



Department Source: City Utilities - Water and Light

To: City Council

From: City Manager & Staff

Council Meeting Date: September 21, 2020

Re: Wind Energy Purchase Power Agreements with Crystal Lake III, LLC.

Executive Summary

Staff has prepared for Council consideration an ordinance authorizing the City Manager to execute amendments to existing Purchase Power Agreements (PPAs) with Crystal Lake III, LLC, for the purchase of wind energy. The amendments will reduce the cost of the existing PPAs, increase the amount of energy to be supplied by Crystal Lake III, LLC, and extend the term of the existing PPA's by approximately 8 years to 2040.

Discussion

CWL has entered into two Purchase Power Agreements (PPAs) with Crystal Lake, III LLC for wind energy produced at the Crystal Lake III wind farm located in northern Iowa. The first PPA, effective on February 7, 2012, is for the output of 21 MW name plate capacity of wind turbines at a fixed price of \$45 per MWh. CWL began purchasing energy in February 2012, under this agreement. The second PPA, effective December 6, 2016, is for the purchase of additional wind energy in two different the phases. The first phase is for the production from 27 MW of wind turbines beginning in January 2017 and an additional 18 MW of turbines commencing in January 2023. The price of the second PPA begins at \$19.55 per MWh with a 2% annual escalator. Both PPAs are scheduled to terminate in February 2032.

Crystal Lake III, LLC is proposing to repower the wind farm with updated equipment and estimates an additional 40,000 MWhs per year can be produced. The name plate capacity of the wind farm will remain the same at 66 MW. Crystal Lake III, LLC is offering CWL this incremental energy at a discount in exchange for extending the term of the PPAs.

Staff has reviewed the proposal with respect to the existing PPAs for periods beginning January 2021. In addition, staff asked Crystal Lake III, LLC for a fixed price option. Analysis was done on a nominal basis and also discounted back to 2020 dollars to account for inflation. The table below shows a summary of the results of the analysis.



City of Columbia

701 East Broadway, Columbia, Missouri 65201

Summary	MWHs	Nominal Cost		Real Cost	
		Total	\$/MWH	Total	\$/MWH
Existing Contracts	2,218,000	\$ 68,573,300	\$ 30.92	\$ 60,604,306	\$ 27.32
Proposal #1 - Variable	4,832,700	\$ 121,324,456	\$ 25.10	\$ 99,036,638	\$ 20.49
Proposal #2 - Fixed	4,832,700	\$ 124,181,683	\$ 25.70	\$ 101,028,822	\$ 20.91
Incremental MWHs					
Proposal #1 - Variable	2,614,700	\$ 52,751,157	\$ 20.17	\$ 38,432,332	\$ 14.70
Proposal #2 - Fixed	2,614,700	\$ 55,608,384	\$ 21.27	\$ 40,424,516	\$ 15.46

Staff also asked The Energy Authority (TEA) to evaluate the Crystal Lake III, LLC proposal. TEA reviewed the existing PPAs and the Crystal Lake III, LLC proposal based upon historical performance at Crystal Lake and MISO 2019 market prices at the Crystal Lake, Indiana Hub, and the CWLD nodes. Net margins were computed using the 2019 market prices projected through the life of the PPAs. Given that the energy delivery point is at the Crystal Lake Hub, CWL may save around \$10,000,000 over the next twelve years, due to the repricing of the energy during the remaining term of the existing PPAs. For the latter years, part of this initial savings may be returned to the extent that the costs associated with the PPAs are in or out the money with respect to the MISO market at that time.

The table below shows how the existing PPAs and the Crystal Lake III, LLC proposal is expected to impact CWL's compliance with the City's renewable energy ordinance. Future system MWHs comes from work recently done by Siemens as part of the Integrated Electric Resource and Master Plan process.



Renewable Energy Impact					
Year	System	Existing Contracts		Proposal	
	MWHs	MWHs	% of Load	MWHs	% of Load
2021	1,256,086	152,700	12.2%	152,700	12.2%
2022	1,261,921	152,700	12.1%	181,800	14.4%
2023	1,267,785	209,900	16.6%	249,900	19.7%
2024	1,273,685	209,900	16.5%	249,900	19.6%
2025	1,279,703	209,900	16.4%	249,900	19.5%
2026	1,285,821	209,900	16.3%	249,900	19.4%
2027	1,292,047	209,900	16.2%	249,900	19.3%
2028	1,298,382	209,900	16.2%	249,900	19.2%
2029	1,304,822	209,900	16.1%	249,900	19.2%
2030	1,315,910	209,900	16.0%	249,900	19.0%
2031	1,327,127	209,900	15.8%	249,900	18.8%
2032	1,338,472	23,500	1.8%	249,900	18.7%
2033	1,349,909	-	0.0%	249,900	18.5%
2034	1,361,399	-	0.0%	249,900	18.4%
2035	1,372,963	-	0.0%	249,900	18.2%
2036	1,384,602	-	0.0%	249,900	18.0%
2037	1,396,307	-	0.0%	249,900	17.9%
2038	1,408,063	-	0.0%	249,900	17.7%
2039	1,419,839	-	0.0%	249,900	17.6%
2040	1,431,636	-	0.0%	249,900	17.5%

Since the proposal decreases the price from the existing PPAs, the cost impact with the respect the renewable energy ordinance 3% of rates requirement will be reduced through 2032.

Through a purchase power agreement with the University of Missouri (MU) effective in March 2013 and amended in 2017, CWL passes along half of the production from the initial 21 MW portion of wind farm to MU, or approximately 33,400 MWh annually. Should Council approve the necessary contract amendments to implement this proposal, staff will review the existing PPA with MU to determine if any changes to the agreement with MU are necessary. As this proposal will not change significant terms of the existing PPAs with Crystal Lake until 2022, there is sufficient time to make any necessary changes to the existing PPA with MU

Fiscal Impact

Short-Term Impact: As these contract amendments will not impact PPA pricing until 2022, there is no short term impact.

Long-Term Impact: The expected annual outlay for wind energy under the PPAs will be approximately the same as under the existing PPAs, but with additional energy supplied, until



City of Columbia

701 East Broadway, Columbia, Missouri 65201

the end of the existing PPA term in 2032. Afterward, an annual outlay of approximately \$4,250,000 will be incurred until the end of the proposed term in 2040, and will be budgeted annually as part of CWL's Purchased Power.

Strategic & Comprehensive Plan Impact

Strategic Plan Impacts:

Primary Impact: Infrastructure, Secondary Impact: Not Applicable, Tertiary Impact: Not Applicable

Comprehensive Plan Impacts:

Primary Impact: Infrastructure, Secondary Impact: Livable & Sustainable Communities, Tertiary Impact: Environmental Management

Legislative History

Date	Action
February 2, 2012	B19-12 Authorizing a power purchase agreement with Crystal Lake III, LLC.
November 11, 2016	B315-16 Authorizing a purchase power agreement with Crystal Lake III, LLC.

Suggested Council Action

Staff recommends Council approve an ordinance authorizing the City Manager to execute amendments to the contracts with Crystal Lake III, LLC, for the purchase of wind energy.