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NOV 15 2021

**MISS. PUBLIC SERVICE
COMMISSION**

November 15, 2021

VIA E-MAIL

Katherine Collier
Executive Secretary
Mississippi Public Service Commission
501 North West Street, Suite 201A
Jackson, MS 39201

**Re: Energy Delivery Plan for the Mississippi Public Service Commission's Annual
Evaluation of Mississippi Power Company Pursuant to IRP Rule
Regulatory Year 2022
Docket No. 2019-UA-231**

Dear Katherine:

On behalf of Mississippi Power Company for MPSC Docket 2019-UA-231, I enclose the Company's 2022 Energy Delivery Plan.

Thank you for your assistance.

Very truly yours,

MISSISSIPPI POWER COMPANY

A handwritten signature in black ink, appearing to read 'SS' followed by a stylized flourish.

SHAWN SHURDEN

SSS:alm
Enclosures

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NOV 15 2021

**MISS. PUBLIC SERVICE
COMMISSION**

 **Mississippi Power**

**Mississippi Power Company
2022 Annual Energy Delivery Plan**

**As set forth in the Mississippi Public Service Commission
Integrated Resource Planning and Reporting (IRP) Rules**

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I. Introduction

In compliance with Rule 29: Integrated Resource Planning and Reporting, promulgated in Docket 2018-AD-64, Mississippi Power Company (MPC or the Company) submits its Annual Energy Delivery Plan (EDP or the Plan). The Plan will provide details on how the Company proposes to address the following areas that are essential to maintaining an efficient energy delivery system in the future: Demand Side Management (DSM), Distributed Energy Resources (DER), Transmission and Distribution Systems, Customer Offerings for Low Income Residents, and Enabling Technology.

The considerations detailed in this Energy Delivery Plan will provide the Mississippi Public Service Commission (MPSC or Commission) a thorough review of the Company's plan to ensure that customers continue to have access to safe, reliable, and affordable electric service. Yet, with increased advancements in technology and evolving environmental priorities, MPC's obligation to customers must extend beyond our traditional planning objectives. The available mix of technologies and fuels used to generate and manage electricity for consumption in homes, businesses, and vehicles will progressively change the electric utility's relationship with customers. Through development of this Energy Delivery Plan, MPC will present an integrated approach to the critical elements defined in Rule 29 that will ensure an efficient energy delivery system that benefits all customers. The Plan will ensure MPC is delivering the types of energy solutions its customers expect, and it will enable the Company to better anticipate future energy needs.

II. Demand Side Management

During 2021 MPC continued the transformation of the DSM portfolio to meet guidance from Rule 29. This included the launch of New Home Program, Strategic Load Growth Programs and a Demand Response pilot. MPC continues to enhance existing programs where possible and warranted.

In addition, MPC contracted with Brightline Group to conduct a Technical Potential Study

considering Energy Efficiency, Demand Response, and Strategic Load Growth, to support the ongoing Integrated Resource Planning and DSM Program planning activities. The Technical Potential Study considers a wide range of energy efficiency measures that Mississippi Power could implement and applies cost-effective measures to Mississippi Power's current and forecasted customer base. The study assesses opportunities across a 20-year time horizon (2022-2041). The study includes primary market research and a comprehensive review of current programs and projected energy savings opportunities to develop estimates of technical, economic, and achievable potential. Outcomes from this study including measure-level cost effectiveness and measure savings potential provide guidance in the development of Mississippi Power's 7-year program plans starting in 2022. The final report will be available by December of 2021.

MPC's participation in the Commission's Technical Workshop in February 2021 allowed stakeholder input and feedback on DSM program plans. Based on the workshop and feedback from other stakeholders, MPC is implementing a number of changes including 1) expanding incentives to include qualifying Large Commercial and Industrial customers, 2) expanding the scope of the SELECT Residential Low-Income measures to include multi-family, 3) creating a New Home Program with incentives to builders for efficiency constructions measures and 4) adding outdoor lighting retrofit incentives for commercial and industrial customers.

MPC has developed the following 2022-2028 trajectory for DSM investment and energy savings that is informed by the Company's Technical Potential Study performed by the Brightline Consulting Group and the nearly 7 years of DSM program implementation experience.

Program Year	kWh	Budget*	% savings of retail sales**
2021	21,980,943	\$ 4,192,348	0.24%
2022	26,180,312	\$ 4,492,348	0.29%
2023	28,126,352	\$ 4,592,348	0.31%
2024	32,450,576	\$ 4,792,348	0.36%
2025	34,967,754	\$ 4,992,348	0.38%
2026	38,167,619	\$ 5,192,348	0.42%
2027	40,848,268	\$ 5,392,348	0.45%
2028	43,563,760	\$ 5,592,348	0.50%

*Budget numbers beyond 2022 are for modeling purposes only. **Based on reported retail sales for 2020

MPC plans to double our current level of savings (which are comparable to the Southeast average) over the next 7 years. MPC believes the level of spending associated with the savings trajectory across all customer groups balances participant benefit with the impact of upward pressure on rates for non-participants. The programs and measures in place today will need to be adjusted over time due to changing equipment standards (i.e., LED lighting), market acceptance, and new technologies, etc. MPC will also conduct a review of historical program performance, with an eye to understanding market adoption, customer behaviors, and identifying potential new markets and/or programs that best fit the needs of MPC customers.

In accordance with Rule 29, MPC submits Appendix A, which includes 1) a summary of 2020 DSM program results, including program descriptions, participation levels, expenses, energy savings and demand savings, 2) a summary of 2021 DSM program results from January-September 2021, including program descriptions, participation levels, expenses, energy savings and demand savings, 3) proposed changes to 2021 DSM programs to be implemented in 2022 with projected participation levels, expenses, energy savings, demand savings and cost effectiveness test results; and 4) proposed strategic load growth programs including descriptions and cost effectiveness test results. Although detailed fully in Appendix A, MPC briefly describes below its DSM efforts for 2020 and 2021, as well as its anticipated plans for 2022.

A. 2020 DSM Program Results

MPC offered seven programs in 2020. A detailed analysis of 2020 programs are provided in Appendix A. Each program is briefly described below followed by a table showing program performance.

- ***SELECT (Residential Low Income):*** This program provides education and promotion of energy efficiency as well as installation of energy saving measures to income-qualified customers. MPC audits between 40-50 homes per month and provides efficient LED lighting and insulation upgrades.
- ***Behavioral Analysis (HERs):*** This program bridges the customer engagement gap, providing MPC customers with the data regarding their personal and comparative energy usage as well as tools to understand how they can become better managers of their energy usage.
- ***Residential Energy Efficiency Program (REEP):*** This program increases energy awareness by offering home energy assessments to MPC's residential customers which help homeowners analyze their energy use, identify energy efficiency projects, and install low-cost, energy saving measures in their residence. It also offers HVAC unit replacement incentives.
- ***School Kits and Education:*** MPC targets 4th and 5th grade students to educate on the benefits of energy conservation. Students receive an energy efficiency kit to install at home and schools are incentivized to participate.
- ***Welcome Kits:*** This program provides LED bulbs to new residential customers in kits that are mailed to the customer including energy efficiency tips and a LED nightlight.
- ***Commercial 100:*** This program educates and provides direct-installed efficiency measures and incentives to business customers that have a ≤ 100 kW peak demand threshold.
- ***Commercial 500:*** This program provides facility walkthroughs and incentives toward a suite of energy efficiency measures, for customers with a peak demand ≤ 500 kW. The program is designed to help customers who manage commercial facilities operate their buildings more efficiently by deepening their understanding of the technical and financial benefits of energy efficiency investments.

2020 DSM Program Results

2020 DSM Programs				
Program Name	Number of Participants	Annual kWh Savings	KW Savings	Program Expenses
SELECT	499	575,266	197	\$351,381
Behavioral Analysis	39,588	6,049,593	877	\$292,930
Residential Energy Efficiency Program	463	1,103,381	402	\$307,476
School Kits and Education	2,610	393,928	116	\$104,628
Welcome Kits	5,222	1,094,846	256	\$112,304
Commercial 100	112	1,363,292	449	\$327,477
Commercial 500	12	397,494	210	\$80,620
Marketing & Advertising				\$5,557
EM&V & Planning				\$355,308
Demand Response Pilot				\$81,095
Cross-Cutting*				\$188,918
Totals	48,506	10,977,799	2,508	\$2,207,695

*Cross-Cutting – overhead costs that are not specific to any program but are allocated across all programs (i.e., labor).

B. 2021 DSM Program Results

In 2021, MPC continued implementation of the 7 programs described above and launched a New Home Program and a Demand Response Pilot. Appendix A includes details and program results for January through September 2021. In accordance with Rule 29, MPC will report the full year results of 2021 programs in the next annual Energy Delivery Plan. Below are descriptions of any program changes MPC implemented during 2021 followed by a table showing performance through September.

- ***SELECT (Low Income):*** In 2021, additional areas were targeted to increase participation in the program.
- ***Behavioral Analysis:*** Participation was increased by 11,000 to achieve a total of 55,000 customers.
- ***Residential Energy Efficiency Program (REEP):*** There were no changes to this program in 2021.
- ***School Kits and Education:*** There were no changes to this program in 2021.
- ***Welcome Kits:*** There were no changes to this program in 2021.
- ***Commercial 100:*** In 2021, the lighting solutions offered were expanded to ensure a

comprehensive list of existing and emerging technologies and the incentive cap was increased from 60% of project cost to 70% of project cost.

- **Commercial 500:** In 2021, the lighting solutions offered were expanded to ensure a comprehensive list of existing and emerging technologies.
- **New Home Program -** The Residential New Homes program was launched in Q4 2021 and focuses on a whole-building approach for improving the energy efficiency of new single-family homes. The program provides tiered incentives that promote the installation of energy-efficient measures in new home construction that exceed baseline construction standards and improve the energy performance of participating homes.
- **DR Pilot Program:** This program began in 2021 and utilizes smart thermostats to test load management potential for income-qualified residential customers. The program allows MPC to heat and cool homes prior to the peak window then adjust the thermostats to lower usage during higher cost time periods. The purpose of the pilot is to assess energy efficiency, bill savings, and load management potential of connected smart thermostats as well as customer behavior during demand response events.

2021 DSM Programs January – September				
Program Name	Number of Participants	Annual kWh Savings	KW Savings	Program Expenses
SELECT (Res. Low Income)	817	1,455,509	569	\$906,745
Behavioral Analysis (HERs)	54,451	7,095,009	681	\$226,743
Residential Energy Efficiency Program	499	1,455,098	516	\$386,713
Education Program	2,841	428,707	125	\$123,706
Welcome Kits	5,363	1,124,085	263	\$165,245
New Home Program (launch 4Q)	-	-	-	-
Demand Response Pilot	79	69,948	21	\$25,997
Commercial 100	124	2,396,984	658	\$380,018
Commercial 500	50	2,496,220	847	\$332,059
Marketing & Advertising				\$3,475
EM&V & Planning				\$286,611
Cross-Cutting				\$257,154
Totals	64,224	16,521,559	3,681	\$3,094,466

C. 2022 DSM Programs

In 2022, MPC proposes additional enhancements to the 7 existing programs and the demand response pilot. A complete description and projected performance for 2022 is included in Appendix A. Below is a summary of the changes planned to MPC's portfolio in 2022 followed by a table showing projected performance.

- ***SELECT (Residential Low Income):*** MPC plans to audit 1,050 customers in 2022 and provide efficient LED lighting and insulation upgrades. The program will expand by targeting low-income, multi-family units with the addition of air and duct sealing as well as HVAC tune ups. Once COVID-19 precautions are lifted, we plan to return to a hybrid approach consisting of some in-home energy audits by our MPC auditors while continuing a contractor-led approach to maximize outreach and increase customer participation.
- ***Behavioral Analysis (HERs):*** In 2022, there will be 25,000 additional households targeted to achieve a total of 80,000 households (representing 51% of MPC's total residential customers). Customers can receive paper or email energy reports and have access to a web portal for additional usage information.
- ***Residential Energy Efficiency Program (REEP):*** There are no changes planned for this program in 2022.
- ***School Kits and Education:*** MPC plans to expand this program in 2022 by increasing the total eligible schools by fifty-two.
- ***Welcome Kits:*** In 2022, MPC expects to have 7,000 participants in the program.
- ***New Home Program:*** The pilot will become an official program in 2022 with no changes.
- ***Demand Response Pilot Program:*** Due to setbacks with participant recruitment and thermostat installation caused by the COVID pandemic and Hurricane Ida, MPC will continue the pilot for an additional Summer and Winter season and increase the maximum participant count to 200. This will provide a larger sample size of participants and events for more abundant, accurate, and reliable data. MPC will offer the same incentives that were offered in 2021 and continue to focus on the low-to-moderate income community.
- ***Small Business (formerly Commercial 100):*** There are no changes planned for this program in 2022.
- ***Large Commercial and Industrial Business (formerly Commercial 500):*** In 2022, this program will be available to MPC's Large General Service (LGS) customers. This change is based on the results of a survey to understand interest in program participation. Incentive changes include expanding lighting solutions to ensure a comprehensive list of existing and emerging technologies.

2022 DSM Programs

Program Name	Number of Participants	Annual kWh Savings	kW Savings	Total Program Budget
SELECT (Residential Low Income)	1,050	2,966,646	949	\$1,128,412
Behavioral (HERs)	80,000	9,197,500	2,821	\$406,653
Residential Energy Efficiency Program	850	1,873,834	677	\$458,677
School Kits and Education	6,693	1,010,199	298	\$239,766
Welcome Kits	7,000	1,467,060	343	\$232,013
New Homes	25	140,032	48	\$35,000
Home Revitalization Pilot				\$30,000
Demand Response Pilot				\$44,093
Small Business	122	3,077,174	547	\$636,953
Large Commercial & Industrial	45	4,305,009	1,068	\$507,261
Outdoor Lighting	15	2,142,857	321	\$150,000
Marketing & Advertising				\$20,000
EM&V & Planning				\$282,924
Cross-Cutting				\$320,596
Portfolio Total	95,800	26,180,311	7,072	\$4,492,348

D. DSM Program Evaluation

MPC completed a benefit-cost analysis to compare the value of the energy and demand savings resulting from the proposed 2022 DSM programs to the costs incurred by the programs. MPC utilized multiple cost-effectiveness tests including: The Total Resource Cost (TRC) Test, the Utility Cost Test (UCT), the Ratepayer Impact Measure (RIM) test, and the Participant Cost Test (PCT). Each test represents a unique perspective, so MPC considers test results for programs individually and holistically to assemble a comprehensive understanding. The TRC Test considers program offerings as a resource in comparison with other supply-side resources. The UCT assesses whether utility bills will increase, while RIM assesses whether utility rates will increase. Finally, PCT determines whether program participants benefit over the lifetime of the program-incentivized equipment or measure. Appendix A provides cost effectiveness tests for each of the 2022 programs, as well as the entire portfolio.

E. Cost Recovery

MPC supports treating DSM investments on the same basis as traditional supply-side resources, and therefore proposes to defer all costs related to the Company's DSM programs consistent with Section 107(1)(c) of Rule 29. The Company has deferred the costs to a regulatory asset and includes the account(s) in jurisdictional rate base in the PEP plan. The deferred account(s) earn the Company's PEP weighted average cost of capital on the simple average balance, consistent with other regulatory assets and liabilities. Furthermore, the Company proposes to amortize the costs over six (6) years beginning in 2022.

MPC continues to support the Commission's directive in Rule 29 that allows for budget flexibility to address oversubscriptions and undersubscriptions. This flexibility also provides the ability to take advantage of emerging technologies and other opportunities to enhance customer value. Any such changes will be noted in the annual PEP filing in March.

F. Strategic Load Growth

MPC proposed the following new strategic load growth programs in the 2020 EDP filing that were ultimately implemented in August 2021:

- ***Residential Electric Transportation Program:*** Encourages residential customers to purchase a Battery Electric or Plug-in Hybrid Electric Passenger Vehicle through education, customer support, and incentives. Educates customers on the strategic benefits of upgrading to electric technology from internal combustion engines, including reduced fuel and maintenance costs and decreased emissions.
- ***Commercial Electric Transportation Program:*** Encourages commercial customers to upgrade fossil fuel-powered transportation equipment to electric-powered alternatives through education, customer support, and incentives. Incentives are offered for both on-road and off-road vehicles like forklifts and lift trucks.
- ***Commercial Strategic Electrification Program:*** Offers a custom incentive path to support the installation of strategic electrification equipment such as Waste Heat Recovery, Electric Infrared Heating, Electric/Electrode Boilers and Variable Refrigerant Flow (VRF) with heat recovery. The objective is to improve production efficiencies, enhance the customer's competitive position, or assist with emission reduction goals. Eligibility for incentives through this program is based on customized analysis to determine the benefits and impacts of each project individually, to ensure cost effectiveness requirements are met for both the customer and Mississippi Power.

MPC will continue the strategic load growth programs in 2022.

III. Distributed Energy Resources

A. DER Projects

Walnut Grove Demonstration Project:

Mississippi Power plans to construct, acquire, own, operate, maintain, repair and renew a 1.285 megawatt alternating current solar photovoltaic energy generating facility with a maximum capacity of 1.5 MW and a 5.14 MWh capacity battery storage system for the purposes of demonstrating the battery storage technology, and conducting research on bifacial solar and solar plus storage technology optimization as well as enhancing the reliability in the Walnut Grove community in Leake County, Mississippi.

The Mississippi Public Service Commission approved the project in April of 2021 in Docket 2019-UA-231. Construction is scheduled to start mid/late October. The current schedule has the project commercially operational in 2nd quarter of 2022.

Total cost for the Walnut Grove Demonstration Project is estimated at \$7.8 million.

B. DER Programs

1. Standby Generation

MPC will continue to offer a standby generation program to expand the use of customer-sited generation. The Standby Generation Program is facilitated through specific contracts with each customer.

Under this program, customer-sited EPA compliant electric generation is integrated into MPC's resource capacity requirements. The design of the customer Standby Generation program allows units of 500kW and greater to seamlessly tie into the MPC electric system without interruption of customer service, and then export their electrical capacity into the MPC distribution grid up to 90% of the generation units' nameplate capacity.

In 2020, MPC provided credits in the amount of \$573,205 to five customers participating in the Standby Generation Program with a total contract capacity of 29.15 MW.

2. Renewable Energy Net Metering

MPC continues to support the installation of renewable energy options for our customers. As of October 1, 2021, MPC has 6.4 MW of behind the meter renewable resources installed. Of that total 2.75 MW comes from 208 customers who are enrolled in the Renewable Energy Net Metering tariffs. The table below shows the breakdown of net metering participants by customer class:

	# Customers	MWdc
Residential	186	1.51
Commercial	22	1.25

The number of participants in the net metering tariff increased from 180 to 208 customers since last year, but the total behind the meter capacity of 6.4 MW is the same as reported last year. This is primarily due to one large installation being destroyed by Hurricane Zeta. MPC's 2021 Net Metering and Interconnection report and avoided cost calculation used for the Renewable Energy Net Metering tariffs are included in Appendix B.

3. Solar Subscription Program

Mississippi Power Company is developing a solar subscription program (the Program). The Program is a voluntary solar subscription program that is being developed to provide customers the ability to subscribe to solar generation, who either do not have the ability or the desire to place solar facilities on their property. In exchange for a monthly subscription fee, participating customers will receive bill credits associated with the solar generation produced by the facilities associated with the Program. The Program is designed to be cost effective for both participants and nonparticipants and is an innovative way to add solar generation for the benefit of all customers, while also

responding to specific customer demand for community solar generation.

To better quantify customer interest in the Program and determine appropriate size for program, Mississippi Power plans to conduct detailed customer surveys. Additionally, Mississippi Power will issue a request for proposals (RFP) to verify pricing for solar purchase power agreements which are needed to finalize program subscription rates.

IV. Transmission & Distribution Plan

A. Summary

Rule 29 requires all regulated gas and electric utilities to report to the Commission on their efforts to improve energy delivery through modernization of existing infrastructure, improvements to lower energy delivery costs, and/or through expansion of energy delivery to additional customers. This section addresses the following transmission and distribution system reporting as required by the Rule:

- List of new transmission lines and other associated facilities which are under construction or for which there are specific plans to be constructed during the relevant planning horizon, including capacity and voltage levels, location, cost estimates and schedules for completion and operation, to the extent such have been developed. This includes reporting relevant collaborative transmission planning projects occurring within the context of any regional planning organization such as the Midcontinent Independent System Operator or the Southeastern Regional Transmission Planning group.
- To the extent practical, include similar information as noted in the bullet above concerning MPC's distribution plans.
- Discussion of the adequacy of MPC's transmission and distribution systems, including the reliability, resiliency, and storm hardening condition of the transmission and distribution systems.
- Overview of MPC's vegetation management plan to meet the requirement of the

Staff's review of the Company's vegetation management plan every four years.

Overall, MPC has completed or is in the process of executing the Power Delivery programs and projects outlined in the Company's 2021 Energy Delivery Plan except as noted herein.

MPC expects its total level of T&D capital spend, including the General Plant projects managed by T&D, to be \$166 million in 2022, an increase of approximately \$6M compared to 2021. The increase is due to storm hardening and reliability programs within the distribution function. MPC plans this level of T&D capital spend to continue over the planning horizon.

The Company's transmission 2021 and 2022 budget amounts, excluding the General Plant projects managed by T&D, are provided in Table 1 below for comparison. The Morrow Affected System Upgrade project budget totals for 2021 and 2022 are listed separately as a credit since Cooperative Energy will reimburse MPC the construction costs associated with these projects per the affected system agreement and as noted in Docket No, 2021-UA-64 approved by the Commission on July 23, 2021.

	2021 Budget (\$ million)	2022 Budget (\$ million)
Transmission Projects	\$58	\$67
Morrow Affected System Upgrades	(\$4)	(\$22)
TOTAL	\$54	\$45

Table 1 (MPC's Transmission Capital Budget – 2021 & 2022)

The Company's distribution 2021 and 2022 budget amounts are provided in Table 2.

	2021 Budget (\$ million)	2022 Budget (\$ million)
Distribution	\$80	\$101

Table 2 (MPC's Distribution Capital Budget – 2021 & 2022)

Over the relevant planning horizon, MPC plans to construct and upgrade transmission

facilities as part of transmission planning requirements and continue our transmission recurring maintenance programs, asset renewal programs, and grid investment efforts to maintain the transmission system's reliability and resiliency, in addition to identifying strategic projects that support and promote economic development.

The prudent expansion of fiber circuits on both our T&D systems in both underserved and unserved areas of our service territory will continue to be a focus as we move forward. The Company will continue to programmatically perform storm hardening projects for both our T&D systems along our coastal service area as part of our continued resiliency efforts. Finally, MPC will continue investment in modernizing its distribution system and improving reliability to our customers through our Self-Healing Network (SHN) Program and various other reliability programs as listed in this plan. These efforts and others noted in this plan will continue to improve energy delivery to MPC's customers in the years ahead.

B. T&D System Overview

MPC's T&D system provides reliable service to more than 190,000 customers in 23 counties in southeast Mississippi. MPC's service territory consists of a fragmented area of approximately 1,149 square miles within 23 counties. MPC's customer base, by number of customers, is comprised of 82% residential and 18% commercial and industrial. MPC also serves over 70 wholesale delivery points from the Company's transmission system.

The T&D facilities used to serve MPC's retail and wholesale customers include 2,196 miles of transmission lines (46kV, 115kV, 230kV and 500kV), 4,856 miles of distribution overhead primary lines (4kV, 12kV, 13.8kV, 14.4kV, & 23kV), 628 miles of underground primary circuit miles, 145 substations, and 280 distribution circuits. Table 3 list the circuit miles by voltage class.

VOLTAGE CLASS	CIRCUIT MILES
4kV	80
12kV	3,349
13.8kV	8
14.4kV	1
23kV	1,418
TOTAL DISTRIBUTION	4,856
46kV	254
115kV	1,176
230kV	688
500kV	78
TOTAL TRANSMISSION	2,196

Table 3 (MPC Circuit Miles by Voltage Class)

C. T&D Relevant Planning Horizon

The relevant planning horizon for MPC's transmission and distribution system is five years (2022-2026) which aligns with the Company's five-year budget plan.

D. T&D Capital Budget Process, Project Estimating, & Funding Prioritization

Each year, MPC's Power Delivery group develops a five-year T&D capital budget based on historical experience, projected maintenance, new business, planning requirements, infrastructure renewal, reliability, operational flexibility, technology demands, economic development, state and federal regulatory requirements, and safety priorities. Each Power Delivery functional area develops their capital budgets to balance cost with reliability, flexibility, and personnel safety.

MPC's T&D capital budgets consist of 1) routine expenses, 2) discrete, individual projects, 3) perpetual recurring programs, and 4) limited duration programs. An example of

routine expenses is employees' salaries and expenses. Examples of discrete, individual projects is transmission and distribution planning projects. Examples of perpetual recurring programs are asset management and maintenance programs. Examples of limited duration programs is reliability strategy programs designed to meet a pre-determined goal or objective.

The cost estimating process for T&D projects included in the Company's budget begins with the identification and justification of the need for the project or program. For transmission, once a project is identified to be included in the budget, the project manager (MPC Substation Engineer or Transmission Lines Engineer) drafts a document to define the scope of the project, i.e., work to be performed. Once the scope document has been created, the project manager will work with Southern Company Services' (SCS) Technical & Project Services (T&PS) group to estimate the cost of the project.

The project estimate is created using Southern Company's Transmission Estimating and Management System (TEAMS) software application. The TEAMS application is a work order estimating and management software application that contains average unit cost of Southern Company standard materials and average unit labor costs for the design, installation, and removal of company assets. TEAMS interfaces with Southern Company's material management system to provide the estimated material cost. Design, material, and labor costs are updated on a periodic basis in the TEAMS application to maintain current estimating factors. The project manager may include entries in the TEAMS work order to adjust costs to account for any known factors that may be outside the normal construction process such as environmental conditions, permit fees, mobilization costs, etc. For example, the project manager may need to add costs to install matting for a temporary roadbed to facilitate vehicular access and construction activities in areas that contain saturated soils or wetlands.

TEAMS work orders are submitted by the project manager, per the prioritized construction schedule, to transmission management for review and approval. A unique work order number is assigned to the project to aid in tracking expenses for the project. The first

phase of each approved project is the completion of the detailed design package by the SCS T&PS design group which includes specifying and ordering material. Once the design package is completed and transmitted, construction will proceed per the construction schedule. The project manager will oversee the completion of the project and provide updates on any significant budget variances compared to actual cost.

For distribution, the cost estimating process will involve one of the following three estimating methods depending on the project or program.

- Individual distribution projects may be estimated using Southern Company's Job Estimating and Tracking System (JETS) software application. The JETS application is a work order estimating and management software application that contains average unit cost of Southern Company standard materials and average unit labor costs for the installation and removal of company assets. JETS interfaces with Southern Company's material management system to provide the estimated material cost. Labor costs are updated on a periodic basis in the JETS application to maintain current estimating factors. The project manager may include entries in the JETS work order to adjust costs to account for any known factors that may be outside the normal construction process such as environmental conditions or permit fees. JETS work orders are submitted by the project manager to distribution management for review and approval. A unique work order number is assigned to the project to aid in tracking expenses for the project.
- Individual projects may also be estimated using recent known average costs of similar completed projects, e.g., recently completed cost to install a recloser or \$/mile for a reconductor project.
- For recurring T&D programs, such as maintenance and asset management programs, budget estimates are typically based on recent historical trends along with any additional estimated costs, such as targeting certain equipment that may be causing

reliability issues.

MPC's T&D capital and project selection funding is prioritized in the following order 1) mandatory federal, state, or local code requirements, including North American Electric Reliability Corporation (NERC) reliability requirements and National Electrical Safety Code (NESC) requirements, 2) new business/economic development, 3) DOT roadway projects, 4) asset management and maintenance programs, 5) reliability programs, and 6) operational flexibility projects.

The individual recurring program budget levels and overall T&D budget totals may change from year-to-year for various reasons such as balancing the needs to fund capital projects in other areas of the Company, as well as the Company's ability to fund the required capital while meeting the Company's financial plan. Submitted budgets are compared to prior years' actual costs and to earlier estimates of the budget period. Significant changes are analyzed and reconciled.

During the year, T&D budgets are reviewed and managed monthly by the Power Delivery Management Team with attention on actual spending in comparison to projected spending. Each functional area manager is responsible to explain variances and the team works to prioritize funding across all of Power Delivery that may become available due to the cancellation of projects, reduction in project or program scope, or moving of projects into future years. The Company's cross functional budget management team addresses any budget concerns at the overall Company level.

The Company's T&D capital budget must be flexible enough to accommodate the unforeseen, ever-changing priorities that occur within the calendar year and in forecast years. For example, unpredictable extreme weather events throughout the year can impact the availability of Company and contract resources to complete planned work due to the resources having to shift their focus to restoring service to customers. This applies to restoration work within MPC's service territory and when MPC resources are called upon to

assist other utilities as part of our mutual assistance agreements. Also, new business and DOT projects that were not part of the Company's original capital plan can unexpectedly arise during the calendar year. For these reasons and other external factors, the management of the Company's T&D capital budget is an ongoing, constant process to ensure critical projects are completed and priorities are balanced while dealing with unplanned events and staying within budget.

E. T&D Grid Investment Programs

For the relevant planning horizon, MPC has categorized its capital T&D programs and projects into the following four grid investment categories, which support MPC's strategy going into the planning horizon to improve energy delivery, reliability, and resiliency, along with modernizing existing infrastructure, and expanding energy delivery to additional customers:

1. Reliability and Resiliency
2. Grid Optimization and Innovation
3. Tactical and Innovative Planning
4. General Business

Table 4 provides the grid investment category budget comparison for 2021 and 2022. As this comparison illustrates, funding for the different categories can change from one category to another from year-to-year based on business needs, programs or project status (new, on-going, or completed), and project prioritization. The Tactical & Innovative Planning grid investment category includes the Morrow Affected System Transmission Upgrade totals for 2021 and 2022. The Morrow Affected System Upgrade totals are listed in a separate row in Table 4 as a credit since Cooperative Energy will reimburse MPC the construction costs associated with these projects as noted in Docket No. 2021-UA-64 approved by the Commission on July 23, 2021.

Category	2021⁽¹⁾ Budget (\$ million)	2022⁽¹⁾ Budget (\$ million)
Reliability and Resiliency	\$89	\$93
Grid Optimization and Innovation	\$5	\$6
Tactical & Innovative Planning	\$30	\$48
General Business	\$40	\$41
Morrow Affected System Upgrades	(\$4)	(\$22)
TOTAL	\$160	\$166

¹ Budget amounts include corporate allocations. Grid investment category totals include General Plant projects managed by T&D.

Table 4 (MPC's Grid Investment Capital Budget – 2021 & 2022)

A categorized list of the Company's major power delivery projects that are under construction or for which there are specific plans to be constructed during the relevant planning horizon is provided in Appendix C.

A description of each grid investment category is provided, below. MPC's T&D programs (both recurring and specific projects) associated with each category are listed and described under each category to provide an overview of the multi-faceted approach the Company is undertaking as part of our grid investment plan. For 2022, there are no new additional T&D programs compared to those listed for 2021.

1. Reliability and Resiliency Category

The Reliability and Resiliency Category consist of programs and initiatives aimed at keeping the lights on (reliability) and upgrading the system to allow for a quicker recovery from storm or other catastrophic damage (resiliency).

Improvements in either category often compliment the other, making the system less likely to have interruptions and improving the recovery time when an event does occur.

Several of MPC's T&D recurring capital programs are included in the

Company's Reliability and Resiliency Category and are outlined below, along with an overview of the types of projects included in each program.

- **Worst Performing Feeder Program (Distribution)** - the Worst Performing Feeder Program is an annual recurring program that is focused on improving the reliability of MPC's worst performing feeders. Feeders are ranked using the past 2-year rolling outage data. Historical outage information is reviewed for the feeders at the top of the list to identify the cause and location of outages to determine the best mitigation solution. Specific improvement projects and cost estimates are developed, along with a justification, to target the specific outage drivers based on established guidelines and proven reliability solutions. This information is presented to MPC's Reliability Committee for review. MPC's Reliability Committee is described in more detail in Sub-Section F of this plan. The Reliability Committee ranks the projects based on the information presented and input from the committee members to compete for available funding. This process allows for synergy and ensures projects are competing for funding using a consistent methodology with input from a cross functional team. Although a feeder may be ranked near the top of the list, that doesn't necessarily guarantee projects for the feeder will be approved. Other factors are taken into consideration for project approval such as recent completed improvement projects for the feeder and number of customers impacted. Only a select number of the worst performing feeder improvement plans are approved by MPC's Reliability Committee based on the available funding. Improvement projects for a worst performing feeder may include a variety of solutions such as relocating inaccessible sections of line to road right-of-way, replacing deteriorated conductor, or installing sectionalizing equipment. The benefits of this program include reduced outages to customer,

reduced restoration time, and fewer number of customers impacted when an outage occurs due to improved sectionalizing.

MPC completed the 2021 worst performing feeder improvement projects in Bay Springs, Gulfport, Quitman, Poplarville, Lucedale, and Heidelberg as planned and noted in the Company's 2021 Energy Delivery Plan. The Biloxi worst performing feeder project has been temporarily paused as the Company and the City of Biloxi work to resolve a real estate issue. The Wiggins worst performing feeder project will begin Q4 2021 but will not be completed until Q1 2022. The delay in completing the Wiggins worst performing feeder project is due to the Company temporarily releasing distribution contractors to assist with Hurricane Ida restoration activities in Louisiana. These contractors have returned to MPC's system to continue their assigned projects.

In 2022, worst performing feeder improvement projects are planned in Beaumont, Biloxi, Ellisville, Gulfport, Hattiesburg, Hickory, Moss Point, and Ocean Springs. The scope of these projects includes a mixture of reconfiguring existing feeders to reduce customer exposure, reconductoring existing feeders to allow for contingency load transfer, or relocation of inaccessible lines.

The budget for the Worst Performing Feeder program is based on historical trends and funding that may be allocated as part of the Company's overall reliability strategy for the calendar year.

- **Self-Healing Network Program (Distribution)** – the Self-Healing Network (SHN) Program is an annual recurring program that includes the strategic deployment of automated devices (reclosers) along the Company's feeders to detect a fault on the distribution system, isolate the trouble to minimize the

number of customers affected, and automatically restore service to the customers that are outside the affected area without human intervention. This results in a smaller area for response personnel to patrol and trouble-shoot which allows the trouble to be identified quicker in most cases. A SHN requires two circuits with tie points and enough circuit and substation capacity to support the transferred load.

MPC recognizes that not all outages can be eliminated; therefore, when trouble does occur, the Company is deploying devices and technology, such as the SHN, to reduce the number of customers affected.

Since 2017, an estimated 28 minutes in SAIDI has been avoided due to the implementation of SHNs. Through September 2021, SHNs have avoided approximately 9 minutes in SAIDI. The estimated minutes avoided is determined by multiplying the number of customers restored by the SHN times 60 minutes which is the assumed time it would take crews to be dispatched and manually perform the switching. SAIDI is explained in more detail in Sub-Section F of this plan.

Since Q4 2020, MPC has increased the number of our customers in a self-healing network from 42% to 56%, meaning without human interaction, the cause of the outage is automatically isolated to a few customers until crews arrive to complete the necessary repairs. MPC plans to include approximately 95% of our customers in a SHN by the end of 2024. In order to achieve this goal, reconductors of existing ties between feeders and substations may be required or new ties constructed to increase capacity for load transfer that occurs when a SHN operates under certain contingency scenarios. Some of MPC's feeders are not candidates for SHNs because there is no alternate source available, and it would be cost prohibitive to

install an additional source which prevents MPC from including 100% of customers within a SHN.

In 2021, MPC has completed the SHN expansion in the Biloxi/D'iberville/Ocean Springs area. The remaining planned expansion of the existing SHNs and implementation of the new SHNs as outlined in the Company's 2021 Energy Delivery Plan will be completed in Q1 2022 due to recent material delays.

In 2022, MPC plans to expand existing SHNs in Biloxi, Gulfport, Hattiesburg, Laurel and Waynesboro areas. A total of 46 reclosers will be installed as part of these SHN expansions. In addition, MPC plans to install new SHNs in Carriere, Decatur, Harperville, Lumberton, Newton, and Union. A total of 21 reclosers will be installed as part of these new SHNs. Five reconductor projects will be also be required as part of these SHN expansions.

The budget for the SHN program is currently based on an annual amount to achieve the goal of 95% of MPC's customers being included in a SHN by the end of 2024.

- **Recloser and TripSaver© Sectionalizing Programs (Distribution)** – the Recloser Sectionalizing Program is an annual recurring program that targets the installation of automated reclosers for every 300+ customers, where applicable. The benefit of this sectionalizing strategy is to limit the number of customers that are impacted when a fault occurs on the distribution system. Several of the reclosers installed as part of this program are used to expand SHNs across MPC's service territory.

The Company has completed the installation of 93 of the 95 reclosers planned in 2021 as part of its Recloser Sectionalizing Program and as noted

in the Company's 2021 Energy Delivery Plan. The Company plans to complete the installation of the remaining two reclosers by year end.

The TripSaver® Sectionalizing Program is a recurring annual program that is focused on replacing certain line fuses with TripSaver® cutout-mounted reclosers based on historical performance, miles of exposure, and customers served. Most faults on the distribution system are temporary (70-80%)¹ and the use of these devices will allow temporary faults to be cleared and avoid extended outages to our customers and unnecessary truck rolls.

The benefit of using a TripSaver® device in place of a fuse is the TripSaver® can be programmed to provide automatic reclosing when a temporary fault occurs whereas a fuse will blow causing a sustained outage which requires personnel to be dispatched to restore service resulting in a longer outage time for customers.

In 2021, MPC planned to install 100 TripSaver® as part of the program. MPC temporarily paused its TripSaver® program early in 2021 as part of a learning event and adopted revised construction standards to address operational flexibility and ensure reliable operations of TripSaver®. MPC will begin retrofitting existing TripSaver® installations in Q4 2021 to the new construction standard while continuing to move forward with new installations using the new construction standard. MPC plans to complete 10 new TripSaver® installations by the end of 2021. The retrofit of existing TripSaver® installations to the new construction standard is expected to take four years to complete based on the current plan.

¹ Electrical Distribution – System Protection, Third Edition, Cooper Power Systems, 1990

The primary focus of the TripSaver© program in 2022 will be to continue to retrofit existing TripSaver© installations to the new construction standard and continue to install new installations on radial taps with 80 or more customers in the remote areas of MPC's service territory that are furthest from MPC's operating headquarters. The scope of this program may be expanded to include other radial taps in future years based on the results of the current program scope.

The budget for the Recloser and TripSaver© Sectionalizing programs is based on historical trends plus funding that may be allocated as part of the Company's overall reliability strategy for the calendar year. The Recloser Sectionalizing program is projected to be completed by the end of 2024 based on the current plan and funding level. The budget for the TripSaver© program will be a recurring over the planning horizon.

- **Capital Overhead and Underground Repair Programs (Distribution)** – the Capital Overhead and Underground Repair Programs are annual recurring repair programs that address emergency replacement of failed or damaged distribution overhead or underground equipment such as poles, conductor, underground cable, transformers, switchgear, reclosers, line regulators, etc. Although MPC has programs to proactively identify and replace equipment as it nears end-of-life to avoid prolonged outages to customers, unexpected failures do occur prior to equipment or facilities being replaced. Factors outside of MPC's control such as animals, weather, deterioration, acts of others, or premature failure can result in equipment outages or damage and require immediate attention to ensure the reliability of the system. This program funds these unplanned, reactive capital repairs.

The budget for the Capital Overhead and Underground Repair Programs is based

on historical trends.

- **Overhead Line & Pole Inspection Program (Distribution)** – the Overhead Line & Pole Inspection Program is an annual recurring asset management program that supports a 10-year inspection interval on MPC’s distribution overhead lines and poles. MPC currently owns 157,224 distribution wood poles; therefore, approximately 15,000 poles are inspected each year as part of this program. This program includes a visual inspection from the ground to the pole top. Wood poles are subject to rot, especially around the ground level. This inspection process includes excavation around the base of the pole to inspect for any rot and boring the pole to verify it is structurally sound. If needed, a fumigant preservative is used to treat the pole. Some poles are classified as “rejects” as part of the inspection process and must be replaced within a certain timeframe due to the amount of rot or decay or other structural damage. MPC’s annual distribution pole rejection rate typically varies between 2-3%.

One of the benefits of performing the overhead inspection process is identification of safety issues that may pose a risk to the public that otherwise may have gone unreported. Inspection crews will make minor repairs during the inspection process such as installing missing guy guard markers, repairing broken pole grounds, etc. Another benefit of this program is proactively identifying poles for replacement before they fail and cause extended unplanned outages to customers.

The budget for the Overhead Line & Pole Inspection Program is based on historical trends.

- **Underground Cable Testing and Replacement Programs (Distribution)** – the Underground Cable Testing and Replacement Program is an annual

recurring asset management program that includes testing primary cable that has been in service in excess of 20 years or that has a history of failures. Cable that fails the testing criteria is scheduled for replacement, typically in the same calendar year. Cable that meets the testing criteria is guaranteed by the contractor performing the test to be good for another 15 or 20 years, depending on the type of cable. This proactive approach allows the Company to identify cable for replacement prior to it failing and avoids unplanned extended outages to customers. This program also avoids unnecessary capital expenditures that would be required if the cable was replaced based solely on the age of the cable.

The budget for the Underground Cable Testing and Replacement Program is based on historical trends, plus funding that may be allocated as part of the Company's overall reliability strategy for the calendar year.

- **Capital Customer Centered Maintenance (CCM) Program**

(Transmission) – MPC's Transmission CCM Program is an annual recurring repair program that addresses emergency replacement of failed or damaged transmission and substation equipment such as poles/structures, power transformers, breakers, regulators, circuit switches, etc. Although MPC has programs to proactively identify and replace equipment as it nears end-of-life to avoid prolonged outages to customers, unexpected failures do occur prior to equipment or facilities being replaced. Factors outside of MPC's control such as animals, weather, deterioration, acts of others, or premature failure can result in equipment outages or damage and require immediate attention to ensure the reliability of the system.

This program also includes the replacement of equipment that is identified as being at a high risk of failure or not operating properly during

the Company's routine maintenance inspection process. This program funds these unplanned, reactive capital repairs.

The budget for the CCM Program is based on historical trends.

- **Ground Line and Line Inspection Programs (Transmission)** – the Transmission Ground Line and Line Inspection Programs are annual recurring asset management programs that support a 12-year wood pole inspection interval (ground line treatment) and a 6-year interval for a comprehensive ground patrol inspection of transmission lines.

Poles that are identified as critical for replacement as part of the ground line treatment inspection are replaced within a prescribed timeframe. Non-critical poles are recorded and typically included in the following year's work plan to potentially bundle with other improvement projects. This minimizes the number of scheduled line outages and saves mobilization costs. MPC currently has 7,035 wood transmission poles, 3,075 steel poles and 5,857 concrete poles. Concrete or steel poles are the standard poles used on all new construction and on any rebuild or reconductor projects so the number of wood poles in service is expected to decrease over time. MPC's annual transmission wood pole rejection rate typically varies between 4-5%.

The crews performing the comprehensive ground patrol inspection make minor repairs during the inspection process. Non-critical findings from this inspection are recorded and bundled with other projects that are planned in the future for the specific line. One of the benefits of performing the ground line and line inspections is identification of safety issues that may pose a risk to the public that otherwise may have gone unreported. Inspection crews will make minor repairs during the inspection process such as installing missing guy guard markers, repairing broken pole grounds, etc.

Another benefit of this program is proactively identifying poles for replacement before they fail and cause extended unplanned outages to customers.

The budget for the Transmission Ground Line and Line Inspection Program is based on historical trends.

- **Transmission Line & Substation End-of-life Renewal Programs**
(Transmission) - Transmission proactively replaces equipment that is at its end-of-life to reduce the risk of unplanned outages and catastrophic failures which can impact a large number of customers or entire communities. The transmission and substation end-of-life asset renewal programs target the replacement of critical equipment such as transformers, breakers, batteries, voltage regulators, switches, relays, Substation Integration Automation (SIA) hardware, substation equipment monitors, conductors, and polymer insulators.

The end-of-life criteria used to identify transmission and substation equipment for replacement is based on historical performance, manufacturer recommendations, industry guidance, local operating and maintenance experience and certain equipment models and vintages.

The budget for the end-of-life programs is a recurring annual amount to support the program objective for each type of critical equipment.

- **Power Delivery Condition Based Maintenance Program** – the Condition Based Maintenance (CBM) program is a Southern Company program to transition from interval-based maintenance to maintenance based on equipment and system health utilizing near real time information obtained from monitors installed on various equipment on the T&D system.

Historically, this program has involved substation equipment, but will be expanded in the future to include equipment on T&D lines. Included in the program is software to retrieve, store, and analyze data from the equipment monitors that aids in the determination of equipment and system health that drives portions of the maintenance program.

In support of the CBM program, MPC is continuing to install and maintain equipment monitors and implement software solutions. These equipment monitors are being installed on equipment in substations such as power transformers, substation batteries, and breakers. These equipment monitors provide near real time data, alarms, and diagnostics to remotely monitor asset health, perform remote trouble shooting, and other remote activities to assist in reducing the cost of asset management while providing high levels of system reliability. The purpose of this program is to use near real time information to determine equipment and system health and proactively address maintenance issues and reduce interval-based maintenance inspections and expenses.

The budget for the Substation CBM Program is based on specific project needs in each year of the planning horizon.

- **Cyber and Physical Security Programs (Transmission and Distribution) –** MPC works in conjunction with Southern Company to ensure cyber security. This includes a plan on upgrading existing cyber security hardware and applications to protect against the latest cyber threats and the addition of new hardware and applications to protect the T&D systems from potential cyber threats.

NERC mandates Critical Infrastructure Protection Reliability

Standards (CIP Standards). The CIP Standards require entities, such as MPC, to identify critical assets and to regularly perform a risk analysis of those assets, develop policies for monitoring and changing the configuration of critical assets, establish access controls, require the use of firewalls to block vulnerable ports and the implement cyber-attack monitoring tools.

Organizations are also required to enforce IT controls protecting access to critical cyber assets as part of CIP and have comprehensive contingency plans for cyber-attacks, natural disasters and other unplanned events.

Penalties for non-compliance with NERC CIP can include fines, sanctions or other actions against covered entities. There are currently 11 CIP Standards, each containing multiple requirements, that are enforceable.

The Southern Company Services' Operations Compliance group provides oversight of compliance with the NERC CIP Standards. Southern Company's NERC CIP Procedures Manual and various CIP policies provide procedures, plans, and programs for complying with the NERC CIP Standards. Southern Company's NERC CIP Procedures Manual applies to all Southern Company's affiliate companies, which includes MPC, and the facilities and computer systems in scope for compliance activities with the NERC CIP Standards.

The Substation Physical Security Program is focused on improving the physical security of selected substations to minimize and deter potential threats and avoid equipment damage and unplanned outages to customers.

Attacks on substations and other critical utility infrastructure can result in hundreds of thousands of dollars in equipment damage, theft of materials or equipment, and/or power outages. MPC's investment in

substation physical security includes projects such as improved lighting, installation of impenetrable fencing, around-the-clock centralized monitoring, alarms/alerts which provide early intrusion awareness, and perimeter monitoring.

The budget for the T&D Cyber and Physical Security Programs is based on specific project needs identified on a year-by-year basis.

- **Storm Hardening Program (Transmission and Distribution)** – In 2022, MPC plans to continue a strategic Storm Hardening Program to upgrade selected T&D lines and other critical facilities to higher grades of construction in the three coastal counties south of I-10 due to this area's exposure to extreme weather events such as tropical storms and hurricanes.

MPC's Storm Hardening Program focuses on proactively mitigating certain disaster risks rather than just managing disaster recovery following small and large storms. Although MPC continues to seek ways to be better prepared to repair and replace infrastructure following a major disaster, this program adds the benefit of resiliency which aids in our ability to restore service more expediently.

For our distribution system, MPC will continue to focus on upgrading our standards of construction for selected overhead lines to Grade B construction which consist of replacing poles on the mainline feeder with stronger poles that can withstand higher wind loadings.

In 2021, a pilot structural resiliency assessment and remediation evaluation was completed by a contractor on MPC's distribution poles on three of the Company's 23kV feeders (two in Pass Christian and one in Bay St. Louis). A pole loading analysis was performed for poles identified as >80% loaded from the load screening. The analysis included recommended

solutions which involved using steel trusses to reinforce poles or replacement of existing poles. MPC is using the information provided as part of this analysis as a guide and is moving forward with performing the structural remediation work on Pass Christian feeder 10486 in Q4 2021. The work on this project will continue into Q1 2022. MPC is in the process of negotiating a contract for the pole loading analysis with the contractor to aid in identifying and prioritizing the distribution circuits to be completed in 2022 as part of MPC's storm hardening projects.

For the transmission system, MPC will begin replacing wooden structures on selected lines with concrete poles and upgrading aging lines to current design standards, including extreme wind. Additionally, the Company will continue to replace switch houses that are nearing end-of-life in areas along the coast with storm hardened designs and elevating those in areas that are prone to flooding and storm surge. In 2021, MPC will begin the storm hardening on the 4.5-mile section of 115kV transmission line from Long Beach to Pass Christian's Menge Avenue substation as noted in the Company's 2021 Energy Delivery Plan. This project will be completed in 2022. Appendix C provides a list of the planned transmission storm hardening projects over the planning horizon.

MPC recognizes that storm-hardening and grid resilience investments must carefully be balanced between the needs of the customers, regulators, shareholders, and the Company. There is no one solution to address all severe weather events that may impact MPC, and it is impractical and cost-prohibitive to implement all available storm-hardening measures at one time.

The budget for MPC's Storm Hardening Program for the planning horizon is based on a recurring annual amount to support the current program

objective.

2. Grid Optimization and Innovation Category

The Grid Optimization and Innovation Category is leveraging technology to better serve customers and provide growth opportunities. The following programs and projects are part of MPC's Grid Optimization and Innovation Category.

- **Advanced Metering Infrastructure (AMI)** - One of the key projects in the Grid Optimization and Innovation Category is MPC's AMI project that was approved by the Commission in Docket 2009-UA-398 and completed in 2020. This project has provided operational efficiency in automated customer outage reporting, reduced site visits to read and set/remove meters through the remote connect and disconnect function, and enabled MPC to offer increased service and convenience to our customers. AMI has also provided MPC with the ability to troubleshoot certain customer service issues by providing remote communication with the meter to determine if a problem is on MPC's side of the meter or the customer's side of the meter which saves additional truck rolls. In 2022, MPC will continue to seek ways to optimize the existing AMI network and functionality and explore further use of data analytics using the data available through the AMI system to improve customer service. One of the projects that MPC's AMI and Lighting Services teams began in 2021 and will continue in 2022 is the Network Lighting Control Program being implemented by MPC's Lighting Business Unit. This program will utilize smart photocells attached to MPC's outdoor lighting to monitor the light and report when the light is out. The photocell will also be used to meter lights on the energy only rate for billing purposes. The smart photocells will use the AMI communication network to provide this functionality.

- **Fiber to T&D (Broadband Development)** - MPC's Grid Optimization and

Innovation Category also includes the strategic expansion of MPC's T&D fiber network to improve reliability and aid in broadband development in underserved areas of Mississippi.

In September 2021, MPC gave Notice to the Commission for two distribution fiber projects involving collaboration with third parties. One of the projects involves MPC installing approximately 9 miles of fiber in Meridian, MS to improve the speed and accuracy of communication between MPC's distribution reclosing devices while at the same time providing an interconnection with a third party to use this new fiber, for increased access to broadband services. The estimated cost of this project is \$1.4 million.

The other 2021 fiber expansion project involves MPC installing approximately 8 miles of fiber in Lucedale, MS to improve the speed and accuracy of communication between MPC's distribution reclosing devices while at the same time allowing for an interconnection with a third party to increase access to broadband. This fiber project will extend to the George County Industrial Park and provide access to fiber-based services. The estimated cost of this project is \$1.31M.

Both of the distribution fiber projects, noted above, are scheduled to be completed in 2021 / Q1 2022.

Beyond these projects, MPC has continued to identify expansion of MPC's T&D fiber network to improve reliability and aid in broadband development in underserved areas of Mississippi. In 2022, MPC is planning a multi-phase deployment of fiber routes traversing Jasper and Jones Counties. The sum of the routes over these phases total approximately up to 60 miles. MPC is budgeting \$6M in 2022 to complete the fiber to distribution projects mentioned above.

Fiber is also continuing to be installed on portions of MPC's transmission system as part of communication network upgrades. This initiative focuses on expanding the installation of Optical Ground Wire (OPGW) on selected transmission lines to improve the protection and control and operation of the system. OPGW is designed to replace traditional static/shield wires on overhead transmission lines with the added benefit of containing optical fibers which can be used for telecommunications purposes. The conductive part of the cable serves to bond adjacent towers to earth ground and shields the high-voltage conductors from lightning strikes. The optical fibers within the cable are used for high-speed transmission of data between MPC's protection and control devices allowing for improved protection and operation of the transmission system.

The optical fibers can also be used for the Company's voice and data communication, or it may be leased or sold to third parties to serve as a high-speed fiber interconnection between cities. The cost difference of installing the OPGW compared to the standard overhead static/shield wire is minimum when compared to the overall cost of the project and the benefits that are gained with the fiber. The budget for the transmission fiber communication network upgrades is based on specific project needs as identified by MPC's Protection and Control department and on planned transmission upgrades that include the replacement of the static/shield wire that is nearing end-of-life. MPC has projects planned in 2024 and 2025 to complete the installation of fiber on the Company's Waynesboro – Lucedale 115kV line as listed in Appendix C.

In 2020, MPC began the installation of a 120-mile fiber underground circuit along the length of the Company's transmission right-of-way between

Plant Barry, in Alabama, and MPC's Logtown West Substation near the Louisiana-Mississippi border. This project is scheduled to be completed in Q1 2022 at a total estimated cost of \$18.4M and is replacing an existing overhead fiber circuit along this same route that has exceeded the manufacture's recommended service life. The new fiber being installed will have a 144-fiber count compared to the 36-fiber count of the existing overhead fiber circuit which will allow for increased capacity and ensure reliable operations going into the future. MPC filed a Certificate of Public Convenience and Necessity for this project in Docket No. 2019-UA-121 and the Commission approved an order for the project on March 17, 2020.

MPC will continue to look for partnership opportunities to install fiber optic cables to aid in broadband development in underserved areas of Mississippi. MPC and Southern Company have fiber networks that span the service territories and provide critical communication pathways between major cities. We see this as an opportunity for our assets, which run through rural communities, to serve as the backbone network to provide access to high-speed broadband networks to those communities through win-win partnerships.

3. Tactical and Innovative Planning Category

The Tactical and Innovative Planning Category includes investments in distribution and transmission planning solutions to meet applicable regulatory and local planning standards and provide for future capacity, redundancy, and operational flexibility needs.

MPC's transmission and distribution planning processes used to identify the planning projects in this category are described in more detail in Sub-Sections G and H of this plan, respectively.

The major power delivery planning projects in the relevant planning horizon are provided in Appendix C for reference. The budget for transmission planning projects is based on specific, discrete projects to comply with NERC reliability standards, support load growth, and provide operational flexibility.

The budget for distribution planning projects is typically based on historical spending levels for baseline planning projects plus any additional cost associated with discrete projects such as reconductors or new feeders. For the planning horizon, the major distribution planning projects known at the time of this filing are those that support the Distribution Conversion Program described below and listed in Appendix C.

- **Distribution Voltage Conversion Program** - the major distribution program in the Tactical and Innovative Planning Category that MPC is continuing in 2022 is the 4kV to 12kV Distribution Voltage Conversion Program. This program involves the conversion of MPC's last few remaining 4kV distribution systems located in Decatur, Union, Richton and Bassfield, MS over the next four years. These 4kV distribution systems make up less than 3% of MPC's overall circuit miles. MPC uses predominantly 12kV and 23kV as its primary standard voltages with 12kV used primarily north of the three coastal counties and 23kV used along the three coastal counties. These voltages make up almost 97% of MPC's circuit miles. The scope of this program includes replacing existing 4kV overhead and padmount transformers with 12kV transformers and upgrading the primary insulating hardware to approved 12kV design standards, along with converting and updating the substations in the towns from 4kV to 12kV.

In 2021, the Company has completed or plans to complete the following

projects as part of the Distribution Voltage Conversion Program and noted in the Company's 2021 Energy Delivery Plan.

- Sumrall Central substation has been converted from 4kV to 12kV which completes the distribution voltage conversion for the town of Sumrall.
- The two Decatur Center 4kV feeders are being converted from 4kV to 12kV. MPC plans to complete the conversion of these feeders in Q1 2022.

In 2022, the following projects are planned as part of the Distribution Voltage Conversion Program.

- Complete the conversion of the two Decatur Center 4kV feeders to 12kV in Q1 2022.
- Rebuild Union Industrial North 46-12kV substation to include two 46-12kV banks with two feeders on each bank to support the conversion of Union from 4kV to 12kV.
- Complete conversion of the Decatur Central 46-4kV substation to 46-12kV.
- Construct new Richton 46-12kV two bank substations to support the distribution voltage conversion of Richton from 4kV to 12kV. The existing Richton 46-4kV substation will be retired in 2023 once the conversion is completed.
- Convert Union Magnolia 4kV circuits to 12kV.
- Construct new Purvis Industrial 46-12kV substation to allow retirement of Purvis Kaiser, Purvis Hess, and Purvis EOT assets and complete the distribution conversion of the Purvis area.

In 2023, a new 46-12kV substation is planned in Bassfield as part of the Distribution Voltage Conversion Program. MPC plans to file a Petition for a Certificate of Public Convenience and Necessity with the MPSC for the Richton and Bassfield proposed new substations. MPC's Distribution Voltage Conversion Program is expected to be completed once the conversion is completed for Bassfield.

The benefits of the 4kV conversion project are reducing the need to stock 4kV distribution and substation material, standardizing on 12kV as our primary voltage for our service area north of the three coastal counties, increasing the load serving capacity and economic growth capacity in each of these areas due to the higher primary 12kV voltage, and providing additional redundancy, reliability, and resiliency in the towns where the conversions are planned. This program also establishes additional tie options and transfer options between feeders and substations in several of the towns which will allow MPC to expand its self-healing networks into these communities.

The budget for the Distribution Voltage Conversion Program is based on the estimated cost to complete the program in the next three to four years.

4. General Business Category

The General Business Category includes the remainder of MPC's T&D general capital expenses. These include new business expenditures used to purchase and install new facilities or upgrade existing facilities required to serve new customers and new load, including outdoor lighting to residential, commercial, industrial and governmental customers. Also included in the General Business Category is funding for commitment projects that are required by others such as DOT relocations. Engineering and supervision salaries and expenses associated with the capital projects, fleet (mechanized equipment and vehicles), tools and equipment, capital

transformer account, and capital technology application development and support are also included in the General Business Category.

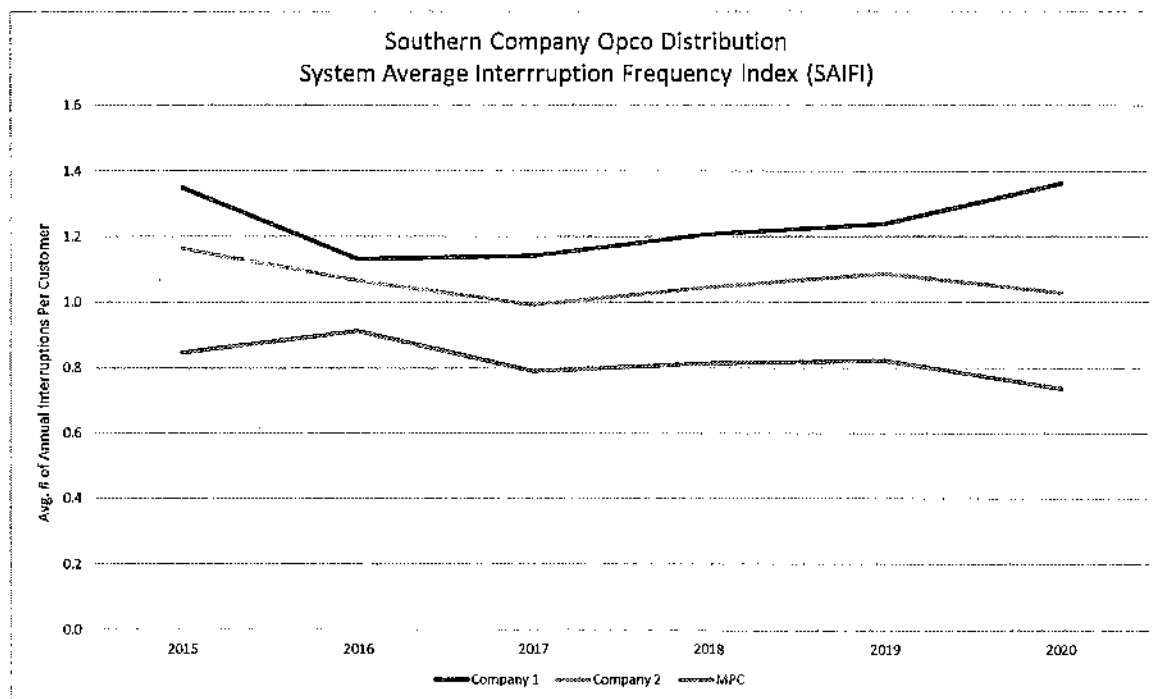
F. T&D Reliability

MPC's T&D reliability strategy and supporting programs listed in the previous sections of this plan are established by MPC's Power Delivery organization leadership team. To ensure a consistent and holistic approach to executing our reliability strategy and managing associated funding, MPC formed a Reliability Committee which is sponsored by Power Delivery leadership. The Reliability Committee has been in existence for many years and is chaired by MPC's Reliability Engineer. The committee members include cross-functional representation from various departments, including Transmission, Distribution, Operations, Planning & Reliability, Protection & Control, Materials, Asset Management, and Divisions. The Reliability Committee is responsible for identifying, vetting, prioritizing, selecting and executing several of MPC's reliability projects associated with the strategic reliability programs based on the available funding. This approach fosters synergy and sharing of knowledge and experience from the committee members, along with a forum to challenge proposed projects to ensure MPC's customers are reaping the results of cost-effective reliability solutions.

MPC uses two Institute of Electrical and Electronics Engineers (IEEE) industry standard methods for measuring the reliability of our T&D systems, SAIDI and SAIFI. SAIDI is the System Average Interruption Duration Index and measures the average interruption of service duration that each customer has experienced in a given time period. SAIFI is the System Average Interruption Frequency Index and measures the average number of interruptions in service that each customer has experienced in a given time period. MPC reports its SAIDI and SAIFI results to Southern Company per the Southern Company Reliability Reporting Guidelines and to the Commission via the

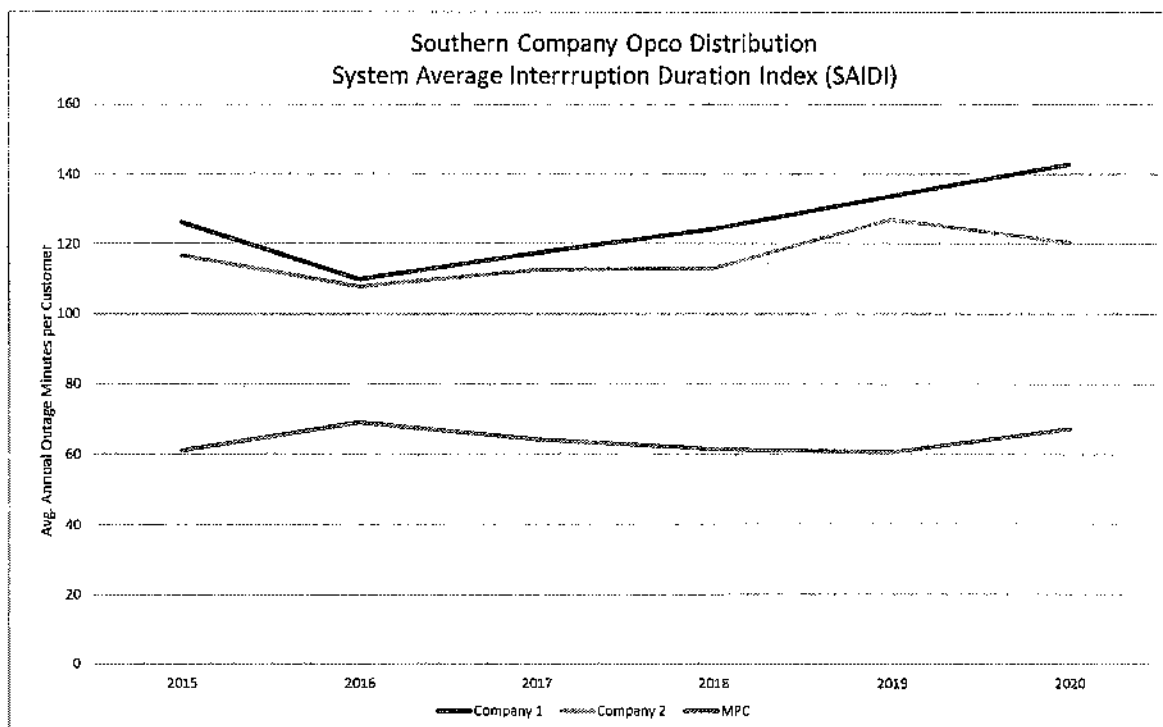
Performance Evaluation Plan “PEP-6” requirements. There are certain types of outages excluded in MPC’s SAIDI and SAIFI reporting as allowed by the Southern Company Reliability Reporting Guidelines and PEP-6. For instance, the following types of outages are excluded per PEP-6: Named Storms, Tornadoes, Winter Storms (Ice/Snow), Scheduled Outages, Customer Trouble, Acts of Others, Vehicles, and Manufacturer’s Defects.

The most relevant reliability performance comparisons MPC can make is with the other operating companies in Southern Company. MPC, along with the other Southern Company operating companies, utilize a common set of outage exclusion criteria to measure transmission and distribution reliability. The following types of outages are excluded in the Southern Company reliability reporting: Named Storms, Tornadoes, Winter Storms (Ice/Snow), Weather Anomalies, Scheduled Outages, and Customer Trouble. In addition, the Southern Company operating companies use similar materials and construction/design methods and generally experience similar weather patterns which results in a more relevant reliability comparison. MPC’s transmission and distribution SAIDI and SAIFI reliability performance is shown below in Figures 1-4 as compared to the other operating companies in Southern Company.



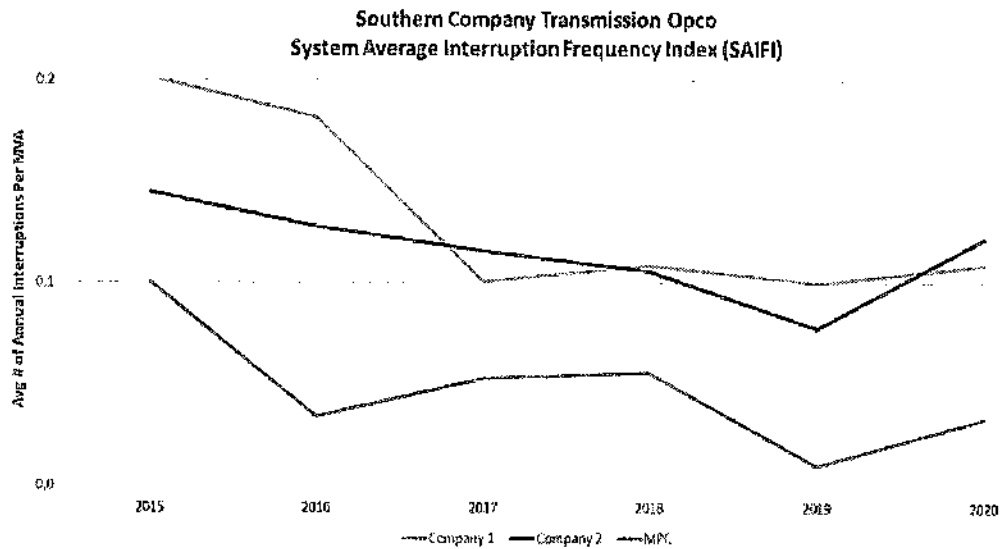
Note: The following types of outages are excluded in the Southern Company reliability results: Named Storms, Tornadoes, Winter Storms (Ice/Snow), Weather Anomalies, Scheduled Outages, and Customer Trouble.

Figure 1 (Comparison of MPC's Distribution SAIFI with SoCo Operating Companies 2015-2020)



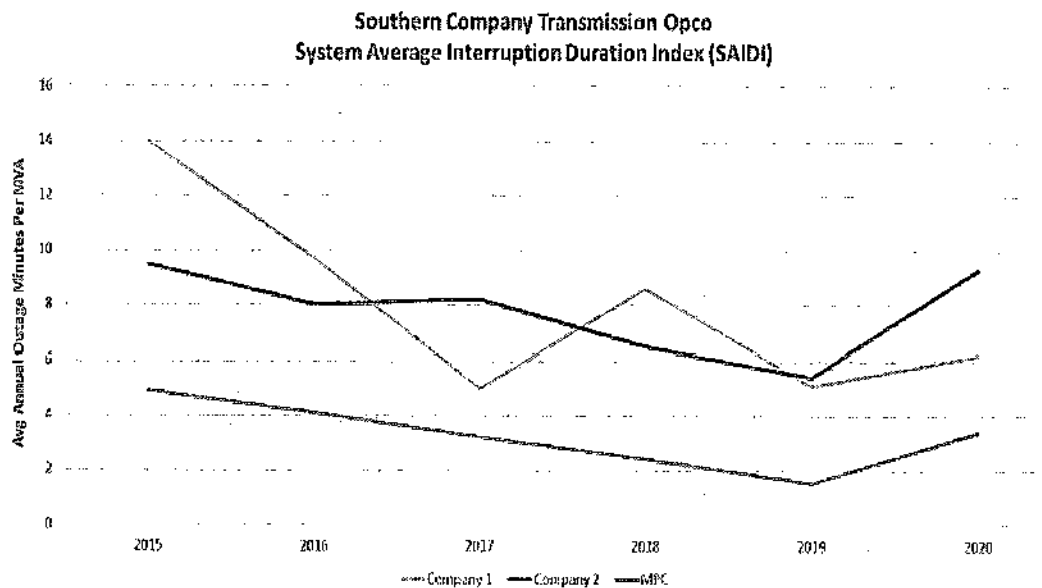
Note: The following types of outages are excluded in the Southern Company reliability results: Named Storms, Tornadoes, Winter Storms (Ice/Snow), Weather Anomalies, Scheduled Outages, and Customer Trouble.

Figure 2 (Comparison of MPC's Distribution SAIDI with SoCo Operating Companies 2015-2020)



Note: The following types of outages are excluded in the Southern Company reliability results: Named Storms, Tornadoes, Winter Storms (Ice/Snow), Weather Anomalies, Scheduled Outages, and Customer Trouble.

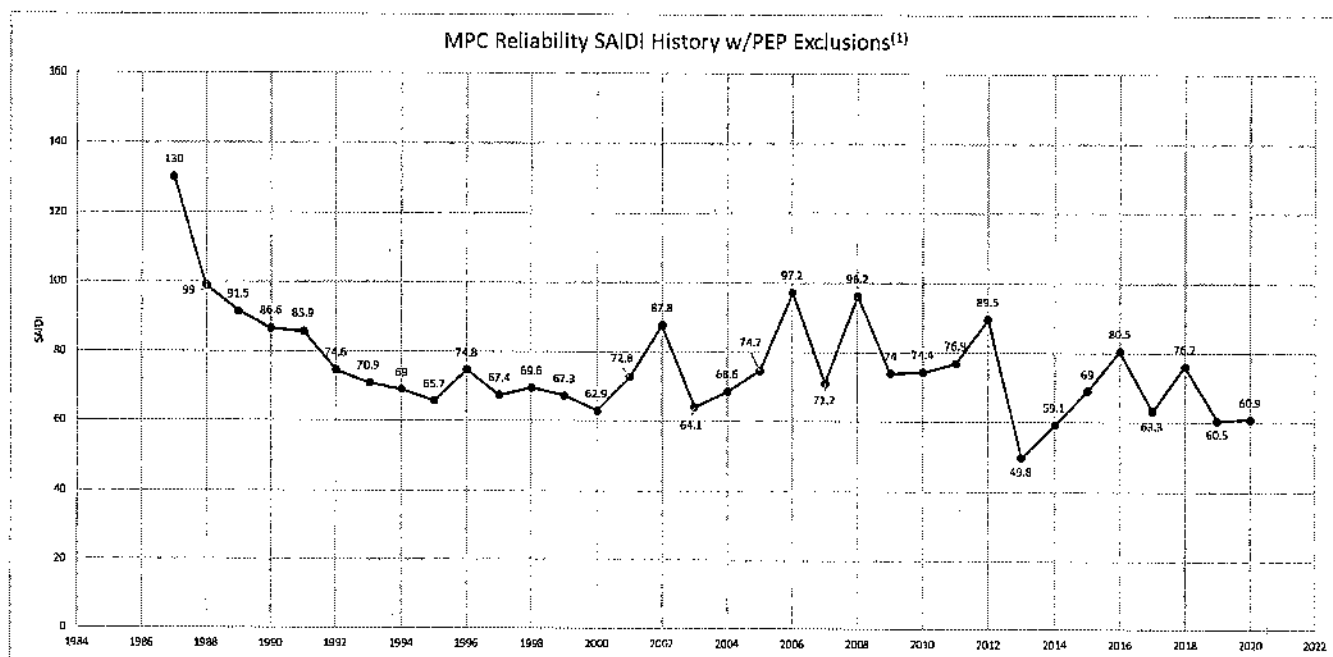
Figure 3 (Comparison of MPC's Transmission SAIFI with SoCo Operating Companies 2015-2020)



Note: The following types of outages are excluded in the Southern Company reliability results: Named Storms, Tornadoes, Winter Storms (Ice/Snow), Weather Anomalies, Scheduled Outages, and Customer Trouble.

Figure 4 (Comparison of MPC's Transmission SAIDI with SoCo Operating Companies 2015-2020)

Historical reliability data demonstrates that distribution and transmission reliability results will experience some volatility from year-to-year, due to either extreme weather patterns or other factors. For instance, MPC's historical PEP reliability index results shown in Figure 5 indicate that one of our best years in reliability was in 2013 (8 years ago) which was during a drought season. In 1987, our customers on average experienced 130 outage minutes. Over the last 5 years, customers experienced 68 outage minutes on average annually. This downward trend over the past few decades is an indicator of the improvement customers are seeing with the investments MPC has made in reliability projects. The PEP reliability results shown in Figure 5 include distribution, substation, and transmission outage types.



(1) The following types of outages are excluded from the results shown per PEP-6: Named Storms, Tornadoes, Winter Storms (Ice/Snow), Scheduled Outages, Customer Trouble, Acts of Others, Vehicles, and Manufacturer's Defects.

Figure 5 (MPC's PEP SAIDI Reliability History 1987-2020)

MPC's January – September 2021 summary of outages types, customer minutes interrupted, and number of outages by outage type (no exclusions) is provided in Table 5 below ranked by total customer minutes interrupted (CMI). Weather related outages (wind/rain, ice/snow, & lightning) are by far the greatest cause of outages (75% of total CMI).

Outage Cause Code	Sum of CMI	Outage Count
Wind/Rain	29,135,373	2,184
Ice/Snow	17,468,371	733
Trees/Limbs/Vines Failure	5,945,658	1,175
Scheduled/Customer Notified	2,696,064	2,402
Lightning	2,459,270	924
Vehicle	2,409,716	299
Deterioration – Other	1,637,693	858
Patrolled No Trouble Found	664,773	473
Emergency Repairs	663,377	46
Acts of Others	486,623	237
Trees/Limbs/Vines Growth	479,895	266
Loose Connection	302,411	153
Deterioration – Fuse	169,153	240
Cable Failure	153,468	217
Animal	121,314	264
Overload	111,265	38
MPC	101,976	105
Patrol In Progress	92,446	155
Contamination/Corrosion	85,818	185
Patrol Later	81,915	1,345
Dig In	19,340	29
Customer Equipment	19,133	25
Scheduled/Customer NOT Notified	16,579	11
Improper Installation	12,306	22
Fire	5,264	23
Manufacturer Defect	1,329	5
Load Shed	130	1

Table 5 (MPC's Outage Summary – January-September 2021)

MPC sets annual T&D reliability goals. The current goal methodology for distribution consists of using the past seven years of reliability results, excluding the best year and worst year, and calculating the average of the remaining five-years. A similar methodology is used for transmission reliability goals. This method removes some of the volatility in reliability results such as severe weather. For 2021, MPC's distribution SAIDI goal is 62.9 average outage minutes per customers and the SAIFI goal is 0.814 outages per customer. MPC's transmission SAIDI goal is 6.6 average outage minutes per MVA and the SAIFI goal is 0.093 outages per MVA.

G. Transmission Planning

MPC's transmission planning function is performed by the SCS Transmission group located primarily in Birmingham, AL. SCS Transmission is registered as the NERC Transmission Planner and Planning Coordinator entity for the Southern Company operating companies, which includes MPC. The transmission planning function ensures the system will operate reliably over a broad spectrum of system conditions and following a wide range of probable contingencies, e.g., line and/or unit outages, while adhering to NERC Reliability Standards. SCS Transmission also coordinates transmission planning activities with neighboring planning regions.

The SCS transmission planning assessment process covers the Near-Term (years 1-5) and Long-Term (years 6-10) Transmission Planning Horizons. The planning assessment covers a broad range of system conditions and contingency events for planning transmission in the Southern Bulk Electric System (BES).

The goal of the transmission planning process is to provide transmission customers safe, reliable, and affordable delivery from their resource choices to their customer loads through dependable long-term firm physical transmission service. With this goal in mind, it is MPC's and the SCS Transmission Planning group's intent to fully meet or exceed NERC reliability requirements and related reliability criteria applicable to transmission planning.

The SCS Transmission Planning group works closely with the real-time operation group at MPC and within Southern Company to minimize challenges in the operating environment, to the extent practical, by identifying potential operating constraints and mitigations in advance and planning a transmission system which reliably supports transmission customers' needs. Transmission Planning coordinates closely with system operators to review actual, stressed system conditions as well as anticipated future conditions to reflect them in transmission models. The transmission planning process

considers both the reliability requirements of the NERC planning standards and the broader scope of operational implications such as impacts on operating reserves, regulation/ramping needs, power quality, resiliency, restoration capabilities, and other operational needs.

The SCS Transmission Planning group seeks to ensure that transmission system performance remains reliable, robust, and resilient to address both normal and severe operating conditions and events. To address the uncertainties inherent in transmission planning inputs (such as load forecasts, resource changes, variable generation, and fuel forecasts), the SCS Transmission Planning group assesses long-term firm physical delivery service needs and identifies cost-effective transmission expansion options considering a wide range of scenarios and operating conditions, providing not only a degree of margin in ensuring compliance with all applicable reliability standards, but also providing necessary operational flexibility in economically accessing firm network generation resources, scheduling maintenance/construction activities, and responding to significant system events.

To minimize costs to transmission customers, transmission expansion projects which are not in a construction stage are reassessed each year. Expansion projects may be deferred or removed if the reliability need is delayed or goes away. Expansion projects may be replaced if more economic solutions are identified. Expansion projects may need to be advanced if the reliability need is advanced. By timing completion to coincide with delivery service needs, transmission customers can commence their delivery service when requested, benefit from more cost-effective solutions that may arise during the interim and avoid premature carrying costs.

H. Distribution Planning

MPC's distribution planning process ensures the system infrastructure can accommodate projected growth and provide reliable service to our customers. The

distribution planning process consists of using computer software tools to perform power flow analysis under peak load conditions during normal system configuration and applying long-range load growth projections. Projects are identified as part of the analysis to ensure adherence to MPC's planning guidelines. MPC's distribution planning function is performed within the MPC Power Delivery Operations department located in Gulfport, MS.

Detailed distribution planning studies are performed on each distribution feeder at least once every 10 years and more often in areas with high growth rates. This minimum requirement provides reasonable assurance that circuit problems such as low voltage and overloads will be identified before customer complaints develop.

Distribution planning studies are performed more frequently in areas with higher load growth to ensure necessary improvement projects can be budgeted, scheduled, and constructed according to normal processes. Typically, feeders or towns with moderate load growth (1-2% annually) are studied at least once every 5 years. Circuits with higher growth rates may require more frequent studies to ensure the integrity of the distribution system is maintained.

MPC's distribution studies generally include the following elements:

- Developing a base case model and load data
- Performing load growth analysis
- Identifying any substation, feeder, or equipment loading issues
- Recommending solutions for power factor correction
- Recommending solutions to resolve low or high voltage
- Recommending solutions to balance load
- Performing economic analysis of proposed corrective solutions
- Providing recommendations of corrective solutions
- Analyzing Distributed Generation (as necessary)

- Performing contingency analysis (ex: analyzing the loss of a feeder, substation bank, or substation and ability to transfer load via ties to other feeders or substations)
- Providing reliability analysis (including potential Self-Healing Network projects)

The equipment that makes up the distribution system must be sized to provide reliable service under all anticipated loading conditions. In most cases, subject matter experts within Southern Company provide loading guidelines for specialized distribution equipment. These guidelines were developed with consideration given to the manufacturer's rating, anticipated load cycles, life expectancy and other factors. The loading of power transformers, substation breakers, regulators, switches, reclosers, conductor, etc. is verified as part of the planning analysis. An annual screening analysis is performed on all substation transformer banks to identify potential overloads as far in advance as possible. This process ensures that a replacement transformer can be included in the appropriate budget forecast year. Also, the lead time for a substation transformer can be several months so this must be factored into the plan, along with the construction timeframe required to either replace the existing substation transformer or add an additional transformer to an existing substation.

When planning studies indicate that system improvements are required, the economics, longevity, and operation of the solutions are considered as part of the project selection process. In general, potential distribution planning solutions to capacity and voltage issues are evaluated in the following order from least cost to more costly:

- Load Shifts
- Phase Balancing
- Capacitor Banks
- Line Regulators
- Reconductoring and Phase Additions

- New Feeders and/or Substations

Reliability issues such as number of customers on feeders, key accounts on feeders, circuit length, and circuit route are considered as part of the distribution planning process and proposed projects.

MPC's Distribution Planning team assists with the interconnection evaluation process for DER connected behind the customer's meter. The majority of DERs presently connected on the customer's side of the meter consist of residential solar systems. The penetration of residential solar is still low within MPC's service territory.

I. Adequacy of MPC's T&D Systems

MPC uses a multifaceted approach focused on the planning, operation, maintenance, reliability, resiliency, and security of our T&D systems to ensure our system as a whole is adequate and provides reliable service to our customers presently and into the future while making prudent investments to maintain fair and reasonable rates. MPC's T&D system has proven to be reliable over the years as noted in Sub-Section F of this plan. We are continuing to identify projects and programs as described in this plan to go beyond just being reliable; we are moving toward modernizing our T&D systems to be more resilient. With our Storm Hardening strategy, we will focus on addressing facilities in our areas most susceptible to extreme weather events. The grid investment categories and associated programs and projects described in Sub-Section E of this plan and the major T&D projects listed in Appendix C support this multifaceted approach over the relevant planning horizon and helps us meet our customers' expectations to provide reliable service.

J. Vegetation Management Program

Rule 29 requires each electric utility to include an overview of their Vegetation Management (VM) Program. MPC's VM Program provides a comprehensive, integrated approach to managing the vegetation in the vicinity of our transmission and distribution

facilities. Outages due to vegetation are one of MPC's top three causes of outages. There are two main environmental factors that contribute to vegetation being one of the major causes of outages in MPC's service territory and the need to have a VM Program – 1) forest density and 2) an extended growing season.

MPC's territory is in a high forest density area as shown in Figure 6 below. Due to this high tree density, MPC must perform ongoing vegetation management activities to maintain the right-of-way (ROW) floor and vegetation in proximity of our transmission and distribution lines.

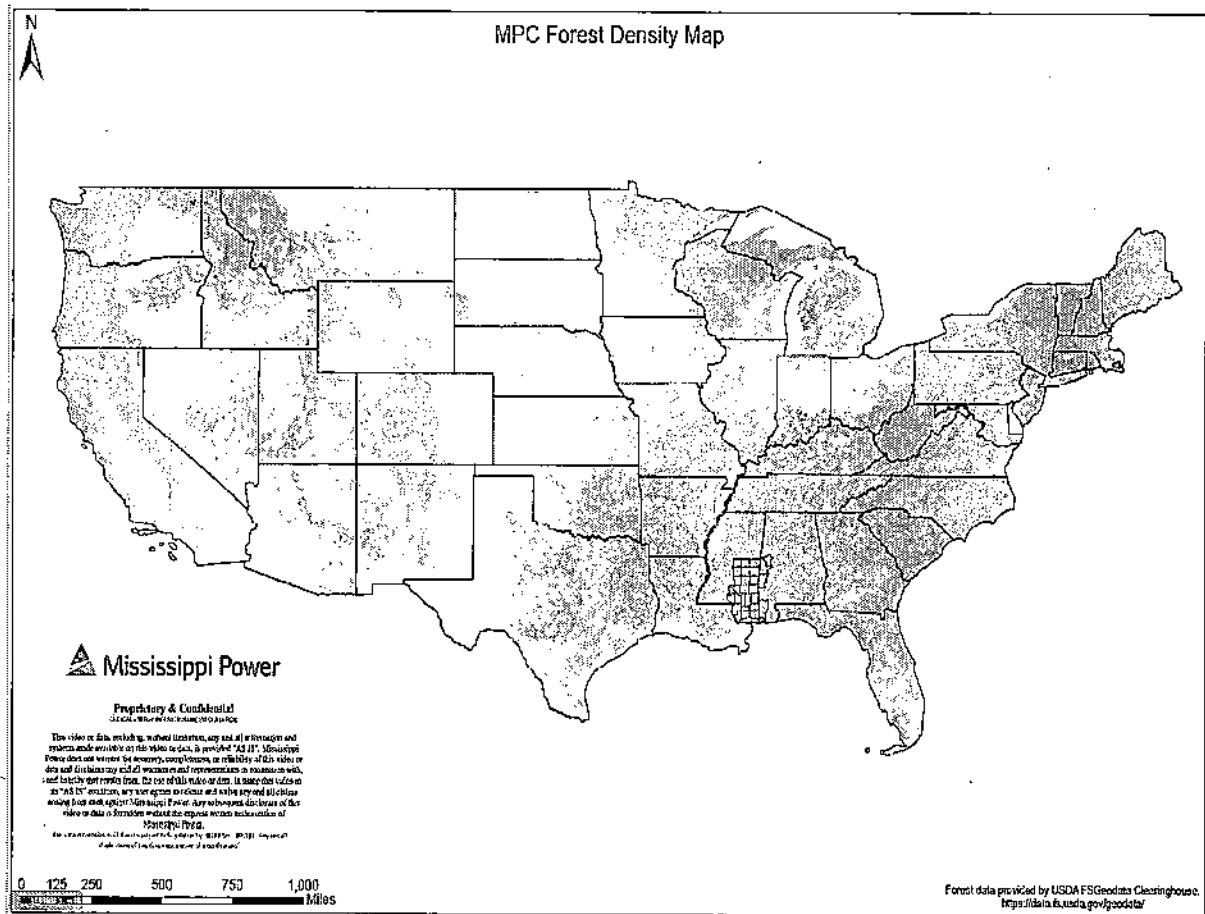


Figure 6 – MPC Forest Density Map

MPC's service territory is also within a vegetation zone that has some of the longest growing seasons in the nation as shown in Figure 7. This extended growing season requires MPC to obtain a greater clearance from the vegetation to the lines when trimming and trim

more often to account for the vegetation regrowth rate and maintain safe and appropriate clearances between our facilities and vegetation.

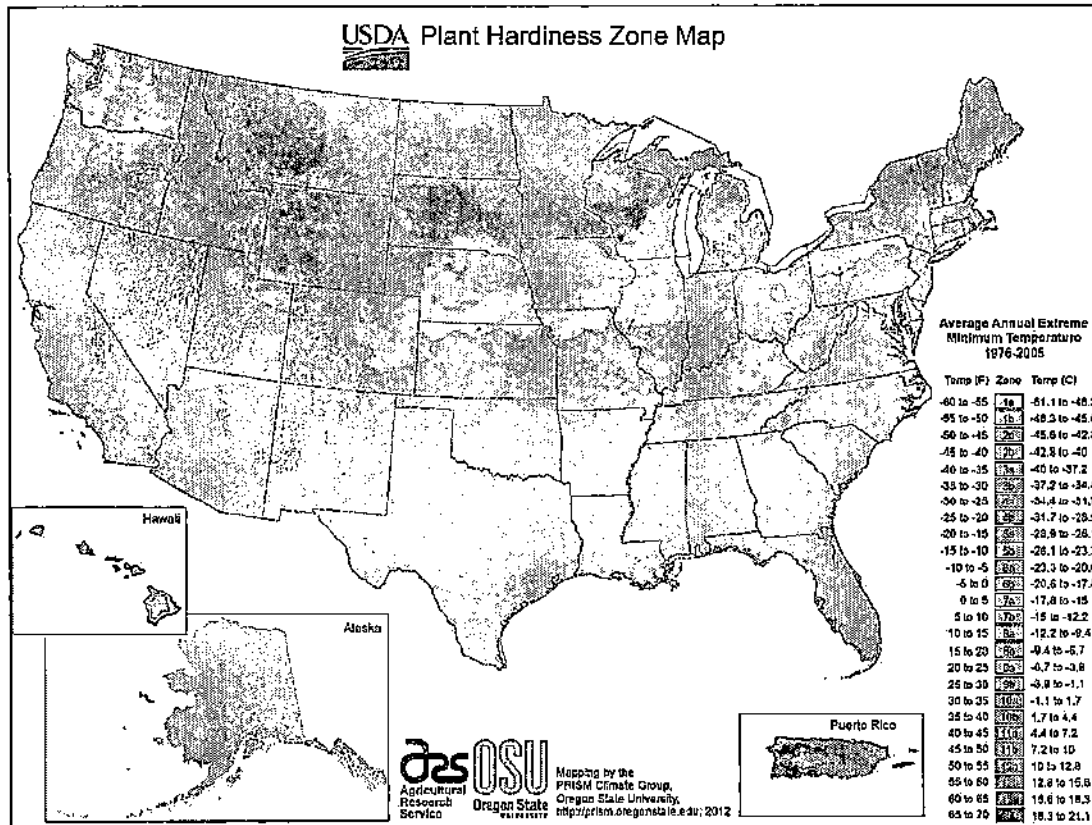


Figure 7 – USDA Plant Hardiness Zone Map

Vegetation management is one of the main preventative measures MPC uses to mitigate outages and safety issues associated with vegetation. Vegetation management is the periodic pruning of limbs and removal of trees that grow near our power lines. Vegetation management also involves maintaining the ground cover to an acceptable level under the lines, which includes mowing and herbicide application.

MPC's VM Program is an integrated program that utilizes a cyclic approach to the application of non-restrictive herbicide, mowing, pruning of trees, and removal of trees. There are two primary goals of MPC's VM Program:

1. Compliance with the North American Reliability Corporation (NERC) FAC-003-4 "Transmission Vegetation Management" reliability standard requirements.

2. Minimize vegetation related interruptions and tree contact with energized conductors.

The NERC FAC-003-4 "Transmission Vegetation Management" reliability standard mentioned above establishes requirements for Transmission Owners to maintain a reliable electric transmission system by managing vegetation located on transmission ROW and minimizing encroachments from vegetation located adjacent to the ROW. MPC's VM Program is guided by the Southern Company Transmission VM Optimum Program to ensure compliance with this NERC reliability standard. Failure to meet these standards can result in NERC issuing a Notice of Penalty to MPC which can include financial penalties.

Although it is neither realistic nor possible to eliminate all tree caused outages on a distribution system, an effective vegetation management program can minimize the impact on reliability. Vegetation management is important to the T&D system because vegetation growing into the system will cause power outages and could cause hazards to the public. The impact is worsened during rain, wind or ice which can cause the vegetation to fall into or contact the lines causing damage and prolonged power outages. Maintaining the ground cover under the lines is also important because brush density can impede response personnel from patrolling and accessing facilities to safely make repairs if the ground cover is too dense. If vegetation management is done improperly, or neglected, the impact can be significant and even catastrophic. There have been incidents over the years where inadequate vegetation management has been a factor in blackouts and other extreme events such as the northeast blackout of 2003 which affected an estimated 50 million people in eight states.⁵²

MPC's VM Program involves a competitive bid process at both the local and

² "August 14, 2003, "Northeast Blackout Impacts and Actions and the Energy Policy Act of 2005", David W. Hilt P.E., North American Electric Reliability Council.

Southern Company level to contract its vegetation management activities and control costs. MPC utilizes two bid methods to control vegetation management costs: 1) time and equipment (T&E) contracts and 2) unit pricing contracts. The T&E contracts allow flexibility to respond to unplanned or complex tasks while the unit pricing method involves contractors submitting a bid to complete vegetation management activities on an entire circuit or multiple circuits using predetermined costs, thus placing productivity responsibility on the contractor.

The contractors performing all tree pruning services are required to perform pruning techniques that are in accordance with the most recent revision of the ANSI A300 standard which establishes utility pruning and trimming standards. There must be enough clearance from the conductor to the tree to prevent re-growth from contacting the conductors before the tree is pruned on the next designated cycle. A cycle is the length of time between trimming events.

MPC's VM Program is based on optimum trim clearances and trim cycles as noted in Table 6. These clearances and trim cycles have been identified as optimum based on MPC's experience in vegetation management over the past few decades, shared best practices from other utilities, trim clearances, and consideration of tree regrowth rates.

	Transmission	Distribution
Trim Cycle	<p>NERC Lines:</p> <p>500kV – 12yrs</p> <p>230kV - 8 yrs</p> <p>Non-NERC Lines:</p> <p>46kV – 6 yrs</p> <p>115kV – 8 yrs</p>	<p>North of Interstate 10 – 4 yrs</p> <p>South of Interstate 10 – 2 yrs</p>
Ground Maintenance Cycle (Mowing & Herbicide)	<p>6 yr mowing cycle;</p> <p>herbicide applied</p> <p>twice within 6yr</p> <p>mowing cycle.</p>	<p>Herbicide applied approximately</p> <p>12-18 months after pruning</p>
Desired Trim Clearance	<p>Side trimmed to</p> <p>edge of ROW and</p> <p>ground floor</p> <p>maintained to avoid</p> <p>encroachment into</p> <p>Minimum</p> <p>Vegetation</p> <p>Clearance Distance</p>	<p>10' to 15' for 4 yr cycle</p> <p>6' to 8' for 2 yr cycle</p> <p><i>NOTE: Distances are from center</i></p> <p><i>of line. Trim clearances</i></p> <p><i>dependent on tree species.</i></p>

Table 6 (MPC VM Program Trim Cycles & Trim Clearances)

Up until July of 2019, MPC's targeted trim cycle for the entire service territory was 3.5 years for distribution. In July of 2019, MPC initiated a 2-year trim cycle along coastal areas of its service territory south of Interstate 10. The area selected represents approximately 1,485 miles (27%) of the estimated 5,600 total distribution overhead line miles. MPC made this change to the trim cycle to resolve complaints from customers/communities on the amount of vegetation MPC was removing from trees in this mostly urban area and to improve storm resiliency to this portion of MPC's distribution system that has a greater exposure to tropical storms and hurricanes. In early 2020, MPC also changed the targeted trim cycle for its territory north of Interstate 10 from 3.5 years to 4 years. This change is expected to have minimal impact to system reliability and will reflect more realistic productivity levels based on recent historical trim rates.

MPC plans to be at its targeted optimum distribution trim cycles by year end 2021. MPC transmission is estimated to be approximately 125 miles behind the optimum trim schedule for the non-NERC lines.

MPC's VM Program expense is included in MPC's annual O&M budget. MPC's 2021 & 2022 VM Program budgets are provided in Table 7 below.

Description of Work	2021 Budget ⁽¹⁾	2022 Budget ⁽¹⁾
Transmission – NERC Lines (Trimming, Mowing, Herbicide)	\$1,295,000	\$1,315,000
Transmission – LiDAR	\$338,000	\$100,000
Transmission – Non-NERC Lines (Trimming, Mowing, Herbicide)	\$1,189,000	\$1,196,000
Distribution (Trimming)	\$12,500,000	\$12,252,000
Distribution (Herbicide)	\$338,000	\$343,000
TOTAL	\$15,660,000	\$15,206,000

(1) Costs include contract labor for tree pruning, tree removal, ground floor maintenance (mowing & herbicide), and other associated costs. Costs do not include clearing for new construction, major storm restoration work, or labor of MPC's management and staff that support vegetation management activities.

Table 7 (MPC T&D Vegetation Management Budget 2020 & 2021)

V. Customers

Rule 29 encourages utilities to consider low-income customers in relation to DSM and DER offerings and to contemplate the impediments, relative to such offerings, that lack of access to affordable capital creates. In MPC's service territory more than 25% of the households fall below the federal poverty level. Cognizant of the need, MPC devotes approximately 42% of its DSM portfolio budget to low income programs and is actively engaged in finding ways to expand access to credit through on-bill payment options. Additionally, as permitted by Rule 29, MPC will target charitable giving to improve opportunities in its service territory.

A. DSM & DER

In 2022, MPC is projected to direct approximately 45% of the DSM budget on low-income customers participating in the following programs:

- ***SELECT Program (formerly Neighborhood Efficiency):*** As described in the 2022 DSM programs, SELECT is specifically targeted to income-qualified customers to educate and provide energy efficiency measures. MPC auditors/contractors reach approximately 50 homes per month and provide energy efficient lighting and insulation with no out-of-pocket cost for the customer. Qualifying neighborhoods are identified for the program in conjunction with community leaders, churches and low-income interest groups. Other individuals outside of the specific targeted area can qualify for participation through a partnership with Catholic Charities. The program will expand by targeting low-income, multi-family units with the addition of air and duct sealing as well as HVAC tune-ups.
- ***Behavioral Analysis:*** As described in the 2022 DSM programs, the Behavioral Analysis program provides customers with the data regarding their personal and comparative energy usage as well as tools to understand how they can become better managers of their energy usage. There will be 25,000 additional households targeted in 2022-2024 for a total of 80,000 (representing 51% of MPC's total residential customers). While MPC does not have data to show the exact percentage of participants that meet the low-income threshold, the random sampling assures us that a significant number low-income participants are included.
- ***School Kits and Education:*** As described in the 2022 DSM programs, MPC targets 4th and 5th grade students across the service territory to educate them on the benefits of energy conservation. MPC plans to expand this program in 2022 by increasing the total eligible schools by fifty-two. MPC will continue to provide the option to use

the virtual studio created in the fall of 2020 to make energy efficiency presentations to schools from our office to keep students and MPC employees safe and to comply with schools who have “no visitor” policies. The studio allows MPC to make presentations to multiple schools per day, eliminates travel time to schools, and eliminates transporting program equipment to schools. In-person presentations will be offered to schools without “no visitor” policies who request them and can provide a safe environment in which to make presentations. Kits will be delivered to schools prior to presentations and students will receive them the day of their schools presentation. As MPC targets schools in all communities across the service territory, it is certain that the program is reaching those most in need of assistance.

- ***Smart Thermostat Demand Response Pilot Program:*** This program is specifically targeted to low-income residential customers to provide smart thermostats for load management. Due to setbacks with participant recruitment and thermostat installation caused by the COVID pandemic and Hurricane Ida, MPC will continue the pilot for an additional summer and winter season and increase the maximum participant count from 100 to 200. This will provide a larger sample size of participants and events for abundant, accurate, and reliable data. MPC will offer the same incentives that were offered in 2021 and continue to focus on the low-to-moderate income community.
- ***On-Bill Payment Option:*** MPC continues to evaluate a program that would introduce an On-Bill Payment Option that could help alleviate the significant barrier of upfront cost for low income customer program participation. Although final disposition has not been determined, MPC is closely evaluating legal requirements, customer burdens and anticipated participation rates. Should the program be implemented it would include adherence and integration to budget and cost effectiveness requirements. While this program would be available for all customers, the specific terms of the offer may be

accelerated for income-qualified customers. The following will be included in the residential offering: HVAC replacements (upgraded SEER) and insulation (not otherwise provided through the existing SELECT program). For small commercial customers the offering would be for LED lighting retrofits, HVAC and insulation. The goal is to find a means to utilize existing incentives to provide competitive terms and reducing barriers for customers to obtain efficiency measures.

B. STEM & Workforce Lineman Program Initiative

In 2022, MPC will devote up to \$350k to continue support and development of Workforce Linemen Training with Community Colleges within our service territory and help establish programs where they do not currently exist. We will continue to expand our efforts to develop utility lineman and electrical training programs in select area high school career technical centers. These will be like the “Energy Academy” MPC is currently operating in conjunction with Gulfport High School (GHS). The partnership with GHS was developed because this Career Technical Center is utilized by several area school districts beyond Gulfport High. We will continue to utilize this model as we evaluate expanding these programs which provide an entry level exposure to the essential career fields of the energy industry.

MPC will aid the development and expansion of area STEM-based learning centers such as the FabLab in Jackson County and Central Creativity in Laurel. These community-based programs provide STEM and STEAM based learning curriculums to increase student awareness in these much-needed career fields. The FabLab and Central Creativity are technical platforms for STEAM education, workforce development, and business idea prototyping that allows students to explore the entire engineering design process in real world context. These two programs provide tools that enable students to go from concept to drawing, models to prototype, and redesign to final product. Both

enhance the student's ability to think critically and creatively through in-school programs, after-school programs, and summer camps.

MPC will continue to evaluate these programs and develop others that promote workforce development and STEM education and career technical training. MPC expects these programs to expand as the needs of our service territory and the state change and grow.

C. ACT Work Ready Community

MPC will continue to offer up to \$5,000 to each county in our 23-county service territory to help them achieve their gold certification as an ACT Work Ready Community. This certification designates a county as having a qualified and work ready workforce through high school and community college student and unemployed testing. This certification is a vital economic development tool for our communities to have while demonstrating they possess a qualified and ready workforce. To date, seven of our 23 counties have taken advantage of the grant and certification.

VI. Enabling Technologies

MPC continues to deploy new technologies that improve reliability, promote economic development, and provide customer access to enhanced services. The projects submitted in this plan also allow MPC to test real time impacts to the electric grid and to assess customer benefits.

A. Enhanced Grid Investment

- ***Solar/Electric Vehicle Charging Demonstration Project***

MPC plans to create a demonstration project at Forrest County Agricultural High School with the deployment of a Thompson CS Saf-T-Liner Jouley all-electric bus and an all-electric passenger car with separate charging stations. The project will be done in conjunction with the school's installation of a small capacity roof-mounted PV array to supply energy for a specific

building. The solar array will also interact with the EV battery in order to offset the energy requirements for charging the bus. The all-electric passenger vehicle will be used for the driver's education program at the school to inform the next generation of drivers on the benefits of electric vehicles. The solar array will be installed and paid for with funds administered by the Mississippi Gulf Coast Community Foundation. Parking lot lighting at the school will be upgraded to LEDs for improved energy efficiency and safety.

The project will allow MPC to 1) evaluate bi-directional power flow and reliability impacts, 2) test operational characteristics of the technology and customer response, and 3) provide enhanced services and energy efficient technologies to an underserved community. The estimated project cost is \$446,000 which excludes the solar.

- ***Public EV Charging Deployment Pilot***

MPC plans to install up to 5 networked DC fast chargers in 2022 and 2023 on interstate and highway corridors for public use to advance adoption of electric vehicles in the service territory. Each site will be equipped with two charging units at 62.5 kW each. The Federal Highway Administration's EV Corridor designation criteria of 50 miles or less between chargers and 5 miles or less from an interstate exit will be one of the primary methods used to select sites. The locations will offer EV drivers access to amenities such as shopping, dining or entertainment venues.

Electric vehicle charging infrastructure in Mississippi is inadequate to meet forecasted customer demand. Creating a robust infrastructure that advances electric vehicle adoption will benefit MPC customers and all Mississippi residents through a) economic development and job creation, b) cleaner air quality, and c) downward pressure on electricity rates from increased utilization of utility infrastructure. The pilot will also allow MPC to evaluate customer behaviors and better understand potential grid impacts. Total cost for the project is estimated at \$1,000,000.

- ***Smart Neighborhood update***

MPC continues to work toward the construction of a smart neighborhood in Lauderdale County, MS. The project was delayed due to COVID-19 as well as construction cost increases and supply chain uncertainty but is now moving forward. The homes will feature the most energy efficient appliances, equipment and building standards as well as solar roof shingles and home batteries to achieve a “net zero energy” certification. MPC will conduct extensive research on the optimization of smart devices inside the homes and at the community level. This will include aggregation software to optimize individual home batteries for grid services (voltage, capacity, frequency) and an energy management software platform to control household appliances for peak shaving. The research will provide critical information for understanding how bi-directional energy flow can impact grid reliability. It will help us understand how future rate design can encourage the most beneficial deployment of energy-related technologies for customers and MPC and give insight into customer behavior and acceptance of the technologies.

The deployment of renewable energy with the solar roof shingles will allow homeowners to participate in the Renewable Energy Net Metering rate and receive credit for excess energy that flows to the grid. Homeowners will also benefit from the energy management software platform that will optimize appliance usage for the highest level of energy efficiency. This software could ultimately be deployed for the benefit of other customers in the future. MPC’s portion of the smart neighborhood project is approximately \$2 million.

B. Fiber Deployment

Rule 29 highlights the importance of public utilities expanding their fiber optic infrastructure, particularly noting that “such expansion is consistent with a number of policy drivers that underlie public regulation,” including reliable service, promotion of the public welfare and economic development. MPC continues to make investments, as

described below, that thoughtfully deploy fiber in keeping with the goals of Rule 29.

- **Logtown/Barry Fiber Replacement Project**

In 2020, MPC began the installation of a 120-mile fiber underground circuit along the length of the Company's transmission right-of-way between Plant Barry, in Alabama, and MPC's Logtown West Substation near the Louisiana-Mississippi border. This project is scheduled to be completed in Q1 2022 at a total estimated cost of \$18.4 million and is replacing an existing overhead fiber circuit along the same route that has exceeded the manufacturer's recommended service life. The new fiber being installed will have a 144- fiber count compared to the 36-fiber count of the existing overhead fiber circuit which will allow for increased capacity and ensure reliable operations going into the future.

MPC filed a Certificate of Public Convenience and Necessity (CCN) for this project in Docket No. 2019-UA-121 and the Commission approved an order for the project on March 17, 2020.

MPC will seek partnership opportunities to utilize excess capacity on this fiber network to bring enhanced connectivity to surrounding areas.

- **George County Fiber Project**

On September 4, 2020, MPC filed a Notice with the Commission to install approximately 8 miles of 144-count fiber in Lucedale, MS. The fiber will interconnect with existing fiber owned by C Spire to complete a fiber ring. The agreement between MPC and C Spire will allow for a swap of 24 counts of fiber. MPC will install reclosing devices on the fiber infrastructure. C Spire and MPC partnered to identify a fiber project that would a) be mutually beneficial to each Company through enhanced infrastructure and b) increase access to broadband for residents, businesses, schools and industrial sites, and c) generate cost savings

through collaboration and utilization of existing resources.

The utilization of fiber on MPC's distribution system will increase the speed and accuracy of the system's response to outages. It will allow MPC to properly coordinate more reclosing devices than what is currently possible through wireless communication. Additional reclosing devices will result in fewer customers being impacted by outages.

The fiber project could increase access to broadband services. MPC estimates there are 6,500 premises within 5 miles of the proposed fiber ring who could ultimately benefit from the fiber deployment. In addition, there are 8 schools within the vicinity who may choose to utilize their federal E-rate support to bring C Spire's all-fiber gigabit services to their campuses thereby enhancing connectivity. Additionally, MPC and C Spire may agree to jointly market their assets to third-party carriers, which could further increase access and produce a future revenue stream for MPC customers.

The fiber ring will extend to the George County Industrial Park and provide access to high-speed, fiber-based services. The park has three premier sites two of which are MS Power Project Ready certified. A 353-acre industrial rail site has been a leading candidate on several large projects in recent years. Fiber infrastructure has become more of a key component to infrastructure preparedness. With ongoing improvements related to electricity, water, wastewater, and natural gas, fiber access is the only remaining component not available. Additionally, the availability of increased reliable connectivity may foster internet business and work-from-home opportunities. The cost estimate for MPC to construct the new fiber, install reclosing devices, and connect to C Spire's network is \$1.31M and will be complete in 2021.

- **Kemper & Lauderdale County Fiber Project**

On September 4, 2020, MPC filed a Notice with the Commission to install 8.7 miles of 144-count fiber in Meridian, MS. The fiber will be installed on MPC's power distribution system and interconnect with existing fiber on MPC's power transmission system. MPC will utilize the new distribution fiber to enhance communication between new and existing reclosers which will increase system reliability. MPC is partnering with East Mississippi Electric Power Association (EMEPA) on an interconnection agreement. This agreement could allow EMEPA to connect to MPC's new 8.7 miles of fiber and 71 miles of existing fiber. EMEPA and MPC have collaborated to identify fiber deployment that would a) be mutually beneficial to each entity through enhanced infrastructure, b) increase access to broadband for customers, and c) generate cost savings through collaboration and utilization of existing resources.

The utilization of fiber on MPC's distribution system will increase the speed and accuracy of the system response to outages. It will allow MPC to properly coordinate more reclosing devices than what is currently possible through wireless communication. Additional reclosing devices will result in fewer customers being impacted by outages.

The interconnection agreement with EMEPA could allow for increased access to broadband services in the territories served by both MPC and EMEPA. The potential number of residences and businesses that could benefit from this agreement will depend on how EMEPA decides to deploy fiber from its delivery points. Additionally, MPC may market available fiber capacity to third-party carriers, which could further increase access and produce a future revenue stream for MPC customers.

Fiber extends to the industrial park and may be further deployed to provide access to high-speed, fiber-based services to ventures that locate. Fiber infrastructure has become more of a key component to infrastructure preparedness and provides further site appeal to developers. Additionally, the availability of increased reliable connectivity may foster internet business and work-from-home opportunities. The project's estimated cost is \$1.41 million and is expected to be completed in 2021/Q1 2022.

- **Jasper / Jones County Fiber Projects**

In 2022, MPC plans a multi-phase deployment of fiber routes traversing Jasper and Jones Counties. The sum of the routes over these phases totals approximately up to 60 miles. The project has an expected completion by the end of Q4 2022. MPC is budgeting \$6 million to complete the fiber distribution projects mentioned above.

The utilization of fiber on MPC's distribution system connecting substations along the route will increase the speed and accuracy of the system response to outages. It will allow MPC to properly coordinate more reclosing devices than what is currently possible through wireless communication. Additional reclosing devices will result in fewer customers being impacted by outages.

MPC anticipates executing fiber lease agreements that will facilitate increased high-speed broadband access to consumers and businesses located in the areas and communities surrounding the proposed routes. MPC is currently negotiating specific routing and contract terms. The outcome of this will determine the final and specific design and route.

Fiber infrastructure, especially as it contributes to both electric reliability and high-speed broadband access, has become more of a key component to

infrastructure preparedness and is also a leading indicator for economic development efforts. In addition to its benefits to nearby homes, the increased availability of high-speed broadband access in the area could also assist in attracting new commercial and industrial businesses and jobs to the area as well as retaining existing ones. The increased availability to nearby homes may also facilitate internet business and work-from-home opportunities for nearby residents.



2022

DSM Programs

November 15, 2021

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I. 2020 Executive Summary

In 2020, Mississippi Power Company ("MPC") moved into the transformational planning phase and initial implementation for programs ("Portfolio") between Quick Start DSM programs to the DSM programs to be offered in conformity with the new version of Rule 29. These consist of seven programs designed to reach Residential and Non-Residential customer classes. The 2020 programs yielded annual energy savings of 10,977,799 kWhs while reaching 48,506 participants.

Table 1 briefly summarizes MPC's Energy Efficiency program performance for 2020. A description of each individual program follows.

Table 1: Summary of Portfolio Results

2020 DSM Programs				
Program Name	Number of Participants	Annual kWh Savings	KW Savings	Program Expenses
SELECT (Res. Low Income)	499	575,266	197	\$351,381
Behavioral Analysis	39,588	6,049,593	877	\$292,930
Residential Energy Efficiency Program	463	1,103,381	402	\$307,477
School Kits and Education	2,610	393,928	116	\$104,628
Welcome Kits	5,222	1,094,846	256	\$112,304
Commercial 100	112	1,363,292	449	\$327,477
Commercial 500	12	397,494	210	\$80,620
Marketing & Advertising				\$5,557
EM&V & Planning				\$355,308
DSM Pilot				\$81,095
Cross-Cutting*				\$188,918
Totals	48,506	10,977,799	2,508	\$2,207,695

*Cross-Cutting – overhead costs that are not specific to any program but are allocated across all programs (i.e., labor).

2020 Programs

SELECT (Residential Low Income): This program provides education and promotion of energy efficiency as well as installation of energy saving measures to income-qualified customers. MPC audits between 40-50 homes per month and provides efficient LED lighting and insulation upgrades. In 2020, this program had 499 participants with annual energy savings of 575,266 kWhs. Program expenses totaled \$351,381.

Behavioral Analysis: This program bridges the customer engagement gap, providing MPC customers with the data regarding their personal and comparative energy usage as well as tools to understand how they can become better managers of their energy usage. In 2020, this program had 39,588 participants with annual energy savings of 6,049,593 kWhs. Program expenses totaled \$292,930.

Residential Energy Efficiency Program (REEP): This program increases energy awareness by offering home energy assessments to MPC's residential customers which help homeowners analyze their energy use, identify energy efficiency projects, and install low-cost, energy saving measures in their residence. It also offers HVAC unit replacement incentives. In 2020, this program had 463 participants, with annual energy savings of 1,103,381 kWhs. Program expenses totaled \$307,476.

School Kits and Education: MPC targets 4th and 5th grade students to educate on the benefits of energy conservation. Students receive an energy efficiency kit to install at home and schools are incentivized to participate. In 2020, this program had 2,610 participants with annual energy savings of 393,928 kWhs. Program expenses totaled \$104,628.

Welcome Kits: This program provides light emitting diode ("LED") bulbs to new residential customers in kits that are mailed to the customer including energy efficiency tips and a LED nightlight. In 2020, this program had 5,222 participants with annual energy savings of 1,094,846 kWhs. Program expenses totaled \$112,304.

Commercial 100: This program educates and provides direct-installed efficiency measures and incentives to business customers that have a ≤ 100 kW peak demand threshold. In 2020, this program had 112 participants, with annual energy savings of 1,363,292 kWhs. Program expenses totaled \$327,477.

Commercial 500: This program provides facility walkthroughs and incentives toward a suite of energy efficiency measures, for customers with a peak demand ≤ 500 kW. The program is designed to help customers who manage commercial facilities, operate their buildings more efficiently by deepening their understanding of the technical and financial benefits of energy efficiency investments. In 2020, this program had 12 participants, with annual energy savings of 397,494 kWhs. Program expenses totaled \$80,620.

Table 2: Program customer class participation

	Residential	Residential – Low Income	Non-Residential
SELECT		X	
Behavioral Analysis	X	X	
REEP	X	X	
School Kits and Energy Education	X	X	
Welcome Kits	X	X	
Commercial 100			X
Commercial 500			X

II. 2021 DSM Program Performance

In 2021, Mississippi Power Company ("MPC") moved into continued the transformational planning phase and initial implementation for programs ("Portfolio") between Quick Start DSM programs to the DSM programs to be offered in conformity with the new version of Rule 29. These consist of seven programs designed to reach Residential and Non-Residential customer classes. The 2021 programs yielded annual energy savings of 16,521,559 kWhs while reaching 64,224 participants for January -

September. The IRP Technical Conference was held in February 2021 and provided MPC with industry advocate and regulatory feedback that continued to inform the portfolio design. More detail on that to be listed in the 2022 plan section.

Table 3 briefly summarizes MPC's Energy Efficiency program performance for January – September 2021. A detailed description of each individual program follows.

Table 3: Summary of Portfolio Results

2021 DSM Programs January - September				
Program Name	Number of Participants	Annual kWh Savings	KW Savings	Program Expenses
SELECT (Res. Low Income)	817	1,455,509	569	\$906,745
Behavioral Analysis (HERs)	54,451	7,095,009	681	\$226,743
Residential Energy Efficiency Program	499	1,455,098	516	\$386,713
Education Program	2,841	428,707	125	\$123,706
Welcome Kits	5,363	1,124,085	263	\$165,245
New Home Pilot	-	-	-	-
Demand Response Pilot	79	69,948	21	\$25,997
Commercial 100	124	2,396,984	658	\$380,018
Commercial 500	50	2,496,220	847	\$332,059
Marketing & Advertising				\$3,475
EM&V & Planning				\$286,611
Cross-Cutting				\$257,154
Totals	64,224	16,521,559	3,681	\$3,094,466

A. SELECT (Residential Low Income)

This program provides information and premise upgrades that promote energy efficiency to residential income-qualified customers. MPC auditors/contractors audit and provide energy efficient lighting and attic insulation at no cost to qualified customers. MPC uses internal identifiers to target specific low-income neighborhoods with the goal of maximizing the number of customers it reaches. Qualification of neighborhoods is supplemented by interaction with community leaders, churches, and low-income interest groups. Other individuals outside of the specific-targeted area can become eligible for participation through a partnership with Catholic Charities. Table 4 lists the neighborhoods and demographics reached by MPC during 2021.

Table 4: Demographic information of targeted neighborhoods

Neighborhood	Timeframe	Median Household Income
Ellisville	September 2020 - March 2021	\$ 29,757
Biloxi (McDonnell to Rodeo & Pass Rd. to William Harris Dr.)	December 2020 - May 2021	\$ 41,088
Gulfport (Cowan to Anniston/Pass Rd to Collins)	January 2021 - May 2021	\$ 49,593
Hattiesburg (Palmers Crossing East)	February 2021 - July 2021	\$ 21,194
Brooklyn	June 2021 - July 2021	\$ 42,105
Wiggins	June 2021 - August 2021	\$ 51,534
Waveland	August 2021 - Current	\$ 37,351
Columbia	August 2021 - Current	\$ 25,100

B. Behavioral Energy Efficiency Program

In November 2014, Mississippi Power and Opower launched the Home Energy Reports (HERs) program, an opt-out behavioral program designed to boost customer engagement and reduce residential energy consumption and costs. Participating households receive a series of personalized HERs and email Home Energy Reports (eHERs) designed to motivate and educate recipients to take actions to improve the energy efficiency of their homes. The behavioral energy efficiency program results in measurable and verifiable energy savings for Mississippi Power customers, while increasing customer engagement and awareness of other energy efficiency programs. The HER program is uniquely suited to reach a broad base of Mississippi Power's customers, providing benefits to customers of all income levels and ages.

Program Highlights

i. Program Design and Participation

- Due to the effectiveness and customer response, a program expansion was launched in January 2021, where 20,100 customers were added to the HER program to total 57,000 residential Mississippi Power customers in the HER program in 2021.
- HER program recipients receive paper HERs on a bi-monthly basis and email for each billing cycle.
- As of September 2021, a total of 195,202 paper HERs (Figure 1) and 205,451 email HERs (Figure 2) have been sent to customers.
- All recipients in the Home Energy Report program have access to Opower's online web portal, which allows them to track energy usage, find tips on how to save energy, and provide updates to their home profile.

[illegible]

Mississippi Power

Average Home

You used 38% more electricity than efficient homes.

Great
Good
Average
Using more than others

Efficient Homes 3,030 kWh
You 4,197 kWh
Similar Homes 3,352 kWh

Jun 20, 2013 - Jul 21, 2013
This is based on 10 similar homes an average of 6 miles from you. Efficient homes are the most efficient 20% of this group.
[Learn More](#)

Electricity comparison over time

In the last 6 months, you spent \$284 more than similar homes.

\$6,000
\$4,000
\$2,000
\$0.00

Feb Mar Apr May Jun Jul

○ Your home ■ Similar homes ○ Efficient homes

Ways to Save



Upgrade to an efficient refrigerator

Your refrigerator is on 24/7. As a result, it uses more energy than most appliances in your home. An old refrigerator uses nearly twice as much energy as a new ENERGY STAR® refrigerator.

Save up to \$80 per year



Weatherstrip windows and doors

Windows and doors can be responsible for up to 25% of heat loss in winter. To reduce leakage and save energy, seal your windows and doors with weatherstripping, caulk, foam, or door sweeps.

Save up to \$170 per year



Set your thermostat to 78°F in the summer

Cooling can account for a large portion of your home's summer energy use. To save energy and money, set your thermostat to 78°F when you're home. Raise the temperature a few degrees when you're away and before bed.

Save up to \$225 per year



ii. Program Results

Energy Savings

Savings are measured and verified using a randomized control trial. A statistically equivalent group of approximately 35,000 households have been randomly assigned to serve as a control population; these households do not receive reports. Both samples (the treatment and control) were randomly selected from the same population to ensure unbiased measurement and verification of program results.

Digital Engagement

In 2021 so far, email Home Energy Reports have had an average open rate of 45% and an average click-through rate of 1.3%.

iii. 2021 Program Innovations and Updates

- In January 2021, a 20k household expansion was launched. They received the "Welcome" modules below in their paper Home Energy Report (Figure 3) and their Email Home Energy Report (Figure 4).

Figure 3. Print Home Energy Report Welcome Module

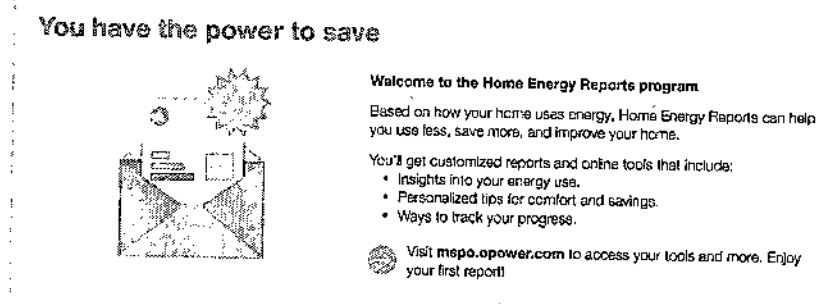
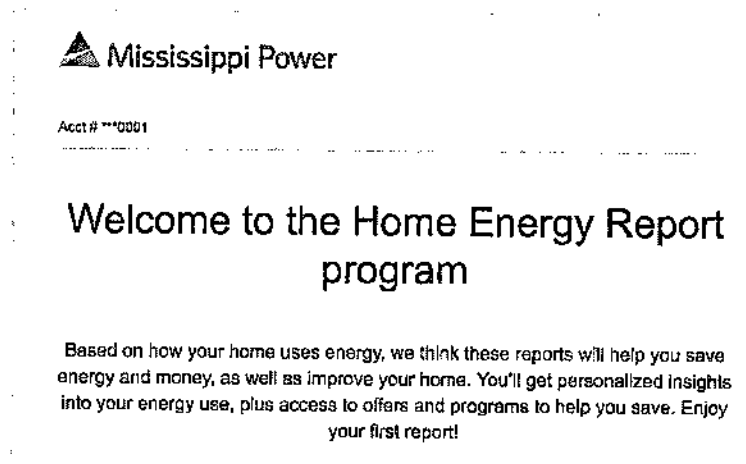
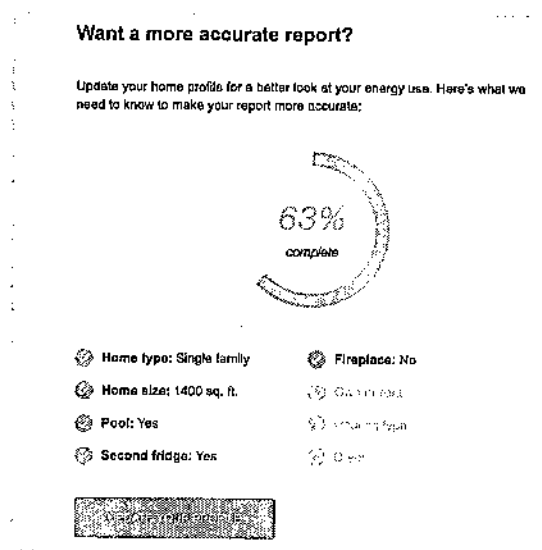


Figure 4. Email Home Energy Report Welcome Module



- The Home Energy Analysis (HEA) campaign will be running in Q4 2021 in email HERs to encourage customers to complete the HEA which will further personalize the HERs for customers. It also serves as a tool for boosting digital engagement. Figure 5 shows the email version of the audit module.

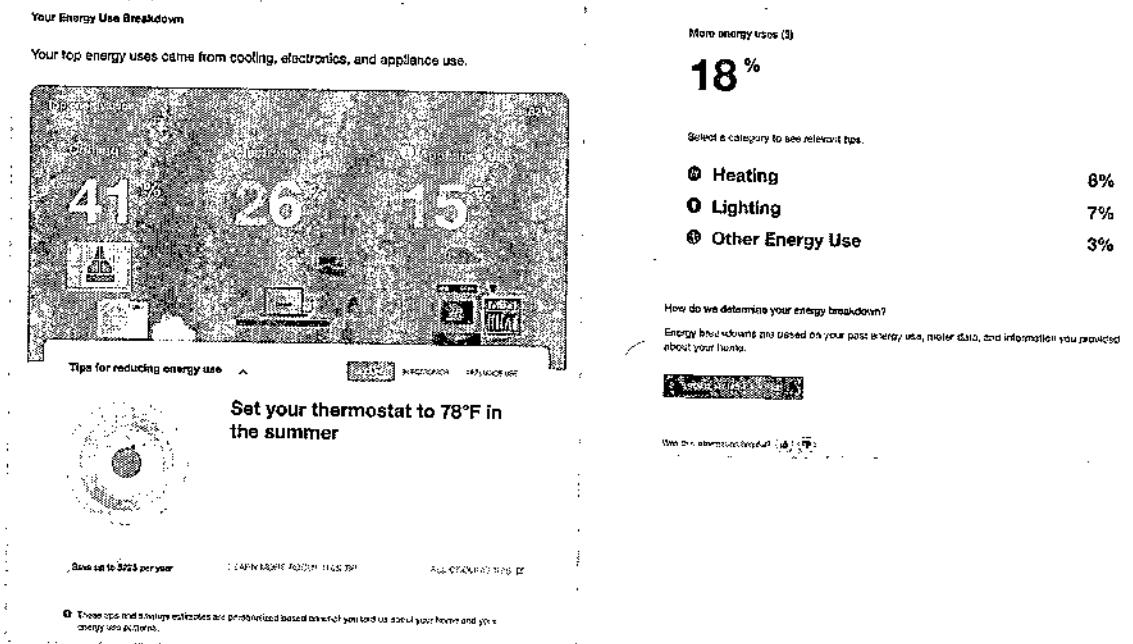
Figure 5. Email Home Energy Audit module



- Over the summer, the Home Energy Analysis (HEA) breakdown on Mississippi Power's Opower web portal was refreshed to Opower's version 2. Upon completion of the HEA survey, the customer will see the results page highlighting their top energy use categories. The results are calculated using a combination of the customer's historical energy usage along with the answers they provided in the survey.

The new design not only provides the customer with insights into which are their top energy use categories, but also gives them tips/actions they can take to reduce their energy consumption in the respective categories.

Figure 6. HEA breakdown version 2



C. Residential Energy Efficiency Program (REEP)

This is an energy efficiency program that allows homeowners to achieve significant, long-term energy savings. Homeowners achieve those savings by allowing trade allies to assess the home's unique energy saving opportunities and carry out the work necessary to complete the identified opportunities. The program provides a direct benefit to MPC residential customers, as well as local contractors.

Contractor, face-to-face channels did not begin until the third of quarter of 2020; consequently, program results reflect portfolio transition and safety uncertainty due to COVID19.

Program objectives are met through five key components: 1) identifying energy efficiency opportunities through home assessments; 2) executing weatherization measures including air/duct sealing and ceiling insulation; 3) implementing direct install measures including LEDs; 4) providing mail-in rebate measures including smart thermostats, heat pump water heaters, window AC units, pool pumps, and heat pump water heaters; and 5) HVAC unit replacements of existing HVAC equipment with high efficiency heat pump units or conventional air conditioning equipment.

REEP Measures & Incentive Levels:

Category	Measure	Incentive	
Contractor Led	Air Sealing	\$0.10 per CFM50 reduced	
	Duct Sealing	\$1.25 per CFM25 reduced	
	Attic Insulation	<R19	\$0.20
		>R19	\$0.12
	LED Lighting (combo offering)	\$3.50 per incandescent bulb replaced, limited to 12	
Customer Led	HVAC Replacement	15 SEER Central A/C	\$ 80 per ton
		16+ SEER Central A/C	\$100 per ton
		15 SEER Heat Pump	\$160 per ton
		16+ SEER Heat Pump	\$200 per ton
		16+ SEER Ductless Heat Pump	\$200 per ton
	Ceiling Insulation	<R19	\$0.20 per square ft.
		>R19	\$0.12 per square ft.
Mail-in Rebates	Smart Thermostat	\$100 per thermostat	
	Pool Pump	\$250 per pool pump	
	Window A/C	\$25 per unit	
	Heat Pump Water Heater	\$350 per water heater	

D. School Kits and Education

The School Kits and Education program is designed to help educate 4th and 5th grade students about energy efficiency. The students view a presentation about energy efficiency and then take home a kit which includes several energy efficient measures to install around the house. Those measures include LED bulbs, a LED night light, and shower timers. The schools are incentivized to encourage participation.

Student Education Program Measures & Incentive Levels:

Energy Efficiency kits are provided to each fourth and fifth grader who participates in the program. These kits include 3 LED light bulbs, 2 shower timers, 1 nightlight, 1 recommended thermostat setting magnet, a home energy survey, and a participation card. Each kit costs ~\$16.45 per kit.

Each grade with 25% student participation (energy survey returned) receives a \$300 mini-grant.

E. Welcome Kits

This program provides 6 light emitting diode ("LED") bulbs to new residential customers in kits that are mailed to the customer including energy efficiency tips and a LED nightlight.

F. Commercial 100 Program

The Commercial 100 program offers contractor and customer education on energy efficiency technologies that will potentially assist in generating [alternate or non-energy] revenue from projects in the small business market. MPC works directly with our qualified contractors to provide design and installation services for energy efficient technologies. Substantial incentives are in place to move small businesses (≤ 100 kW peak demand) to install energy efficient products, such as high efficiency lighting and refrigeration measures. The program overcomes market barriers by providing incentives to help pay for energy efficiency upgrades. In addition, the Commercial 100 program connects customers with contractors who are qualified to provide design and installation services for energy efficient technologies.

Commercial 100 Measures & Incentive Levels:

The program will pay up to 70% of the project cost.

Measure Name	Program Rebate
LED Screw-in (Small Office)	\$4
LED Screw-in A-LAMP (small business)	\$3
LED Screw-in PAR Lamp (small business)	\$3
TLED (Type A) Lamp - small business	\$5
8' TLED (Type C) Lamps - small business	\$15
TLED (Type C) Lamps - small business	\$20
LED 2' X 2' Troffer Fixture - small business	\$40
LED 2' X 4' Troffer Fixture - small business	\$40
TLED 2' U-lamp (Type A) (small business)	\$5
TLED 2' U-lamp (Type C) (small business)	\$20
LED Wall Pack <75W (Early)	\$100
LED Wall Pack >75W (Early)	\$75
Occupancy Sensors	\$20
Daylight Sensors	\$40
LED Exit Signs (Early)	\$15
LED Downlight (Early)	\$15
LED Garage Light >150W HID (Early)	\$100
LED Garage Light < 150W HID (Early)	\$50
LED High Bay >400w HID small business	\$150
LED High Bay >250W, <400w HID small business	\$90
LED High Bay <250w HID small business	\$45
Smart Thermostat Gas Heat	\$100
Smart Thermostat Heat Pump	\$100
Smart Thermostat Electric Resistance	\$100
Anti-Sweat Refrigerated Case Doors	\$210

G. Commercial 500 Program

The Commercial 500 program is designed to help customers who manage, or own commercial facilities operate their buildings more efficiently by deepening their understanding of the technical and financial benefits of energy efficiency investments. The program also helps these customers plan energy efficiency improvements. The Commercial 500 program will offer simple rebates to reduce the incremental cost of eligible high efficiency equipment for all commercial customers with a General Service rate (typically demand less than 500 KW). Starting in 2020, to expand existing programs (and budgets) to residential and small commercial customers, the LGS rate custom projects incentives was suspended. See 2022 program notes for updates.

Commercial 500 Measures & Incentive Levels:

Incentives are capped at \$30,000 per premise, per program year.

Measure Name	Program Rebate
TLED (Type A) Lamp - large business	\$3
TLED (Type C) Lamps - large business	\$15
LED 2' X 4' Troffer Fixture - large business	\$25
LED 2' X 2' Troffer Fixture - Large business	\$10
LED Downlight (ROB)	\$10
LED Exit Signs (ROB)	\$7
LED High Bay >400w HID large business	\$100
LED High Bay >250W, <400w HID large business	\$60
LED High Bay <250w HID large business	\$30
LED Garage Light >150W HID (ROB)	\$75
LED Garage Light < 150W HID (ROB)	\$40
LED Screw-in A-LAMP (small business)	\$2
Parking Lot Lighting <100W HID	\$10
Parking Lot Lighting 250-101W HID	\$30
Parking Lot Lighting 750W-251W HID	\$50
Parking Lot Lighting >750W HID	\$100
Sports Lighting >1000W HID	\$250
LED Wall Pack <75W (ROB)	\$30
LED Wall Pack >75W (ROB)	\$50
Occupancy Sensors	\$10
Daylight Sensors	\$25
LED Cooler/Freezer Lighting (per foot)	\$5
Anti-Sweat Refrigerated Case Doors	\$100
EnergyStar Freezer	\$75
EnergyStar Refrigerator	\$75
High Efficiency Air Conditioner	\$75 per ton

High Efficiency Heat Pump	\$100 per ton
Ceiling Insulation R12 to R30 (EH business)	\$0.20 per sq. ft.
Ceiling Insulation R12 to R30 (HP business)	\$0.20 per sq. ft.
Ceiling Insulation R12 to R30 (GH business)	\$0.20 per sq. ft.
Commercial tune-up (1.5-2.5 ton)	\$50 per ton
Commercial tune-up (3-5 ton)	\$125 per ton
Commercial tune-up (6-10 ton)	\$225 per ton
Commercial tune-up (11-15 ton)	\$400 per ton
Commercial tune-up (16-25 ton)	\$600 per ton
VFD (10 HP)	\$500
Smart Thermostat Gas Heat	\$100
Smart Thermostat Heat Pump	\$100
Smart Thermostat Electric Resistance	\$100
Custom Projects	\$0.10 per kWh saved

H. New Homes Pilot Program

Residential New Homes Pilot –The program promotes the installation of energy-efficient measures in new home construction that exceed baseline construction standards and improve the energy performance of participating homes. The Residential New Homes program will focus on a whole-building approach for improving the energy efficiency of new single-family homes. The new offering will include tiered incentives. This program is launching Q4 2021.

I. Smart Thermostat Demand Response Pilot Program (Low Income)

MPC added a pilot program in 2021 that utilizes smart thermostats to test load management potential for income-qualified residential customers allowing MPC to heat and cool homes prior to the peak window. The purpose of the pilot is to assess energy efficiency, bill savings, and load management potential of connected smart thermostats as well as customer behavior during demand response events. The duration of the pilot will be one year with the option to continue as a pilot or develop into a full program for additional years.

Participants in this pilot are single-family homes in residential areas that qualify as low-income based on the federal poverty guidelines at 200%.

The program offers rebate checks as incentives to participants. Each participating household receives a rebate check for \$50 at the beginning of the program. Participants will also receive a \$100 rebate check after 12 months in the program if they meet the following criteria:

- Participants must not opt out of the program.
- Participants must not remove or interfere with the connectivity of the thermostat.

- Participants must reside in the same premise for the duration of the study.

At the conclusion of the program, the smart thermostat will become the exclusive property of the participant. In addition, 12 energy efficient LED bulbs are given to all participating households.

MPC utilizes Uplight Orchestrated Energy Demand Response Management System (DRMS) to administer and manage the program. Through this system, MPC will be able to monitor program performance and coordinate demand response events.

Once the participants' existing thermostats are replaced by smart thermostats, MPC:

- Creates events to shift the load away from peak as necessary for the study
- Monitors customer interaction with events
- Collects data used to determine energy efficiency capabilities of low-income households

Additionally:

- MPC provides participants 24-hour notice prior to an event day via email. During an event, the thermostat notifies participants if they are in the preconditioning or active event period.
- The events reduce or raise the temperature setting on the smart thermostat by up to 4 degrees prior to the peak demand time and cycle off for no longer than a 2-hour duration.
- Customers will have the capability to manually override the change in the thermostat.
- Customers will be surveyed at the end of the program to gather feedback and assess satisfaction.

As of September 30, 2021, 38 Smart Thermostats have been installed in income-qualified households as part of the pilot for a total energy savings of 33,062 kWh. 528 lightbulbs have been given out to participants of the DR program for a total energy savings of 36,886 kWh. Two demand response events have been executed which are currently being analyzed.

J. Strategic Load Growth

MPC proposed strategic load growth programs in the 2020 EDP filing that were implemented in August 2021. The strategic load growth programs as described in Rule 29 are designed to offer participant benefits that can include cost savings, improved comfort, production efficiencies and emission reductions. These programs also benefit all utility customers through the increased utilization of resources that spreads more energy usage over utility fixed costs thereby placing downward pressure on rates. Strategic load growth programs are evaluated for cost effectiveness using the RIM test in accordance with the California Standard Practice Manual.

Programs implemented in 2021 were:

- **Residential Electric Transportation Program:** Encourages residential customers to purchase a Battery Electric or Plug-in Hybrid Electric Passenger Vehicle through education, customer support, and incentives. Educates customers on the strategic benefits of upgrading to electric technology from internal combustion engines, including reduced fuel and maintenance costs and decreased emissions.
- **Commercial Electric Transportation Program:** Encourages commercial customers to upgrade fossil fuel-powered transportation equipment to electric-powered alternatives through education, customer support, and incentives. Incentives will be offered for both on-road and off-road vehicles like forklifts and lift trucks.
- **Commercial Strategic Electrification Program:** Offers a custom incentive path for installations of strategic electrification equipment such as Waste Heat Recovery, Electric Infrared Heating, Electric/Electrode Boilers and Variable Refrigerant Flow (VRF) with heat recovery. The objective is to improve production efficiencies, enhance the customer's competitive position, or assist with emission reduction goals. Eligibility for incentives through this program will be based on customized analysis to determine the benefits and impacts of each project individually, to ensure cost effectiveness requirements are met for both the customer and Mississippi Power.

III. 2022 DSM Program Changes

MPC plans to continue the seven programs that were implemented during 2021 with adjustments to help meet our customers' needs to improve their homes and businesses' energy efficiency. These changes are resulting from customer/industry, advocate and regulator feedback and reflect the addition of programs designed to assist customers retrofit to more efficient outdoor lighting options, the reinclusion of incentivized measures for MPC's large general service (LGS) customers, expansion of our residential low income (SELECT) program to include multi-family. Also offering a program to promote higher efficiency thresholds in new residential construction.

Mississippi Power contracted with Brightline Group in 2021 to conduct a Market Potential Study considering Energy Efficiency, Demand Response, and Beneficial Electrification, to support the ongoing Integrated Resource Planning and DSM Program planning activities. The Energy Efficiency Potential Study considers a wide range of energy efficiency measures that Mississippi Power could implement and applies cost-effective measures to Mississippi Power's current and forecasted customer base. The study assesses opportunities across a 20-year time horizon (2022-2041). The study includes primary market research and a comprehensive review of current programs and projected energy savings opportunities, to develop estimates of technical, economic, and achievable potential. Outcomes from this study including measure-level cost effectiveness and measure savings potential are providing guidance in the development of Mississippi Power's 7-year program plans starting in 2022.

Table 5 briefly summarizes Mississippi Power's 2022 DSM program performance projections. A description of proposed changes for each program and results of the cost effectiveness tests follows.

Table 5: Summary of Portfolio Results

2022 DSM Programs

Program Name	Number of Participants	Annual kWh Savings	kW Savings	Total Program Budget
SELECT (Residential Low Income)	1,050	2,966,646	949	\$1,128,412
Behavioral (HERs)	80,000	9,197,500	2,821	\$406,653
Residential Energy Efficiency Program	850	1,873,834	677	\$458,677
School Kits and Education	6,693	1,010,199	298	\$239,766
Welcome Kits	7,000	1,467,060	343	\$232,013
New Homes	25	140,032	48	\$35,000
Home Revitalization Pilot				\$30,000
Demand Response Pilot				\$44,093
Small Business	122	3,077,174	547	\$636,953
Large Commercial & Industrial	45	4,305,009	1,068	\$507,261
Outdoor Lighting	15	2,142,857	321	\$150,000
Marketing & Advertising				\$20,000
EM&V & Planning				\$282,924
Cross-Cutting				\$320,596
Portfolio Total	95,800	26,180,311	7,072	\$4,492,348

MPC has developed a 2022-2028 trajectory for DSM investment and energy savings that is informed by the Company's Technical Potential Study as well as nearly 8 years of DSM program implementation experience.

Program Year	kWh	Budget*	% savings of retail sales**
2021	21,980,943	\$ 4,192,348	0.24%
2022	26,180,312	\$ 4,492,348	0.29%
2023	28,126,352	\$ 4,592,348	0.31%
2024	32,450,576	\$ 4,792,348	0.36%
2025	34,967,754	\$ 4,992,348	0.38%
2026	38,167,619	\$ 5,192,348	0.42%
2027	40,848,268	\$ 5,392,348	0.45%
2028	43,563,760	\$ 5,592,348	0.5%

*Budget numbers beyond 2022 are for modeling purposes only. **Based on reported retail sales for 2020

Residential Programs

A. SELECT (Residential Low Income)

MPC plans to continue this program in 2022. The program will expand by targeting low-income, multi-family units with the addition of air and duct sealing as well as HVAC Tune-ups.

MPC will continue the contractor-led approach to maximize outreach and by expanding the measures offered and customer type participation (multi-family).

B. Behavioral Analysis Program

MPC plans to continue this Home Energy Report program in 2022. There will be 25,000 additional households targeted in 2022 - 2024 for a total of 80,000. An additional component for 2022, will be High Bill Alerts (HBA) emailed to participants.

C. Residential Energy Efficiency Program (REEP)

MPC plans to continue this program in 2022 with enhancements that will facilitate increased contractor participation.

D. School Kits and Education

MPC plans to expand this program in 2022 by increasing the total eligible schools by fifty-two. We will continue to provide the option to use the virtual studio created in the fall of 2020 to make energy efficiency presentations to schools from our office to keep students and MPC employees safe and to comply with schools who have "no visitor" policies. The studio allows MPC to make presentations to multiple schools per day, eliminates travel time to schools and eliminates transporting program equipment to schools. In person presentations will be offered to schools without "no visitor" policies who request them and can provide a safe environment in which to make presentations. Kits will be delivered to schools prior to presentations and students will receive them the day of their school's presentation.

E. Welcome Kits

MPC plans to continue this program in 2022. The number of program participants will increase to 7,000, based on historical trends. This kit is sent to all new single-family connects and contains led bulbs, MPC energy efficiency and energy saving tips for new customers.

F. Home Revitalization Pilot

This program assists promotes retrofit residential efficiency standards by providing upgrades to historic Laurel residences featured in the HGTV Home Town series.

G. New Home Program

This addition provides tiered incentives for increasing levels of energy efficiency measures incorporated into new homes built in MPC's service territory.

H. Demand Response Pilot

Due to setbacks with participant recruitment and thermostat installation caused by the COVID pandemic and Hurricane Ida, MPC will continue the pilot for an additional Summer and Winter season and increase the maximum participant count to 200. This will provide a larger sample size of participants and events for more abundant, accurate, and reliable data. We will offer the same incentives that were offered in 2021 and continue to focus on the low-to-moderate income community. The anticipated expenses for the continuation and expansion of the pilot are outlined below:

	2021	2022
Thermostat Installation	\$ 5,250	\$ 18,300
Thermostats	\$ 12,305	
Incentive Gift Cards	\$ 3,800	\$ 13,700
Gift Card Setup	\$ 1,500	
Uplight Pilot Expansion	\$ 65,000	
Total	\$ 87,855	\$ 32,000

Non-Residential Programs

I. Small Business Program (formerly Commercial 100)

MPC will continue the Commercial 100 Program in 2022, renamed Small Business. This program will be more accessible for contractors to participate given improvements in the qualification and application of incentives for measures using an online contractor. Contractor engagement and marketing efforts will be key to delivery of the Small Business Program. Incentive changes include expanding lighting solutions to ensure a comprehensive list of existing and emerging technologies.

Category	Measure Name	Program Rebate
Lighting	LED Screw-in PAR Lamp	\$3
	LED Screw-in	\$4
	TLED 2' U-lamp (Type A)	\$4.50
	TLED 2' U-lamp (Type C)	\$20
	TLED (Type A or Type B) Lamp	\$4.50
	TLED (Type C) Lamp	\$20
	8' TLED (Type C) Lamp	\$30
	LED 1' X 4' Troffer Fixture	\$40
	LED 2' X 2' Troffer Fixture	\$40
	LED 2' X 4' Troffer Fixture	\$40
	LED Downlight	\$15
	LED Exit Signs	\$15
	LED High Bay <250w HID	\$45
	LED High Bay >250W, <400w HID	\$90
	LED High Bay >400w HID	\$150
	LED Wall Pack ≥75W	\$75
	LED Wall Pack <75W	\$100
	LED Garage Light < 150W HID	\$50
	LED Garage Light >150W HID	\$100
Lighting Controls	Occupancy Sensors	\$20
	Daylight Sensors	\$40
HVAC	Smart Thermostat	\$100
Refrigeration	Anti-Sweat Refrigerated Case Doors	\$210

J. Large Commercial and Industrial Business Program (formerly Commercial 500)

MPC plans to continue the Commercial 500 Program in 2022 renamed Large Commercial and Industrial Business, indicating the addition of MPC's Large General Service (LGS) customers. MPC conducted a survey of these customers to determine interest in our offerings. This change will ensure customers are aware that all Commercial class customers are able to take advantage of the program offerings. Incentive changes include expanding lighting solutions to ensure a comprehensive list of existing and emerging technologies.

Incentives are capped at \$30,000 per premise, per program year. For outdoor lighting, pole-mounted lighting, the maximum rebate is \$10,000 per premise, per year up to 50% of total project cost.

Category	Measure Name	Program Rebate
Lighting	LED Screw-in A-LAMP	\$2
	TLED (Type A or Type B) Lamp	\$3
	TLED (Type C) Lamps	\$15
	8' TLED (Type C) Lamps	\$15
	LED 2' X 4' Troffer Fixture	\$25
	LED 2' X 2' Troffer Fixture	\$10
	LED Downlight (ROB)	\$10
	LED Exit Signs (ROB)	\$7
	LED High Bay ≤250w HID	\$30
	LED High Bay >250W, ≤400w HID	\$60
	LED High Bay >400w HID	\$100
	LED Cooler/Freezer Lighting	\$50
Lighting Controls	Occupancy Sensors	\$10
	Daylight Sensors	\$25
Refrigeration	Anti-Sweat Refrigerated Case Doors	\$100
	EnergyStar Freezer	\$75
	EnergyStar Refrigerator	\$75
HVAC	High Efficiency Air Conditioner	\$75 per ton
	High Efficiency Heat Pump	\$100 per ton
	EnergyStar Smart Thermostat	\$100
	Commercial tune-up (up to 25 tons)	\$40 per ton
	VFD (10 HP)	\$500
Other	Ceiling Insulation	\$0.20 per sq. ft.
	Custom Projects	\$0.10 per kWh saved

K. Outdoor Lighting Program

Energy saving outdoor lights offer numerous advantages for businesses. Because of this, MPC is expanding its offerings to include outdoor lighting during the 2022 program year.

Incentives for pole-mounted, outdoor lighting, the maximum rebate is \$10,000 per premise, per year up to 50% of the total project cost.

Category	Measure Name	Program Rebate
Outdoor Lighting	LED Wall Pack ≤75W (ROB)	\$30
	LED Wall Pack >75W (ROB)	\$50
	LED Garage Light < 150W HID (ROB)	\$40
	LED Garage Light >150W HID (ROB)	\$75
	Pole-Mounted Fixture ≤100W HID	\$30
	Pole-Mounted Fixture 250-101W HID	\$50
	Pole-Mounted Fixture 750W-251W HID	\$55
	Pole-Mounted Fixture >750W HID	\$75

IV. 2022 DSM Program Cost Effectiveness

This table contains estimates of program cost effectiveness in accordance with the California Standard Practice Manual. Table 6 summarizes the results of the cost effectiveness assessment for the Mississippi Power portfolio of programs for 2022.

Table 6: Summary of 2022 Portfolio Cost Effectiveness Results

Program	TRC Test	UCT Test	RIM Test	PCT Test
SELECT	1.66	1.62	0.39	4.71
Behavioral	0.98	0.98	0.29	0.00
REEP	1.78	2.67	0.49	4.44
EE School Kits	0.88	0.88	0.28	6.03
Welcome Kits	1.8	1.36	0.32	7.46
New Homes	0.58	0.94	0.32	2.14
Small Business	1.5	1.87	0.49	1.98
Large Comm & Ind (includes ODL)	1.77	4.05	0.53	2.07
Totals	1.35	1.79	0.43	3.27

V. DSM Program Under Consideration

MPC's Energy Efficiency team continues to observe industry and customer trends and evaluate new programs and measures that increase efficiency in customers' daily living and operations. Listings below are merely considerations and final disposition has not been determined.

Note that consideration for these programs would include adherence and integration to budget and cost effectiveness requirements.

- On-Bill Payment Option: MPC continues to evaluate a program that would introduce an On-Bill Payment Option that could help alleviate the significant barrier of upfront cost for low income customer program participation. Although final disposition has not been determined, MPC is closely evaluating legal requirements, customer burdens and anticipated participation rates. Should the program be implemented it would include adherence and integration to budget and cost effectiveness requirements. While this program would be available for all customers, the specific terms of the offer may be accelerated for income-qualified customers. The following will be included in the residential offering: HVAC replacements (upgraded SEER) and insulation (not otherwise provided through the existing SELECT program). For small commercial customers the offering would be for LED lighting retrofits, HVAC and insulation. The goal is to find a means to utilize existing incentives to provide competitive terms and reducing barriers for customers to obtain efficiency measures.

VI. 2022 Strategic Load Growth Programs

A. Residential Electric Transportation Program

This program will encourage residential customers to purchase a Battery Electric or Plug-in Hybrid Electric Passenger Vehicle and educate customers on the strategic benefits of upgrading to electric technology from internal combustion engines, including reduced fuel and maintenance costs and decreased emissions.

Battery Electric Vehicle	\$1,250
Plug-In Hybrid Electric Vehicle	\$750
Level 2 Electric Vehicle Charger	\$250

B. Commercial Electric Transportation Program

This program will encourage commercial customers to upgrade fossil fuel-powered transportation equipment to electric-powered alternatives through education, customer support, and incentives. Incentives will be offered for both on-road and off-road vehicles like forklifts and lift trucks.

	Customer	Dealer
Class 1 Industrial Lift Truck – New	\$1,000	\$ 250
Class 1 Industrial Lift Truck – Existing	\$1,000	\$ 250
Class 2 Narrow Aisle Reach Truck – New	\$1,000	\$ 250
Class 2 Narrow Aisle Reach Truck – Existing	\$1,000	\$ 250
Class 3 Hand Driven & Pallet Jacks	\$ 250	\$ 250
Level 2 Electric Vehicle Charger	\$ 0	\$2,000
Truck Electric Parking	\$ 0	\$2,000
Truck Electric Transportation Refrigeration Unit	\$ 0	\$2,000

C. Commercial Strategic Electrification Program

This program will offer a custom incentive path for installations of strategic electrification equipment such as waste heat recovery, electric infrared heating, electric/electrode boilers and variable refrigerant flow (VRF) with heat recovery. The objective is to improve production efficiencies, enhance the customer's competitive position, or assist with emission reduction goals. Eligibility for incentives through this program will be based on customized analysis to determine the benefits and impacts of each project individually, to ensure cost effectiveness requirements are met for both the customer and Mississippi Power.

VII. 2022 Strategic Load Growth Programs Cost Effectiveness

Table 7: Summary of 2022 Strategic Load Growth Cost Effectiveness Results

Program	RIM Test
Residential Electric Transportation	1.02
Commercial Electric Transportation	6.44
Commercial Strategic Electrification	Case by Case



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March 30, 2021

VIA E-MAIL

Katherine Collier, Executive Secretary
Mississippi Public Service Commission
501 North West Street, Suite 201A
Jackson, MS 39201

**Re: Notice of Intent of Mississippi Power Company to Establish the Renewable Net
Energy Metering Rate
Docket No. 2016-UN-33**

Dear Katherine:

On behalf of Mississippi Power Company, I have enclosed the Company's Net Metering Report and Interconnection Report for the year ended 2020.

Very truly yours,

MISSISSIPPI POWER COMPANY

A handwritten signature in black ink, appearing to read "SS" or "Shawn Shurden".

SHAWN SHURDEN

SSS:alm

Enclosures

cc: Ms. Sally Doty, Esq.
Tad Campbell
Kyle Brown

2020 MRENMR AND MDGIR REPORT

I. Introduction

The Mississippi Public Service Commission (“Commission”) opened its net metering docket in 2011 for the purpose of investigating the development and implementation of net metering and interconnection standards. Mississippi Power Company (“MPC” or the “Company”) submitted written comments to the Commission on numerous occasions and also participated in and provided comments at the Commission’s October 6, 2015, public hearing. Following years of discussion, public comment, and study, the Commission finalized its Mississippi Renewable Energy Net Metering Rule (“MRENMR”) and Mississippi Distributed Generator Interconnection Rule (“MDGIR”). This report is intended to satisfy the reporting requirements established by the MRENMR and MDGIR.

Prior to approval of MPC’s Renewable Energy Net Metering (“RENMR”) rate on September 8, 2016, the Company’s customers sold their excess renewable energy production to MPC exclusively through the Company’s Cogeneration and Small Power Production Purchases (“CSPP”) rate. Some customers owning renewable generation still choose to participate in the CSPP rate.

Based on the foregoing, information related to both CSPP and RENMR customers, as well as non-participating (i.e., non-exporting or offsetting only) renewable customers, will be provided below, in order to provide a more complete picture of MPC’s renewable customers in 2020.

II. MRENMR Required Reporting

Consistent with the requirements of Chapter 5 of the MRENMR, MPC submits its 2020 MRENMR Report consisting of the following information for calendar year 2020:

- 1. Total energy expressed in kilowatt hours supplied to the EU's grid by RENMICs and a description of any estimation methodology used.*

<u>CSPP rate:</u>	16,787 kWh
<u>RENMR rate:</u>	816,085 kWh

- 2. Total number of RENMICs that were paid for excess energy exported to the EU at the end of any Billing Periods during the prior calendar year.*

<u>CSPP rate:</u>	3
<u>RENMR rate:</u>	177

- 3. The total dollar amount by month that the EU paid to RENMICs for excess energy exported to the EU during the prior calendar year.*

Month	CSPP Rate:	RENM Rate:
January	(\$24.63)	(\$2,242.58)
February	(\$37.77)	(\$2,805.63)
March	(\$32.68)	(\$4,132.08)
April	(\$35.31)	(\$4,850.03)
May	(\$35.92)	(\$5,775.97)
June	(\$21.07)	(\$4,169.15)
July	(\$22.14)	(\$3,548.05)
August	(\$19.51)	(\$3,056.97)
September	(\$19.87)	(\$2,933.00)
October	(\$67.30)	(\$3,604.84)
November	(\$93.67)	(\$4,411.99)
December	(\$79.70)	(\$3,353.84)
TOTALS:	(\$489.57)	(\$44,884.13)

4. *The total number of net metering DGFs by resource type that were interconnected at the end of the prior calendar year.*

Quantity of Solar/Photovoltaic CSPP DGFs: 4

Quantity of Solar/Photovoltaic RENM DGFs: 189

Quantity of ALL behind-the-meter renewable DGFs: 228 ¹

5. *The total nameplate direct current generating capacity of net metering DGFs installed during the prior calendar year broken out by resource type.*

Capacity of Solar/Photovoltaic CSPP DGFs: 0 kWdc

Capacity of Solar/Photovoltaic RENM DGFs: 424.18 kWdc

Capacity of ALL behind-the-meter renewable DGFs: 2,662.44 kWdc ¹

6. *The percentage of the EU's total system peak demand from the prior calendar year represented by the total rated nameplate direct current generating capacity of net metering DGFs.*

A) 2020 12-month Retail Level 1 CP Demand: 1,517,650 kW ²

B) Capacity of Solar/Photovoltaic RENM DGFs: 2,267.81 kWdc

¹ These are all known existing behind-the-meter renewable DGFs whether on CSPP, RENM, or neither. This includes one existing wind turbine with 2.4kWac capacity, installed prior to 2016.

² At this time, 2019 12-month Retail Level 1 CP Demand is the most recent available data.

Ratio B/A: 0.1494 %

C) Total Capacity of CSPP and RENM Solar/Photovoltaic DGFs: 2,347.24 kWdc

Ratio C/A: 0.1547 %

For reference and comparison, the total cumulative capacity of non-exporting / offsetting only DGFs is 4,098.6 kWdc. This figure is not included in the above calculations regarding net metering.

III. MDGIR Required Reporting

Consistent with the requirements of Chapter 5 of the MRENMR, MPC submits its 2020 MDGIR Report consisting of the following information for calendar year 2020:

1. *The total number of and the Nameplate Capacity of the Interconnection Requests received, approved and denied under Level 1, Level 2, and Level 3 reviews.*

Level	Quantity	Capacity (kWdc)	Status
1	26	199.32	Approved
2	8	2,459.10	Approved
3	0	0	n/a

2. *The number of Interconnection Requests that were not processed within the timelines established in this rule.*

MPC is not aware of any instances where requests were not processed within the established timelines.

3. *The number of Scoping Meetings held and the number of feasibility studies, impact studies, and facility studies performed and the fees charged for these studies.*

No Scoping Meetings or defined studies were required in the processing of 2020 Interconnection Requests.

4. *The justifications for the actions taken to deny Interconnection Requests.*

No Interconnection Requests were denied in 2020.



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June 29, 2021

VIA E-MAIL

Katherine Collier, Executive Secretary
Mississippi Public Service Commission
501 North West Street, Suite 201A
Jackson, MS 39201

**Re: Mississippi Power Company's Estimated Avoided Cost Filing for 2021
2007-UN-395**

Dear Katherine:

On behalf of Mississippi Power Company, we submit the Company's Estimated Avoided Cost Filing for 2021. This filing is being made pursuant to 18 C.F.R. § 292.302, which requires that MPC make available for public inspection with the Mississippi Public Service Commission not less often than every two years data from which avoided costs may be derived. As contemplated by the Commission's Rule 29, MPC will begin updating its avoided cost annually.

Very truly yours,

MISSISSIPPI POWER COMPANY

A handwritten signature in black ink, appearing to read "S. Shurden", written over a horizontal line.

SHAWN SHURDEN

cc: Ross Hammons, Esq.
Tad Campbell, Esq.
Ms. Sally Doty, Esq.

Mississippi Power Company 2021 PURPA Filing					
Estimated Avoided Costs (Cents/kWh)					
Year	MW Blocks	Period 1 Peak Season Peak Hours	Period 2 Peak Season Off-Peak Hours	Period 3 Off-Peak Season Peak Hours	Period 4 Off-Peak Season Off-Peak Hours
2021	001 - 100	3.24	2.48	2.60	2.37
	101 - 200	3.23	2.47	2.59	2.36
	201 - 300	3.23	2.46	2.58	2.34
	301 - 400	3.22	2.46	2.57	2.33
	401 - 500	3.21	2.45	2.56	2.32
	501 - 600	3.20	2.44	2.54	2.31
	601 - 700	3.18	2.43	2.50	2.31
	701 - 800	3.17	2.43	2.47	2.31
	801 - 900	3.15	2.42	2.44	2.32
	901 - 1000	3.13	2.42	2.40	2.32
2022	001 - 100	3.07	2.40	2.44	2.25
	101 - 200	3.07	2.39	2.42	2.24
	201 - 300	3.06	2.37	2.41	2.23
	301 - 400	3.05	2.36	2.39	2.21
	401 - 500	3.05	2.35	2.38	2.20
	501 - 600	3.04	2.34	2.35	2.19
	601 - 700	3.03	2.33	2.33	2.18
	701 - 800	3.02	2.32	2.30	2.17
	801 - 900	3.01	2.31	2.28	2.16
	901 - 1000	3.00	2.31	2.25	2.15
Pricing Period Definitions					
Period 1	June through September				
Peak Season	Monday through Friday, hours ending 11:00 AM to 9:00 PM except holidays				
Peak Hours					
Period 2	June through September				
Peak Season	Monday through Friday, hours ending 1:00 AM to 10:00 AM & hours ending 10:00 PM to 12:00 AM				
Off-Peak Hours	Saturdays, Sundays, & holidays all hours				
Period 3	January through May & October through December				
Off-Peak Season	Monday through Friday, hours ending 8:00 AM to 9:00 PM except holidays				
Peak Hours					
Period 4	January through May & October through December				
Off-Peak Season	Monday through Friday, hours ending 1:00 AM to 7:00 AM & hours ending 10:00 PM to 12:00 AM				
Off-Peak Hours	Saturdays, Sundays, & holidays all hours				
Notes:					
1. Holidays are New Year's Day, Independence Day, Labor Day, Thanksgiving Day, & Christmas Day. If the holiday falls on Sunday, the following Monday shall be treated as the holiday.					
2. These costs are based on the dispatch of system units at marginal spot fuel rates. Each 100-MW block decrements from territorial load. Any variable O&M and CAA compliance costs are included. Transmission costs are not included, and therefore this data represents the cost at the generator buses.					

Mississippi Power Company 2021 PURPA Filing					
Estimated Avoided Costs (Cents/kWh)					
Year	MW Blocks	Period 1	Period 2	Period 3	Period 4
		Peak Season Peak Hours	Peak Season Off-Peak Hours	Off-Peak Season Peak Hours	Off-Peak Season Off-Peak Hours
2023	001 - 100	3.40	2.59	2.52	2.36
	101 - 200	3.39	2.58	2.50	2.34
	201 - 300	3.39	2.57	2.49	2.33
	301 - 400	3.38	2.55	2.47	2.32
	401 - 500	3.37	2.54	2.46	2.30
	501 - 600	3.36	2.53	2.44	2.29
	601 - 700	3.34	2.53	2.41	2.28
	701 - 800	3.33	2.52	2.38	2.27
	801 - 900	3.32	2.51	2.36	2.26
	901 - 1000	3.30	2.51	2.33	2.25
2024	001 - 100	3.57	2.69	2.40	2.31
	101 - 200	3.56	2.68	2.39	2.29
	201 - 300	3.55	2.67	2.37	2.28
	301 - 400	3.54	2.66	2.35	2.26
	401 - 500	3.53	2.64	2.34	2.25
	501 - 600	3.50	2.63	2.32	2.24
	601 - 700	3.47	2.62	2.30	2.24
	701 - 800	3.44	2.61	2.28	2.23
	801 - 900	3.40	2.61	2.26	2.22
	901 - 1000	3.37	2.60	2.24	2.22
Pricing Period Definitions					
Period 1	June through September				
Peak Season	Monday through Friday, hours ending 11:00 AM to 9:00 PM except holidays				
Peak Hours					
Period 2	June through September				
Peak Season	Monday through Friday, hours ending 1:00 AM to 10:00 AM & hours ending 10:00 PM to 12:00 AM				
Off-Peak Hours	Saturdays, Sundays, & holidays all hours				
Period 3	January through May & October through December				
Off-Peak Season	Monday through Friday, hours ending 8:00 AM to 9:00 PM except holidays				
Peak Hours					
Period 4	January through May & October through December				
Off-Peak Season	Monday through Friday, hours ending 1:00 AM to 7:00 AM & hours ending 10:00 PM to 12:00 AM				
Off-Peak Hours	Saturdays, Sundays, & holidays all hours				
Notes:					
1. Holidays are New Year's Day, Independence Day, Labor Day, Thanksgiving Day, & Christmas Day. If the holiday falls on Sunday, the following Monday shall be treated as the holiday.					
2. These costs are based on the dispatch of system units at marginal spot fuel rates. Each 100-MW block decrements from territorial load. Any variable O&M and CAA compliance costs are included. Transmission costs are not included, and therefore this data represents the cost at the generator buses.					

Mississippi Power Company 2021 PURPA Filing					
Estimated Avoided Costs (Cents/kWh)					
Year	MW Blocks	Period 1 Peak Season Peak Hours	Period 2 Peak Season Off-Peak Hours	Period 3 Off-Peak Season Peak Hours	Period 4 Off-Peak Season Off-Peak Hours
2025	001 - 100	3.69	2.76	2.49	2.40
	101 - 200	3.68	2.74	2.48	2.39
	201 - 300	3.67	2.73	2.46	2.38
	301 - 400	3.66	2.72	2.44	2.36
	401 - 500	3.65	2.70	2.43	2.35
	501 - 600	3.62	2.70	2.40	2.34
	601 - 700	3.58	2.71	2.38	2.34
	701 - 800	3.53	2.71	2.35	2.34
	801 - 900	3.48	2.72	2.32	2.34
	901 - 1000	3.44	2.73	2.30	2.33
2026	001 - 100	3.88	2.99	2.69	2.62
	101 - 200	3.87	2.97	2.68	2.61
	201 - 300	3.86	2.96	2.66	2.59
	301 - 400	3.84	2.94	2.65	2.58
	401 - 500	3.83	2.93	2.64	2.57
	501 - 600	3.81	2.92	2.62	2.56
	601 - 700	3.79	2.91	2.60	2.55
	701 - 800	3.76	2.90	2.58	2.54
	801 - 900	3.74	2.90	2.56	2.53
	901 - 1000	3.72	2.89	2.54	2.52
Pricing Period Definitions					
Period 1	June through September				
Peak Season	Monday through Friday, hours ending 11:00 AM to 9:00 PM except holidays				
Peak Hours					
Period 2	June through September				
Peak Season	Monday through Friday, hours ending 1:00 AM to 10:00 AM & hours ending 10:00 PM to 12:00 AM				
Off-Peak Hours	Saturdays, Sundays, & holidays all hours				
Period 3	January through May & October through December				
Off-Peak Season	Monday through Friday, hours ending 8:00 AM to 9:00 PM except holidays				
Peak Hours					
Period 4	January through May & October through December				
Off-Peak Season	Monday through Friday, hours ending 1:00 AM to 7:00 AM & hours ending 10:00 PM to 12:00 AM				
Off-Peak Hours	Saturdays, Sundays, & holidays all hours				
Notes:					
1. Holidays are New Year's Day, Independence Day, Labor Day, Thanksgiving Day, & Christmas Day. If the holiday falls on Sunday, the following Monday shall be treated as the holiday.					
2. These costs are based on the dispatch of system units at marginal spot fuel rates. Each 100-MW block decrements from territorial load. Any variable O&M and CAA compliance costs are included. Transmission costs are not included, and therefore this data represents the cost at the generator buses.					

Mississippi Power Company 2021 PURPA Filing

Projected Capacity Additions 2022 - 2031

<u>Year</u>	<u>Amount</u>	<u>Type</u>	<u>Estimated Capacity Cost (\$/kW)</u>	<u>Estimated Energy Cost (cents/kWh)</u>
2022	0			
2023	0			
2024	0			
2025	0			
2026	0			
2027	0			
2028	0			
2029	0			
2030	0			
2031	0			

Projected Capacity Retirements 2022 - 2031

<u>Year</u>	<u>Amount (MW) *</u>
2022	0
2023	250
2024	0
2025	100
2026	100
2027	500
2028	0
2029	0
2030	0
2031	0

Note:

* Nameplate rating

2022-2026 MPC Major Power Delivery Capital Project List

Project/Investment Category	General Business	New Business	Grid Investment Category	Grid Investment Sub-Category	EWO
EWO	EWO	EWO	EWO	EWO	402,077
					2025
Other	Other	Other	Other	Other	2025
					2025
AMI	AMI	AMI	AMI	AMI	2025
					2025
Tactical and Innovative Planning	Tactical and Innovative Planning	Tactical and Innovative Planning	Tactical and Innovative Planning	Tactical and Innovative Planning	2025
					2025
Distribution	Distribution	Distribution	Distribution	Distribution	2025
					2025
System Voltage Conversions	System Voltage Conversions	System Voltage Conversions	System Voltage Conversions	System Voltage Conversions	2025
					2025
Transmission	Transmission	Transmission	Transmission	Transmission	2025
					2025

2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011	1010	1009	1008	1007	1006	1005	1004	1003	1002	1001	1000	999	998	997	996	995	994	993	992	991	990	989	988	987	986	985	984	983	982	981	980	979	978	977	976	975	974	973	972	971	970	969	968	967	966	965	964	963	962	961	960	959	958	957	956	955	954	953	952	951	950	949	948	947	946	945	944	943	942	941	940	939	938	937	936	935	934	933	932	931	930	929	928	927	926	925	924	923	922	921	920	919	918	917	916	915	914	913	912	911	910	909	908	907	906	905	904	903	902	901	900	899	898	897	896	895	894	893	892	891	890	889	888	887	886	885	884	883	882	881	880	879	878	877	876	875	874	873	872	871	870	869	868	867	866	865	864	863	862	861	860	859	858	857	856	855	854	853	852	851	850	849	848	847	846	845	844	843	842	841	840	839	838	837	836	835	834	833	832	831	830	829	828	827	826	825	824	823	822	821	820	819	818	817	816	815	814	813	812	811	810	809	808	807	806	805	804	803	802	801	800	799	798	797	796	795	794	793	792	791	790	789	788	787	786	785	784	783	782	781	780	779	778	777	776	775	774	773	772	771	770	769	768	767	766	765	764	763	762	761	760	759	758	757	756	755	754	753	752	751	750	749	748	747	746	745	744	743	742	741	740	739	738	737	736	735	734	733	732	731	730	729	728	727	726	725	724	723	722	721	720	719	718	717	716	715	714	713	712	711	710	709	708	707	706	705	704	703	702	701	700	699	698	697	696	695	694	693	692	691	690	689	688	687	686	685	684	683	682	681	680	679	678	677	676	675	674	673	672	671	670	669	668	667	666	665	664	663	662	661	660	659	658	657	656	655	654	653	652	651	650	649	648	647	646	645	644	643	642	641	640	639	638	637	636	635	634	633	632	631	630	629	628	627	626	625	624	623	622	621	620	619	618	617	616	615	614	613	612	611	610	609	608	607	606	6
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Grid Investment Category	Grid Investment Sub-Category	FWO	FWO Description	2021	2022	2023	2024	2025	2026	Projected In-Service Date
		TS2064	PASCAGOULA CASOTTE SUBSTATION REPLACE SHA EQUIPMENT	141,391	0	0	0	0	0	2022
		TS2066	HATTIESBURG SW SUBSTATION - REPLACE 230/115KV AUTO TRANSFORMER	0	0	3,846,770	49,566	0	0	2025
		TS2067	DIBERVILLE NW SUBSTATION - REPLACE 230/115KV AUTO TRANSFORMER	0	0	0	4,140,075	0	0	2025
		TS2068	KILN TS - REPLACE 230/115KV AUTO TRANSFORMER	0	0	0	0	4,590,912	0	2026
	Reliability Improvement Projects	B27064	DS ANIMAL MITIGATION	0	683,243	713,470	703,146	705,458	0	Recurring
		C22704	MATHESON TRI-GAS INSTALL SCADA	0	27,330	0	0	0	0	2023
		TS1801	DISTRIBUTION SUBSTATION SPARE EQUIPMENT NEW RELAY TRAILER #1	555,565	545,595	0	0	0	0	2023
	Security	B22703	SUBSTATION PHYSICAL SECURITY UPGRADES	500,561	510,573	508,759	521,749	559,697	0	Recurring
		B28203	TRANS SUB - INSTALL BADGE READERS	1,252,402	1,276,680	0	0	0	0	2023
		B28208	DIST SUB - INSTALL BADGE READERS	1,413,911	2,732,973	0	0	0	0	2023
		C26544	PUBLIC-PRIVATE TECHNOLOGY SECURITY PROJECT	92,304	92,436	66,455	10,219	3,400	0	Recurring
		C26547	PUBLIC-PRIVATE CYBER TECHNOLOGY PARTNERSHIP PROJECT - SERVER HARDWARE	62,577	62,393	14,846	6,897	2,297	0	Recurring
		C26732	INSIDE/THREAT DATA CORRELATION PROJECT	27,411	27,595	27,879	816	818	0	Recurring
		C26756	DETECTION & MONITORING 2.0 OPS CENTER-CYBER SECURITY	351,137	157,158	293,801	244,326	432,365	0	Recurring
		C26757	DETECTION & MONITORING 2.0 HUBS HUB-CYBER SECURITY	340,016	186,025	282,695	233,201	421,279	0	Recurring
		C26758	DETECTION & MONITORING 2.0 MERIDIAN HUB-CYBER SECURITY	340,016	186,025	282,695	233,201	421,279	0	Recurring
		C26759	DETECTION & MONITORING 2.0 DISTRIBUTION-CYBER SECURITY	340,016	186,025	282,695	233,201	421,279	0	Recurring
		C27259	COLLABORATIVE DEFENCE (IRONNET PHASE 2)	254,981	139,498	211,998	174,879	315,921	0	Recurring
		TS1597	BEAUMONT TS - INSTALL IT FIREWALL	1,230,716	8,456	8,518	8,586	8,679	0	2022
		TS1613	HATTIESBURG FAIRM SOLAR 115KV SS - INSTALL IT FIREWALL	11,272	0	0	0	0	0	2022
		TS1626	SUMRALL SOLAR 115KV SS - INSTALL IT FIREWALL	11,272	0	0	0	0	0	2022
		TS1678	ELLISVILLE HWY 11 DS - INSTALL IT FIREWALL	12,725	0	0	0	0	0	2022
		TS1684	HATTIESBURG COUNTY DRIVE DS - INSTALL IT FIREWALL	12,725	0	0	0	0	0	2022
		TS1686	HATTIESBURG HWY 11 115-12KV DS - INSTALL IT FIREWALL	12,725	0	0	0	0	0	2022
		TS1686	HATTIESBURG INDUSTRIAL DS - INSTALL IT FIREWALL	12,725	0	0	0	0	0	2022
		TS1688	LAUREL JACKSON STREET DS - INSTALL IT FIREWALL	12,725	0	0	0	0	0	2022
		TS1691	LEAKESVILLE DS - INSTALL IT FIREWALL	12,725	0	0	0	0	0	2022
		TS1695	MERIDIAN HAWKINS CROSSING RD DS - INSTALL IT FIREWALL	12,725	0	0	0	0	0	2022
		TS1802	LUMBERTON - INSTALL IMPENETRABLE FENCE	588,629	0	0	0	0	0	2022
		TS1875	DESOTO 48KV FIREWALL	11,272	0	0	0	0	0	2022
		TS1876	SINGING RIVER MALL SS FIREWALL	11,272	0	0	0	0	0	2022
		TS1878	HAPIERVILLE DS FIREWALL	12,725	0	0	0	0	0	2022
		TS1880	HATTIESBURG USM FIREWALL	12,725	0	0	0	0	0	2022
		TS1881	MERIDIAN A STREET FIREWALL	12,725	0	0	0	0	0	2022
		TS1882	HEIDELBERG DENBURY FIREWALL	12,725	0	0	0	0	0	2022
		TS1883	MERIDIAN DELCO-REMY FIREWALL	12,725	0	0	0	0	0	2022
		TS1885	SOSO DENBURY DS FIREWALL	25,450	0	0	0	0	0	2022
		TS1886	PLANT DANIEL 230/500 KV TS - INSTALL IT FIREWALL	16,281	0	0	0	0	0	2022
		TS1961	NASA SATURN DRIVE 115-13.8KV FIREWALL	0	12,298	0	0	0	0	2023
		TS1962	NEWTON HORE AVENUE FIREWALL	0	12,298	0	0	0	0	2023
		TS1963	PEVAL GEORGE STREET FIREWALL	0	12,298	0	0	0	0	2023
		TS1964	POPLARVILLE CPL FIREWALL	0	12,298	0	0	0	0	2023
		TS1965	PURVIS HWY 589 46-12KV FIREWALL	0	12,298	0	0	0	0	2023
		TS1966	QUITMAN NORTHWEST FIREWALL	0	11,499	0	0	0	0	2023
		TS1967	SAUNDER DS FIREWALL	0	11,298	0	0	0	0	2023
		TS1968	SHUBUTA DS FIREWALL	0	12,298	0	0	0	0	2023
		TS1969	TAYLORSVILLE DS FIREWALL	0	12,298	0	0	0	0	2023
		TS1970	UNION INDUSTRIAL AREA FIREWALL	0	12,298	0	0	0	0	2023
		TS1971	UNION INDUSTRIAL NORTH 46-12KV FIREWALL	0	12,298	0	0	0	0	2023
		TS1972	WALNUT GROVE FIREWALL	0	12,298	0	0	0	0	2023
		TS1973	YELLOW CREEK GATLIN RD FIREWALL	0	12,298	0	0	0	0	2023
		TS2017	CHEVRON COGEN PHYSICAL SECURITY UPGRADES	313,101	0	0	0	0	0	2022
		TS2027	CHEVRON PRCP PHYSICAL SECURITY UPGRADES	353,178	0	0	0	0	0	2022
	Spare Equipment	TS2038	TS SUBSTATION SPARE EQUIPMENT - PURCHASE (2) 230KV PT/CT COMBOS FOR SPARE STOCK	118,378	0	0	0	0	0	2022
		TS2049	DISTRIBUTION SUBSTATION SPARE EQUIPMENT - PURCHASE (1) 115-12KV 2B MYA TRANSFORMER FOR SPARE STOCK	869,556	0	0	0	0	0	2022
	Storm Hardening	B26647	TL STORM HARDENING 115 KV PROGRAM	0	0	0	0	3,498,104	0	2026
		TS1271	GPT FERNWOOD - BILLOXI STELLY 115KV TL STORM HARDENING	0	0	3,561,310	0	0	0	2024
		TS1276	LONG BEACH - PASS CHRISTIAN 115KV TL STORM HARDENING	1,227,354	0	0	0	0	0	2022
		TS1277	LONG BEACH - GPT 29TH AVE 115KV TL STORM HARDENING	0	0	3,879,285	0	0	0	2024
		TS1978	BILLOW PERCY ST SUBSTATION - REPLACE SWITCH HOUSE	0	1,598,790	0	0	0	0	2023
		TS1979	LONG BEACH COMMISSION RD SUBSTATION - REPLACE SWITCH HOUSE	0	1,691,711	0	0	0	0	2023
		TS1980	OCEAN SPRINGS VANCEVALE RD SUBSTATION - REPLACE SWITCH HOUSE	0	1,277,665	0	0	0	0	2023
		TS2014	MELBA - BASSFIELD 46KV TL REBUILD	0	0	0	6,085,328	0	0	2025
		TS2015	BASSFIELD - SUMRALL TL 66KV REBUILD	0	0	0	5,152,268	0	0	2025
		TS2024	GULFPORT TEXAS AVE - GULFPORT FERNWOOD 115KV TL STORM HARDENING	0	0	3,879,285	0	0	0	2024
		TS2025	BILLOXI STELLY - BILLOW RODENBURG 115KV TL STORM HARDENING	0	0	0	0	4,267,698	0	2026
		TS2026	GULFPORT 29TH AVE - GULFPORT TEXAS AVE 115KV TL STORM HARDENING	0	0	3,879,285	0	0	0	2024
		TS2030	PASC TELEPHONE RD - SINGING RIVER MALL 115KV TL STORM HARDENING	0	0	0	0	3,952,858	0	2026
		TS2032	BEAUMONT - BILLOW 46KV TL REBUILD	160,892	5,362,060	0	0	0	0	2023
	System Modifications for Sectionalizing Purposes	TS1542	PASCAGOULA TELEPHONE ROAD DS - H-1 RESOLUTION ADD 115 KV BREAKER	151,995	0	0	0	0	0	2022
		TS1773	GPT HWY 53 DS - ADD 115KV TRANSMISSION BUS TIE BREAKER	0	0	555,079	0	0	0	2024
		TS1787	GULFPORT HWY. 53 DS - REPLACE ALDOTT SWITCH #14635 WITH NEW BUS TIE BREAKER 23KV	0	0	87,043	0	0	0	2024
		TS1788	LAUREL INDUSTRIAL BLVD 115/12KV DS - REPLACE ALDOTT SWITCH #32215 WITH NEW BUS TIE BREAKER 12KV	86,249	0	0	0	0	0	2022