2025 PISA Report

Annual Update

The Empire District Electric Company
d/b/a Liberty

February 28, 2025

Table of Contents

Introduction

This report satisfies the requirements of RSMo. 393.1400 based on the election to Plant in Service Accounting ("PISA") by The Empire District Electric Company d/b/a Liberty ("Liberty" or the "Company"). This is the 2025 PISA Annual Report which provides an update on the Company's planned investments and updates the past reports filed in 2021 through 2024 in Missouri Public Service Commission ("Commission") File No. EO-2019-0046.

This report reflects a snapshot in time of Liberty's intentions regarding budget plans for the next five years. Organizational priorities and plans are prone to shift based on evolving needs, technology, supply chain issues, and the economic landscape, resulting in adjustments to the reported budget and spending forecast.

- Liberty continuously evaluates and analyzes the needs of its customers and the electric grid, the condition of Liberty's infrastructure, the costs and accessibility of modern technologies, and the availability of new technologies.
- Liberty continuously strives to make the most of every dollar and every hour of labor, to provide reliable and affordable electric service most efficiently to its customers.
- Liberty will continue to be active and dedicated partners to the customers we serve. Our planned initiatives will enhance reliability and safety and help save our customers money over other alternatives. Our investments strike a balance between affordability and service quality.
- Additionally, it is important to note that challenges with supply chains for specialty equipment could result in impacts to Liberty's ability to execute on portions of this investment plan. Procurement leaders are constantly assessing this situation and notifying planners.
- As mentioned, plans are always being re-evaluated and are subject to change. For example, the Company's next triennial integrated resource plan ("IRP"), due to be filed in April 2025, can impact future projects (see the section "The Integrated Resource Plan (IRP)" presented below).

PISA Agreements from Past Cases

The stipulation and agreement in Commission File No. ER-2021-0312 states that Liberty "will meet with Staff and OPC at least twice regarding 'parameters and assumptions' and will provide… cost-benefit analyses and performance metrics for planned capital investments of greater than $1 million." Additionally, these metrics and analyses will be updated annually and filed in the Company's PISA docket. Liberty held its initial meeting with Commission Staff ("Staff") and Office of the Public Counsel ("OPC") on September 27, 2022, and a second meeting was held on February 24, 2023.

Liberty's cost-benefit analyses ("CBA") and performance metrics for investments that meet the $1 million threshold are included as Exhibit 4 within the Company's PISA docket.

Separately from the settlement commitments, based on the statute, for each project in the specific capital investment plan on which construction commences on or after January 1st of the year in which the plan is submitted (in this case 2025), and where the cost of the project is estimated to exceed $20 million, a cost benefit statement will be provided as Exhibit 3 within the Company's PISA docket.

2024 Actual Capital Expenditures

As required by statute, Liberty is submitting Exhibit 1, a detailed account of actual capital investments made in 2024.

Additionally, Liberty is providing, as required by statute, "the quantitatively evaluated benefits and costs generated by each of those investments that exceeded $20 million, and any efficiencies achieved as a result of those investments." The project that met the $20 million threshold and went into service in 2024 is included in Exhibit 2.

The Integrated Resource Plan (IRP)

Liberty filed its most recent triennial IRP in Missouri on April 1, 2022. This IRP was then submitted in Arkansas in July 2022, and in Oklahoma in June 2023 based on a three-year submission cycle. As required by the Missouri Commission's Electric Utility Resource Planning Rule (Chapter 22), a full compliance filing is made every three years, and an IRP annual update is prepared and filed in all other years. Following the most recent triennial filing in 2022, the Company filed IRP Annual Updates in March 2023 and March 2024. Currently, the Company is developing its 2025 triennial IRP, which is planned to be filed in Missouri by April 1, 2025.

The IRP process results in a target list of resource candidates to serve Liberty's future customer needs. The IRP enables the utility to develop a preferred resource plan and initiate an acquisition strategy. The IRP is a plan, but it should be noted that not all aspects of the plan progress to projects that become a part of Liberty's future capital investment plans. This investment plan includes the next planned resource investments to meet growing customer needs or to replace aging units. Specifically, this plan includes the replacement of a portion of the Riverton generation facility (Riverton Units 13 and 14), scheduled for the 2026 timeframe and the Company's first utility-scale solar project. Progress is being made on these projects, and changes since the time of the 2022 IRP filing have been outlined in the IRP Annual Update process. Each of these projects will be discussed further herein.

Resource planning is a dynamic process. Since the Company filed the 2022 IRP, conditions in the electric industry continue to evolve. This includes changes to the Southwest Power Pool ("SPP") resource adequacy requirements; the proposed introduction of performance-based accreditation which will be implemented in the near future for traditional generating resources; updated estimates to Effective Load Carrying Capability ("ELCC") ratings for renewable resources which is planned to be implemented within SPP following FERC approval; and the passage of the Inflation Reduction Act ("IRA") and Infrastructure

Investment and Jobs Act ("IIJA") to name just a few notable industry shifts. The Company's 2025 IRP is still under development, but it will address these changes.

Investment Summary

Liberty's 2025 investment summary consists of approximately $2,174.8 million over the next five years across eight categories of investment. These investments represent Liberty's long-term planning estimates of expected capital investment on the electric infrastructure for Liberty in the Central Region. While this infrastructure is predominantly located in Missouri, serving Missouri residents, the Central Region also operates electric infrastructure and serves electric customers in Kansas, Arkansas, and Oklahoma. Liberty's capital investment plan addresses electric infrastructure for Liberty's entire Central Region, not just for the state of Missouri.

This report addresses Liberty's current plan and estimates for investment in identified projects across these eight strategic areas to modernize its electric infrastructure. Annually, project and program owners submit progression status and five-year forward-looking budget estimates for evaluation and approval into Liberty's full capital investment plan. The results of this year's approved version for 2025 through 2029 are detailed in the table below. Each year, Liberty will continue to evaluate, adjust, and report this five-year investment plan. As noted, Liberty continuously evaluates and analyzes the needs of its customers and the electric infrastructure, with budget priorities and plans shifting based on evolving needs and emerging technology.

2025 Liberty Capital Investment Plan *$ Millions*

Program Name	2025	2026	2027	2028	2029	Total
Solar	$11.0	$10.0	$99.0	$225.2	$0.0	$345.3
Plant Emissions	$1.3	$1.5	$1.6	$1.7	$1.8	$8.1
Transportation Electrification *	$0.2	$0.8	$0.4	$0.3	$0.3	$1.9
Cyber & Technology Upgrades *	$15.7	$13.2	$13.2	$13.6	$13.6	$69.4
Grid Resiliency - Distribution *	$78.2	$127.7	$159.3	$163.1	$152.2	$680.5
Grid Resiliency - Transmission	$29.2	$91.1	$173.5	$282.9	$216.9	$793.6
Generation Optimization	$36.7	$42.6	$73.3	$53.6	$25.9	$232.1
Total	$172.3	$287.0	$520.3	$740.5	$410.8	$2,130.9
New Thermal Generation	$21.5	$22.5	$0.0	$0.0	$0.0	$44.0
Total including New Thermal Gen	$193.7	$309.5	$520.3	$740.5	$410.8	$2,174.8
Grid Modernization Subtotal	$94.0	$141.7	$173.0	$177.1	$166.2	$751.9
Grid Mod Percentage (%)	55%	49%	33%	24%	40%	35%

This reported investment plan reflects Liberty-Empire's full budget, not just focused on PISA-eligible spend.

AFUDC is not included in this report and investment plan summary.

Planned costs for retirement projects are not included in this report and investment plan summary.

* Included in the Grid Modernization subtotal.

Liberty's capital investment plan is centered around grid modernization investments that optimize operations, automate, and improve the flexibility of the grid, facilitate integration of distributed renewable generation, improve power quality, and increase the use of digital

information, the security and safety of the grid, and the grid' s resiliency to withstand threats from vegetation and damaging winds and other extreme weather events. The PISA statute specifies that at least 25% of each year's planned investment be for grid modernization projects. As shown in the table above, this level is easily achieved in four of the five years presented. At this time, 2028 costs associated with the 2027 utility-scale solar generation addition significantly impacts grid modification percentage for the year. If solar is not included in the divisor for calculating the grid modification percentage, the 2028 grid modification percentage increases to 34%. The table also includes a large "below the line" project for new thermal generation. This important reliability addition of new thermal generation at the Riverton site is not PISA eligible.

Investments in resiliency represent a major portion of Liberty's investment plans and follow examples set by progressive peers in the industry. It is crucial to our communities that our infrastructure continues to perform even under extenuating circumstances and extreme weather events.

Safety and Reliability

Customers consistently point to reliability as a top priority, and Liberty is committed to operating and maintaining its grid infrastructure in a safe and reliable manner on behalf of the communities it serves. Not all these improvements will be readily visible to customers, nor are they limited to the installation of physical assets or devices, but they will benefit customers, nonetheless.

Grid Resiliency – Distribution

Liberty continually updates our philosophy for design and construction of Liberty's electric distribution system. Our grid resiliency design philosophy will be applied through a series of projects and through the recurring process of constructing new or replacing old facilities to accomplish a stronger and more resilient infrastructure.

Liberty has evaluated and approved numerous projects to improve the resiliency of its electrical infrastructure. Notable projects include:

- Replace and upgrade distribution circuit breakers.
- Replace and upgrade critical aged assets and equipment prone to failure.
- Build new substations to accommodate redundancy and load growth.
- Install and upgrade animal guards on distribution and substation equipment.
- Increase capacity and resiliency of lines serving remote communities.
- Systematically inspect, treat, and replace old underground cable as needed.
- Upgrades to service center facilities and equipment inventories.
- Install Fault Location Isolation and Restoration (FLISR) systems associated with IIJA Grant.

These projects, among others, will increase the resiliency of distribution infrastructure to withstand threats from vegetation and extreme weather, increase load-carrying capacity

to accommodate evolving customer loads and two-way power flows, and reduce the average age of distribution assets reducing risk and frequency of failure. As emerging technologies present opportunities to approach existing problems in new ways, Liberty seeks to add them to its planning toolbox.

Grid Resiliency – Transmission

Like Distribution Resiliency, projects and investments on Liberty's transmission infrastructure will improve system resilience through strategic upgrades and rebuilding of core facilities such as high-voltage transmission lines and associated substations. Notable projects include:

- Addition and upgrade of 69kV and 161kV breakers.
- Upgrade and expansion of SCADA to Liberty's substations.
- Replace and upgrade aged transmission structures.
- Replace and upgrade critical transmission lines delivering electricity to Joplin, Missouri, and other load concentrations across Liberty's service territory.

These projects will increase the resiliency and flexibility of transmission infrastructure to accomplish system redundancy for continued service through equipment failures or other disruptions and implement more robust structures to withstand threats from vegetation and extreme weather.

Grid Resiliency – Notable Accomplishments

Liberty continued its investment into our reliability and inspection programs in 2024. The Company supports the reliability requirements through a distribution system inspection program in all jurisdictions. Liberty replaced or reinforced transmission and distribution poles that were identified through the field inspections. The work included in this project is the replacement of poles, wire, anchors, and other items. This project also includes the reinforcement of structures to extend the useful life of the asset.

Additionally, in 2024, Liberty completed work at multiple substations. A new Liberty substation was energized in the city of Greenfield, Missouri in 2023. This substation provides additional system capacity and switching capacity for the area. Additional work converting 4kV distribution facilities to 12kV leading to the substation was completed in Greenfield in 2024.

The Company rebuilt an aged substation in Southwest Missouri known as Wanda Substation #399. The primary goal of this project was to replace dated substation equipment with updated equipment. The substation had a 7.5 megavolt-amperes ("MVA") transformer that followed an older standard version of oil containment. This transformer was replaced with a 10.5 MVA – 69/12kV transformer with current oil containment standards. The new 12kV arrangement consists of a 3-bay in-line distribution structure with two 12kV breakers and a spare bay for the future with a new control house.

The Company rebuilt an aged transmission substation in the former town of Hockerville, Oklahoma. Substation Hockerville #404 is a critical transmission node on the 161 kV system connecting two outside entities into Liberty's transmission network. The site contains two autotransformers and provides sources for two 69 kV lines. This project replaced aging infrastructure to improve reliability. New foundations, auto-transformer, breakers, and control enclosures were installed to replace the existing aged equipment. The new control enclosure was installed with modern relay panels, communications equipment, and DC battery systems. This substation was rebuilt in place to minimize outages and construction costs. Completion of this project will allow for increased reliability and reduced need for maintenance for decades to come.

Tipton Ford Substation #292

Substation #292 is a critical transmission node on the 161kV system located in Newton County, Missouri. Positioned where four transmission lines converge, Substation #292 is essential in providing reliable power to many Liberty customers. Rebuilding the substation will improve system reliability through the installation of a 161kV ring bus and significant transmission and distribution line work. The project will also allow for replacement of aging assets while at the same time maintaining service to Liberty customers, allowing Liberty to apply current day standards, install modernized equipment, and prepare the substation for future load growth. Completion is anticipated near the end of 2026 with an estimated cost of approximately $34 million.

Southwest Power Pool Transmission Planning

According to SPP, the Integrated Transmission Planning ("ITP") process promotes transmission investment to meet near- and long-term reliability, economic, public policy, and operational transmission needs. As a member of SPP, Liberty was awarded significant transmission projects within its service territory via the ITP process, which are part of the Company's five-year investment plan. The ITP process coordinates solutions with ongoing compliance, local planning, interregional planning, and tariff service processes. The goal is to develop a 10-year regional transmission plan that provides reliable and economic energy delivery and achieves public policy objectives, while maximizing benefits to the end-use customers. The 2024 ITP is guided by requirements defined in SPP's Open Access Transmission Tariff ("OATT") Attachment O, which describes the ITP process, and can be found within the SPP's ITP Manual and the 2024 ITP scope.

The ITP process is open and transparent, allowing for stakeholder input throughout the assessment. SPP staff coordinated the study results with other entities, including those embedded within the SPP footprint and neighboring first-tier entities. The objectives of the ITP are to:

- Resolve reliability criteria violations;
- Improve access to markets;
- Improve interconnections with SPP neighbors;

- Meet expected load-growth demands;
- Facilitate or respond to expected facility retirements;
- Synergize with the Generator Interconnection ("GI"), Aggregate Transmission Service Studies ("ATSS"), and Delivery Point Assessment ("DPA") processes;
- Address persistent operational issues;
- Facilitate continuity in the overall transmission expansion plan; and
- Facilitate a cost effective, responsive, and flexible transmission network.

On October 29, 2024, the SPP Board of Directors approved a historic nearly $7.7 billion plan to expand and upgrade the region's transmission capacity. SPP's 2024 ITP is the single largest proposed construction portfolio in SPP's 20-year history as a transmission planning coordinator. The initiative, which took 27 months of study and the evaluation of over 2,100 potential solutions to anticipated system needs, represents a major milestone in serving increasing demand for reliable electricity throughout the region. The ITP sought to provide cost levelization across the SPP footprint, relief of operational congestion, a more reliable and resilient electrical grid, and to facilitate resource adequacy, generation interconnection, and delivery point load additions. The $7.68 billion investment in the 2024 ITP portfolio is comprised of reliability, winter weather, economic, short circuit and operational projects that will mitigate 1,062 system issues. Reliability projects allow the region to meet compliance requirements and keep the lights on by providing loading relief, voltage support, and system protection. Winter weather projects address voltage and thermal overload violations that SPP observed during winter storm Elliott (December 2022) and a generically modeled winter storm based on aggregation of common stressors from multiple previous storms. Economic projects allow the region to lower energy costs through mitigation of transmission congestion. This includes 89 projects, totaling 495 miles of transmission rebuilds and 2,333 miles of new transmission.

Liberty was selected for two extra-high voltage ("EHV") projects as well as three high voltage ("HV") projects. These projects amount to the largest transmission projects in the Liberty footprint in over 40 years. The Delaware–Monett 345kV project will construct 114.5 miles of new transmission lines between Delaware, Oklahoma and Monett, Missouri. The project, which will be split with American Electric Power ("AEP"), is estimated at nearly $343 million. The Monett–North Branson 345kV project will construct 47.2 miles of new transmission lines between Monett and Branson, Missouri. The project is estimated at nearly $166 million. The Monett–Aurora, Aurora–Ozark Powersite Dam 161kV, and Ozark S.–Ozark Powersite 161kV conversion projects will rebuild 92.2 miles of existing transmission. The EHV group of projects is estimated at approximately $337 million (assuming 50/50 split of joint project with AEP) and the HV group of projects is estimated at over $198 million. While Liberty will be responsible for the upfront costs of the projects, SPP's cost allocation policy will reimburse the Company over the estimated 40-year life of each project. Projects over 300kV are considered regional and Liberty will be responsible for its load ratio share (approximately just under 3%). In addition, Liberty is responsible for its load ratio share for all 300kV+ projects within the SPP region. Projects between 100kV

and 300kV are considered zonal and cost allocation is 33% regional and 67% zonal. Liberty's retail customers will pay approximately 94% of all zonal costs.

Generation Optimization

In today's eco-friendly world, the utility space is under pressure to optimize the safety, utilization, and operational efficiency of all their assets and equipment. This is especially true for existing coal and natural gas plants. Liberty is prudently investing to optimize its existing generation facilities with focus on failure risk, reliable and responsive operation, and fuel conversion efficiency. With the recent passage of performance-based accreditation in the SPP and continued focus on weather related reliability standards from the North American Electric Reliability Corporation ("NERC"), investment in the reliable operation of its generation fleet to increase resiliency and stay in compliance with changing standards will be paramount.

These optimization and continuous improvement projects vary in size and scope ensuring plant safety as a top priority, while focusing on economic sustainability and operational reliability. These projects involve upgrades that include comprehensive control system replacement, combustion turbine ("CT") rotor upgrades, insulation enhancement, access platform upgrades, valve upgrades, pump upgrades, drainage improvements, plant automation augmented with tools that will help standardize operational decisions, LED lighting, labor saving tools, water saving upgrades, and more. With the implementation of these projects, Liberty will be able to offer greater longer-term value to its customers through sustained operations of these plants until they are replaced by renewable generation alternatives in a cost-effective manner.

New Thermal Generation

The Riverton Units 10 and 11 replacement project is in progress and part of the capital project plan although this project is not PISA eligible. The Riverton Replacement project will install two CT generators which will be called Riverton Unit 13 and Riverton Unit 14. Each new CT unit will have a nominal net output of roughly 13.3 MW. The turbines are fast-starting and are dual fuel capable, providing resiliency for periods of natural gas scarcity and the capability to start when no off-site power is available. The two new turbines will have no post-combustion pollution controls but will employ dry low NOx combustion to limit NOx formation. The new units will be more efficient than the existing units, meaning they will consume approximately 37% less fuel per kWh generated than the units they will replace. Additionally, the CTs may provide a benefit for the potential of utilizing H2 as a blend fuel in the future. This project has a projected commercial operation date in the third quarter of 2026.

Infrastructure Investment and Jobs Act Projects

As discussed in the last year's PISA update report, on October 18, 2023, the U.S. Department of Energy ("DOE") announced that Liberty was selected to receive up to $47.5 million in funding support for a project seeking to deploy Distribution Automation ("DA")

autorecloser devices across the Company's distribution system, while making other technology and equipment capacity and resilience upgrades required to support grid automation. The project, provisionally termed "Project DA" was selected for funding through the Grid Resilience and Innovation Partnerships Program ("GRIP") from the DOE's Grid Deployment Office. Following a nearly year-long project due diligence process, the DOE formally issued the Notice award to Liberty for Project DA on September 26, 2024. The project work was formally kicked off on November 18, 2024, and is expected to be completed by the end of 2029.

The grant funds will allow the Company to install or upgrade over 300 DA devices across approximately 160 circuits, while reconductoring and hardening over 30 miles of distribution lines and upgrading capacity at several distribution substations. An associated benefit of this program will be the ability to monitor the status and loading of the distribution system at over 300 new points, improving our ability to detect and respond to system disturbances. The DOE's support of the project means that Liberty's customers in Arkansas, Kansas, Missouri, and Oklahoma can benefit from improved service reliability, resilience, and added capacity to accommodate renewables, while experiencing rate impact that is significantly reduced by way of a DOE funding contribution, provided that relevant regulatory commissions approve the associated investments in future rate filings. Aside from the service-related benefits, the projects are poised to contribute to the local economy by creating direct and indirect jobs and facilitating skills advancement for line personnel.

It is also notable that the DOE awarded another GRIP program grant to Liberty's California affiliate, Liberty Utilities (CalPeco Electric) LLC, on October 1, 2024. The California project will deploy the latest Advanced Metering Infrastructure ("AMI") solution in California, which includes a number of advanced field telecommunications and grid edge computing features, that can create important synergies with project DA. Aside from the technological synergies, the two affiliates plan to coordinate their grant management and reporting activities to share best practices and streamline administrative tasks.

Please refer to Exhibit 4 for further discussion of Project DA background, scope, and targeted outcomes and capabilities.

Modernization

Electric consumers are evolving, and Liberty is responding. As preference trends shift to greater energy efficiency and decarbonization, Liberty is updating its fleet, operations, customer programs, and digital infrastructure to meet these shifts in a safe and secure manner.

Solar Generation (Photovoltaic)

The Company is continuing the planning of approximately 175 MW of utility-scale solar as outlined in the Company's most recent IRP update. In 2024 a request for proposals was sent to known developers, within Liberty's service territory, which had existing

development projects. The project team continues to engage and negotiate with the potential developers. However, given the changing dynamics surrounding the SPP's resource adequacy construct, evolving market dynamics, and the timing of this report, it is not certain that this project will proceed, and an update will be provided during a future period.

Plant Emissions

Liberty will continue to prudently invest in the maintenance and optimization of its operating fossil fuel plants to ensure they perform reliably, run optimally, and emit as few pollutants as possible during their remaining operational life. It should be noted that Liberty's only remaining coal generation is from two jointly owned facilities.

Projects include upgrades to generation units and their control systems that improve heat rate (net efficiency of conversion from fuel to electricity) and increase net power output capacity. Other projects consist of proactively replacing aged equipment that are at higher risk of failure to ensure reliable operations.

For more details on Liberty's long-term generation supply plans in Liberty's Central Region, please refer to Liberty's upcoming IRP which is planned to be filed with the Commission on April 1, 2025.

Transportation Electrification

Decarbonizing transportation through electrification contributes to safer and healthier communities. Liberty is supporting this objective through a diverse portfolio of projects and programs that enable transportation electrification equitably across its service territory through education, charging infrastructure, financial incentives, and hands-on support with customers as they transition their fleets and specific equipment to electric. These programs include Residential Smart Charge Program, Ready Charge Program, School Bus Electrification Program, Commercial Electrification Program, Fleet Advisory, Non-Road Customer Incentives, and Administration, Education, and Analytics. In January 2022, a Liberty Transportation Electrification ("TE") pilot comprised of utility-administered electric vehicle ("EV") charging programs for different types of electric customers was approved by the Commission (File No. ET-2020-0390).

Aside from supporting the development of EV infrastructure in Liberty's service territory, the TE pilot program continues to enable the Company to gather insights in multiple areas that will enhance its long-term planning capabilities, including:

- The extent (if any) of accelerated strain to adjacent assets brought about by EV charging (and especially Direct Current chargers).
- Technical and operating parameters of potential Vehicle-to-Grid and EV-specific Demand Response ("DR") schemes.
- The demand elasticity of EV charging in response to the Time of Use rate schedules approved by the program.

- Customer journey insights, including the real and perceived barriers of customer EV adoption in Liberty's service territory.
- The suitability of charger equipped consumption measurement devices for the purposes of utility customer billing.

In addition to these Transportation Electrification programs for customers, Liberty continues to decarbonize emissions from its own fleet.

Technology

Corporate IT executed enterprise-wide initiatives that enhanced operational efficiency, cybersecurity, and customer service across the organization. Our key focus areas included Customer Experience, Cybersecurity, Technology Modernization, Operational Technology, Reliability and Resiliency, SAP Optimization and Enhancements, and System Sustainment. Notable achievements include the final rollout of Customer First programs, which impacts nearly every aspect of the Company and includes the new suite of SAP tools; modernization of network infrastructure; improved system reliability and scalability; and the deployment of advanced endpoint security measures. Additionally, enhanced Cloud network capacity has significantly strengthened resiliency and performance. Cybersecurity best practices were embedded into project execution, ensuring robust security frameworks for all future initiatives.

Looking ahead our focus will be on further modernizing our SAP systems to ensure ongoing supportability and operational reliability. This includes system upgrades, cloud migrations, and advancements in analytics and financial planning tools. We will also continue to enhance our cybersecurity posture by expanding security tools and improving processes to mitigate risks to critical infrastructure. Additionally, we aim to improve customer experience through technology upgrades and the introduction of new tools to support workforce management and self-service options. These initiatives are designed to ensure continuity of operations and support our long-term strategic goals. The benefits of these programs will be realized by all utilities within our corporation, ensuring consistent and high-quality service delivery across all regions.

Cyber

In coordination with application, system, and integration upgrades associated with the Customer First program and other technologies, Liberty is upgrading parts of its digital infrastructure, cybersecurity, data governance, and analytics. This involves investments in computer, server, and network upgrades to support user access and bandwidth. It also includes investments in safe and secure cloud strategies that facilitate collaboration and increase data utilization without exposing sensitive information or critical systems. The Cybersecurity Program is a multi-year programmatic uplift of Liberty's cybersecurity readiness to adjust to the changes in the technology landscape and build internal capacity to respond to the growing threats targeting utility operations. The program's objectives and desired outcomes are mapped to the National Institute of Standards and Technology

("NIST") Cybersecurity Framework ("CSF"). This includes continuous on-going assessments to improve the program's outcomes and value. New digital architectures have been established with accompanying governance strategies and procedural documentation. Liberty's customers will experience improved and secure utilization of operational and customer data, leading to enhanced operational efficiency for utility personnel. This includes the proactive identification and resolution of issues before they lead to service disruptions, as well as optimized utilization of utility infrastructure.

Investment Plan Summary and Conclusion

As compared to the Company's investment plan for 2024, the estimated capital investment for year 2025 (excluding new thermal generation) is lower by $82.8 million, or about 33%. Overall, this year's five-year investment plan, not including new thermal generation, covering the period 2025-2029, is approximately $644.4 million higher than last year's plan which covered the period 2024-2028. Comparing the common period of 2025-2028 without new thermal generation, this year's plan is about $551.8 million or 47% higher than the same period last year. The most noticeable changes between the 2024 and 2025 five-year investment plans are changes to project timelines and the addition of transmission projects through SPP's ITP.

As detailed above, Liberty's 2025 investment plan consists of approximately $2,174.8 million over the next five years, across eight strategic investment areas to modernize the Company's electric infrastructure (see table on page five). These investments represent Liberty's long-term planning estimates of expected capital investment on the electric infrastructure for Liberty's Central Region. This investment plan addresses all electric infrastructure for the Central Region, including Missouri, Kansas, Arkansas, and Oklahoma.

Bringing about improved customer solutions through cost management and modern technologies will enable the Company's electric grid to meet evolving customer needs both today and in the future.

For the 2025 budget, grid modernization projects, within the meaning of RSMo. 393.1400 and the minimum 25% requirement, constitute approximately 55% of planned capital expenditures. Investments in resiliency represent a major portion of Liberty's Investment Plan, as it is crucial to our communities that our infrastructure continue to perform even under extenuating circumstances and extreme weather events. Additionally, the five-year plan includes new generation to enhance reliability, including replacement of units at the Riverton Generation Station and potentially a new utility-scale solar facility.

2024 Actual Capital Expenditures (Dollars)

Expense Category	2024 Actual Expenditures
COMMERCIAL OPERATIONS	$129,583,999
GENERAL SERVICES	$198,172,778
PRODUCTION	$48,371,798
WIND	$14,415,714
TOTAL	$390,544,298

AFUDC is included in actual amounts

Most large negative balances reflect transfers occurring within budget lines.

COMMERCIAL OPERATIONS

Funding Project	Project Description	2024 Actual Expenditures
DA0115	Distribution Automation & Improvements IIJA	$17,002
DA0151	Build New 69/12kV Sub-Willard	$313
DA0154	161/12kV Sub-Hollister Ind Pk	$93,638
DA0161	Build New 161kV Sub in Gentry	$15,164,243
DA0620	Aging Equipment	$882,718
DA0630	Substation Security	$9,506
DA0640	SCADA Installation	-$68,951
DA0650	Wildlife Guards	-$11,386
DA0660	Underground Conductor	$42,686
DA0680	Fleet Electric Charging Station	$783,777
DA0691	TEPP Res. Smart Charge	$8,722
DA0692	TEPP Ready Charge Program	$7,311
DA0694	TEPP School Bus Program	-$40,000
DISTRIBUTION ADDITIONS		$16,889,579
DB0001	Extensions	$36,304,392
DB0004	Street Lighting	$1,952,882
DB0005	Distribution Transformers	$2,020,277
DB0006	Customer's Meters	$6,270,232
DB0007	Customer's Services	$9,246,196
DB0008	Substation Blankets	$241,515
DB0010	Misc Dist of OH Lines	$6,154,975
DB0011	Misc Dist of UG Lines	$1,200,394
DISTRIBUTION BLANKETS		$63,390,863

DR0001	Relocate T&D for Hwy Changes	-$717,700
DR0002	Replace Bad Order Distr Poles	$12,341,601
DR0004	Chg Jop Dist Voltage 4kv to 12	-$65,993
DR0008	Distr. Reliability Improvement	$211,015
DR0009	Misc Rebuilds/Add to Dist Subs	$878,625
DR0010	Misc Rebuilds/Add - Dist Lines	$1,003,846
DR0011	Replace UG Dist Cable-System	$64,818
DR0012	Joint Use Line Rebuilds	-$88,689
DR0013	Purchase Power Transf & Brkrs	$3,897,467
DR0100	Municipal MV to LED Replacements	-$55,867
DR0176	Replace SWG at Northpark Mall	$134,435
DR0186	Replace Struct & 12kV Brkr Wan399	$3,074,759
DR0187	Replace Struct & 12kV Brkr Wanda400	$51
DR0188	Replace Struc T&D Heatonville#338	-$173,328
DR0192	Replace Wood Struct Boston #249	$59,949
DR0194	Replace Wood Struct Arcola#250	$22,668
DR0212	REBUILD/INC CAPACITY-BAXTER	-$6,745
DR0230	Add Brkr & New Ckt SW City#414	$21,174
DR0236	Gravette Dist Line Recond	$4,678
DISTRIBUTION REBUILDS		$20,606,764
DS0130	Service Center Improv/Addition	$30,480
DS0140	Other Additions/Improvements	$1,710
DX	Excess Facilities	$965,438
COMMERCIAL OPERATIONS FACILITIES		$997,628
DISTRIBUTION TOTALS		$101,884,834
GT0010	Purchase Misc Tools	$85,393
GT0015	Purchase Fall Arrest Equipment	$31,172
GT0075	Purchase Large Tools & Equipmn	$279,975
GT0103	Purchase Test Equip	$39,453
GENERAL TOOLS		$435,993
STORM JOBS	Storm Outages	$7,818,550
STORM JOBS		$7,818,550
B00000	Billing Not Budgeted	$796
CG0000	Gen Comm Ops Proj-not budgeted	$763
OTHER COMM OPS		$1,559

TA0236	Install ICON 20 Node - 2 Ring	$191,058
TA0245	Install DFR at Sub 389 per PCR	-$10,268
TA0246	Install DFR Asbury Sub 349	$458,459
TA0255	Substation #509 & 69kV Insula	-$27,437
TA0925	Install 2-69kV Breakers at#322	$10,517
TA0927	Install Distribution SCADA	$721
TA0930	Install 2-69kV Breakers at #44	$6,375
TA0936	Install 2 161kV Brkrs at #432	-$892,688
TA0937	Install 2-69kV Breakers at#251	$410,659
TA0939	Inst2Way69kV MOAB TransSch 296	$1,610
TA0941	Install Monett Switch Automatn	$337,747
TA0942	Install 161kV Sub & Retire#291	-$5,276
TA0947	Convert Exist 34.5 kV Collins	$0
TA0950	Install SCADA at Sub #124	$54,236
TRANSMISSION ADDITIONS		$535,713
TB0001	Transmission Blankets	$61,357
TRANSMISSION BLANKETS		$61,357
TR0001	Replace BO Trans Poles	$1,857,471
TR0009	Misc Rebuilds/Add - Trans Subs	$3,389,479
TR0010	Misc Rebuilds/Add-Trans Line	$816,482
TR0014	Inst 161kV & 69kV Bus Diff#184	-$1,428
TR0127	Repl 69kV Infras Tipton Fd#292	$10,202,734
TR0134	Rebuild 69kV Riverton to Jopli	-$392,025
TR0150	Rebuild 69kV btw Atlas &Kodiak	-$600,862
TR0152	OPGW on 161kV Noel to Decatur	-$210,073
TR0166	Rebld Riverton to Neosho 161kV	$81,128
TR0168	RBLD LINE 161kV & OPGW 413-438	-$304,240
TR0601	Sub 404 Hockerville Rep Equip	$2,199,749
TR0910	Rebld 69kV Boston - Greenfield	$61,998
TR0911	69kV Rebuild #249 to #251	$62,156
TRANSMISSION REBUILDS		$17,162,569
TM0100	W7th to Stateline 161kV Rebld	$1,665,151
TM0101	Sub 312 Ozark Dam 16103 Replcm	-$23,244
TM0103	AECC Sibley Road Substation Line Tap	$41,517
TRANSMISSION		$1,683,424
TRANSMISSION TOTAL		$27,699,165
TOTAL COMMERCIAL OPERATIONS		$129,583,999

GENERAL SERVICES

Funding Project	Project Description	2024 Actual Expenditures
CS0002	Computers, Servers, Network Eq	$8,666
CS0023	Infrastructure CORE/OT	$14,934
CS0028	Software Upgrades	$34,091
CS0052	C1 - Empire Customer First SAP	$170,325,726
CS0066	GIS/ADMS - EDE	$36,448
CS0071	Corp IT Projects	$22,905,196
CX0003	Cust Information Upgrades	$69,400
COMPUTER SERVICES		$193,394,461
GA0001	Fleet	$3,038,553
GA0002	Transportation - Tools	$2,999
GA0005	Furniture & Fixtures	$47,140
GA0006	Stores Facilities & Equip	$105,934
GA0010	Joplin Facilities	$39,517
GA0012	FCMGT24-Ozark-Brick RTU	$9,488
GENERAL ADDITIONS		$3,243,631
GF0001	Facilities	$25,916
GENERAL FACILITIES		$25,916
STE022	Replace Batteries	$27,168
STE030	SCADA	$69,973
TELECOMMUNICATIONS		$97,141
AMI001	AMI	$839,061
GSC071	Corp IT Projects	$572,207
000000	Projects Not Budgeted	$361
GENERAL SERVICES		$1,411,629
TOTAL GENERAL SERVICES		$198,172,778

PRODUCTION

Funding Project	Project Description	2024 Actual Expenditures
NG0016	Iatan 2	$82,159
NG0021	Wind Project	$5,479
NG0026	Riverton Replacement	$20,069,289
NEW GENERATION		$20,156,927
EN0013	Buffalo Quarry Conserv Bank De	$1,419,040
GI0001	Generation Interconnects	$1,458,184
ENVIRONMENTAL AND SAFETY		$2,877,224
Individual PCC projects include the WGI credit		
PCC001	Misc Prod Plant Additions	$75,515
PCC002	Labor Saving Devices & Tools	$22,569
PCC004	HRSG & Aux Equip Additions	$817,607
PCC006	Turbine Upgrades	$1,063,198
PCC007	Valve Additions	$34,822
PCC009	Deep Well Pump & Column	$14,542
PCC010	Cooling Tower	$103,782
PCC011	Plant Replacements & Improveme	$312,486
PCC015	Fire Protection	$43,790
PCC019	Control System Upgrade	$234
PCC020	Incidental Replacements/Improv	$332,513
STATE LINE COMBINED CYCLE		$2,821,058
PE0001	Misc Production Plant Addition	$68,857
PE0002	Labor Savings Devices & Tools	$10,438
PE0009	Eng Ctr Controls	$6,316
PE0010	Eng Ctr BOP	$162,178
PE0011	Eng Ctr Unit 1	$224,372
PE0012	Eng Ctr Unit 2	$4,978,288
PE0013	Eng Ctr Unit 3	$322,254
PE0014	Eng Ctr Unit 4	$9,481
PE0025	Gas Generators	$5,005,643
ENERGY CENTER		$10,787,827
PI0001	Iatan Plant	$1,823,002
IATAN PLANT		$1,823,002
PII001	Iatan 2	$4,840,945
IATAN 2 PLANT		$4,840,945

PIC001	Iatan Common Facilities	-$338,147
IATAN COMMON FACILITIES		-$338,147
PP0001	Plum Point Misc Prod Plt Add	$624,683
PLUM POINT PLANT		$624,683
PO0001	Hydro Plant Additions	$275,572
PO0002	Labor Saving Devices & Tools	$44,785
PO0009	Plant Automation Remote Contrl	$13,808
PO0010	Improvements to Dam	$3,193
PO0012	Improvement to Powerhouse	$45,927
OZARK BEACH		$383,285
PR0001	Production Plant Additions	$105,361
PR0002	Labor Saving Devices & Tools	$181,802
PR0003	Plant Replacements & Imprvmts	$529,131
PR0006	Boiler & Aux Equip Additions	$842,522
PR0007	Turbine Gen & Aux Equip Add	$214,540
PR0009	Lowell & Bypass Replacements	$401,411
PR0011	Valve Additions	$74,378
PR0012	Pump Additions	$173,818
PR0014	Insulation Improvements	$187,687
PR0019	Control System	$125,736
PR0020	Feedwater Heaters	$219,468
PR0021	Water System Additions	$100,149
PR0024	Combustion Turbines	$272,607
RIVERTON		$3,428,610
PS0002	Labor Savings Devices & Tools	$652
PS0006	Additional CT Upgrades	$64,923
STATE LINE		$65,575
PW0001	Labor Saving Devices & Tools	$60,700
PW0002	Plant Replacements/Improvement	$79,086
PW0003	Facilities Maintenance	$6,190
PW0004	Land Management Equipment	$693,690
PW0008	Wind Farm Specialty Tools	$57,000
PW0025	Drone	$4,143
WIND		$900,809
TOTAL PRODUCTION		$48,371,798

Wind

Funding Project	Project Description	2024 Actual Expenditures
NF0001	North Fork Wind Projects	$5,105,987
NFT001	North Fork Tax Equity	$220,249
ENF001	North Fork - Empire	$241,489
WNF002	O&M Building Security Upgrades	$21,122
WNF_00006	LPS2 Upgrade	$1,102,833
WNF008	Sump for MPT Containment	$170,354
WNF012	NF T-4 & T-35 Blade Repl	$847,337
TOTAL NORTH FORK WIND		$7,709,371
NR0001	North Ridge Wind Projects	-$86,973
NRT001	Neosho Ridge Tax Equity	$1,120,253
ENR001	Neosho Ridge - Empire	$1,228,285
WNR002	O&M Building Security Upgrades	$1,323,103
WNR008	Walkway Installation Both MPTs	$19,659
WNR009	LPS2 Upgrade	$403,000
WNR012	NR T-109 Blade Repl	$495,000
TOTAL NEOSHO RIDGE WIND		$4,502,327
KP0001	Kings Point Wind Projects	$1,706,708
WKP003	O&M Building Security Upgrades	$21,122
WKP007	SMWA to CapEx Conversion	$452,000
WKP009	Ignition Software	$24,186
TOTAL KINGS POINT WIND		$2,204,016
TOTAL WIND		$14,415,714

2024 Actual Spending Grand Total

GRAND TOTAL (including AROs)	$390,544,298

$20 million projects – 2024

Projects included in this report went into service in 2024 and were $20 million or more.[1]

Greenfield Substation

As discussed in the 2024 PISA filing, a new Liberty substation was energized in the city of Greenfield, Missouri in 2023. This substation provides additional system capacity and switching capacity for the area. Additional work converting 4kV distribution facilities to 12kV distribution from the substation was completed in Greenfield in 2024.

Start Date: March 15, 2021
Cost to Date: $23,020,006
In Service Date: May 24, 2024

[1] This report does not include blanket projects or budget lines.

$20 million projects - 2025

There are no projects scheduled to begin construction in 2025 that are expected to meet or exceed a total project cost of $20 million.[1]

[1] This report does not include blanket projects or budget lines.

2025 PISA Report Exhibit 4

Cost-Benefit Analyses and Performance Metrics for Planned Capital Investments of Greater than $1 Million

The Empire District Electric Company
d/b/a Liberty

February 28, 2025

Introduction and Background

Pursuant to the Stipulation and Agreement in Commission File No. ER-2021-0312, and as discussed in the Company's 2024 PISA Annual Report, Liberty is pleased to present the first iteration of its framework for cost-benefit analysis and performance metrics for planned capital investments of $1 million and above (collectively referred to as CBAM framework). The following information pertains only to the planned 2025 investments that meet the $1 million threshold and reflects the discussions that took place between the Company and representatives of the Missouri Public Service Commission Staff ("Staff") and the Missouri Office of the Public Counsel ("OPC") on September 27, 2022, and February 24, 2023. Since those initial discussions, the Company also provided Staff and OPC with an incremental update in its pre-filed testimony in Case No. ER-2024-0261.

The CBAM framework is the first step in a gradual multi-year journey of continuous improvement and experimentation. Consistent with last year's PISA filing and the above-referenced 2024 rate case testimony, Liberty sees this inaugural iteration of CBAM as an early test case of its ongoing effort to enhance or refine its asset management and investment planning, prioritization, and performance measurement processes. More specifically, the Company expects that the manner of presentation and specific content of CBAM analysis in this area will continue to evolve over the coming years, as more insight and experience is gained, and more input data becomes available through the following initiatives:

- Completion of the ongoing Missouri-specific Value of Lost Load ("VOLL") study;
- Incorporation of new asset condition data collected through inspection activities;
- Refinements to system connectivity models as conductor ratings are validated in the field;
- Normal-course enhancements to the Company's planning tools and processes are made;
- Stakeholder feedback on the information provided in this and subsequent filings is incorporated.

While a considerable amount of work lies ahead, Liberty is excited to take this next formal step on its continuous improvement journey that was in part sparked by the settlement discussions in Case No. ER-2021-0312. The Company is confident that with continued support of its regulatory stakeholders, it can make important strides along the asset management maturity curve in the coming years, moving its planning and analytics functions towards the industry's best practices.

Manner of Presentation: CBAM Investment Program Nomenclature and Hierarchy

To balance clarity and efficiency of presentation of CBA and metrics results for investments exceeding $1 million, Liberty is piloting a new investment categorization approach. As further described below, this approach is more granular than the PISA investment categories used in the body of this report (e.g. Transmission or Distribution Resilience), yet less granular than the "Funding Project" entries used to report the prior year's actuals in

Exhibit 1. Straddling these two extremes, the proposed new CBAM categorization framework groups planned investments across the Company's lines of business into three main *Portfolios,* which are, in turn comprised of individual *Programs*. Starting at the top of this investment planning hierarchy, the three Portfolios are:

System Access (Transmission and Distribution) - networks investments made to connect new customers, modify, or relocate facilities on request of existing customers or government entities, Regional Transmission Organizations ("RTOs"), or other parties.

System Renewal (Transmission and Distribution) – investments made to replace, refurbish, or reinforce existing assets with the aim of managing the system's lifecycle, reducing probability or impact of outages, or enhancing the assets' ability to withstand increased mechanical, thermal or other forms of stress they are subjected to under the normal course of operation or in extreme circumstances.

System Service (Transmission and Distribution) – investments seeking to add new technical capabilities to increase the systems' operational efficiency, enhance transformation capacity or inter-area transfer capability and flexibility, expand reliance on data-driven planning and operational decisions, or augment the operational tools and processes in anticipation of emerging new ways of utilizing the grid.

Each Portfolio is in turn comprised of individual Programs, which are presented here through Program Summary documents. Program Summaries describe Liberty's current approach to investment planning, asset management, and proposed performance measurement in a particular area of the business and provide a combination of qualitative and quantitative information that explains the underlying planning decisions and conveys the relevant cost-benefit assessment variables for the group of assets in question

Most programs are intended to be evergreen. Some programs, however, can be more temporary in duration and exist until their targeted objectives are met, or circumstances change otherwise. Table 1 showcases the planned 2025 programs with investments above the $1 million threshold, grouped by business line and portfolio.

Table 1: Planned 2025 Capital Programs Exceeding $1M Cost Forecast

Portfolios	Transmission	Distribution
System Access	**T1.** Southwest Power Pool (SPP) Integrated Transmission Planning (ITP)	**D1.** Customer Connections **D2.** Externally Initiated Work

System Renewal	**T2.** Proactive and Reliability-Driven System Renewal **T3.** Reactive / Inspection-Driven System Renewal	**D3.** Proactive and Reliability-Driven System Renewal **D4.** Reactive / Inspection-Driven System Renewal **D5.** Emergency System Repairs
System Service		**D6.** Grid Flexibility Enhancements: Project DA **D7.** Risk-Based Planning and Connectivity Model Enhancements: Field Data Collection

Program Summaries Content

The inaugural and evolving CBAM framework is built around program-level discussion of planning and asset management *processes* (and their ongoing evolution) which the Company uses to identify, evaluate, and prioritize regularly recurring investments that make up a material portion of its capital work program year after year. Specifically, Program Summaries describe the current health and performance status quo of the assets in focus (as relevant case-by-case) and lay out the calculation mechanics and quantitative and/or qualitative inputs of the economic or engineering analysis that informs project plans and budgets. Where relevant or available, the Program Summaries outline specific performance metrics applicable to the investment types in question. Program Summaries precede the presentation of individual entries summarizing the 2025 investments related to a given program that meet the $1 million threshold. These investment summaries include the results of the project-specific quantitative CBA calculations (where these are performed), proposed performance metrics and/or other relevant information for each investment.

In this way, by concentrating the general methodological discussion for each major type of investments in the Program Summary documents and then relaying the key results of these methodologies in brief for individual investment summaries, Liberty is able to fulfill its CBAM-related settlement commitments in a transparent and efficient manner.

Methodology Differences Across Program Summaries and Portfolios

Each of the three CBAM program portfolios have distinct drivers and objectives – from accommodating new customers, to renewing or reinforcing the existing asset base, expanding system capacity, or introducing net new capabilities to current operations. In

exploring these different types of investments, Liberty relies on multiple types of inputs and analytical approaches that transform available data into investment decisions. With different types of inputs and different investment outcomes sought, the Company's cost-benefit analyses and performance measurement approaches will naturally differ as well across different programs and portfolios. In addition, although Liberty has made major strides in increasing its reliance on objective data in its planning work in some areas, more work remains to be completed to collect technical data from multiple types of asset classes.

Along with data availability, which is different across portfolios and programs, is the Company's degree of discretion as to whether, when, or in which matter, to execute certain investment activities. For example, while System Access projects to connect new customers or meet other mandatory compliance obligations entail next to no discretion, potential work in the System Service portfolio would imply a greater degree of choice – be it regarding the size, construction timing, or the overall decision to pursue one type of a project relative to another. Similarly, the Company has considerably less discretion in repairing the T&D assets after storm damage to restore service, than it does in relation to the scope, timing or location of projects seeking to proactively replace critical T&D equipment to enhance reliability.

As the degree of the Company's discretion differs across program and portfolios, so does the requisite amount of cost-benefit analysis and performance measurement work that it performs to explore the value of contemplated investments. Importantly, just because cost-benefit considerations may have no bearing on the Company's requirement to make mandatory investments, it does not mean that they are exempt from any type of supporting analytical work. Cost-benefit calculations aside – there are still opportunities to apply quantitative or qualitative analysis to optimize planning certainty, enhance execution efficiency or maintain quality. Accordingly, in the case of programs where a quantitative CBA may not be required, Liberty placed more emphasis on the available Performance Metrics.

Introduction of Risk-Based Planning for Networks Investments

Although much of the Program Summaries' content draws on existing and well-established planning practices, Liberty is also proud to share early results of its planning process innovation. Specifically, the Program and Investment Summaries for Distribution System Renewal and System Service investments feature the early results of the Company's ongoing adoption of principles of risk-based planning. As noted above, these early attempts will undergo further refinement and recalibration in the coming years, as additional data inputs become available. Chief among these are the results of the ongoing Missouri-specific Value of Lost Load (VOLL) study that Liberty is performing in concert with other investor-owned utilities in the state, and the collection and validation of additional asset condition and demographics information described in Program Summary *D7: Risk-Based Planning and Connectivity Model Enhancements: Field Data Collection.*

Risk-based asset management in the utility space is about selecting an optimal portfolio of system investments based on a systematic assessment of available data that estimates the probability and dollar impact of various undesirable outcomes associated with the functions performed by the utility's asset base (e.g., equipment failures, substation capacity shortages) and evaluates the potential means of mitigating these outcomes through a range of available asset intervention options. Depending on the equipment in question, these options can include asset replacement (with or without capacity expansion or addition of new features and capabilities), incremental equipment maintenance or refurbishment, feeder looping, or a deferral of a given project relative to other opportunities to deploy the utility's capital resources. In conducting this analysis, planners refer to the following types of data (among others):

Information Pertaining to the Probability of Undesirable Outcomes:

- Equipment demographics (age, models, configurations, equipment ratings);
- Equipment condition (results of inspections or intrusive / empirical asset testing;
- Equipment utilization history (e.g. % of time a transformer is loaded at or above capacity);
- Historical performance information (past equipment failure rates, historical pace of load growth); and
- Statistical functions that draw from both industry research and the above utility-specific data to estimate asset-specific failure probability scores.

Information Pertaining to the Economic Impact of Undesirable Outcomes:

- Data on the number and mix of customer classes served by different assets on the system;
- System connectivity models specifying relationships between customers and specific assets and protection devices on the system;
- Results of empirical / actuarial work to estimate the impact of various events:
    - Results of VOLL studies for different customer classes
    - Actuarial estimates of economic costs of safety incidents
    - Actuarial estimates of economic costs of environmental damage (e.g. oil spills).

Information on the Cost of Rectifying Potential Risks:

- Construction cost estimates for various types of work.

By integrating the relevant pieces of the above information, planners can calculate the dollar value that estimates the current risk that the status quo of each asset in the system represents (e.g. its age, condition, the remaining connection capacity, etc.). By analyzing the risk scores (which are expressed as dollar values) against the estimated investment costs that would rectify these risks, planners can derive numerical Benefit-to-Cost Ratios (BCR) for different contemplated investments. In general – the higher the ratio's output – the more beneficial it is to do the project without delay. However, in systems comprised of hundreds of thousands of individual assets, there is no single BCR threshold below which

an investment is automatically not worth pursuing. Instead, to explore the value of a specific contemplated investment, it is critical to compare a given investment's score relative to those of functionally similar contemplated investments, or the average of all potential investments across the system. This is particularly important in the early stages of introducing risk-based planning metrics when data inputs are incomplete, or analytical methodologies are yet to be calibrated for use in a particular system.

Liberty also notes that since it has only been exploring risk-based asset planning and management for less than two years, virtually all of the investments that underwent this analysis were originally selected using the Company's existing practices. This represents an added level of assurance that the specific investments advanced for execution in 2025 are those that the Company's experts believe need to be made. The relevant Program Summaries include more details as to the specific calculation steps applied to assets and investments in question.

As the Company gains experience with risk-based planning, it intends to expand the use of this methodology to other programs and portfolios, beginning with greater utilization in the transmission business. However, it is critical to re-iterate that the Company sees these new tools as supplementing, but by no means replacing or superseding professional engineering judgment. By identifying the most worthwhile investment candidates through a partially automated triage-like process, the risk-based planning tools will in fact enable the planning engineers to spend more time on the most value-adding types of analysis and detailed estimation work.

In the comparatively short time that it spent exploring and implementing the risk-based planning framework, Liberty has come to appreciate the new insights and questions that this approach is bringing to the table in everyday discussion between planners, engineers, finance, and regulatory professionals. In submitting the current results of this analysis to the audience of this report, Liberty trusts that its regulatory stakeholder partners will also see the value in the progress made to date and the continuous improvement potential that lies ahead.

Investment Programs Exceeding $1 Million: Investment Portfolio and Program Summaries.

PART I: System Access Portfolio Summary

The Transmission System Access portfolio is comprised of investments that are deemed needed by the RTO (SPP). These investments, their basis for action, the cost estimates and economic value are all detailed in the latest ITP Assessment Report[1].

The Distribution System Access portfolio includes investments Liberty makes to connect new customers and fashion their facilities with appropriate metering, modify the configuration or capacity of connection facilities for existing customers when asked, or

[1] https://www.spp.org/media/2229/2024-itp-assessment-report-v10.pdf

relocate distribution facilities on request of customers, government entities, Regional Transmission Organizations (RTOs), or other third parties.

Program T1: SPP Integrated Transmission Planning

1. Basis for Action

SPP has formulated the following transmission system projects to address needs driven by extreme winter weather.

2. Cost-Benefit Analysis Considerations

In determining the optimal portfolio composition to achieve the desired outcomes, SPP has performed cost-benefit analysis on all projects as part of its 2024 assessment report.

3. Budgeting Considerations

All of the projects within this program are multi-year projects and part of SPP's Winter Weather Project Grouping which has an estimated total cost of $2.2B. While Liberty's portion of the grouping amounts to over $364M in total, the 2025 component of the projects in aggregate is only slightly over $11M.

4. Performance Metrics

Liberty does not propose to measure or track any performance metrics for this program as the nature and quantity of work is entirely determined by the SPP.

5. Individual Projects Exceeding $1M

Name & Synopsis: *Joplin West 7th to Stateline 161kV Rebuild*	Projected 2025 Investment: $1.7M
Basis for Action: SPP mandated work to ensure reliability and resiliency during extreme winter weather Cost-Benefit Analysis: Already performed by SPP in the ITP	

Name & Synopsis: *AECC Sibley Road Substation Line Tap*	Projected 2025 Investment: $1.8M
Basis for Action: SPP mandated work to ensure reliability and resiliency during extreme winter weather Cost-Benefit Analysis: Already performed by SPP in the ITP	

Name & Synopsis: *Upgrade Capacity / Rebuild Monett to Aurora to Powersite 161kV*	Projected 2025 Investment: $1.5M
Basis for Action: SPP mandated work to ensure reliability and resiliency during extreme winter weather	

Cost-Benefit Analysis: Already performed by SPP in the ITP

Name & Synopsis: *Line 39-0 Ozark S. to Powersite 69kv to 161kV Voltage Conversion*	**Projected 2025 Investment: $2.0M**
Basis for Action: SPP mandated work to ensure reliability and resiliency during extreme winter weather **Cost-Benefit Analysis**: Already performed by SPP in the ITP	

Name & Synopsis: *Upgrade Ln 39-0 to 161kV from Sub #57 - Sub#410*	**Projected 2025 Investment: $2.0M**
Basis for Action: SPP mandated work to ensure reliability and resiliency during extreme winter weather **Cost-Benefit Analysis**: Already performed by SPP in the ITP	

Name & Synopsis: *New 345/161kV Substation Branson NW and Assc. Line Taps*	**Projected 2025 Investment: $1.8M**
Basis for Action: SPP mandated work to ensure reliability and resiliency during extreme winter weather **Cost-Benefit Analysis**: Already performed by SPP in the ITP	

Name & Synopsis: *Branson Northwest to Monett - New 345 kV Line and Substations*	**Projected 2025 Investment: $2.5M**
Basis for Action: SPP mandated work to ensure reliability and resiliency during extreme winter weather **Cost-Benefit Analysis**: Already performed by SPP in the ITP	

Program D1: Customer Connections

1. Basis for Action

Prospective customers' requests for interconnection to the Company's distribution system, or existing customers' requests for modification of existing connection facilities – such as an upgrade of facilities ratings to increase their load carrying capacity, upgrades to metering equipment, or conversion from overhead to underground services.

2. Cost-Benefit Analysis Considerations

Liberty is required to accommodate new customer extensions or modification to the existing facilities, provided they meet the requirements of its Connection Policy. To ensure that contemplated connections provide the value to the existing system and customers, the Company estimates the cost of connection work and then performs an economic evaluation to determine the present value of revenues it would expect to collect from the requesting customer over their expected length of connection and assumed annual consumption. The connection horizons and consumption / demand assumptions vary depending on the customer's rate class and the specifics of individual projects.

3. Budgeting Considerations

Annual work volumes and budgets for the Connections program are challenging to estimate, given that a large number of connection requests are submitted and processed within a single calendar year, while volumes year-to-year can be impacted by a variety of economic factors, ranging from hyper-local to global. As a pragmatic solution to this challenge, Liberty relies on year-to-year trending of connection work volumes to develop an estimated Program budget. The Company reviews its current year Connections program budget regularly and makes necessary reallocation from / to programs where it has a greater spending discretion should the originally budgeted amounts be tracking above or below the expected volumes based on most recent in-year information. Beyond the trending work, and as described in s. 2.4.1, the Company has begun using the risk-based planning approaches to validate the value proposition of the budgeted amounts, where permissible by data.

4. Performance Metrics

Liberty proposes the following metrics to be reported on a lagging basis, with 2025 being the first year over which this data would be tracked and assembled for reporting in the 2026 PISA Update. These metrics are new for the Company and are being advanced as means of furthering its own understanding of asset management analysis and the ensuing work delivery. The Company welcomes stakeholders' feedback on these metrics following their review of this document.

Customer Extensions $ Forecast vs. Actual Expenditures: 3-Year Rolling Average	%
Tested Meters Annual Passing Rate	%
Prior Year Customer Contributions as % of Total Expenditures	%

5. Individual Projects Exceeding $1M

Name & Synopsis: *Customer Extensions* – blanket project, a trended amount budgeted for multiple projects, aside from known individual investments in excess of $1M.	Projected 2025 Investment: $29.5M

Basis for Action: ensure sufficient capital resources are budgeted to account for a typical annual volume of customer-initiated work based on the year-over-year trending analysis and known data on confirmed pipeline. **Cost-Benefit Analysis**: CIAC contributions will be calculated on a project-by-project basis, with amounts in excess of the Present Value (PV) of forecasted revenues over the relevant connection period assessed to customers requesting connections or modifications.

Name & Synopsis: *Distribution Line Transformers* – blanket project for pole-mounted and pad-mounted units for reactive replacement in the event of failure, or installation as a part of new or modified customer-requested connections.	**Projected 2025 Investment: $2.9M**
Basis for Action: plan for sufficient volumes of equipment to ensure timely and efficient in-year rectification of in-service failures and completion of customer connection requests. **Cost-Benefit Analysis:** (1) For connection accommodation: CIAC contributions are calculated on a project-by-project basis for connection facilities (service conductor/cable, pole, transformer as required), with amounts in excess of the Present Value (PV) of forecasted revenues over the relevant connection period requested from customers as deposits. (2) For emergency replacement post-failures: volumes predicted using trending, and system risk mitigation value assessed via calculation of B/C ratios of a random sample of top age decile transformers commensurate to the annual dollar budget, and then compared to the average B/C ratio of the entire distribution transformer asset class.	

Name & Synopsis: *Customer's Meters* – blanket project for addition of new or replacement of existing customer meters.	**Projected 2025 Investment: $1.7M**
Basis for Action: plan for sufficient volumes of equipment to ensure timely and efficient in-year rectification of in-service failures and completion of customer connection requests. **Cost-Benefit Analysis**: (1) For connection accommodation: CIAC contributions are calculated on a project-by-project basis for connection facilities (service conductor/cable, pole, transformer as required), with amounts in excess of the Present Value (PV) of forecasted revenues over the relevant connection period requested from customers as deposits. (2) For emergency replacement post-failures: volumes predicted using trending, and system risk mitigation value assessed via calculation of B/C ratios of a random sample of top age decile transformers commensurate to the	

annual dollar budget, and then compared to the average B/C ratio of the entire distribution transformer asset class.

Name & Synopsis: *Customer's Services* – blanket project for installation of new customer's overhead/underground service or replacement of any existing customer's service	Projected 2025 Investment: $6.1M
Basis for Action: plan for sufficient volumes of equipment to ensure timely and efficient in-year rectification of in-service failures and completion of customer connection requests. Cost-Benefit Analysis: (1) For connection accommodation: CIAC contributions are calculated on a project-by-project basis for connection facilities (service conductor/cable, pole, transformer as required), with amounts in excess of the Present Value (PV) of forecasted revenues over the relevant connection period requested from customers as deposits. (2) For emergency replacement post-failures: volumes predicted using trending, and system risk mitigation value assessed via calculation of B/C ratios of a random sample of top age decile transformers commensurate to the annual dollar budget, and then compared to the average B/C ratio of the entire distribution transformer asset class.	

Program D2: Externally Initiated Work

1. Basis for Action

Accommodate known and anticipated requests to relocate, or otherwise modify Liberty's existing distribution facilities submitted by other utilities, government agencies of various levels, RTOs, or private sector entities.

2. Cost-Benefit Analysis Considerations

When processing third-party requests for facilities relocation or modification, Liberty assesses whether the existing age, condition, or configuration of assets being disturbed allows for them be reinstalled in the new location, reused elsewhere on the system, or if it is more efficient to replace and/or upgrade them earlier than would have occurred otherwise given the scale and scope economies of the work involved in accommodating the external request. More specifically, the Company's Electric Distribution Policy mandates that Liberty must determine whether, or to what extent the requested work is in the Company's best interest from the economic, safety, or reliability perspective. This is done by way of calculating the cost of facilities, relocation, removal and/or upgrades, while also factoring in the remaining lifecycle value of the existing assets being affected, and the applicable indirect costs.

Should any portion of the contemplated work not be deemed in the Company's best interests (e.g. when assets with significant remaining lifecycle are subject to relocation), the associated amount is charged in full to the requesting party. In this way, even though the third-party initiated investments are considered non-discretionary as a category, the projects only proceed to execution once the Company and the requesting party obtain alignment regarding cost responsibility.

In performing this type of lifecycle management analysis today, the Company relies on available asset data and engineering judgment to determine the value tradeoffs described above. As Liberty expands its use of risk-based asset management methodologies and collects more asset condition and in-service failure data, it expects to further enhance its assessment processes in this area in future years. In preparation for this work, the Company completed a trial cost-benefit evaluation of contemplated asset replacements or upgrades in scope of the planned 2025 externally requested projects over $1 million, using the methodology discussed in the following section.

3. Budgeting Considerations

In addition to larger projects where budgets are developed over a longer period of time, in collaboration with requesting parties, the Company also typically processes a number of smaller asset relocation or modification requests that are submitted and accommodated within a single year. To ensure sufficient budgetary room for these projects, the Company relies on historical trending when estimating the overall budget, in excess of known projects.

4. Performance Metrics

Proposed metrics to be developed in a future year as there are currently no projects of this nature over $1M in 2025.

5. Individual Investments Exceeding $1M

No projects in 2025.

PART II: System Renewal Portfolio Summary

Both Transmission and Distribution System Renewal portfolios include investments Liberty has deemed necessary to reduce or maintain the system's risk of power outages to customers. This includes the replacement of line and substation assets that either fail in service, are designated for near-term replacement based on inspection or testing results, or are proactively replaced to improve reliability, enable capacity upgrades, and/or account for certain assets' lengthy procurement and replacement time.

Programs T2 and D3: Proactive Reliability-Driven Renewal

1. Basis for Action

(a) recommendations from planning and engineering personnel on opportunities for proactive reliability improvements and/or resilience reinforcements achievable primarily through replacement (with or without upgrades or enhancements) of existing equipment

approaching end of useful life; and (b) recommendations from engineers and supply chain professionals for critical spares volumes based on assessment of current supply chain lead times for major distribution equipment relative to anticipated system renewal or expansion volumes.

2. Cost-Benefit Analysis Considerations

When contemplating new reliability-enhancing initiatives driven primarily by asset renewal, the starting point for planners is the analysis of reliability records from the system-wide level – down to areas served by each substation, or individual feeders and laterals. Outage data is examined across both individual instances of Customer Interruptions (CI) and the Customer minutes of Interruption (CMI) associated with each event. Data is also examined across outage cause codes assigned in the process of outage investigations. The following table provides a five -year summary of outages associated with top 10 outage cause codes, less the data associated with Major Events.

Rank	Count	5-Year Event Count Total	5-Year Event Count Average	Average CI / Event	Average CMI / Event
1	Animal Interference	3843	769	28	1,959
2	Unknown	2695	539	37	3,026
3	Lightning	2514	503	36	3,730
4	Human Activity	1084	217	46	3,516
5	Line Transformer Failure	1051	210	27	2,746
6	Wind Loading	1013	203	67	9,115
7	Bird Interference	962	192	35	2,563
8	Vegetation Contact	721	144	9	1,536
9	Connector Trouble	688	138	12	1,182
10	Vehicle Collisions	612	122	138	14,986

Once the reliability analysis yields preliminary focus areas, planners examine the demographics and condition of candidate assets to explore which potential projects carry the greatest reliability-enhancing benefits relative to the estimated construction costs. In the past, this work involved a range of project-specific calculation approaches depending on the available data. With the introduction of the ENGIN / Cost-benefit Analysis Automation Tool (CBAT) risk-based asset management tool, the Company has taken a decisive step towards systematizing the underlying asset analytics work, to drive objectivity

and processing consistency, while ensuring that automation of previously manual tasks creates more time for the most value-adding engineering analysis.

2.1. Quantitative Cost-Benefit Analysis Methodology

Although the proactive reliability-driven 2025 investments over $1 million were scoped before it implemented the ENGIN / CBAT risk-based planning solution, Liberty used the new tool on these projects to explore its functionalities and stress-test the assumptions underlying it. In doing so, the Company relied on the following methodology:

Step 1: (a) Where specific assets slated for renewal are known (i.e. work other than spares procurement), obtain the assets' available age and condition information, and estimate their failure probability based on the failure curve analysis for the associated asset classes. (b) For spares procurement investments where the specific destination of equipment is not known, identify the similarly rated units with the highest failure probability that are *not* currently scoped into any specific projects (as a proxy for future project).

Step 2: Using available Ice Calculator 1.0 CIC values and the system connectivity model, explore investment criticality and identify the value of lost load downstream of the assets in scope to estimate the outage cost avoidance value, which will form the economic benefit stream in the CBA calculation, along with assumptions of environmental and safety cost mitigation of low-probability catastrophic failure mode events.

Step 3: Using all of the above variables (assets' failure probability estimate, CICs downstream of the assets, and project cost estimates), derive the following metrics:

- Benefit to Cost (B/C) Ratio of planned asset replacement based on the PV of 10-year asset failure risk reduction.

- Total Cost of Operation (TCO) reduction, which estimates the value of performing the work now vs. deferring it to a future point in time over a 10-year evaluation period (during which the assets would be subjected to an increasing failure probability and an emergency renewal cost premium – should failure occur, net of the incremental value derived from keeping the asset in service).

Given that there is typically a greater degree of discretion with respect to proceeding with these projects, the TCO cost reduction is expected to become a particularly valuable metric when considering whether a given project should proceed to construction sooner rather than later.

Once the CBAT tool is used to identify candidate projects, a further Step 4 will be taken to compare the results of Step 3 with similar metrics generated for other candidate projects under consideration, thus enabling quantitative prioritization. Once a shortlist of candidate projects is selected, planners can conduct further in-depth analysis on a smaller subset of projects by factoring in other cost and benefit considerations like opportunities for

capacity or resilience upgrades, or those that are more challenging to quantify, or do not apply to the same degree to all projects.

3. Budgeting Considerations

Projects contained in this program are typically reliability-enhancing renewal work which can involve a degree of discretion in terms of its scope or execution timing. For example, line equipment renewal projects are comparatively suitable for year-to-year deferral or partial scope reduction – particularly when their scopes include work on multiple locations or feeders. On the other hand, planned substation equipment renewal has much lower flexibility in terms of scope boundaries or scheduling firmness, given the installation logistics and the imperative of replacing the legacy units before they fail in service. Critical spares procurement investments fall somewhere in the middle, as the degree of flexibility may be dictated by the number of spares already available and/or commercial terms that the Company can secure with its vendor.

While there are notable exceptions to the above assertions (such as when line reconductoring work is requested by an RTO, or when substation renewal budgets are trended to maintain in-year flexibility for multiple potential projects), the Proactive Reliability-Driven Renewal program provides Liberty with budgetary maneuverability. This maneuverability can become pivotal in years when the distribution system experiences greater-than-anticipated storm activity, or when large investments in other parts of the business necessitate adjustments to the overall distribution capital work program.

4. Performance Metrics

The following metrics are being proposed based on available data, however there are currently no internal targets associated with these measures. By observing these metrics over the coming years, the Company expects to derive incremental work planning and budgeting insights on which it will report in future years.

Customer Interruptions (CI) Caused by Equipment Failures or Malfunctions	# of Interruptions
Customer Interruption Minutes (CMI) Caused by Equipment Failures or Malfunctions	# Minutes

5. Individual Investments Exceeding $1M

5.1. Transmission

Name & Synopsis: *Replace 69kV Aged Infrastructure at Substation #292*	Projected 2025 Investment: $12.8M
Basis for Action: This project covers the complete rebuild of Liberty's Tipton Ford substation. This is a tier 3 substation and is a critical node in the transmission system where four 161kV lines converge.	

Cost-Benefit Analysis: In addition to project value considerations not readily quantifiable (e.g. using the opportunity of replacing aged assets to also modify the bus structure into a more reliable ring bus configuration), the following are results of the CBA analysis focused on the renewal component of the contemplated investment: B/C Ratio (ten-year risk reduction): 0.453 B/C Ratio (TCO): 0.224

5.2. Distribution

Name & Synopsis: *Critical Spares Purchases* – proactive procurement of spare substation power transformers and circuit breakers. In scope are two 161/12 kV 22.4 MVA power transformers and six 161 kV circuit breakers.	Projected 2025 Investment: $3.3M
Basis for Action: Results of demographic survival analysis of substation transformer and circuit breaker units in relation to known near-term project plans involving renewal of this types of equipment and in consideration of the current equipment lead times. Cost-Benefit Analysis: B/C Ratio 161kV Circuit Breakers (ten-year risk reduction): 0.238 B/C Ratio 161kV Circuit Breakers (TCO reduction): 1.478 B/C Ratio 161/12 kV 22.4 MVA Transformers (ten-year risk reduction): 0.373 B/C Ratio 161/12 kV 22.4 MVA Transformers (TCO reduction): 0.453	

Programs T3 and D4: Reactive / Inspection-Driven System Renewal

1. Basis for Action

Results of asset inspection and testing activities that identify damage, deterioration or other current or impending deficiencies on distribution line and substation assets, which warrant near-term intervention by way of replacement or reinforcement with either like-for-like or higher-rated plant.

2. Cost-Benefit Analysis Considerations

Liberty's asset inspection cycles follow the guidelines of the Missouri Administrative Code *tit. 20 § 4240-23.020,* with the details provided in Program Summary D3 section 2.1.1. The vast majority of capital work in this Reactive / Inspection-Based Program stems from results of pole inspections and testing, which follow a 4-year patrol cycle for urban poles, 6-year patrol cycle for rural poles, and a 12-year intrusive inspection cycle for all poles older than 12 years of age. In 2025, Liberty plans to invest approximately $14 million into reactive

pole replacement work (Transmission and Distribution combined) stemming from inspection and testing recommendations.

2.1. Quantitative Cost-Benefit Analysis Methodology

The core aspect of cost-benefit evaluation of future reactive work informed by inspection / testing findings lies in prioritization of work based on its deemed criticality to system safety, operational integrity and reliability. By scheduling and executing the work in accordance with the criticality-based prioritization, Liberty ensures that less critical work is deferred for an appropriate period of time, to optimize the amount of asset service life consumed before the identified deficiencies present imminent operation risks. As discussed in the previous section, based on its recent experience, Liberty has identified a near-term plan for further improvements to this process to deliver more efficient investment outcomes. Moreover, with the recent introduction of the CBAT tool and risk-based asset management methodologies more generally, Liberty has now defined the next frontier of its quantitative asset management evolution. To begin exploring the new tools and processes, Liberty subjected the 2025 group of reactive investments for both poles and substation assets to quantitative cost-benefit evaluation using the CBAT tool. The following methodology was used:

Step 1: (a) Where specific assets slated for replacement or reinforcement are known, estimate their failure probability based on the combination of their age and condition (if available) applied to the relevant asset class failure curve. Where specific assets slated for renewal are not identified (e.g. for trended miscellaneous substation rebuild work), randomly select a proxy group of assets based on the identified trended investment volume from the oldest decile of the relevant asset class, and use their condition and demographic data to estimate failure probability over the next decade.

Step 2: Using available Ice Calculator 1.0 CIC values and the system connectivity model, explore the criticality and identify the value of lost load downstream of the assets in scope to estimate the outage cost avoidance value, which will form the economic benefit stream in the CBA calculation, along with assumptions of environmental and safety cost mitigation of low-probability catastrophic failure events.

Step 3: Using all of the above variables (assets' failure probability estimate, CICs downstream of the assets, and project cost estimates), derive the following metrics:

- Benefit to Cost (B/C) Ratio of planned asset replacement based on the PV of 10-year asset failure risk reduction.

- Total Cost of Operation (TCO) reduction, which estimates the value of performing the work now vs. deferring it to a future point in time over a 10-year evaluation period (during which the assets would be subjected to an increasing failure probability and an emergency renewal cost premium – should failure occur, net of the incremental value derived from keeping the asset in service).

Step 4: To benchmark the calculated risk mitigation value of the assets in scope, planners took an additional stage to compare the aggregate risk mitigation value of the contemplated 1,600 pole replacement (calculated as the aggregate failure probability eliminated through pole replacement) with median failure probability across all the remaining poles. In this way planners could assess the estimated risk mitigation value in two ways: (a) by comparing the aggregate risk being removed from the system to the average risk remaining across all assets, and (b) by comparing the percentage of the asset class being replaced with the percentage of asset class risk being removed.

3. Budgeting Considerations

Budgets for reactive renewal work are developed and amended on the following factors:

- Quantity of equipment recommended for renewal through inspections, including any backlogs from prior years;
- Assessment of work execution capacity (internal and contractors) available to the program;
- Evaluation of Company-wide investment priorities and constraints over the relevant planning period across all portfolios and the ensuing budgetary implications;
- Work execution bundling and scheduling work seeking to maximize the throughput of the work program scheduled for delivery;
- Evaluation of other programs' intended scopes for the relevant planning timeframe to explore opportunities for incremental work execution synergies;
- Monitoring of in-year changes to budgetary availability across all relevant portfolios to implement any adjustments that may be required;

As discussed above, another critical (though indirect) budgetary lever available to the Company is its ongoing exploration of improvement opportunities in asset analytics and program delivery. Process changes such as those pertaining to contemplated inspection frequency changes, scheduling parameters and the ensuing targeted execution timelines, create opportunities to maximize the expected utility of annual investments.

4. Performance Metrics

Liberty proposes the following metrics to be reported on a lagging basis, with 2025 being the first year over which this data would be tracked and assembled for reporting in the 2026 PISA Update. These metrics are new for the Company and are being advanced as means of furthering its own understanding of asset management analysis and the ensuing work delivery. The Company welcomes stakeholders' feedback on these metrics following their review of this document.

Median Age of Poles with Priorities 1 and 2 non-conformances identified.	#

Net Annual Backlog Additions (# of Additions – # of Subtractions)	#

5. Individual Investments Exceeding $1M

5.1. Transmission

Name & Synopsis: *Replace Bad Order Transmission Poles* – planned replacement of 87 poles previously flagged for non-conformances during inspection	Projected 2025 Investment: $1.2M
Basis for Action: Findings of visual and/or intrusive inspections, triaged by criticality and further analyzed by internal planning staff to optimize the renewal delivery. Cost-Benefit Analysis: B/C Ratio (ten-year risk reduction): 0.00294 – note that the low benefit-to-cost ratio is in part due to the fact that the CBAT / ENGIN platform does not yet incorporate the inspection data that would de-rate those poles automatically to increase their effective age. Moreover, as Liberty is increasingly replacing the legacy poles with higher-rated units (e.g. larger poles or fiberglass crossarms), the additional costs can be expected to drive the B/C ratio down, until such time as the Company gains sufficient experience to be able to make appropriate adjustments for this issue. B/C Ratio (TCO): -0.0956 – performing the work in 2025 generates an estimated 10% lifecycle cost savings relative to hypothetically delaying the work by a decade (which is in any case not feasible given the identified deficiencies that warrant rectification.	

Name & Synopsis: *Replace Bad Order Distribution Poles* – planned replacement of 1,600 poles previously flagged for non-conformances during inspection	Projected 2025 Investment: $13.0M
Basis for Action: Findings of visual and/or intrusive inspections, triaged by criticality and further analyzed by internal planning staff to optimize the renewal delivery. Cost-Benefit Analysis: B/C Ratio (ten-year risk reduction): 0.0343 – note that the low benefit-to-cost ratio is in part due to the fact that the CBAT / ENGIN platform does not yet incorporate the inspection data that would de-rate those poles automatically to increase their effective age. Moreover, as Liberty is increasingly replacing the legacy poles with higher-rated units (e.g. larger poles or fiberglass crossarms), the additional costs can be expected to drive the B/C ratio down, until such time as the Company gains sufficient experience to be able to make appropriate adjustments for this issue.	

B/C Ratio (TCO): -0.0989 – performing the work in 2025 generates an estimated 10% lifecycle cost savings relative to hypothetically delaying the work by a decade (which is in any case not feasible given the identified deficiencies that warrant rectification.

Percent of Poles Slated for Replacement: 0.76%

Est. Aggregate Elimination of all Poles Risk through 2025 replacements: 1.21% - when compared with the % of poles asset class being replaced, this metric suggests that the project carries risk elimination value well above what would be proportionally expected based on the asset count.

Pole Risk Eliminated Above Asset Class Average: 59.6% - when comparing the aggregate risk (% probability x $ impact of failure), the poles slated for replacement carry nearly 60% more risk than asset class average.

5.2. Distribution

Name & Synopsis: *Distribution Overhead Lines* – blanket project to accommodate like-for-like replacement of functionally failed overhead equipment	Projected 2025 Investment: $1.2M

Basis for Action: Findings of visual/detailed inspections, field issues identified by crews or members of the public, equipment faces imminent risk of functional failure or requires replacement to enable mitigation of other failed equipment, triaged by criticality and further analyzed by internal planning staff to optimize the renewal delivery.

Cost-Benefit-Considerations:

B/C Ratio (ten-year risk reduction): 0.202 – since this is a blanket project and the individual equipment to be replaced is not yet known, this number is an average measure of risk reduction for replacement of any given overhead equipment. Note that the higher risk reduction is a function of the relative age of overhead equipment in the system.

B/C Ratio (TCO): -0.1114 – performing the work in 2025 generates an estimated 11% lifecycle cost savings relative to hypothetically delaying the work by a decade (which is in any case not feasible given the nature of the work which this blanket project entails.

Program D5: Emergency System Repairs

1. Basis for Action

The presence of asset failures accompanying reported customer outages during normal or severe weather conditions, which must be rectified to enable power restoration to affected customers and/or eliminate imminent public or employee safety risks.

2. Cost-Benefit Analysis Considerations

As stated above, while Liberty's current approach to the planning and budgeting for emergency / storm response investments is based on historical trending of prior year expenditures for the same categories, the Company did conduct a CBAT calculation run for this program's expected 2025 investment value. The calculation followed the following the following methodology:

Step 1: Since it is impractical to assume which portion of the distribution system will be affected by storm events in 2025, Liberty took the entire distribution plant with the exception of underground cable and conduit as a starting point for this calculation. Planners calculated the overall risk cost of the assets in scope, by estimating the probability of their failure based on the application of failure curve analysis to the available demographic and condition information, and estimating the impact calculated by way of available CIC estimates from ICE Calculator 1.0 and actuarial assumptions for environmental and safety costs for low probability / high impact catastrophic failures.

Step 2: Using the unit cost estimates for all asset classes, Liberty calculated the estimated total replacement value of the system equipment in scope (note that this is a high-level calculation used only for planning analysis purposes that omits a significant degree of detail that would be required to deliver a commercial estimate, for example).

Step 3: Using the budgeted dollar amount for the 2025 storm response expenditures, the Company estimated what percentage of the overall system risk would be commensurate to this dollar amount had the assets been replaced proactively. Because the Company assumed that most asset classes could be theoretically impacted by weather events, no specific asset classes were taken as a basis. Instead, average risk for the entire system was calculated. Liberty then applied the resulting estimated average system-wide renewal B/C ratio to the dollar amount dedicated to storm outage rectification in 2025, to calculate its estimated value proposition.

Step 4: As with other investments that underwent the CBAT analysis, the resulting 10-year renewal and TCO B/C ratios are provided in the associated investment summary document at the end of this program summary. The Company acknowledges that the described methodology represents a high-level approximation only, and many of its assumptions warrant significant refinement. For example, while substation infrastructure can be affected by bad weather – this is usually associated with low-probability events like tornadoes. While tornadoes do periodically occur in Liberty's service territory and have historically caused significant devastation to electricity infrastructure – the current analysis does not contain a quantitative qualifier that would appropriately reduce the probability of weather-induced damages to substation equipment. This and other related adjustments represent future improvement frontiers for the Company's asset management analytics work stream.

3. Budgeting Considerations

The budget for emergency outage restoration capital expenditures is determined on the basis of historical trending and is adjusted in-year depending on the analysis of expenditures to date relative to the historical experience. In the event where originally budgeted amounts may end up being insufficient, Liberty reallocates the budgeted amounts from other budgetary categories where flexibility to do so in-year exists. As one example, certain Proactive Reliability-Driven Renewal investments discussed in program summary D3 can be re-scoped or deferred to provide additional budgetary flexibility. In the event where unanticipated storm expenditures exceed its budgetary flexibility, Liberty may consider other available means of funding the available to it through the regulatory framework.

4. Performance Metrics

Liberty proposes the following metrics to be reported on a lagging basis, with 2025 being the first year over which this data would be tracked and assembled for reporting in the 2026 PISA Update. These metrics are new for the Company and are being advanced as means of furthering its own understanding of asset management analysis and the ensuing work delivery. The Company welcomes stakeholders' feedback on these metrics following their review of this document.

Median age of overhead equipment destroyed beyond repair by poor weather events	#
Planned vs. Actual Emergency Response Investments: 3-Year Rolling Average	%

5. Individual Investments Exceeding $1M

Name & Synopsis: *Storm Outages Blanket* – annual budgeted amount for outage response expenditures during poor weather events.	Projected 2025 Investment: $4.4M
Basis for Action: Outage notifications received by the Company's Customer Care and Dispatch functions. Specific type of work performed depends on the line response crews' assessment of cause of interruption, damage sustained and feasible means of restoring power safely and reliably, and as quickly as feasible. **Existing Asset Demographics & Condition:** Not specifically applicable, as virtually any component on the distribution system – including brand new assets can sustain damage and contribute to an outage (e.g. vegetation contact, motor vehicle accident involving collision with utility infrastructure, etc.). **Cost-Benefit-Considerations**: B/C Ratio (ten-year risk reduction): 0.206 – note that in conducting this analysis, Liberty assumed that all types of asset classes aside from underground cables could theoretically sustain damage by poor weather events and require emergency rectification. Since the expenditures associated with this program are completely non-discretionary, the Company is providing this CBA calculation as evidence of its initial efforts to incorporate quantitative risk-based asset management principles into each facet of its planning work. In the coming years the Company will develop more nuanced methodologies for applying risk-based asset management principles to emergency restoration project budgets and historical expenditure information. B/C Ratio (TCO): -0.0965 – please see Program Summary D5 for additional discussion.	

Part III: Distribution System Service Portfolio

Portfolio Summary: Distribution System Service portfolio covers investments seeking to add new technical capabilities to increase the systems' operational efficiency, enhance transformation capacity, or inter-area transfer capability and flexibility, expand reliance on data-driven planning and operational decisions, or augment the operational tools and processes in anticipation of emerging new ways of utilizing the grid. In general, there are three larger types of investments that make up this portfolio:

- *Equipment capacity enhancements* – such as projects where new power transformers or circuit breakers are added to existing substations facilities, or line reconductoring work to increase the affected lines' transfer capability;

- *Digital tools to improve reliability or system operability* – such as Distribution Automation technology installations, deployment of new line or substation equipment monitoring sensors, expansions of SCADA infrastructure, or integrations

between various operational technology software components to generate incremental insights or other operational benefits;

- *Pilots and Proactive Research Initiatives* – usually smaller-scale investments to test out new or emerging equipment standards, collect field data that was not previously used in planning, or develop and implement new planning and operational analytics tools like dashboards, databases, or simulation tools.

In many cases, System Service investments can have material overlap with System Renewal work – such as when aged and deteriorated low-capacity copper conductor is replaced with a higher-rated modern ACSR conductor, or when functionally obsolete electromechanical protection relays are replaced with new digital models. In the cases where such overlap exists, planners will approach the investment classification on a case-by-case basis.

Program D6: Grid Flexibility Enhancements - Project DA

1. Basis for Action

The conceptual underpinnings of Project DA stem from the results of proactive reliability improvement analysis that considered the hypothetical introduction of distribution automation (DA) schemes using autorecloser technology across Liberty's feeders. The preliminary results of this analysis informed the creation of a grant funding application that was submitted to and ultimately selected by the U.S. Department of Energy ("DOE") in first tranche of the Grid Resilience and Innovation Partnerships ("GRIP") grant, enabled by the 2022 Bipartisan Infrastructure Legislation also known as the Infrastructure Investments and Jobs Acs ("IIJA"). The resulting project, provisionally entitled "Project DA" was formally launched with the DOE in December of 2024 following a 1.5-year application preparation process and the post-selection DOE due diligence work. The Project's overall current estimated cost is $120.1M, of which $47.5M will be eligible for reimbursement by the DOE. The 2025 planned capital expenditure net of the DOE grant is $9.2M.

Figure 1 provides a visual summary of the core components of the solution that will be deployed over the five-year timeline between 2025 and 2029 inclusively.

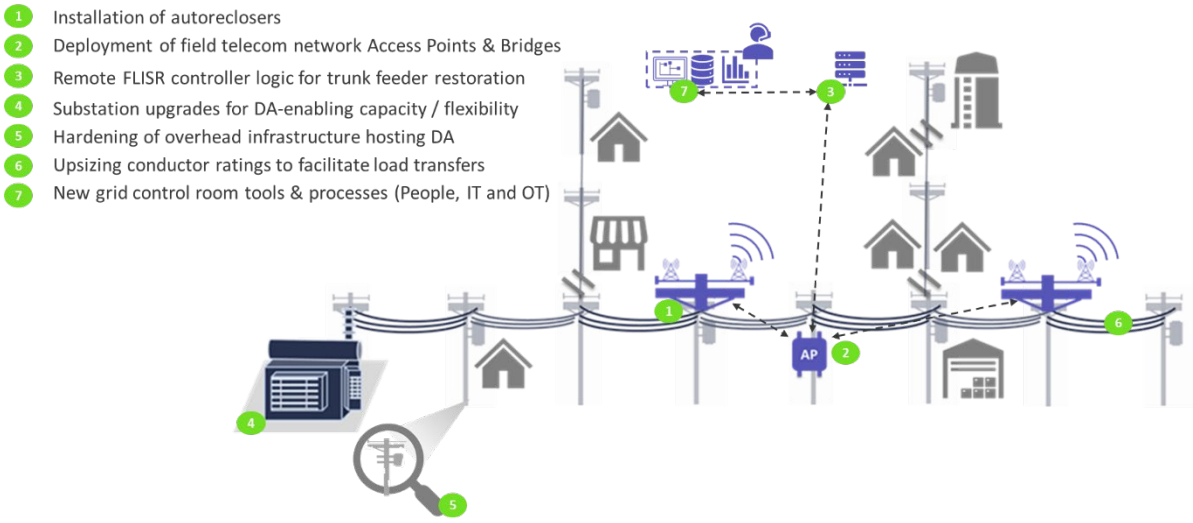

Figure 1: Project DA Core Infrastructure Elements

The project seeks to add another dimension to Liberty's reliability improvement efforts by segmenting the relevant circuits and equipping electrically adjacent circuit interfaces with autorecloser devices. In equipping the DA system with a telecommunications backbone grounded in Advanced Metering Infrastructure (AMI) mesh network technology and integrated into the company's Outage Management System (OMS), Liberty also stands to significantly advance the digital transformation of its distribution field operations and create opportunities for incremental data-driven insights to further improve its planning processes.

2. Cost-Benefit Analysis Considerations

The key inputs for the original analysis that drove the work preceding the GRIP application were the (a) estimated costs of autorecloser deployment and sectionalization work, calculated using general per-device and per-feeder unit cost assumptions; (b) ICE Calculator 1.0 Value of Lost Load estimates configured for Missouri and applied to the counts and types of customers present on each evaluated circuit; (c) historical reliability data by feeder and cause code - to determine the reliability baseline that was amenable to improvement thorough DA technology deployment.

As noted above, Liberty expanded the scope of the project to account for the GRIP program application requirements and maximize the value of potential investments that could be completed within the project's scope. A key cost-benefit consideration driving this scope expansion was the anticipated impact of the DOE's cost contribution that would effectively act as a Contribution in Aid of Construction (CIAC) for the eligible portion of the project. In

consideration of this benefit (which amounts to $47.5M or 40% of the project's latest total cost estimate), Liberty expanded the scope of the project to more feeder locations, and a more comprehensive technology stack solution that will set up the Company for future frontiers of its grid modernization journey, beyond the capabilities and benefits specifically accounted for in the Project DA plan. Figure 2 provides a snapshot of additional longer-term capabilities that the Company expects to be in a better position to pursue longer-term as a result of the new technologies, upgrades to existing tools, and greater integration between operating technology solutions that it expects to deploy with the aid of a significant funding contribution from the federal government.

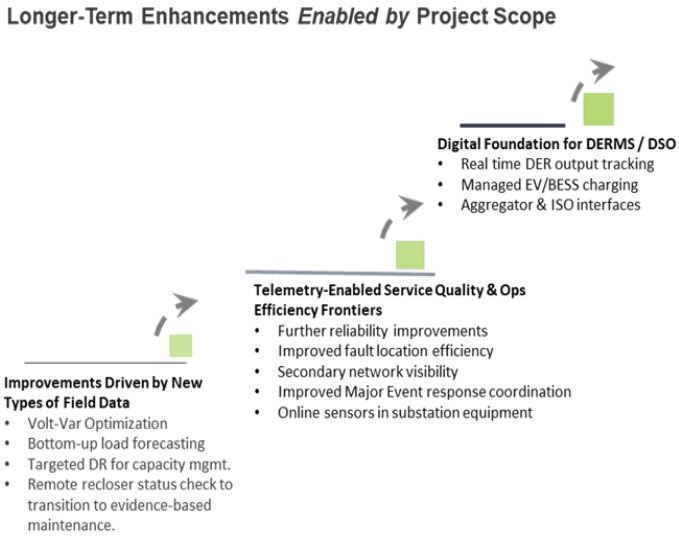

Figure 2: Longer-Term Operating Capabilities Enabled by Project DA Technology Scope

3. Budgeting Considerations

As Liberty discusses in the pre-filed testimony submitted as a part of a recent Missouri rate application, there are certain components of the project costs that are not typically included in a distribution capital project, but which are required by the terms of the DOE grant. Among them are extensive incremental reporting requirements, a variety of activities comprising the Community Benefits Plan framework, and the expenditures associated with maintaining compliance with the Davis Bacon Act. These and other related expenditures are mandatory in order to maintain eligibility for reimbursement of the DOE's portion of the project's overall costs. Moreover, the DOE rules do not permit the award recipients to recoup the costs they incurred before the DOE funding was formally confirmed. In Project DA's case, this means that the costs incurred before October of 2024 will not be eligible for DOE funding contribution. Notwithstanding these limitations, the overall financial value of the DOE award and the transformative nature of the project on Liberty's field operations far outweigh the impact of marginal incremental costs that the Company would not incur but for the DOE grant.

4. Performance Metrics

Liberty proposes the following metrics to be reported on a lagging basis, with 2026 being the first year over which this data would be tracked and assembled for reporting in the 2027 PISA Update as the first DA installation aren't scheduled to take place until early 2026.

SAIDI Improvements on DA-Equipped Circuits – 3-Year Rolling Average	%
Percentage of Customer Base Served by DA Infrastructure	%

5. Individual Investments Exceeding $1M

Not applicable, as this program entails a single, multi-year investment project.

Program D7: Risk-Based Planning and Connectivity Model Enhancements: Field Data Collection

1. Basis for Action

Presence of material gaps in available demographic and condition asset records for distribution equipment deployed across Liberty's service territory. The presence of these gaps limits the Company's ability to leverage to the full extent (and with full confidence) the asset management and planning analytics investments it recently made in the CBAT solution powered by the ENGIN software package. Aside from the CBAT use case, some of the missing data – most notably conductor types and ratings for all distribution circuits – poses a limitation to Liberty's ability to perform load flow simulation studies required in customer connection, substation capacity planning, and contingency planning work. To this end, the Company plans to execute a concerted "blitz" effort to eliminate or substantially reduce the existing asset data gaps, while simultaneously discharging its recurring inspection and testing obligations through the same work. As the contemplated work will serve to provide critical current state configuration inputs to a newly deployed software solution, the associated data collection costs will be attributed to the second phase of the development of the CBAT tool, enabling their capitalization.

2. Cost-Benefit Analysis Considerations:

The currently estimated cost of the data collection initiative is between $5.0M and $6.0M. Once the data is collected Liberty should be able to accurately estimate the cumulative asset failure risk cost of the entire overhead system which is likely to be in the tens of millions of dollars, if not higher. A payback horizon for this data collection initiative could then be determined through subsequent use of the data to refine investment decisions which generate incremental savings or cost avoidance. Considering that Liberty's distribution system is comprised from over 200,000 poles, attaining the benefits commensurate with the expended costs is a realistic expectation. Bolstering the value proposition is also the fact that the program's scope will also enable the Company to complete its planned inspection work prescribed by the Missouri Administrative Code *tit. 20 § 4240-23.020* ahead of schedule, thereby enabling an optimization of inspection schedules moving forward to realize a net reduction in O&M costs into the future.

3. Budgeting Considerations

The cost estimate is a product of a Request for Proposals (RFP) process that Liberty administered in late 2024 to secure the most competitively priced offerings from multiple existing and new vendors specializing in field inspections. As such, the budgeted costs are grounded in fit-to-purpose competitive procurement work.

4. Performance Metrics:

Liberty proposes the following metric to be reported on a lagging basis, with 2025 being the first year over which this data would be tracked and assembled for reporting in the 2026 PISA Update as data collection only commenced in 2025.

Asset Data Availability Index Improvements for Overhead Infrastructure	%

5. Individual Investments Exceeding $1M:

Not applicable as this program entails a single, multi-year investment project which itself does not replace transmission or distribution assets. Therefore, the benefits are not quantifiable using the methodology outlined in Part II, however a method to quantify the payback period has been proposed above.