

**Power Supply**  
**Request for Proposal 2018-C1**  
**Evaluation Report**

**April 4, 2019**

## **Background**

In November of 2017, City Council approved retaining Burns & McDonnell to provide services for the formation of an Independence Power & Light (“IPL”) Energy Master Plan. The goal was to provide planning assistance for both short-term and long-term power supply needs. IPL requested that Burns & McDonnell assess the options that may be available to IPL for providing reliable, low cost, and environmentally compliant power to its customers.

The results of the IPL Master Plan were presented to City Council on August 27, 2018 and the final report was issued on September 20, 2018. The Master Plan was presented to the Public Utility Advisory Board (“PUAB”) on September 20, 2018. The following recommendations were presented for consideration:

1. The Blue Valley units have reached the end of their technical and economic useful lives.
2. IPL should consider retiring the units from service as soon as practical.
3. IPL should continue to operate and maintain the combustion turbines owned by IPL as they are low cost resources for providing capacity and provide enhanced reliability to IPL’s system. The value of the combustion turbines to the overall power supply portfolio should continue to be evaluated within future energy master planning efforts.
4. IPL should issue a power supply request for proposals (“RFP”) soliciting other utilities and power providers to submit offers for short-term contracts, long-term contracts, and/or ownership interests for capacity and energy. The RFP should focus on resources that provide capacity for IPL to meet its capacity obligations, with less focus on energy.
5. Based on the results of the RFP, IPL should choose one or more options that provide IPL the flexibility to adjust to future electric industry market conditions, such as demand response, energy efficiency, and energy storage. Securing large or long-term resources may be detrimental to providing IPL the flexibility it needs to adapt to future conditions. After the proposals have been evaluated, IPL will be able to select the best mix of capacity resources to position the utility for future success.
6. On-system generation provides IPL increased reliability and protection from wholesale price volatility due to transmission congestion. The combustion turbines will eventually reach the end of their useful lives. IPL should continue to evaluate the combustion turbine sites for eventual replacement and repurposing with new generation resources in the future.
7. The value of repurposing the combustion turbine sites with new generation should continue to be evaluated within future energy master planning efforts.

On October 9, 2018, PUAB approved a motion to endorse a Power Supply RFP. Shortly after this motion, IPL retained Burns & McDonnell to assist in the development and evaluation of the Power Supply RFP.

## **Request for Proposal**

On November 15, 2018, an RFP for up to 70 megawatts (“MW”) of capacity only or capacity and energy was issued.

The RFP was posted as follows:

- 1) Posted on the City’s website.
- 2) Notification was provided to 205 potential companies by Public Purchase, the City’s internet-based, e-procurement system, of which 84 downloaded the bid documents.

The RFP requested proposals for up to 70 MW of accredited capacity only or capacity and energy beginning June 1, 2020. It was requested that the proposals meet capacity requirements following the potential retirement of Blue Valley Generation Station. The RFP indicated that IPL would consider multiple proposal structures including power purchase agreements (“PPA”), asset purchases, asset leases, and unit participation options.

General requirements for this RFP were as follows.

- Capacity located within the Southwest Power Pool (“SPP”) must be accredited and determined to be deliverable to the SPP footprint in the SPP’s annual deliverability study
- Capacity located externally to the SPP must include firm transmission to the SPP footprint or IPL’s load
- Capacity only or capacity and energy beginning June 1, 2020 as provided below for a period of one to twenty years
- Proposals must be for a minimum of 10 MW of accredited SPP capacity
- IPL will not accept proposals for non-dispatchable resources, energy efficiency, or demand side management at this time

All proposals were to remain effective through June 30, 2019 or until negotiations are complete, whichever occurs first unless otherwise agreed upon.

IPL projected the need for the following quantities of accredited SPP capacity from 2020-2039 as shown below:

**Table 1 – IPL Projected Capacity**

<b>Year</b>	<b>Capacity (MW)</b>
2020	46
2021	47
2022	48
2023	49
2024	51
2025	52
2026	53
2027	54
2028	55
2029	57
2030	58
2031	59
2032	60
2033	61
2034	63
2035	64
2036	65
2037	66
2038	68
2039	69

The Evaluation Criteria listed below was provided within the RFP and respondents were informed that they would be evaluated based upon the content of their submission in accordance with the stated criteria.

Proposal Quantitative Evaluation

The quantitative evaluation would be primarily based on a comparison of each proposal’s cost to enable IPL to meet SPP’s resource adequacy requirement.

Proposal Qualitative Evaluation

In evaluating proposals, the following qualitative criteria would be considered, as applicable.

- Site Location and Site-specific characteristics
- Fuel supply plan and transportation arrangements
- Transmission Interconnection and deliverability
- Respondent’s Experience as it relates to utility-scale power generation
- Environmental Considerations
- Financial Considerations including:
  - price certainty, price volatility, and risk of price increases
  - Respondent’s or Guarantor’s financial condition and creditworthiness
- Project Schedule

- Operating Flexibility
- Maintenance Requirements
- Overall Proposal Requirements including:
  - Asset purchases and unit participation proposals should be for assets that have a remaining economic life of at least 20 years
  - Other owners and dispatch rights/preference, allowance for multiple offers into SPP
  - Other purchase options
  - Operating history, age, and remaining life
  - Capacity size options/limits/flexibility and future option to expand
  - Overall completeness, clarity, and quality of the Proposal
  - Compliance of proposals with the specifications and requirements described in the RFP
  - Other data as may be requested prior to commencing further discussions

On January 15, 2019, the RFP closed, and the following companies presented proposals:

- Able Grid Energy Solutions
  - On-system battery storage
  - Short and long-term capacity only PPAs
- Dogwood Energy
  - Combined cycle gas turbine (“CCGT”) purchase offer<sup>1</sup>
- Morgan Stanley Capital Group
  - Short-term capacity and SPP South Hub energy PPA
- NextEra Energy Resources
  - Short and long-term capacity only PPAs
  - On-system battery storage long-term PPA
  - On-system reciprocating engine purchase offers
- Oneta Power
  - Short and long-term capacity only PPAs
  - Short and long-term capacity and CCGT energy PPAs<sup>2</sup>
- Tenaska Power Services
  - Short-term capacity only PPA
  - Short-term capacity and simple cycle gas turbine (“SCGT”) energy PPA
- The City of Lincoln, NE
  - Short-term capacity only PPA

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<sup>1</sup> IPL already owns a 75 MW share of the 610 MW Dogwood facility. Dogwood was placed in service in 2002.

<sup>2</sup> The Oneta facility has a total capacity of 1,133 MW. Oneta was placed in service in 2002.

The map below displays where each proposal's resource was geographically located in relation to Independence, MO (designated by the blue star).

**Figure 1 – Proposal Map**



### **Short List Evaluation**

An Evaluation Committee was formed and consisted of the following members:

- City of Independence Assistant City Manager/Director of Utilities
- Power & Light Department General Manager
- Power & Light Department Power Production Manager
- Power & Light Department Utility Project Development Manager
- Power & Light Department System Operations Manager
- Power & Light Department Acting Utility Finance Manager
- Power & Light Department Energy Markets Coordinator

The Evaluation Committee had an initial meeting to review the proposals and determine the Short List evaluation process. Burns & McDonnell was engaged to review the initial offers and provide an initial quantitative economic analysis along with a qualitative analysis summary for each respondent. During the evaluation process, Burns & McDonnell developed a list of several questions and clarifications for each respondent in order to better define their proposals. Respondents that offered ownership contracts or PPAs that included energy were also asked additional questions in order to better understand the revenue potential of each offer. The tables below summarize the initial analysis of each respondent.

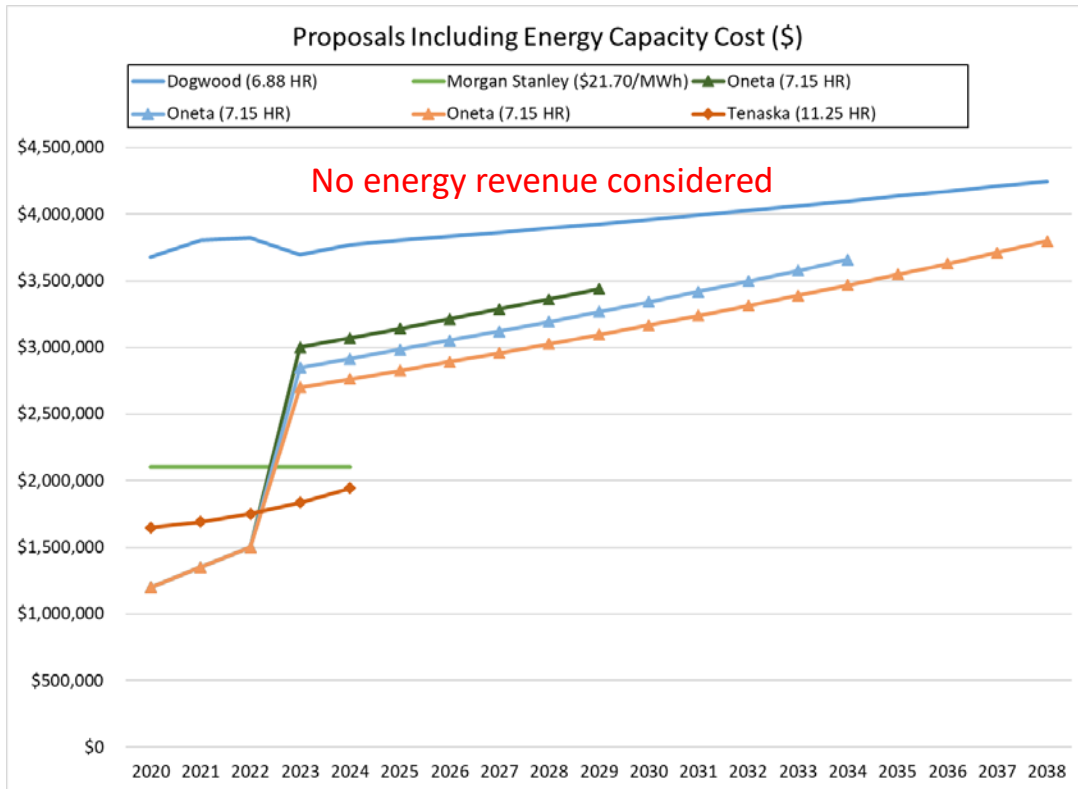
The proposal summary table includes high-level details of each RFP response. This table includes the location of the resource, products that are included (SPP accredited capacity only or SPP accredited capacity and energy), quantity of capacity in megawatts, term in years, capacity pricing (including any debt service payment and annual fixed charges), and energy pricing details contained within each proposal.

**Table 2 – Proposal Summary**

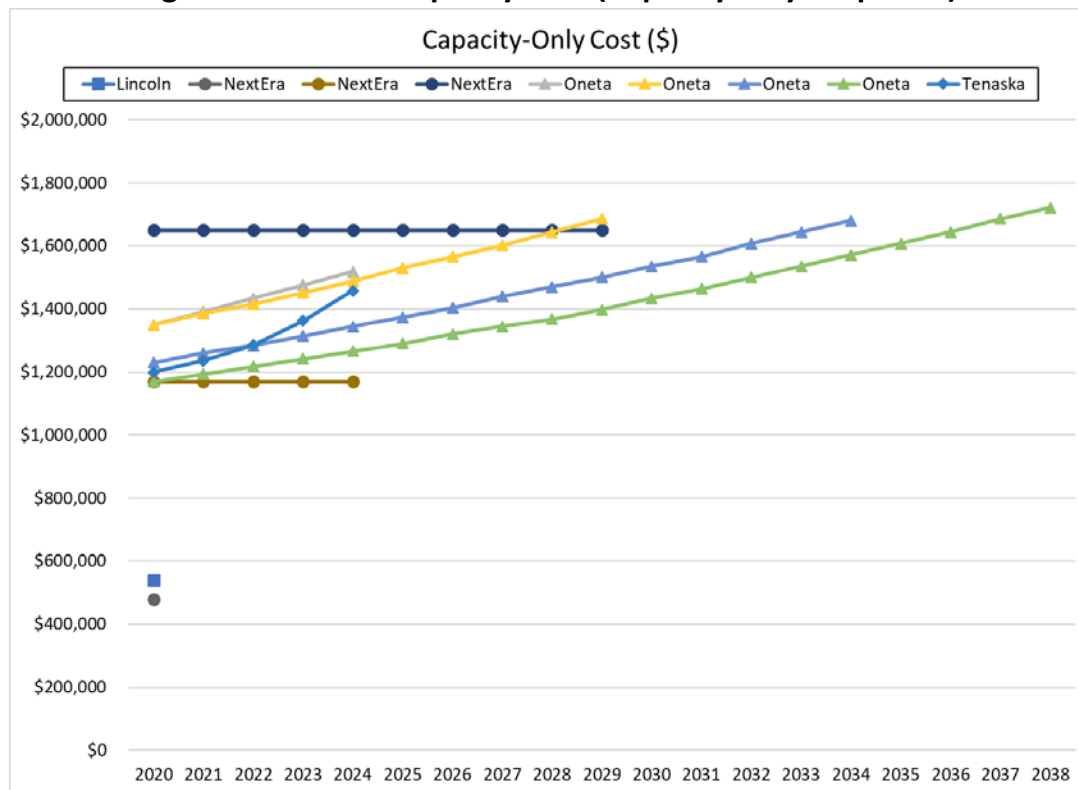
Proposals	Location	Product(s)	Size (MW)	Term	Capacity Pricing (\$/kW-year)	Energy Pricing	Notes	
<b>Dogwood Purchase</b>	Pleasant Hill, MO	SPP Capacity and Energy	50-70	Life	\$44	\$1.40/MWh + \$2,618/start + 6.88 MMBtu/MWh * (\$Southern Star/MMBtu + \$0.17/MMBtu)	\$525/kW	
<b>Able Grid Storage PPA</b>	Blue Valley 161 kV Substation	SPP Capacity Only	12.5	2021 - 2040	\$100	N/A	Also offered 5 and 10-year terms at slightly higher cost	
				2022 - 2041	\$80			
				2023 - 2042	\$64			
			25	2021 - 2040	\$102			
				2022 - 2041	\$88			
				2023 - 2042	\$77			
50	2021 - 2040	\$129						
	2022 - 2041	\$117						
	2023 - 2042	\$108						
<b>NextEra PPA</b>	SPP	SPP Capacity Only	25 - 50	2020	\$10	N/A	Capacity sourced from renewable resources	
				2020 - 2024	\$23			
				2020 - 2029	\$33			
<b>NextEra 3x0 Recips Purchase + Storage PPA</b>	Blue Valley 161 kV Substation	SPP Capacity and Energy (Paper Capacity 2020-2021)	54	2022 +	\$172	\$7.18/MWh + 8.65 MMBtu/MWh * (\$Southern Star/MMBtu + \$Spire/MMBtu)	Recips \$1,996/kW	
			15	2025 - 2044	\$122	\$18.41/MWh	Storage	
<b>NextEra 4x0 Recips Purchase</b>			73	2022 +	\$157	\$7.18/MWh + 8.65 MMBtu/MWh * (\$Southern Star/MMBtu + \$Spire/MMBtu)	Recips \$1,807/kW	
<b>The City of Lincoln, NE PPA</b>	Lincoln, NE	SPP Capacity Only	50	2020	\$11	N/A		
			13	2021	\$15			
			3	2022	\$17			
<b>Morgan Stanley PPA</b>	SPP South Hub	SPP Capacity and Energy	25-50	2020 - 2024	\$42	\$21.70/MWh	7x24 Must Take Energy	
			25-50	2020 - 2029	\$132	\$23.00/MWh		
			25-50	2020 - 2034	\$132	\$24.25/MWh		
<b>Oneta Power PPA</b>	Coweta, OK	SPP Capacity and "Look-Back" Energy	50 - 70	2020 - 2029	\$24 - \$69	\$1.05/MWh + \$2,522/start + 7.15 MMBtu/MWh * (\$ Panhandle/MMBtu + \$0.48/MMBtu)	Years 1-3 Capacity Only	
				2020 - 2034	\$24 - \$73			
				2020 - 2039	\$24 - \$78			
		SPP Capacity Only		2020 - 2024	\$27 - \$30	N/A		
				2020 - 2029	\$27 - \$34			
				2020 - 2034	\$25 - \$34			
			50	2020 - 2024	\$24 - \$29	N/A		
				2020 - 2024	\$33 - \$39			11.25 MMBtu/MWh * (\$ Henry Hub/MMBtu + \$0.15/MMBtu)

For comparative purposes, the annual cost for 50 MW of capacity was also calculated for each offer and shown in the tables that follow. These costs include debt service payments (for ownership) and any other annual fixed charges that were submitted with each proposal. For offers that consist of capacity and energy, no projected energy market revenues are included. Energy market revenues can vary widely by year, so what is shown is the projected annual cost IPL would pay for each offer without subtracting any profits from the resource being dispatched in the SPP wholesale energy market. Due to having much higher costs than the other offers received, NextEra reciprocating engine and energy storage as well as Able Grid energy storage proposals are not shown.

**Figure 2 – Annual Capacity Cost (Capacity & Energy Proposals)**



**Figure 3 – Annual Capacity Cost (Capacity only Proposals)**





The qualitative matrix shown in the table below summarizes the metrics used to evaluate proposals from each bidder that could not be quantified in the economic evaluation. Deliverability risk captures the power supply option’s chances of incurring network upgrades when IPL applies for firm transmission for the resource to count towards SPP resource adequacy requirements. It was assumed that the farther away a generation resource is located from IPL service territory, the more likely it is for IPL to incur additional costs to acquire firm transmission from the resource. Overall flexibility describes the bidder’s willingness to vary term length and quantity of capacity provided to align with IPL’s capacity shortfall over the term of a contract. Tax revenue and local job impacts were considered for Able Grid’s proposal for building battery storage in IPL’s service territory, which represented the only competitive new-build resource option. Risks associated with project development, including financial plan and schedule, were also considered for Able Grid’s proposal. Creditworthiness was considered, capturing the risk of financial default for each bidder.

**Table 3 – Qualitative Matrix**

Bidder	Deliverability Risk	Overall Flexibility (term & MW size)	Tax Revenue and Jobs	Financial Plan	Schedule	Financial Credit
NextEra	SPP	Size & term flexibility offered	None	Existing	Existing	A-
Lincoln Electric System	Lincoln, NE	Little	None	Existing	Existing	AA
Tenaska	Longview, TX	Moderate Size Flexibility, Short PPA	None	Existing	Existing	Private "BBB"
Oneta Power	Coweta, OK	Size & term flexibility offered	None	Existing	Existing	BBB+
Able Grid Storage	IPL Blue Valley	Size & term flexibility offered	\$2 - \$5 million tax revenue plus jobs	Balance Sheet	Good	Private/Strong
Dogwood	Pleasant Hill, MO	Prorateable ownership share	None	Existing	Existing	Private/Good

The short list analysis information provided by Burns & McDonnell was presented to the Evaluation Committee for review. Each Committee member then selected Respondents to short list and be considered for further evaluation. Below are the respondents who were selected by the Evaluation Committee:

- Dogwood Energy
- NextEra Energy Resources
- Oneta Power
- The City of Lincoln, NE

All Evaluation Committee members selected Dogwood, NextEra, and Oneta as short list candidates. Six of the seven Committee members selected the City of Lincoln, NE.

The Morgan Stanley offer was eliminated due to it including must-take 7x24 energy and being a financial transaction that was not tied to any specified physical resource. The NextEra reciprocating engine and energy storage offers were eliminated due to high costs (NextEra's capacity only offer was shortlisted). The Tenaska offer was eliminated due to being physically located the furthest away from IPL of the offers received and IPL receiving other lower-cost 5-year term offers. The Able Grid energy storage proposals were also eliminated due to high costs. If IPL were to build a new power supply resource on-system, it would likely be more economical to self-build the asset instead of going through a third-party developer.

### **Best and Final Offer Request and Final RFP Evaluation**

On February 25, 2019, the short list candidates were notified and asked to provide any additional information or revisions as needed along with their best and final price offering. Several of the short list candidates were also sent a list of additional questions provided by Burns & McDonnell to assist in the final analysis. Best and Final offers were received on March 1, 2019.

Using information from best and final offers received on March 1, 2019, economic analysis was performed to identify all-in costs of the final proposals. Best and final offers analyzed included: (1) Dogwood Purchase (life of unit); (2) Oneta Capacity and Energy PPA (10-year, 15-year, 20-year terms available beginning 2020); (3) Oneta Capacity Only PPA (10-year, 15-year, 20-year terms available beginning 2020); (4) Lincoln Electric System Capacity Only PPA (1-year, available 2020 only).

Annual costs were determined for each power supply option.

Total costs were calculated for capacity only agreements, from Lincoln Electric System and Oneta, by multiplying PPA capacity price with contracted capacity.

Total costs were calculated for Oneta capacity and energy offers by multiplying PPA capacity price with contracted capacity and subtracting projected energy revenues received from market sales. All-in PPA costs were determined under low, medium, and high energy revenue scenarios to quantify cost impacts associated with energy market volatility. Historical energy market revenues were determined for Oneta for years 2016, 2017, and 2018, and annual revenues for each year were escalated to create three different energy market revenue

projections, representing low, medium, and high revenue scenarios to offset the PPA capacity price.

Total costs for purchasing Dogwood were determined by calculating annual fixed costs (debt service, fixed O&M, and capital expenditures) and subtracting projected energy revenues received from market sales. Debt service to purchase Dogwood at a price of \$525/kW was calculated assuming a 20-year term and 5% interest rate. Fixed O&M and capital expenditure costs were calculated using Dogwood's 2020-2023 approved budget and escalated for the remainder of the study period. All-in costs were determined under low, medium, and high energy revenue scenarios to quantify cost impacts associated with energy market volatility. Historical energy market revenues were determined for Dogwood for years 2016, 2017, and 2018, and annual revenues for each year were escalated to create three different energy market revenue projections, representing low, medium, and high revenue scenarios to offset fixed costs.

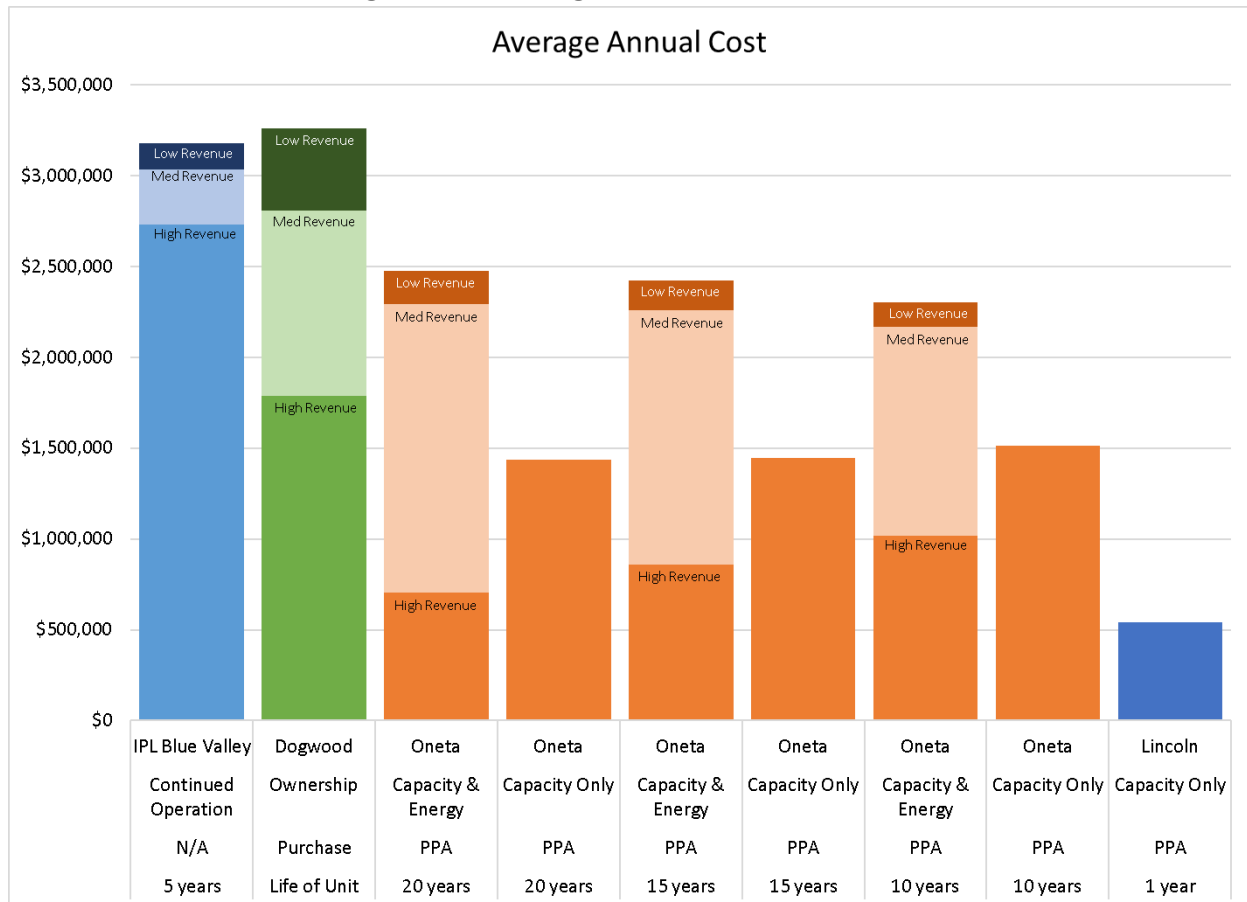
It is important to understand the risk involved with PPAs that are dependent on projected energy revenues from market sales to lower the overall cost of the agreement. Compared with the Oneta Capacity Only PPA, the Oneta Capacity and Energy PPA has approximately double the capacity pricing (for the 15-year Oneta PPAs in 2023: \$57.00/kW compared to \$26.28/kW). The Capacity and Energy PPA relies on projected energy market revenues to bring down the overall cost of the agreement; however, if wholesale power prices are lower than expected, earned energy market revenues may not be enough cover the difference in cost compared to the less expensive Capacity Only PPA. Compared with the Capacity Only PPA, the Capacity and Energy PPA has a lower overall cost under the identified high energy revenue scenario (which is based on Oneta's 2018 historical market revenues), but a higher cost under the identified low (2017 historical) and medium (2016 historical) revenue scenarios. The Capacity Only PPA is insulated from volatile wholesale power prices, as its overall cost is fixed and detached from energy market conditions.

Dogwood presents similar risks to the Oneta Capacity and Energy PPA, as the economic viability of Dogwood ownership is contingent on wholesale power prices providing energy revenues to offset fixed costs associated with the unit. Compared with a PPA, ownership of a generating asset presents additional risks related to any future maintenance, repair, environmental compliance, and decommissioning costs of the plant; all of which reduce long-term cost certainty. Compared with Oneta, Dogwood poses the advantage of being physically located much closer to IPL's service territory, providing a better energy hedge to IPL load, however the fixed costs components are much higher than Oneta has offered.

Lincoln Electric System's Capacity Only PPA offer presents the most attractively priced option for meeting IPL's capacity requirement, but it is only available in 2020, requiring additional capacity procurement beyond 2020. Combining the Lincoln Electric System Capacity Only PPA with one of the other longer-term offers could provide cost savings.

The NextEra capacity only offer was removed from the short-list due to only offering indicative pricing. The the figure below is an average annual cost summary of the remaining best and final offer submittals as well as the estimated cost to operate Blue Valley Unit 3 for the next 5 years. Costs were averaged over each proposals term (i.e. 1, 5, 10, 15, or 20 years). Dogwood’s costs for ownership were averaged over 20 years. Blue Valley Unit 3 was included in this analysis assuming no capital expenditures were incurred, only 16 staff were dedicated to operate the unit in 2020 (reducing down to 9 by 2024), and approximately \$1.1M in annual fixed operations and maintenance costs. There are three levels of projected energy market revenues included for each proposal that involved an energy component (Blue Valley, Dogwood, and Oneta). These energy market revenues are all based off of historical or backcasted revenue from recent calendar years. The high revenue scenario is based on 2018, medium revenue scenario is based on 2016, and low revenue is based on 2017. Additional details concerning the power supply options that included energy can be found in Appendix A.

**Figure 4 – Average Annual Cost (50 MW)**



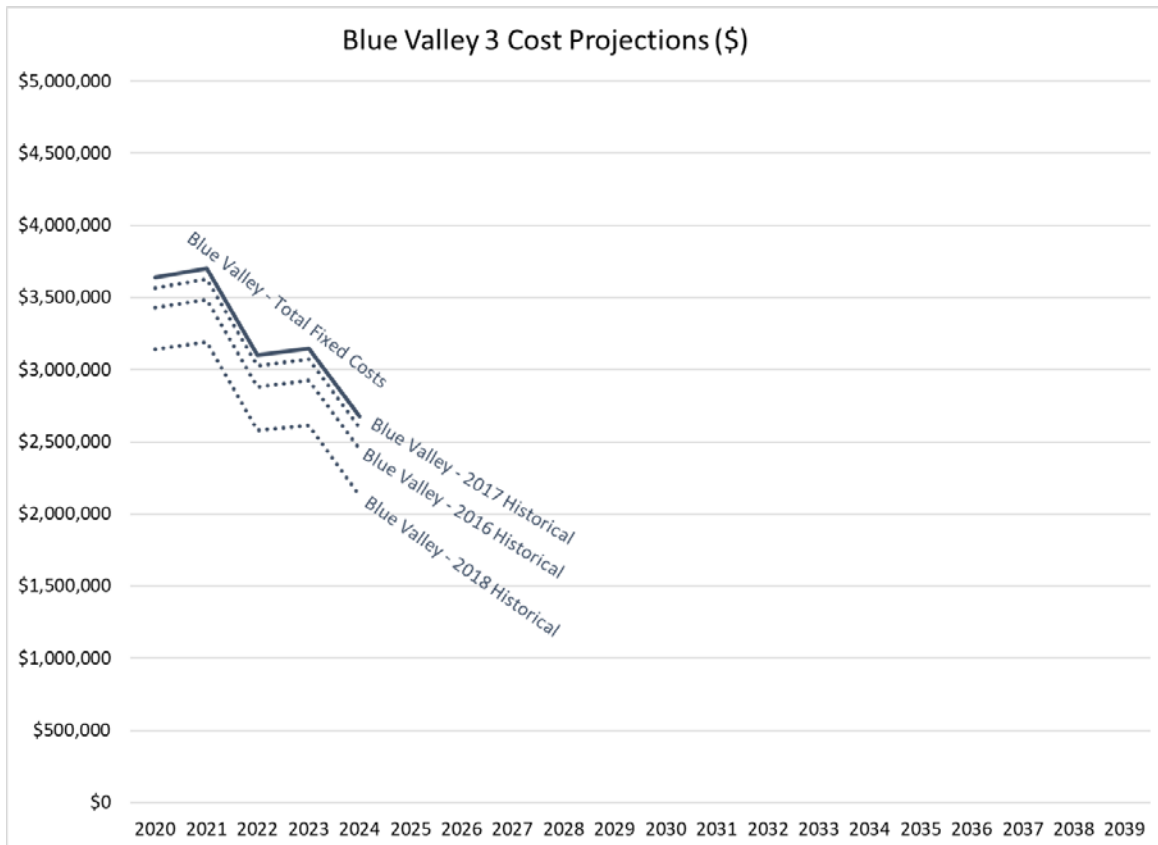
Based on this information, the Evaluation Committee unanimously selected the Oneta 20-year capacity only PPA as the best proposal and recommended that IPL enter into contract negotiations in order to provide an acceptable Power Purchase Agreement for City Council consideration.

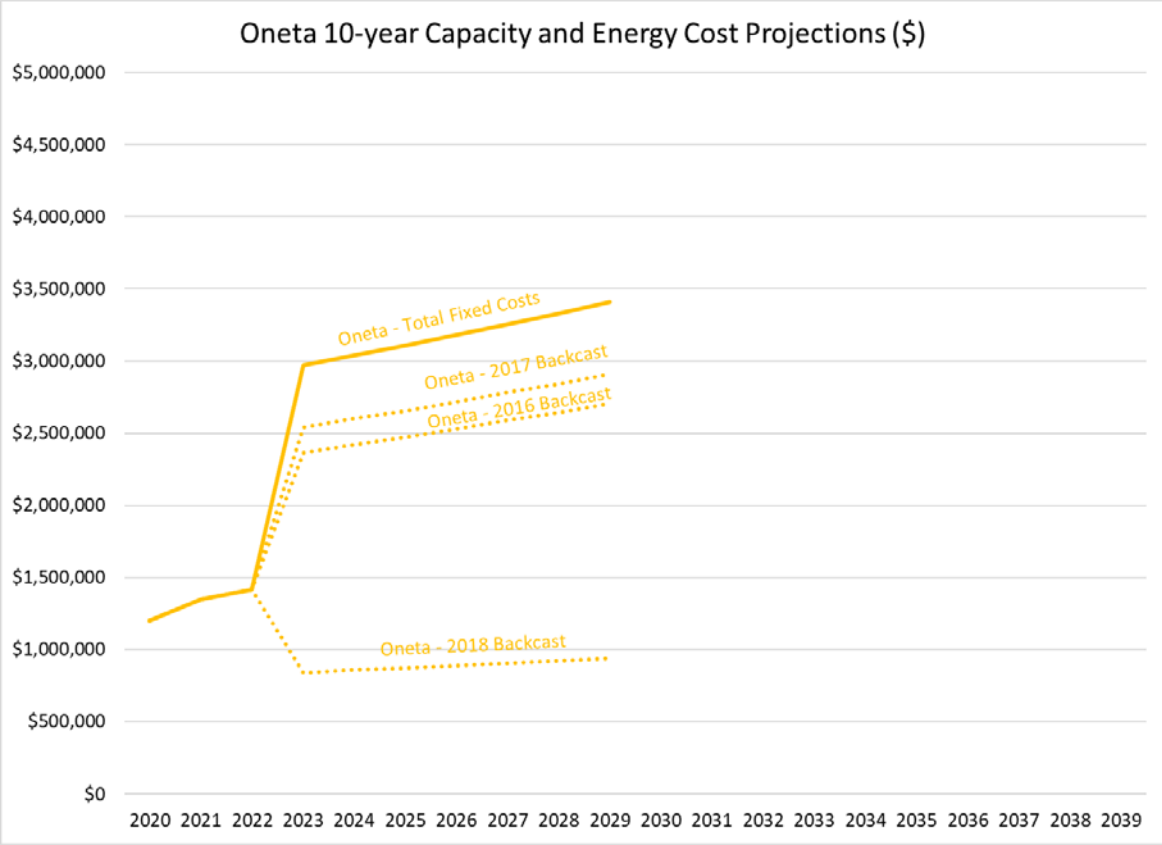
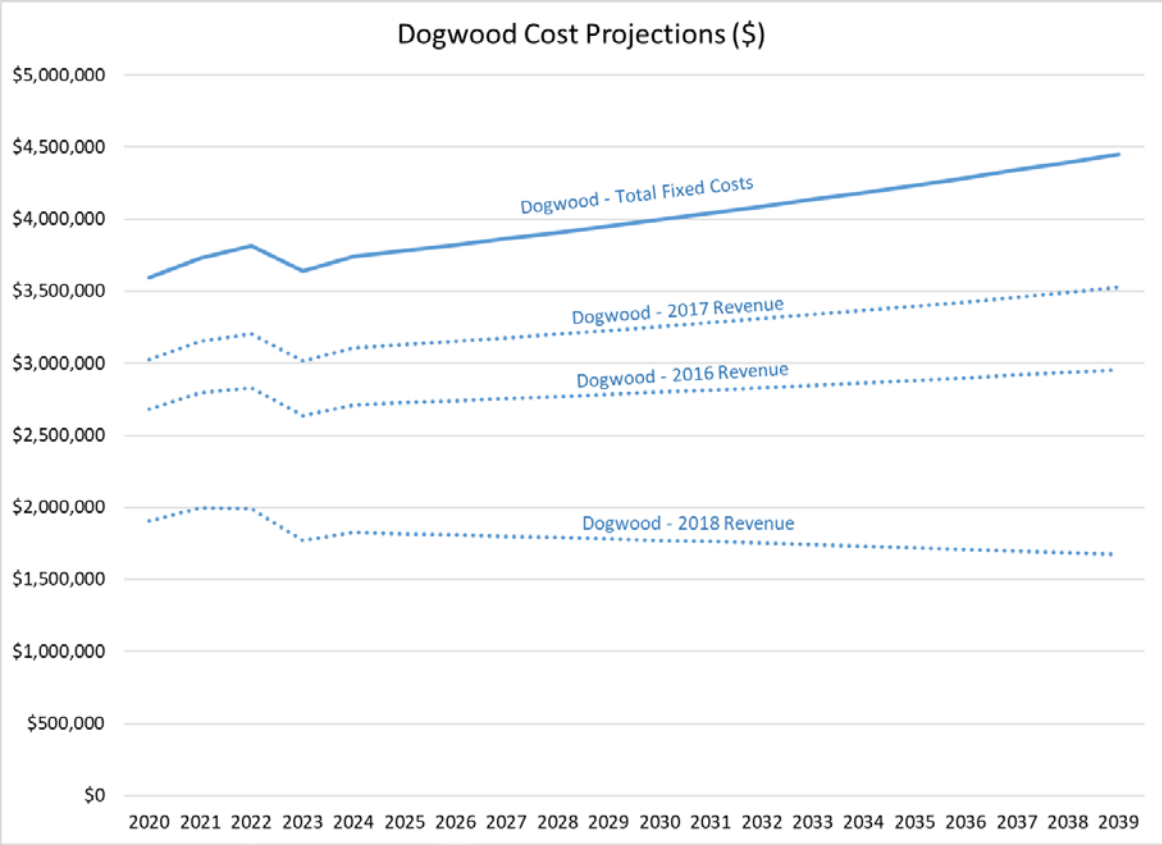
## **Appendix A**

### **Analysis for Resource Options that Include Energy**

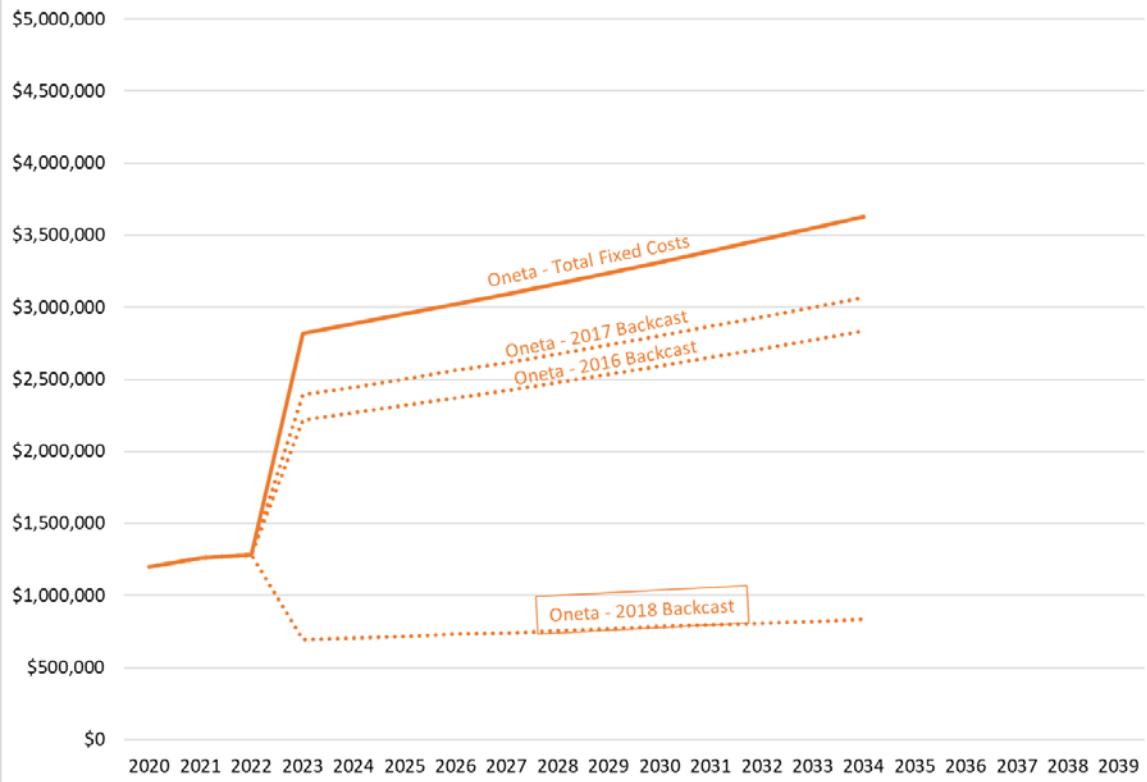
For offers that consisted of capacity and energy, projected energy market revenues needed to be included to determine the net cost that IPL would incur each year. Annual cost projections for Blue Valley 3, Dogwood, and Oneta are shown below. Capacity for each resource was assumed to be 50 MW. Financing costs associated with the debt service to purchase Dogwood assumed a 20-year term with a 5% annual interest rate. Projected energy market revenues were derived from 2016, 2017, and 2018 data for each generating resource (based on historical actuals for Blue Valley 3 and Dogwood, backcast from PPA terms for Oneta), and were escalated to create three different energy market revenue projections, representing low, medium, and high revenue scenarios to offset power supply costs. An annual escalation rate of 2.5% was applied to O&M and historical energy market revenue projections to represent inflation.

The average annual costs shown in Figure 4 are based on these projections.





Oneta 15-year Capacity and Energy Cost Projections (\$)



Oneta 20-year Capacity and Energy Cost Projections (\$)

