



April 14, 2023

VIA ELECTRONIC FILING

Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

**RE: The Empire District Electric Company d/b/a Liberty
Case No. EO-2023-0358
2022 RES Compliance Report and 2023-2025 RES Compliance Plan**

Dear Judge Dippell:

In accordance with Commission Rule 20 CSR 4240-20.100(8), I am providing herewith for filing with the Missouri Public Service Commission, in electronic form, Liberty's 2022 Renewable Energy Standard ("RES") Compliance Report and 2023-2025 RES Compliance Plan.

A Motion for Protective Order regarding the highly confidential ("HC") designation was filed on this date, opening the above-referenced docket. The HC designation is used in the report and plan because certain material regarding renewable energy certificate ("REC") prices and payment terms is subject to contractual agreements providing for the material to not be disclosed except under certain limited circumstances and to be treated as "highly confidential," as the material could provide an unjust competitive advantage.

The information designated as "confidential" in the report and plan is done so pursuant to Commission Rule 20 CSR 4240-2.135(2), subparts 1 and 5. Attachment 7 is designated confidential because it contains customer-specific account numbers. Attachments 3 and 9 and portions of the report are confidential because they were prepared by an outside consultant and contain the consultant's proprietary formulas. Liberty will post the public version of its RES Compliance Report on its website.

Please bring these filings to the attention of the Commissioners and the appropriate Commission personnel, and please do not hesitate to contact me with any questions or concerns you may have regarding these filings.

Sincerely,

Diana C. Carter

THE EMPIRE DISTRICT ELECTRIC COMPANY (“LIBERTY”)

2022

ANNUAL RENEWABLE ENERGY STANDARD COMPLIANCE REPORT

Prepared in Compliance with 20 CSR 4240-20.100

****Indicates Highly Confidential****

Indicates Confidential



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CONFIDENTIAL

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2022 ANNUAL RENEWABLE ENERGY STANDARD COMPLIANCE REPORT

INTRODUCTION

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

Liberty 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, Liberty 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, Liberty 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, Liberty began offering rebates for Missouri customers for qualifying solar installations in accordance with the Missouri RES and Liberty's Solar Rebate Rider approved by the Commission, which continued in 2022.

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, the 300MW Neosho Ridge Wind project (located in Kansas), and the 149MW Kings Point Wind project (located in Missouri) reached commercial operation in 2021. These Commission approved resources were added to fulfill the Customer Savings Plan. Liberty also completed the addition of the 2.2MW Prosperity Solar Farm in 2021, however this facility is not utilized for RES compliance.

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 2022 by Liberty 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 2022 Total Retail Sales

Year	MWh	Revenue
2022	4,376,596	\$575,869,436

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 2022 and the MWhs that were supplied. (See ATTACHMENT 1)

Table 2: Total 2022 Retail Electric Sales Supplied by Renewable Energy

<u>Facility</u>	<u>Generation (MWh)</u>	<u>Percentage</u>	<u>Energy Supplied to MO Retail Customers (MWh)</u>
Elk River	307,985	88.90%	273,798
Meridian Way	199,398	88.90%	177,265
Ozark Beach	56,535	88.90%	50,259
North Fork Ridge	270,192	88.90%	240,200
Kings Point	299,176	88.90%	265,967
Neosho Ridge	299,485	88.90%	266,242
Prosperity Solar	3,199.86	100%	3,199.86
Total	1,435,970.86		

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

Table 3: 2022 REC/SREC Produced and Locational Marginal Pricing (LMP)
 CONFIDENTIAL

Facility	REC/SREC Produced	2022 Average LMP (\$/MWh)	REC / SREC Value (\$/Credit)
Ozark Beach			
North Fork Ridge Wind			
Kings Point Wind			
Neosho Ridge Wind			
Customer Generated Solar			
Prosperity Solar (Community Solar)			

*Market average for 2022 voluntary, non-Green-e SRECs

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

RECS ACQUIRED:

Liberty 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. Liberty utilizes the 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, Liberty purchases all of the output from the 150-megawatt Elk River Windfarm, and the 105-megawatt Meridian Way Wind Farm. In 2022, Elk River generated 307,985 MWhs and Meridian Way generated 199,398 MWhs. (See ATTACHMENT 2)

RECS SOLD/TRANSFERRED:

During 2022, 39,879 RECs from Meridian Way were sold through a purchased power agreement with Missouri Joint Municipal Electric Utility Commission and on the open market. Liberty was able to register and certify the new wind resources in 2022 and sold 468,918 RECs from Kings Point Wind, 417,707 from Neosho Ridge Wind, and 465,679 from North Fork Ridge. (See ATTACHMENT 3). These RECs were sold and transferred in the NARR.

RECS RETIRED:

During 2022, 56,589 2022 RECs from hydroelectric generation at Ozark Beach were retired to help fulfill the non-solar Missouri compliance obligation. In addition, 507,597 vintage 2021 and 2022 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 2022. Generation from Liberty owned wind resources was required for end-of-year compliance retirement.

In March of 2023, 11,825.6 vintage 2022 RECs from Ozark Beach, 28,575 from Kings Point Wind, and 13,340 from North Fork Wind were retired to complete the 2022 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, 44,198 SRECs generated from Liberty customers (Liberty Solar Aggregate Assets 1 – 44) in 2021 were utilized and were retired in December of 2022. 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, 592,761 RECs and 44,198 SRECs were retired to fulfill the 2022 Missouri compliance obligation. (See ATTACHMENT 4). Prosperity Community Solar Project retired 3,199.84 SRECs generated in 2022 on behalf of subscribing customers.

Table 4: Total 2022 RECs Sold, Carried Forward or Used for Compliance

<u>Facility</u>	<u>2022 Generation (MWh)</u>	<u>RECS Sold in 2022</u>	<u>RECS Carried Forward</u>	<u>RECS retired in 2022 for Compliance</u>	<u>RECS retired in 2023 for 2022 Compliance</u>
Elk River	307,985	0	74,006	279,486	0
Meridian Way	199,398	39,879	37,760	136,475	0
Ozark Beach	56,535	0	0	44,763	11,826
North Fork Ridge	270,192	465,679	0	49,721	13,340
Kings Point	299,176	310,011	2,381	28,575	28,575
Neosho Ridge	299,485	417,707	20,000	0	0
EDE Solar Aggregates 1-44	65,386	0	21,188	44,198	0
Prosperity Community Solar (Not for MoRES Compliance)	3,200	0	0	0	0
Total	1,501,357	1,233,276	134,147	586,418	53,741

*North Fork Ridge and Neosho Ridge sales include some generation from 2021.

**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 2022 as indicated in Table 3. The majority of the RECs were used for compliance or sold during the first quarter of 2023. 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 2022 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 Liberty 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).

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 Liberty as a condition of receiving the solar rebate instituted in May of 2015 and extending through 2022.

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

For the calendar year 2022, the annual number of customers that applied and received a solar rebate in accordance with section (4) of the Rule was a total of 697 Missouri solar net metering customers.

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

Liberty 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 LIBERTY FOR SOLAR REBATES

Annual funds expended by Liberty for 2022 solar rebates totaled \$2,158,333.70. 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 2022 Compliance Plan, ATTACHMENT 8.

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

Liberty has made every effort to comply and believes it has achieved compliance with the Missouri RES Compliance Plan for the 2022 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 2022 retail rate impact is 0.3% calculated using the total 2021 compliance cost of \$1,154,213 and the 2022 revenue requirement of \$724,060,740¹. Costs incurred for 2022 compliance totaled \$48,096.61 for the registration, retirement, and associated costs of REC and SREC management and reporting. The total rebates paid to our customers for customer generated solar in 2022 totaled \$2,158,333.70. The total compliance cost for 2022 was \$2,206,430.31.

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-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 North Fork Ridge Wind, Kings Point Wind and Neosho Ridge Wind, Elk River, Meridian Way and Ozark Beach, when the generation from customer-generated solar is also considered.

¹ This number is the Company's Surrebuttal Position in docket ER-2021-0312 which was ultimately resolved by a black box revenue requirement settlement agreement.

Table 5: Projected Non-Solar Compliance

Time Period	RES Requirement Percent	Mo Retail Sales (MWh)	Non-Solar Resources ¹							Total Non-Solar Requirement	Total RES Requirements
			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

ATTACHMENT 1:

WIND GENERATION ALLOCATION FOR MO RETAIL CUSTOMERS 2022

Facility	Generation (MWh)	Percentage*	Energy Supplied to Missouri Retail Customers (MWh)
Elk River Windfarm	307,985	88.9%	273,798
Cloud County Meridian Way Windfarm	199,398	88.9%	177,265
North Fork Ridge Wind	270,192	88.9%	240,200
Kings Point Wind	299,176	88.9%	265,967
Neosho Ridge Wind	299,485	88.9%	266,242

* Allocation based on 12-month average CP Demand Factor

From: [Kiernan Hardiman](#)
To: [Gregory Jarman](#)
Cc: [Pat Brewer](#)
Subject: Re: Cloud County
Date: Monday, April 3, 2023 11:53:59 AM

This Message Is From an External Sender

This message came from outside your organization.

Good morning Greg,

Thanks for talking with me on the phone on Friday, hope you're doing well! I brought this up to my manager, and we confirmed that the 2022 generation info from these facilities won't be submitted to us until June 1st during Verification. The only information we have regarding these facilities are the tracking attestation approval forms that I will be re-sending after this email. Feel free to contact me sometime in early July to confirm the voluntary sales from these facilities. You could also try checking the retirement reports of these facilities to see if there's any indication between compliance and voluntary sales. Thanks again for working with me and hope to talk to you later this year!

Best,

Kiernan Hardiman

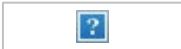
Program Analyst

He/him/his

kiernan.hardiman@resource-solutions.org

415-568-4290

www.resource-solutions.org



From: Gregory Jarman <Gregory.Jarman@libertyutilities.com>
Sent: Friday, March 31, 2023 2:36 PM
To: Kiernan Hardiman <kiernan.hardiman@resource-solutions.org>
Subject: RE: Cloud County

Kiernan,

Thank you for your assistance today. Attached are the Attestation forms that I am trying to locate. I am currently working on our Missouri Renewable Energy Standard(RES) report. Part of that report reads as follows:

“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.”

Than you again for your assistance and I look forward to hearing from you on Monday.
Have a great weekend.

Greg Jarman | Liberty Utilities (Central Region) | Manager of Renewable and Environmental Compliance
P: 417-625-6510 C: 417-438-1652 E: Gregory.Jarman@libertyutilities.com

From: Kiernan Hardiman <kiernan.hardiman@resource-solutions.org>
Sent: Friday, March 31, 2023 4:22 PM
To: Gregory Jarman <Gregory.Jarman@libertyutilities.com>
Subject: Cloud County

Hey!

Kiernan Hardiman

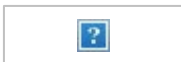
Program Analyst

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ATTACHMENT 8:
AFFIDAVIT OF COMPLIANCE WITH 2022
COMPLIANCE PLAN

The Empire District Electric Company
Liberty Utilities
2021 Annual RES Compliance Report
HIGHLY CONFIDENTIAL 20 CSR 4240-2.135(4)

On April 15, 2021, The Empire District Electric Company filed a Compliance Plan outlining our plan to comply with the Renewable Energy Standard for the years of 2021-2023.

In accordance with that document, EDE stated that the company would utilize the non-solar generation from a contract with Elk River Windfarm and generation from the Ozark Beach Hydroelectric facility owned by EDE. In order to meet the increased compliance requirement in 2022, EDE also utilized generation from Meridian Way Windfarm. In addition, generation from EDE-owned Kings Point and North Fork Ridge were required to meet the compliance obligation due to NARR registration lag. EDE retired 564,186 vintage 2021 and 2022 RECs from the facilities listed above in order to meet the 2022 non-solar compliance requirements.

EDE retired 44,198 customer generated SRECs for compliance with the solar requirement.

The 2022 RES Compliance Plan states that EDE will continue to utilize non-solar RECs generated by the Ozark Beach facility, the Elk River Wind Farm, and the Meridian Way Windfarm. EDE will utilize solar SRECs from customer-generated sources for solar-sourced compliance. EDE may also use RECs from owned wind or solar generation for compliance in the future.

The total costs for meeting the 2022 annual Missouri RES are as follows:

Resource	Cost
Ozark Beach, Kings Point, North Fork Ridge Generation	-0-
Solar Customer Generation Rebates	\$2,158,333.70
NAR Administration	\$48,096.61
RRI Calculations, Modeling	\$7,500
Elk River & Meridian Way PPA, Compliance Portion	****

On this date, 11/16/21, 10/20/23, before me appeared Drew Landoll, to me personally known, who, being by me **fi** **sworn**, states that he is Director, Strategic Projects, of the Empire District Electric Company and acknowledges that he has read the above and foregoing document and believes that the statements therein are true and correct to the best of his information, knowledge and belief.


Drew Landoll

SHERRI J. BLALOCK Notary Public • Notary Seal Newton County • State of Missouri Commission Number 14969626 My Commission Expires Nov 16, 2026
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Sherrig Blalock

ATTACHMENT 9 and 3: RES RETAIL RATE IMPACT

2023 RES Retail Rate Impact (“RRI”) Filing

The Empire District Electric Company (“Liberty” or “Company”) filed its 2022 Missouri triennial Integrated Resource Plan (“2022 IRP”) on April 1, 2022 in File No. EO-2021-0331. The 2022 IRP represents Liberty’s most recent electric utility resource planning analysis. Pursuant to 20 CSR 4240-22.100 (the “Rule”), Liberty used the 2022 IRP analysis to develop the assumptions regarding projected renewable energy resource additions. Liberty filed its 2023 IRP Annual Update compliance filing (“2023 IRP Annual Update”) in March 2023 in File No. EO-2023-0294. Liberty’s 2023 IRP Annual Update reviews the 2022 IRP preferred plan and the steps the Company has taken toward implementation since the filing of the 2022 IRP. As further described in the 2023 IRP Annual Update, Liberty has taken significant steps toward implementing its 2022 IRP preferred plan and does not expect any notable changes to the plan at this time.

As a part of developing the 2023 IRP Annual Update, Liberty identified how the uncertain factors identified as critical in the 2022 IRP have changed since the filing of the 2022 IRP. The identified critical uncertain factors were load, cost of new builds, natural gas prices, and emissions price and pressure to reduce carbon. In the 2023 IRP Annual Update, the critical uncertain factors were compared against the assumptions used in Liberty’s most recent and approved rolling six-year plan, which is internally referred to as the six-year budget and which is developed on an annual basis as a part of Liberty’s ongoing internal planning process. Liberty found that the values of fuel prices used in the latest six-year plan were higher than the 2022 IRP Base Case and more aligned with the 2022 IRP High Case, but not significantly enough to require re-modeling the IRP alternative plans in either the 2023 IRP Annual Update or in the 2023 RES filing. Additionally, the market power prices and fuel prices used for the 2023 IRP Annual Update were developed for internal planning and budgeting purposes and do not represent a fundamental long-term view of the SPP market. Liberty also found that new build capital costs for renewables have escalated more than expected in the 2022 IRP Base Case, although this effect has been largely offset by the enhanced tax credit provisions of the Inflation Reduction Act. Thus, Liberty did not update the PVRR results used for purposes of the RES RRI filing.

Liberty’s 2023 RES RRI analysis contained herein calculates the retail rate impact (“RRI”) on an incremental basis for each planning year based on procurement or development of renewable energy resources averaged over the next ten (10) years. The RES RRI is calculated by subtracting the total retail revenue requirement incorporating an incremental non-renewable generation and purchased power portfolio from the total retail revenue requirement including an incremental RES-compliant generation and purchased power portfolio.

Section 5(B) of the Rule states that the non-renewable generation and purchase power portfolio shall be determined by adding, to the utility’s existing generation and purchased power resource portfolio excluding all renewable resources, additional non-renewable resources sufficient to meet the utility’s needs on a least-cost basis for the next ten (10) years. Consistent with the Rule, Liberty defined the non-renewable generation and purchased power portfolio (“Plan 1 – No RES”)¹ as the utility’s existing generation and purchased power resource portfolio excluding all renewable resources except those

¹ This analysis was performed on the basis of Plan 1 derived for the 2022 IRP. Plan 1 was not revised to reflect recent changes to the resource adequacy construct identified for the 2023 Annual Update, including accreditation and reserve margin. The substitution of a 30 MW gas turbine in place of RICE units at the Riverton site in 2025 was also not applied. These adjustments would yield similar incremental changes to thermal resources for Plan 1 and Plan 1 – No RES, resulting in an unchanged comparison baseline. Therefore, the basis of Plan 1 from the 2022 IRP remains a robust point of comparison for the RES Retail Rate Impact analysis.

owned or contracted prior to September 30, 2010,² plus additional non-renewable resources sufficient to meet the utility's needs on a least-cost basis for the next ten years. To develop the Plan 1 – No RES portfolio, Liberty removed the following renewable resources from Liberty's existing portfolio:

Resource Name	Resource Type	ICAP MW by 2041
Neosho Ridge	Wind	301
North Fork Ridge	Wind	149
Kings Point	Wind	149
Prosperity Solar	Dist. Solar	2.5

To maintain a minimum capacity margin of 12% over the modeling horizon, a 60 MW natural gas reciprocating engine ("RICE") was added in 2022, 30 MW RICE was added in 2025, 180 MW RICE was added in 2035, 30 MW RICE was added in 2037, and 240 MW of a natural gas combustion turbine ("CT") frame was added in 2039.

Rule 5(B) states that the RES-compliant portfolio shall be determined by adding to the utility's existing generation and purchased power resource portfolio an amount of least cost renewable resources sufficient to achieve RES requirements and an amount of least-cost non-renewable resources, the combination of which is sufficient to meet the utility's needs for the next ten (10) years. Because Liberty's existing portfolio including all renewable resources already more than achieves RES requirements, Liberty added to the current existing portfolio a least-cost amount of non-renewable resources ("Plan 1"). To maintain a minimum capacity margin of 12% over the modeling horizon, Plan 1 adds 30 MW RICE in 2025, 150 MW RICE in 2035, and 240 MW CT Frame. Relative to Plan 1 – No RES, Plan 1 also includes 600 MW wind in 2020-2021.

Rule Section 5(B)4 states that the assumptions for this filing should utilize the most recent electricity utility resource planning analysis. Liberty used power market prices, natural gas fuel prices, and emissions prices from its most recent electric utility resource planning analysis assumptions. Consistent with the 2022 IRP, a 20% probability weighting was given to the Low carbon emissions cost scenario and a 40% probability weighting was given to both the Base and High carbon emissions cost scenarios.

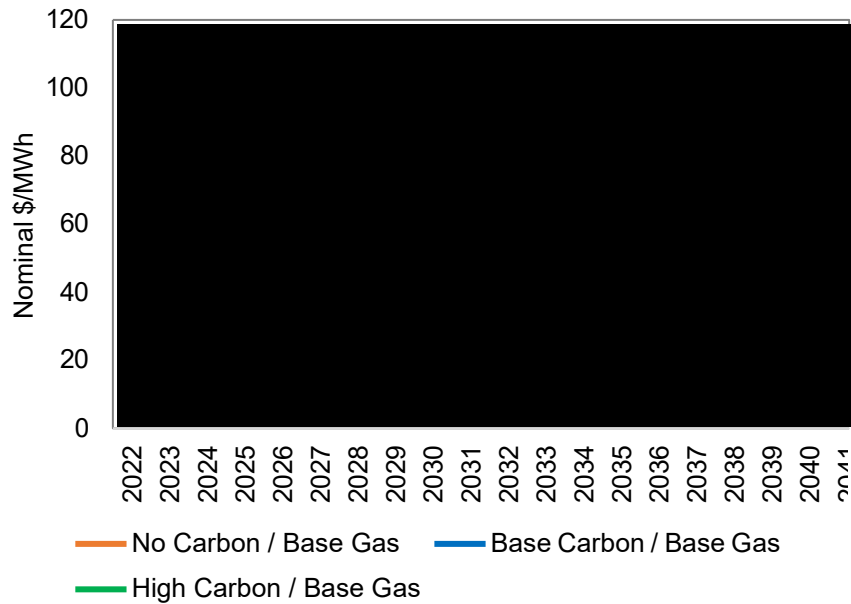
Table 1 includes the expected value of costs associated with carbon emissions used in this analysis. Exhibit 1 includes forecast power prices for the EDE_EDE load node with and without the impact of a carbon tax.

² Pursuant to Rule Section 5(A), because the Ozark Beach hydro facility, the Meridian Way Windfarm PPA and the Elk River Windfarm PPA were all owned or contracted prior to September 30, 2010, they were kept in the non-renewable generation and purchase power portfolio.

Table 1: Expected Value of Carbon Tax (Nom\$/Short Ton) CONFIDENTIAL INFORMATION

	Carbon Tax (\$Nom/Short Ton)			Expected Value
	No Carbon - 20%	Base Carbon - 40%	High Carbon - 40%	
2021	-	-	-	-
2022	-	-	-	-
2023	-	-	-	-
2024	-	-	-	-
2025	-	-	-	-
2026	-	-	-	-
2027	-	-	-	-
2028	-	-	-	-
2029	-	-	-	-
2030	-	-	-	-
2031	-	-	-	-
2032	-	-	-	-
2033	-	-	-	-
2034	-	-	-	-
2035	-	-	-	-
2036	-	-	-	-
2037	-	-	-	-
2038	-	-	-	-
2039	-	-	-	-
2040	-	-	-	-

Exhibit 1: EDE_EDE Annual Average Power Prices (Nom\$/MWh) CONFIDENTIAL INFORMATION*



Results:

The following table shows the calculation for the average 10-year compliance spend over the 10-year period (2023-2032) as required by Rule 5(B). The RRI Budget is calculated as 1% of the Plan 1 Revenue Requirement. Actual Compliance Spend is calculated as the difference between the PVRRs of Plan 1 – No RES and Plan 1 in each year. As indicated in the table, the average Actual Compliance Spend for the 10-year period does not exceed the budgeted 1% RRI for the 10-year period.

Exhibit 2: 2023-2032 Annual Revenue Requirements and RES Compliance Spend CONFIDENTIAL INFORMATION

<i>Dollars in millions</i>	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
RRI Budget (2023-2032)											
Actual Compliance Spend (2023-2032)											
Revenue Requirement (2023-2032)											
Budget (% of RR)											
Actual Compliance Spend (% of RR)											

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 2023 RES RRI Filing 20 CSR 4240-20.100
 CONFIDENTIAL 20 CSR 4240-2.135(2)(A)5

The following tables summarize the Retail Rate Impact calculation, including the annual carry-forward amount required by Rule 5(G).

Exhibit 3: 2023-2032 RRI Calculation Period CONFIDENTIAL INFORMATION

2023-2032 RRI Calculation Period		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)												
	Annual 1% (\$MM)												
	Actual Costs of Compliance												
	Annual Over (Under)												
	Plus Prior Carryover												
	Cumulative Carryover												

Exhibit 4: 2024-2033 RRI Calculation Period CONFIDENTIAL INFORMATION

2024-2033 RRI Calculation Period		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)												
	Annual 1% (\$MM)												
	Actual Costs of Compliance												
	Annual Over (Under)												
	Plus Prior Carryover												
	Cumulative Carryover												

Exhibit 5: 2025-2034 RRI Calculation Period CONFIDENTIAL INFORMATION

2025-2034 RRI Calculation Period		2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)												
	Annual 1% (\$MM)												
	Actual Costs of Compliance												
	Annual Over (Under)												
	Plus Prior Carryover												
	Cumulative Carryover												

Exhibit 6: 2026-2035 RRI Calculation Period CONFIDENTIAL INFORMATION

2026-2035 RRI Calculation Period		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)	[REDACTED]											
	Annual 1% (\$MM)	[REDACTED]											
		[REDACTED]											
		[REDACTED]											
	Actual Costs of Compliance	[REDACTED]											
	Annual Over (Under)	[REDACTED]											
	Plus Prior Carryover	[REDACTED]											
	Cumulative Carryover	[REDACTED]											

Exhibit 7: 2027-2036 RRI Calculation Period CONFIDENTIAL INFORMATION

2027-2036 RRI Calculation Period		2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)	[REDACTED]											
	Annual 1% (\$MM)	[REDACTED]											
		[REDACTED]											
		[REDACTED]											
	Actual Costs of Compliance	[REDACTED]											
	Annual Over (Under)	[REDACTED]											
	Plus Prior Carryover	[REDACTED]											
	Cumulative Carryover	[REDACTED]											

Exhibit 8: 2028-2037 RRI Calculation Period CONFIDENTIAL INFORMATION

2028-2037 RRI Calculation Period		2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)	[REDACTED]											
	Annual 1% (\$MM)	[REDACTED]											
		[REDACTED]											
		[REDACTED]											
	Actual Costs of Compliance	[REDACTED]											
	Annual Over (Under)	[REDACTED]											
	Plus Prior Carryover	[REDACTED]											
	Cumulative Carryover	[REDACTED]											

Exhibit 9: 2029-2038 RRI Calculation Period CONFIDENTIAL INFORMATION

2029-2038 RRI Calculation Period		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)	[REDACTED]											
	Annual 1% (\$MM)	[REDACTED]											
		[REDACTED]											
	Actual Costs of Compliance	[REDACTED]											
	Annual Over (Under)	[REDACTED]											
	Plus Prior Carryover	[REDACTED]											
	Cumulative Carryover	[REDACTED]											

Exhibit 10: 2030-2039 RRI Calculation Period CONFIDENTIAL INFORMATION

2030-2039 RRI Calculation Period		2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)	[REDACTED]											
	Annual 1% (\$MM)	[REDACTED]											
		[REDACTED]											
	Actual Costs of Compliance	[REDACTED]											
	Annual Over (Under)	[REDACTED]											
	Plus Prior Carryover	[REDACTED]											
	Cumulative Carryover	[REDACTED]											

Exhibit 11: 2031-2040 RRI Calculation Period CONFIDENTIAL INFORMATION

2031-2040 RRI Calculation Period		2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)	[REDACTED]											
	Annual 1% (\$MM)	[REDACTED]											
		[REDACTED]											
	Actual Costs of Compliance	[REDACTED]											
	Annual Over (Under)	[REDACTED]											
	Plus Prior Carryover	[REDACTED]											
	Cumulative Carryover	[REDACTED]											

Exhibit 12: 2032-2041 RRI Calculation Period CONFIDENTIAL INFORMATION

2032-2041 RRI Calculation Period		2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	10-Year	Cumulative
	Baseline Revenue Requirement (\$MM)												
	Annual 1% (\$MM)												
	Actual Costs of Compliance												
	Annual Over (Under)												
	Plus Prior Carryover												
	Cumulative Carryover												