



City of Columbia

701 East Broadway, Columbia, Missouri 65201

Department Source: City Utilities - Water and Light

To: City Council

From: City Manager & Staff

Council Meeting Date: May 6, 2024

Re: Bluegrass Ridge Wind Energy Re-Power Report

Executive Summary

Staff has prepared a report regarding the potential to obtain additional renewable energy due to a re-powering of the Bluegrass Ridge wind farm

Discussion

In 2006, the City entered into an agreement with Associated Electric Cooperative, Inc (AECI) to purchase and transmit wind energy generated from Bluegrass Ridge Wind Farm located in Gentry County, Missouri (between I-29 and I-35 in NW Missouri). The wind farm is operated by Constellation. The agreement includes both capacity and energy allocation from the wind farm that has 27 generators onsite that each have the capacity to produce 2.1 MW. The City is allocated 11.1% of the total energy produced. The City pays a fixed price of \$55.00 per megawatt-hour (MWh) for the energy for the term of the agreement that expires on June 1, 2027. The City also pays a firm transmission rate for 6.3 MW that is updated yearly, currently \$2.08471 per kw-month.

Constellation is repowering the wind farm with updated equipment and expects additional megawatts to be produced each year. The City has the option to continue to receive 11.1% of the production or a reduced percentage equivalent to the historical average of MWh received. If the City chooses a reduced percentage, an amendment to the existing agreement will be required.

Constellation has provided projected monthly production before and after the upgrade. Their projected annual total output prior to the upgrade is 114,137 MWh and with the repowered generators is 204,654 MWh. Over the entire year, it averages to a 79% expected increase in production.

AECI and Constellation will be phasing the facility outage from mid May through August, with the new generators being online in September 2024. Since the benefit of the repower is anticipated to be most evident in the summer months, it will take two years of data to see an increase in renewable energy production from this facility.

In 2023, Columbia's 11.1% allocation resulted in 10,137 MWh of energy and in the last six years Columbia has received an average of 11,203 MWh annually. Constellation anticipates Columbia could receive 22,717 MWh annually in energy with the repower. Based on the last six years of actuals and assuming a 79% increase, staff anticipates receiving an average of 20,088 MWh annually in energy. The additional energy received each year could range anywhere from 7,000 MWh to 11,500 MWh. As a result of the repower upgrade, total costs for



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energy will increase as more power is purchased. However, the yearly transmission costs do not vary with the energy received since the rate is based on 6.3 MW. Therefore, the cost per MWh becomes lower as Columbia purchases more energy.

Evaluating the option to continue receiving 11.1% of production included looking at the cost increase, cost per MWh, Columbia's percent renewable standard and the impact to rates. The evaluation included the assumption of a 79% overall annual increase in production based on the projection provided by Constellation. With the repower, Columbia's total renewable energy portfolio could increase between 0.6% and 0.9%. On average, the repower would also increase the total renewable rate impact from 80% of the 3% rate limit to 86% of the 3% rate limit. The table below summarizes 2023 Bluegrass Ridge wind energy as shown in the Draft 2024 Renewable Energy Plan and then with the assumed 79% increase in energy received for the same year.

	Annual MWh	Annual Cost	Cost / MWh	% of System	Renewable Rate Impact
2023 Existing	10,137	\$746,117	\$73.60	0.83%	\$371,014
2023 Repower	18,177	\$1,210,602	\$66.60	1.49%	\$538,066
Difference	8,040	\$464,485	-\$7.00	0.66%	\$167,051

The above table only summarizes the impacts based on the most recent year of data. An analysis of these same parameters over the Constellation projection and an average of the last six years yields similar results since the underlying assumption of a 79% increase in energy production stays the same. Costs, percentages and impacts will increase or decrease from what is shown above based on actual wind energy produced. In the City's current renewable energy portfolio, Bluegrass Ridge Wind Farm has the highest cost per MWh. Obtaining more energy from this resource will reduce the cost per MWh, but it will still be the highest cost per MWh of the City's current renewable resources. For comparison, the 2023 request for proposals for a renewable energy Power Purchase Agreement (PPA) yielded costs of less than \$60 per MWh.

If the City chooses to maintain the existing contract with AECL, then no additional action will be required. If the City decides the increased cost or impact to rates is too high, then a new allocation percentage would need to be determined and agreed upon with an amendment to the existing agreement. A likely new allocation percentage would be between 6.0% and 6.2% to maintain a similar amount of energy received annually as in the past.

Upsides for this opportunity to maintain the existing allocation:

- overall price impact for this particular resource decreases



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- increase in renewable energy production assists with being closer to reaching the current renewable energy ordinance standard
- no modifications to the existing agreement with AECl are necessary

Downsides for this opportunity to maintain the existing allocation:

- increased total costs and related increased impact to rates
- other renewable energy could likely be obtained at lower rates ~ better value
- if City chooses to maintain the same production level it would require an amendment to the existing agreement with AECl

At the April 17, 2024 Water and Light Advisory Board meeting, the Board unanimously recommended that the City proceed with maintaining the 11.1% energy allocation from the Bluegrass Ridge Wind Farm as provided in the 2006 agreement. The discussion by the Board highlighted that this opportunity is short term since the contract expires in 2027 and therefore the associated increase in costs will only be through 2027. This timeline will provide the City an opportunity to evaluate the additional energy production and costs associated with the repower of the generators. Should a future contract renewal become available with this resource, the City will have historical data to evaluate rate impacts. The Board discussed that the increase the overall percentage of the renewable energy portfolio did not result in an increase above the 3% rate limit, per ordinance, for 2023. Therefore, the Board was comfortable with the increase in costs for the additional increase in renewable energy for this time frame.

Staff will communicate to AECl that the City will continue with the existing contract agreement for the 11.1% allocation of energy from the Bluegrass Ridge Wind Farm unless the Council directs otherwise.

Fiscal Impact

Short-Term Impact: Estimated additional power purchase costs of \$500,000 annually.
Long-Term Impact: Additional annual power purchase cost of \$500,000 until 2027.

Strategic & Comprehensive Plan Impact

Strategic Plan Impacts:
Primary Impact: Reliable and Sustainable 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
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08/20/2007	B260-07 Authorizing Amendment No. 1 to the wind generation energy purchase and transmission service agreement with Associated Electric Cooperative, Inc
11/06/2006	B438-06 Authorizing an agreement with Associated Electric Cooperative Inc. for Wind Generated Renewable Energy

Suggested Council Action

For information only.