

**BEFORE THE
GEORGIA PUBLIC SERVICE COMMISSION**

In Re:

**GEORGIA POWER COMPANY'S APPLICATION)
FOR CERTIFICATION OF THE ROBINS, MOODY,)
HAMMOND, AND MCGRAU FORD PHASE I AND)
II BATTERY ENERGY STORAGE SYSTEMS)**

DOCKET NO. 55378

**DIRECT TESTIMONY
AND EXHIBITS
OF
BOBBY ISELEY
AND
JEFFREY D. BOWER**

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**On Behalf of the
Georgia Public Service Commission
Public Interest Advocacy Staff**

October 11, 2024

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**DIRECT TESTIMONY OF
BOBBY ISELEY AND JEFFREY D. BOWER**

**IN THE MATTER OF GEORGIA POWER COMPANY’S APPLICATION FOR THE
CERTIFICATION OF THE ROBINS, MOODY, HAMMOND, AND MCGRAU FORD
PHASE I AND II BATTERY ENERGY STORAGE SYSTEMS**

DOCKET NO. 55378

I. INTRODUCTION

**Q. MR. ISELEY, PLEASE STATE YOUR NAME, TITLE, EMPLOYER, AND
BUSINESS ADDRESS.**

A. My name is Bobby Iseley, and I am a Public Utilities Engineer in the Energy Efficiency and Renewable Energy Unit with the Georgia Public Service Commission (“Commission”). My business address is 244 Washington Street SW, Atlanta, GA 30334.

**Q. MR. ISELEY, PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND
WORK EXPERIENCE.**

A. My educational background and work experience are provided in my resume, which is attached as Public Interest Advocacy Staff (“PIA Staff”) Exhibit_ (IB-1).

**Q. MR. BOWER, PLEASE STATE YOUR NAME, TITLE, EMPLOYER, AND
BUSINESS ADDRESS.**

A. My name is Jeffrey D. Bower. I am a Managing Consultant at Daymark Energy Advisors (“Daymark”), which provides energy planning, market analysis, and regulatory policy consulting and advisory services to support decision making within the electricity and

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1 natural gas industries. We serve a broad range of clients in North America, including
2 private and public utilities, energy producers and traders, energy consumers and consumer
3 advocates, regulatory agencies, and public policy and energy research organizations, and
4 other industry stakeholders. Our technical skills include power market forecasting models
5 and methods, economics, management, planning, rates and pricing, and energy
6 procurement, and contracting. Our experience includes detailed analyses of energy and
7 environmental performance of the electric systems, economic planning for transmission,
8 and market analytics. My business address is 370 Main Street, Suite 325, Worcester, MA
9 01608.

10 **Q. MR. BOWER, PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND**
11 **WORK EXPERIENCE.**

12 A. My educational background and work experience are provided in my resume, which is
13 attached as PIA Staff Exhibit_ (IB-2).

14 **Q. MR. ISELEY, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS**
15 **COMMISSION?**

16 A. No. I have not.

17 **Q. MR. BOWER, HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS**
18 **COMMISSION?**

19 A. Yes. I testified in Docket Nos. 4822, 16573, and 19279 regarding the application of
20 Georgia Power Company's Renewable Cost Benefit Framework ("RCB Framework") to
21 Public Utility Regulatory Policies Act of 1978 ("PURPA") qualifying facilities ("QFs"). I

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1 also testified in Docket No. 44160, Georgia Power Company’s 2022 Integrated Resource
2 Plan (“IRP”), regarding multiple issues related to renewable and battery storage proposals.
3 In addition, I have testified before regulatory commissions in other states and Canadian
4 provinces. I have also supported Commission Staff’s evaluation of Georgia Power
5 Company’s (“Georgia Power” or “Company”) RCB Framework since 2016.

6 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING?**

7 A. We are presenting testimony on behalf of the Commission PIA Staff.

8 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

9 A. The primary purpose of our testimony is to address Georgia Power’s request to certify 500
10 megawatts (“MW”) of Battery Energy Storage Systems (“BESS”) described in its August
11 16, 2024 Application for the Certification of Robins, Moody, Hammond, and McGrau Ford
12 Phase II Battery Energy Storage System in Docket No. 55378 (“Application”). In addition,
13 our testimony will also address Georgia Power’s request to proceed with the McGrau Ford
14 Phase I BESS, which is a 265 MW BESS project described in its August 9, 2024
15 Engineering, Procurement, and Construction (“EPC”) Agreement Compliance Filing in
16 Docket No. 44160 (“Compliance Filing”). The specific issues that we address in our
17 testimony include the review of the costs estimated to build the BESS projects, the
18 Company’s requested certified amount, and the reporting requirements associated with the
19 construction of these projects.

20 On September 4, 2024, the Commission approved a Procedural and Scheduling Order that
21 consolidated consideration of the Company’s Application and the Company’s Compliance

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1 Filing from Docket No. 44160 into the evidentiary proceedings under this docket. The
2 Robins, Moody, Hammond, and McGrau Ford Phases I and II projects will collectively be
3 referred as the “Five BESS Projects” for the remainder of our testimony.

4 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

5 A. Based on our review of the Company’s filings, testimony, data request responses, and other
6 pertinent information for this case, we have the following recommendations for the
7 Commission’s consideration:

- 8 1. The Company should provide updated costs of augmentation, actual decline rates in
9 duration, and performance of BESS pre- and post-augmentation in an Annual BESS
10 Report.
- 11 2. The Company should be required to file quarterly Construction Monitoring Reports for
12 the Five BESS Projects.
- 13 3. The Commission should approve the Company’s proposal to include information on
14 capital expenditures and financial cost data, detailed schedule reporting on critical path
15 activities, status updates on the procurement of any new licenses and permits, variances
16 in major contracts, and the procurement status of long-lead time equipment in the
17 Construction Monitoring Reports. The Company should also be required to include
18 information in the Construction Monitoring Reports regarding contingency assessment,
19 construction work in progress (“CWIP”), allowance for funds used during construction
20 (“AFUDC”), and Ad Valorem balances.

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- 1 4. The Company’s request to proceed with the McGrau Ford Phase I BESS Project should
2 be approved.
- 3 5. The Company’s request to certify the Robins, Moody, Hammond, and McGrau Ford
4 Phase II BESS Projects should be approved.
- 5 6. The Company’s requested certified amounts for the Five BESS Projects should be
6 reduced by the contingency amount of ██████████ for Changes in Import Tariffs or
7 other Regulatory Impacts. Therefore, Staff’s recommended total certified cost amount
8 for the Five BESS Projects, provided in Table 10, is ██████████. Staff will monitor
9 the status of the risks identified along with the cumulative contingency spending
10 through the Construction Monitoring Reports.

11 **II. BACKGROUND**

12 **Q. PLEASE DESCRIBE THE COMPANY’S SPECIFIC REQUESTS CONTAINED IN**
13 **THE APPLICATION AND COMPLIANCE FILINGS.**

- 14 A. In the Application, the Company requested that the Commission certify 500 MW of
15 Company-owned BESS projects located at Robins, Moody, Hammond, and McGrau Ford
16 Phase II sites and approve the total certified amounts for each BESS project. In its
17 Compliance Filing, the Company requested that the Commission allow the Company to
18 proceed with the McGrau Ford Phase I BESS Project and approve the deemed certified
19 cost contained in the filing.

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1 **Q. HAS THE COMMISSION ALREADY AUTHORIZED THE COMPANY TO**
2 **DEVELOP 500 MW OF BESS PROJECTS?**

3 A. Yes. On April 26, 2024, the Commission issued the 2023 IRP Update Order Adopting
4 Stipulated Agreement in Docket No. 55378 (“IRP Update Order”), which authorized the
5 Company to develop, own, and operate up to 500 MW of BESS resources. Specifically,
6 Paragraph 7 of the Commission approved stipulation states the following:

7 *The Company’s request to own and operate up to a total of 1,000 MW of*
8 *Battery Energy Storage Systems (“BESS”) is not approved. The Company*
9 *is granted authority to develop, own, and operate up to 500 MW of BESS*
10 *resources at various sites that will be identified by the Company to help*
11 *meet the needs of economic development customer loads in the winter of*
12 *2026/2027. This BESS development will be exempted from the RFP process*
13 *under Commission Rules 515-3-4-.04(3)(f)(6) and (7). The Company shall*
14 *file for expedited certification of projects once EPC agreements for the*
15 *projects have been executed. Specific reporting requirements will be*
16 *determined in the certification proceeding. Should the projects not be*
17 *certified, the Commission will consider, during the certification proceeding,*
18 *whether any incurred project cost not useful or transferable to other*
19 *potential future projects shall be deferred to a regulatory asset for recovery*
20 *in the next base rate case. The Commission will monitor the load growth*
21 *under the reporting provided in Paragraph 2 and the Company or Staff may*
22 *request an adjustment to the amount of BESS resources procured under this*
23 *paragraph as needed to ensure that customers’ needs can be met in the*
24 *winter of 2026/2027.*

25 **Q. HAS THE COMPANY’S SPECIFIC REQUEST TO ADD BESS PROJECTS AT**
26 **ROBINS AND MOODY AIR FORCE BASES ALREADY BEEN APPROVED BY**
27 **THE COMMISSION?**

28 A. Yes. Paragraph 8 of the Commission approved stipulation states the following:

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1 *The Company’s specific request for Battery Energy Storage System*
2 *(“BESS”) projects at Robins and Moody Air Force Bases are exempted*
3 *from the Commission’s RFP process under Commission Rules 515-3-4-*
4 *.04(3)(f)(6) and (7) and approved. The capacity of these projects is included*
5 *in the 500 MW of BESS resources approved for development in Paragraph*
6 *7. The Company shall file for expedited certification of the Robins and*
7 *Moody projects once the EPC agreements for the projects have been*
8 *executed. The Company will file semi-annual construction monitoring*
9 *reports from the date construction begins through the date of commercial*
10 *operation. Specific reporting requirements will be determined in the*
11 *certification proceeding. Should the projects not be certified, the*
12 *Commission will consider, during the certification proceeding, whether any*
13 *incurred project cost not useful or transferable to other potential future*
14 *projects shall be deferred to a regulatory asset for recovery in the next base*
15 *rate case.*

16 **Q. HAS THE COMPANY INCLUDED THE CAPACITY FOR THE ROBINS AND**
17 **MOODY PROJECTS IN ITS 500 MW BESS CERTIFICATION REQUEST?**

18 A. Yes. The capacity for the Robins and Moody BESS Projects was included in the
19 Company’s 500 MW BESS Certification request.

20 **Q. REGARDING MCGRAU FORD PHASE I, WHEN DID THE COMMISSION**
21 **AUTHORIZE THE COMPANY TO DEVELOP THIS PROJECT?**

22 A. On July 29, 2022, the Commission approved the 2022 IRP Order Adopting Stipulation
23 (“2022 IRP Order”) which provisionally authorized the Company to own and operate the
24 McGrau Ford Phase I BESS Project. Paragraph 13 of the Commission approved stipulation
25 states the following:

26 *The Company is provisionally authorized to develop, own, and operate the*
27 *McGrau Ford Battery Facility (the “McGrau Ford Project”). The*
28 *Company will be required to provide the final McGrau Ford Engineering*

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1 *Procurement and Construction (“EPC”) agreement (or agreements if more*
2 *than one) to the Commission prior to undertaking procurement for or*
3 *construction of the McGrau Ford Project. Following the Company’s*
4 *provision of the EPC agreement to the Commission, the Commission will*
5 *determine whether to proceed with the McGrau Ford Project and provide*
6 *a deemed certified amount for the McGrau Ford Project. If the Company*
7 *exceeds the deemed certified amount, the Company has the burden of*
8 *showing that such costs were prudently incurred. The Company will also*
9 *file quarterly construction monitoring reports from the date construction*
10 *begins through the date of commercial operation.*

11 **Q. HAS THE COMPANY MET THE REQUIREMENT TO FILE FOR AN**
12 **EXPEDITED CERTIFICATION?**

13 A. Yes. In order to file for an expedited certification, the Company was required to file
14 executed EPC agreements for the Five BESS Projects. In the Application and Compliance
15 Filing, the Company provided executed EPC Agreements for all Five BESS Projects.

16 **III. BESS PROJECT SPECIFICS**

17 **Q. PLEASE DESCRIBE IN MORE DETAIL THE FIVE BESS PROJECTS THAT**
18 **COMPRISE THE COMPANY’S CERTIFICATION REQUEST.**

19 A. The Five BESS Projects will utilize the Tesla Megapack 2 XL battery storage unit. As part
20 of the Application and Compliance Filing, the Company provided the executed Battery
21 Energy Supply Agreements (“BESA”) for each BESS project. Specific project details for
22 the Five BESS Projects are as follows:

- 23 • Robins is a 128 MW, 4-hour duration, BESS facility located in Warner Robins,
24 Georgia. The BESS will be collocated with the existing 128 MW Robins solar

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1 facility. The Company has executed an EPC agreement with Burns and McDonnell
2 for the construction of the facility.

- 3 • Moody is a 49.5 MW, 4-hour duration, BESS facility located in Valdosta, Georgia.
4 The BESS will be collocated with the existing 49.5 MW Moody solar facility. The
5 Company has executed an EPC agreement with Crowder for the construction of the
6 facility.

- 7 • Hammond is a 57.5 MW, 4-hour duration, standalone BESS facility located in
8 Rome, Georgia. The Company has executed an EPC agreement with Crowder for
9 the construction of the facility.

- 10 • McGrau Ford Phase I is a 265 MW, 2-hour duration, standalone BESS facility
11 located in Ball Ground, Georgia. The Company has executed an EPC agreement
12 with Burns and McDonnell for the construction of the facility.

- 13 • McGrau Ford Phase II is a 265 MW, 4-hour duration, standalone BESS facility
14 located in Ball Ground, Georgia. The Company has executed an EPC agreement
15 with Burns and McDonnell for the construction of the facility.

16 **Q. HOW DID THE COMPANY DETERMINE WHERE TO SITE THESE BESS**
17 **PROJECTS?**

- 18 A. The Company sited the Five BESS Projects in locations that allowed it to meet the required
19 Commercial Operation Date (“COD”) and would have limited transmission impacts
20 (Direct Testimony of Jeffrey R. Grubb, Michael A. Bush, and Steven M. Goedjen, page
21 (“p”). 6, lines 3-7). The review of the siting of the projects and associated transmission

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1 review will be addressed in the testimony of PIA Staff panel of Douglas A. Smith and
2 Katherine Palacios.

3 **Q. ARE THE FIVE BESS PROJECTS FORECASTED TO HELP MEET THE**
4 **COMPANY’S CAPACITY NEEDS IN THE WINTER OF 2026/2027?**

5 A. Yes. All of the Five BESS Projects are anticipated to be online by the winter of 2026/2027
6 and will help meet the needs of economic development customer loads in the winter of
7 2026/2027. The table below provides the anticipated COD for each of the Five BESS
8 Projects:

9 *Table 1. BESS Commercial Operation Dates*

BESS Project	COD
Robins	June 2026
Moody	May 2026
Hammond	November 2026
McGrau Ford Phase I	November 2026
McGrau Ford Phase II	September 2026

10 **Q. WHAT TOTAL CERTIFIED COST HAS THE COMPANY REQUESTED FOR**
11 **EACH OF THE FIVE BESS PROJECTS?**

12 A. As contained in the Application and Compliance Filing, the Company requested the
13 following total certified cost amounts:

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Table 2. Requested Certified Cost

BESS Project	Capacity (MW)	Requested Certified Cost	Cost per MW
Robins	128		
Moody	49.5		
Hammond	57.5		
McGrau Ford Phase I	265		
McGrau Ford Phase II	265		

2 **Q. PLEASE DESCRIBE THE COST CATEGORIES THAT WERE INCLUDED IN**
3 **THE COMPANY’S REQUESTED CERTIFIED COST.**

4 A. The Company separated the requested certified cost into the following categories:
5 Planning, Licensing, EPC Contract, BESA Contract, Engineering and Construction, Start-
6 Up, Transmission, Contingency, Financing (AFUDC), and Ad Valorem Taxes.

7 **Q. IN ADDITION TO THE REQUESTED CERTIFIED COST, ARE THERE OTHER**
8 **EXPENSES THAT MUST BE CONSIDERED DURING THE LIFE OF THE BESS**
9 **PROJECTS?**

10 A. Yes. In the Application and Compliance Filing, the Company provided estimated annual
11 costs that include the following categories: Depreciation, Debt and Equity Financing Costs
12 on Capital Investment, Income Taxes on Capital Investment, Fixed Operations and
13 Maintenance (“O&M”), Insurance, Property Taxes, and Capital Additions. The Company
14 also provided a list of transmission projects attributable to the McGrau Ford Phase II
15 Project (Attachment F, Application).

16 **Q. PLEASE DESCRIBE IN DETAIL THE INTENDED PURPOSE OF FIXED O&M.**

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1 A. In response to a data request, the Company stated that Fixed O&M includes the following
2 annual expense categories: [REDACTED]

3 [REDACTED]. The Robins BESS Project uniquely has an annual
4 Administrative Fee for the Central Georgia Joint Development Authority included in the
5 Fixed O&M (Company's Response to STF-PIA-17-11). Additionally, in the final year of
6 life for each project, the Company included in Fixed O&M, costs for the removal and
7 remediation of the project site (Company's Response to STF-PIA-15-15).

8 **Q. DID THE COMPANY INCLUDE CONTINGENCY IN ITS COST ESTIMATES**
9 **AND IF SO, WHAT IS THE PURPOSE OF CONTINGENCY?**

10 A. Yes. The Company included contingency in its total certified cost requests to address risks
11 associated with the completion of the projects. The Company stated that it considered
12 multiple risk factors in its determination of the contingency amount and that any unused
13 contingency funds will not be included in the final cost of the projects. The Company also
14 stated that it expects to report on contingency as part of its construction monitoring
15 requirements (Company's Response to STF-PIA-15-12). The Company provided the
16 following contingency amounts in its risk register spreadsheet tool for each of the Five
17 BESS Projects (Company's Response to STF-PIA-18-6):

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Table 3. Risk identification

BESS Project	Project Estimate (Excluding Contingency)	Total Contingency	[REDACTED]
Robins	[REDACTED]	[REDACTED]	[REDACTED]
Moody	[REDACTED]	[REDACTED]	[REDACTED]
Hammond	[REDACTED]	[REDACTED]	[REDACTED]
McGrau Ford Phase I	[REDACTED]	[REDACTED]	[REDACTED]
McGrau Ford Phase II	[REDACTED]	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]	[REDACTED]

2 **Q. PLEASE DESCRIBE THE RISK FACTORS USED BY THE COMPANY TO**
 3 **DETERMINE THE CONTINGENCY FOR THE FIVE BESS PROJECTS.**

4 A. The risks factors that were considered by the Company in the contingency calculation
 5 include: market fluctuations, project complexity, supplier lead times, contractual terms,
 6 clarity and stability of the project scope, rapid development, complexity of managing
 7 multiple interdependent agreements, and the need for a 2026 COD. The Company provided
 8 a detailed breakdown of the risk categories and then assigned probabilities for each of the
 9 Five BESS Projects (Company’s Response to STF-PIA-18-6). Worth noting, for the Five
 10 BESS Projects, the Company identified several risk categories [REDACTED]
 11 [REDACTED]. The risks that are outside of the Company’s control include: [REDACTED]
 12 Index Impact [REDACTED] EPC Cost Relief for Force Majeure, and Changes in Import

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1 Tariffs or other Regulatory Impacts. The risks that the Company has some control over are
2 Vendor-caused Schedule Delays and Controls Integration. The risks the Company has
3 primary control over is Quality Issues, Transmission Facilities Cost Increase, and Owner-
4 caused Schedule Delays. The only risk category that was identified as [REDACTED] is Changes
5 in Import Tariffs or other Regulatory Impacts. This risk is outside of the Company's
6 control and makes up a significant portion of the Company's total contingency request.

7 **Q. WHAT CONCERNS DOES STAFF HAVE REGARDING THE CONTINGENCY**
8 **AMOUNT REQUESTED BY THE COMPANY AS PART OF THE CERTIFIED**
9 **COST FOR THE FIVE BESS PROJECTS?**

10 A. Staff has concerns regarding the risk category Changes in Import Tariffs or other
11 Regulatory Impacts being included in the Company's contingency request. If a change in
12 law does occur and Georgia Power incurs costs associated with changes in tariffs or other
13 regulatory impacts being implemented, under the Commission's IRP Act, the Company
14 would be allowed to request recovery of such costs even if the costs are not included in the
15 certified amount. Staff would likely support the recovery of such costs if associated directly
16 with the implementation of the change in law. However, if the change in law does not
17 occur but the contingency for those costs has been included in the certified cost, there is no
18 mechanism available to challenge the reasonableness of any project cost unless the project
19 costs exceed the approved certified amount. In other words, if Georgia Power spends the
20 contingency amount on something different, ratepayers would have no opportunity to
21 challenge the reasonableness of such costs. The Commission should preserve the right of
22 the ratepayers to challenge costs based on the legal standard of reasonableness.

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1 **Q. WHAT IS STAFF’S RECOMMENDATION REGARDING THE CONTINGENCY**
2 **AMOUNT REQUESTED BY THE COMPANY?**

3 A. Staff recommends that the contingency amount requested for Changes in Import Tariffs or
4 other Regulatory Impacts, in the cumulative amount of [REDACTED] for the Five BESS
5 Projects, not be approved as part of the total certified cost. For the other contingency items,
6 the Company has provided Staff the risk registers for each project. Staff will monitor the
7 status of the risks identified along with the cumulative contingency spending through the
8 Construction Monitoring Reports.

9 **Q. PLEASE DESCRIBE HOW THE COMPANY SELECTED THE EPC**
10 **CONTRACTORS FOR THE FIVE BESS PROJECTS.**

11 A. In November 2023, the Company issued a Request for Proposals (“RFP”) for an EPC
12 contractor for the Robins, Moody, and McGrau Ford Phase I BESS Projects. The responses
13 to the RFP were to include all installation and equipment costs excluding the procurement
14 of the BESS. Once the responses were received and reviewed, the Company ranked each
15 proposal considering quantitative and qualitative factors which included weighted
16 categories such as the bidder’s [REDACTED]
17 [REDACTED] (Company’s Response to TS STF-PIA-
18 15-3 Attachment C).

19 **Q. PLEASE DESCRIBE THE PROGRESS USED BY THE COMPANY TO SELECT**
20 **TESLA AS THE SOLE BESS SUPPLIER.**

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1 A. In November 2023, the Company issued an RFP for a BESS supplier for the Robins,
2 Moody, and McGrau Ford Phase I BESS Projects. In response to a data request, the
3 Company provided the total cost with breakout of cost categories submitted in each
4 vendor's bid (Company's Response to TS STF-PIA-15-3 Attachment A). Similar to the
5 EPC RFP, bidders from this RFP were ranked considering several qualitative and
6 quantitative factors [REDACTED]
7 [REDACTED].

8 **Q. PLEASE DESCRIBE THE COMPANY'S ECONOMIC EVALUATION OF THE**
9 **FIVE BESS PROJECTS.**

10 A. As part of the Application, the Company conducted an economic evaluation for four of the
11 Five BESS Projects, excluding McGrau Ford Phase I. This evaluation assessed the costs
12 and benefits of the projects over time. The economic analysis provided in the Application
13 is structured to be consistent with the 2023 IRP Update Economic Analysis (Application,
14 Attachment A: 500 MW BESS Economic Analysis, p. 2). The period of analysis covers
15 the 20-year assumed life of the asset, plus additional years using the "term equalization"
16 method which used in the 2023 IRP Update filing. This method allowed the comparison of
17 assets of varying lifespans. The Company conducted the analysis using five scenarios:
18 Medium Gas Price, Zero Carbon Price (MG0); Low Gas, Zero Carbon Price (LG0); High
19 Gas Price, Zero Carbon Price (HG0); Medium Gas Price, \$20 Carbon Price (MG20); and
20 Medium Gas Price, \$50 Carbon Price (MG50).

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1 The Company did not provide an updated economic benefits analysis for McGrau Ford
2 Phase I BESS in the Compliance Filing. In the 2022 IRP, when the project was initially
3 approved, the Company conducted a generic analysis of the economic costs and benefits
4 of incremental battery storage resources. The analysis, provided in Technical Appendix 2
5 of the 2022 IRP filing, was structurally similar to the analysis included in the Application,
6 including energy benefits from the Aurora model and benefits related to reducing the cost
7 of integrating renewable resources. While the Company did not provide an updated
8 economic analysis in the Compliance Filing, the analysis conducted on McGrau Ford Phase
9 II BESS provides an indication of the potential benefits, with the caveat that McGrau Ford
10 Phase I is a 2-hour battery and Phase II is a 4-hour battery.

11 **Q. WHAT ARE THE PRIMARY COMPONENTS OF THE PROJECT COSTS OVER**
12 **THE LIFE OF THE ASSETS?**

13 A. The table below provides the cost and benefit components reproduced from the Company’s
14 economic analysis summary (Application, PD Attachment A 500 MW BESS Economic
15 Analysis, p. 4). The table includes cost component categories grouped into asset costs,
16 system costs, and benefits categories.

17 *Table 4. Economic Analysis Cost and Benefit Categories*

Asset Costs	System Costs	Benefits
Capacity Costs Accounting Lease Additional Sum In-Service Capital Environmental Maintenance Capital Fixed O&M FT	Transmission Term Equalization	Energy Benefit Renewable Integration Benefit

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1 [REDACTED]
2 [REDACTED]
3 [REDACTED]
4 [REDACTED]
5 [REDACTED]

6 **Q. PLEASE DESCRIBE THE COMPANY’S TREATMENT OF TAX CREDITS IN**
7 **ITS APPLICATION AND COMPLIANCE FILINGS.**

8 A. The value of federal and state investment tax credits (“ITCs”) is included as an element of
9 the In-Service Capital line item. The Company used project-specific tax credit qualification
10 assumptions based on the specific circumstances of each project (Company’s Response to
11 STF-PIA-17-6). The table below summarizes the tax credit assumptions for each project:

12 *Table 5. Federal and State ITC Assumptions*

Project	Federal ITC	State ITC
Robins	30%	5%
Moody	30%	5%
Hammond	40%	5%
McGrau Ford Phase I	30%	3%
McGrau Ford Phase II	30%	3%

13 The difference in the Federal ITC amounts is due to the siting of the Hammond project at
14 a retired coal plant. The Federal Inflation Reduction Act (“IRA”) provides a bonus 10%
15 tax credit for projects sited within “energy communities,” defined as United States (“US”)
16 census tracts near where a coal-fired generating plant was retired after 2009. The difference
17 in the state tax credits for the McGrau Ford Phase I and II Projects and the other BESS

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1 Projects is due to the county in which the projects are located (Company’s Response to
2 STF-PIA-17-6).

3 **Q. ARE THERE NOTABLE RISKS ASSOCIATED WITH THE TAX CREDIT**
4 **ASSUMPTIONS?**

5 A. Yes. There are risks related to qualification for specific tax credits. Tax credits are subject
6 to specific tax code provisions that are driven by policies of the Federal Government.
7 Qualification for specific credits is based on compliance with the provisions of the
8 regulations, some of which are outside of the control of the Company. For example, the
9 Federal ITC under the IRA has specific Prevailing Wage and Apprenticeship (“PWA”
10 requirements,” which set threshold requirements in order to qualify for the maximum credit
11 amounts. The Company has confirmed that the vendors are “guaranteeing compliance with
12 [PWA] requirements relevant to their works scope for the Company to remain eligible” for
13 the assumed ITC levels (Company’s Response to STF-PIA-17-10-a). Furthermore, the
14 Company has stated that [REDACTED]
15 [REDACTED]
16 [REDACTED] (Trade Secret (“TS”) Company’s
17 Response to STF-PIA-17-10-a). Therefore, while there are still some risks associated with
18 full qualification for the tax credits, the Company [REDACTED]
19 [REDACTED].

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1 **Q. ARE THERE SIGNIFICANT DIFFERENCES IN THE COSTS BETWEEN THE**
 2 **PROJECTS?**

3 A. Yes. While many of the cost elements are very similar, there are some notable exceptions
 4 which resulted in a meaningful difference in the relative costs of the projects. The Company
 5 provided a breakdown of costs on a \$/kilowatt (“kW”) basis for the aggregated cost
 6 categories with the economic analysis (Application, TS Attachment A: 500 MW BESS
 7 Economic Analysis, p.4). In the table below, we have expanded the table to highlight key
 8 sub-categories:

9 *Table 6. Cost Components by Project (NPV \$/kW, 2024\$)*

		Robins	Moody	Hammond	McGrau Ford I	McGrau Ford II
Nameplate Capacity (MW)		128	49.5	57.5	265	265
In-Service Capital	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Maintenance Capital	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Fixed O&M	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

10 As shown in the table, there are a few notable differences between the projects. First, the
 11 McGrau Ford Phase I Project is a 2-hour BESS, while the other projects are 4-hour BESS,
 12 so the capital cost is lower on a per-kW basis. The Hammond Project has a higher
 13 interconnection cost on a per-kW basis. The Company addressed this item, noting that:
 14 “The need for a new 230 kV project level substation and associated generation tie-line,
 15 coupled with Hammond BESS being a smaller project, results in the BESS being more

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1 expensive on a \$/kW basis than the other three projects” (Company’s Response to STF-
2 PIA-15-11). Lastly, the augmentation cost is higher for the Robins and Moody Projects due
3 to the strategy used by the Company for these projects. This issue will be discussed in more
4 detail later in our testimony.

5 **Q. WHAT ARE THE COMPONENTS OF THE PROJECT BENEFITS?**

6 A. The project benefits included in the Company’s economic evaluation consist of two
7 elements: Energy Benefits and Renewable Integration Benefits.

8 **Q. PLEASE DESCRIBE THE COMPANY’S CALCULATION OF ENERGY**
9 **BENEFITS.**

10 A. Energy Benefits reflect the change in overall system production cost due to the addition of
11 the BESS project. Consistent with the 2023 IRP Update analysis, the Company used the
12 Aurora production cost model to quantify these benefits. The Company did not provide
13 Energy Benefit results for the McGrau Ford Phase I Project. The analysis models a “Base
14 Case” without the project in-service, and a “Change Case” with the project in service. The
15 addition of the project results in a reduction in the total system production cost due to the
16 reduction in fuel purchases as the battery displaces the use of less efficient peaking plants.

17 **Q. DO THE PROJECTS PROVIDE SIMILAR ENERGY BENEFITS?**

18 A. Yes. The table below provides the Energy Benefits on \$/kW basis and demonstrates that
19 the results are similar across the projects:

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Table 7. Energy Benefit Results

		Robins	Moody	Hammond	McGraw Ford Phase II
Energy Benefit	\$000 NPV, 2024\$	████	████	████	████
Nameplate Capacity	MW	128	49.5	57.5	265
Energy Benefit	\$/kW NPV, 2024\$	████	████	████	████

2

There were minor differences in how the projects were represented in the Aurora model, which helps account for the discrepancies. The Robins and Moody Projects are designed to charge from the co-located solar facility and this limitation is reflected in the Aurora modeling (Company’s Response to STF-PIA-15-1). This constraint on operations prevents these facilities from using the same optimized charging and discharging cycles that was used by the other facilities in the model. However, in actual operation, the Company plans to charge the battery from the grid when conditions allow. In addition, the Company plans to “investigate firm transmission deliverability service for charging in the future to expand the operational flexibility of the resources” (Company’s Response to STF-PIA-15-1).

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11 **Q. PLEASE DESCRIBE THE RENEWABLE INTEGRATION BENEFIT.**

12 A. The Renewable Integration Benefit derives from the operational value of BESS to a grid
 13 with more intermittent renewable resources. During the 2022 IRP proceeding, the
 14 Company filed the Renewable Integration Study conducted by Astrapé Consulting (Docket
 15 No. 44160. Georgia Power Company 2022 Integrated Resource Plan, Volume 1.
 16 *Renewable Integration Study*. November 18, 2021). That study concluded that the addition

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1 of battery storage resources lowers the cost of reliably integrating renewable resources.
2 This cost reduction is reflected in the Renewable Integration Benefit.

3 **Q. HOW DID THE COMPANY QUANTIFY THE RENEWABLE INTEGRATION**
4 **BENEFIT?**

5 A. The Company used the results of the analysis Renewable Integration Study to quantify the
6 benefit of the BESS projects on a \$/kW basis. The Company compared the production cost
7 deltas between two sets of Aurora model runs: a case with 3,000 MW of incremental solar
8 and no new BESS capacity, and a case with 3,000 MW of incremental solar and 1,150 MW
9 of BESS capacity. The Company divided the reduction in production costs due to the BESS
10 by the total BESS capacity to yield a value of the BESS in \$/kW.

11 In the benefits analysis, the Company credited the BESS projects with a Renewable
12 Integration Benefit by multiplying the project capacity by the \$/kW value. The
13 methodology and result of the Renewable Integration Study is consistent with the
14 evaluation of bids in the Company’s ongoing All-Source Capacity RFP. The results of the
15 renewable integration benefit are summarized in the table below:

16 *Table 8. Renewable Integration Benefit Results*

		Robins	Moody	Hammond	McGrau Ford Phase II
Renewable Integration Benefit	\$000 NPV, 2024\$	████	████	████	████
Nameplate Capacity	MW	128	49.5	57.5	265
Renewable Integration Benefit	\$/kW NPV, 2024\$	████	████	████	████

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1 **Q. WHAT IS THE CONCLUSION OF THE COMPANY’S ECONOMIC ANALYSIS?**

2 A. When considering the asset costs, system costs, and benefits (Energy Benefits and
3 Renewable Integration Benefits), the BESS Projects yield a net cost to customers, as the
4 combined benefits are not sufficient to outweigh the costs. This outcome is expected for a
5 resource that is needed to meet capacity requirements.

6 **Q. PLEASE DESCRIBE THE COMPANY’S AUGMENTATION PLANS FOR THE**
7 **FIVE BESS PROJECTS.**

8 A. “Augmentation,” in the context of battery storage projects, refers to periodic modifications
9 to the battery storage facilities to maintain the desired performance characteristics. Over
10 time, the ability of BESS to store energy degrades, so a project that was able to deliver four
11 hours of output at the time of commissioning will lose a portion of that duration. The owner
12 of a BESS can make additional capital investments in the facility to maintain the target
13 duration. This is important such that the projects can maintain the same reliability value to
14 the grid.

15 **Q. WHAT ARE THE PRIMARY AUGMENTATION STRATEGIES USED IN THE**
16 **INDUSTRY?**

17 A. There are two primary approaches to augmentation. First, a BESS owner can overbuild the
18 battery project at the time of commissioning, to provide a buffer for the target duration and
19 extend the time before an augmentation investment is made. The second approach is to
20 build the project to the desired energy level at commissioning and make augmentation

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1 investments once the battery degrades and can no longer deliver the desired duration (e.g.
2 4 hours).

3 **Q. WHICH OF THE AUGMENTATION STRATEGIES IS THE COMPANY**
4 **PROPOSING TO UTILIZE?**

5 A. The Company proposes to use both strategies. For the Robins and Moody Projects, the
6 Company is sizing the projects to their full target size at commissioning and starting
7 augmentation sooner [REDACTED]. For the Hammond and McGrau Ford Phases I and II
8 Projects, the Company is slightly overbuilding the projects and beginning augmentation
9 later [REDACTED]. The Company told Staff during informal discussions that the Company
10 is pursuing this strategy in order to provide a balanced approach. For example, the project
11 will need to be taken out of service for a short period when the augmentation investments
12 are put in service, and with the Company's approach, all five of the projects will not need
13 to be taken out of service during the same year for the investment.

14 The figure below depicts the cumulative cost of the augmentation investments for each
15 project on a \$/kW basis. Note that the data is presented on a per-kW basis, so the Robins
16 and Moody Projects trends appear similar to each other, as do the Hammond and McGrau
17 Ford Phase II trends. The McGrau Ford Phase I Project has a lower augmentation cost due
18 to the fact that it is a 2-hour battery rather than a 4-hour battery.

FIGURE REDACTED

1

2

TS Figure 1. Augmentation Cost, Cumulative Present Value (\$/kW, 2024\$)

3

Q. DOES STAFF AGREE WITH THE COMPANY'S APPROACH?

4

A. Yes. Staff agrees with the Company's augmentation strategy, which represents a

5

reasonable balance of risks and provides some operational benefits.

6

Q. WHAT PORTION OF THE COSTS OF THE BESS PROJECTS ARE RELATED TO THE AUGMENTATION?

7

8

A. For the Robins and Moody Projects, the NPV of the cost of augmentation capital is

9

approximately [REDACTED] or slightly less than [REDACTED] of the total asset revenue requirement. For

10

the Hammond and McGrau Ford Projects, which are designed to be overbuilt, the cost of

11

augmentation is [REDACTED]. The table below summarizes the values for each project:

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1

Table 9. Augmentation Costs by Project

		Robins	Moody	Hammond	McGrau Ford I	McGrau Ford II
Nameplate Capacity (MW)		128	49.5	57.5	265	265
Total Revenue Requirement	\$000 NPV, 2024\$	■	■	■	■	■
Augmentation Cost	\$000 NPV, 2024\$	■	■	■	■	■
Percent		■	■	■	■	■
Augmentation Cost	\$/kW NPV, 2024\$	■	■	■	■	■

2 **Q. DOES STAFF HAVE ANY RECOMMENDATIONS RELATED TO**
 3 **AUGMENTATION?**

4 A. Yes. Given that the Company is expected to add more battery storage in the future, the
 5 experience gained from these initial BESS projects provides an opportunity for the
 6 Company to refine its future strategies. Since the Company is using multiple augmentation
 7 approaches, it can use the lessons learned with these projects to inform planning for future
 8 BESS projects. Staff recommends that the Company provide information regarding its
 9 augmentation plans in an Annual BESS Report. Specific information provided in this report
 10 should include costs of augmentation, actual decline rates in duration, and performance of
 11 the BESS pre- and post-augmentation.

12 **Q. PLEASE DESCRIBE THE COMPANY’S DECOMMISSIONING PLANS FOR**
 13 **THE FIVE BESS PROJECTS.**

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1 A. As part of the total certified cost requests, the Company included decommissioning and
2 dismantlement costs which represent additional estimated costs at the end of the life of the
3 BESS for site remediation. It is Staff’s understanding that the Company plans to recycle
4 the recyclable materials of the Tesla Megapack 2 XL after the 20-year expected life. The
5 Company did not include any additional value or cost of the recycled BESS in the estimated
6 decommissioning costs. The Company told Staff that the basis for this assumption is that
7 the future market for recycled BESS is relatively unknown; therefore, the Company chose
8 not to include a salvage value in its cost estimates.

9 **IV. CONSTRUCTION MONITORING REPORTING**

10 **Q. PLEASE DESCRIBE THE REPORTING REQUIREMENTS FOR THE FIVE BESS**
11 **PROJECTS THAT HAVE ALREADY BEEN APPROVED BY THE**
12 **COMMISSION.**

13 A. As part of the 2023 IRP Update Order, the Commission ordered the Company to file semi-
14 annually, Construction Monitoring Reports for the Robins and Moody BESS Projects;
15 however, the Order stated that specific reporting requirements for the 500 MW of BESS
16 would be determined during the certification proceeding. For the McGrau Ford Phase I
17 Project, the approved 2022 IRP Stipulation requires quarterly filings but did not specify
18 reporting requirements.

19 **Q. HOW FREQUENTLY DID THE COMPANY PROPOSE TO FILE THE**
20 **CONSTRUCTION MONITORING REPORTS FOR THE FIVE BESS PROJECTS?**

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1 A. In the Compliance Filing, the Company stated that it will file quarterly Construction
2 Monitoring Reports for the McGrau Ford Phase I Project; however, the Compliance Filing
3 was silent on what information would be provided in the reports. For the Robins, Moody,
4 Hammond, and McGrau Ford Phase II Projects, the Company proposed to file semi-annual
5 Construction Monitoring Reports and provide information regarding capital expenditures
6 and financial cost data, detailed schedule reporting on critical path activities, status updates
7 on the procurement of any new licenses and permits, variances in major contracts, and the
8 procurement status of long-lead time equipment (Company's Direct Testimony, p. 17, lines
9 12-21).

10 **Q. DOES STAFF AGREE THAT SEMI-ANNUAL REPORTING REQUIREMENTS**
11 **ARE SUFFICIENT GIVEN THE FAST CONSTRUCTION TIMELINE AND**
12 **CAPITAL-INTENSIVE NATURE OF THE BESS PROJECTS?**

13 A. No. Staff does not agree that semi-annual reporting is sufficient when considering the fast-
14 approaching COD and capital-intensive projects. It is Staff's position that Construction
15 Monitoring Reporting for these projects should be done more often than twice a year.

16 **Q. WHAT IS STAFF'S RECOMMENDATION REGARDING THE FREQUENCY OF**
17 **CONSTRUCTION MONITORING REPORTING AND THE INFORMATION TO**
18 **BE PROVIDED IN THE REPORT?**

19 A. Staff recommends quarterly Construction Monitoring Reporting for the Robins, Moody,
20 Hammond and McGrau Ford Phase II BESS Projects to allow the Commission to stay
21 properly informed regarding the status of the construction and associated spending for

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1 these projects. The Commission has already approved a quarterly reporting requirement
2 for the McGrau Ford Phase I Project. In addition to the information that the Company has
3 agreed to provide, Staff recommends that the following information also be provided in the
4 quarterly reports: contingency assessment, CWIP, AFUDC, and Ad Valorem balances.

5 **Q. DOES STAFF RECOMMEND APPROVAL OF THE COMPANY'S REQUEST TO**
6 **PROCEED WITH THE MCGRAU FORD PHASE I BESS PROJECT?**

7 A. Yes. Staff recommends approval of the Company's request to proceed with the 265 MW
8 McGrau Ford Phase I Project.

9 **Q. DOES STAFF RECOMMEND APPROVAL OF THE COMPANY'S REQUEST TO**
10 **CERTIFY THE ROBINS, MOODY, HAMMOND, AND MCGRAU FORD PHASE**
11 **II BESS PROJECTS?**

12 A. Yes. As provided in the testimony of PIA Staff panel of Douglas A. Smith and Katherine
13 Palacios, Staff agrees with the Company's siting of the Five BESS Projects. Since these
14 projects are anticipated to be online by the winter of 2026/2027 to meet the needs of
15 economic development customers and are sited at locations that should have minimal
16 transmission impacts, Staff recommends approval of the Company's request to certify
17 Robins, Moody, Hammond and McGrau Ford Phase II BESS Projects.

18 **Q. DOES STAFF RECOMMEND APPROVAL OF THE COMPANY'S REQUESTED**
19 **TOTAL CERTIFIED AMOUNTS FOR THE FIVE BESS PROJECTS?**

20 A. No. Staff recommends that the Company's contingency amount requested for Changes in
21 Import Tariffs or other Regulatory Impacts, in the amount of [REDACTED] for the Five

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1 BESS Projects, not be approved as part of the total certified cost. With this
2 recommendation, the total certified amount for each project is as follows:

3 *Table 10. Certified Cost Adjustments by Project*

Project	Company's Requested Certified Cost	Changes in Import Tariffs or Other Regulatory Impacts	Staff's Recommended Certified Cost
Robins			
Moody			
Hammond			
McGrau Ford Phase I			
McGrau Ford Phase II			
Total			

4 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

5 A. Yes.

Bobby Iseley
Professional Experience and Educational Background

Mr. Iseley graduated from the University of Florida in 2021 with a Bachelor of Science degree in Electrical Engineering. He received a Master of Science degree in Natural Resources and Energy Policy from the Colorado School of Mines in 2023. In 2023, Mr. Iseley was hired as a Public Utilities Engineer in the Energy Efficiency and Renewable Energy Unit. During Mr. Iseley's time at the Commission, he participated in Docket No. 55378, Georgia Power Company's 2023 Integrated Resource Plan Update, Docket No. 44880, Georgia Power Company's 2023 Biomass Request for Proposals, Docket No. 45084, Georgia Power Company's 2023 CARES Utility Scale Request for Proposals, Docket No. 44942, Georgia Power Company's 2023 Distributed Generation Request for Proposals, and Docket No. 4822, Capacity and Energy Payments to Cogenerators under PURPA.

Jeffrey D. Bower

Managing Consultant

Jeff advises infrastructure developers, utilities, and regulators pursuing commercial opportunities and policies to develop and deploy renewable energy resources and enabling transmission projects. He has broad experience in integrated resource planning, power market modeling, and the integration of offshore wind, land-based renewable energy, and transmission into RTO/ISO markets. His work includes economic and operational cost-benefit analysis and assessments of strategies to meet utility and state decarbonization goals. Jeff has testified before FERC and before state regulatory agencies in Arkansas, Georgia, and Maine, as well as the province of Manitoba.

SELECTED PROFESSIONAL EXPERIENCE

Integrated Resource Planning

- Evaluated a multi-state IRP in the western U.S. on behalf of a state's public service commission staff, assessing models, methods, assumptions, and conclusions.
- Reviewed the IRP of a vertically-integrated utility in the southeastern U.S., with specific focus on evaluation of renewable resource options and reserve margin. Provided expert witness testimony in regulatory approval proceeding.

Economic Benefits Analysis

- Conducted market and environmental benefits studies for multiple transmission, offshore wind and land-based renewable project proposals. Summarized results for submission by project developers into competitive procurements.
- Analyzed multiple midwestern utility proposals for build-own-transfer transactions for a large solar facilities. Provided expert witness testimony evaluating project need, consistency with IRP, and the utility's forecast of benefits to customers.
- Evaluated a large wind project proposed in the SPP RTO. Provided expert witness testimony regarding project benefits analysis, production cost modeling methodology, congestion risk, and associated transmission proposal benefits.
- Conducted detailed review of a western utility proposal to repower 1 GW of existing wind projects, examining PTC qualification, economic benefits to ratepayers, and project risks.

Wholesale Market Advisory Services

- Served as independent expert to Canadian energy regulator, advising on U.S. wholesale market trends and revenue opportunities for export sales
- Analyzed wholesale market pricing risks for generation developers, incorporating long-term price forecasting and market rule changes over time.
- Evaluated a midwestern utility proposal to join a regional transmission organization (RTO). Analyzed the impacts of the transition on transmission and generation resource adequacy and planning, as well as retail rates

- Authored a market survey of PJM for an independent power producer considering plant acquisitions. Evaluated market opportunities and risks, as well as projections of plant revenues and impacts of policy changes.

Clean Energy Strategy and Policy

- Evaluated a methodology for determining costs and benefits of renewable energy for a southeastern U.S. vertically-integrated utility. Advised state agency on avoided cost methodology, modeling techniques, and application of results to quantify system value of renewables.
- Analyzed Massachusetts' Alternative Energy Portfolio Standard, evaluating barriers to adoption of renewable thermal technologies and developing policy recommendations for the state agency to improve program participation and efficacy.
- Authored a market intelligence report for an offshore wind developer considering participation in a BOEM offshore wind lease auction. Summarized key market opportunities and barriers across multiple states and wholesale energy markets, including evaluation of renewable energy policies, market structures, and drivers of future demand for offshore wind and RECs.
- Supported the development of a transmission planning engagement strategy for a national environmental NGO. Advised on opportunities for high-impact engagement to promote rapid integration of renewables. Authored detailed surveys of regional differences in transmission planning needs and processes, and provided recommendations for high-leverage strategy elements.

INDUSTRY EXPERIENCE

Daymark Energy Advisors, Inc.	Worcester, MA
<i>Managing Consultant</i>	2022 – Present
<i>Senior Consultant</i>	2017 – 2022
<i>Consultant</i>	2013 – 2017
<i>Analyst</i>	2010 – 2013

Consulting practice includes:

- Power market modeling and price forecasting
- Power project financial pro-forma modeling and risk analysis
- Economic benefits analyses for generation and transmission infrastructure projects
- Energy policy analysis
- Integrated resource plan evaluation
- Competitive market design advisory services
- Potential assessment of renewable energy and energy efficiency resources
- Expert witness testimony

Climate Change Policy Partnership at Duke University	Durham, NC
<i>Transportation Research Assistant</i>	2009 – 2010

North Carolina Sustainable Energy Association	Durham, NC
<i>Wind Power Research Analyst Intern</i>	2009

EDUCATION

Master of Environmental Management | Nicholas School of the Environment at Duke University, Durham, NC | 2010

Certificate in Geospatial Analysis | Duke University, Durham, NC | 2010

B.A. Sociology | Tufts University, Medford, MA | 2004

EXPERT TESTIMONY

FORUM	ON BEHALF OF	MATTER
Arkansas Public Service Commission	Arkansas PSC General Staff	Petition of Entergy Arkansas, LLC for Approval of Power Purchase Agreements. Docket No. 22-082-U.
Arkansas Public Service Commission	Arkansas PSC General Staff	Application of Southwestern Electric Power Company for Approval to Acquire New Renewable Generation Facilities and to Recover the cost of Power Purchase Agreements. Docket No. 22-019-U.
Arkansas Public Service Commission	Arkansas PSC General Staff	Petition of Entergy Arkansas, LLC for Approval of a Build-Own-Transfer Arrangement for a Solar Facility. Docket No. 20-067-U.
Arkansas Public Service Commission	Arkansas PSC General Staff	Petition of Entergy Arkansas, LLC for Approval of a Build-Own-Transfer Arrangement for a Solar Facility. Docket No. 20-052-U.
Arkansas Public Service Commission	Arkansas PSC General Staff	Application of Southwestern Electric Power Company for Approval to Acquire Wind Generating Facilities. Docket No. 19-035-U.
Arkansas Public Service Commission	Arkansas PSC General Staff	Petition of Entergy Arkansas, LLC for Approval of a Build-Own-Transfer Arrangement for a Solar Facility. Docket No. 19-019-U.
Georgia Public Service Commission	Georgia PSC Public Interest Advocacy Staff	Georgia Power Company's 2022 Integrated Resource Plan. Docket No. 44160.
Georgia Public Service Commission	Georgia PSC Public Interest Advocacy Staff	Capacity and Energy Payments to Cogenerators Under PURPA. Docket Nos. 4822, 16573, 19279.
Maine Public Utilities Commission	Central Maine Power Company	Application for Certificate of Convenience and Public Necessity (CPCN) for the New England Clean Energy Connect. Provided analysis of economic benefits of HVDC transmission project. Docket No. 2017-00232.
North Carolina Utilities Commission	Avangrid Renewables	Biennial Consolidated Carbon Plan and Integrated Resource Plans Duke Energy. Docket No. E-100, Sub 190.
Manitoba Public Utilities Board	Independent Expert Consultant to the Board	Manitoba Hydro 2023/24 and 2024/25 General Rate Application.
FERC	New York Utility Intervention Unit	FERC Notice of Proposed Rulemaking (NOPR): Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators. Submitted comments addressing the adverse efficiency impact of setting the offer cap too high and of maintaining different caps in adjacent regions. No. RM16-5-000. April 2016.