

THE EMPIRE DISTRICT ELECTRIC COMPANY

2022 ANNUAL RENEWABLE ENERGY STANDARD COMPLIANCE PLAN

Prepared in Compliance with 20 CSR 4240-20.100

Supplemental Filing

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****Indicates Highly Confidential****

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2022 ANNUAL RENEWABLE ENERGY STANDARD COMPLIANCE PLAN

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 Plan. The rule became effective in September 2010, and pursuant to the rule EDE must file the RES Compliance Plan on or before April 15, 2022 for the current year and subsequent two calendar years.

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) to purchase all of the energy generated at the 150-megawatt (MW) 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- MW Phase 1 Meridian Way Wind Farm located in Cloud County, Kansas. In addition, the Ozark Beach Hydroelectric Project (Ozark Beach), owned by EDE has produced renewable hydropower for many years. Through purchased power agreements or owned generation, EDE's wind and hydro renewable energy resources have provided adequate renewable energy to comply with the non-solar RES requirements in the past

The solar component of the RES requires compliance which can only be met with Solar Renewable Energy Credits (SRECs) or energy from solar generation resources. EDE will meet the solar RES compliance obligation through customer-generated SRECs. 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. This requirement will continue to be in place for future compliance obligations.

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 generating RECs in December of

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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 additions fulfilled the Commission-approved Customer Savings Plan. Empire also completed the addition of the 2.2-MW Prosperity Solar Farm in 2021 which will not be utilized for compliance.

The renewable energy available in EDE's compliance-available portfolio includes generation by Elk River Windfarm, Kings Point Wind, Meridian Way Wind, Neosho Ridge Wind, North Fork Ridge Wind, Ozark Beach, and customer-generated solar which can be used for future compliance with the standard.

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

SECTION (8) (B) 1 A: PLANNED RES COMPLIANCE

Non-solar Compliance

20 CSR 4240-20 provides the procedure by which utilities must meet statutory obligations for renewable energy. Missouri law required that by 2011, electric companies must either generate, purchase energy, or purchase renewable energy credits (RECs) equal to at least 2 percent of the electricity they sell to retail customers from renewable sources. That percentage increased to the current 15 percent in 2021. The regulation also requires the utilization of a commission designated third-party registry for REC accounting, and the North American Renewable Registry (NARR) is utilized for tracking EDE retirements for Missouri compliance.

This year and in the subsequent two years, EDE plans to comply with the non-solar portion of the RES through contracts with Elk River Windfarm, Meridian Way Wind Farm and/or generation from its Ozark Beach Hydroelectric facility. EDE's addition of three utility scale wind generation facilities in 2021 for the Customer Savings Plan adds flexibility for compliance if needed with the current and future standards.

EDE owns the Ozark Beach Hydroelectric Project which generates approximately 54,000 megawatt-hours (MWh) each year. Since this facility is located in Missouri, EDE is allowed to claim the amount of MWhs generated plus an additional twenty-five hundredths (0.25) credits, as authorized by subsection (3)(G) of this rule. Consequently, Ozark Beach generation counts as one and twenty-five hundredths (1.25) RECs for purposes of compliance with this rule as allowed by 20 CSR 4240-20.100 (3) (G).

Under this same ruling, Kings Point Wind (annual output approximately 600,000 MWh) and North Fork Ridge Wind (annual output approximately 575,000 MWh) are eligible for the Missouri-sourced multiplier.

The table below represents EDE’s expected Missouri retail sales and the non-solar percentage requirements of Missouri retail electric sales that must be achieved by EDE either through the purchase of RECs or the production of energy, and the total expected potential of qualifying RECs that could be used for compliance. EDE expects to sell all or a portion of its remaining RECs after all current or future state and/or federal mandates have been met.

Table 1: 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 |

¹Expected average operation; Ozark Beach, North Fork Ridge Wind, Kings Point Wind includes 1.25 credit for Missouri sources.

²Total expected eligible RECs not including potential 3rd party sales or other RES requirements.

³ Both Non solar and Solar will make up the total RES requirement

Solar Compliance

EDE filed a tariff to establish solar rebate payment procedures and to revise its net metering tariffs to accommodate the payment of solar rebates which became effective on May 16, 2015. Under the terms of the tariff, EDE received SRECs from its electric customers who installed or are installing net metered solar facilities at their homes and/or businesses according to the solar rebate tariff and net metering requirements.

For 2022 compliance, EDE expects to obtain SRECs transferred from qualified customer-generator’s operational solar electric systems as a condition of receiving the solar rebate. SRECs produced from these solar electric systems will be transferred to EDE for a period of 10 years. Generation from these customer-owned facilities would be eligible for application of the 1.25 factor as these facilities are located in Missouri. SRECs generated by these systems will be used for the dedicated solar compliance component but can also be used for general renewable energy compliance. In the future, (2022-2024) EDE will use customer-generated SRECs or banked SRECs. EDE will also evaluate and monitor the feasibility and economics of constructing and operating additional utility scale solar generation.

Table 2: Projected Solar Compliance

| Time Period | RES Requirement Solar % | MO Retail Sales (MWh) | Solar RES Requirement | Customer Generated Solar ¹ |
|-------------|-------------------------|-----------------------|-----------------------|---------------------------------------|
| 2022 | 0.3% | 4,308,795 | 12,926 | 44,198 |
| 2023 | 0.3% | 4,338,622 | 13,016 | 44,198 |
| 2024 | 0.3% | 4,365,882 | 13,098 | 44,198 |

¹Future Projections based on 2021 Total MO PV online.

SECTION (8) (B) 1 B: LIST OF EXECUTED CONTRACTS

EDE’s executed renewable energy contracts includes the two 20-year agreements for the output from Elk River Windfarm and Meridian Way Cloud County Wind Farm. EDE anticipates annual generation of approximately 282,000 MWhs for Elk River and approximately 277,000 MWhs for Meridian Way.

The effective date of the Elk River agreement was December 10, 2004 and the effective date of the Meridian Way agreement was on June 19, 2007. Unless otherwise terminated in accordance with contract stipulations each of those agreements will remain in full force for a term ending at midnight local time on the 20th anniversary of each facility’s respective completion date. ATTACHMENT 1 indicates the wind generation allocation for Missouri retail customers. Additional information on the wind energy purchases and sales can be found in ATTACHMENT 2.

In 2021, Empire executed payment for 304 additional solar customer generated rebates. Empire expects to annually execute payment for customer generated rebates during the 2022-2024 timeframe.

SECTION (8) (B) 1 C: PROJECTED TOTAL RETAIL SALES

The following table represents EDE's projected Missouri retail sales for each year of the Annual Compliance Plan period. These MWhs are the sales numbers that each non-solar and solar requirement is multiplied by in order to calculate EDE's RES requirements.

Table 3: EDE Projected Retail Sales and RES Requirements

| Time Period | Projected Retail Electric Sales (MWh) | Non-solar Requirement (MWh) | Solar Requirement (MWh) |
|-------------|---------------------------------------|-----------------------------|-------------------------|
| 2022 | 4,308,795 | 633,393 | 12,926 |
| 2023 | 4,338,622 | 637,777 | 13,016 |
| 2024 | 4,365,882 | 641,785 | 13,098 |

Source: 2022-2027 Revenue Budget

SECTION (8) (B) 1 D: COMPARISON TO PREFERRED RESOURCE PLAN

EDE will fully meet the RES compliance requirements for 2022, 2023, and 2024 with its current purchased power contracts, hydroelectric facility, customer-generated solar energy, and owned wind and solar generation. Therefore, there is no difference between the RES Compliance Plan and the 2021 filing of the Integrated Resource Plan (IRP). EDE continues to include a section in the IRP which discusses the impact potential or proposed changes to Renewable Energy Standards would have on EDE. Regardless of the outcome of proposed changes, in the future, EDE will continue to retain a sufficient amount of RECs and SRECs to meet any current or future RES.

SECTION (8) (B) 1 E: RES COMPLIANCE PLAN COST

EDE currently meets the Missouri non-solar RES compliance requirements on a total percentage basis with hydro and wind resources for the plan period. Analysis of the IRP indicates the use of energy provided by EDE-owned hydro generation, and long-term wind purchased power agreements is currently the least cost, most prudent methodology to achieve compliance with the RES.

To comply with the solar-specific compliance, the purchase of SRECs through an industry broker is currently the least expensive alternative. However, EDE expects to utilize SRECs transferred from qualified customer-generator's systems for the compliance obligation.

SECTION (8) (B) 1 F: RES RETAIL RATE IMPACT

The retail rate impact was calculated by comparing non-renewable generation portfolio to a RES-compliant portfolio with sufficient renewable resources to achieve the renewable standards. EDE has performed this rate impact calculation in accordance with Section (5) Retail Rate Impact. The calculations were completed consistent with EDE's understanding of Staff's interpretation of the RES rules. For each year of the 2022-2024 RES Compliance Plan period, the annual retail rate impact for compliance is limited to a maximum of 1% of the 10-year average non-RES compliant revenue requirement.

Costs associated with EDE's current or anticipated RES compliance are associated with (1) the registration of assets and RECs in the NARR, (2) costs associated with retirement of RECs, (3) the value of RECs from purchased power agreements that are used for compliance, (4) costs associated with solar rebates, and (5) costs associated with the retail rate impact modeling and calculations. Costs incurred for 2021 compliance totaled \$34,539 for the registration, retirement, and associated costs of REC and SREC management and reporting. The purchase price of the amount of wind energy necessary for 2021 compliance totaled **\$_____**. This amount reflects assets that are currently included in Empire's portfolio through purchased power agreements and does not reflect an additional cost as they were contracted prior to the commencement of the RES. These resources will be used in the future for compliance, as needed. Empire's base rates reflect a representative level of renewable registry costs. The addition of wind resources will not be required for the period of 2022 to 2024

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as current wind resources are adequate to meet compliance obligations. However, as we move towards a lower carbon future, additional renewable energy resources will be added to the Empire portfolio.

Solar costs incurred for 2021 solar rebates paid totaled \$1,112,174. EDE successfully received treatment to recover the solar costs in Missouri base rates.

The total compliance cost for 2021 was \$1,154,213. The purchase price of the existing wind energy which was not added for compliance totaled **\$_____**. EDE will use the generation from our Ozark Beach hydro facility, energy from the windfarm purchased power agreements, owned renewable energy resources, and solar energy from customer-generated facilities but we do not expect to exceed the rate cap. ATTACHMENT 3 further explains the retail rate impact calculations. The calculations in ATTACHMENT 3 are based on total company not Missouri jurisdictional.

It is important to note the rate cap calculation is *purely* a mathematical exercise and is not associated with current rates, current generation assets or even current finalized environmental rules.

SECTION (8) (B) 1 G: COMPLIANCE WITH AIR, WATER, OR LAND USE REQUIREMENTS

Pursuant to Section 393.1030.4 RSMo, any renewable energy facility located in the state of Missouri shall not cause undue adverse air, water, or land use impacts.

All generating facilities utilized by EDE to meet the requirements of the Missouri RES have, to EDE's knowledge, received all necessary environmental and operational permits and are in compliance with any necessary federal, state and/or local requirements related to air, water and land use. All generating facilities have received Certification as a Renewable Energy Generation Facility by the Missouri Department of Natural Resources, Division of Energy.