2019 Resource Assessment: Renewable RFP

LG&E KU

PPL companies

Generation Planning & Analysis
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Contents

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1. Executive Summary

Louisville Gas and Electric Company ("LG&E") and Kentucky Utilities Company ("KU") (collectively, "the Companies") issued a request for proposals for renewable energy ("Renewable RFP") in February 2019 to evaluate renewable energy as a means of reducing customers' energy costs and to gather actionable alternatives to support interest from industrial customers in Green Tariff Option #3. Ninety-four proposals were received from 16 respondents, including 71 initial proposals and 23 subsequent proposals that the Companies requested from several respondents for revised sizes and terms.[1] The proposals were primarily for solar energy located in Kentucky, but several were for wind energy in Illinois and Ohio. Several of the solar energy proposals included a grid-connected battery storage option.

The Companies evaluated the Renewable RFP responses over numerous fuel price and CO_2 price scenarios and identified a proposal from ibV Energy Partners ("ibV") as most favorable for supporting interest in Green Tariff Option #3 and potentially lowering customers' future energy costs. The best ibV proposal resulted in the Companies negotiating a 20-year, 100 MW solar power purchase agreement including associated renewable energy certificates ("RECs") with a December 2021 start date at a level price of $27.82/MWh with an ibV special purpose entity named Rhudes Creek Solar, LLC ("Solar Power Contract"). The Rhudes Creek Solar facility will be constructed in Hardin County, Kentucky.

As the analysis of the Renewable RFP responses was progressing, the Companies met with industrial customers who had expressed interest in procuring renewable energy via the Green Tariff Option #3. As a result of these discussions, 50 percent of the Solar Power Contract has been contracted via a Renewable Power Agreement ("RPA") to Toyota Motor Manufacturing, Kentucky, Inc. ("Toyota") and 25 percent has been contracted via an RPA to Dow Silicones Corporation ("Dow"), both of which are KU customers. The remaining 25 percent of the Solar Power Contract will be used to serve all of the Companies' customers.

Based on all of the fuel price and CO_2 price scenarios, the impact on the future revenue requirements of the 25 percent of the Solar Power Contract serving all customers ranges from [redacted] (the net present value of revenue requirements ("NPVRR") in 2019 dollars over the 20-year contract term). The analysis shows that:

- The Solar Power Contract will save customers money in every case where there is a future price of CO_2;
- The level pricing of the Solar Power Contract has the potential to slightly increase annual fuel expense (likely less than [redacted] out of the Companies' total fuel expense of around $800 million) through the early 2030s, at which point the potential for escalating coal and natural gas prices make its energy less expensive than fossil fuel resources;
- To offset the potential for higher energy costs in the early years of the contract, the Companies will sell the RECs (excluding those transferred to Toyota and Dow) as is currently done with the RECs from the Brown Solar project. The 25 percent of Solar Power Contract energy allocated to

[1] All proposals received are listed in Appendix 6.1.

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all customers will generate about 55,000 RECs annually. Thus, REC prices only need to average around [redacted] to offset the potential added cost of the solar energy. In 2019, the Companies sold Brown Solar RECs for over $10/REC. The [redacted] NPVRR case mentioned above results only if RECs have no value for the entire 20-year period – a risk that is very remote at the present time.

- Due to the level pricing in the Solar Power Contract, the need to sell RECs likely becomes very small and disappears altogether in the early 2030s given the risk of escalating coal and natural gas prices and the potential for CO_2 pricing.

Finally, the portion of the Solar Power Contract not allocated to Green Tariff Option #3 participants will be allocated 61 percent to KU and 39 percent to LG&E, based on each Company's share of forecasted energy requirements during daylight hours over the 20-year contract term. Because Toyota and Dow are KU customers, the overall allocation of the Solar Power Contract is 9.75 percent to LG&E and 90.25 percent to KU.

2. Renewable RFP

The Companies issued the Renewable RFP in February 2019 to over 50 project developers, marketers, generation asset owners, and renewable energy trade groups. The Companies also issued a press release[2] and placed a link to the Renewable RFP on the Companies' website to generate further awareness.[3] Proposals were requested for utility-scale (10-200 MW nameplate) renewable resources delivered to the Companies' transmission system for a period of between 5 and 20 years. The Renewable RFP did not specify a particular renewable generation technology but stated a preference for new renewable energy projects with delivery beginning no later than January 1, 2022.

The Companies issued the Renewable RFP to systematically assess the cost of renewable energy in Kentucky and evaluate renewable energy as a means to either reduce customers' energy costs or increase renewable generation at a modest incremental cost. In addition, the Renewable RFP was issued to provide real transactional opportunities to support interest in Green Tariff Option #3 should the Kentucky Public Service Commission ("Commission") approve that proposal in the Companies' then-pending rate cases.[4]

Sixteen companies responded to the Companies' Renewable RFP with 71 initial proposals with both level and escalating pricing options.[5] The proposals were primarily for solar energy located in Kentucky, but several were for wind energy in Illinois and Ohio. Five proposals included battery storage in

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[2] "LG&E and KU Issue Request for Renewable Energy," February 4, 2019. *See* https://lge-ku.com/newsroom/press-releases/2019/02/04/lge-and-ku-issue-request-renewable-energy.

[3] "Request for Proposals (RFP) to Sell Renewable Electrical Power and Energy," February 4, 2019. *See* https://lge-ku.com/sites/default/files/2019-02/RFP-February-2019.pdf.

[4] *Electronic Application of Kentucky Utilities Company for an Adjustment of its Electric Rates,* Case No. 2018-00294 (April 30, 2019); *Electronic Application of Louisville Gas and Electric Company for an Adjustment of its Electric and Gas Rates,* Case No. 2018-00295 (April 30, 2019).

[5] Subsequent to receiving the initial proposals, the Companies requested additional proposals from several respondents for revised sizes, terms, and start dates, which brought the total number of proposals to 94.

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Kentucky, one for a stand-alone battery and four for solar energy with a grid-connected battery storage option. Figure 1 plots the distribution of the proposed energy prices and terms of the initial solar and wind proposals. The proposals ranged between 10 MW and 200 MW in size, between 10 and 30 years in term, and between [redacted]/MWh and [redacted]/MWh in price, on a level price basis.[6] Battery storage is not a renewable resource but can be used to store energy for use on demand. Therefore, the Companies evaluated the battery storage proposals as a source of dispatchable energy and capacity.

Figure 1 – Distribution of Initial Solar and Wind Proposals' Costs and Terms

[redacted]

3. Analysis of Proposals

The Companies' analysis of the Renewable RFP proposals was completed in four phases. First, the Companies performed a screening analysis to identify the lowest-price proposals among the various technology types, nameplate capacity sizes, and contract terms. Second, the lowest-price proposals from the screening analysis were evaluated in a detailed production cost analysis to estimate each proposal's impact to system energy costs. During this phase of the analysis, the Companies followed up with a shortlist of the respondents to request best-and-final proposals as well as new proposals for a standardized set of contract capacities, terms, and start dates. In the third phase of the analysis, the Companies met with the top two respondents to discuss potential contract terms and project implementation plans in more detail. A clear frontrunner was identified through these discussions with whom the Companies initiated more formal contract negotiations. In the fourth phase of the analysis, the Companies evaluated the top proposal based on new fuel forecasts from the more recent 2020 Business Plan. Ultimately, the Companies entered into a contract with Rhudes Creek Solar, LLC (a

[6] In Figure 1, proposals with only an escalating pricing option are represented by a levelized price computed over the PPA term.

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special purpose entity solely owned by ibV Energy Partners) for 100 MW of solar energy and associated RECs for 20 years.

As this analysis was being performed and after the Commission approved the Companies' application for the Green Tariff Option #3, the Companies met with industrial customers who had expressed interest in procuring renewable energy.[7] These discussions ultimately resulted in Renewable Power Agreements with Toyota Motor Manufacturing, Kentucky, Inc. ("Toyota") and Dow Silicones Corporation ("Dow"), both KU customers, based on the output of the Rhudes Creek Solar facility. However, because the level of Green Tariff Option #3 participation was unknown during most of the analysis, the revenue requirement impacts for each proposal in Section 3 was evaluated based on 100 percent of the proposal's energy being allocated to all customers. Green Tariff Option #3 participation reduces the allocation of costs and benefits to all customers, but it does not directionally impact the relative ranking of each proposal. Section 4 shows only the NPVRR impacts of the 25 percent of the Solar Power Contract allocated to all customers.

3.1. Screening Analysis

Given the large number of proposals, the Companies initially performed a screening analysis to identify the lowest-price proposals among the various technology types, nameplate capacity sizes, and contract terms. In this analysis, each proposal was assigned to one of three groups based on technology type, one of eight groups based on nameplate capacity, and one of six groups based on contract term (see Table 1).[8] Then, the proposal in each of the 17 groups with the lowest level or levelized escalating price as well as all proposals with a level or levelized escalating price less than [redacted] were selected for further evaluation.

Table 1 – Screening Analysis Groups

Category	# of Groups	Groups
Technology Type	3	Solar, Wind, Battery Storage
Nameplate Capacity	8	0-25, 26-50, 51-75, 76-100, 101-125, 126-150, 151-175, & 176-200 MW
Contract Term	6	10, 12, 15, 20, 25, and 30 years

The lowest-price proposals from the screening analysis are shown in Table 2. Solar proposals from ibV Energy Partners ("ibV") and [redacted] were the lowest-price proposals in more than one screening group.[9] The [redacted] from ibV was the lowest-price proposal overall. The lowest-price wind proposal was a [redacted] The [redacted]"), the [redacted] and the [redacted] were eliminated from further analysis based on their higher prices relative to other similarly-sized proposals of the same technology type.

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[7] See Sheets 69 – 69.2 in LG&E's current electric rates at https://lge-ku.com/sites/default/files/lgereselectric.pdf and in KU's current electric rates at https://lge-ku.com/sites/default/files/kuelecrates.pdf.

[8] The Companies received six financial settlement proposals from [redacted] which did not include physical delivery of energy. The Companies did not evaluate these proposals.

[9] Section 6.2 in the Appendix contains a complete listing of the Screening Analysis results.

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Table 2 - Lowest Cost Proposals from Screening Analysis

Category	Group	Respondent	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Technology Type	Solar	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Wind	[redacted]	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Battery	[redacted]	Battery	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Nameplate Capacity (MW)	0-25	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	26-50	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	51-75	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	76-100	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	101-125	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	126-150	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	151-175	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	176-200	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contract Term (Years)	10	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	12	[redacted]	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	15	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	20	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	25	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	30	[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other <$30/MWh		[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

3.2. Detailed Production Cost Analysis

In the detailed production cost analysis, the Companies evaluated the impact on system energy costs for each of the proposals that passed the screening analysis using hourly avoided energy costs developed in PROSYM.[10] Then, the Companies followed up with the most competitive respondents to request and evaluate best-and-final proposals. The lowest-cost battery storage proposal was evaluated separately in PROSYM as a source of dispatchable capacity. The following assumptions from the Companies' 2019 Business Plan were included in this phase of the analysis.

- **Low, base, and high natural gas prices.** The low, base, and high natural gas prices assumed in this analysis, as well as the coal prices, are shown in Table 3.
- **Zero price for carbon dioxide ("CO_2") emissions.**[11] No CO_2 emissions prices were assumed at this early stage in the evaluation given the uncertainty that exists regarding possible future CO_2 regulations. Furthermore, excluding CO_2 emissions prices allowed the Companies to focus the analysis explicitly on avoided energy costs based on known regulations.
- **Zero price for RECs.** No REC price was included in this phase so the analysis could focus on avoided energy costs.[12]
- **65-year unit life.** The Companies' existing generating units are assumed to retire when they reach 65 years of age and replaced by 1x1 natural gas combined cycle ("NGCC") units (368 MW each) as needed to maintain the Companies' minimum target reserve margin.
- **No modeled change to unit commitment.** Due to the intermittent nature of renewable generation and the size of the proposals being evaluated, the Companies assumed no change to the 2019 Business Plan's modeled commitment of existing units and no need for added renewable integration costs including possible transmission system upgrades.
- **Generation profile correlated to weather.** The hourly generation forecast for each proposal was developed by the respondents using the same weather assumptions that the Companies used to develop their hourly load forecast.
- **No off-system sales**. Generation for off-system sales is very small compared to native load energy requirements and highly uncertain due to market factors that are out of the Companies' control. Therefore, consistent with the Companies' prior practice for making resource planning decisions, the potential impact to off-system sales was not considered in the analysis.

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[10] PROSYM is the Companies' detailed production cost modeling software and is provided by ABB.

[11] A scenario that includes a forecasted price for CO_2 emissions was included in the 2020 Business Plan update, as discussed in Section 3.4.

[12] The Companies expect to reduce customers' costs by selling the RECs associated with any renewable energy that is allocated to all customers and returning the funds to customers as they currently do with RECs from Brown Solar. However, the RECs for energy assigned to Green Tariff Option #3 customers will be transferred to those customers at no cost.

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Table 3 – 2019 Business Plan Fuel Prices (Nominal $/MMBtu)

	Natural Gas (Henry Hub)			Coal (Illinois Basin, FOB Mine)
	Low	Base	High	
2020	[redacted]	[redacted]	[redacted]	[redacted]
2021	[redacted]	[redacted]	[redacted]	[redacted]
2022	[redacted]	[redacted]	[redacted]	[redacted]
2023	[redacted]	[redacted]	[redacted]	[redacted]
2024	[redacted]	[redacted]	[redacted]	[redacted]
2025	[redacted]	[redacted]	[redacted]	[redacted]
2026	[redacted]	[redacted]	[redacted]	[redacted]
2027	[redacted]	[redacted]	[redacted]	[redacted]
2028	[redacted]	[redacted]	[redacted]	[redacted]
2029	[redacted]	[redacted]	[redacted]	[redacted]
2030	[redacted]	[redacted]	[redacted]	[redacted]
2031	[redacted]	[redacted]	[redacted]	[redacted]
2032	[redacted]	[redacted]	[redacted]	[redacted]
2033	[redacted]	[redacted]	[redacted]	[redacted]
2034	[redacted]	[redacted]	[redacted]	[redacted]
2035	[redacted]	[redacted]	[redacted]	[redacted]
2036	[redacted]	[redacted]	[redacted]	[redacted]
2037	[redacted]	[redacted]	[redacted]	[redacted]
2038	[redacted]	[redacted]	[redacted]	[redacted]
2039	[redacted]	[redacted]	[redacted]	[redacted]
2040	[redacted]	[redacted]	[redacted]	[redacted]
2041	[redacted]	[redacted]	[redacted]	[redacted]
2042	[redacted]	[redacted]	[redacted]	[redacted]
2043	[redacted]	[redacted]	[redacted]	[redacted]
2044	[redacted]	[redacted]	[redacted]	[redacted]
2045	[redacted]	[redacted]	[redacted]	[redacted]
2046	[redacted]	[redacted]	[redacted]	[redacted]
2047	[redacted]	[redacted]	[redacted]	[redacted]
2048	[redacted]	[redacted]	[redacted]	[redacted]
2049	[redacted]	[redacted]	[redacted]	[redacted]
2050	[redacted]	[redacted]	[redacted]	[redacted]

The energy from each proposal was evaluated as non-firm, must-take energy since it is dependent on sunlight, cloud, or wind conditions and is not dispatchable. This means that system reliability is still ensured by the Companies' existing fleet of dispatchable resources. By relying on the existing fleet for reliability and only looking at decremental energy costs, the Companies are evaluating intermittent generation like wind and solar in the most favorable way possible. The Companies projected hourly energy cost savings for each proposal in the natural gas price scenarios by computing the cost of energy from the Companies' dispatchable resources that would be displaced by the renewable generation.

Because the Companies' resources are committed and dispatched economically, the renewable generation will displace energy in each hour from the Companies' highest-cost resources.[13]

It is important to note that while the analysis at this phase utilized three natural gas price scenarios, only in the "High" case did natural gas prices materially affect the financial results because coal generation was almost always the marginal resource when evaluating new solar and wind resources. This condition occurred for three reasons:

1. This phase assumed a 65-year unit life. Until Brown 3 is retired in 2036 and Ghent 1 is retired in 2039 - near the end of the 20-year analysis period - the only natural gas-fired combined cycle unit in the Companies' fleet is Cane Run Unit 7. This means that gas prices would need to be high enough before 2036 to force Cane Run 7 to be the marginal unit above coal-fired units.
2. While the average heat rates of coal units and simple cycle gas turbines ("CT") may be similar, the marginal heat rate of a coal unit is often much greater, meaning that if a CT has been started, it will likely be loaded before a coal unit because the next MW is cheaper. Thus, if solar or wind is added to the system, it will be the coal unit that backs down first to accommodate it rather than the CT. Furthermore, CTs do not run many hours in a year – typically less than 1,000 hours annually – so this impact will be somewhat limited.
3. Given the 65-year life assumption in this phase and points #1 and #2 above, the vast majority of the hours in a year will have coal as the marginal generation source because Cane Run Unit 7 is lower cost or there are no other gas resources online.

The NPVRR for each screened proposal was calculated by subtracting the present value ("PV") of its projected hourly energy cost savings from the PV of its projected hourly purchase costs. Then, this difference was levelized over the proposal's projected generation to normalize the results on a $/MWh basis. This normalized metric ("levelized NPVRR") allows for a direct comparison of the cost effectiveness of proposals with different nameplate capacities and terms. No integration costs were considered as it was assumed that the load following capabilities of the Companies' existing resources could maintain reliability while supporting the intermittent nature of the renewable energy proposals and that no material transmission upgrades would be required.

Table 4 contains the detailed production cost analysis results for proposals that passed the screening analysis. The results are ranked by the levelized NPVRR ($/MWh) from the base natural gas price scenario; all pricing options for the proposals are listed separately. Negative levelized NPVRR values indicate that a proposal would be expected to lower system energy costs for customers over the proposal's term. Because this phase of the analysis assumed zero REC prices, the levelized NPVRR for proposals with an unfavorable NPVRR is the levelized REC price on a $/MWh basis that would be required to make the NPVRR zero.

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[13] A more detailed discussion of this process along with the average annual energy cost savings for each natural gas price scenario is included in Section 6.3.

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Table 4 – Detailed Production Cost Analysis Results for Proposals that Passed Screening Analysis (Zero REC Prices; Negative values indicate savings and positive values indicate greater costs)

		Levelized NPVRR ($/MWh)				Nameplate		Start
	Respondent	Low Gas	Base Gas	High Gas	Price ($/MWh)	Capacity (MW)	Term (Years)	Year (Dec.)
Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Based on these results, the Companies requested any updates in generation profiles and pricing from [redacted]ibV, [redacted].[14] In addition, the Companies requested these respondents provide new proposals for a standardized set of contract capacities, terms, and start dates to ensure that each respondent's proposed capacity and term were most favorable and to improve comparability among the different respondents.

Table 5 contains detailed production cost analysis results for all proposals from the shortlist of respondents, including updates to generation profiles and pricing where applicable, and ranks the results by the levelized NPVRR ($/MWh) from the base natural gas price scenario. Compared to the wind proposals, the lower-priced solar proposals have the higher potential to reduce costs for customers. While wind generation would generally be expected to have a higher capacity factor compared to solar, the generation typically occurs more in off-peak hours, which tend to have lower avoided costs compared to the on-peak daytime hours when solar generation occurs. Section 6.5 shows a comparison of typical generation profiles of wind and solar.

[14] Because the [redacted] and [redacted] proposals were similarly priced, the Companies chose to follow up with [redacted] to include a wider range of nameplate capacities.

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Table 5 – Detailed Production Cost Analysis Results for Proposals from Shortlist of Renewable RFP Respondents (Zero REC Prices; Negative values indicate savings and positive values indicate greater costs)

	Respondent	Levelized NPVRR ($/MWh) Low Gas	Levelized NPVRR ($/MWh) Base Gas	Levelized NPVRR ($/MWh) High Gas	Price ($/MWh)	Nameplate Capacity (MW)	Term (Years)	Start Year (Dec.)
Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted] [1]
Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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Even with zero REC prices, the [redacted] and the [redacted] ibV proposals are favorable in each natural gas price scenario. Based on these results, [redacted] and ibV were deemed finalists for further due diligence and evaluation.

During this due diligence phase, ibV provided two new proposals for a 20-year, 100 MW solar power purchase agreement at prices lower than their [redacted] proposal:

- December 2021 in-service date at a level price of $27.82/MWh (or $[redacted]/MWh, escalating at [redacted] percent per year)
- December 2022 in-service date at a level price of $[redacted]/MWh (or $[redacted]/MWh, escalating at [redacted] percent per year)

These additional proposals were evaluated in the final phase discussed in Section 3.3 below.

3.2.1. Analysis of Battery Storage Proposal

All proposals for battery storage involved battery storage connected to the grid. None involved batteries dependent on the availability of a renewable resource to charge. For this reason, the Companies evaluated the lowest-priced battery storage proposal separately as a dispatchable resource. The price of the lowest-priced battery proposal was $[redacted]/kW-month level (or $[redacted]/kW-month escalating at [redacted] percent per year) for a [redacted] MW, [redacted] MWh battery, which equates to an annual capacity cost of $[redacted].

This proposal was eliminated from further consideration because of its high capacity cost. As a point of comparison, the Companies' combustion turbines ("CTs") at the Brown Station (Brown Units 5, 8, 9, 10, & 11) have a levelized "stay-open" fixed cost of $0.96/kW-month, which equates to an annual capacity cost of between $1.4 and $1.5 million.[15] With [redacted], these CTs each provide more than six times the capacity of the proposed battery and the ability to provide energy for a longer duration. Even though the Companies were not seeking capacity from the Renewable RFP, this analysis demonstrates that the battery proposals were not currently economically viable to replace the Companies' existing simple cycle gas turbine capacity, even when the batteries in these proposals could be reliably charged from the grid and were not dependent on intermittent renewable generation to charge them.

3.3. Finalist Evaluation

In making a final decision regarding the various proposals, the Companies had to select among four parameters: contract term, nameplate capacity, start date, and level vs. escalating energy price.

As to the issue of contract term, Table 6 shows that for each finalist, a 20-year term resulted in a lower price by between $[redacted] and $[redacted]/MWh compared to the 15-year term. Therefore, all 15-year proposals were rejected.

[15] The Companies' 2018 Integrated Resource Plan ("IRP") shows that each of the Brown Units 5, 8, 9, 10, & 11 (121-130 MW each) have an annual stay-open cost of $11.5/kW-year ($0.96/kW-month = $11.5/kW-year / 12 months/year). *See* Table 9 on page 17 of the "2018 IRP Reserve Margin Analysis," located in Volume III of the 2018 IRP at https://psc.ky.gov/pscecf/2018-00348/rick.lovekamp%40lge-ku.com/10192018102925/5-LGE_KU_2018_IRP-Volume_III.pdf.

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Second, increasing the nameplate capacity of the project also resulted in a lower price from each finalist. For example, [redacted] made proposals of [redacted] MW, [redacted] MW, and [redacted] MW with [redacted]-year level pricing of $[redacted]/MWh, $[redacted]/MWh, and $[redacted]/MWh, respectively, beginning [redacted]. Similarly, ibV proposed a [redacted] MW, [redacted] MW, and 100 MW contract with 20-year level pricing of $[redacted]/MWh, $[redacted]/MWh, and $27.82/MWh, respectively, beginning in December 2021. Because the interest in Green Tariff Option #3 by Toyota and Dow was 75 MW, increasing the size of the potential contract to 100 MW would result in not only lower pricing for them, but also create a volume of energy that could be used to lower future energy costs for all customers. Therefore, the Companies focused on the 100 MW proposals.

Third, as stated in the Renewable RFP, the Companies preferred energy delivery beginning before January 1, 2022. This preference was driven by (i) what we had been hearing from potential Green Tariff Option #3 customers for a preference of renewable energy sooner rather than later, and (ii) a desire to mitigate uncertainties that increase with the passage of time regarding the availability of tax incentives for renewables, the market for solar RECs, and project development in general. Furthermore, entering into a contract with a 2021 in-service date did not preclude the Companies from seeking additional renewable generation. While a preference existed to begin receiving renewable energy earlier, the Companies were willing to delay the start date if there was a material savings for customers. Setting aside the NPVRR $/MWh metric and looking only at the absolute price that customers would pay each year, the [redacted] proposal to provide energy beginning in [redacted] was priced at [redacted] while waiting another year would have reduced the price by only $[redacted]/MWh to $[redacted], a savings of less than $[redacted] annually. Similarly, ibV's 100 MW, 20-year proposal to begin service in December 2021 was priced at $27.82 as compared to $[redacted] by waiting a year – [redacted] just $[redacted]/MWh or about $[redacted] annually. Therefore, with such a small savings potential, the Companies opted to focus on the earlier project start date of December 2021.

Finally, the decision between level and escalating contract energy prices focused on risk mitigation. While an escalating energy price would make the potential for fuel savings greater in the near term, it would place greater emphasis on the future escalation rates of coal and natural gas as well as the potential retirement dates for coal units. Also, as discussed in detail in Section 3.4.1, an escalating contract price potentially requires some level of REC prices throughout the 20-year contract term to create energy savings for customers. In essence, the escalating price structure shifts the economic risks to the back end of the contract. On the other hand, a level price structure greatly reduces long-term fuel price escalation and REC price risk and concentrates the risk in the early years of the contract where forecasts of coal and gas prices are likely more reliable and REC markets and pricing exists. Also, level pricing was believed to be more attractive to potential Green Tariff Option #3 customers since their economic analysis depends on their view of the Companies' future rates. For these reasons, the Companies focused on the level price proposals.

Comparing the 100 MW, 20-year, level priced starting in December 2021 proposals from ibV and [redacted], ibV's price was $27.82/MWh and [redacted] price was $[redacted]/MWh. Thus, the ibV proposal was economically the best proposal. Also, ibV had progressed its project development further than [redacted], which demonstrated a greater likelihood of project completion. For these reasons, the Companies entered contract negotiations with ibV that eventually resulted in the contract with Rhudes Creek Solar, LLC.

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Table 6 – Price Comparison for Finalist Proposals

Respondent	Nameplate Capacity (MW)	Start Year (Dec.)	Price ($/MWh) by Term	
			20 years	15 years
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
ibV	100	2021	27.82 level	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

3.4. 2020 Business Plan Update

The analysis that led to the Companies' decision to pursue a contract with ibV was based on assumptions from the Companies' 2019 Business Plan, which was developed in 2018. Because coal and natural gas price forecasts are lower in the Companies' 2020 Business Plan, the Companies evaluated ibV's proposal for a 100 MW power purchase agreement starting at the end of December 2021 ("ibV 100 MW PPA") based on these forecasts and other considerations. The following assumptions were included in this analysis.

- **Low, base, and high fuel prices.** The 2020 Business Plan fuel prices assumed in this analysis are shown in Table 7.[16] In all scenarios, fuel prices are assumed to escalate through the analysis period.
- **Zero and high CO_2 emissions prices.** The 2020 Business Plan included an assumption of zero CO_2 emissions prices. The CO_2 emissions price scenarios assumed in this analysis are shown in Table 7. The high CO_2 emissions price is based on the Synapse Energy Economics Spring 2016

[16] The low fuel price scenario was evaluated with low coal and natural gas prices, the base fuel price scenario was evaluated with base coal and natural gas prices, and the high fuel price scenario was evaluated with high coal and natural gas prices.

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National Carbon Dioxide Price Forecast Low Case and is the same as the forecast used by the Companies to prepare their 2018 Integrated Resource Plan that was filed with the Commission.[17, 18]

The Companies included the high CO_2 emissions price scenarios for illustrative purposes in the absence of actual CO_2 regulations that include emissions pricing. For the high CO_2 emissions price scenarios, the analysis did not consider any changes to the composition of the generating fleet that would likely be prudent in a high CO_2 emissions price scenario. This action likely results in a more favorable evaluation of the ibV 100 MW PPA because the avoided cost in a high CO_2 emissions price scenario that includes coal unit retirements would be lower than the case without retirements. In a high CO_2 emissions price environment, natural gas-fired generation or renewables would be expected to replace retiring coal-fired units and these units would dispatch at a lower marginal energy cost compared to the Companies' marginal coal-fired generation. Therefore, the results from the high CO_2 emissions price scenario should be viewed with caution but it is not surprising that solar energy is more attractive with CO_2 pricing.

- **Four levelized REC price scenarios.** The Companies evaluated the energy cost savings of the ibV 100 MW PPA under four levelized REC price scenarios – $0/REC, $[redacted]/REC, $[redacted]/REC, and $[redacted]/REC.
- **Unit life scenarios.** In the Companies' 2020 Business Plan, existing generating units are assumed to retire when they reach 65 years of age. A scenario in which existing generating units are assumed to retire when they reach 55 years of age was also included in this analysis. In both 55- and 65-year life scenarios, retired generating units are assumed to be replaced by 1x1 NGCC units (368 MW each) as needed to maintain the Companies' minimum target reserve margin. This 55-year life scenario makes the analysis more sensitive to future natural gas price forecasts than was the case in the previous phase of the analysis.
- **No modeled change to unit commitment.** Due to the intermittent nature of renewable generation and the size of the proposals being evaluated, the Companies assumed no change to the 2020 Business Plan's modeled commitment of existing units and no need for added renewable integration costs including possible transmission system upgrades.
- **Generation profile correlated to weather.** The hourly generation forecast for the ibV 100 MW PPA was developed by ibV using weather data reflecting the Companies' 2020 Business Plan's weather assumptions.
- **No off-system sales**. Generation for off-system sales is very small compared to native load energy requirements and highly uncertain due to market factors that are out of the Companies' control. Therefore, consistent the Companies' prior practice for making resource planning decisions, the potential impact to off-system sales was not considered in the analysis.

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[17] *See* Synapse's "Spring 2016 National Carbon Dioxide Price Forecast" (March 16, 2016) at http://www.synapse-energy.com/sites/default/files/2016-Synapse-CO2-Price-Forecast-66-008.pdf. Synapse's CO_2 emissions prices were presented in real 2015 dollars and for this analysis, have been escalated to nominal dollars at 1.8% annually.
[18] *The 2018 Integrated Resource Plan of Louisville Gas and Electric Company and Kentucky Utilities Company*, Case No. 2018-00348.

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Table 7 – Fuel and CO_2 Emissions Prices

	Natural Gas Prices (2020 Business Plan Henry Hub; Nominal $/MMBtu)			Coal Prices (2020 Business Plan Illinois Basin; FOB Mine; Nominal $/MMBtu)			CO_2 Emissions Prices (Nominal $/short ton)	
	Low	Base	High	Low	Base	High	Zero	High
2020	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	-
2021	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	-
2022	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	-
2023	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	-
2024	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	-
2025	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	-
2026	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	17.00
2027	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	18.17
2028	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	19.37
2029	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	20.62
2030	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	21.90
2031	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	23.23
2032	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	24.59
2033	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	26.00
2034	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	27.44
2035	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	28.94
2036	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	30.47
2037	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	32.05
2038	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	33.68
2039	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	35.36
2040	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	37.09
2041	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	38.87
2042	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	46.51
2043	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	48.56
2044	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	44.52
2045	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	46.51
2046	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	48.56
2047	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	50.67
2048	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	52.84
2049	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	55.08
2050	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	-	57.37

Table 8 summarizes the NPVRR in 2019 dollars and levelized NPVRR for the ibV 100 MW PPA assuming zero REC prices and over a range of fuel price, CO_2 emissions price, and unit life scenarios. Negative values indicate that a proposal would be expected to lower system energy costs for customers over the

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proposal's term.[19, 20] The contract is projected to have a favorable impact on revenue requirements in all high CO_2 emissions price scenarios as well as the high fuel price scenarios with zero CO_2 emissions prices. However, with zero REC prices, the contract is unfavorable in the low and base fuel price scenarios with zero CO_2 emissions prices. Lower fuel price forecasts from the 2020 Business Plan reduce the Companies' forecast of marginal energy costs and therefore the savings in energy costs associated with the ibV 100 MW PPA compared to the analysis performed using the 2019 Business Plan assumptions.

Table 8 – NPVRR for the ibV 100 MW PPA (Zero REC Prices, Negative values indicate savings and positive values indicate greater costs)

Pricing	CO_2 Emissions Price Scenario	Unit Life Scenario	NPVRR ($M; 2019 Dollars) Low Fuel	NPVRR ($M; 2019 Dollars) Base Fuel	NPVRR ($M; 2019 Dollars) High Fuel	Levelized NPVRR ($/MWh) Low Fuel	Levelized NPVRR ($/MWh) Base Fuel	Levelized NPVRR ($/MWh) High Fuel
Level	Zero	55-Year	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		65-Year	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	High	55-Year	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		65-Year	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Figure 2 shows annual nominal net revenue requirements for the ibV 100 MW PPA in the six zero CO_2 emissions price scenarios, assuming zero REC prices.[21] These charts show the year in which each scenario is expected to save energy costs without REC sales. In the High Fuel cases, the crossover year is around 2027, regardless of the unit life scenario. However, the crossover year is delayed until the early 2030s in the Base fuel scenario, again with little differences between the unit life scenarios. Not surprising, it is only in the Low fuel scenario where at the crossover year is delayed until the late 2030s or, in the 55-year Unit Life scenario, savings never occurs because system costs decrease with low natural gas prices and the replacement of coal with NGCC generation. This sensitivity to future fuel prices is why the ability to sell RECs is an important aspect of the economics of the Solar Power Contract.

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[19] Because the level of Green Tariff Option #3 participation was unknown during this phase of the analysis, the NPVRR values reflect the modeled costs and benefits for 100% of the proposals' energy. With 75% of the PPA costs, RECs, and energy allocated to Green Tariff Option #3 participants and 25% allocated to all customers, the NPVRR figures could be scaled to 25% to reflect the NPVRR to all customers. Green Tariff Option #3 participation does not directionally change the economic favorability of the PPA for all customers or the levelized NPVRR values.
[20] The average annual energy cost savings for each scenario are shown in Section 6.4.
[21] Figure 2 focuses only on the zero CO_2 emissions price scenarios because the PPA's NPVRR is favorable in all high CO_2 emissions price scenarios.

Figure 2 - Annual Nominal Net Revenue Requirements by Fuel Price Scenario, Unit Life Scenario (Level Pricing; Zero CO_2 Emissions Prices; Zero REC Prices)

[redacted]

3.4.1. REC Price Considerations

Because REC prices are expected to be positive in the near-term, the Companies considered the market for RECs in choosing between the level and escalating energy pricing options. REC prices are subject to the supply and demand for RECs in states with renewable energy mandates as well as changes in the laws and regulations that govern these mandates. The Companies have gained experience with selling solar RECs primarily into the Ohio market from renewable energy generated by the Brown Solar station since 2017. Figure 3 shows the prices at which the Companies have sold RECs as well as the current market prices for RECs in recent and upcoming years.[22] The current market price for 2021 RECs is $6.88/REC.

[22] The market REC prices reflect the average of the bid and ask prices for Ohio Certified Solar RECs as of October 25, 2019.

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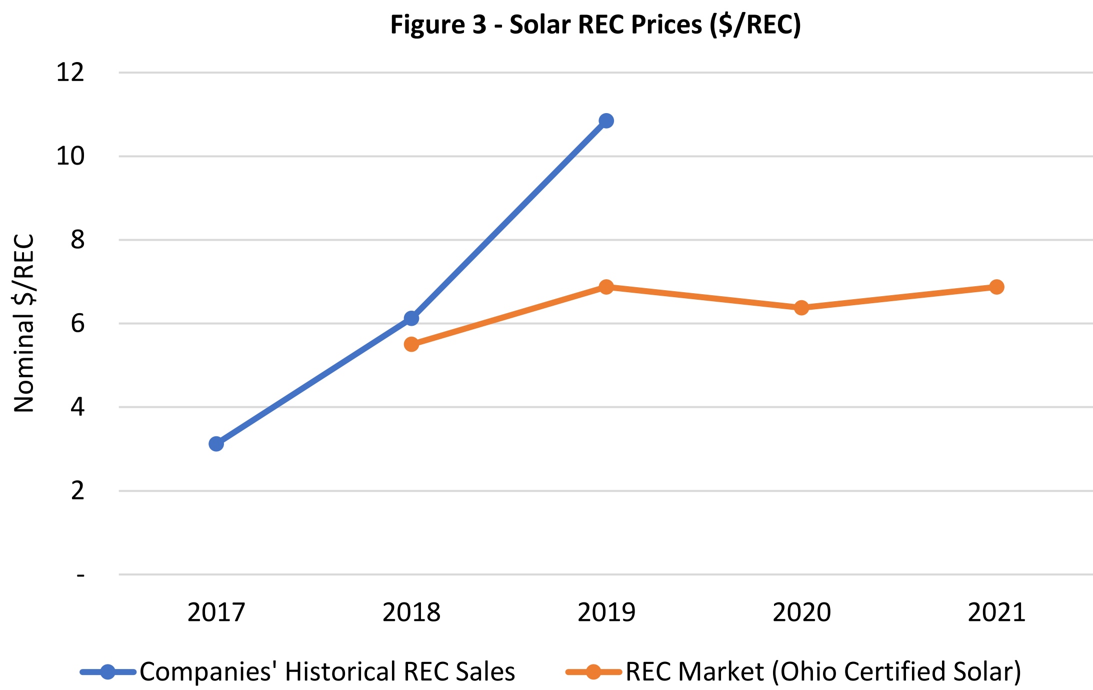

The Companies computed REC prices for each pricing option and for each year of the ibV 100 MW PPA that would cause the contract to have at least a neutral impact on annual revenue requirements. The analysis focused only on the twelve zero CO_2 emissions price scenarios because the contract's NPVRR is favorable in all high CO_2 emissions price scenarios. Table 9 summarizes the results of this analysis. In years where the contract already has a favorable impact on annual revenue requirements, the "breakeven" REC price is zero. While the laws regarding RECs are continually subject to change and there is no liquid market for RECs to cover the contract term, the breakeven REC prices are lower than the current market price for 2021 RECs ($6.88/REC) for both pricing options in all years for all scenarios except the last five years of the low fuel price, 55-year unit life scenario for the escalating pricing option. The breakeven REC prices range from zero to $[redacted]/REC with a level energy price and from zero to $[redacted]/REC with an escalating energy price. However, with an escalating energy price, the breakeven REC prices in the low and base fuel price scenarios are much higher in the latter half of the contract term when the market price for RECs is more uncertain. The Companies chose the level pricing option in part to mitigate the risk associated with long-term REC pricing, as discussed in Section 3.3.

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Table 9 – Breakeven REC Prices for the ibV 100 MW PPA (\$/REC; Zero CO_2 Emissions Prices)

	65-Year Unit Life						55-Year Unit Life					
	Level			Escalating			Level			Escalating		
Year	Low Fuel	Base Fuel	High Fuel	Low Fuel	Base Fuel	High Fuel	Low Fuel	Base Fuel	High Fuel	Low Fuel	Base Fuel	High Fuel
2022	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2023	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2024	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2025	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2026	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2027	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2028	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2029	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2030	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2031	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2032	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2033	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2034	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2035	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2036	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2037	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2038	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2039	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2040	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2041	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

3.4.2. Source of Energy Displaced by the ibV Solar Power Contract

All energy produced by the ibV 100 MW Solar Power Contract is assumed to displace energy from the Companies' coal and natural gas resources. For each of the twelve scenarios evaluated, Table 10 contains the percentage of the contract's energy that displaces coal generation; Table 11 contains total CO_2 emissions reductions. During the first half of the contract term, almost all of the displaced energy is from coal generation. This is because, among baseload units, the marginal energy cost of coal generation is generally higher than that of NGCC generation, which has a much higher efficiency. Compared to peaking units, coal generation has a greater opportunity to be displaced as some level of coal generation is online in every hour versus gas-fired peaking generation, which is only in service in limited periods of high demand. Even when gas-fired peaking generation is in service, its inherent efficiency in generating incremental energy results in a marginal energy cost advantage compared to coal, causing coal generation to be more likely to be displaced. However, as coal units are replaced by natural gas resources and as natural gas prices increase, the percentage of the contract's energy that displaces coal generation decreases and the percentage of the contract's energy that displaces natural gas generation increases.

Table 10 – Percent Energy from the ibV 100 MW Solar Power Contract that Displaces Coal Generation

Fuel	CO_2	Life	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	Total
Low	Zero	55-yr	98%	98%	97%	95%	88%	88%	84%	83%	83%	82%	75%	60%	57%	63%	49%	22%	20%	9%	6%	5%	64%
Low	Zero	65-yr	98%	99%	97%	94%	92%	90%	90%	92%	90%	91%	90%	89%	88%	85%	84%	84%	85%	78%	78%	80%	89%
Low	High	55-yr	98%	98%	97%	95%	95%	84%	81%	52%	53%	51%	28%	15%	14%	15%	7%	2%	2%	0%	0%	0%	45%
Low	High	65-yr	98%	99%	97%	94%	95%	92%	89%	83%	82%	81%	81%	79%	76%	77%	75%	60%	56%	31%	31%	22%	75%
Base	Zero	55-yr	93%	91%	91%	91%	81%	83%	80%	83%	80%	77%	77%	70%	61%	67%	45%	18%	18%	5%	4%	4%	62%
Base	Zero	65-yr	93%	91%	91%	91%	89%	87%	87%	89%	89%	88%	88%	85%	84%	82%	80%	80%	81%	74%	73%	73%	85%
Base	High	55-yr	93%	91%	91%	91%	88%	87%	86%	65%	62%	62%	45%	31%	28%	31%	19%	8%	7%	2%	1%	1%	50%
Base	High	65-yr	93%	91%	91%	91%	88%	90%	91%	91%	90%	90%	91%	91%	90%	91%	90%	87%	86%	62%	61%	48%	85%
High	Zero	55-yr	86%	86%	85%	88%	77%	77%	72%	54%	45%	42%	27%	19%	17%	16%	7%	3%	4%	0%	0%	0%	41%
High	Zero	65-yr	86%	87%	87%	86%	86%	83%	82%	85%	84%	82%	81%	80%	76%	74%	68%	61%	61%	34%	33%	28%	73%
High	High	55-yr	86%	86%	85%	88%	84%	84%	84%	83%	82%	81%	69%	56%	55%	59%	41%	20%	19%	7%	6%	5%	60%
High	High	65-yr	86%	87%	87%	86%	87%	86%	88%	92%	91%	92%	91%	91%	90%	89%	88%	88%	87%	80%	81%	77%	87%

Table 11 – CO_2 Emissions Reductions from the ibV 100 MW Solar Power Contract (Thousand Tons)

Fuel	CO_2	Life	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	Total
Low	Zero	55-yr	230	237	226	237	211	221	210	211	198	202	187	156	156	168	140	99	101	80	81	75	3,426
Low	Zero	65-yr	230	237	226	236	216	226	218	230	213	219	219	208	212	215	206	195	206	183	194	179	4,268
Low	High	55-yr	230	237	226	237	212	210	200	171	160	162	131	107	109	114	95	83	87	73	77	72	2,993
Low	High	65-yr	230	237	226	236	211	220	210	213	198	203	203	191	193	199	190	165	170	132	139	119	3,888
Base	Zero	55-yr	223	228	219	231	202	215	204	213	196	197	193	173	165	178	137	94	99	75	78	74	3,395
Base	Zero	65-yr	223	228	219	231	212	222	213	226	211	215	217	203	208	211	200	189	201	179	187	174	4,170
Base	High	55-yr	223	228	219	231	207	215	207	184	170	173	148	122	123	130	107	87	91	75	78	73	3,090
Base	High	65-yr	223	228	219	231	207	221	214	223	209	214	216	206	210	219	209	193	203	162	170	143	4,118
High	Zero	55-yr	214	220	210	227	197	207	193	169	145	146	119	101	101	103	83	73	78	67	72	67	2,789
High	Zero	65-yr	214	221	212	224	208	217	207	220	204	208	206	196	196	198	182	163	173	123	130	112	3,816
High	High	55-yr	214	220	210	227	205	215	208	210	194	199	176	149	151	161	130	95	99	77	80	75	3,297
High	High	65-yr	214	221	212	224	210	220	215	229	213	220	220	210	214	220	209	197	208	183	195	174	4,210

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4. Final Recommendation

This analysis demonstrates that the 100 MW, 20-year, level priced Solar Power Contract with Rhudes Creek Solar, LLC is most favorable for supporting interest in Green Tariff Option #3 and potentially lowering system energy costs for customers. As this analysis was being performed and after the Commission approved the Companies' application for the Green Tariff Option #3, the Companies met with industrial customers who had expressed interest in procuring renewable energy. As a result of these discussions, 75 percent of the Solar Power Contract's costs, RECs, and energy will be allocated to Green Tariff Option #3 participants and 25 percent will be allocated to all customers.

The NPVRR for the portion of the Solar Power Contract allocated to all customers (25 percent) is summarized in Table 12 for the scenarios evaluated previously as well as for four levelized REC price scenarios.[23] Over all the scenarios evaluated, the NPVRR in 2019 dollars ranges from [redacted] with an average of [redacted]. Only 6 of the 48 cases result in a slight [redacted] in NPVRR with only 2 cases [redacted] over the 20-year analysis period. In the 6 cases where the Solar Power Contract [redacted] NPVRR, the average [redacted], while in the 42 cases where NPVRR [redacted], the average [redacted]n is [redacted]. Excluding the 24 high CO_2 emissions price cases, the overall average of the 24 zero CO_2 emissions price cases is [redacted]. In the 18 zero CO_2 emissions price cases that [redacted] NPVRR, the average [redacted], which compares favorably to the [redacted] in the 6 cases where NVPRR [redacted]. In the scenarios with low fuel prices and zero CO_2 emissions prices, the NPVRR is favorable when the levelized REC price is $[redacted]/REC or higher. In the scenarios with base fuel prices and zero CO_2 emissions prices, the NPVRR is favorable when the levelized REC price is [redacted]REC or higher. Both of these prices are well below the over $10/REC average price the Companies achieved in 2019 selling Brown solar RECs and the current forward market for RECs, thus indicating a relatively low risk of achieving the necessary pricing at this time.

[23] Negative NPVRR values indicate that a proposal would be expected to lower system energy costs for customers over the proposal's term.

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Table 12 – NPVRR for Portion of the ibV 100 MW Solar Power Contract Allocated to All Customers ($M; 2019 Dollars; Negative values indicate savings and positive values indicate greater costs)

Fuel Price Scenario	CO_2 Emissions Price Scenario	Unit Life Scenario	Levelized REC Price			
			$0/REC	$[redacted]/REC	$[redacted]/REC	$[redacted]/REC
Low	Zero	55-Year	[redacted]	[redacted]	[redacted]	[redacted]
		65-Year	[redacted]	[redacted]	[redacted]	[redacted]
	High	55-Year	[redacted]	[redacted]	[redacted]	[redacted]
		65-Year	[redacted]	[redacted]	[redacted]	[redacted]
Base	Zero	55-Year	[redacted]	[redacted]	[redacted]	[redacted]
		65-Year	[redacted]	[redacted]	[redacted]	[redacted]
	High	55-Year	[redacted]	[redacted]	[redacted]	[redacted]
		65-Year	[redacted]	[redacted]	[redacted]	[redacted]
High	Zero	55-Year	[redacted]	[redacted]	[redacted]	[redacted]
		65-Year	[redacted]	[redacted]	[redacted]	[redacted]
	High	55-Year	[redacted]	[redacted]	[redacted]	[redacted]
		65-Year	[redacted]	[redacted]	[redacted]	[redacted]

Figure 4 shows annual nominal net revenue requirements in each of the twelve scenarios, assuming zero REC prices, for the portion of the Solar Power Contract allocated to all customers. Over all the scenarios evaluated, annual net revenue requirements range from [redacted]. In the zero CO_2 emissions price scenarios (solid lines), annual net revenue requirements range from [redacted]. For reference, the Companies' annual fuel expense is approximately $800 million.

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Figure 4 - Annual Nominal Net Revenue Requirements for 25 Percent Allocated to All Customers by Fuel Price Scenario, CO_2 Emissions Price Scenario, Unit Life Scenario (Level Pricing; Zero REC Prices)

[redacted]

As discussed in Section 3.4.1, while the laws regarding RECs are continually subject to change and there is no liquid market for RECs to cover the contract term, projected annual net revenue requirements are favorable in all years for all scenarios if the current market price for 2021 RECs ($6.88/REC) persists for the entire 20-year term. Furthermore, in the 65-year unit life scenarios, the Solar Power Contract is favorable in the base and low fuel price scenarios, respectively, if the current market price for 2021 RECs

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($6.88/REC) persists through only [redacted] or [redacted] and then becomes $0/REC for the remainder of the contract term. Similarly, in the 55-year unit life scenarios, the Solar Power Contract is favorable if current market REC prices persist through [redacted] or [redacted] and then becomes $0/REC for the remainder of the contract term.

In summary, the Solar Power Contract provides the following benefits:

1. reduces future energy costs across a broad range of possible futures and provides a hedge against the risk of rising coal and natural gas prices;
2. does not result in a material increase in future energy costs should coal and natural gas prices remain relatively low over the next 20+ years;
3. almost certainly reduces energy costs with relatively modest REC pricing;
4. reduces future compliance costs should broad CO_2 regulations be implemented; and
5. provides a low-cost renewable resource to meet the needs of two large Green Tariff Option #3 customers.

Once this renewable resource is in-service, the Companies anticipate exploring additional renewable resources to further reduce system energy costs. The lessons from the Renewable RFP, the subsequent analysis, contract negotiations, and implementation will provide valuable insights for these future evaluations. In addition, this project will be the Companies' third utility-scale solar facility and one of the largest solar projects in Kentucky. It will allow the Companies to better understand the integration of a large solar facility into the existing generation and transmission systems and to further study the impact of geographical diversity on the coincident intermittence of multiple renewable resources.

5. Solar Power Contract Allocation

The Solar Power Contract energy, RECs, and associated costs will be allocated 25 percent to all LG&E and KU customers collectively and 75 percent to the two Green Tariff Option #3 participants (50 percent to Toyota and 25 percent to Dow). The Companies propose that the 25 percent allocation for all customers be assigned 39 percent to LG&E and 61 percent to KU.[24] This assignment was calculated by allocating the Solar Power Contract's forecasted generation in each hour based on each company's forecasted share of native load energy requirements for the hour. Each company's proposed assignment equals its allocated share of the total solar energy generated over the term of the Solar Power Contract. Because Toyota and Dow are KU customers, the overall allocation of the Solar Power Contract is 9.75 percent to LG&E and 90.25 percent to KU. Table 13 summarizes these allocations.

[24] This matches the existing ownership allocation of Brown Solar, for which the same allocation method was used.

Table 13 – Solar Power Contract Allocation Summary

	All Customers	Green Tariff Option #3		Overall
		Toyota	Dow	
Total Solar Power Contract Allocation	25%	50%	25%	100%
Utility Assignment				
LG&E	39%	--	--	
KU	61%	100%	100%	
Utility Allocation				
LG&E	9.75%	--	--	9.75%
KU	15.25%	50%	25%	90.25%

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6. Appendix

6.1. All Proposals Received

	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
3	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
4	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
5	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
6	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
7	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
8	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
9	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
10	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
12	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
13	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
14	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
15	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
16	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
17	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
18	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
19	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
20	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
21	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
22	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
23	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
24	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
25	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
26	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
27	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
28	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
29	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
30	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
31	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
32	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
33	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
34	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
35	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
36	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
37	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
38	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
39	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
40	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
41	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
42	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]%
43	ibV Energy Partners	Hardin County, KY	Solar	20	100	2021	[redacted]	27.82	[redacted]	[redacted]
44	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
45	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
46	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
47	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
48	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]%
49	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[25] [redacted] and [redacted] updated their initial responses with new pricing. Updated prices are shown.

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	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
50	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
51	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
52	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
53	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
54	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
55	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
56	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
57	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
58	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
59	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
60	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
61	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
62	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
63	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
64	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
65	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
66	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
67	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
68	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
69	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
70	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
71	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
72	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
73	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
74	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
75	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
76	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
77	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
78	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
79	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
80	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
81	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
82	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
83	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
84	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
85	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
86	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
87	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
88	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
89	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
90	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
91	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
92	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
93	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
94	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

6.2. Screening Analysis Results – All Initial Proposals

Category	Group	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Technology Type	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

Category	Group	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Technology Type	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

Category	Group	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Technology Type	Solar	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Wind	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	Battery	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Nameplate Capacity (MW)	0-25	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	26-50	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

Category	Group	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Nameplate Capacity (MW)	26-50	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	51-75	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	76-100	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

Category	Group	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Nameplate Capacity (MW)	76-100	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	101-125	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	126-150	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	151-175	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	176-200	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

Category	Group	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Nameplate Capacity (MW)	176-200	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Contact Term (Years)	10	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	12	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	15	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

Category	Group	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Contact Term (Years)	15	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
	20	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

Category	Group	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Contact Term (Years)	20	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

Category	Group	Respondent	Location	Tech-nology	Term (Years)	Nameplate Capacity (MW)	Start Year (Dec.)	Capacity Factor	Level Price ($/MWh)	Escalating Price ($/MWh)	Price Escalation Rate
Contact Term (Years)	30	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Other <$30/MWh		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

6.3. Average Annual Energy Cost Savings – Detailed Production Cost Analysis

The Companies projected hourly energy cost savings from each screened proposal in each of the natural gas price scenarios by ranking the decremental costs of each MW of each unit committed in each hour, and then summing the highest decremental costs representative of the expected renewable generation for each proposal in that hour. Dividing the sum of these decremental costs by the expected annual generation results in average annual energy cost savings. Table 14 shows average annual energy cost savings for a 100 MW solar proposal from the detailed production cost analysis using the Companies' 2019 Business Plan assumptions. The values in Table 14 were developed using the generation profile for the [redacted] proposal. This proposal was the most favorable proposal at this phase of the analysis and its generation profile is comparable to other 100 MW solar proposals.

Table 14 - Average Annual Energy Cost Savings for a 100 MW Solar Proposal by Natural Gas Price Scenario; 2019 Business Plan (Nominal $/MWh)

Gas	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Low	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Base	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

CONFIDENTIAL INFORMATION REDACTED

6.4. Average Annual Energy Cost Savings – 2020 Business Plan Update

Table 15 shows average annual energy cost savings for the 100 MW ibV proposal by fuel, CO_2 emissions price scenario from the Companies' 2020 Business Plan update.

Table 15 - Average Annual Energy Cost Savings for the ibV 100 MW PPA by Fuel, CO_2 Emissions Price Scenario; 2020 Business Plan (Nominal $/MWh)

Fuel	CO_2	Life	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
Low	Zero	55	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Low	Zero	65	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Low	High	55	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Low	High	65	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Base	Zero	55	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Base	Zero	65	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Base	High	55	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Base	High	65	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High	Zero	55	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High	Zero	65	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High	High	55	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
High	High	65	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

6.5. Wind and Solar Generation Profiles

Figure 5 - Solar Hourly Mean Capacity Factor by Month

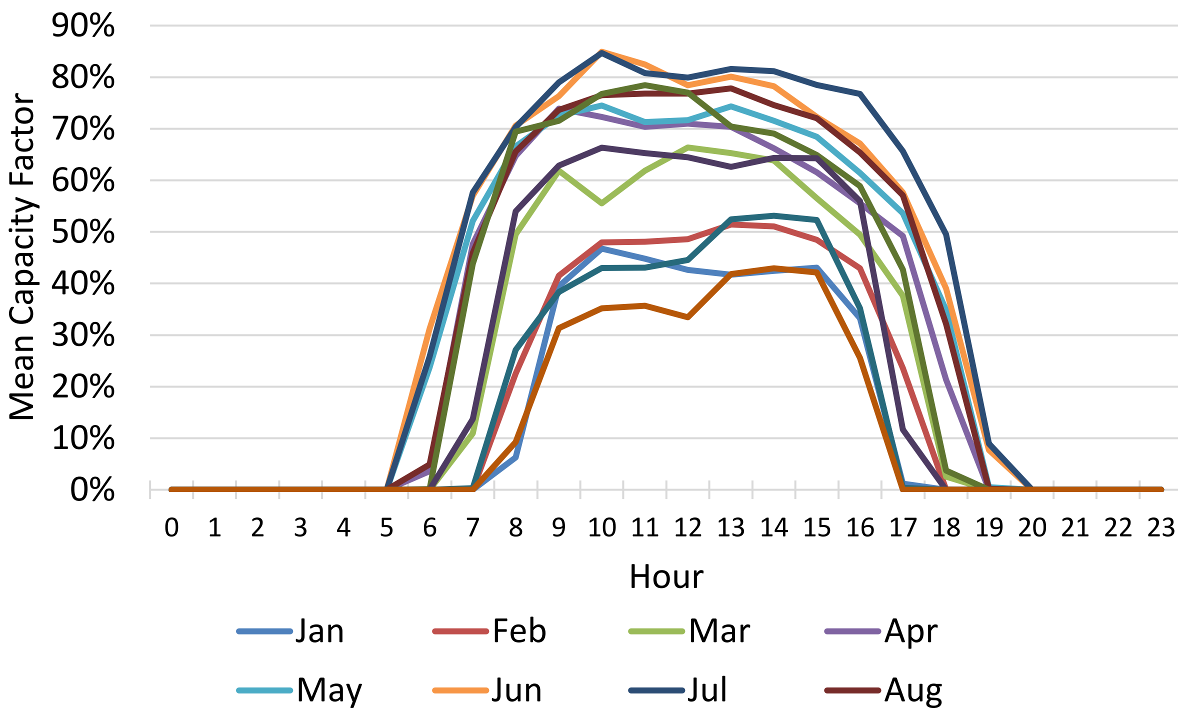

Figure 6 - Wind Hourly Mean Capacity Factor by Month

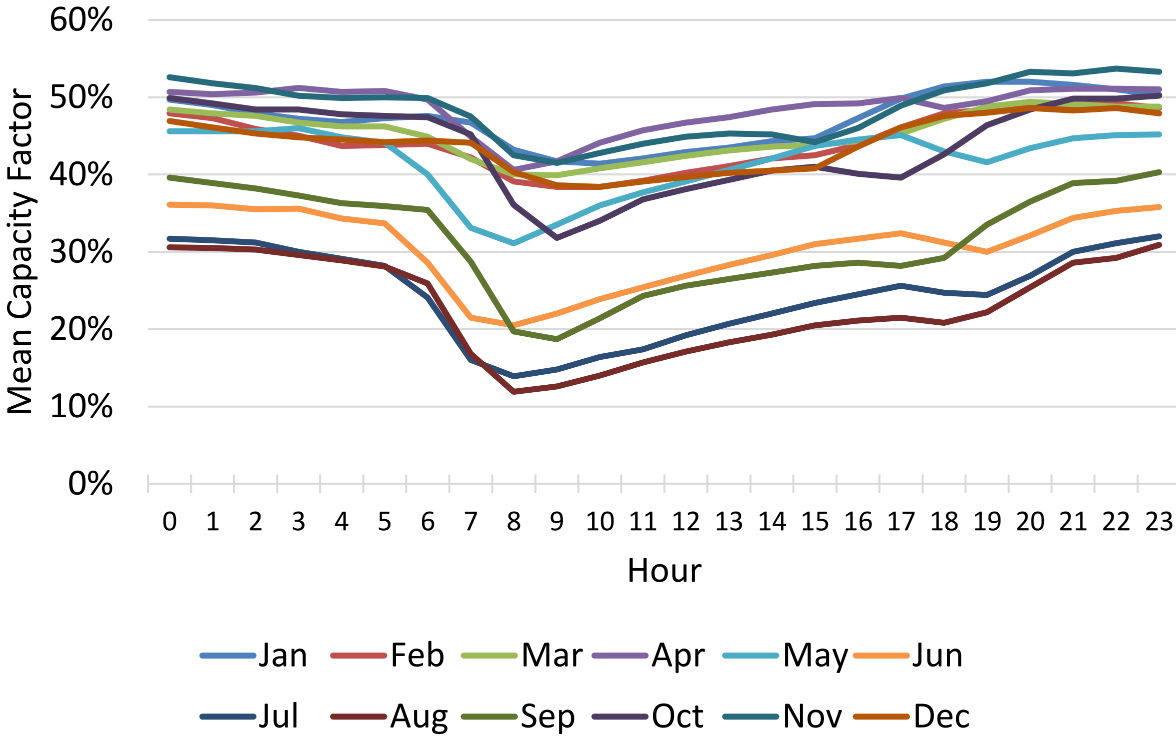

Figure 7 - Solar and Wind Capacity Factor by Month