Mississippi Power Company
2021 IRP Technical Conference

February 25, 2021

MPC Participants:
David Schmidt – MPC Generation Services
Theron Furr – MPC Generation Services
Phillip Worland – MPC Generation Services
Lynda Johnson – MPC Marketing Services
Mike Pruitt – MPC Marketing Services
Shawn Shurden – MPC Regulatory Affairs
Randy Hubbert – SCS Resource Planning
Charles Rossmann – SCS Resource Planning
Marc Parker – SCS Generation Planning & Development

This information is preliminary, confidential and proprietary and subject to an NDA.
“The purpose of the technical conference is for the electric utility to provide an overview of the process, planning assumptions and inputs ultimately used to develop its Integrated Resource Plan, and to answer questions related thereto.”

This information is preliminary, confidential and proprietary and subject to an NDA.
Topics

• Executive Summary
• Existing Generating Fleet
• Planning Assumptions for Fossil Steam Units
• Coordinated Planning
• Reserve Margin
• Scenario Development
• Demand Side Management
• Expansion Plan

This information is preliminary, confidential and proprietary and subject to an NDA.
Executive Summary

• Using broad range of scenarios.
• Battery storage and utility-scale solar will be incorporated as generic resource options.
• Commission’s order regarding fossil steam retirements will be incorporated.
• Capacity need is not anticipated until 2031 or later.
• Current models indicate a wide range of assets from renewables to gas options across the scenarios.

This information is preliminary, confidential and proprietary and subject to an NDA.
### Generating Fleet

<table>
<thead>
<tr>
<th>Plant</th>
<th>Location</th>
<th>Fuel</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweatt</td>
<td>Meridian</td>
<td>Gas</td>
<td>32</td>
</tr>
<tr>
<td>Watson</td>
<td>Gulfport</td>
<td>Gas</td>
<td>817</td>
</tr>
<tr>
<td>Greene County(^1)</td>
<td>Alabama</td>
<td>Gas</td>
<td>206</td>
</tr>
<tr>
<td>Chevron Cogen</td>
<td>Pascagoula</td>
<td>Gas</td>
<td>135</td>
</tr>
<tr>
<td>Daniel(^2)</td>
<td>Moss Point</td>
<td>Coal &amp; Gas</td>
<td>1,583</td>
</tr>
<tr>
<td>Ratcliffe</td>
<td>Dekalb</td>
<td>Gas</td>
<td>693</td>
</tr>
<tr>
<td>CB Energy(^3)</td>
<td>Gulfport</td>
<td>Solar PPA</td>
<td>3.29</td>
</tr>
<tr>
<td>MS Solar 2(^3)</td>
<td>Sumrall</td>
<td>Solar PPA</td>
<td>52</td>
</tr>
<tr>
<td>Hattiesburg Farm(^3)</td>
<td>Hattiesburg</td>
<td>Solar PPA</td>
<td>50</td>
</tr>
<tr>
<td>SR Meridian III(^3)</td>
<td>Meridian</td>
<td>Solar PPA</td>
<td>52.5</td>
</tr>
</tbody>
</table>

\(^1\) Represents the Company’s 40% share of Greene County Unit No. 1 and Unit No. 2.

\(^2\) Includes the Company’s 50% share of Plant Daniel Unit No. 1 and Unit No. 2.

\(^3\) Represents AC nameplate capacity.

*Mississippi Power receives the solar energy and renewable energy credits generated by these facilities, which we can use to serve our customers or sell to third parties for the benefit of customers.

This information is preliminary, confidential and proprietary and subject to an NDA.
Generating Capacity and Energy Mix – 2020

Generating Capacity Mix

- Coal: 84%
- Gas: 14%
- Other: 2%

Energy Mix

- Coal: 92%
- Gas: 6%
- Other: 2%

This information is preliminary, confidential and proprietary and subject to an NDA.
Historical Capacity Factors

This information is preliminary, confidential and proprietary and subject to an NDA.
Planning Assumptions for Fossil Steam Units

• MPC’s IRP will incorporate a plan to retire 950 MW of fossil steam generating capacity by the end of 2027 per the Commission’s recent order.

• The final plan will be based on the results of asset valuations currently underway.
Planning for the Future
Integrated Resource Planning

This information is preliminary, confidential and proprietary and subject to an NDA.
Coordinated Planning

• Coordinated planning is a forward-looking process to provide adequate resources to meet anticipated customer load obligations.

• The individual retail operating companies utilize integrated resource planning (IRP) to ensure reliable and cost-effective supply for customers.

• The coordinated retail Operating Company IRPs are combined into an aggregate plan that reflects the benefits of load diversity, pooling and reserve sharing to economically meet the minimum system target reserve margins.

• Retail Operating Companies make their own plans and decisions informed by the efficiencies available from the aggregate plan.

This information is preliminary, confidential and proprietary and subject to an NDA.
Reserve Margin
Addressing uncertainty in weather, unit performance and market conditions

This information is preliminary, confidential and proprietary and subject to an NDA.

**MPSC Electronic Copy ** 2019-UA-231 Filed on 03/31/2021 **
Reserve Margin Study (RMS)

Performed every three years

Determines the Target Reserve Margin (TRM) for the Southern Company system, considering reliability and economics

Reserves are needed to account for uncertainty in:

- Weather
- Economic growth
- Unit performance
- Market purchase availability

This information is preliminary, confidential and proprietary and subject to an NDA.
Target Reserve Margin Considerations

In setting a Target Reserve Margin, Southern Company considers:

- **Cost Optimization**
  Optimizes costs to customers (production costs, incremental capital costs, customer outage costs), adjusted for risk

- **Minimum Reliability Threshold**
  Targets generation-related firm load curtailment of no more than 1 event every 10 years – called “1 in 10 LOLE” (Loss of Load Expectation)

This information is preliminary, confidential and proprietary and subject to an NDA.
Winter Reliability Risk Drivers

- Winter peak demand growth and volatility
  - Winter peak demand growth
  - Greater weather (thus load) volatility in winter vs. summer

- Less available generation at extremely cold temperatures
  - Unplanned outages at extremely cold temperatures
  - Solar generation is less during winter peaks
  - Operational Flow Orders limit natural gas to firm transportation and even hourly withdrawals more frequently on cold winter days
  - Market purchases limited on extremely cold days

This information is preliminary, confidential and proprietary and subject to an NDA.
Reserve Margin Study Example Results

<table>
<thead>
<tr>
<th></th>
<th>Summer</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>16.25%</td>
<td>26.00%</td>
</tr>
<tr>
<td>MPC</td>
<td>15.03%</td>
<td>25.25%</td>
</tr>
</tbody>
</table>

This information is preliminary, confidential and proprietary and subject to an NDA.
Scenario Planning
Addressing uncertainty in future fuel cost, CO$_2$ pressure, load growth and technology cost and performance

This information is preliminary, confidential and proprietary and subject to an NDA.
Outline

• Scenario Development Process
• 10 Scenarios of the Future
• Key Uncertainties – Fuel Price, Greenhouse Gas Pressure, Load Growth, Technology Cost
  ▪ 4 Views of Future Fuel Prices – Lower; Moderate; Higher; $50 CO₂
  ▪ 4 Views of Future Greenhouse Gas Pressure – $0; $20; $50; declining annual emissions limit
  ▪ 2 Views of Future Technology Cost and Performance – Current; Lower cost of zero-CO₂ tech
  ▪ 8 Views of Future Load Growth – Official forecast; 5 adjustments for gas price and CO₂ pressure, higher growth, lower growth

This information is preliminary, confidential and proprietary and subject to an NDA.
Scenario Development Process

This information is preliminary, confidential and proprietary and subject to an NDA.
## Scenarios

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Natural Gas Price Path</th>
<th>Greenhouse Gas Pressure</th>
<th>Technology Cost &amp; Performance</th>
<th>Load</th>
<th>Short Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Moderate</td>
<td>$0 fee</td>
<td>Tech Application Stds¹</td>
<td>Reference²</td>
<td>MG0</td>
</tr>
<tr>
<td>2</td>
<td>Moderate</td>
<td>$50 CO₂</td>
<td>Tech Application Stds</td>
<td>Reference + $50 delta</td>
<td>$50</td>
</tr>
<tr>
<td>3</td>
<td>Low</td>
<td>$0 fee</td>
<td>Tech Application Stds</td>
<td>Reference + LG0 delta</td>
<td>LG0</td>
</tr>
<tr>
<td>4</td>
<td>Low</td>
<td>$20+ fee</td>
<td>Tech Application Stds</td>
<td>Reference + LG20 delta</td>
<td>LG20</td>
</tr>
<tr>
<td>5</td>
<td>High</td>
<td>$0 fee</td>
<td>Tech Application Stds</td>
<td>Reference + HG0 delta</td>
<td>HG0</td>
</tr>
<tr>
<td>6</td>
<td>High</td>
<td>$20+ fee</td>
<td>Tech Application Stds</td>
<td>Reference + HG20 delta</td>
<td>HG20</td>
</tr>
<tr>
<td>7</td>
<td>Moderate</td>
<td>$0 fee</td>
<td>Tech Application Stds</td>
<td>High Electrification</td>
<td>HL</td>
</tr>
<tr>
<td>8</td>
<td>Moderate</td>
<td>$0 fee</td>
<td>Tech Application Stds</td>
<td>High EE &amp; DER adoption</td>
<td>LL</td>
</tr>
<tr>
<td>9</td>
<td>Moderate</td>
<td>$0 fee</td>
<td>Low cost zero-CO₂ tech⁵</td>
<td>Reference</td>
<td>Tech</td>
</tr>
<tr>
<td>10</td>
<td>Moderate</td>
<td>CO₂ Intensity⁶</td>
<td>Tech Application Stds</td>
<td>Reference</td>
<td>CI</td>
</tr>
</tbody>
</table>

**Notes:**

1. Southern Company Technology Application Standards which contain assumptions on generating technology cost and performance benchmarks.
2. Standard load forecasts produced by each operating company that serve as the reference forecasts.
3. Higher load growth based on the EPRI electrification study.
4. Lower load growth based on aggressive adoption of energy efficiency improvements and distributed resources.
5. Lower costs for solar, wind, storage, and 4th generation nuclear technologies.
6. The CO₂ intensity view reflects current legislative ideas that have the effect of imposing a shrinking annual cap on emissions.

*This information is preliminary, confidential and proprietary and subject to an NDA.*
## 4 Views of Future Natural Gas Prices

<table>
<thead>
<tr>
<th>Major Components</th>
<th>High</th>
<th>Moderate and $50 CO₂*</th>
<th>Low</th>
</tr>
</thead>
</table>
| **Resource Size and Production Rates** | • 1,791 Tcf of total dry natural gas TRR  
• IP rates increase to 20% above current levels by 2059 | • 2,829 Tcf of total dry natural gas TRR  
• IP rates increase to 40% above current levels by 2059 | • 3,993 Tcf of total dry natural gas TRR  
• IP rates increase to 60% above current levels by 2059 |
| **Well Costs**                    | • Fixed well cost down from current levels 20% by 2059  
• Variable well costs decrease to 90% of current levels by 2059 | • Fixed well cost down from current levels 40% by 2059  
• Variable well costs decrease to 80% of current levels by 2059 | • Fixed well cost down from current levels 60% by 2059  
• Variable well costs decrease to 70% of current levels by 2059 |
| **U.S. LNG Exports**              | • Exports grow to 12.7 Bcf/d by 2028, then declines to 10.1 Bcf/d in 2046  
• After 2046, export volumes increase modestly to 10.7 Bcf/d by 2050 | • Exports grow to 14.0 Bcf/d by 2026, and 15.9 Bcf/d by 2030  
• After 2030, export volumes remain flat at 15.9 Bcf/d | • Exports grow to 14.3 Bcf/d by 2026, and 19.3 Bcf/d by 2036  
• After 2040, export volumes remain flat at 19.8 Bcf/d |
| **Pipeline Exports to Mexico**    | • US exports grow to 7.3 Bcf/d by 2028, before declining to 6.2 Bcf/d in 2050 | • US exports grow to 7.8 Bcf/d by 2028, and levels off around 8.2 Bcf/d by 2042 | • US exports grow to 8.1 Bcf/d by 2028, 8.8 Bcf/d by 2040, before leveling off at 9.2 Bcf/d after 2048 |

* The Company’s 4th view natural gas price, a view considering the effects of a $50+ per ton fee on CO₂ emissions, uses the same views of natural gas production and exports as shown above for the Moderate view. The $50+ CO₂ price path affects how producers and consumers respond to those same views.

This information is preliminary, confidential and proprietary and subject to an NDA.

**MPSC Electronic Copy ** 2019-UA-231 Filed on 03/31/2021 **
4 Views of Future Natural Gas Prices

This information is preliminary, confidential and proprietary and subject to an NDA.
## 4 Views of Future Greenhouse Gas Pressure

<table>
<thead>
<tr>
<th>Source Type</th>
<th>$0 View</th>
<th>$20 View</th>
<th>$50 View</th>
<th>CO₂ Intensity Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$0 View</td>
<td>$20 View</td>
<td>$50 View</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($20+ / MT CO₂ on all fossil)</td>
<td>($20+ / MT CO₂ on all fossil)</td>
<td>($50+ / MT CO₂ on all fossil)</td>
<td></td>
</tr>
<tr>
<td>New Sources (2014 and later)</td>
<td>NGCC</td>
<td>1000 lbs CO₂/MWh</td>
<td>1000 lbs CO₂/MWh</td>
<td>1000 lbs CO₂/MWh</td>
</tr>
<tr>
<td></td>
<td>Full (90%) CCS 2040</td>
<td>Full (90%) CCS 2035</td>
<td>Full (90%) CCS 2035</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simple-cycle CTs</td>
<td>25% Annual capacity factor</td>
<td>25% Annual capacity factor</td>
<td>25% Annual capacity factor</td>
</tr>
<tr>
<td></td>
<td>10% Capacity factor 2035</td>
<td>10% Capacity factor 2035</td>
<td>10% Capacity factor 2035</td>
<td></td>
</tr>
<tr>
<td>Existing Sources (pre-2014)</td>
<td>Fossil-fueled Boilers</td>
<td>(No additional pressure)</td>
<td>(No additional pressure)</td>
<td>(No additional pressure)</td>
</tr>
<tr>
<td></td>
<td>NGCC</td>
<td>(No additional pressure)</td>
<td>(No additional pressure)</td>
<td>(No additional pressure)</td>
</tr>
<tr>
<td></td>
<td>Simple-cycle CTs</td>
<td>25% Annual capacity factor</td>
<td>25% Annual capacity factor</td>
<td>25% Annual capacity factor</td>
</tr>
<tr>
<td></td>
<td>10% capacity factor 2035</td>
<td>10% capacity factor 2035</td>
<td>10% capacity factor 2035</td>
<td></td>
</tr>
</tbody>
</table>

This information is preliminary, confidential and proprietary and subject to an NDA.
4 Views of Future Greenhouse Gas Pressure

This information is preliminary, confidential and proprietary and subject to an NDA.
8 Views of Future Load Growth

Short-term Energy Forecasts 0-5 years
Developed by Class and Rate
Key Drivers Economics (Income, Households, Employment, Industrial Production)
Local Market Information, Energy Efficiency

Long-term Energy Forecasts 6+ years
Developed by Class, Building Type, and end-use
Key Drivers Economics End-use technologies Appliance Standards Building Codes Customer Fuel Choices Appliance Stock Consumer Response EE Trends

Retail Operating Company Energy Efficiency Programs
Key Drivers Company Specific Programs

Final Load Forecast Net of the effects of Energy Efficiency Programs

1. No Adjustment
2. Adjustment for Lower Natural Gas Price
3. Adjustment for Lower Natural Gas Price and $20 CO₂
4. Adjustment for Higher Natural Gas Price
5. Adjustment for Higher Natural Gas Price and $20 CO₂
6. Adjustment for $50 CO₂
7. Adjustment for Higher Electrification
8. Adjustment for Higher End-Use Efficiency & DER

This information is preliminary, confidential and proprietary and subject to an NDA.
8 Views of Future Load Growth

This information is preliminary, confidential and proprietary and subject to an NDA.
Demand Side Management

This information is preliminary, confidential and proprietary and subject to an NDA.

**MPSC Electronic Copy ** 2019-UA-231 Filed on 03/31/2021 **
Program Overview

• 2020 transition to 2021
  • Rule 29 Quick Start Programs - Demand Side Management Programs

• Diverse Program Offerings designed to promote efficiency and new technologies for Residential and Commercial Customers, including:
  
  • Residential Programs
    • SELECT Program
    • Behavioral Analysis Program
    • REEP Program
    • LED light bulb give-away

  • Commercial Programs
    • Commercial 100 Program
    • Commercial 500 Program

  • Education Programs
    • School Kits and Education Program

This information is preliminary, confidential and proprietary and subject to an NDA.
SELECT Program

- **Customer Eligibility**
  - Customers ≤200% federal poverty guidelines
  - Targeting 80-100 homes/month

- **Collateral Presentation and Discussion**
  - MPC “Top 10 Energy Saving Tips and Energy Usage in Home”
  - 12 Energy Star LED bulbs
  - Blown-in fiberglass attic insulation up to R-38 if existing insulation level is R-19 or less

### 2021 Targets

<table>
<thead>
<tr>
<th>Participants</th>
<th>Energy Saved (kWh)</th>
<th>Demand Saved (kW)</th>
<th>Total Program Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>700</td>
<td>760,337</td>
<td>241</td>
<td>$494,175</td>
</tr>
</tbody>
</table>

This information is preliminary, confidential and proprietary and subject to an NDA.
Behavioral Analysis Program

• Customer Eligibility
  • Approximately 45,000 randomly selected residential customers

• Program Offerings
  • Participants receive a customized Home Energy Report (HER) in the mail and/or an Electronic Home Energy Report (eHER)

2021 Targets

<table>
<thead>
<tr>
<th>Participants</th>
<th>Energy Saved (kWh)</th>
<th>Demand Saved (kW)</th>
<th>Total Program Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>46,750</td>
<td>7,486,059</td>
<td>1,649</td>
<td>$308,987</td>
</tr>
</tbody>
</table>

This information is preliminary, confidential and proprietary and subject to an NDA.
REEP Program

- Customer Eligibility
  - Residential customers – Single Family through Fourplex homes

- Program Incentives for:
  - Air sealing
  - Duct sealing
  - HVAC replacement upgrade
  - Insulation (ceiling, floor, wall)
  - MPC premise observation audit
  - Mail-in rebates, *Energy Star, if applicable*
    - direct install measures

**2021 Targets**

<table>
<thead>
<tr>
<th>Participants</th>
<th>Energy Saved (kWh)</th>
<th>Demand Saved (kW)</th>
<th>Total Program Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>1,384,574</td>
<td>487</td>
<td>$555,837</td>
</tr>
</tbody>
</table>

*This information is preliminary, confidential and proprietary and subject to an NDA.*
Welcome Kits Program – LED lightbulb distribution

• Customer Eligibility
  • New Customers

• Program Offerings
  • 6 Energy Star LED lightbulbs
  • 1 LED nightlight
  • Energy Efficiency tips

2021 Targets

<table>
<thead>
<tr>
<th>Participants</th>
<th>Energy Saved (kWh)</th>
<th>Demand Saved (kW)</th>
<th>Total Program Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>6,500</td>
<td>1,362,270</td>
<td>319</td>
<td>$202,197</td>
</tr>
</tbody>
</table>

This information is preliminary, confidential and proprietary and subject to an NDA.
Commercial 100 Program

- Customer Eligibility
  - General Service rate customers \( \leq 100 \text{ kW peak demand} \)

- Incentive Cap
  - The program can pay up to 70% of the project cost

- Program Offerings (typical)
  - LED Lighting, New and retrofits
    - Lighting Controls
    - Energy Star Smart Thermostats
    - Anti-Sweat Refrigerated Case Doors

**2021 Targets**

<table>
<thead>
<tr>
<th>Participants</th>
<th>Energy Saved (kWh)</th>
<th>Demand Saved (kW)</th>
<th>Total Program Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>175</td>
<td>4,429,974</td>
<td>818</td>
<td>$867,780</td>
</tr>
</tbody>
</table>

This information is preliminary, confidential and proprietary and subject to an NDA.
Commercial 500 Program

• Customer Eligibility
  • General Service rate customers with >100 kW peak demand

• Incentive Cap
  • Incentives are capped at $30,000 per customer, per program year

• Program Offerings *(typical)*
  • LED Lighting, New and retrofits
  • Lighting Controls
  • HVAC Replacements
  • Energy Star Smart Thermostats
  • Tune-ups
  • Energy Star Refrigerators and Freezers
  • Anti-Sweat Refrigerated Case Doors
  • LED Cooler/Freezer Retrofit Lighting
  • Ceiling Insulation

Before

After

2021 Targets

<table>
<thead>
<tr>
<th>Participants</th>
<th>Energy Saved (kWh)</th>
<th>Demand Saved (kW)</th>
<th>Total Program Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>5,905,421</td>
<td>1,246</td>
<td>$565,180</td>
</tr>
</tbody>
</table>

This information is preliminary, confidential and proprietary and subject to an NDA.
School Kits and Education Program

• Program Offerings
  • The program teaches students & families the importance of energy conservation

  • Presented to fourth and fifth-grade students who attend elementary and middle schools within Mississippi Power’s service territory

  • $250 mini-grants are awarded per grade level to schools with 75% or more participation by returning the energy worksheet

• Take home kits for students
  • Kits include:
    • 3 Energy Star LED light bulbs
    • 2 Shower timers
    • 1 Night light
    • 1 Room thermometer
    • 1 Home energy survey
    • 1 Parent/guardian participation card

2021 Targets

<table>
<thead>
<tr>
<th>Participants</th>
<th>Energy Saved (kWh)</th>
<th>Demand Saved (kW)</th>
<th>Total Program Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,759</td>
<td>567,302</td>
<td>167</td>
<td>$210,569</td>
</tr>
</tbody>
</table>

This information is preliminary, confidential and proprietary and subject to an NDA.
Future Cost and Performance of Generating Technologies

This information is preliminary, confidential and proprietary and subject to an NDA.
Supply-side Technology Screening Process

Identify Expansive Portfolio
- Generation
- Energy Storage
- Dozens of Technologies

Preliminary Screening
- Technical Maturity
- Lead Times
- Environmental
- Safety & Health
- Availability
- Financial
- Other Uncertainties

Secondary Screening
- Site Requirements
- Fuel Availability
- Further Environmental Attributes
- Detailed Cost Information
- Detailed Performance
- Scalability and Repeatability
- Levelized Cost of Energy

Expansion Options
- Busbar Analysis
- Range of Capacity Factors
- Reliable Capacity Contributions

This information is preliminary, confidential and proprietary and subject to an NDA.
Future Technology Cost and Performance
The Options for Expansion Planning Analysis, 2 views

• **Standard View** – Costs from SCS Technology Application Standards
  ▪ Natural Gas Combustion Turbine – SCR required beginning 2035
  ▪ Natural Gas Combined Cycle – Carbon Capture required beginning in 2035 or 2040 depending on CO₂ view
  ▪ Solar Photovoltaic
  ▪ Battery

• **Lower Cost Low-CO₂ Technologies View** – Costs from SCS Technology Strategy Coordination Team
  ▪ Commercialization path for Advanced Nuclear
  ▪ Lower cost path for Solar PV
  ▪ Lower cost path for Battery

This information is preliminary, confidential and proprietary and subject to an NDA.
Combined Cycle (CC)
Distribution of Researched CC Project Capital Costs

This information is preliminary, confidential and proprietary and subject to an NDA.

**MPSC Electronic Copy ** 2019-UA-231 Filed on 03/31/2021 **
Combustion Turbines (CT)
Distribution of Researched Simple Cycle CT Project Capital Costs

This information is preliminary, confidential and proprietary and subject to an NDA.
Battery Energy Storage Systems (BESS)
Distribution of Researched BESS Externally-Developed Capital Costs

*All data points represent 4-hour BESS systems, i.e. for every 1 MW of power rating, energy rating equals 4 MWh.

This information is preliminary, confidential and proprietary and subject to an NDA.
Prices selected based on market information available to the Company:

- $25/MWh with 3% annual escalation assuming ITC sunsets as scheduled (equivalent to $34/MWh levelized)
- $20/MWh with 3% annual escalation assuming an extension of full ITC (equivalent to $27/MWh levelized)

Prices are consistent with publicly available industry data*:

Lazard’s 2020 LCOE Analysis

![Lazard’s 2020 LCOE Analysis](https://www.lazard.com/perspective/levelized-cost-of-energy-and-levelized-cost-of-storage-2020/)

*This information is preliminary, confidential and proprietary and subject to an NDA.*
Expansion Plan

This information is preliminary, confidential and proprietary and subject to an NDA.
IRP Expansion Plan / Mix Study

Purpose:
To provide generation expansion plans for the retail operating companies to meet customers’ energy and demand requirements with reliable service at the lowest practical cost.

Legend:
- Load Forecast (adjusted for DSM)
- Fuel Cost Projections
- Future Generating Unit Characteristics (cost & performance)
- Financial Parameters (Discount Rate, Inflation)
- Reserve Margin Target
- Operational Characteristics of Existing Fleet of Generating Units (includes DSM, Renewables, etc.)
- System Mix Optimization
- Generic Resource Expansion Plan by Year
- Unit Retirement Schedule
- Environmental Compliance
- Operational Characteristics of Planned and Committed Resources (includes DSM, Renewables, etc.)

This information is preliminary, confidential and proprietary and subject to an NDA.
2021 Southern Company System IRP – Cumulative MWs Through 2040

Cumulative Build through 2040
- Solar: 4,200 – 20,400 MW
- Battery: 0 – 17,100 MW
- CC: 300 – 9,300 MW
- CC w/ CCC: 0 – 8,100 MW
- CT: 300 – 5,400 MW
- CT w/ SCR: 3,000 – 9,600 MW

This information is preliminary, confidential and proprietary and subject to an NDA.
2021 Southern Company System IRP – Cumulative Solar MWs Through 2040

This information is preliminary, confidential and proprietary and subject to an NDA.
2021 Southern Company System IRP – Cumulative Battery MWs Through 2040

This information is preliminary, confidential and proprietary and subject to an NDA.

**MPSC Electronic Copy ** 2019-UA-231 Filed on 03/31/2021 **
MPC Load Forecast

This information is preliminary, confidential and proprietary and subject to an NDA.
MPC Cumulative Additions (2021-2040)

Cumulative Build through 2040
Solar: 0 – 3,000 MW
Battery: 0 – 930 MW
CC: 0 – 390 MW
CC w/ CCC: 0 – 420 MW
CT: 0 – 600 MW
CT w/ SCR: 0 – 150 MW

This information is preliminary, confidential and proprietary and subject to an NDA.
Mississippi Power
IRP Technical Conference

Break

Conference will resume shortly.

This information is preliminary, confidential and proprietary and subject to an NDA.