

THE EMPIRE DISTRICT ELECTRIC COMPANY

2021

ANNUAL RENEWABLE ENERGY STANDARD COMPLIANCE REPORT

Prepared in Compliance with 20 CSR 4240-20.100

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****Indicates Highly Confidential****

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2021 ANNUAL RENEWABLE ENERGY STANDARD

COMPLIANCE REPORT

INTRODUCTION

Pursuant to the Missouri Public Service Commission's (Commission) renewable energy standards rule, 20 CSR 4240-20.100(8), The Empire District Electric Company (EDE or Empire), a Kansas corporation, is filing the Annual Renewable Energy Standard (RES) Compliance Report. The rule became effective in September 2010, and pursuant to the rule EDE must file the 2021 RES Compliance Report on or before April 15, 2022.

EDE began to develop its wind renewable energy portfolio on December 10, 2004, when it entered into a 20-year contract with Elk River Windfarm, LLC (owned by Avangrid Renewables, LLC) to purchase all of the energy generated at the 150-megawatt Elk River Windfarm located in Butler County, Kansas. On June 19, 2007, EDE enhanced its renewable energy portfolio when it entered into a 20-year purchased power agreement with Cloud County Wind Farm, LLC. EDP Renewables North America, LLC is an indirect parent company of Cloud County Wind Farm, LLC. Pursuant to the terms of the agreement, EDE purchases all of the output from the 105-megawatt Phase 1 Meridian Way Wind Farm located in Cloud County, Kansas. In addition, the Ozark Beach Hydroelectric Project, owned by EDE, has produced renewable hydropower for many years.

Effective May 16, 2015, Empire began offering rebates for Missouri customers for qualifying solar installations in accordance with the Missouri RES and Empire's Solar Rebate Rider approved by the Commission, which continued in 2021.

At the end of 2020, construction of the North Fork Ridge Wind project was completed. This 149-MW facility is located in Missouri and started operation in December of 2020. In addition to this new project, the 300-MW Neosho Ridge Wind project (located in Kansas), and the 149-MW Kings Point Wind project (located in Missouri) reached commercial operation in 2021. These Commission-approved resources were added to fulfill the Customer Savings Plan. Empire also completed the addition of the 2.2-MW Prosperity Solar Farm in 2021.

The RES rules allow for the banking of Renewable Energy Credits (REC) for up to a three-year time period. In the past, this has allowed the use of eligible Ozark Beach and Elk River Windfarm RECs generated in earlier years. In 2021, RECs generated in 2020 and 2021 were used for the RES requirement which were generated at Elk River Windfarm, Meridian Way Wind Farm, North Fork Ridge Wind, Kings Point Wind, Ozark Beach, and customer-generated solar.

The following sections provide information required to indicate compliance with the rule:

SECTION (8) (A) 1 A, B: TOTAL MISSOURI RETAIL ELECTRIC SALES AND REVENUE

The following table represents the number of megawatt-hours (MWh) of electricity delivered in 2021 by EDE to its Missouri retail customers, as reflected in the monthly billing statements. In addition, a column is provided capturing the revenue from total retail electric sales to Missouri customers:

Table 1: Missouri 2021 Total Retail Sales

Year	MWh	Revenue
2021	4,185,550	\$474,937,560

Data Source: Customers Kilowatt Hours Revenue Report

SECTION (8) (A) 1 C: TOTAL RETAIL ELECTRIC SALES SUPPLIED BY RENEWABLE ENERGY RESOURCES

The following table indicates the renewable generation sources used during 2021 and the MWhs that were supplied. (See ATTACHMENT 1)

Table 2: Total 2021 Retail Electric Sales Supplied by Renewable Energy

Facility	Generation (MWh)	Percentage	Energy Supplied to MO Retail Customers (MWh)
Elk River	300,512	88.90%	267,155
Meridian Way	178,947	88.90%	159,084
Ozark Beach	50,542	88.90%	44,931
North Fork Ridge	498,279	88.90%	442,970
Kings Point	407,657	88.90%	362,407
Neosho Ridge	888,337	88.90%	789,732
TOTAL			2,066,228

SECTION (8) (A) 1 D: CURRENT NUMBER AND VALUE OF RECS CREATED BY EDE OWNED FACILITIES

In 2021, EDE-owned Ozark Beach generated energy which allowed for the creation of 50,542 RECs. Using the provision of the Missouri RES allowing for additional credit of 0.25, the resultant RECs available for compliance totaled 63,177 RECs (50,542 x 1.25). The value of the energy generated by Ozark Beach for calendar year 2021 was \$*____*/MWh as determined by the locational marginal pricing through the Southwest Power Pool (SPP).

In 2021, Missouri-resourced RECs from EDE-owned North Fork Ridge (7,335) and Kings Point (62,265) were used for compliance due to NARR registration lag and lower than anticipated production from the wind purchased power agreement. The value of energy generated by North Fork Ridge for 2021 was \$*____*/MWh, the value of energy generated at Kings Point was \$*____*/MWh, and the value of energy generated by Neosho Ridge for 2021 was \$*____*/MWh as determined by locational marginal pricing through the SPP.

The value of the customer generated solar energy was \$50.13/SREC. This value is determined using the rebate amount of \$22,157,862 paid in solar rebates divided by 44,198 (the amount of SRECs received). The rebate entitles EDE to receive SRECs from these systems for 10 years.

Completion and operation of the Prosperity Solar Farm generated 1,253 SRECs in 2021. These SRECs were retired on behalf of participating customers per the Community Solar Pilot Program tariff filed with the Commission, are not used for compliance and do not enter the SPP system. The average 2021 market value for voluntary, non Green-e SRECs was \$1.50/MWh.

SECTION (8) (A) 1 E, F: SOURCE AND NUMBER OF RECS ACQUIRED, SOLD, TRANSFERRED, RETIRED

RECS ACQUIRED:

EDE receives renewable energy from multiple sources: ownership of Ozark Beach; ownership of Kings Point, North Fork Ridge and Neosho Ridge Wind projects; ownership of Prosperity Solar Farm; two purchased power agreements (Elk River Windfarm and Meridian Way Wind Farm); and customer-generated solar. EDE utilizes the North American Renewable Registry (NARR) as recommended by Staff and approved by the Commission for tracking all RECs.

Pursuant to the terms of the two 20-year windfarm agreements, EDE purchases all of the output from the 150-megawatt Elk River Windfarm, and the 105-megawatt Meridian Way Wind Farm. In 2021, Elk River generated 300,512 MWhs and Meridian Way generated 178,947 MWhs. (See ATTACHMENT 2)

RECS SOLD/TRANSFERRED:

During 2021, 88,630 RECs from Meridian Way were sold through a purchased power agreement with Missouri Joint Municipal Electric Utility Commission and on the open market. EDE was able to register and certify the new wind resources in 2021 and sold 281,947 RECs from Kings Point Wind, 906,439 from Neosho Ridge Wind, and 421,661 from North Fork Ridge. (See ATTACHMENT 3). These RECs were sold and transferred in the NARR.

In July of 2021, 144 RECs from Elk River Windfarm were retired to support the application for an MDNR Volkswagen funding grant request. The grant was awarded which allowed EDE to add electric vehicle charging stations to the system.

RECS RETIRED:

During 2021, 54,857 vintage 2020 and 2021 RECs from hydroelectric generation at Ozark Beach were retired to help fulfill the non-solar Missouri compliance obligation. In addition, 438,743 vintage 2020 and 2021 RECs from generation at the Elk River Windfarm, Meridian Way Wind Farm, Kings Point Wind, and North Fork Wind were retired for the non-solar RES obligation for 2021. Although Ozark Beach, Elk River and Meridian Way typically provide adequate generation for 2021 compliance, generation was lower than anticipated during the last part of the year. Generation from Empire-owned wind resources was required for end-of-year compliance retirement.

In March of 2022, 14,211 vintage 2021 RECs from Ozark Beach, 19,207 from Elk River, and 15,436 from Meridian Way were retired to complete the 2021 Missouri compliance obligation. RECs generated from Ozark Beach, Kings Point Wind and North Fork Wind are entitled to the 1.25 multiplying factor as they represent Missouri based generation.

In addition, 40,636 SRECs generated from EDE customers (EDE Solar Aggregate Assets 1 – 39) in 2020 were utilized and were retired in December of 2021. Any remaining SRECs will be banked for future use. SRECs from customer installed net metered systems are entitled to the 1.25 compliance multiplying factor as they represent Missouri based generation.

In total, 542,454 RECs and 40,636 SRECs were retired to fulfill the 2021 Missouri compliance obligation. (See ATTACHMENT 4). Prosperity Community Solar Project retired 1,253 SRECs generated in 2021 on behalf of subscribing customers.

Table 3: Total 2021 RECs Sold, Carried Forward or Used for Compliance

Facility	2021 Generation (MWh)	RECs Sold in 2021	RECs Carried Forward	RECs Retired in 2021 for Compliance	RECs Retired in 2022 for Compliance
Elk River	300,512	0	45,507	308,979	19,207
Meridian Way	178,947	88,630	14,717	60,164	15,436
Ozark Beach	50,542	0	0	54,857	14,211
North Fork Ridge	498,279	421,661	108,731	7,335	0
Kings Point	407,657	281,947	63,445	62,265	0
Neosho Ridge	888,337	906,439	4,700	0	0
EDE Solar Aggregates 1 - 44	44,198	0	44,198	40,636	
Prosperity Community Solar (not for MoRES Compliance)	1,253			1,253	
TOTAL	2,369,725	1,698,677	281,298	493,600	48,854

*North Fork Ridge and Neosho Ridge sales include some generation from 2020.

**Prosperity Solar retirement is not associated with the MORES Standard.

SECTION (8) (A) 1 G: IDENTIFICATION OF RECS CARRIED FORWARD

RECS CARRIED FORWARD:

RECs and SRECs generated by renewable energy resources were carried forward at the end of 2021 as indicated in Table 3. The majority of the RECs were used for compliance or sold during the first quarter of 2022. Any remaining RECs or SRECs will be held for future compliance or sale benefitting customers through the fuel adjustment clause. (See ATTACHMENT 5)

SECTION (8) (A) 1 H: GAINS AND LOSSES FROM SALE OR PURCHASE

The sale of excess REC's not needed for compliance of any sort of renewable energy standards, will attempt to be monetized through sales to third parties and the revenue received from any sales of excess REC's will be distributed back to retail customers through the appropriate tracker mechanisms for each jurisdiction. The revenue generated from REC's will be distributed back to customers for generation and REC creation after the associated investments are reflected in actual rates.

ATTACHMENTS 1 and 3 include the amount of wind generation allocated for Missouri retail customers by each wind farm and the REC report indicating sales of 2021 Kings Point Wind, Meridian Way, Neosho Ridge Wind, and North Fork Ridge Wind RECs. Any gains from sale or purchase were returned to the customers through the fuel adjustment.

SECTION (8) (A) 1 I: ACQUISITION OF RENEWABLE ENERGY

Non-Solar renewable energy is purchased for EDE from the following non-utility owned facilities:

Elk River Wind (Resource)
Avangrid Renewables (Owner) 14980 SE 190th Rd.
Latham, KS 67072

Meridian Way I (Cloud County) Wind (Resource)
EDP Renewables North America LLC (Owner) 1409 Iron Road
Concordia, KS 66901

All energy was derived from eligible renewable energy technology (wind, hydro and solar). ATTACHMENT 6 includes information to certify that the renewable energy attributes of the energy from Elk River Windfarm and the Cloud County Meridian Way Wind Farm, have not been used to meet the requirements of any other local or state mandate.

SECTION (8) (A) 1 J: ACQUISITION OF ELECTRICAL ENERGY AND/OR RECS FROM CUSTOMER GENERATORS

ATTACHMENT 7 shows the system operational dates and estimated amounts of SRECs generated from customer generators using the Commission-approved estimation method, PVWatts. The SRECS were acquired by EDE as a condition of receiving the solar rebate instituted in May of 2015 and extending through 2021.

SECTION (8) (A) 1 K: CUSTOMERS RECEIVING SOLAR REBATE

For the calendar year 2021, the annual number of customers that applied and received a solar rebate by December 31, 2021 in accordance with section (4) of the Rule was 304. A total of 3,245 Missouri solar net metering customers have been connected to the Empire system as of that date.

SECTION (8) (A) 1 L: CUSTOMERS DENIED SOLAR REBATE

EDE makes every effort to award the solar rebate to every applicant. Applications have been delayed due to failure to comply or submit to the requirements of the rebate, but no applications have been denied.

SECTION (8) (A) 1 M: FUNDS EXPENDED BY EDE FOR SOLAR REBATES

Annual funds expended by EDE for 2021 solar rebates totaled \$1,112,174. Since the beginning of the rebate program over \$22 million has been expended for solar rebates.

SECTION (8) (A) 1 N: ANNUAL COMPLIANCE WITH RES COMPLIANCE PLAN

See Affidavit of Compliance with 2021 Compliance Plan, ATTACHMENT 8.

SECTION (8) (A) 1 O: NON-COMPLIANCE WITH RES COMPLIANCE PLAN

EDE has made every effort to comply and believes it has achieved compliance with the Missouri RES Compliance Plan for the 2021 compliance period.

SECTION (8) (A) 1 P: CALCULATION OF ACTUAL CALENDAR YEAR RETAIL RATE IMPACT

See ATTACHMENT 9. The calculations in ATTACHMENT 9 are based on total company not Missouri jurisdictional.

The 2021 retail rate impact is 0.24% calculated using the total 2021 compliance cost of \$1,154,213 and the 2021 revenue requirement of \$474,937,560. Costs incurred for 2021 compliance totaled \$34,539 for the registration, retirement, and associated costs of REC and SREC management and reporting. Solar costs incurred for 2021 solar rebates paid totaled \$1,112,174. The total compliance cost for 2021 was \$1,154,213.

The retail rate impact (RRI) shall be calculated pursuant to Missouri statute and regulation and shall be calculated annually on an incremental basis for each planning year based on procurement or development of renewable energy resources averaged over the succeeding

ten- (10-) year period. The modeling indicates this amount may be exceeded with the addition of the new renewable energy resources to fulfill the Customer Savings Plan, which were not specifically constructed for RES compliance. The table below indicates adequate generation to meet the total RES Requirement using Elk River, Meridian Way and Ozark Beach, when the generation from customer-generated solar is also considered (approximately 44,198 RECs x 1.25 Missouri-sourced multiplier). The cost of adding the new wind projects will not impact compliance until the termination of the Elk River contract in December of 2024.

Table 4: Projected Non-Solar Compliance

Time Period	RES Requirement Percent	Mo Retail Sales (MWh)	Non Solar Resources ¹							Total Non-Solar Requirement	Total RES Requirement ³
			Elk River	Meridian Way	Ozark Beach	North Fork Ridge Wind	Kings Point Wind	Neosho Ridge Wind	Total Potential ²		
2022	15%	4,308,795	282,000	277,000	67,500	718,750	750,000	1,325,000	3,420,250	633,393	646,319
2023	15%	4,338,622	282,000	277,000	67,500	718,750	750,000	1,325,000	3,420,250	637,777	650,793
2024	15%	4,365,882	282,000	277,000	67,500	718,750	750,000	1,325,000	3,420,250	641,785	654,882