




TO: Water & Light Advisory Board
FROM: Erin Keys, P.E., Acting Assistant Director, Electric 
DATE: April 12, 2024
SUBJECT: Bluegrass Ridge Wind Farm Repower


In 2006, the City entered into an agreement with Associated Electric Cooperative, Inc (AECI) to purchase and transmit wind energy generation from Bluegrass Ridge Wind Farm located in Gentry County, 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 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 prior to the upgrade and with 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.

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 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.

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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	8,580	\$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 AECI, 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
- increase in renewable energy production assists with being closer to reaching the current renewable energy ordinance standard
- no modifications to the existing agreement with AECI are necessary

Downsides for this opportunity to maintain the existing allocation:

- increased total costs and related increased impact to rates
- other renewable energy could 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

Staff seeks a recommendation from the Water and Light Advisory Board on how to proceed. Then a report with the Board's recommendation and requesting final direction will be provided to the City Council.