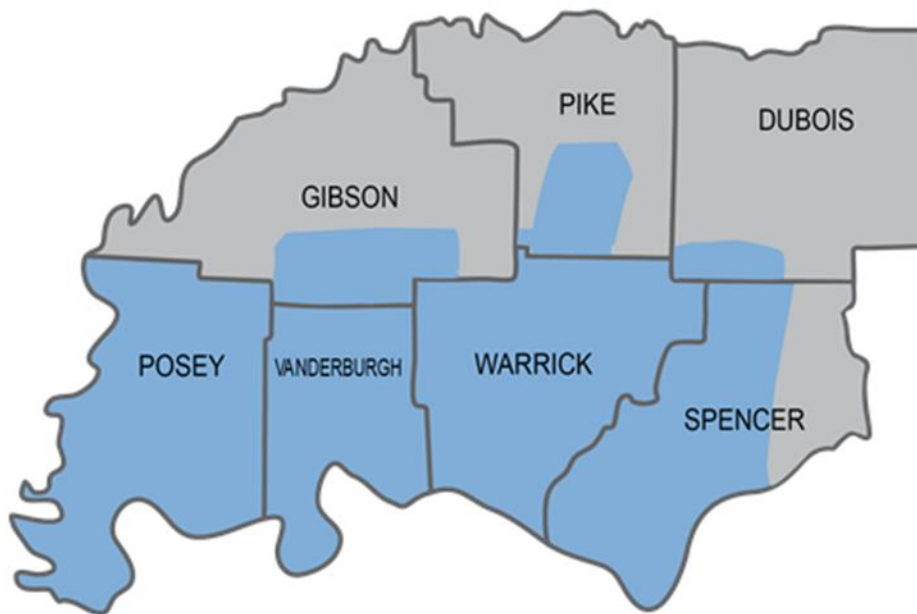
1.0 ALL-SOURCE RFP OVERVIEW

1.1 Introduction

Southern Indiana Gas and Electric (Vectren) is a subsidiary of CenterPoint Energy, headquartered in Houston, Texas. Vectren provides energy delivery services to 144,000 electric customers located in southwestern Indiana. Vectren also owns and operates electric generation to serve its electric customers and optimizes those assets in the wholesale power market.

Vectren's electric customers are currently served by a mixed portfolio of 1,000 megawatts (MW) of coal-fired generation, up to 225 MW of gas-fired generation and 4 MWs of solar coupled with 1 MW of storage. The portfolio also contains 3 MW from a landfill gas to electric project and purchases from the Ohio Valley Electric Corporation (OVEC) of up to 32 MW, wind purchases of up to 80 MW, and purchases from the Midcontinent Independent System Operator (MISO) power pool as needed to meet Vectren's load requirements. Furthermore, interruptible load and demand-side management initiatives can reduce load by approximately 60 MW if needed.

Figure 1-1: Vectren Electric Service Area



1.2 Purpose

Vectren has issued this all-source Request for Proposals (RFP) seeking power supply and demand-side Proposals for capacity and unit-contingent energy to meet the needs of its customers. For asset purchases and power purchase agreements (PPAs) the capacity is preferred to be fully accredited for the 2023/2024

MISO Planning Year (PY). Vectren intends to submit an updated Integrated Resource Plan (2019/2020 IRP) to the Indiana Utility Regulatory Commission (IURC) in 2020 which will evaluate existing resources and identify the preferred resource options to meet capacity and energy requirements. Only resources capable of firm deliverability, further outlined in Section 4.1.1.2, to MISO Local Resource Zone (LRZ) 6 will be considered.

Vectren's resource planning will balance the need for dispatchable capacity with intermittent and demand-side resources to meet customers' needs reliably and cost effectively in an environmentally sustainable manner in both the short and long term. The IRP is designed to provide Vectren customers with a safe, reliable, and affordable power supply.

Vectren prefers Proposals that reflect all of the costs and characteristics of the resource necessary for energy to be financially settled or directly delivered to Vectren's load node (SIGE.SIGW). 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 2.1 no later than the Proposal Submittal Due Date shown in Section 2.4. Vectren reserves the right in its sole discretion to modify this schedule for any reason.

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 to perform the quantitative and qualitative evaluations of all Proposals. However, Vectren will make final decisions (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 VectrenRFP@burnsmcd.com.

Long term resource planning requires addressing risks and uncertainties created by a number of factors including the costs associated with new resources. As part of ongoing resource planning, Vectren has concluded that it is in the best interest of its customers to seek information regarding the potential to acquire, construct or contract for additional capacity that qualifies as a MISO internal resource (i.e. not pseudo-tied into MISO) with physical deliverability utilizing Network Resource Integration Service (NRIS) to MISO LRZ 6. Hereafter within this document, zonal restrictions will be referred to as being within MISO LRZ 6. Within the context of the 2019 IRP process, Vectren is soliciting all-source RFP for supply-side and demand-side capacity resources. The purpose of the RFP is to identify viable resources available to Vectren in the marketplace to meet the needs of its customers. Dependent upon further

evaluation of aging resources, and subject to actual IRP results, Vectren may identify a capacity need of approximately 700 MW beginning in the 2023/2024 planning year. Because Vectren is looking at a number of potential resource portfolio combinations in the IRP, it is likely the 2019/2020 IRP will have scenarios that could result in a need less than or greater than 700 MW. Therefore, Respondents are encouraged to offer less than, or more than, 700 MW depending on the resources they have available. Vectren will also consider alternative timelines related to the capacity acquisition to the extent Respondents are able to provide more competitive pricing and/or terms for delivery beginning prior to or after 2023/2024 planning year. Vectren will aggregate data from the RFP responses, which include a delivered price (pending verification), and input such data into its IRP modeling. The RFP bid evaluation and selection process will be based upon the specific resource needs identified through this IRP modeling as well as the bid evaluation criteria. Through this RFP, Vectren seeks to satisfy the identified capacity need through either a single resource or multiple resources including dispatchable generation, load modifying resources (LMRs)/demand resource (DRs), renewables, stand-alone and paired storage, and contractual arrangements.

Vectren is seeking to provide reliable generation supply and demand resources for its customers. This RFP is issued to:

- Acquire a generation facility or facilities described further in Section 4.0, including the following:
 - Existing or planned dispatchable generation facilities that, at a minimum, meet established industry-wide reliability and performance standards or development requirement
 - Planned resources can be but are not required to be in the MISO generator interconnection queue
 - Existing or planned utility scale renewable resources
 - Existing or planned utility scale storage facilities, either stand-alone or paired with renewables
- Procure power purchase contract options for capacity and energy described further in Section 5.0.
- Procure LMRs/DRs that satisfy the criteria described further in Section 6.0.

Accordingly, you are invited to submit a written, binding Proposal in accordance with the requirements described in this RFP. Entities that submit a Proposal are referred to as Respondents.

The milestone dates for this RFP process are presented below. Additional information about milestone dates for the RFP is provided in Section 2.4.

Table 1-1: RFP Milestone Dates

Milestone	Date
Issue RFP	Wednesday, June 12, 2019
Notice of Intent w/ Pre-Qualification Documents	Thursday, June 27, 2019
Notification of Pre-Qualification	Wednesday, July 3, 2019
Proposals Due	Wednesday, July 31, 2019

2.0 INFORMATION AND SCHEDULE

2.1 Information Provided to Potential Respondents

This RFP and all of its Appendices are available on the RFP website (<http://VectrenRFP.rfpmanager.biz/>). Interested parties are expected to be able to download this RFP with its required forms and complete the forms in Microsoft Word, Microsoft Excel¹, and/or PDF format. Respondents should submit properly completed forms by the specified due date to the RFP e-mail address (VectrenRFP@burnsmcd.com). Burns & McDonnell will accept only Proposals that are complete. Proposals that are nonconforming, not complete, or that are mailed, or hand delivered may be deemed ineligible and may not be considered for further evaluation. By submitting a Proposal in response to this RFP, the Respondent certifies that it has not divulged, discussed, or compared any commercial terms of its Proposal with any other party (including any other Respondent and/or prospective Respondent), and has not colluded whatsoever with any other party.

2.2 Information on the RFP Website

The information on the RFP website (<http://VectrenRFP.rfpmanager.biz/>) contains the following:

- This RFP and associated appendices
- Template Information Form Addendum (as described in Section 8.1)
- Form of Notice of Intent
- Form of RFP Non-Disclosure Agreement
- Form of Pre-Qualification Application including Creditworthiness information
- Frequently asked questions and answers about this RFP
- Updates on this RFP process and other relevant information

2.3 Questions

An e-mail address (VectrenRFP@burnsmcd.com) has been set up to collect all communications and questions from potential Respondents as well as a website (<http://VectrenRFP.rfpmanager.biz/>) to download the RFP 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 Due Date. All Respondents will directly interface with Burns & McDonnell through the RFP e-mail address for all communications regarding this resource request. Proposals will be opened in private by Burns &

¹ Microsoft Excel format is required for the submission of Appendix D.

McDonnell on a confidential basis, but written questions will not be considered confidential. Individual questions submitted by e-mail to Burns & McDonnell before the submittal due date will be answered and responses sent back via e-mail 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.

Proposals will be reviewed by Burns & McDonnell for completeness and offers that do not include the information requirements of this RFP may 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.

2.4 Schedule

Vectren has retained 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 VectrenRFP@burnsmcd.com.

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

Table 2-1: RFP Schedule

Step	Date²
RFP Issued	Wednesday, June 12, 2019
Notice of Intent, RFP NDA, and Respondent Pre-Qualification Application Due	5:00 p.m. CDT, Thursday, June 27, 2019
Respondents Notified of Results of Pre-Qualification Application Review	5:00 p.m. CDT, Wednesday, July 3, 2019
Proposal Submittal Due Date	5:00 p.m. CDT, Wednesday, July 31, 2019
Initial Proposal Review and Evaluation Period	Wednesday, July 31, 2019 – Wednesday, September 18, 2019
Proposal Evaluation Completion Target and Input to Vectren	2 nd Quarter, 2020
Due Diligence and Negotiations Period	Mid 2020
Definitive agreement(s) Executed (subject to regulatory approvals) with Selected Respondent(s)	Late 2020
Petitions (if required) filed with the IURC, the Federal Energy Regulatory Commission (FERC), or any other required agency/commission	TBD

² Negotiation schedule for smaller projects can be expedited at Vectren's discretion

3.0 RFP GENERAL 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. Respondents should refer to the Proposal Checklist in Appendix E for high-level guidance on Proposal requirements.

For a Proposal to be eligible under this RFP, it must offer MISO accredited or accreditable capacity (including Zonal Resource Credits) of no less than 10 MW to MISO LRZ 6³.

Vectren has a preference for Proposals that provide Vectren with operational control of the asset, regardless of ownership position. Where applicable, proposed generation facilities should have no major operational limitations that reduce the ability to run for extended periods.

3.1 Respondent Pre-Qualification

Respondents to this RFP are required to fill out and sign Appendix A: Notice of Intent to Respond, Appendix B: Non-Disclosure Agreement (NDA), and Appendix C: Pre-Qualification Application in its present form.

3.2 Multiple Proposals

In the event that multiple Proposals are submitted by the same Respondent, the Respondent must indicate whether the Proposals are to be evaluated independently of one another or if Proposals are to be considered together.

Respondents may submit up to three Proposals at no cost in response to this RFP. Respondents submitting more than three responses will incur a Proposal Evaluation Fee for each additional Proposal submitted. The non-refundable fee for evaluating each additional Proposal is \$5,000. This sum will serve to defray evaluation costs. Respondents can find instructions for paying fees for their Proposal(s) on the RFP website (<http://VectrenRFP.rfpmanager.biz/>). Vectren and Burns & McDonnell will have sole discretion to determine whether a submission is deemed a single Proposal or multiple Proposals.

³ Load Modifying Resource suppliers must be located entirely within MISO LRZ 6.

3.3 Non-Disclosure Agreement

This RFP contains an RFP NDA (Appendix B). Respondents shall submit a signed version to the RFP e-mail address (VectrenRFP@burnsmcd.com) by 5:00 p.m. CDT on June 27, 2019. Respondents may download the form from the RFP website (<http://VectrenRFP.rfpmanager.biz/>).

3.4 Valid Proposal Duration

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 Appendix D in terms of US dollars as of the date the term of the contract begins and not subject to a currency exchange rate adjustment. 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 for 1-year from the Proposal Submittal Due Date.

3.5 Acknowledgement of RFP Terms and Conditions

The submission of a Proposal shall constitute Respondent's acknowledgment and acceptance of all the terms, conditions, and requirements of this RFP.

3.6 RFP Response Summary Information

All Proposals must include a table of contents and provide concise and complete information on the topics described below, organized as follows:

3.6.1 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 and if applicable, MISO generator interconnection project number, size, the primary contact's name, e-mail, 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 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.

3.6.2 General Information

3.6.2.1 Respondent's Information 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 Respondent 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 PPAs 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 website 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 or LMRs/DRs.

Please provide a list of projects with a brief description of the Engineering, Procurement and Construction (EPC) contractor's experience as it relates to utility-scale power generation.

4.0 GENERATION FACILITY PROPOSALS

For generation facility Proposals, Vectren will only consider bids for facilities that have an estimated remaining useful life of five or more years from acquisition date. In all cases, Respondents shall describe the expected useful life of all facilities included in their Proposals.

4.1 Content Requirements for Generation Facility Proposals

This section describes Vectren's requirements for the content of any Proposal that is submitted in response to this RFP as an offer to sell a generation facility to Vectren. Proposals that do not include all of the required information may be deemed ineligible and may not be considered for further evaluation. If it appears that certain information has inadvertently been omitted from a Proposal, Burns & McDonnell may, but is not obligated, to contact the Respondent to obtain the missing information, per Section 2.3. If, during the RFP process, there is a material change to the generation facility or the circumstances of the Respondent that could affect the outcome of the RFP evaluation, the Respondent is obligated to inform Burns & McDonnell within five business days. In addition, any winning Respondent must provide such additional information and data as may be requested by Vectren to support regulatory approvals of the generation facility purchase transaction.

Vectren has a preference for projects located near its load. Non-conforming bids by Respondents to sell a generation facility or facilities not meeting the location requirements may be disqualified from consideration on that basis alone.

Vectren will accept Proposals for new or planned generation facilities that will be complete and operational in advance of the expected acquisition date. A project will be defined as complete and commercially operable if, and only if, it includes all facilities necessary to generate and deliver energy into MISO to at least one single point of interconnection within MISO. More detail on the development milestone requirements for planned facilities are included in Section 4.1.7.

If a facility does not have black start capability installed but could be made black start capable, Proposals should indicate the estimated costs to construct and operate and include the estimated construction timeline.

4.1.1 Capacity Characteristics

Respondents shall state the nameplate capacity, net summer operating capacity, net winter operating capacity and the awarded unforced capacity (UCAP) of the generation facility for the last five MISO planning years (existing facilities).

Respondents also should provide the expected UCAP for the first five MISO planning years beginning June 1, 2023 based on current MISO rules for the applicable generating technology.

4.1.1.1 Acquisition Date

In preparing their Proposals, Respondents shall assume the acquisition of the facility shall be closed and transfer of title shall occur on or before the start of the 2023/24 Planning Resource Auction window, subject to regulatory approvals. If Respondent is able to offer more competitive pricing and terms for title transferring prior to or after June 1, 2023, Respondent should detail the drivers and the optimal date for title transfer.

4.1.1.2 Capacity Availability and Deliverability

For Proposals to sell an existing generation facility to Vectren, the existing generating facility must be commercially operable, including all facilities and requirements necessary to deliver capacity (Zonal Resource Credits) to MISO LRZ 6. Respondents must identify the specific point(s) of interconnection including the type(s) of transmission service (e.g. NRIS or Energy Resource Interconnection Service (ERIS)). Proposals for facilities without existing firm deliverability to MISO LRZ 6 should include cost estimates and transmission studies associated with securing such deliverability.

The Proposal should also include nodal economic analyses (2023, 2028, and 2033) showing expected unit economic metrics (including congestion impacts on: capacity factor, produced energy, and generation revenue) for the project at the proposed delivery point(s).

Vectren reserves the right to reject any Proposal that does not include the full cost of any known or potential interconnection costs or network upgrades that may be required to provide firm deliverability to MISO LRZ 6 and/or that does not include interconnection, reliability, and/or economic analyses supporting interconnection and transmission requirements. Such materials should include a technical description and estimated costs of network upgrades from studies completed or underway.

4.1.2 Technical and Economic Detail

4.1.2.1 Generation Technology

Respondents shall describe the generation technology of the facility, including the make, model, and name of the supplier of all major equipment.

All Proposals to sell a generation facility to Vectren must utilize an existing, proven technology, with demonstrated reliable generation performance that is capable of sustained, predictable operation.

4.1.2.2 Dispatch and Emissions Characteristics

Respondents shall provide the dispatch and emissions characteristics of the generation facility in Appendix D, including, but not limited to:

- Minimum load level
- Maximum load level
- Ramp rates (up and down)
- Number of gas turbines that can be started simultaneously (if applicable)
- Heat rate curve for typical operations, including the minimum load and full load heat rates
 - If applicable, Respondent shall also provide heat rate curves for summer and winter seasons
- Fuel consumption and heat rate during startup, including startup time and the total number of hours annually the facility can be assumed to be in startup mode
- Fuel consumption and heat rate when the facility is being shut down, including how long shutdown takes and the total number of hours annually the facility can be assumed to be in shutdown mode
- An estimation of the total number of hours annually that the facility operates at full load
- Capability decreases as a result of ambient temperature increases
- Supplemental firing capability, including black start capability, and any operating limitations caused by such factors of design
- Pounds/megawatt hour (lb/MWh) emissions rates at relevant dispatch levels (startup, minimum, mid and full loading) and seasons (summer, winter, shoulder) for nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon dioxide (CO₂), volatile organic compounds (VOC), particulate matter (PM) and carbon monoxide (CO)
- Any other operational limitations that reduce unit availability or reduce a unit's ability to dispatch or regulate

For renewable resources Respondents shall provide expected capacity factors, including 8760 hourly profiles (actual or based on weather data) and the expected useful life of the asset. If applicable, Respondents shall also provide expected annual degradation rates.

Regarding any major current and/or historical operational limitations, Respondents shall provide a description of the root causes of the limitations (e.g. original equipment manufacturer (OEM) design, material condition of the facility, environmental permits, etc.). To the extent that expected performance deviates from observed performance, the Respondent shall provide the basis for the assumption.

4.1.2.3 Revenues and Operating Costs

For existing generation facilities, Respondents shall provide a detailed breakout of the facility's actual annual revenues for each of the past five years. This will include energy, capacity, and ancillary service market revenues, as well as any other revenues the facility earned, including any congestion revenue (positive or negative), as well as uplift revenues. Associated with these revenues, Respondents shall state the estimated annual output in MWh as well as the operation and maintenance costs of the facility on a fixed (\$) and variable (\$/MWh) basis and provide the actual annual operation and maintenance costs of the facility for each of the past five years in nominal dollars.

Respondents shall provide a detailed breakout of the generation facility's estimated and actual annual fixed costs for the following categories: labor, benefits, materials, and all others for the past five years. Respondents shall provide a breakdown of the number of people employed at the facility, including permanent and contracted employees, and whether those employees are organized under any labor agreement.

If fixed or variable costs for the generation facility are expected to change in the foreseeable future (e.g., following planned upgrades, etc.), the Respondent should provide both the new expected cost(s) and the year(s) in which the costs are expected to change.

Respondents shall also state and describe any property, state, and local taxes and tax abatements associated with the generation facility, including all state and local taxes including property taxes.

New generation facilities also must provide reasonable expectations for all of the above details associated with plant revenues and costs, including market revenues, fixed and variable operations costs, expected upgrades and service timing, and taxes.

4.1.3 Operating Considerations

4.1.3.1 Operating Data

For an existing generation facility, Respondents shall provide historical operating data consisting of:

- The commercial operation date (COD) of the facility
- The annual run-time hours (per unit, if applicable)
- The annual operating cycles per year (per unit, if applicable)
- The annual facility capacity and availability factors
- The equivalent forced outage rate demand (EFORD)

The above annual data may be limited to the most recent five years. The EFORD should correspond to the UCAP amounts awarded for the last five Planning Years. Respondents shall provide a breakdown of EFORD by failure mode or North American Electric Reliability Corporation/Generating Availability Data System category. Respondents shall provide a description of the major contributors to the generation facility EFORD. If there are particular costs associated with maintaining the EFORD of a generation facility, those must be provided. Generating facilities considered a Dispatchable Intermittent Resource (DIR) in MISO shall provide historical curtailments over the most recent years. New facilities shall put forth a best effort forecast of curtailments by MISO.

Respondents shall provide details on any current generation facility equipment issues and concerns, including the potential drivers and recommended mitigation procedures for the issues and/or concerns. These may include, but are not limited to, any operation of the turbine, generator, or boiler outside recommended parameters established by OEM, compromised turbine or compressor blades, etc. Respondents shall provide a list of any redundant equipment that is currently bypassed or out of service, and the related reason. Respondents shall also provide historical information on such issues and concerns that have arisen, how they were resolved, and the associated costs for the last ten years of operation, or for the commercial life of the generation facility, whichever is lesser.

Respondents shall provide maintenance history for the lesser of the past ten years of operation or the commercial life of the generation facility consisting of: (i) dates of last full unit inspection and findings based on OEM recommendations; and (ii) outstanding OEM recommendations remaining to be implemented, including the cost and outage duration for any major maintenance requirements expected over the coming ten years. Respondents shall provide the outage reports for major planned and forced outages for each of the past five years.

For new or planned generation facilities, Proposals should include the manufacturer or developer quoted expected performance, as well as historical performance of similar facilities in MISO.

As noted in Section 4.1.5.3, below, Proposals shall disclose if the generation facility or any parts thereof are subject to a service agreement.

4.1.3.2 Operating Plan

Proposals should include a summary of the operating plan for the generation facility. Such plan should include software management system(s) and personnel roles and responsibilities for operating, maintaining, and servicing the facility, including any contractual arrangements currently in place.

Respondent shall provide an overview of key scheduled outage and maintenance plans, as well as plans for procuring and maintaining key spare parts.

For new or planned generation facilities, this should include a summary of the intended operating plan for the facility. The plan should include software management system(s) planned or in use (e.g., SAP, etc.), any third-party roles and responsibilities for operating, maintaining, and servicing the facility, including any contractual arrangements to be executed. Respondent shall provide an overview of key scheduled outage and maintenance plans, as well as plans for procuring and maintaining key spare parts.

4.1.3.3 Fuel Supply

Respondents shall provide a description, including detailed cost information, contract duration, and material contract terms (including whether fuel contracts are take or pay, minimum volume requirements, price reopeners, assignability or termination provisions) of all fuel purchase, storage, and transport agreements related to the generation facility Proposal. Cost of fuel commodities shall be provided separately from the cost of fuel transportation. Respondents also must list any provisions or other considerations that would prohibit or impair the assignment and/or affect the performance obligations of either party under the respective contract(s). Respondents shall describe fuel purchase and transport to the generation facility, as well as any existing or known potential operational restrictions or impediments on such fuel purchase and transportation. Respondents also are required to provide a description of the existing fuel supply (and storage) infrastructure serving the generation facility, including the infrastructure for the delivery of secondary fuel for dual-fuel resources. However, Vectren, through this RFP, is exploring the potential purchase of generation facilities, and it is Vectren's sole discretion whether to assume any contract or contracts associated with the proposed generation facility related to fuel commodities and/or fuel transportation.

Proposals shall describe, to the extent possible, fuel sourcing strategy, including from where their fuel is sourced.

Proposals shall describe the generation facility's ability to access a reliable fuel supply that would support operation for any hour throughout the year, including the plant's on-site fuel storage and dual-fuel capabilities, if applicable. Proposals for gas generators shall indicate whether the facility is dual-fuel capable and Proposals should include an indication of the days of on-site fuel storage available. Gas generators without dual fuel capability shall provide information on the costs required to make the facility dual fuel capable to the extent that such cost estimates are available. Natural gas fired facilities shall have firm gas transportation contracts in place for the amount of gas capacity necessary to fulfill the amount of UCAP being bid. Proposals that do not include firm gas supply may be disqualified.

4.1.4 Environmental Considerations

4.1.4.1 Emissions and Waste Disposal Compliance

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, NO_x, Mercury (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 Code of Federal Regulations (CFR) part 60, subpart TTTT).

4.1.4.2 Water Supply

Respondents shall provide a detailed description of the water supply, including but not limited to, contract term, water usage, and cost of water for the generation facility. Respondents shall also provide the status of the facility's National Pollutant Discharge Elimination System (NPDES) permits, including, but not limited to, permit conditions, permit violations reported over the last five years, the timing of next permit renewal, and any other known concerns.

If applicable, Respondents shall provide a summary of the facility's water chemistry program, including key systems and suppliers, and its performance in the most recent year.

4.1.4.3 Permits

The generation facility must have all relevant environmental and other permits necessary for operation and maintenance. Facilities without such permits may be disqualified from consideration at Vectren's sole discretion. Respondents shall provide a description of all permits currently in place for the operation and maintenance of the facility (e.g., Spill Prevention Containment and Control plans, Title IV and Title V permits of the Clean Air Act, Cap and Trade Permits, NPDES permits, Water Withdrawal, and Pollution

Incident Prevention Plan, etc.). Respondents must also state whether there are any provisions that would prohibit the assignment of such permits and/or any consents required for the assignment of such permits.

Respondents shall describe any operating limitations imposed by permitting or environmental compliance that limit plant availability.

Respondents shall provide a description of any identified environmental liabilities (e.g., potential site remediation requirements, etc.) for the facility.

4.1.5 Financial Considerations

4.1.5.1 Capital Expenditures

Respondents shall provide historical actual and budgeted capital expenditures for the generation facility.

Historical capital expenditures shall be provided for each of the past five years in nominal dollars.

Planned and budgeted capital expenditures shall be provided for each of next five years in nominal dollars along with a description of the projects involved. Respondents also shall disclose any known capital expenditure needs outside of the five-year time horizon that are expected to exceed \$1 million dollars.

Respondents shall supply a summary list of all spare parts and components currently owned by the facility and their approximate dollar value. Respondents shall also identify any spare parts or components that are currently needed and/or on order as of the date the Proposal is submitted.

4.1.5.2 Acquisition Price

Respondents shall submit an acquisition price consisting of a single fixed payment that is inclusive of all monetary consideration for the generation facility, working inventory, and, if applicable, ancillary facilities and contractual arrangements (e.g., for fuel supply and transportation, maintenance, pollution control bonds, etc.). Respondents must submit their best and final price with their Proposal. Respondents must provide details regarding any liabilities that Vectren might assume as a buyer of a generation facility.

For new or planned generation facilities, the price offered in the Proposal shall include all costs associated with providing a completed generating asset whose full output will be accredited to the MISO LRZ 6. This includes, in particular, but without limitation, costs associated with transmission interconnection, including engineering studies, siting, permitting, acquisition and construction.⁴

⁴ If, during the evaluation, Burns & McDonnell or Vectren determines that the Proposal will be unable to achieve firm delivery to MISO LRZ 6, the Proposal will be rejected.

4.1.5.3 Other Contractual Commitments

Respondents shall provide a description, including detailed cost information, of any other contracts that are currently necessary for generation facility operations, including, but not limited to, long-term service agreements, state union labor contracts and/or technical support contracts, agreements related to capacity and/or energy sales from the facility and any capacity offers submitted to any independent system operator/regional transmission organization related to the generation facility that, if accepted, would be binding on Vectren as a result of an acquisition. Respondents must also state whether there are any provisions that would prohibit the assignment and/or affect the performance obligations of either party under the respective contract, including transfer or cancellation fees.

4.1.6 Legal Considerations

4.1.6.1 Legal Proceedings, Liabilities & Risks

The Proposal shall include a summary of all material actions, suits, claims or proceedings (threatened or pending) against Respondent, its Guarantor (if applicable) or involving the generation facility or the site as of the Proposal due date, including existing liabilities whether or not publicly disclosed, including but not limited to those related to employment and labor laws, environmental laws, or contractual disputes for the development, construction, maintenance, fueling, or operation of the facility.

4.1.6.2 Material Contingencies

Proposals that have material contingencies, such as for financing, may not be considered.

4.1.7 Additional Items Specific to New Facilities

All Proposals for new generation facilities must have a well-defined and credible development plan for Respondent to complete the development, construction, and commissioning of the facility on their proposed development timeline. Respondents submitting Proposals for new or planned facilities should review the Development Risk evaluation metric and be sure to discuss key development milestones in their Proposal.

If available, Respondents shall submit:

1. A copy of an executed MISO Generator Interconnection Agreement
2. A copy of a completed MISO Facilities Study
3. A copy of a completed MISO System Impact Study

4. Nodal economic analyses (2023, 2028, and 2033) showing expected unit economic metrics (including congestion impacts on: capacity factor, produced energy, and generation revenue) for the project at the proposed delivery point(s)

If Respondent cannot provide this information, Respondent must indicate why it cannot be provided and must provide a timeline showing ability to complete key development milestone requirements prior to or after June 1, 2023 including the above referenced items for the MISO generator interconnection queue.

Respondent shall also detail its MISO generator interconnection queue position, if any, and the types and amounts of transmission service requested (e.g. NRIS or ERIS). Respondents submitting Proposals for a new or planned generation facility should also submit a copy of a fully executed EPC contract if available.

Respondents should also provide the following:

- Roles and responsibilities of the companies involved in the design, development, procurement, and construction of the facility. Information about key contributors shall extend to the status of contractual relationship with each key contributor; key contractual assurances, guarantees, warranties or commitments supporting the Proposal, including an executed EPC contract, and any past experience of Respondent working with each key contributor.
- Description of status of major equipment procurement, as well as processes for engineering, procurement, and construction bids and awards.
- Description of the facility site and Respondent's rights (i.e., whether owned, leased, under option) to such site. Please indicate whether additional land rights are necessary for the development, construction, and/or operation of the facility.
- Discussion of the development schedule and associated risks and risk mitigation plans for that schedule, including whether there are contract commitments from contractors supporting the proposed schedule. The Respondent should be prepared to document and commit to a proposed development schedule, which should include a COD.
- Discussion of the financing arrangements secured by the Respondent, including an overview of the sources of funds, and level of commitment from debt, equity, or other investors.
- Discussion on permitting, including a list of all required permits, permitting status of each, and key risks to securing necessary future permit approvals.
- Description of status in MISO queue process and presentation of documents described above.

- Financial information regarding guarantors and sources of equity funding along with either the Respondent's or guarantors' senior unsecured debt and/or corporate issuer ratings documentation from Moody's and Standard & Poor's showing the name of the rating agency, the type of rating, and the rating of the Respondent or guarantor.

Vectren will not assume any responsibility for the successful development, construction, and/or completion of a proposed facility. Accordingly, development schedule, budget, permits and approval risk will be the sole responsibility of the Respondent.

5.0 POWER PURCHASE AGREEMENT PROPOSALS

Vectren will consider meeting some or all of its resource requirements through short, medium and/or long-term PPAs. Vectren will only consider PPAs that have a term of five years or greater.

5.1 Name and Location

Respondents shall state the name of the generating facility, the county where the generating facility is located, the owner of the facility, and the commercial pricing node associated with the facility, if applicable. The facility must qualify as MISO internal generation (i.e. not pseudo-tied into MISO) and be qualified to receive Zonal Resource Credits for Zone 6 consistent with MISO's Module E Planning Resource Auction. Should the facility not be qualified in Zone 6, Respondents shall detail in their Proposals the means by which Zonal Resource Credits will be delivered/fulfilled in Zone 6.

5.2 Net Capability of Generating Facility

Respondents proposing a PPA for existing assets shall state the nameplate capacity, net summer operating capacity, net winter operating capacity and the UCAP of the facility for the 2019/2020 MISO planning year. Respondents shall specifically identify any known derates affecting the facility.

Respondents proposing existing assets shall also list the UCAP awarded to the facility, for the MISO Planning Years, 2015, 2016, 2017, 2018, and 2019. Respondents shall provide the projected UCAP for the facility. In the event that the projected UCAP has sizable deviation from historical UCAP, Respondents shall provide a detailed explanation. Respondents proposing facilities in development shall provide the anticipated UCAP after the asset acquisition date.

5.3 Generation Technology

Respondents shall describe the generation technology of the facility, including the make of the equipment, model, and name of supplier.

5.4 Dispatch and Emissions Characteristics

Respondents shall state/describe the dispatch characteristics of the facility, including, but not limited to, minimum load level, ramp rates (up and down), number of turbines that can be started simultaneously (if applicable), fuel consumption during startup, capability decreases as a result of ambient temperature increases, supplemental firing capability and any operating limitations caused by such factors as design, material condition of the facility, and various permit restrictions. Respondents shall state/describe the emissions profile of the facility, including but not limited to, the lbs/MMBtu at various dispatch profiles

as applicable (startup, minimum load, mid, and max output) by season (summer, winter) for applicable emissions: NO_x, SO₂, CO₂, VOC, PM and CO.

Regarding any major operational limitations, Respondents shall provide a description of the root causes of the limitations (e.g., OEM design, material condition of the facility, environmental permits, etc.)

Generating facilities considered a DIR in MISO shall provide historical curtailments over the most recent five years. New facilities shall put forth a best effort forecast of curtailments by MISO. Respondents shall also specify how DIR will be addressed (i.e. agreed to MISO offer price, bank of curtailment energy, etc.) within submitted Proposals. Generally, Proposals shall also take into consideration Vectren acting as the MISO Market Participant (responsible for market offers). However, Vectren is willing to consider Proposals where Vectren is not acting as the MISO Market Participant to the extent it is beneficial to Vectren's customers.

5.5 Fuel Supply

Respondents must supply a detailed fuel supply plan that fully details how fuel is purchased and transported to the facility as well as any existing or known potential operational restrictions or impediments on such fuel supply. This applies to all fuel types used to operate a facility, including natural gas, coal, fuel oil, biomass, etc. The Respondent is also required to provide a description, including detailed cost information, of all fuel service and purchase agreements applicable to the facility.

Respondents proposing a PPA shall be solely responsible for maintaining a reliable fuel supply that is delivered to the Respondent's proposed generating unit(s) to ensure reliable delivery of firm capacity and energy to Vectren throughout the Delivery Term. Facilities operating on natural gas must have firm natural gas supply agreement(s) capable of meeting 100% of the facility's maximum daily consumption requirements throughout the Delivery Term. The supply agreement(s) should provide all services required to cause natural gas to be delivered to the facility on a firm basis, which may include both timely and intraday supply, transportation, storage, and/or balancing.

5.6 Financial Considerations

5.6.1 Power Purchase Agreement

Respondents shall submit an annual power purchase price (\$ and/or \$/MWh as applicable) consisting of a payment that is inclusive of all monetary consideration for the generation facility, working inventory, and, if applicable, ancillary facilities and contractual arrangements (e.g., for fuel supply and transportation, maintenance, pollution control bonds, etc.). Respondents must submit their best and final price with their Proposal. Respondents must provide details regarding any liabilities that Vectren might assume.

For new or planned generation facilities, the price offered in the Proposal shall include all costs associated with providing a completed generating asset whose full output will be accredited to the MISO LRZ 6. This includes, in particular, but without limitation, costs associated with transmission interconnection, including engineering studies, siting, permitting, acquisition and construction.⁵

5.6.2 Asset(s) Specific Financial Information

Respondents shall submit audited or unaudited Financial Statements including Balance Sheets, Income Statements and Cash Flow Statements for the proposed asset(s) for the past three years. Respondents shall clearly indicate book value of the asset(s) in the financial information submitted.

5.6.3 Other Contractual Commitments

Respondents shall state whether there are other contractual commitments limiting or affecting the operation of the facility. Respondents shall state whether there are any other agreements in place for or claims on output from the facility. Such information should include any obligations that may restrict or compromise Vectren's ability to dispatch the facility.

5.6.4 Assets in Development

For PPA supported by proposed assets or assets that have not yet achieved their COD, Respondents must provide the same information requested in Section 4.1.7 for facilities to be developed.

⁵ If, during the evaluation, Burns & McDonnell or Vectren determines that the Proposal will be unable to achieve firm delivery to MISO LRZ 6, the Proposal will be rejected.

6.0 LOAD MODIFYING RESOURCES/DEMAND RESOURCES

LMRs/DRs are demand-side resources and behind the meter generation not typically modeled or measured as part of MISO's operations but used during capacity shortages to help meet the energy balance. Vectren will consider LMRs/DRs from one or more MISO customers or curtailment service providers (CSP). LMR suppliers must be located entirely within MISO LRZ 6. Proposals for LMRs/DRs are to be for assets that are eligible to participate in MISO LRZ 6 and can meet the additional performance requirements of Vectren as described in Sections 6.1 and 6.3. In addition, for LMRs/DRs located within Indiana, Respondent must identify how the Proposal conforms with any requirements of the local utility and state law in order to offer resources for capacity accreditation within the MISO market under Module E Capacity Tracking.

Proposals for LMRs/DRs may be combined with another power supply Proposal or may be submitted on a standalone basis. Vectren will consider LMR/DR Proposals that have a term of one year or longer, consistent with MISO planning years.

6.1 Product Definition

To be eligible for participation in this RFP, the LMR/DR offered by a supplier must:

- Meet LMR/DR Requirements for participation in MISO as a demand-side resource, including any future changes to MISO's requirements for LMRs/DRs for the term of the Proposal
- Meet the additional performance requirements described in Section 6.3
- For capacity accreditation, the Proposal must be sourced from locations entirely within the MISO LRZ 6
- For energy accreditation, the Proposal must be sourced from locations entirely within Vectren's electric service territory
- Be at least 10 MW
- Use an existing, proven technology that has demonstrated reliable demand reduction, which may include use of Behind the Meter Generation (as defined by MISO)
- Reduce load by a predetermined amount when notified by Vectren of a Curtailment Event without further direction or communication by or from Vectren.

6.2 Purchase Agreement

If selected, the LMR/DRs supplier and Vectren will negotiate a mutually acceptable agreement to govern any commercial relationship established by the parties. With respect to a Proposal from a CSP, Vectren

will not be responsible for making payments to, communicating with, or managing the relationship or performance of any customer within an aggregation, and the CSP shall be solely responsible for the same in all respects. To mitigate risk, Vectren will require the LMR/DR supplier to provide collateral upon execution of a LMR/DR Proposal. Vectren reserves the right to determine the form of that collateral requirement for a winning Proposal.

6.3 Curtailment Events: Notification and Performance Requirements

LMRs/DRs must meet notification and performance requirements applicable to a Curtailment Event, as defined and described herein and comply with MISO current and future testing requirements. For purposes of this RFP, a Curtailment Event shall be one in which either Vectren or MISO determines, in its respective sole discretion. MISO may also initiate a Curtailment Event upon its sole determination that a pre-emergency situation exists.

6.3.1 Notification, Performance, and Test Requirements

Curtailment Events initiated by MISO: For Curtailment Events initiated by MISO, LMR/DR suppliers shall agree to and be capable of meeting, throughout the entire term of the Proposal, all notification and performance requirements applicable to Capacity Performance demand resources. The supplier shall comply with all MISO Module E Capacity Tracking measurement and verification requirements.

Curtailment Events initiated by Vectren: Suppliers shall also agree to and be capable of meeting the following additional notification and performance requirements applicable to Curtailment Events initiated solely by Vectren:

- Suppliers shall curtail Actual Measured Load to Firm Contract Load within the proposed notification time specified in the Proposal
- Notification of a Curtailment Event initiated solely by Vectren will consist of an electronic message issued by Vectren to a device or devices such as telephone, facsimile, or e-mail, selected and provided by the supplier and approved by Vectren. Two-way information capability shall be incorporated by Vectren and the supplier in order to provide confirmation of receipt of notification messages. Vectren will provide the supplier a notification of when Curtailment Events have ended. Operation, maintenance, and functionality of communication devices for receipt of notifications selected by the supplier shall be the sole responsibility of the supplier, and receipt of notifications set out in this paragraph shall be the sole responsibility of the supplier

- During the entire period of a Curtailment Event initiated by Vectren, the supplier's Actual Measured Load must remain at or below its Firm Contract Load. A supplier's Actual Measured Load shall be determined by integrating the megawatts used over every clock hour (hour-ending).

6.3.2 Remedies for Non-Performance

A supplier whose Actual Measured Load exceeds its Firm Contract Load will be subject to performance penalties which may include, but not be limited to, refunding to Vectren monthly payments under the agreement.

A supplier shall be responsible for, and shall indemnify Vectren for, any non-performance penalties, costs, charges, or other amounts assessed by MISO and incurred by Vectren as a result of non-performance attributable to the supplier's LMR/DR, including but not limited to any Capacity Resource Deficiency Charges, Non-Performance Charges, or similar charges or penalties under the MISO agreements. In no event shall the penalties listed above for non-performance during a Curtailment Event be less than the sum of any MISO non-performance penalties, costs, charges, or other amounts incurred by Vectren as a result of non-performance attributable to the supplier's LMR/DR and the Curtailment Event charge.

6.4 Proposal Requirements

6.4.1 Acquisition Price

Suppliers shall submit an acquisition price consisting of a single fixed amount denominated in units of dollars per megawatt-day (\$/MW-day), which is to apply for the term of the Proposal. If a Proposal is accepted, the supplier will be compensated in an amount equal to the monthly Curtailable Load times the Acquisition Price. The Proposal shall include all monetary consideration for the LMR/DR offered. Suppliers must submit their best and final price with their Proposal.

Should Vectren execute an agreement with a Respondent, the contract price between Vectren and the Respondent will be the Acquisition Price submitted in its respective Proposal through this RFP process.

6.4.2 Product Description

A Proposal shall include a description of the individual LMR/DR customer(s) and expected load drop values (kW), equipment, and technology that will be deployed and make available any other information required by MISO to meet its registration process, and for CSPs, plans for recruiting, engaging, and maintaining Program Participants.

Proposals should discuss the experience, qualifications, and financial strength of the supplier and other key contributors including the specific number of months the supplier has been providing LMR/DR services in MISO. Responses should indicate whether the supplier has ever been assessed a performance penalty in association with the resource and if so, when any penalties were assessed. For CSPs, Proposals should describe well-defined roles and responsibilities of the supplier and its participants. The supplier should describe successful protocols, if any, they have employed in the MISO LRZ 6 or other MISO zones for dispatching their LMR/DR.

While the product definition requires a load reduction upon notification by Vectren or MISO of a Curtailment Event, there is a preference for resources that can provide a more rapid response and/or ramp up or down in response to specific control signals. Respondents are urged to detail the full, demonstrated capability of the proposed resource in accordance with the evaluation criteria included in Section 7.0.

For planned LMRs/DRs, the supplier must fully describe specific plans detailing what equipment or technology it will deploy and/or utilize to support its operations. For CSPs, Proposals must describe supplier's processes for aggregating participants, how the supplier intends to recruit and engage participants, and/or provide lists of participants. The Proposal also must describe curtailment systems and procedures, budgeting for and structure of dispute resolution, and plans for communicating with participants in connection with a curtailment period.

6.4.3 Technical Requirements

Vectren shall acquire all rights, titles, and interests in the LMR/DR including all the potential capacity and energy revenues. Suppliers must agree to cooperate with Vectren in providing information needed to meet all MISO LMR/DR information requirements.

The supplier will assume all responsibilities and liabilities associated with providing LMRs/DRs. Accordingly, Proposals offering LMRs/DRs must include acknowledgment and agreement that the supplier is responsible for the following non-exhaustive list of activities and obligations:

- Managing load reductions, including all notices, communications, controls, equipment, or other processes required
- If the supplier is a CSP, determining the number of participants, in its aggregation, the number of interruptible hours per customer, and the size of each participant's load reduction
- If the supplier is a CSP, paying any participants according to the CSP's agreement with those participants. Such agreements shall be independent of Vectren's agreement with the CSP and

must hold Vectren harmless for any direct or indirect obligations or liability associated with the program

- Paying penalties assessed due to the non-performance of the LMR/DR

The agreement shall reflect that it will be the supplier's responsibility to reimburse Vectren for any penalties, fees, or charges resulting from non-performance of its LMR/DR, including replacement capacity to maintain Vectren's planning reserve margin requirement, and the supplier's obligation to indemnify and hold Vectren harmless against any claim arising from such non-performance. In the case of a supplier who is a CSP, the agreement will additionally set forth CSP's responsibility to reimburse Vectren for any penalties, fees, or charges resulting from non-performance of any CSP participant, and CSP's obligation to indemnify and hold Vectren harmless against any claim arising from such CSP participants' non-performance.

6.5 Evaluation Methodology

Burns & McDonnell will identify for recommendation to Vectren the LMR/DR Proposal or portfolio of Proposals that contribute to Vectren's capacity needs consistent with the evaluation methodology outlined in Section 7.0. LMRs/DRs will be evaluated independently of supply-side resources and may include other scoring criteria.

6.6 Contract Execution

Vectren does not, by this RFP, obligate itself to purchase any LMR/DR, or to execute an agreement with any Respondent who submits an offer to sell a LMR/DR to Vectren. Vectren may, in its discretion, reject any or all Proposals to sell a LMR/DR to Vectren, as such are described in this RFP.

Selection of a Proposal as a finalist shall not be construed as a commitment by Vectren to execute an agreement. Execution of any agreement is contingent upon Vectren receiving all required regulatory approvals and completion of such due diligence as Vectren in its sole discretion determines is reasonable to confirm the qualifications and performance of a given LMR/DR. During the period between when Burns & McDonnell makes its recommendation(s) to Vectren, and the date of execution of the agreement, Vectren may conduct additional due diligence on the Proposal.

7.0 PROPOSAL EVALUATION AND CONTRACT NEGOTIATIONS

7.1 Initial Proposal Review

An initial review of the bids will be performed by Burns & McDonnell. Proposals will be reviewed for completeness. Proposals that do not meet the requirements of this RFP may be notified. Respondents may also be contacted for additional data or clarifications by Burns & McDonnell, these communications will be initiated via e-mail (VectrenRFP@burnsmcd.com). Each complete bid will be evaluated by quantitative and qualitative factors. The evaluation criteria outlined in this section are intended to relatively compare each Proposal to analogous submissions and will be the starting guidelines for the evaluation. If needed, the scoring may be adjusted to provide distinction between Proposals. This evaluation, in conjunction with the IRP, will be used to determine which resources are most capable of providing Vectren customers with a safe, reliable, and affordable power supply.

7.2 Evaluation Criteria - Generation Facility

Burns & McDonnell will quantitatively and qualitatively evaluate all conforming generation facility Proposals' ability to meet power supply needs. During this evaluation process, Burns & McDonnell may or may not choose to initiate more detailed clarification discussions with one or more Respondents. Discussions with a Respondent shall in no way be construed as commencing contract negotiations. A more detailed quantitative evaluation for select bidders will consider production cost models and nodal analysis.

Table 7-1: Generation Facility Scoring Criteria Summary⁶

	LCOE Evaluation	Energy Settlement Location	Interconnection/ Development Status & LCR	Project Risk Factors
Points	150	100	90	160
%	30%	20%	18%	32%

7.2.1 Levelized Cost of Energy - 150 Points

The initial evaluation will be primarily based on a comparison of each Proposal's Levelized Cost of Energy (LCOE). A LCOE allows for Proposals within asset classes, which have different sizes, pricing, operating characteristics, ownership structures, etc. to be evaluated and compared to each other on an equivalent economic basis. The LCOE analysis will incorporate all costs associated with an asset purchase or PPA over a 20-year/standardized amount of time. These costs will include the applicable

⁶ Vectren reserves the right to add up to 100 points to Proposals located in Southern Indiana, as local resources provide multiple benefits: VAR support, economic development, less future congestion risk, etc.

purchase or PPA cost, fixed costs, and variable operating expenses across standard technology respective operating parameters. The levelized value of these costs over this time period are then divided by the energy produced by the respective Proposal.

Vectren specific assumptions used in this analysis will be in accordance with Vectren's 2019/2020 IRP assumptions, including but not limited to

- Discount rate
- Capital recovery factor
- Escalation
- Commodity forecasts

The LCOE evaluation is a screening level economic evaluation which will determine the cost of energy provided by each Proposal relative to similar technology types. Proposals within an evaluation class with the lowest LCOE will receive full scoring for this metric. Based on variance of costs and number of Proposals in each class, points awarded to higher cost Proposals will be scaled accordingly.

The rules for performing the LCOE analysis will be determined by Burns & McDonnell and Vectren in advance of the receipt and review of any Proposals. However, as part of the process of evaluating Proposals, cases may arise where, in order to adequately project asset costs or to facilitate a comparison between qualified Proposals, the rules related to the LCOE analysis may require review and/or adjustment. To the extent that any additions or adjustments are required, such additions or adjustments will be made solely by Burns & McDonnell. In such cases, any and all rules will be applied consistently across all Respondents.

While performing LCOE analyses of Proposals, Burns & McDonnell may request additional or clarifying information from a given Respondent regarding unit performance, operating costs, or other factors that influence the LCOE calculation for a given resource. This evaluation will also include grid congestion analysis. Requests for additional information may be required to ensure that all qualified Proposals are fairly and consistently evaluated. Consistent with Section 2.3, in such cases, Respondents will be required to respond within five business days of receipt of such request. Burns & McDonnell will not consider unsolicited updates from Respondents related to the cost of any power supply resource.

7.2.2 Energy Settlement Location - 100 points

Vectren has a preference for Proposals that include all costs to have energy financially settled or directly delivered to Vectren's load node (SIGE.SIGW). Proposals that meet one of these criteria will receive 100

points, while Proposals failing to meet either criteria will be awarded zero points. Market data from Proposals that include the aforementioned costs will be carried forward into the IRP modeling analysis as described in Section 7.5.

7.2.3 Interconnection and Development Status - 60 Points

Existing resources will receive full credit under this evaluation category. Plants that have not achieved commercial operation but that are in the MISO Generation Interconnection (GI) Queue will be awarded points based on the Definitive Planning Phase they are in. Other projects not in the MISO GI Queue must demonstrate development progress. Facilities failing to meet critical development milestones may be disqualified from consideration at Vectren's sole discretion.

Up to 60 points will be awarded based on the achievement of certain development milestones towards the facility COD. Five milestones have been selected and 12 points will be awarded for each equally. The selected milestones are as follows:

- Executed a MISO Generator Interconnection Agreement
- Completed a MISO Facilities Study
- Completed a MISO System Impact Study
- Achieved site control and completed zoning requirements
- EPC Contract awarded

7.2.4 Local Clearing Requirement Risk - 30 Points

The MISO footprint is split into ten LRZs. All load serving entities within MISO are required to obtain capacity which meets their respective Planning Reserve Margin (PRM). A Local Reliability Requirement is also established for each LRZ which is the aggregate of all Load Serving Entity's (LSE's) PRMs. Due to Zonal capacity import/export limitations a portion of each LRZ's Local Reliability Requirement must be served locally, this requirement is the zone's Local Clearing Requirement (LCR). The LCR establishes the amount of Unforced Capacity which is required to be located in each respective LRZ.

Proposals located within LRZ 6 provide additional risk avoidance to Vectren's LCR requirements and will receive 30 points; Proposals located outside of LRZ 6 will receive zero points.

7.2.5 Project Risk Factors - 160 Points

Certain risk factors may be unique to a Proposal. Such factors may be significant enough to independently impact the overall ability of the Proposal to meet Vectren's needs.

This category is intended to capture unspecified risk that may be highlighted by a bidder or identified during the Proposal review. The Project Risk Factors Section attempts to identify and score potential risks which may compromise the future performance of the asset⁷. In situations where the level of risk is not accurately represented, scoring may be adjusted. Potential considerations include, but may not be limited to the following:

- Credit and financial plan - Proposals with a long term unsecured credit rating below BBB+ (Baa1 for Moody's) will not be considered in this evaluation. Proposals which have internal financing are preferred and will receive the 20 points for this category⁸.
- Development experience - Relevant technology development experience is an important risk factor. Proposals will receive up to 20 points based on the following formula:

$$\text{Points awarded} = \frac{(\text{nameplate MW in service})}{1,500} * 20$$

- Sole ownership vs. partial owner - Due to site and dispatch rights/preferences, a sole ownership Proposal will receive 20 points.
- Proposal ownership structure - Due to a preference for ownership Asset Purchase Proposals will receive 20 points while PPA Proposals will receive zero points.
- Operational control - Proposals which offer Vectren operational control will receive 20 points
- Fuel risk - For applicable Proposals, sites with firm and reliable fuel supply will receive 20 points.
- Delivery date - For each year prior or after 2023, 25% of the 20 possible points will be deducted.
- Site Control - Proposals which have fully achieved site control will receive 20 points

Any such risks shall be disclosed along with a description of the associated measures taken to mitigate the risk. Failure to disclose a reasonably foreseeable risk or risks may be a basis to disqualify a Proposal.

Proposals with no such risks as determined by Burns & McDonnell will receive the full number of points available in this category. Proposals with asset or project-specific risks that are not able to be fully mitigated may receive fewer points depending on Burns & McDonnell's assessment.

7.3 Evaluation Criteria - LMR/DR

Burns & McDonnell will quantitatively and qualitatively evaluate all conforming LMR/DR Proposals. During this evaluation process, Burns & McDonnell may or may not choose to initiate more detailed

⁷ Vectren reserves the right to add up to 100 points to Proposals located in Southern Indiana, as local resources provide multiple benefits: VAR support, economic development, less future congestion risk, etc.

⁸ Vectren reserves the right to re-evaluate credit rating and exclude bidders at its sole discretion.

clarification discussions with one or more Respondents. Discussions with a Respondent shall in no way be construed as commencing contract negotiations. A more detailed quantitative evaluation for select bidders will consider production cost models and nodal analysis.

Vectren will accept Proposals from LMRs/DRs that meet the requirements as established in this RFP and conforms to MISO requirements. These requirements include but are not limited to, the ability to respond to Curtailment Events initiated either by MISO or by Vectren.

LMR/DR proposals will be evaluated across the following criteria:

Table 7-2: LMR/DR Scoring Criteria Summary⁹

	Cost Evaluation	Historical Performance	Response Time	Proposal Risk Factors
Points	200	100	100	100
%	40%	20%	20%	20%

7.3.1 Cost Evaluation - 200 Points

The cost of each Proposal will be evaluated based on the annual payment per MW for the LMR/DR. The lowest \$/MW cost Proposal will receive 200 points for the cost evaluation category. Based on variance of costs and number of Proposals, points awarded to higher cost Proposals will be scaled accordingly.

7.3.2 Historical Performance - 100 Points

An end use customer or CSP with a historical performance record of successfully providing demand response services for three or more years without being assessed a non-performance penalty will receive 100 points for this category.

An end use customer or CSP that has provided such services for between one year and three years without being assessed a non-performance penalty will receive 50 points for this category.

An end use customer or CSP that has not provided such services in the past or that has been assessed a non-performance penalty will receive zero points for this category.

⁹ Due to benefits other than capacity accreditation, Vectren reserves the right to add up to 100 points to LMR/DR Proposals located within Vectren’s electric service territory.

7.3.3 Response Time - 100 Points

While the product defines a load reduction response time within a Respondent's Proposal, there is a preference for resources that can provide a more rapid response to specific control signals.

Proposals for LMR/DR that have the ability to follow a real-time signal will be awarded 100 points for the response time category. Proposals for LMR/DR that can achieve the load reduction target within 30 minutes of notification will receive 75 points for this category. Proposals for LMR/DR that can achieve the load reduction target within 60 minutes of notification will receive 50 points for this category.

Proposals for LMR/DR that can achieve the load reduction target within 120 minutes of notification will receive 25 points for this category.

7.3.4 Proposal Risk Factors - 100 Points

This category is intended to capture unspecified risk that may be highlighted by a LMR/DR Proposal or identified during the Proposal review. The Proposal risk factors category will be used to adjust the overall scoring in cases where there is a material risk identified that may create concerns about the ability of the provider to deliver on their Proposal or that may create a material uncertainty about the cost to Vectren or its customers, significant regulatory uncertainty, or other considerations.

7.4 Discussion of Proposals During Evaluation Period

Based on the quantitative and qualitative evaluations and needs identified during the 2019/2020 IRP, 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.

7.5 Selection of Highest Scoring Proposal(s) based on IRP Analysis

Where possible, aggregated cost and performance information from the RFP bids, which provide a delivered price (pending verification), will be provided to the IRP team to facilitate certain portfolio modeling¹⁰. The IRP analysis will provide the RFP team with a preferred portfolio based on these costs. RFP bids will be rank ordered consistent with the evaluation criteria and assets will be selected consistent with the RFP evaluation and the IRP determined need. Consistent with that objective, Vectren may need

¹⁰ Proposals that do not provide an energy settlement contract or physical deliverability to Vectren's load node (SIGE.SIGW) will not be included in the IRP analysis, but may be considered for procurement.

to contract with multiple generating assets. Cost certainty and project implementation are key considerations that will be included in qualitative analysis and that will include the ranking of projects with firm price offers and price caps, projects in the MISO GI queue or with signed Generator Interconnection Agreements (GIAs), recent prior development experience, etc. Vectren will seek to secure resources consistent with the preferred portfolio identified in the 2019/2020 IRP. As such, there is no assurance that the individual, highest-scoring qualified Proposal(s) will be selected.

7.6 Contract Execution

Vectren does not, by this RFP, obligate itself to purchase any generation facility or facilities, or to execute the Asset Purchase Agreement or PPA with any Respondent who submits an offer to sell generation capacity and/or energy to Vectren and Vectren may, in its discretion, reject any or all Proposals, as such are described in this RFP.

Selection of a winning Proposal shall not be construed as a commitment by Vectren to execute an agreement. During the period between Burns & McDonnell's delivery of results to Vectren and the date of execution of any agreement, Vectren will conduct additional due diligence on the Proposal which may include, but not be limited to, onsite visits, management interviews, legal and regulatory due diligence, and detailed engineering assessments and facility dispatch modeling.

8.0 PROPOSAL SUBMISSION

All Proposal documents must be submitted to the RFP Manager via e-mail to VectrenRFP@burnsmcd.com.

8.1 Format and Documentation

All Proposals submitted in response to this RFP must be received by Burns & McDonnell (VectrenRFP@burnsmcd.com) no later than the Proposal Submittal Due Date shown in Section 2.4. 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 e-mail address. Each Proposal must contain the following:

1. Appendix B: Non-Disclosure Agreement (NDA) in its present form
2. Appendix D: Proposal Data in Excel format

8.2 Certification

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
4. The Respondent has not sought by collusion to obtain any advantage over any other Respondent.

9.0 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 Proposal Submittal Due Date, 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.

10.0 CONFIDENTIALITY OF INFORMATION

All Proposals submitted in response to this RFP become the responsibility of Burns & McDonnell and Vectren upon submittal. Respondents should clearly identify each page of information considered to be confidential or proprietary. Consistent with the RFP NDA (Appendix B), Burns & McDonnell will take reasonable precautions and use reasonable efforts to maintain the confidentiality of all information so identified. Vectren reserves the right to release any Proposals, or portions thereof, to agents, attorneys, or consultants for purposes of Proposal evaluation. Regardless of the confidentiality claimed, however, and regardless of the provisions of this RFP, all such information may be subject to review by, and disclosable by Vectren, to the appropriate state authority, or any other governmental authority or judicial body with jurisdiction relating to these matters, and may also be subject to discovery by other parties subject to fully executed NDAs/confidentiality agreements. Further, because Vectren is conducting this RFP as part of the IRP public advisory process, Vectren will disclose the UCAP MW offered, technology/resource type, average price, general location, proposed ownership structure, and Proposal duration of all Proposals unless a given technology has less than three Respondents in order to inform our stakeholders of the summary results of the RFP. Vectren will also disclose the names of Respondents participating in the RFP.

11.0 REGULATORY APPROVALS

Pursuant to the terms of the definitive agreement(s), the Respondent will agree to use its reasonable best efforts, including, if necessary, providing data and testimony, to obtain any and all State, Federal, or other regulatory approvals required for the consummation of the transaction.

Please note in particular that approval by the IURC, MISO and FERC may be required before the transaction can be consummated between the selected Respondent and Vectren. As part of the regulatory process, responses to the RFP may be provided to parties who have executed an NDA/confidentiality agreement, specifically acknowledging that they are neither affiliated with any party responding to the RFP or serving as a conduit for any party responding to the RFP.

12.0 CREDIT QUALIFICATION AND COLLATERAL

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 Baa1 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.

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.

For asset purchases, a Respondent shall have the corresponding obligation to post Definitive Agreement (DA) collateral as determined in accordance with its Proposal if selected for the definitive agreement phase of the RFP. DA Collateral must be posted at the execution of the definitive agreement and will be in force until the transfer of title to Vectren for generating asset Proposals.

For PPAs and LMRs/DRs, winning Respondents may be required to post operating collateral over the term of any PPA or LMR/DR agreement consistent with the terms and conditions of final agreements as negotiated between Vectren and the supplier.

In each case, the collateral must be in the form of either: (a) a letter of credit, (b) cash, or (c) a construction bond. Burns & McDonnell and Vectren reserve the right to require a Respondent to post DA Collateral in an amount that exceeds the amounts listed herein as conditions warrant.

Table 12-1: Collateral

Asset	Collateral Amount
Asset Purchase	\$50.00/kW (UCAP) at execution of definitive agreement
Asset Purchase	\$150.00/kW (UCAP) at regulatory approval
Power Purchase Agreement	12-months expected revenues
LMR/DR	12-months expected revenues

13.0 MISCELLANEOUS

13.1 Non-Exclusive Nature of RFP

Vectren may procure more or less than the amount of assets solicited in this RFP from one or more Respondent(s). Respondents are advised that any definitive agreement executed by Vectren and any selected Respondent may not be an exclusive contract for the provision of assets. In submitting a Proposal(s), Respondent will be deemed to have acknowledged that Vectren may contract with others for the same or similar deliverables or may otherwise obtain the same or similar deliverables by other means and on different terms.

13.2 Information Provided in RFP

The information provided in this RFP, or on the RFP website (<http://VectrenRFP.rfpmanager.biz/>), has been prepared to assist Respondents in evaluating this RFP. It does not purport to contain all the information that may be relevant to Respondent in satisfying its due diligence efforts. Vectren makes no representation or warranty, express or implied, as to the accuracy, reliability or completeness of the information in this RFP, and shall not be liable for any representation, expressed or implied, in this RFP or any omissions from this RFP, or any information provided to a Respondent by any other source.

13.3 Proposal Costs

Vectren shall not reimburse Respondent and Respondent is responsible for any cost incurred in the preparation or submission of a Proposal(s), in negotiations for an agreement, and/or any other activity contemplated by the Proposal(s) submitted in connection with this RFP. The information provided in this RFP, or on Vectren's RFP website, has been prepared to assist Respondents in evaluating this RFP. It does not purport to contain all the information that may be relevant to Respondent in satisfying its due diligence efforts.

13.4 Indemnity

Supplementing Respondent's assumption of liability pursuant to this RFP, Respondent shall indemnify, hold harmless and defend Vectren and its parent company, officers, employees and agents, from any and all damages, liabilities, claims, expenses (including reasonable attorneys' fees), losses, judgments, proceedings or investigations incurred by, or asserted against, Vectren or its officers, employees or agents, arising from, or are related to, this RFP, or the execution or performance of one or more definitive agreements.

13.5 Hold Harmless

Respondent shall hold Vectren harmless from all damages and costs, including, but not limited, to legal costs in connection with all claims, expenses, losses, proceedings or investigations that arise as a result of this RFP or the award of a Proposal pursuant to the RFP or the execution or performance of a definitive agreement.

13.6 Further Assurances

By submitting a Proposal, Respondent agrees, at its expense, to enter into additional agreements, and to provide additional information and documents, in either case as requested by Burns & McDonnell in order to facilitate: (a) the review of a Proposal, (b) the execution of one or more definitive agreements, or (c) the procurement of regulatory approvals required for the effectiveness of one or more definitive agreements.

13.7 Licenses and Permits

Respondent shall obtain, at its cost and expense, all licenses and permits that may be required by any governmental body or agency necessary to conduct Respondent's business or to perform hereunder. Respondent's subcontractors, employees, agents and representatives of each in performance hereunder shall comply with all applicable governmental laws, ordinances, rules, regulations, orders and all other governmental requirements.

APPENDIX A – NOTICE OF INTENT TO RESPOND



Notice of Intent to Respond

CONTACT INFORMATION			
Company			
Primary Contact:			
Name			
Title			
Telephone			
E-mail			
Mailing Address			
Signature of Respondent		Date	

Due: June 27, 2019

E-mail: VectrenRFP@burnsmcd.com

APPENDIX B – NON-DISCLOSURE AGREEMENT

NON-DISCLOSURE AGREEMENT

THIS NON-DISCLOSURE AGREEMENT (Agreement) is entered into as of the ___ day of _____, 2019, between Southern Indiana Gas and Electric Company, Inc., Vectren Energy Delivery of Indiana, Inc. (Vectren) having its headquarters and principal place of business in Evansville, Indiana, and [_____] a [_____] corporation/llc/partnership (the Company), (collectively, the Parties, and individually, Party).

R E C I T A L S :

A. The Parties intend to discuss and evaluate proposals regarding possible energy/capacity transactions that could be entered into between Vectren and the Company, which discussions may include sharing of bid proposal information received from the Company during the competitive bid process administered by Burns & McDonnell on behalf of Vectren (the Transaction).

B. The Parties acknowledge that each Party may make available to the other Party, from time to time, in connection with such discussions, certain Confidential Information, as defined below.

NOW, THEREFORE, in consideration of the premises and the mutual promises and covenants hereinafter set forth, the Parties agree as follows:

1. Non-Disclosure. Subject to Section 4 below, the Party receiving confidential information (the Receiving Party) shall keep strictly confidential and not disclose the following:

(i) all information provided by the disclosing Party (Disclosing Party) or any affiliate, director, officer, employee, agent, advisor, contractor or other representative (individually, Representative, or collectively, Representatives) of the Disclosing Party to the Receiving Party or its Representative(s) in writing, orally or electronically in the course of the Parties' evaluation of the Transaction, whether before or after the date hereof, including, without limitation, any such information

(A) concerning the business, financial condition, operations, products, services, assets and/or liabilities of the Disclosing Party,

(B) relating to technologies, intellectual property or capital, models, concepts, or ideas of the Disclosing Party,

(C) including information from third parties that the Disclosing Party is required under applicable law, contract or other agreement to keep confidential, or

(D) otherwise, clearly identified as confidential or proprietary, including all bid proposal information received by the Receiving Party, during the competitive bid process for intermediate capacity being

conducted by Vectren (collectively, the "Confidential Information"); and

(ii) the Disclosing Party's participation in discussions concerning the Transaction, including execution of this Agreement, the Disclosing Party's disclosures of Confidential Information to the Receiving Party or its Representative.

Receiving Party may disclose Confidential Information provided by the Disclosing Party to any Representative of the Receiving Party who needs this Confidential Information to evaluate the Transaction. Receiving Party remains responsible for its Representative(s) compliance with the terms of this Agreement.

2. Use Restriction. The Receiving Party shall not use any Confidential Information of the Disclosing Party for any purpose other than for the Transaction or for regulatory proceedings and RTO/ISO studies and analyses, including for example, an Indiana Utility Regulatory Commission ("IURC") proceeding in which information about the Transaction must be produced by Vectren to satisfy its evidentiary burden. In any such regulatory proceeding, study or analysis, Receiving Party will take care to protect Confidential Information from public disclosure through redacted public filings and other similar measures available to Receiving Party to protect Confidential Information. Receiving Party will advise Disclosing Party as soon as practical, of any such use and the protections in place for the Confidential Information.

3. Exceptions to Confidential Information. Under this Agreement, Confidential Information shall not include information that: (i) is already in Receiving Party's possession at the time of disclosure, as documented by the Receiving Party; (ii) becomes available subsequently to the Receiving Party on a non-confidential basis from a source not known or reasonably suspected by the Receiving Party to be bound by a confidentiality agreement or secrecy obligation owed to the Disclosing Party; (iii) is or becomes generally available to the public other than as a result of a breach of this Agreement by the Receiving Party or its Representative; or (iv) is independently developed by the Receiving Party without use, directly or indirectly, of Confidential Information of the Disclosing Party. If only a portion of the Confidential Information falls under one of the foregoing exceptions, then only that portion shall not be deemed Confidential Information.

4. Required Disclosure. If Receiving Party or its Representative is required, pursuant to any applicable court order, administrative order, statute, regulation or other official order by any government or any agency or department thereof, to disclose Confidential Information, the Receiving Party shall:

(i) provide the Disclosing Party with prompt written notice of any such request or requirement so that the Disclosing Party may seek a protective order or other appropriate remedy or protection and/or waive compliance with the provisions of this Agreement; and

(ii) reasonably cooperate with the Disclosing Party to obtain such protective order or other remedy. If Disclosing Party waives compliance with the relevant provisions of this Agreement or

the Disclosing Party does not receive a protective order or other remedy or protection, the Receiving Party agrees to

(a) provide only that portion of the Confidential Information for which the Disclosing Party has waived compliance with the relevant provisions of this Agreement, or which the Receiving Party is legally required to disclose,

(b) use commercially reasonable efforts to obtain assurances that confidential treatment will be accorded to such information, at Disclosing Party's expense, and

(c) give the Disclosing Party written notice in advance of any disclosure of Confidential Information.

5. Return or Destruction of Confidential Information. Either Party may terminate this Agreement with thirty days written notice. Additionally, at any time for any reason, upon the written request of the Disclosing Party, the Receiving Party and its Representative(s) will promptly:

(i) deliver to the Disclosing Party all original Confidential Information (whether written or electronic) furnished to the Receiving Party by or on behalf of the Disclosing Party, and

(ii) destroy any copies of such Confidential Information (including any extracts there from) if specifically requested by the Disclosing Party, with Receiving Party allowed to retain one archival copy of the Confidential Information in strict confidence for purposes of record retention and compliance or as otherwise required by applicable laws. If the Disclosing Party requests written proof, Receiving Party shall cause a duly authorized officer to certify in writing to the Disclosing Party that the requirements of the preceding sentence have been satisfied in full.

Regardless of the status of discussions regarding the Transaction and any request for return or destruction of Confidential Information, the Receiving Party will continue to be bound by terms of this Agreement.

6. Term. This Agreement is effective as of the date first written, above. It will terminate one (1) year after its effective date unless extended for additional one year terms by agreement of the Parties. If this Agreement is terminated during a term by either Party providing a termination notice pursuant to Section 5 above; the non-disclosure and use restriction obligations for Confidential Information under this Agreement shall survive any termination and remain in effect for the longer of (i) five (5) years, or (ii) such period during which any Confidential Information retains its status as a trade secret or qualifies as confidential under applicable law.

7. Miscellaneous.

(a) The Parties acknowledge and agree that unless and until a definitive agreement with respect to the Transaction has been executed by the Parties, no Party shall be under any legal obligation of any kind whatsoever to the other Party with respect to the Transaction, except as expressly provided in this Agreement.

(b) Receiving Party acknowledges that the Confidential Information is and at all times remains the sole and exclusive property of the Disclosing Party and that the Disclosing Party has the exclusive right, title, and interest to its Confidential Information. No right or license, by implication or otherwise, is granted by the Disclosing Party as a result of disclosure of Confidential Information hereunder. Each Party reserves the right at any time in its sole discretion, for any reason or no reason, to refuse to provide any further access to and to demand the return of the Confidential Information. The Receiving Party agrees that the Disclosing Party and its Representatives (i) makes no warranty as to the accuracy or completeness of the Confidential Information; and (ii) shall have no liability to the Receiving Party or its Representatives resulting from the use of any Confidential Information.

(c) Neither this Agreement nor any right, remedy, obligation or liability arising hereunder shall be assigned by any Party (whether by operation of law or otherwise), and any such assignment shall be null and void, except with the prior written consent of the other Party. Subject to the foregoing, this Agreement shall be binding upon and inure to the benefit of the Parties and their respective successors and permitted assigns. No provision of this Agreement shall create a third-party beneficiary relationship or otherwise confer any benefit, entitlement or right upon any person or entity other than the Parties.

(d) The Parties acknowledge and agree that no failure or delay by a Party in exercising any right or privilege hereunder shall operate as a waiver of that right or privilege. The provisions of this Agreement may be modified or waived only in writing signed by both Parties.

(f) This Agreement shall be governed by and construed in accordance with the laws of the State of Indiana.

(g) This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

(h) Each Party acknowledges and agrees that money damages would not be a sufficient remedy for any breach of this Agreement by such Party and that the other Party shall be entitled to seek equitable relief, including seeking an injunction and specific performance, as a remedy for any such breach. Such remedies shall not be deemed to be the exclusive remedies for a breach of this

Agreement, but shall be in addition to all other remedies available at law or equity.

(i) This Agreement constitutes the entire agreement between the Parties with respect to the subject matter herein and supersedes and cancels any prior agreements, representations, warranties, or communications, whether oral or written, between the Parties relating to the subject matter herein.

IN WITNESS WHEREOF, each Party hereto has executed this Agreement, or caused this Agreement to be executed on its behalf, all as of the day and year first above written.

Southern Indiana Gas and Electric Company, Inc.,
d/b/a Vectren Energy Delivery of Indiana, Inc.:

By: _____
Name:
Title:

_____ <company name> _____

By: _____
Name:
Title:

APPENDIX C – PRE-QUALIFICATION APPLICATION

Cause No. 45564
PRE-QUALIFICATION APPLICATION

Respondent's Credit-Related Information

Provide the following data to enable Vectren to assess the financial viability of the Respondent as well as the entity providing the credit support on behalf of the Respondent (if applicable). Include any additional sheets and materials with this Appendix as necessary. As necessary, please specify whether the information provided is for the Respondent, its parent, or the entity providing the credit support on behalf of the Respondent.

Full Legal Name of the Respondent: _____

Dun & Bradstreet No. of Respondent: _____

Type of Organization: (Corporation, Partnership, etc.) _____

State of Organization: _____

Respondent's Percent Ownership in Proposal: _____

Full Legal Name(s) of Parent Corporation: _____

Entity Providing Credit Support on Behalf of Respondent (if applicable): _____

Dun & Bradstreet No. of Entity Providing Credit Support: _____

Address for each entity referenced (provide additional sheets, if necessary): _____

Type of Relationship: _____

Current Senior Unsecured Debt Rating from each of S&P and Moody's Rating Agencies (specify the entity these ratings are for): _____

OR, if Respondent does not have a current Senior Unsecured Debt Rating, then Tangible Net Worth (total assets minus intangible assets (e.g. goodwill) minus total liabilities): _____

Bank References & Name of Institution: _____

Bank Contact: Name, Title, Address and Phone Number: _____

Pending Legal Disputes, if any (describe): _____

General description of Respondent's ability to construct, operate and maintain project, to the extent applicable:

Financial Statements of the Respondent or its Credit Support Provider, where applicable, must include Income Statement, Balance Sheet, Statement of Cash Flows, all notes corresponding to those financial statements and applicable schedules for three most recent fiscal years and financial report for the most recent quarter or year-to-date period. Also if available, please provide copies of the Annual Reports and/or 10K for the three most recent fiscal years and quarterly report (10Q) for the most recent quarter ended, if available. If such reports are available electronically, please provide link.

APPENDIX D – PROPOSAL DATA

**SEE ATTACHMENT:
APPENDIX D – PROPOSAL DATA.xlsx**

APPENDIX E – PROPOSAL CHECKLIST

PROPOSAL CHECKLIST

Required:

- Appendix A – Notice of Intent
- Appendix B – Non-Disclosure Agreement
- Appendix C – Pre-Qualification Application
- Appendix D – Proposal Data
- Executive Summary
- MISO Generator Interconnection Agreement
- MISO Facilities Study
- MISO System Impact Study
- Proposal Evaluation Fee (if applicable)
- EPC Contract (if applicable)

Other Data:

- Nodal economic analyses
- PSS/E v33 raw or idev file that reflects modeling parameters of the Project at the respective point of interconnection
- Unit inspection findings and dates and outstanding recommendations yet to be implemented, summary of operating plan, and outage and maintenance plans
- Water supply description, NPDES permit details, all relevant environmental permits, environmental liabilities, and water chemistry program summary and performance
- Emissions credits or offsets and baseline emissions of known and unknown pollutants
- Spare parts list
- Other contractual commitments
- Summary of all legal proceedings, claims, actions, or suits against the Respondent, Guarantor, or involving the facility or site
- Discussion regarding roles and responsibilities of any companies involved, status of major equipment procurement, facility site and Respondent's rights to such site, development schedule and associated risks and risk mitigation plans, and financing arrangements
- Description of fuel supply, fuel cost information, and fuel contract duration and terms
- Audited or unaudited financial statements including balance sheets, income statements, and cash flow statements for the proposed asset(s) for the past three years.

LMR/DR Only:

- Description of how Proposal conforms with requirements of local utility and state law in order to offer resources for capacity accreditation within MISO under Module E Capacity Tracking
- Description of LMR/DR customer(s), load drop values, equipment and technology, plans detailing deployment or utilization to support its operations, LMR/DR supplier and other key contributors, the supplier's process for aggregating and/or plan for recruiting participants, curtailment systems and procedures, and plans for communicating with participants during curtailment periods
- Acknowledgement and agreement that LMR/DR supplier is responsible for activities and obligations listed in Section 6.4.3



CREATE AMAZING.

Burns & McDonnell World Headquarters
9400 Ward Parkway
Kansas City, MO 64114
O 816-333-9400
F 816-333-3690
www.burnsmcd.com



VECTREN PUBLIC STAKEHOLDER MEETING

AUGUST 15, 2019



ALL-SOURCE RFP UPDATE

MATT LIND,

**RESOURCE PLANNING & MARKET ASSESSMENTS
BUSINESS LEAD, BURNS AND MCDONNELL**

OVERVIEW



- 2016 IRP:
 - Identified capacity and energy shortfall beginning in 2023
 - Potential need of ~700 MW accredited capacity

- 2019/2020 IRP:
 - Must examine existing resources alongside alternatives
 - Potentially a similar need

- 2019 All-Source RFP:
 - Feed IRP inputs
 - Identify potential cost effective resources

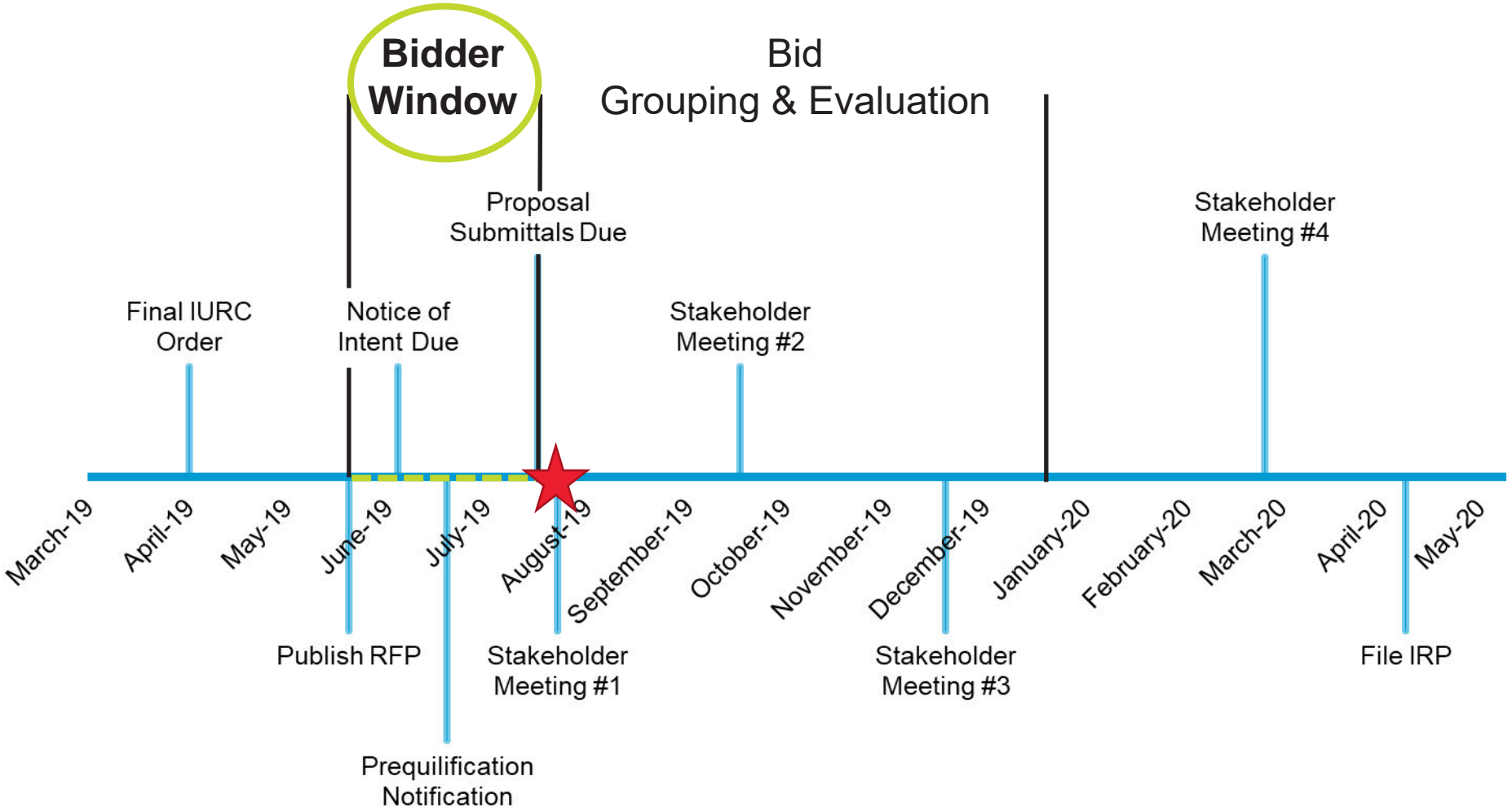
ALL-SOURCE RFP KEY DATES



Event	Anticipated Date*
All-Source RFP Issued	Wednesday, June 12, 2019
Notice of Intent (NOI), All-Source RFP NDA, and Respondent Pre-Qualification Application Due	5:00 p.m. CDT Thursday, June 27, 2019
Respondents Notified of Results of Pre-Qualification Application Review	5:00 p.m. CDT Wednesday, July 3, 2019 Friday, July 12, 2019
Proposal Submittal Due Date	5:00 p.m. CDT Wednesday, July 31, 2019 Friday, August 9, 2019
Initial Proposal Review and Evaluation Period	August - September 2019
Interconnection Evaluation	August - October 2019
Congestion Evaluation	4 th Quarter, 2019
Inputs to IRP	4 th Quarter, 2019

*Negotiation schedule for smaller projects can be expedited at Vectren's discretion

TIMELINE



ALL-SOURCE RFP PUBLICATION & DISTRIBUTION VECTREN

A CenterPoint Energy Company

- Ad published in Megawatt Daily (~20,000 recipients)
- North American Energy Markets Association (NAEMA) distribution (150 members)
- Published in June 2019 Midwest Energy Efficiency Alliance (MEEA) Minute (161 members)
- Included on Vectren.com
- Sent to participants in Vectren's 2017 RFP
- BMcD RFP contact list (>450 industry contacts)
- Vectren stakeholders & industry contacts
- Interviews with Evansville Courier & Press

REQUEST FOR PROPOSALS

Vectren Energy Delivery (Vectren), a subsidiary of CenterPoint Energy, is issuing this

All-Source

Request for Proposals (RFP) targeting

10 to 700 MW

of capacity and unit-contingent energy to meet the needs of its customers.

Bids are due by Wednesday, July 31, 2019.

The RFP documents, schedule, and other RFP information can be found at:

<http://VectrenRFP.rfpmanager.biz/>

Vectren has retained Burns & McDonnell to act as its agent in managing the RFP process.

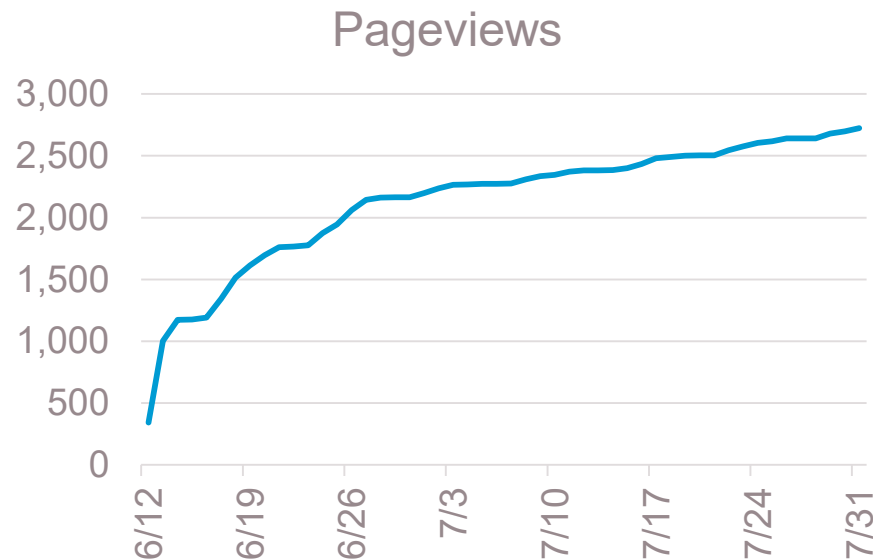
All RFP inquiries and communications are to be made via e-mail: VectrenRFP@burnsmcd.com



WEBSITE: [HTTP://VECTRENRFPMANAGER.BIZ/](http://VECTRENRFPMANAGER.BIZ/)



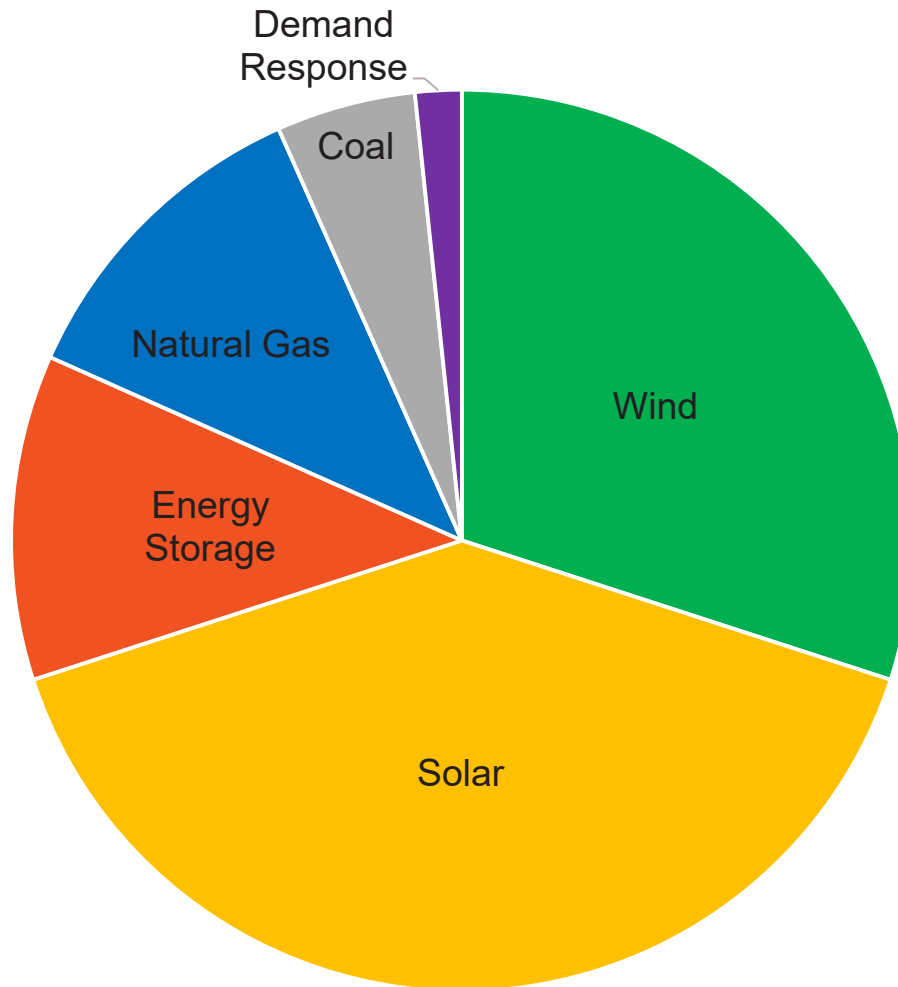
- RFP document downloads
 - 142 unique people
 - 107 companies
- Website visits (June 12th-July 31st)
 - ~800 users
 - ~3,000 pageviews
- Question & Answers posted



ALL-SOURCE RFP PARTICIPATION



- 32 companies submitted Notice of Intent (NOI)



TYPES OF RESOURCES CONSIDERED



- Open, non-limiting All-Source RFP
 - Asset purchase or power purchase agreement (PPA)
 - Existing or planned dispatchable generation
 - Existing or planned utility scale renewable resources
 - Existing or planned utility scale storage facilities, either stand-alone or paired with renewables
 - Load modifying resource (LMR)/Demand Resource (DR)
 - In Local Resource Zone 6 (LRZ6)
 - Proposals outside of Vectren's service territory are only eligible for capacity

PROPOSAL REQUIREMENTS

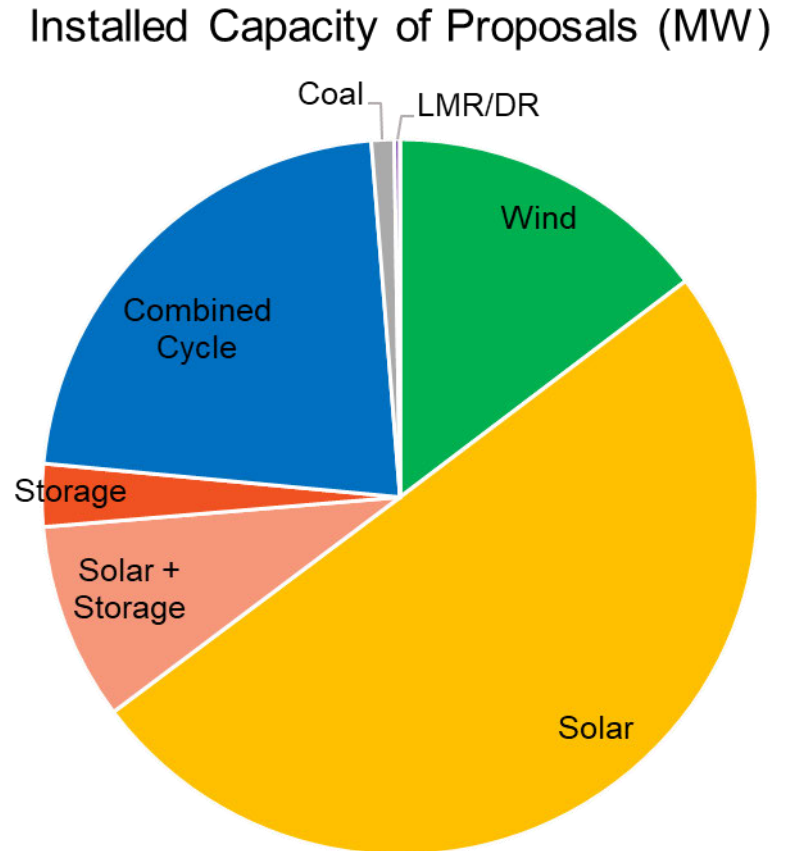
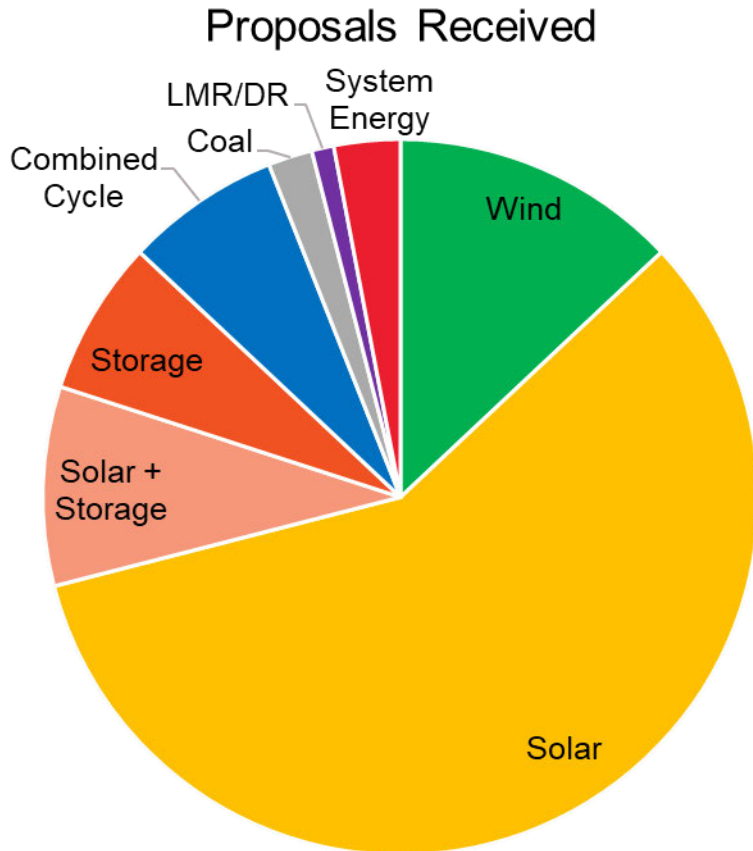


- MISO accredited or accreditable capacity (including Zonal Resource Credits) of no less than 10 MW to MISO LRZ 6
- Submittal forms (NOI, NDA, Pre-Qualification Application)
- 1-year pricing guarantee (from Proposal Submittal Due Date)
- Credit worthy bidders
- Respondent information and experience
- Facility information (Appendix D)
- Remaining life of at least 5 years from acquisition date for asset purchase

PRELIMINARY* RFP STATISTICS

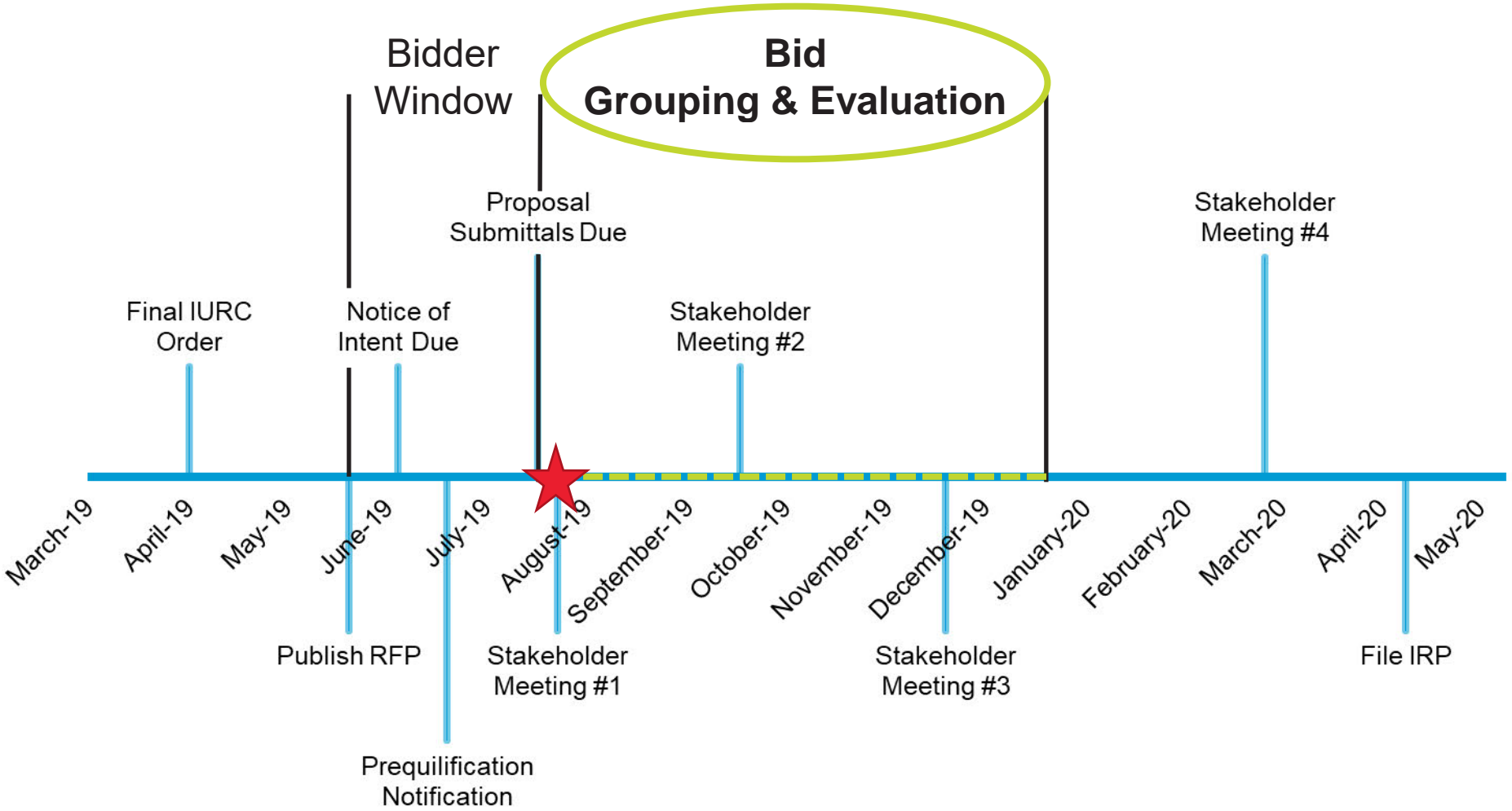


- 100 Proposals from 22 Respondents (4/5 in Indiana, 2/3 are PPA)



*Proposals received 4 business days ago. Follow-up and clarification process with respondents is ongoing.

TIMELINE



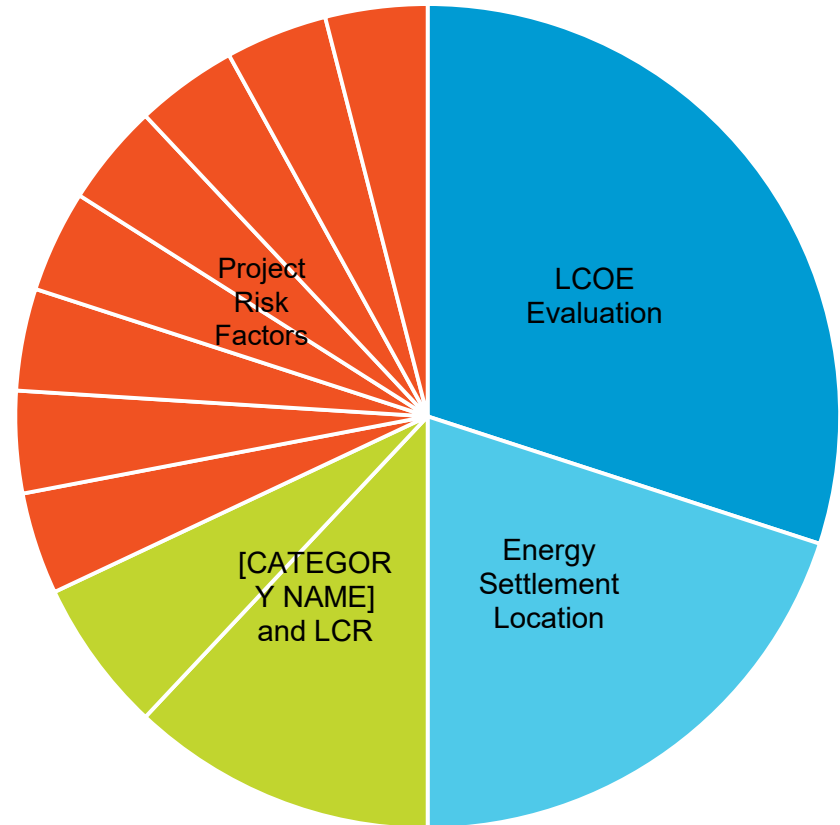


PROPOSAL EVALUATION

- Proposals will be grouped with similar proposals and scored relative to other bids within the same grouping
 - The preferred resource mix will be identified by the IRP analysis
 - All-Source RFP evaluation will rank order available resources within each grouping

Rank	Illustrative Resource Groupings						
1	Solar	Wind	Storage	Coal	Gas	Demand Response	etc.
2							
3							
4							
5							
6							
7							
8							





500 Total Points*



*Vectren reserves the right to add up to 100 points to Proposals located in Southern Indiana (generally defined as the following counties within Vectren’s service territory; Dubois, Gibson, Pike, Posey, Spencer, Vanderburgh, and Warrick), as local resources provide multiple benefits: VAR support, economic development, less future congestion risk, etc.











EVALUATION SUMMARY

Scoring Criteria Name	Points	Scoring Method	Definition	Importance
LCOE Evaluation	150	 Curve	\$/MWh calculation within asset class	An LCOE evaluation comparing similar resource groups will help to show which Project(s) may provide lower cost energy to Vectren's customers.
Energy Settlement Location	100	 Binary	Proposals that include all costs to have energy financially settled or directly delivered to Vectren's load node (SIGE.SIGW)	Having financial settlement or direct delivery to Vectren's load node provides Project's true resource cost to Vectren's customers, eliminating risks/costs associated with the delivery of energy.
Interconnection and Development Status	60	 Binary	<p>Executed a pro-forma MISO Service Agreement and Interconnection Construction Services Agreement (12 points)</p> <p>Completed a MISO Facilities Study (12 points)</p> <p>Completed a MISO System Impact Study (12 points)</p> <p>Achieved site control and completed zoning requirements (12 points)</p> <p>EPC Contract awarded (12 points)</p>	These points are for completion of various critical milestones in the interconnection and development process. Projects which are further through the interconnection and development process will receive more points as cost certainty improves.
Local Clearing Area Requirement	30	 Binary	Physically and electrically located in LRZ 6	Being located in LRZ 6 provides greater certainty that asset capacity can be deliverable to Vectren and fall within LCR requirements through entire life or contract term.



EVALUATION SUMMARY

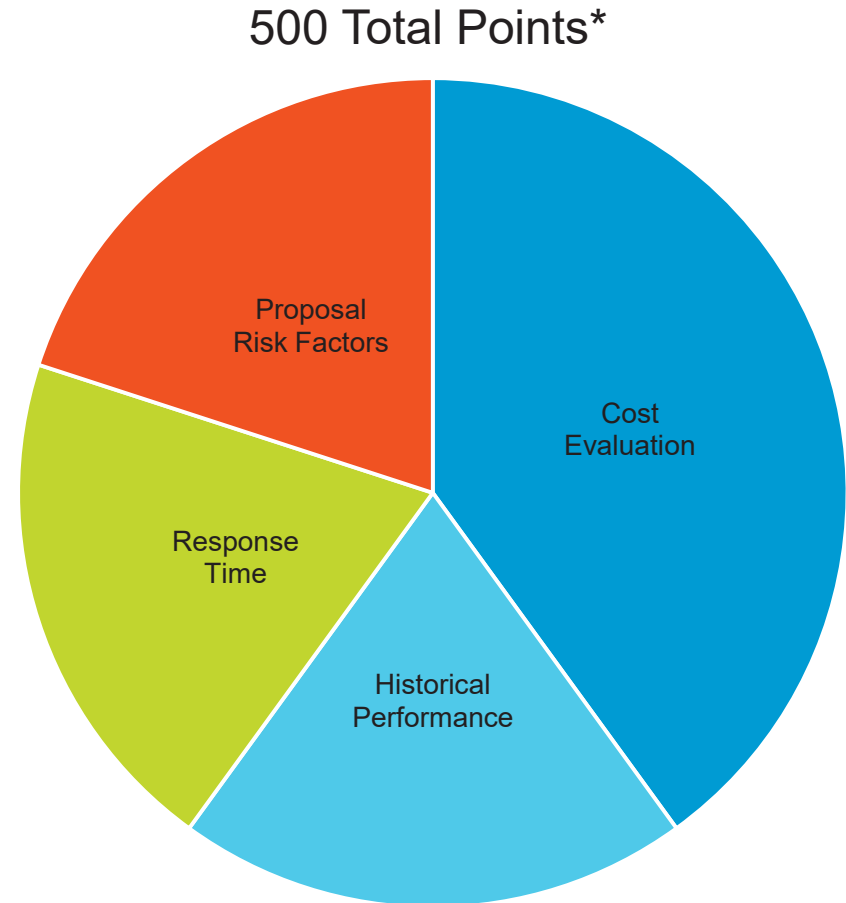
Scoring Criteria Name	Points	Scoring Method	Definition	Importance
Credit and Financial Plan	20	 Curve	Vectren will be reviewing the credit rating and financing capabilities in relation to a Bidder's Project	Projects which lack the financial wherewithal to ensure development pose a significant risk to Vectren and their customers.
Development Experience	20	 Curve	Scored based on 1,500 MW of relevant development experience	Relevant technology experience is important when looking at asset purchases or PPA's for facilities which are not in service. A Bidder's track record of project completion is a benefit to the Project's scoring.
Sole Ownership/ Partial Owner	20	 Binary	Being a sole owner would allow full site and dispatch rights/preferences	Being able to solely own, operate, and maintain a Project lowers risks for Vectren and their customers.
Ownership Structure (Purchase/PPA)	20	 Binary	Vectren has a preference for ownership	Owning an asset and having control with regards to dispatch, maintenance, and operation of the facility lowers risks for Vectren and their customers.
Operational Control	20	 Binary	Dispatch parameters used for the scheduling of energy into MISO and approval for maintenance outage periods	Operational control provides the ability to make prudent operational decisions when it makes economic sense for Vectren's customers.
Fuel Risk	20	 Binary	Sites having firm and reliable fuel supply	Having fuel restrictions or a lack of reliable fuel could effect the operation of the Project and be a risk to the owner/off taker.
Delivery Date	20	 Curve	For each year prior or after MISO PY 2023/2024, 25% of the points will be deducted	To the extent resources are brought on-line before potential Vectren unit retirements, Vectren customers could pay for duplicative capacity and/or energy; while there may be reasons to proceed with such projects, in recognition of their incremental costs, it is appropriate for such projects to not score as well in terms of timing.
Site Control	20	 Binary	Proper rights to the site in which the facility will be located	Without proper permitting and permissions from the owner, there is a risk that the project may not move forward or could experience significant delays.



LMR/DR - PROPOSAL EVALUATION

- Proposals will be grouped with similar proposals and scored relative to other bids within the same grouping
 - The preferred resource mix will be identified by the IRP analysis
 - All-Source RFP evaluation will rank order available resources within each grouping





Rank	Illustrative Resource Groupings						
1	Solar	Wind	Storage	Coal	Gas	Demand Response	etc.
2							
3							
4							
5							
6							
7							
8							



*Vectren reserves the right to add up to 100 points to Proposals located in Southern Indiana (generally defined as the following counties within Vectren’s service territory; Dubois, Gibson, Pike, Posey, Spencer, Vanderburgh, and Warrick), as local resources provide multiple benefits: VAR support, economic development, less future congestion risk, etc.

LMR/DR - EVALUATION SUMMARY



Scoring Criteria Name	Points	Scoring Method	Definition	Importance
Cost Evaluation	200	 Curve	\$/MW calculation to determine scoring based on rank order	The cost of the Project will have the most impact on Vectren's ability to provide low cost energy to its customers.
Historical Performance	100	 Range	Scored based on the length of time the Project has provided demand response services without receiving a non-performance penalty	Historical data can show a track record of performance which can be a benefit to the Project's scoring.
Response Time	100	 Range	Scored based on the time it takes the LMR/DR to reach load reduction target after receiving notification	Fast response time allows the LMR/DR to take advantage of specific control signals
Proposal Risk Factors	100	 Binary	Scored based on the amount of material risk identified	Risk factors may cause concern for the reliability or cost of delivery. Risks associated with a specific Proposal will be considered during the evaluation process.



VECTREN PUBLIC STAKEHOLDER MEETING

OCTOBER 10, 2019





POTENTIAL NEW RESOURCES AND MISO ACCREDITATION

MATT LIND,

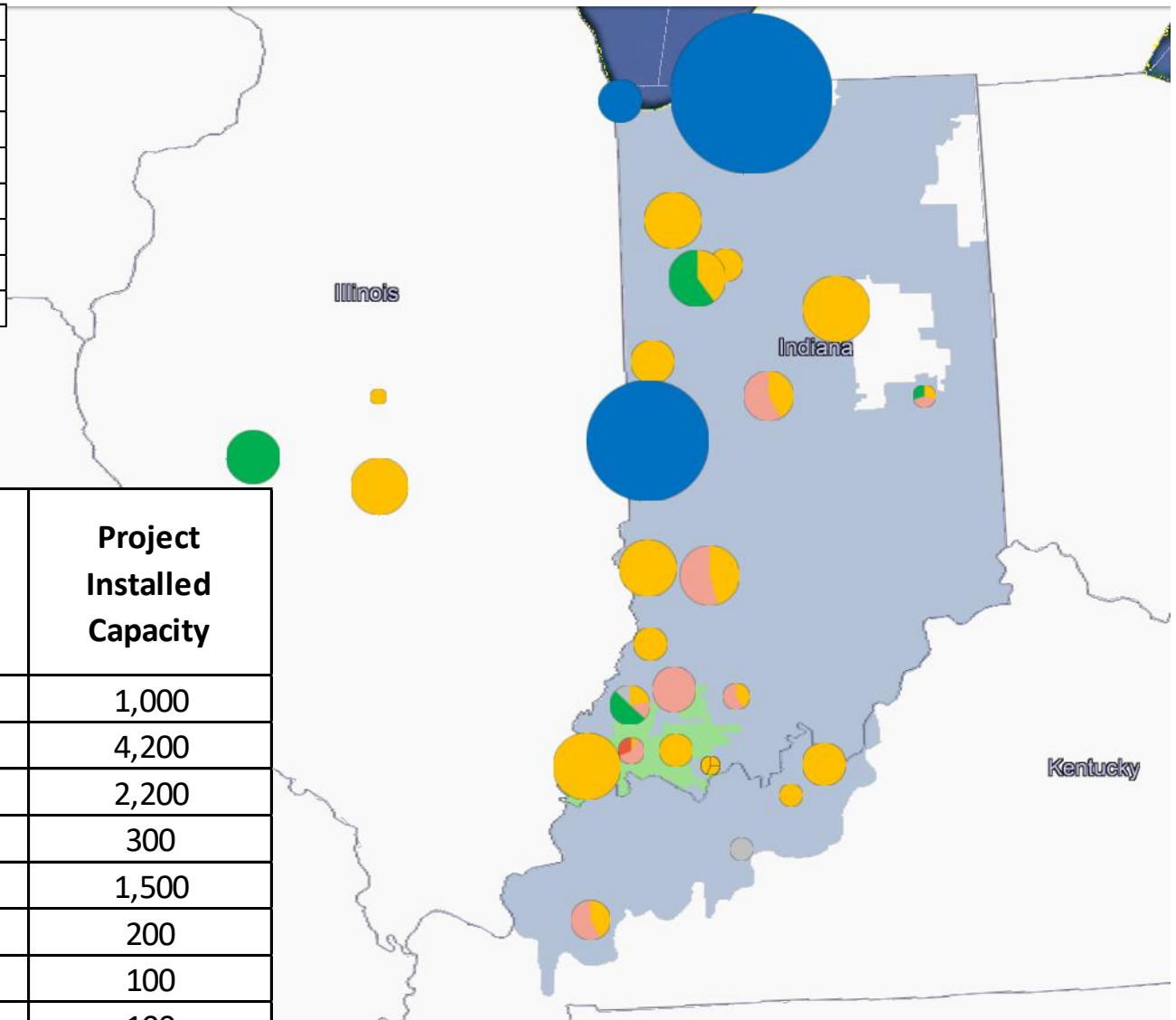
**RESOURCE PLANNING & MARKET ASSESSMENTS
BUSINESS LEAD, BURNS & MCDONNELL**





PROPOSAL LOCATION REVIEW

Key	
	Vectren Service Territory
	MISO LRZ 6
	Solar
	Solar + Storage
	Storage
	Wind
	Combined Cycle
	Coal

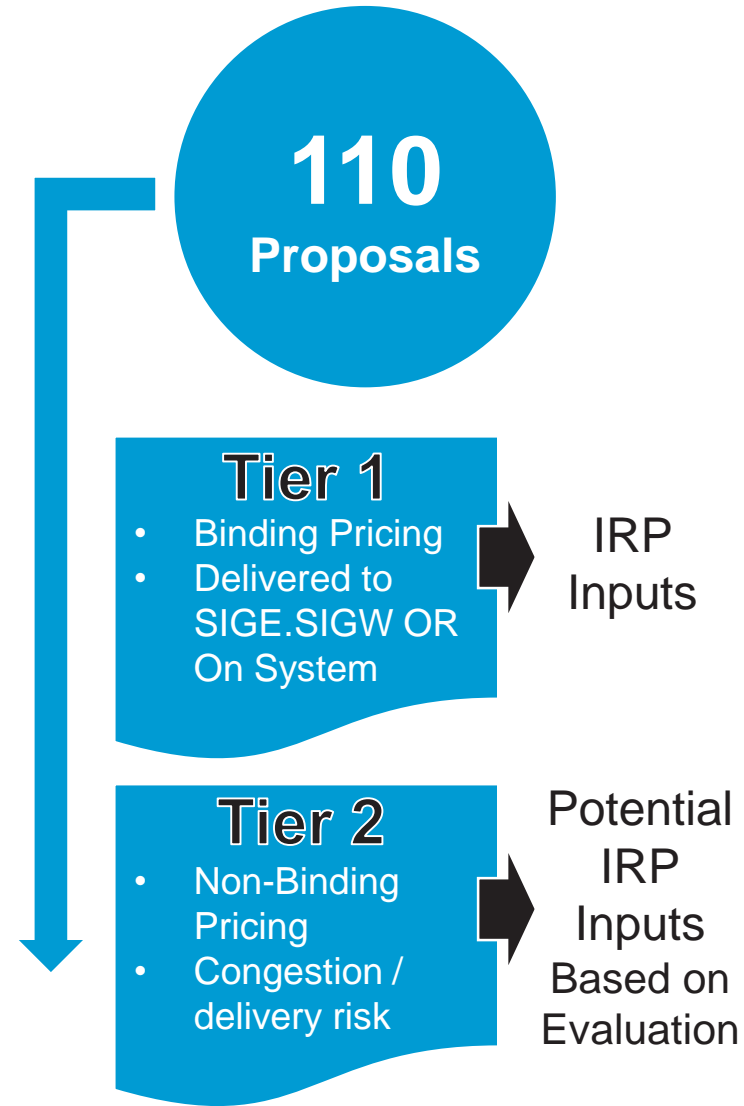


2019 RFP Responses (MW)	Proposal Installed Capacity	Project Installed Capacity
Wind	2,800	1,000
Solar	9,400	4,200
Solar + Storage	3,700	2,200
Storage	600	300
Combined Cycle	4,300	1,500
Coal	200	200
LMR/DR	100	100
System Energy	300	100
Total	21,400	9,600



PROPOSAL GROUPING

Potential Grouping		RFP Count	Tier 1 Proposals	Tier 2 Proposals
1	Coal PPA	2	0	2
2	LMR/DR PPA	1	1	0
3	CCGT PPA	2	0	2
4	CCGT Purchase	5	0	5
5	Wind Purchase	2	0	2
6	12-15 Year Wind PPA	9	4	5
7	20 Year Wind PPA	2	1	1
8	Storage Purchase	4	4	0
9	Storage PPA	4	4	0
10	Solar + Storage PPA	6	5	1
11	Solar + Storage Purchase	9	5	4
12	Solar + Storage Purchase/PPA	4	1	3
13	Solar Purchase/PPA	6	1	5
14	12-15 Year Solar PPA	8	3	5
15	20 Year Solar PPA	16	7	9
16	25-30 Year Solar PPA	9	3	6
17	Solar Purchase	18	4	14
N/A	Energy Only	3	0	3
Total		110	43	67



- Total installed capacity of RFP bids in Tier 1 ~5X greater than Vectren’s peak load
- Resource options from the technology assessment will supplement these options as needed



VECTREN PUBLIC STAKEHOLDER MEETING

DECEMBER 13, 2019





FINAL RFP MODELING INPUTS

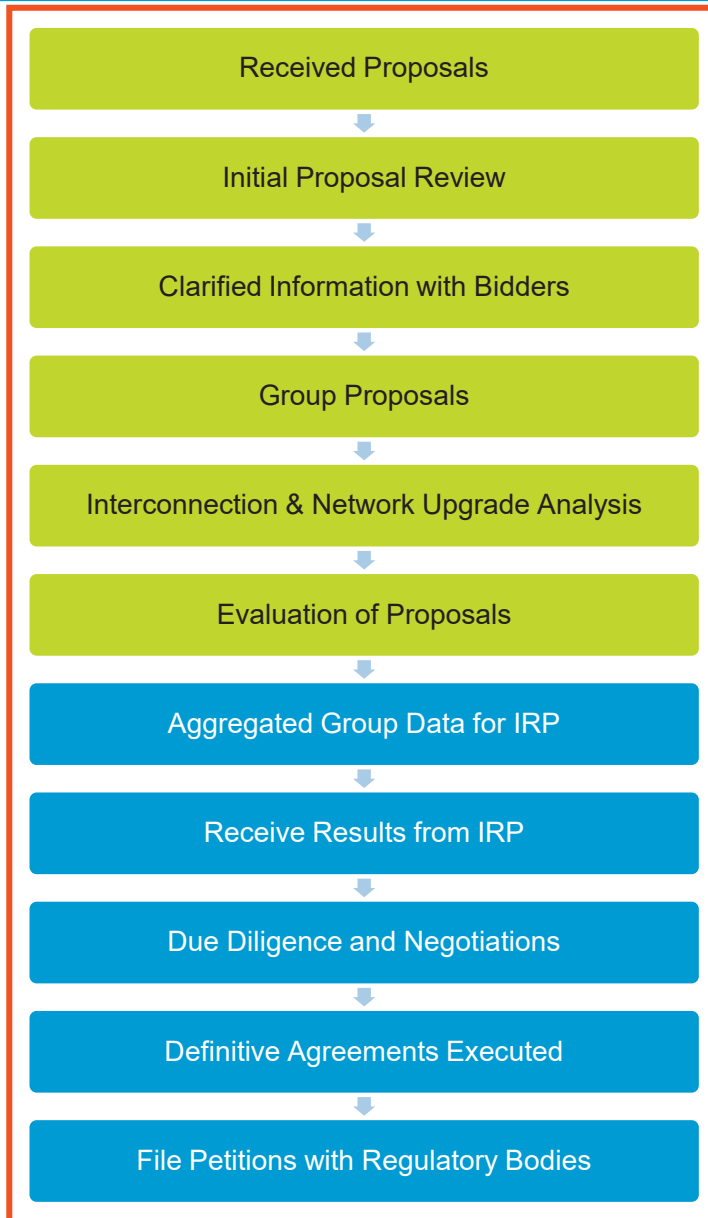
MATT LIND

RESOURCE PLANNING & MARKET ASSESSMENTS
BUSINESS LEAD, BURNS AND MCDONNELL





RFP PROCESS UPDATE

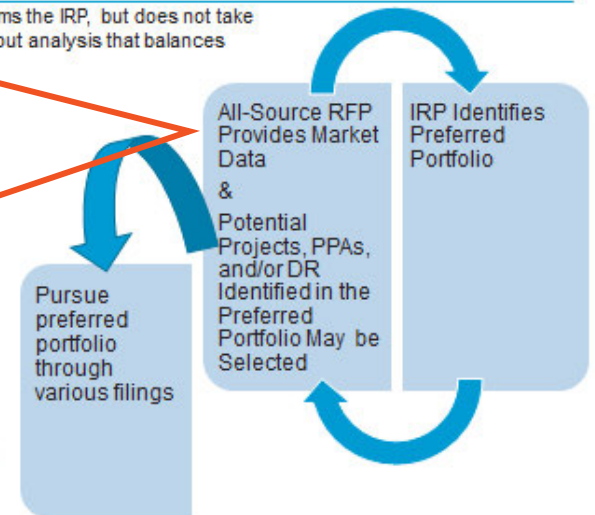


ROLE OF THE ALL-SOURCE RFP

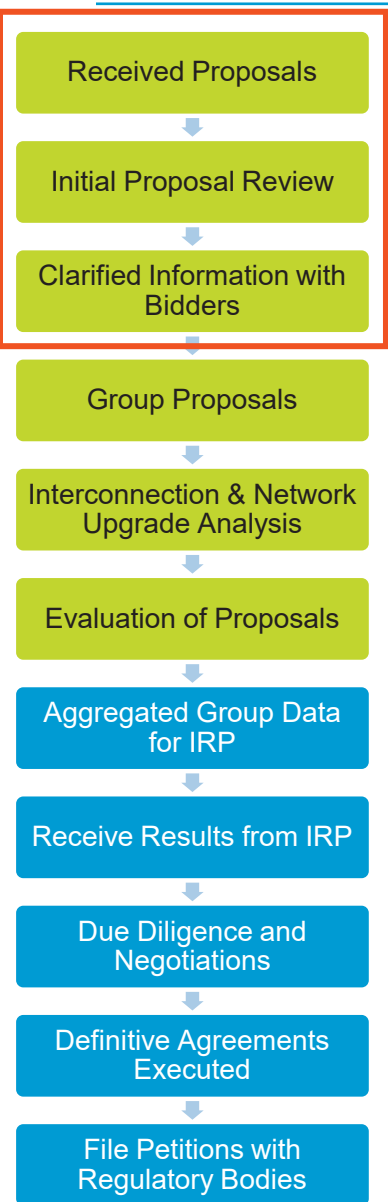


The All-Source RFP informs the IRP, but does not take the place of well thought out analysis that balances multiple objectives

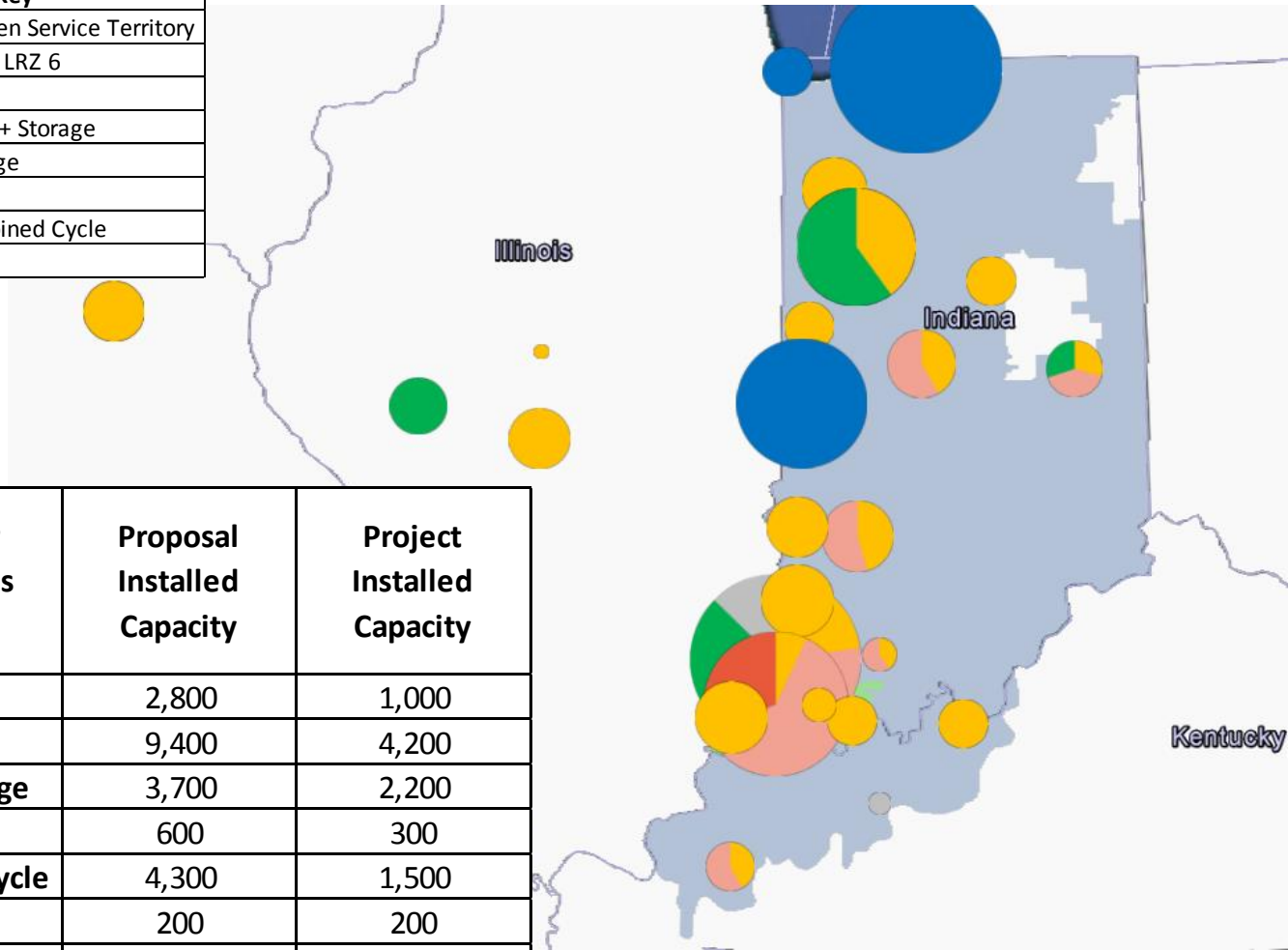
- Average delivered cost by resource will inform modeling
- Resources to be modeled on a tiered basis
- The full IRP analysis, including risk analysis, will test a diverse set of resource mixes and will ultimately identify a preferred portfolio
- Vectren will pursue resources consistent with those identified in the preferred portfolio



RFP PROPOSALS



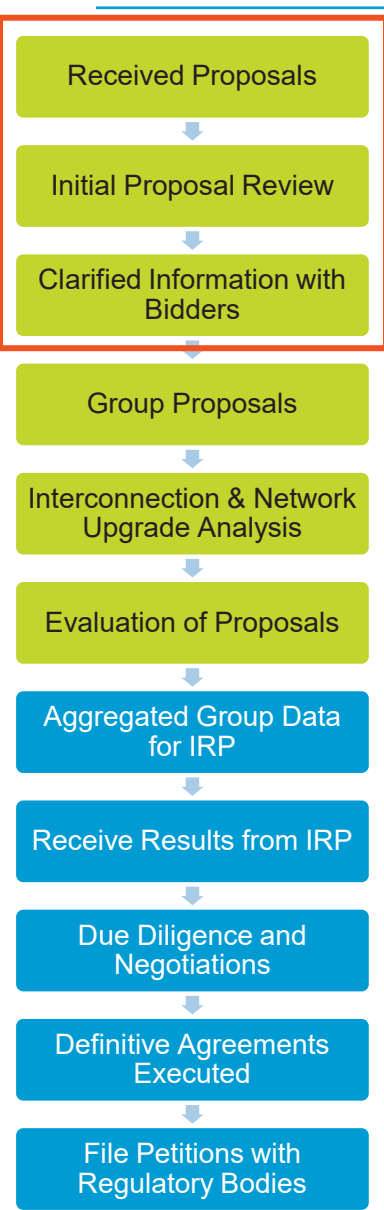
Key	
	Vectren Service Territory
	MISO LRZ 6
	Solar
	Solar + Storage
	Storage
	Wind
	Combined Cycle
	Coal



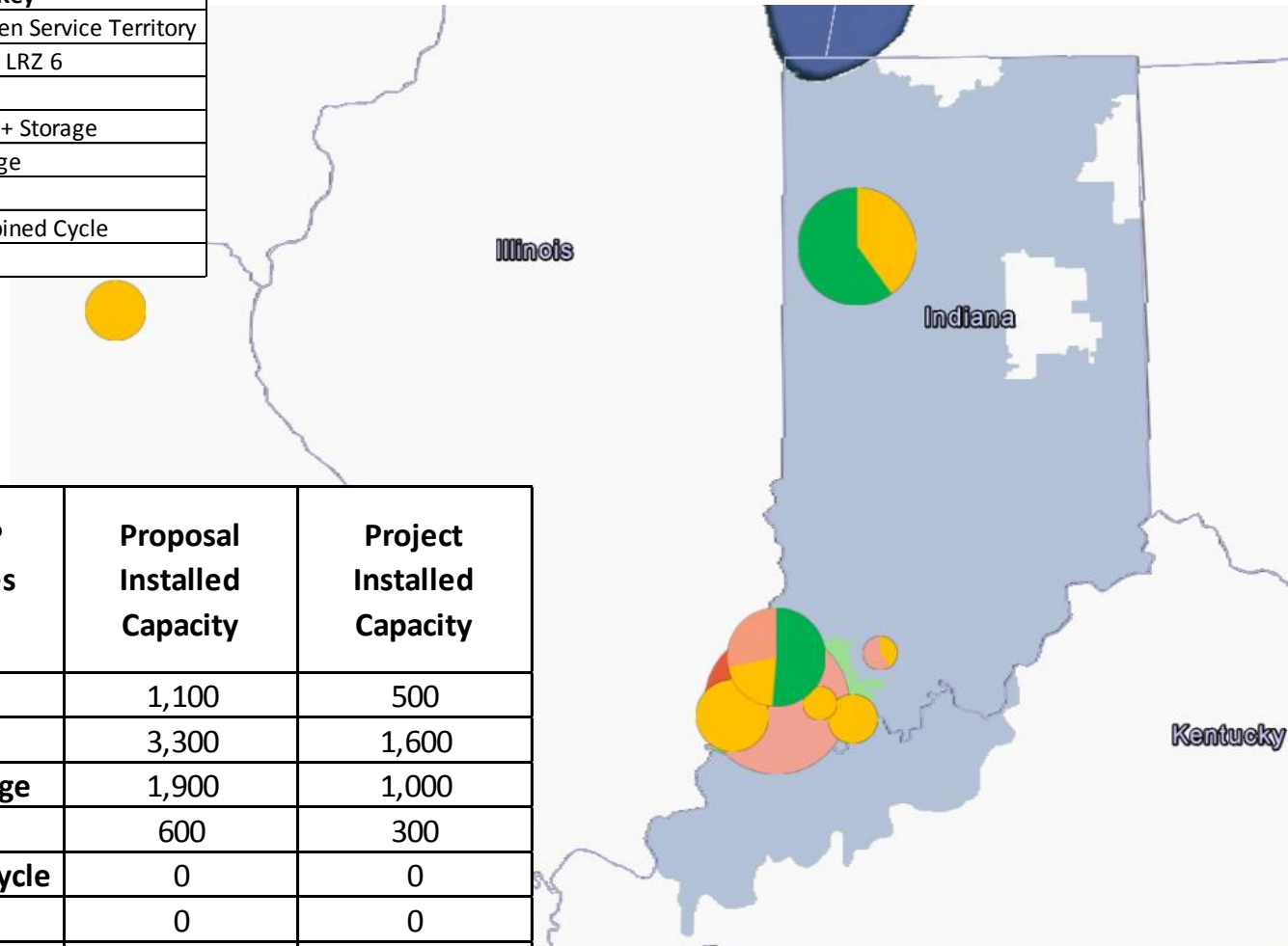
2019 RFP Responses (MW)	Proposal Installed Capacity	Project Installed Capacity
Wind	2,800	1,000
Solar	9,400	4,200
Solar + Storage	3,700	2,200
Storage	600	300
Combined Cycle	4,300	1,500
Coal	200	200
LMR/DR	100	100
System Energy	300	100
Total	21,400	9,600



RFP PROPOSALS - TIER 1



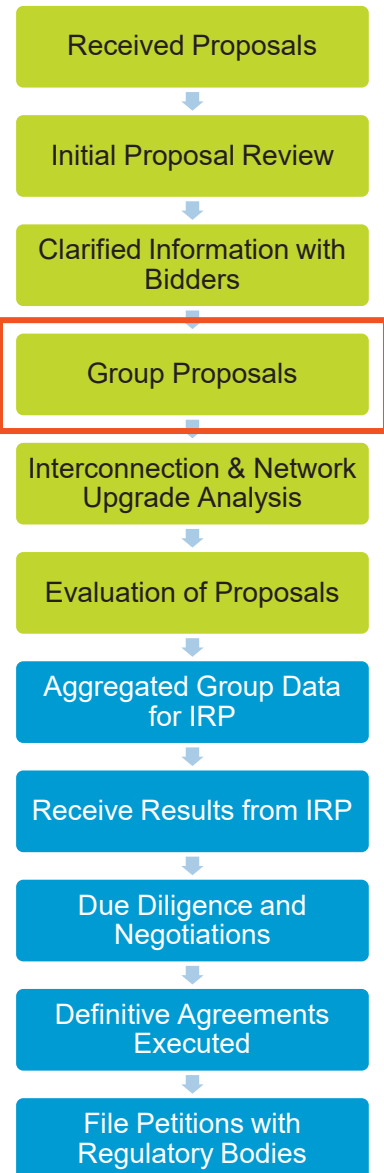
Key	
	Vectren Service Territory
	MISO LRZ 6
	Solar
	Solar + Storage
	Storage
	Wind
	Combined Cycle
	Coal



2019 RFP Responses (MW)	Proposal Installed Capacity	Project Installed Capacity
Wind	1,100	500
Solar	3,300	1,600
Solar + Storage	1,900	1,000
Storage	600	300
Combined Cycle	0	0
Coal	0	0
LMR/DR	100	100
System Energy	0	0
Total	7,000	3,500

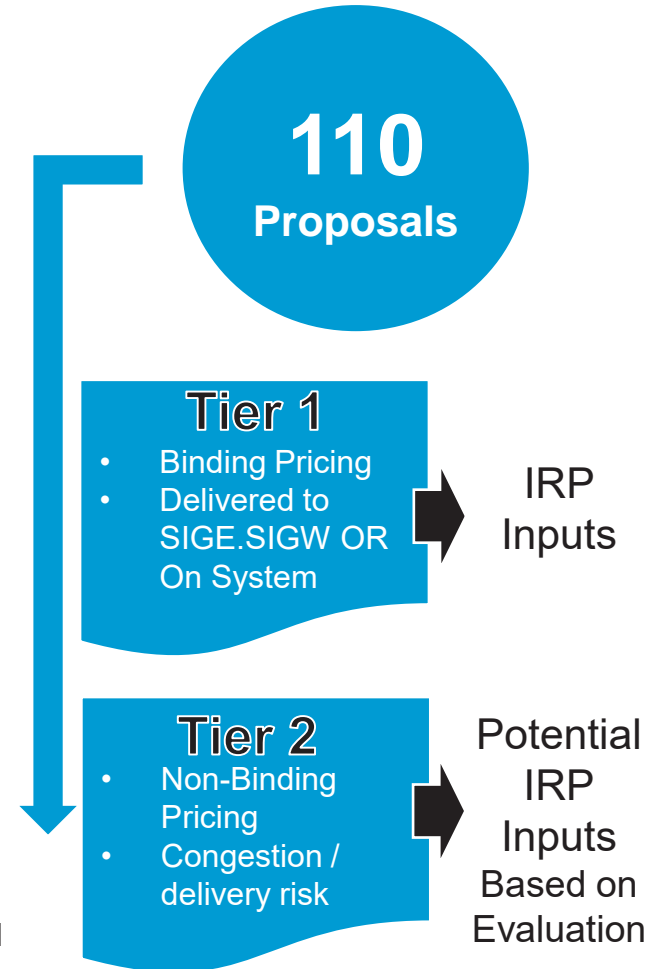


PROPOSAL GROUPING



Grouping ¹		RFP Count	Tier 1	Tier 2
1	Coal PPA	2	0	2
2	LMR/DR PPA	1	1	0
3	CCGT PPA	2	0	2
4	CCGT Purchase	5	0	5
5	Wind Purchase	2	0	2
6	12-15 Year Wind PPA	9	4	5
7	20 Year Wind PPA	2	1	1
8	Storage Purchase	4	4	0
9	Storage PPA	4	4	0
10	Solar + Storage PPA	6	5	1
11	Solar + Storage Purchase	9	5	4
12	Solar + Storage Purchase/PPA	4	1	3
13	Solar Purchase/PPA	6	1	5
14	12-15 Year Solar PPA	8	3	5
15	20 Year Solar PPA	16	10	6
16	25-30 Year Solar PPA	9	3	6
17	Solar Purchase	18	7	11
N/A	Energy Only	3	0	3
Total		110	49	61

- Total installed capacity of RFP bids in Tier 1 ~5X greater than Vectren's peak load
- Resource options from the technology assessment will supplement these options as needed



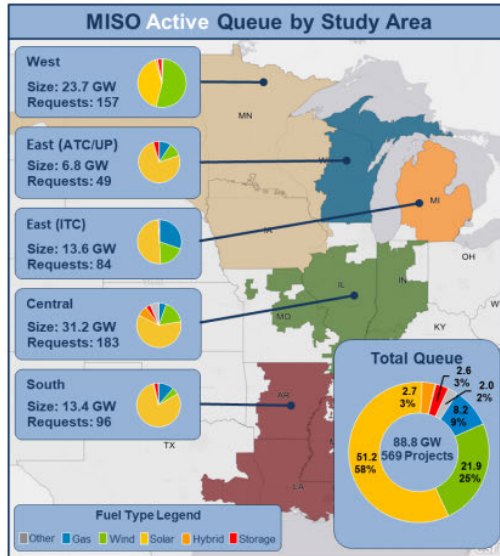
1. Updated Tier 1 & Tier 2 classification based on interactions with bidders

TRANSMISSION INTERCONNECTION COSTS



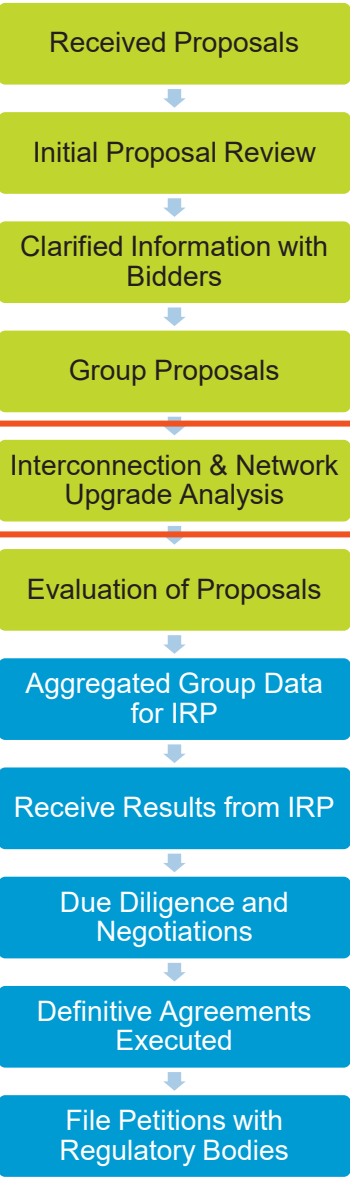
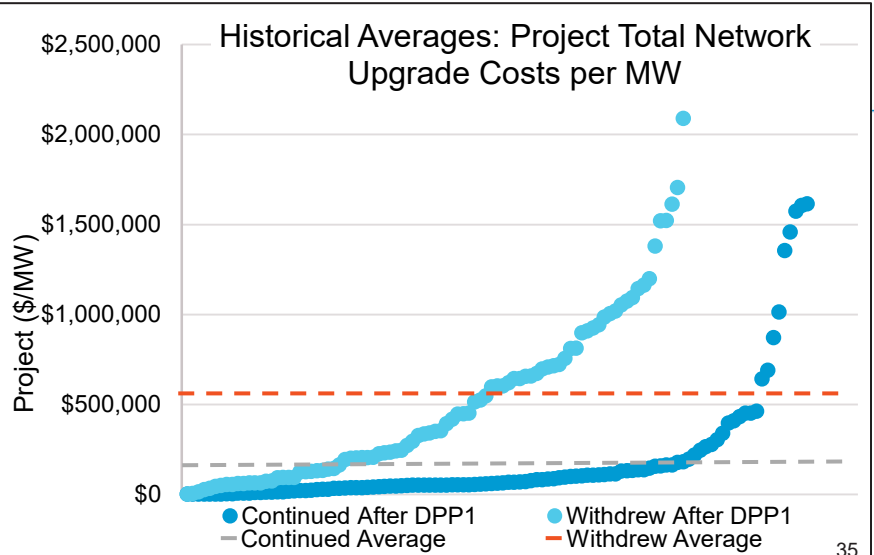
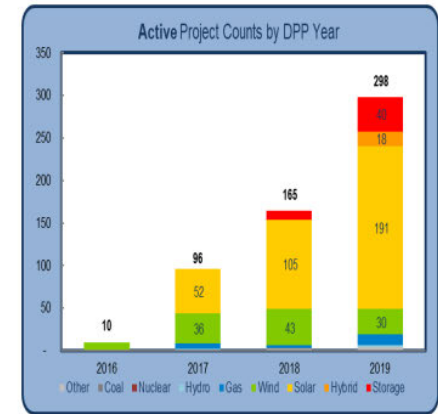
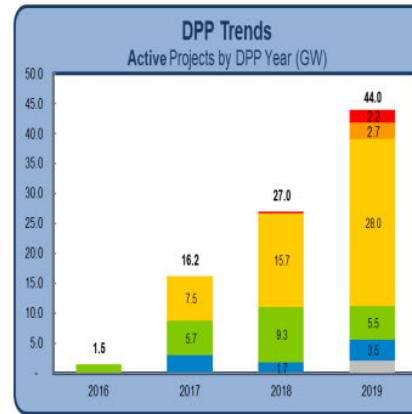
Generator Interconnection: Overview

The current generator interconnection active queue consists of **569** projects totaling **88.8** GW



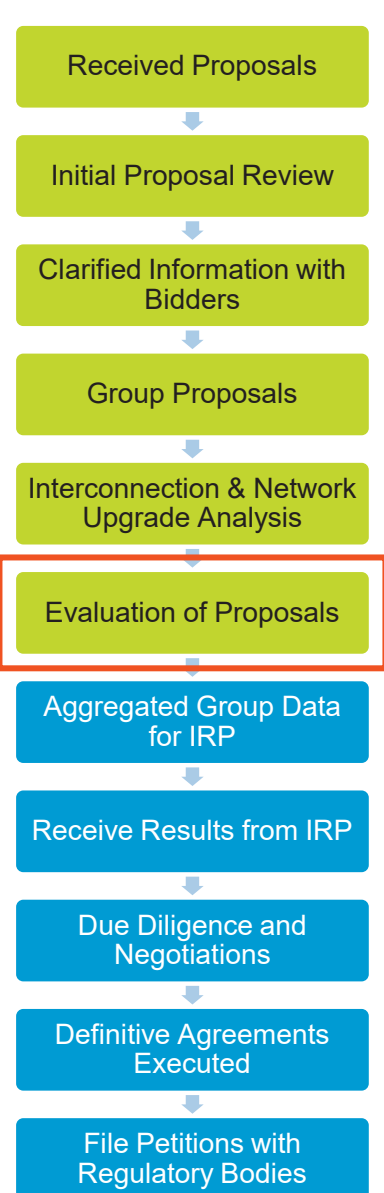
<https://www.misoenergy.org/planning/policy-studies/Renewable-integration-impact-assessment>

DPP Project Trends





TIER 1 COST SUMMARY

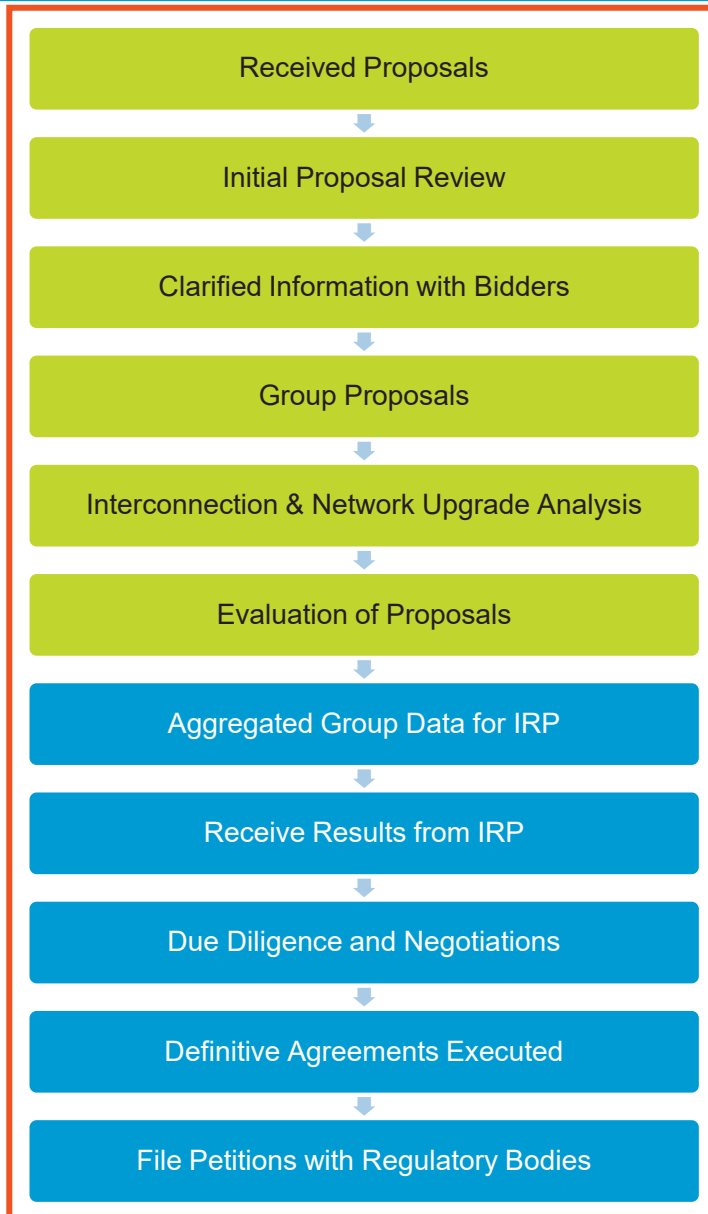


	Bid Group	# Proposals	# Projects	Proposal ICAP (MW)	Project ICAP (MW)	Capacity Weighted Average LCOE (\$2019/MWh)	Capacity Weighted Purchase Price (\$/kW) ²
1	Coal PPA	0					
2	LMR/DR PPA	0					
3	CCGT PPA	0					
4	CCGT Purchase	0					
5	Wind Purchase	0					
6	12-15 Year Wind PPA	4	1	800	200		
7	20 Year Wind PPA	1	1	300	300		
8	Storage Purchase	4	2	305	152	\$157	
9	Storage PPA	4	2	305	152	\$135	
10	Solar + Storage PPA	5	3	902	526	\$44	
11	Solar + Storage Purchase	5	3	862	486	TBD ¹	\$1,417 ³
12	Solar + Storage Purchase/PPA	1	1	110	110		
13	Solar Purchase/PPA	1	1	80	80		
14	12-15 Year Solar PPA	3	2	350	225	\$32	
15	20 Year Solar PPA	10	8	1,522	1,227	\$35	
16	25-30 Year Solar PPA	3	2	400	275	\$34	
17	Solar Purchase	7	6	902	732	TBD ¹	\$1,262

1. The method for realizing tax incentives is being reviewed by Vectren
2. \$/kW costs are in COD\$, purchase option cost is the purchase price unsubsidized by applicable tax incentives and does not reflect ongoing operations and maintenance costs
3. Cost based on simultaneous MW injectable to the grid



RFP PROCESS UPDATE



ROLE OF THE ALL-SOURCE RFP



The All-Source RFP informs the IRP, but does not take the place of well thought out analysis that balances multiple objectives

- Average delivered cost by resource will inform modeling
- Resources to be modeled on a tiered basis
- The full IRP analysis, including risk analysis, will test a diverse set of resource mixes and will ultimately identify a preferred portfolio
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