



Liberty™

Report on:
Liberty's Clean Transition Plan
for the Central Region Electric System
(The Empire District Electric Company)

February 2021

Executive Summary

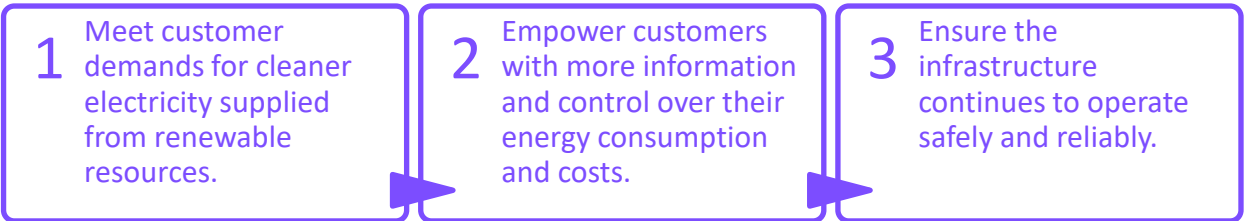
This report satisfies requirements of Senate Bill 564 (RSMo. 393.1400) based on the election to Plant in Service Accounting (“PISA”) by The Empire District Electric Company (“Liberty” or the “Company”) on August 12, 2020 (Case No. EO-2019-0046).

This report reflects Liberty’s current intentions with regard to budget plans for the next five years to accomplish Liberty’s Clean Transition Plan (the “CTP”). Bringing about improved customer solutions through cost management, modern technologies, and a transition to clean energy, the CTP will enable the Company’s electric grid to meet evolving customer needs today and in the future. Liberty continuously evaluates and analyzes the needs of its customers and the electric grid, the condition of the Company’s infrastructure, the costs and accessibility of modern technologies, and the availability of new technologies. Also, Liberty continuously strives to make the most of every dollar and every hour of labor, in order to most efficiently provide reliable and affordable electric service to its customers. As such, the budget is a snap shot in time, with priorities and plans shifting based on evolving needs and technology.

The Case for Transition

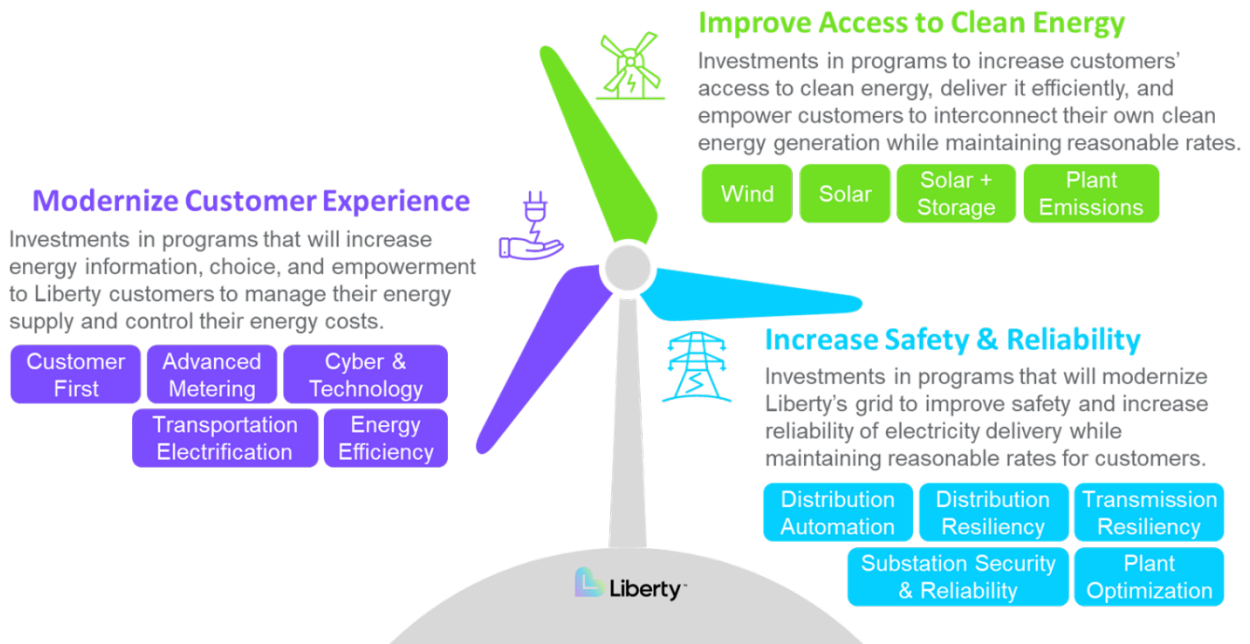
Electricity is a critical contributor to our society and economy. Emerging trends make it even more important. Emerging technology and a desire to reduce carbon impacts of the system are driving Liberty to transition its electrical infrastructure and operations to meet the future needs of its customers.

Liberty is focusing capital investment on its infrastructure in the Central Region to:



Liberty's Clean Transition Plan





This Clean Transition Plan ("CTP") embodies Liberty's organizational priorities to provide sustainability leadership and seek operational excellence. The CTP will establish access to clean energy for customers, modernize the customer experience, and increase safety and reliability of the electric infrastructure.



Access to Clean Energy

Over the next five years, Liberty plans to install nearly 680 megawatts of combined wind, solar, and energy storage capacity in or near its service territory to provide cleaner electricity to its customers. In 2021, approximately 600 megawatts of wind generation will come online across three wind farms, two of which are in Missouri, and one in Kansas. By the end of 2024, approximately 60

megawatts of solar (10 megawatts of community solar and 50 megawatts of utility solar) will be online distributed across multiple sites in or near Liberty's electric service territory. Additionally, nearly 20 megawatts of smaller solar plus storage

Clean Energy	
	~600 MW Wind
	~60 MW Solar
	~20 MW Solar+Storage
	Reduce Emissions

facilities will be strategically placed across the system to provide clean energy while simultaneously mitigating congestion in parts of the system.

In addition to the installation of renewable generation capacity, Liberty will execute strategic projects to reduce the net emissions from its fossil fuel generation fleet. This includes the closure and decommissioning of the Asbury coal plant and upgrades at the Riverton, Stateline, and Ozark Beach power plants.

Once these additions and upgrades are complete, Liberty will continue to evaluate and transition its fossil fuel fleet to renewable energy sources.





Modernize the Customer Experience

To meet customer demands for information, options, and sustainability, Liberty is modernizing its digital infrastructure and launching programs to enable customers to use less energy and better control their electricity costs.

Liberty’s Customer First Program is a comprehensive digitalization initiative that will provide employees with the tools to deliver the experience our customers demand and deserve. It will create greater consistency around Finance, Customer Service, and Operations, resulting in an industry-leading customer experience. It includes advanced metering, advanced distribution management, employee tools, procurement upgrades, and more.

In accordance with system upgrades associated with Customer First, Liberty will upgrade digital infrastructure technologies and analytics to ensure robust operations, integration, availability, and continuous improvement.

As customers migrate toward electric vehicles, Liberty will invest in capabilities and infrastructure to support them, including setting a community example and electrifying portions of its own fleet. Charging infrastructure will be installed to support Liberty’s fleet and employees and to serve the public to relieve range

Customer Experience	
	Customer First
	Cyber & Technology
	Electrify Transportation
	Energy Efficiency

anxiety. Programs will be launched to help support residential and commercial customers as they transition their fleets.

Lastly, Liberty will be rolling out various rebate programs to encourage and guide customers in achieving their energy efficiency goals through education, audits, and the replacement of antiquated equipment with modern, more efficient equipment.





Safety & Reliability

As customers evolve how they use electricity, Liberty will continue to modernize its grid to support those new needs in a safe and reliable manner while maintaining affordability and community values.

Liberty will strategically deploy smart devices and switches throughout its electric distribution system. These devices and switches will sense and respond to issues and disturbances by automatically adjusting, restoring, or isolating them so they impact as few customers for as little duration as is necessary.

In addition to deploying smart devices, Liberty is committed to improving the resiliency of the Transmission and Distribution infrastructure to withstand and avoid disturbances. This involves strategically deploying stronger and more robust structures, as well as moving structures away from threats such as vegetation and damaging winds. It also includes increasing the power capacity of the system to prepare it for more strenuous loads brought on by electric vehicles and distributed generation.

To further ensure the performance of Liberty’s delivery infrastructure, security will be enhanced at critical substations throughout the service territory to protect them from accidental and deliberate threats. This will include upgrades to physical deterrents like fencing and gates, access control, surveillance, sensors, and alarms to keep the system performing and keep employees and customers safe.

Safety & Reliability	
	Distribution Automation
	T&D Resiliency
	Substation S & R
	Plant Optimization

The importance of plant optimization will be in the forefront as Liberty seeks to improve the performance, reliability, and efficiency of each plant in its fleet. There are many methodologies that can determine the effectiveness of a plant’s input to output ratio to improve the plants optimization for the long haul. The future of these capital investments will be focused on reducing failure risk, lowering Operations & Maintenance (O&M) costs, improving efficiency, and improving the overall safety of each plant.

CTP Investment Summary

Liberty’s CTP consists of approximately \$2.0B over the next five years, across 14 categories of investment. These investments represent Liberty’s long-term planning estimates of expected capital investment on the electric infrastructure for Liberty’s central region. This infrastructure is predominantly located in Missouri, serving Missouri residents; however, Liberty’s central region also operates electric infrastructure and serves electric customers in Kansas, Oklahoma, and Arkansas. The CTP addresses electric infrastructure for Liberty’s entire central region, not just for the state of Missouri.

Liberty Central (Empire) Retail Electric Customers	
Missouri	158,512
Kansas	9,698
Arkansas	5,020
Oklahoma	4,757
TOTAL	177,987
<i>(as of December 31, 2020)</i>	

This report addresses Liberty’s current plan and estimates for investment in identified projects, across these 14 strategic areas, to modernize its electric infrastructure. Annually, project and program owners submit progression status and six year forward-looking budget estimates for evaluation and approval into Liberty’s full capital investment plan. The results of this year’s approved version is 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 grid, the condition of the Company’s infrastructure, the costs and accessibility of modern technologies, and

the availability of new technologies, with budget priorities and plans shifting based on evolving needs and technology.

Liberty Capital Investment Plan

						<i>\$ Millions</i>
Program Name	2021	2022	2023	2024	2025	Total
Solar	\$5.3	\$13.7	\$78.4	\$0.5	\$1.1	\$98.9
Solar+Storage ¹	\$6.0	\$60.9	\$0.5	\$0.0	\$0.0	\$67.5
Plant Emissions	\$3.2	\$24.1	\$33.6	\$0.2	\$0.3	\$61.4
Customer First* ¹	\$0.0	\$0.0	\$132.4	\$0.0	\$0.0	\$132.4
Advanced Metering** ¹	\$4.7	\$0.0	\$0.0	\$0.0	\$0.0	\$4.7
Energy Efficiency ¹	\$5.9	\$5.4	\$1.5	\$1.5	\$1.5	\$15.7
Transportation Electrification ¹	\$2.0	\$3.4	\$5.2	\$6.1	\$4.1	\$20.8
Cyber & Technology Upgrades ¹	\$6.6	\$5.9	\$4.3	\$2.9	\$2.0	\$21.7
Distribution Automation ¹	\$12.1	\$19.2	\$20.7	\$13.6	\$13.3	\$78.9
Grid Resiliency - Distribution ¹	\$125.9	\$124.5	\$94.1	\$73.4	\$62.9	\$480.7
Grid Resiliency - Transmission	\$104.8	\$45.4	\$35.3	\$20.7	\$19.5	\$225.7
Substation Security & Reliability ¹	\$15.0	\$20.1	\$20.2	\$20.4	\$20.5	\$96.2
Generation Optimization	\$46.9	\$14.5	\$20.9	\$11.3	\$15.0	\$108.5
Total	\$338.5	\$337.0	\$447.0	\$150.5	\$140.1	\$1,413.1
Wind	\$597.0	\$0.0	\$0.0	\$0.0	\$0.0	\$597.0
Total	\$935.5	\$337.0	\$447.0	\$150.5	\$140.1	\$2,010.1
Grid Modernization	\$178.3	\$239.4	\$278.9	\$117.8	\$104.2	\$918.6
Percentage (%)	53%	71%	62%	78%	74%	65%

* The Customer First program is a Liberty-wide initiative. Liberty-Empire's portion of cost will be allocated in 2023.

** Advanced Metering is a \$46M program that began in 2019. This reflects remaining capital for completing the project.

¹ Included in the Grid Modernization subtotal.

The CTP is centered around investments in grid modernization that increase the use of digital information, optimize operations, automate and improve the flexibility of the grid, facilitate integration of distributed renewable generation, improve power quality, increase security and safety of the grid, and increase the grid's resiliency to withstand threats from vegetation and damaging winds and other weather events. Investments in resiliency represent a major portion of Liberty's CTP and follow examples set by progressive peers in the industry.

As demonstrated by the extreme cold and its consequences experienced earlier this month, it is crucial to our communities that our infrastructure continue to perform even under extenuating circumstances and extreme weather events.

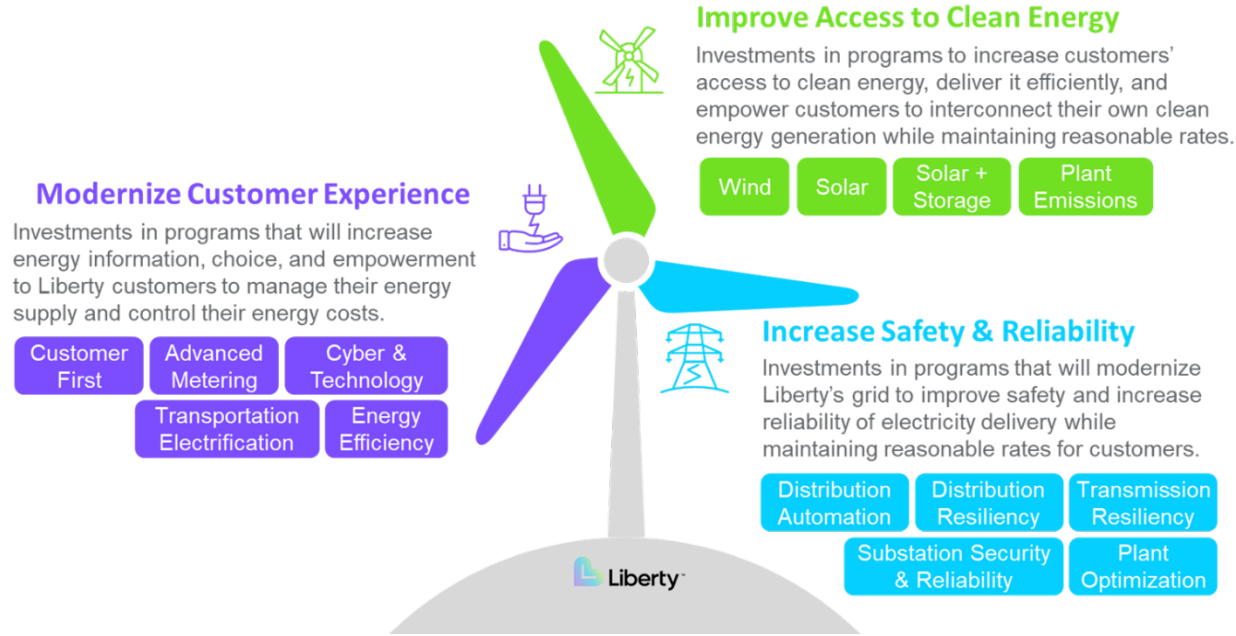
Liberty’s Clean Transition Plan

Introduction

This report describes Liberty’s capital investment plans for its electric infrastructure in its central region over the next five years. This investment plan is referred to as Liberty’s Clean Transition Plan (“CTP”) and satisfies an obligation associated with Liberty’s election to participate in Plant in Service Accounting (“PISA”) in accordance with RSMo. §393.1400 (Senate Bill 564).

The CTP embodies Liberty’s organizational priorities to provide sustainability leadership and seek operational excellence. The CTP invests in technologies, infrastructure, and development of customer programs that transition Liberty’s electrical infrastructure and operations to meet the evolving needs of its customers today and in the future. Investments are focused in three key areas of transition:

1. Improve access to clean energy for all of Liberty’s electric customers.
2. Modernize how customers use, manage, and pay for their electricity.
3. Increase the safety and reliability of Liberty’s electric infrastructure.



Improving Access to Clean Energy

Liberty is committed to transitioning the electricity delivered to customers toward sustainable renewable resources. Over the next five years, Liberty will complete the decommissioning of the Asbury coal plant (Asbury was de-designated from the SPP market as of the end of March 1, 2020, after nearly 50 years of service) and add nearly 680 megawatts of more affordable and more sustainable renewable generation. This will significantly reduce net carbon emissions and secure cost stability for Liberty and its customers.

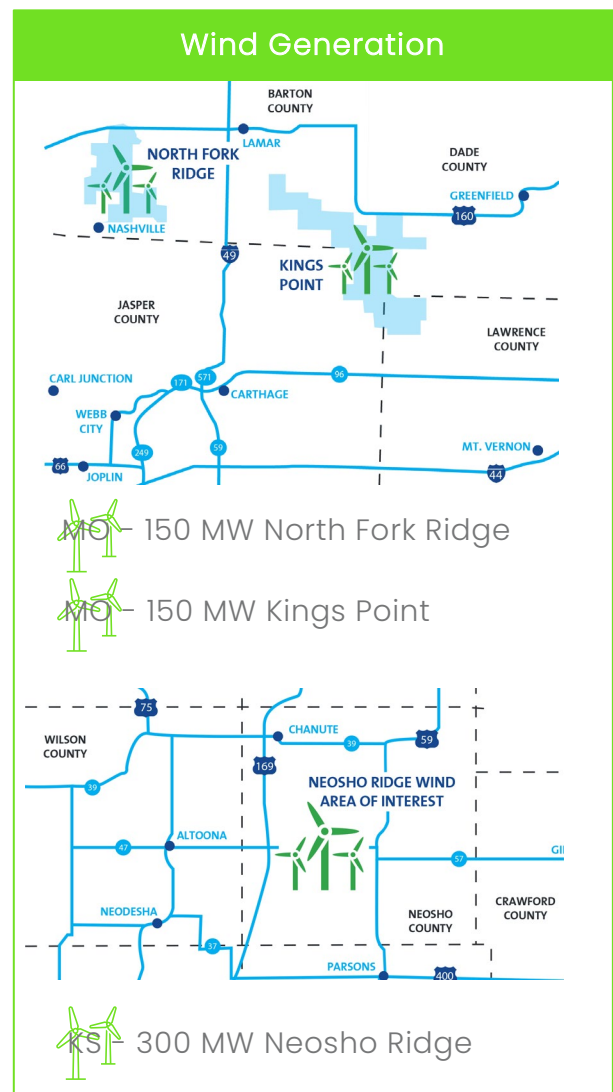
Wind Generation

Approximately 600 megawatts of wind generation capacity will be added to Liberty's power supply portfolio in 2021 across three large wind farms, two of which are in Missouri (approximately 300 megawatts combined) and one in Kansas (approximately 300 megawatts).

The North Fork Ridge wind farm is already in operation. It has a generating capacity of approximately 150 megawatts and is located in Barton and Jasper Counties, just north of Nashville, Missouri.

The Kings Point wind farm will have a generating capacity of approximately 150 megawatts and is in an area spanning portions of Barton, Dade, Jasper, and Lawrence Counties, southwest of Greenfield, Missouri.

The Neosho Ridge wind farm will have a generating capacity of approximately 300 megawatts and is in Neosho County, just east of Altoona, Kansas and south of Chanute, Kansas.



Solar Generation (Photovoltaic)

Approximately sixty megawatts of solar generation (consisting of photovoltaic panels) will be deployed and connected to Liberty's grid over the next five years.

Currently, ten megawatts of that capacity are planned to be allocated as community solar facilities. Community solar is unique, in that it is sold as a voluntary option to interested customers as dedicated renewable supply to offset their individual consumption. These customers participate through a simple and convenient billing mechanism, so they gain the benefits of solar energy supply without needing to install a dedicated system on their own roof or facility.

Liberty plans to build approximately five community solar facilities starting with the more than two-megawatt Prosperity Community Solar installation that is already in operation. This facility is located on approximately 15 acres of land near Prosperity, MO, and consists of more than 5,500 bifacial photovoltaic panels.

Liberty is also establishing approximately fifty megawatts of utility-scale solar facilities as part of its core energy supply fleet. The exact locations and scale of these facilities is currently under evaluation. Recent changes in Income Tax Credit availability due to the COVID-19 pandemic also necessitate reevaluating the scope of this additional capacity.

Solar plus Storage

In addition to larger utility-scale solar generation facilities, Liberty will strategically deploy approximately twenty megawatts of smaller distributed solar generation facilities with integrated energy storage capacity across its electric grid to provide renewable power supply and simultaneously mitigate delivery congestion, constraints, or power quality issues. These facilities will help ensure robust and reliable delivery of electricity to Liberty's customers without performing expensive upgrades to the grid infrastructure. This is a novel Non-Wires Solution (NWS) that will help Liberty make progress toward its clean energy supply goals and meet grid reliability and modernization goals while maintaining reasonable rates for its customers. The exact locations and scale of facilities is currently under evaluation.

Plant Emissions

Liberty will complete the closure and decommissioning of the Asbury coal plant and will continue to operate and deliver power from remaining coal and natural gas generation plants through the Company's clean energy transition over the coming decades. (Note: Liberty's only remaining coal generation is from jointly owned facilities.) Until these facilities are retired and supply transitioned to new renewable sources, Liberty will continue to prudently invest in maintenance and optimization of these plants to ensure they perform reliably, run optimally, and emit as few pollutants as possible during their remaining operational life.

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 operation of the plants.

For more details on Liberty's long-term generation supply plans in its central region, please refer to Liberty's most recent Integrated Resource Plan ("IRP") and annual updates filed with the Commission.

Modernizing the Customer Experience

Electric consumers are evolving to engaged customers with interests for more energy information and options that will empower them to actively manage their energy consumption, carbon footprint, and costs.

In 2019, the Smart Energy Consumer Collaborative ("SECC") sought to better understand the expectations and needs of today's residential energy consumers. Based on more than 7,500 survey responses from consumers in the U.S. and Canada throughout 2019, the SECC found three themes on the needs of today's energy consumers: consumers are more ready than ever to engage on energy; consumer expectations are shaping the future (consumers are asking for more personalization and more innovation); and education remains a clear opportunity to increase energy engagement.

Specific to our Liberty central region customers, in response to our 2020 customer satisfaction survey, numerous customers gave responses that support modernizing the customer experience. Specific areas cited by our customers included the website and the addition of an app for a more convenient and easily accessible customer experience. Customers expressed strong feelings toward modern Customer First experience tools that could help them manage accounts and bills, while also better understanding their energy usage.

Additionally, customers expressed interest in renewable energy sources. Our 2020 customer satisfaction survey revealed that in order for our customers to give us a higher satisfaction score, they want to see more promotion of renewable energy generation and see Liberty make substantial investments in renewables.

As preference trends shift to greater energy efficiency and decarbonization, Liberty is preparing its operations, customer programs, and digital infrastructure to meet these shifts in a secure and safe manner.

Customer First

The Customer First Program is a comprehensive digitalization initiative that will provide employees with the tools to deliver the experience our customers demand and deserve. It will create greater consistency around Finance, Customer Service, and Operations, resulting in an industry-leading customer experience. These projects will create the foundation to support Liberty's sustainability objectives through a fully integrated system with agile processes to support future growth.



There are six pillar projects of the Customer First Program:

1. Customer First Foundations
2. Employee Central
3. Procure to Pay
4. Network & Design Operations
5. eCustomer
6. Advance Metering Infrastructure (AMI)

The Customer First Foundations project impacts virtually every aspect of how Liberty runs its business. It will implement modern Enterprise Resource Planning (ERP) and associated tools.

Employee Central will modernize how Liberty manages employee data, recruiting, and onboarding to ensure Liberty builds and maintains a strong team to support its operations and its customers.

Procure-to-Pay will upgrade the tools and processes used to procure services and facilities on behalf of its infrastructure and customers.

Network & Design Operations will implement a uniform Geospatial Information System (“GIS”) technology across Liberty, for consistency of asset data management and analytics to support many other business and operational objectives, including the implementation of Advanced Distribution Management System (“ADMS”) that will improve the integration and utilization of smart devices, sensors, automation, and operational optimization across its grid infrastructure.

eCustomer will upgrade the customer service and customer data systems to improve how Liberty manages, protects, and shares its customer data to provide better customer service and offer more advanced information and choice to its customers.

Advanced Metering will deploy new AMI with Next Generation (smart) meters to nearly all customers. These smart meters will measure energy consumption in more granular fifteen-minute intervals, enable Liberty to offer new advanced rate options, gain better insight into how customer use electricity to improve analysis and load forecasting, and provide these detailed energy consumption data and insights back to customers so they may better manage their energy usage and associated bills. Liberty’s AMI project is designed to occur in specific stages that are tied to integrations to billing, outage management and other essential “back office” systems, which rely in part on advanced metering data. These stages occur over time, and in a methodical and prudent stepwise fashion.

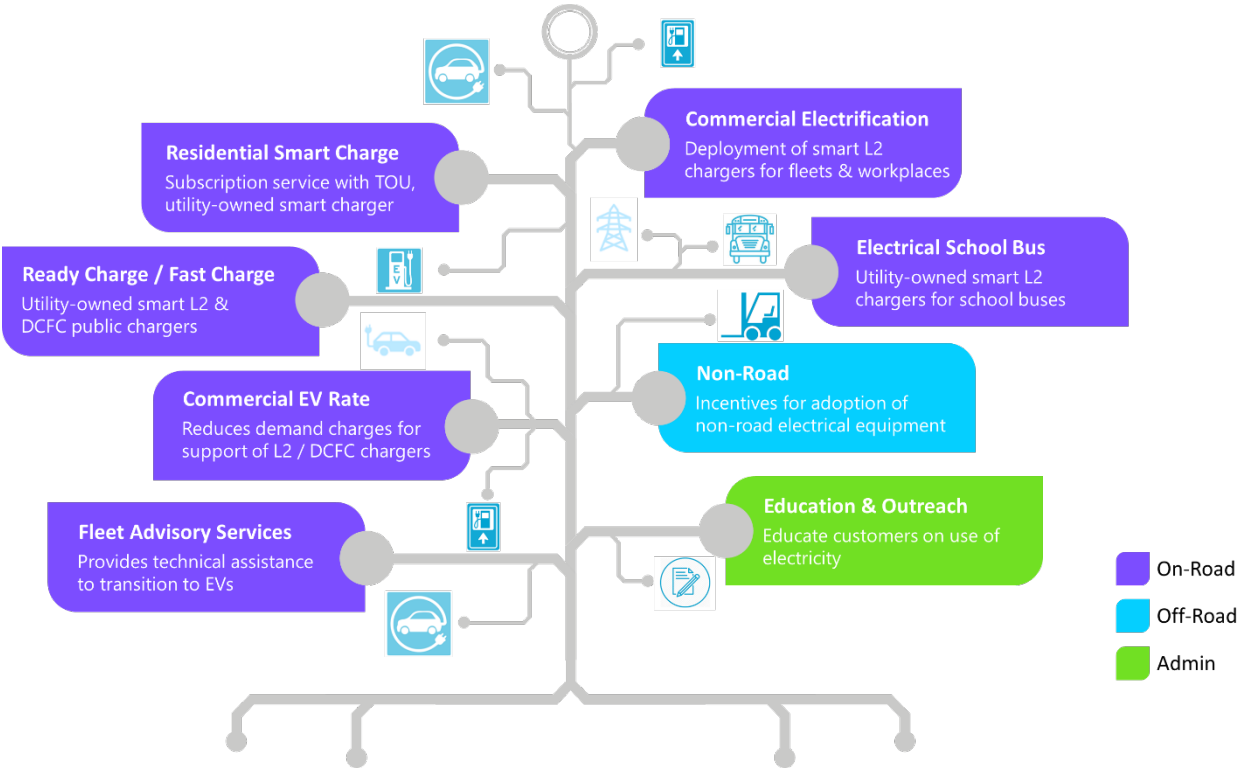
Cyber & Technology

In coordination with application, system, and integration upgrades associated with the Customer First program, Liberty is upgrading parts of its digital infrastructure, cyber security, 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. New digital architectures will be established with

accompanying governance strategies and procedural documentation. Liberty's customers will benefit from enhanced yet secure utilization of operational and customer data to improve operational efficiency of utility employees, proactively identify and resolve issues before they lead to disruptions, and increased utilization of utility infrastructure.

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, technology, charging infrastructure, financial incentives, and hands-on support with customers as they transition their fleets to electric vehicles and equipment.



The above programs provide:

- Grid Flexibility
- Avoid Costly Infrastructure Upgrades
- Increased EVs in area

- Downward Pressure on Electricity Rates
- Fuel Cost Savings
- Public Charging Access
- Emissions Reductions

These Transportation Electrification programs include the decarbonization of a portion of Liberty's own fleet, building a robust infrastructure to support community electrification and provide equitable incentives for residential and commercial customers.

Energy Efficiency

To help its customers and communities use less energy and spend less money on energy, Liberty is continuing and expanding its energy efficiency programs.

Liberty will deploy new energy efficient LED streetlights and LED private lighting across the roadways and parking lots within its service territory. These new LED lights will replace old inefficient lights that are also prone to failure leading to lower lifecycle costs to energize and maintain the thousands of street and private lights that Liberty is responsible for. They also provide higher output and quality of light resulting in a safer driving, parking, and pedestrian environment. These projects will replace numerous mercury vapor lights currently in operation in accordance with EPA objectives, doing a part to help protect the environment.

In addition, pursuant to Commission Rule 20 CSR 4240-4.017, Liberty has submitted a notice of intent to the Commission to file an application to implement robust and mutually beneficial energy efficiency offerings under the framework prescribed by the Missouri Energy Efficiency Investment Act ("MEEIA"). The details of those programs and investment budgets, once established, will be included in filings in the MEEIA docket and in future PISA reports.

Liberty Utilities Co. has a strong history of delivering nationally recognized energy efficiency programs, and the Company looks forward to delivering high caliber programming to our customers in the central region. Over the past decade, Liberty has been recognized nine times as an EPA ENERGY STAR partner for sustained excellence in New Hampshire and as a key contributor to making Massachusetts

the most energy-efficient state, as designated by the American Council for Energy Efficient Economy.

Increase Safety and Reliability

Customers consistently point to safety and reliability as top priorities, and Liberty is committed to operating and maintaining its grid infrastructure in a safe and reliable manner on behalf of the communities served. This involves several areas of Advanced Transmission and Distribution Network Technology (“ATDNT”) investment that will support its customers. 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.

Distribution Automation

ATDNT plans, for example, will lead to more grid self-healing through distribution automation, expanded and improved communication to substations and field devices, and improvements to day-to-day engineering functions due to improved circuit models and maps. Liberty’s distribution automation investments will improve system reliability through coordinated deployment of smart protective devices like reclosers and smart fuses across the distribution grid. These devices, and others like smart capacitor banks and smart voltage regulators that can record and communicate with other devices and the ADMS, will enhance energy efficiencies and power quality on the distribution system. In this way, the ATDNT aspirations are best viewed from a systems point of view, involving by necessity field-located hardware, communications, integrated back office systems, and process improvements that apply the new functional capabilities of distribution automation.

Distribution Resiliency

New standards for design and construction of Liberty’s electric distribution system 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 and accounted for in the CTP. Notable projects include:

- Replacement and upgrade of distribution circuit breakers.
- Replace and upgrade critical aged assets and equipment prone to failure.
- Strategically underground problematic sections of overhead cable systems.
- Build new substations to accommodate redundancy and load growth.
- Convert portions of the Joplin, Missouri distribution from 4kV to 12kV.
- Install and upgrade animal guards on critical distribution equipment.
- Relocate “through the woods” overhead segments to roadside.
- Increase capacity and resiliency of lines serving remote communities.
- Upgrades to service center facilities and equipment inventories.

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.

Liberty is also in the process of evaluating optimal strategies and economic prudence of implementing sustainable microgrids across its service territory to provide increased reliability in lieu of building or rebuilding delivery infrastructure. These strategically implemented microgrids have the potential to increase renewable power supply while simultaneously providing more resilient service to customers, especially in the event of power supply or bulk transmission disturbances.

Transmission Resiliency

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 Transmission Resiliency 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 weather.

Substation Security and Reliability

Liberty's Substation Security and Reliability plan goes beyond better fencing. With the possibility of lethal consequences and exposure to liability, security for high-voltage equipment is more than protecting the grid and its continued operation. With substations located in both heavily populated and remote areas, having a comprehensive Substation Security and Reliability plan is important. Liberty devised a methodical and comprehensive standard that will ensure customer lights stay on with lowered risk to the health and safety of its employees, bystanders, thieves, and the surrounding communities.

Liberty is countering this risk through enhancements to the physical security measures of its substations through the Substation Security and Reliability program (known as "Project Guardian"). This program will upgrade deterrents like fencing, gates, and alarms, as well as install remote monitoring through video cameras, infrared cameras, and other sensors. Access controls will also be upgraded to limit access to only authorized personnel and to track access accurately. In doing so, limiting access to substation infrastructure will reduce the risk of impacts to service from intentional and unintentional threats. Increased monitoring, sensing, and access control will also improve safety of Liberty field employees and others by restricting access to only those who have received proper training and authorization.

Plant 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 that will continue to operate through the transition to renewable power sources. Liberty is prudently investing to optimize its existing generation facilities with focus on failure risk, reliable and responsive operation, and fuel conversion efficiency.

These optimization and continuous improvement projects vary in size and scope ensuring plant safety as a top priority, 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 their customers through sustained operations of these plants until they are replaced by renewable generation alternatives in a cost-effective manner.

CTP Investment Summary and Conclusion

As detailed in this report, Liberty's CTP consists of approximately \$2.0B over the next five years, across 14 strategic investment areas, to modernize the Company's electric infrastructure. These investments represent Liberty's long-term planning estimates of expected capital investment on the electric infrastructure for Liberty's central region. This infrastructure is predominantly located in Missouri serving Missouri residents; however, Liberty's central region also operates electric infrastructure and serves electric customers in Kansas, Oklahoma, and Arkansas. The CTP addresses all electric infrastructure for the central region, not just for Missouri. Bringing about improved customer solutions through cost management, modern technologies, and a transition to clean energy, the CTP will enable the Company's electric grid to meet evolving customer needs today and in the future.

Program Name	2021	2022	2023	2024	2025	Total
Solar	\$5.3	\$13.7	\$78.4	\$0.5	\$1.1	\$98.9
Solar+Storage ¹	\$6.0	\$60.9	\$0.5	\$0.0	\$0.0	\$67.5
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The CTP is centered around investments in grid modernization that increase the use of digital information, optimize operations, automate and improve the flexibility of the grid, facilitate integration of distributed renewable generation, improve power quality, increase security and safety of the grid, and increase the grid's resiliency to withstand threats from vegetation and damaging winds and other weather events. For the 2021 budget, grid modernization projects, within the meaning of RSMo. 393.1400 and the minimum 25 percent requirement, constitute approximately 53 percent of planned capital expenditures. Investments in resiliency represent a major portion of Liberty's CTP, as it is crucial to our communities that our infrastructure continue to perform even under extenuating circumstances and extreme weather events.

The investment plan detailed in this report represents Liberty's current plan and estimates for investment in the identified projects. Liberty continuously evaluates and analyzes the needs of its customers and the electric grid, the condition of the Company's infrastructure, the costs and accessibility of modern technologies, and the availability of new technologies, and strives to be responsive and forward-looking. Additionally, project and program owners annually submit progression status and six year forward-looking budget estimates for evaluation and approval into Liberty's full capital investment plan. The results of this year's approved version is detailed above. Each year, pursuant to RSMo. 393.1400, Liberty will continue to evaluate, adjust, and report this five year investment plan.