cc: JB

m.k.

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August 26, 2022

BY HAND DELIVERY
Ms. Terri Bordelon
Records and Recording Division
Louisiana Public Service Commission
Galvez Building, 12th Floor
Baton Rouge, LA 70802

Re: LPSC Docket No. I-36503 - 2022 Integrated Resource Planning ("IRP") Process for 1803 Electric Cooperative, Inc., pursuant to the General Order No. R-30021, dated April 18, 2012

Dear Ms. Bordelon:

Please find attached an original and three (3) copies of the Data Inputs and Assumptions being filed on behalf of 1803 Electric Cooperative, Inc. ("1803") in connection with the above docket.

Should you have any questions, please contact me. Thank you and kindest regards.

Sincerely,

Kyle C. Marionneaux

Kyle C. Marionneaux

Enclosures
cc: Official Service List

Hand

1803 ELECTRIC COOPERATIVE
a Power Supply Cooperative

1803 Electric Cooperative: 2023 Integrated Resource Plan

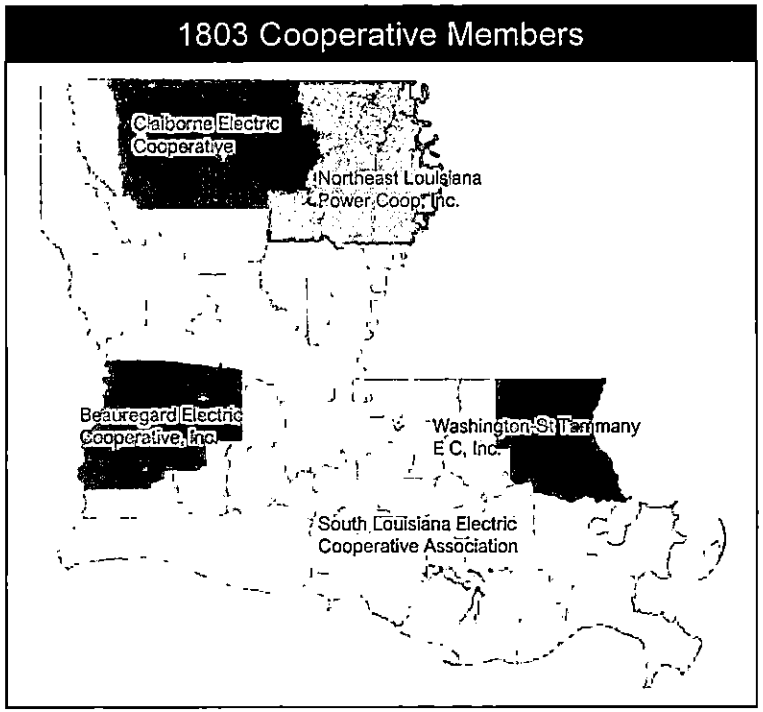
Methodology and Data Assumptions

August 28, 2022

Table of Contents

1803: Cooperative Overview

- Generation & Transmission (G&T) cooperative in Louisiana
- Five Member Cooperatives:
  1) Beauregard Electric Cooperative
  2) Claiborne Electric Cooperative
  3) Northeast Louisiana Power Cooperative ("NELPCO")
  4) South Louisiana Electric Cooperative Association ("SLECA")
  5) Washington-St. Tammany Electric Cooperative ("WST")
- Power Supply Portfolio approved and certified by LPSC in January 2022 (Docket U-35927)



LPSC Order in Docket No. U-35927

As part of the LPSC approval of 1803's power supply portfolio, 1803 is required to:

1) File Request to Initiate an IRP Process within six months
2) Provide a timeline such that the completion of its IRP would occur within a year of filing its notification with the Commission

"4. Commission Staff is directed to open a rulemaking docket to consider modifying the IRP General Order to remove the exemption for electric cooperatives.

5. Notwithstanding the rulemaking docket above, 1803 shall file its Request to Initiate an IRP Process with the Commission within six months of receiving its certification in this docket with a timeline such that the completion of its IRP would occur within a year of filing its notification with the Commission."

Source: Utility Order for 1803 Electric Cooperative, Inc. ex parte.

Accelerated 1803 IRP Timeline

Event	Description	Normal IRP Schedule* (Draft Filed in One Year)	Assuming Deadline is To Publish Final IRP in One Year
1	Submit request to initiate IRP	July 29, 2022	July 29, 2022
2	File data assumptions	August 28, 2022	August 28, 2022
3	First stakeholder meeting	September 29, 2022	September 27, 2022
4	Stakeholders file written comments	November 29, 2022	November 1, 2022
5	Publish draft IRP	July 28, 2023	March 5, 2023
6	Second stakeholder meeting	August 29, 2023	March 31, 2023
7	Stakeholders file written comments	October 31, 2023	May 10, 2023
8	Staff files written comments	November 30, 2023	June 10, 2023
9	Publish final IRP	February 29, 2024	July 28, 2023
10	Stakeholders file disputed issues and alternative recommendations	April 30, 2024	September 28, 2023
11	Staff files recommendation to Commission	May 30, 2024	October 31, 2023
12	Commission Order acknowledging IRP or procedural schedule	July 30, 2024	November 30, 2023

* Source: Docket No. R-30021 - LPSC, Development and Implementation of Rule for Integrated Resource Planning for Electric Utilities

1803 ELECTRIC COOPERATIVE a Power Supply Cooperative

2023 IRP Partners and Resources

Partners

ACES excellence in energy

IRP Modeling, Assumptions, Stakeholder Engagement

guernsey

Load Forecast, Energy Efficiency Study

Resources

NREL NATIONAL RENEWABLE ENERGY LABORATORY

Capital Costs for New Resources, Wind and Solar Profiles

eia *Independent Statistics & Analysis* U.S. Energy Information Administration

Capital Costs for New Resources, Commodity Prices

HORIZONS ENERGY

Long-Term Fundamental Commodity Price Forecasts and Scenarios

ICE CME Group

Short- to Mid-Term Forward Curves for Natural Gas and Power

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1803 Electric Cooperative: Going-In Capacity Position

1803 Approved and Contracted Resources

LPSC Approved Power Supply Resources

Supplier	Resource Type	Installed MW	Term
Magnolia	Natural Gas, Hydrogen	409	20 Years
Bayou Galion	Solar	98	20 Years
Bayou Chicot	Solar	150	20 Years
Bayou Teche	Solar	95	20 Years
Constellation	Fixed Price Load Following	27% of load	5 Years
Calpine[1]	Natural Gas	185	5 Years
SWPA[2]	Hydro	35	20 Years +

1. Energy Only
2. Southwest Power Administration

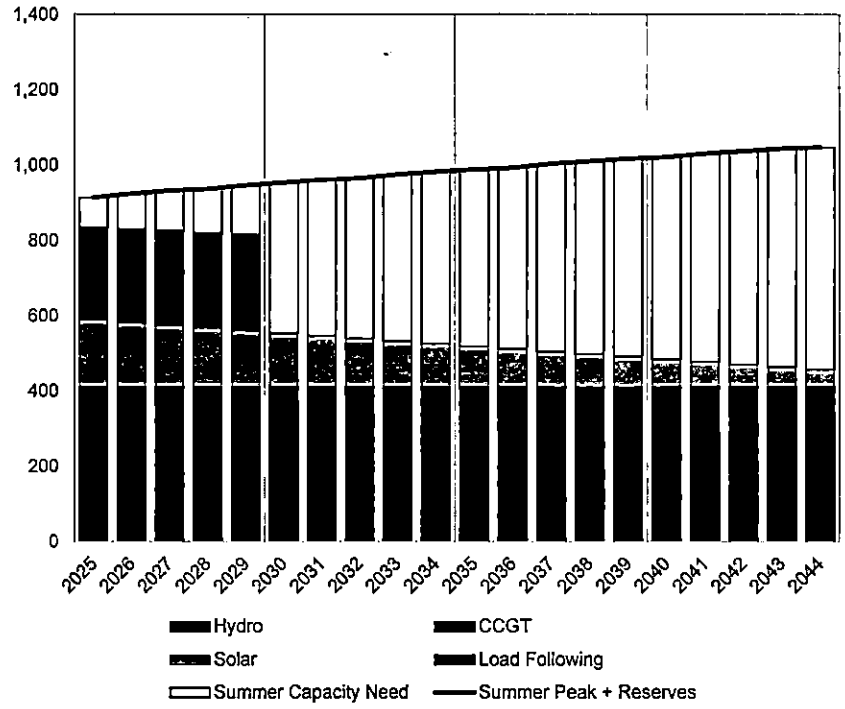
1803 ELECTRIC COOPERATIVE a Power Supply Cooperative

1803 Load Forecast

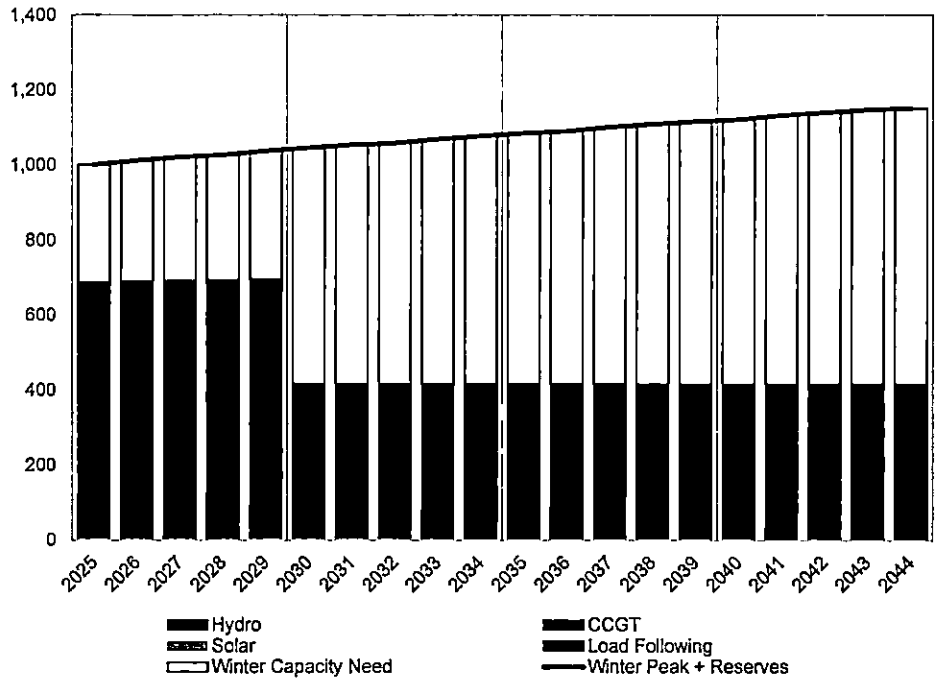
	Winter Peak (MW)	Summer Peak (MW)	Annual Energy (GWh)	Load Factor (%)
2025	933	851	4,153	51%
2026	943	860	4,196	51%
2027	952	868	4,234	51%
2028	956	872	4,267	51%
2029	967	881	4,299	51%
2030	974	888	4,331	51%
2031	982	894	4,363	51%
2032	986	898	4,395	51%
2033	996	908	4,428	51%
2034	1,004	915	4,462	51%
2035	1,011	921	4,492	51%
2036	1,016	924	4,525	51%
2037	1,026	934	4,559	51%
2038	1,033	940	4,589	51%
2039	1,040	947	4,620	51%
2040	1,045	951	4,653	51%
2041	1,055	960	4,685	51%
2042	1,062	966	4,714	51%
2043	1,069	972	4,745	51%
2044	1,073	975	4,776	51%

1803 Going-In Capacity Position

Summer Firm Capacity Position (UCAP* MW)



Winter Firm Capacity Position (UCAP MW)



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* UCAP = Unforced Capacity

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IRP Modeling: Methodology and Assumptions Overview

Modeling Software: EnCompass

EnCompass is a premier long-term capacity expansion and production cost modeling platform used by utilities, co-ops, municipalities, and consultants across the country.

Arizona G&T Cooperatives

GREAT RIVER ENERGY

ODEC

TVA

PJM

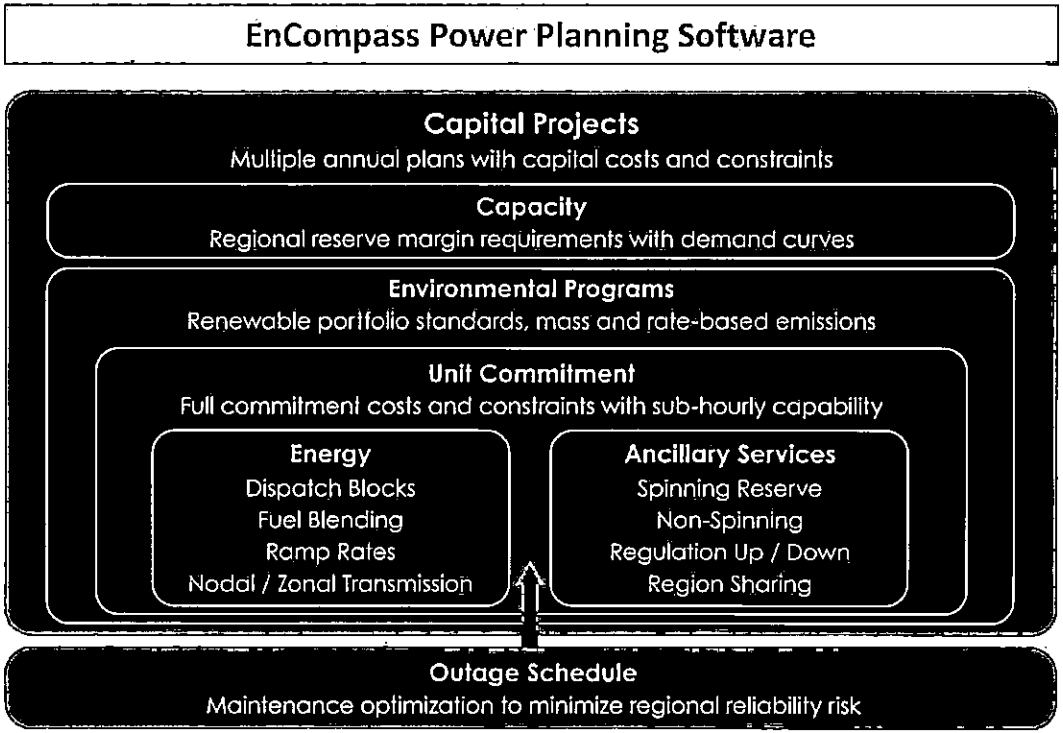
aes Indiana

DUKE ENERGY

Xcel Energy

DTE Energy

1803 ELECTRIC COOPERATIVE a Power Supply Cooperative



Source: Anchor Power Solutions, developer of EnCompass

Modeling Assumptions

- MISO Seasonal Capacity Construct[1]:

  Firm capacity requirements will reflect MISO's proposed seasonal construct for capacity. While MISO rules have not been finalized, 1803 believes it is prudent to consider the seasonal construct in the 2023 IRP modeling.

  - Season definitions
    - Winter: December, January, February
    - Spring: March, April, May
    - Summer: June, July, August
    - Fall: September, October, November
  - Reserve margin target for each season: 7.4%[2]

- 1803 Discount Rate: 5.0%

1. MISO Resource Adequacy Reforms Conceptual Designs
2. Planning Year 2025/2026 UCAP from MISO Planning Year 2022-2023 Loss of Load Expectations Study Report

New Resources: Screening (1/2)

Thermal	Renewables/Storage	Demand-Side	New Tech
• Combustion Turbine • Combined Cycle • Aeroderivative Turbine • Reciprocating Engines	• Solar o Utility-scale o Commercial o Residential • Wind • Standalone Battery Storage • Hybrid Solar + Storage	• Energy Efficiency • Demand Response • Distributed Resources	• Full Hydrogen Combustion Turbines • Long Duration Energy Storage • Carbon Capture • Small Modular Reactors

New Resources: Screening (2/2)

Thermal	Renewables/Storage	Demand-Side	New Tech
• **Natural Gas:** *Pros*: Firm, dispatchable capacity resource *Cons*: Potential stranded cost risk; winter gas supply risk; carbon-emitting resource	• **Solar, Wind:** *Pros*: Low-carbon, potentially low-cost *Cons*: Firm capacity value; ELCC risk; energy value cannibalized • **Battery Storage:** *Pros*: Low/No carbon firm capacity resource *Cons*: ELCC risk; Degradation	• **Demand Resources:** *Pros*: Carbon benefits; local economic impact; cost effective energy and capacity *Cons*: Uncertain cost-effective and realistic potential for volume, cost.	• **New Tech:** *Pros*: Potential to meet low-carbon goals with long-duration tech *Cons*: Not often commercially available projects for proven tech; 10+ years expected for meaningful impact

New Resource Parameters

Technology	ISO Rating (MW)[1]	Capital Cost ($2021/kW)[2,3]	Variable O&M ($2021/MWh)[2,3]	Fixed O&M ($2021/kW)[2,3]	Heat Rate[2]
Small Modular Reactor	600	$7,306	$3.14	$99.46	10,443
1x1 Combined Cycle	418	$1,115	$2.67	$14.76	6,431
2x1 Combined Cycle	1083	$979	$1.96	$12.77	6,370
Combined Cycle with 90% Carbon Capture	377	$2,688	$6.11	$28.89	7,124
Reciprocating Internal Combustion Engine (RICE)	21	$1,962	$5.96	$36.81	8,295
Combustion Turbine—Aero	105	$1,194	$4.92	$17.06	9,124
Combustion Turbine—Frame	237	$724	$4.71	$7.33	9,905
Battery Storage	50	$1,475	$0.00	$36.89	N/A
Wind	50	$1,390	$0.00	$43.66	N/A
Wind Offshore	50	$2,424	$0.00	$108.95	N/A
Solar Photovoltaic (Tracking)	50	$1,168	$0.00	$21.07	N/A
Solar Photovoltaic (Tracking) w/ Battery Storage	50	$2,643	$0.00	$57.96	N/A

[1] Thermal resources ISO ratings from Sargent & Lundy EIA Report https://www.eia.gov/analysis/studies/powerplants/capitalcost/pdf/capital_cost_AEO2020.pdf

[2] Thermal resources cost from EIA Annual Energy Outlook 2022: Electricity Market Module https://www.eia.gov/outlooks/aeo/assumptions/pdf/electricity.pdf

[3] Renewable and storage cost from NREL's Annual Technology Baseline atb.nrel.gov

Inflation Reduction Act (IRA)

The Inflation Reduction Act was signed into law on August 16, 2022. The law is assumed to be a part of every modeled scenario, although additional scenarios will account for potential unforeseen increases in replacement resource cost.

IRA Highlights

- 100% PTC ($26/MWh in 2022 dollars)
- 30% ITC for solar, standalone battery storage
- Direct pay for non-taxable entities
- Bonus credits for meeting domestic content, labor conditions
- $7,500 tax credit for electric vehicles
- $9.7 Billion available for rural electric co-ops to purchase renewable energy (limited to 25% of project cost)

Further Reading: REPEAT* Project Section-by-Section Summary (Google Sheet) | Inflation Reduction Act: Full Text

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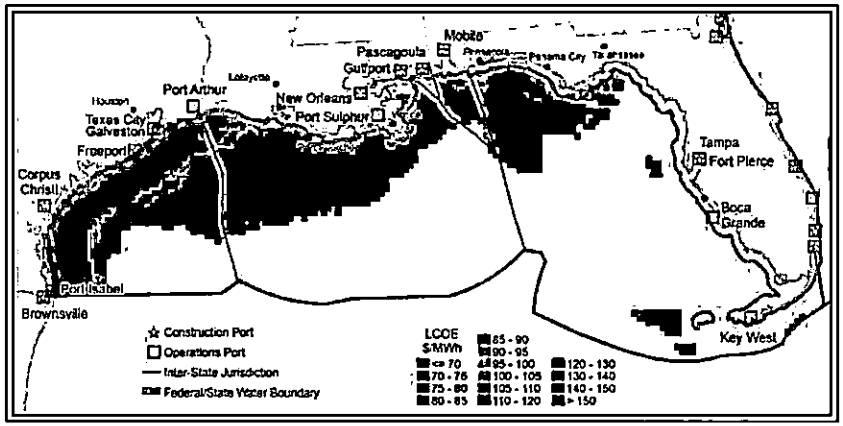
* REPEAT = Rapid Energy Policy Evaluation and Analysis Toolkit (site)

Offshore Wind

- Technical potential of 2,000 GW in US waters and 508 GW in the Gulf of Mexico.[1]
  - *Current development and operational pipeline exceeds 35 GW.*[1]
  - *Federal target to install 30 GW of capacity by 2030.*[1]
  - *States targets are aiming to procure at least 39 GW by 2040.*[2]
- Capacity factors for offshore wind are expected to exceed 45%[3]
- Floating offshore wind LCOE is predicted to decline from approximately $160/MWh in 2020 to $60–$105/MWh in 2030.[2]
- By 2030, NREL estimates LCOE between $70/MWh and $80/MWh in the Western Gulf. [2]
- Inflation Reduction Act (IRA) benefits offshore wind development.
  - Extends full ITC and PTC provisions until 2032.
  - Increases the geographic areas which may be leased for offshore wind.
  - $100 million for the DOE to study transmission for offshore win

Gulf of Mexico Levelized Cost of Energy (LCOE)



Source: NREL

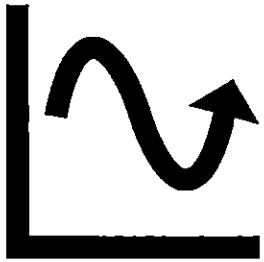
[1]https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/National-Renewable-Energy-Laboratory-Walt-Musial.pdf
[2]https://www.energy.gov/sites/default/files/2021-08/Offshore%20Wind%20Market%20Report%202021%20Edition_Final.pdf
[3]https://atb.nrel.gov/electricity/2022/offshore_wind#9J2RJMVW

Energy Efficiency Study

- Guernsey is conducting an energy efficiency study to evaluate demand-side resources in this IRP
- Guernsey will conduct cost/benefit analysis of programs using the five tests described in the LPSC EE rules
- Study results will be provided later in the IRP process and incorporated into the final IRP report

Scenario Descriptions

Status Quo



- Tax Credits extended per IRA
- No carbon legislation
- Supply chain, inflationary pressures rebalance mid-2020s
- Base power and gas prices

Inflationary Period

- Inflationary pressure continues through 2030 before tapering off
- High cost of replacement resources offset IRA benefits
- High natural gas prices
- No carbon legislation

Low Price Environment

- Supply chain, inflationary pressure subside by 2025
- Return to stable, low fuel prices
- Tax Credits extended per IRA

Aggressive Environmental

- 20-year extension of tax credits
- Federal price on carbon in 2028
- High natural gas prices due to upstream environmental regulation

Scenario Drivers

	Status Quo	Inflationary Period	Low Price Environment	Aggressive Environmental
1803 Load	Base	Base	Base	Base
Natural Gas Prices	Base	High	Low	High
Technology Costs	ITC/PTC extended per IRA	ITC/PTC extended per IRA; High Costs Offset	ITC/PTC extended per IRA	20-Year ITC/PTC Extension
Carbon Legislation	None	None	None	Federal Price on Carbon starts in 2028

Load Forecast Sensitivities

- Load forecast risk driven by uncertainty around:
  - Economic growth
  - End-use consumer mix
  - Electric vehicle penetration
  - Electrification (home, commercial, industrial)
- Load forecast will be stressed via sensitivity analysis to capture risk of:
  - Higher than expected growth leading to capacity shortfalls
  - Lower than expected growth leading to excess capacity and/or energy

Scenario Modeling Framework

Capacity Expansion

1803 portfolio will be optimized with the respective assumptions in each scenario, resulting in a unique portfolio for each scenario

- Status Quo
- Inflationary Period
- Low Price Environment
- Aggressive Environmental

Production Cost and Scenario Analysis

Hourly Production Cost Runs: Portfolios resulting from capacity expansion locked and run through each of the four scenarios

Result: 4 portfolio x 4 scenario matrix

PORTFOLIOS	SCENARIOS: Status Quo Assumptions	Inflationary Period Assumptions	Low Price Environment Assumptions	Aggressive Environmental Assumptions
Status Quo Portfolio				
Inflationary Period Portfolio				
Low Price Environment Portfolio				
Aggressive Environmental Portfolio				

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Next Steps

1803 IRP: Next Steps

- First public stakeholder meeting will be conducted on September 27, 2022. 1803 will provide meeting details and registration options for interested stakeholders in advance of that date
- Modeling assumptions can be provided in electronic format upon request, and confidential data will require a signed NDA