

**Matter No. M10110**

**In the Matter of CI C0014218 Wreck Cove Life Extension  
and Modernization (LEM) Project**

**EVIDENCE OF  
JOHN D. WILSON  
ON BEHALF OF  
CONSUMER ADVOCATE**

Resource Insight, Inc.

**MAY 27, 2021**

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Exhibit JDW-1

*Professional qualifications of John D. Wilson*

1 **I. Identification**

2 **Q: Mr. Wilson, please state your name, occupation, and business address.**

3 A: I am John D. Wilson. I am the research director of Resource Insight, Inc., 5 Water St.,  
4 Arlington, Massachusetts.

5 **Q: Summarize your professional education and experience.**

6 A: I received a BA degree from Rice University in 1990, with majors in physics and history,  
7 and an MPP degree from the Harvard Kennedy School of Government with an emphasis in  
8 energy and environmental policy, and economic and analytic methods.

9 I was deputy director of regulatory policy at the Southern Alliance for Clean Energy  
10 for more than twelve years, where I was the senior staff member responsible for SACE's  
11 utility regulatory research and advocacy, as well as energy resource analysis. I engaged with  
12 southeastern utilities through regulatory proceedings, formal workgroups, informal  
13 consultations, and research-driven advocacy.

14 I have been in my current position since November of 2019. My clients have included  
15 a variety of consumer advocate, energy industry, and environmental advocacy organizations.

16 My work has considered, among other things, the cost-effectiveness of prospective new  
17 electric generation plants and transmission lines, retrospective review of generation-planning  
18 decisions, conservation program design, ratemaking and cost recovery for utility efficiency  
19 programs, allocation of costs of service between rate classes and jurisdictions, design of retail  
20 rates, and performance-based ratemaking for electric utilities.

21 My professional qualifications are further summarized in Exhibit JDW-1.

22 **Q: Have you testified previously in utility proceedings?**

23 A: Yes. I have testified more than two dozen times before utility regulators in various U.S.  
24 jurisdictions and appeared numerous additional times before various other regulatory  
25 agencies and legislative bodies.

1 **Q: Have you previously testified in other proceedings before this Board?**

2 A: Yes. I have filed testimony in eight proceedings. I have also assisted the Consumer Advocate  
3 in preparing comments and developing positions in numerous proceedings and stakeholder  
4 processes.

5 **II. Introduction and Summary**

6 **Q: On whose behalf are you testifying?**

7 A: My testimony is sponsored by the Nova Scotia Consumer Advocate.

8 **Q: What is the purpose of your testimony?**

9 A: I review aspects of NS Power's application for approval of the Wreck Cove Life Extension  
10 and Modernization (LEM) Project – Balance of Plant.

11 **Q: What is your recommendation to the Board?**

12 A: I recommend that the Board approve the application, with some reservations. Several issues  
13 arose in this proceeding that were not resolved by NS Power's response to information  
14 requests. Depending on further evidence that may be developed in this matter, some  
15 modifications to details of the proposed project may be advised.

16 **III. Unresolved Questions**

17 **Q: What are the topics where NS Power's application and responses to information  
18 requests left you with further questions?**

19 A: There are five areas with unresolved questions, as follows.

- 20 1. Diesel generator upgrade
- 21 2. Budget contingency
- 22 3. Insurance risk review
- 23 4. Vendor support and replacement part availability

1           5. Preferred vendor language

2   **Q: Please summarize NS Power’s proposal for upgrade of the Wreck Cove diesel**  
3   **generator.**

4   A: NS Power proposes to replace the 225 kW emergency backup generator with a higher  
5   capacity diesel generator to provide black start capability to handling station loads for the  
6   sump pumps, air movement and fire system.<sup>1</sup>

7   **Q: Are there any potential alternatives to the higher capacity diesel generator?**

8   A: Yes, it may be possible for NS Power to install a battery storage unit to supplement the  
9   existing generator to provide the required total black start capability.<sup>2</sup>

10   **Q: Does NS Power consider a battery storage unit combined with the existing diesel**  
11   **generator to be a viable alternative?**

12   A: No. In response to an information request, NS Power stated that the suggested solution is not  
13   feasible due to the requirement for immediate and sustained power supply for an indefinite  
14   period.

15   **Q: Is NS Power’s response convincing?**

16   A: No, for two reasons. First of all, NS Power did not clearly answer the primary question  
17   related to the combination of storage and diesel units to provide the necessary increase in  
18   black start capability. NS Power’s response focuses on “batteries and solar panels,” which is  
19   the subject of the second part of the same information request question.

20           Second, NS Power justifies the higher capacity diesel generator based on a need for  
21   black start capability but rejects the storage plus diesel concept based on a need for  
22   “indefinite” generation. Since a black-start event should enable Wreck Cove’s generation to  
23   provide energy after the startup process is complete, NS Power’s statement that “indefinite”

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<sup>1</sup> NS Power, Exhibit N-2, response to CA IR-2(a).

<sup>2</sup> NS Power could also install on-site solar generation to charge the storage.

1 generation is required from the upgraded backup generation is not supported by the black-  
2 start capability requirement.

3 **Q: What do you recommend with respect to the backup generation upgrade?**

4 A: Unless NS Power can demonstrate that a storage-plus-diesel alternative is technically  
5 infeasible, it should evaluate the economics of the hybrid alternative. That evaluation should  
6 reflect the additional benefits that the battery storage unit could provide, including energy  
7 arbitrage and ancillary services. The analysis should consider whether the battery can be  
8 dispatched at times that the black-start service is unlikely to be required, given the  
9 opportunity to recharge from the grid or the diesel generator.

10 **Q: Please summarize NS Power's support for its proposed budget contingency.**

11 A: The proposed project has a 25 percent contingency, including a 15 percent project  
12 contingency and a 10 percent COVID-19 contingency. The project contingency was  
13 primarily based on Stantec Consulting's recommendation for the mechanical, ventilation,  
14 electrical, and civil scopes of work, and NS Power applied the same contingency to the  
15 remaining project scope because its staff concluded that those costs are subject to the same  
16 risks. NS Power determined the COVID-19 contingency based on stoppage or delays in work  
17 or equipment supply due to the pandemic.<sup>3</sup> NS Power also states that the pricing and  
18 contingency are based on a Class 3 cost estimate from Stantec.<sup>4</sup>

19 **Q: Is NS Power's support for its proposed budget contingency sufficient?**

20 A: No. With respect to the project contingency, NS Power relies entirely on Stantec  
21 Consulting's recommendation. While Stantec's cost estimate reports list the 15 percent  
22 project contingency, neither those estimates nor its more general report provide the "risk  
23 elements" any basis for selecting 15 percent or provide any specific explanation as to why

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<sup>3</sup> NS Power, Exhibit N-3, response to NSUARB IR-5.

<sup>4</sup> NS Power, Exhibit N-3, responses to NSUARB IR-1 and IR-5.

1 the cost estimate is considered to be a Class 3 cost estimate.<sup>5</sup> Furthermore, NS Power does  
2 not justify the remaining project scope (outside of Stantec’s cost estimate) as a Class 3 cost  
3 estimate, or explain how those cost estimates are subject to the unspecified “risk elements”  
4 that NS Power believes Stantec has identified in selecting the 15 percent project contingency.

5 With respect to the COVID-19 contingency, NS Power simply stated that it is “based  
6 on stoppage or delays in work or equipment supply due to the pandemic.”<sup>6</sup> NS Power did  
7 not provide any explanation as to how it selected the 10 percent contingency value.

8 Even though information requests on this topic were submitted by both NSUARB and  
9 the Consumer Advocate, NS Power has not supported the proposed budget contingency with  
10 an explanation of the basis for the contingency (other than the listed value in Stantec’s cost  
11 estimate report), the use of expert judgement by internal or third-party subject matter experts  
12 in developing the contingency, or the determination of cost estimate classifications.

13 **Q: How should NS Power address the lack of support for its proposed budget contingency?**

14 A: NS Power should provide evidence or explanations for all aspects of the proposed budget  
15 contingency, as summarized above.

16 **Q: Please explain the relevance of an insurance risk review to the project application.**

17 A: In NS Power’s explanation of CI C0030887 POT – Hydrogen Degas Panel Phase 2, NS  
18 Power stated that the “need for this project was identified through the insurance risk review  
19 process.” This second phase of the project was “not determined to be required until after the  
20 initial work on the Hydrogen Degas Panel, completed under CI C0011085.”

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<sup>5</sup> Stantec Consulting Ltd., *Statement of Probable Construction Cost (Class III)* (April 26, 2021). Filed as Exhibit N-1, Attachments 4 and 5. The term “risk elements” is referenced in Exhibit N-3, response to NSUARB IR-5. A search of Exhibit N-1, Attachment 1 did not identify any discussion of contingency or cost risk.

<sup>6</sup> NS Power, Exhibit N-3, response to NSUARB IR-5.

1           The unplanned division of the replacement of the Point Tupper Unit 2 Hydrogen Panel  
2 into two phases raised potential issues related to both cost minimization and the contingency  
3 budget. During the 2021 ACE Plan hearing, a witness for NS Power acknowledged that it  
4 has learned from the Point Tupper project that it should include an insurance risk review in  
5 the evaluation process prior to the finalization of project plans.<sup>7</sup>

6           Considering that many of the replacement systems included in the Wreck Cove LEM  
7 proposal pose potential health and safety risks,<sup>8</sup> it appears that an insurance risk review  
8 might identify changes in the scope of work. To minimize the costs of the project, the review  
9 should be completed prior to finalization of project plans.

10 **Q: Has NS Power conducted an insurance risk review as part of its project planning?**

11 A: No. Although NS Power states that it completes annual insurance risk reviews that include  
12 the Wreck Cove Generating Station, it is unclear whether the scope of those reviews includes  
13 prospective work such as that proposed in NS Power's application.

14 **Q: What is your recommendation with respect to the insurance risk review?**

15 A: NS Power should conduct an insurance risk review prior to the finalization of project plans  
16 for the proposed project.

17 **Q: Please explain the relevance of vendor support and replacement part availability.**

18 A: Ideally, the proposed assets would remain in service at least as long as their recommended  
19 service life. The availability of replacement parts and, where applicable, software updates  
20 may be critical to realizing the full benefit of these assets. Increasingly, electrical equipment  
21 includes integrated computer equipment that requires servicing from the original vendor for  
22 replacement of hardware or updates to firmware or software.

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<sup>7</sup> NUARB, 2021 ACE Plan Application Transcript (March 23, 2021), Matter No. M09920, p. 101, line 12 through p. 102, line 11.

<sup>8</sup> The project includes, for example, large electrical systems, closure of an existing borehole, and drilling of a new borehole.



1 **Q: Is NS Power able to ensure that it will not be necessary to replace any of the systems**  
2 **included in the application when vendor support ceases?**

3 A: No. When asked in an information request, NS Power was not able to provide any specific  
4 discussion of how it has assessed risks associated with a failure of product support from  
5 vendors.

6 **Q: What is your recommendation with respect to the risk of vendor support issues?**

7 A: For equipment or systems that rely on proprietary designs or software, NS Power should  
8 demonstrate that it has considered alternatives and determined that the cost and performance  
9 advantages of its proposed systems outweigh any risks associated with premature  
10 obsolescence.

11 **Q: Please summarize NS Power's preferred vendor language.**

12 A: NS Power submitted a Basis of Design report from Stantec Consulting Ltd., providing system  
13 conditions and the planned scope of work. At two points in the report, Stantec references an  
14 NS Power preferred vendor.

15 NS Power proposes to replace four motor control center (MCC) systems.<sup>9</sup> Stantec  
16 states:

17 NSPI preferred MCC vendor is Allen Bradley, for consistency in spares and  
18 training. The MCC specification will include this vendor as a standard but  
19 "approved equal" submissions shall be considered.

20 NS Power also proposes to replace four 600V switchgear for generator systems.<sup>10</sup>  
21 Stantec states:

22 NSPI preferred 600V switchgear vendor is Powell, for consistency in spares and  
23 training. The switchgear specification will use this vendor as a standard but  
24 "approved equal" submissions will be considered.

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<sup>9</sup> Stantec Consulting Ltd., *Balance of Design – Balance of Plant – Rev D* (January 29, 2021), p. 32.  
Filed as Exhibit N-1, Attachment 1.

<sup>10</sup> Exhibit N-1, Attachment 1, pp. 37-38.

1 **Q: Does the use of a preferred vendor support cost minimization?**

2 A: This is unclear. Although NS Power states that it conducted competitive bidding processes,  
3 it does not explain the inclusion of specific preferred vendors for the MCC systems and  
4 switchgear. When asked how cost minimization is achieved using a preferred vendor, NS  
5 Power responded, “It is not an indication of a sole vendor or of the method used by NS Power  
6 for the procurement of equipment.” This response does not explain the significance of  
7 designating a preferred vendor. Nor does it explain whether NS Power has previously taken  
8 any steps to ensure cost minimization when its contractor buys from the preferred vendor.

9 It appears likely that these preferred vendors were included in all the bids obtained for  
10 the project. If so, then there was no competition among vendors for these two types of  
11 equipment. Alternatively, some supplier may have proposed alternative manufacturers and  
12 NS Power may have approved or rejected that equipment for the bids. At this point, there is  
13 no way to know how the preferred vendor specification affected the project bids and costs,  
14 or whether the specification was warranted.

15 **Q: What is your recommendation with respect to the preferred vendor language?**

16 A: NS Power should provide a complete explanation of its use of preferred vendors and explain  
17 how cost minimization is achieved if all competitive bids are expected to include preferred  
18 vendors for certain equipment.

19 **Q: Does this conclude your testimony?**

20 A: Yes.

**JOHN D. WILSON**

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**SUMMARY OF PROFESSIONAL EXPERIENCE**

- 2019–Present* **Research Director, Resource Insight, Inc.** Provides research, technical assistance, and expert testimony on electric- and gas-utility planning, economics, and regulation. Reviews electric-utility rate design. Designs and evaluates conservation programs for electric utilities, including conservation cost recovery mechanisms and performance incentives. Evaluates performance of renewable resources and designs performance evaluation systems for procurement. Designs and assesses resource planning and procurement strategies for regulated and competitive markets.
- 2007-19* **Deputy Director for Regulatory Policy, Southern Alliance for Clean Energy.** Managed regulatory policy, including supervision of experts in areas of energy efficiency, renewable energy, and market data. Provided expert witness testimony on topics of resource planning, renewable energy, energy efficiency to utility regulators. Directed litigation activities, including support of expert witnesses in the areas of rate design, resource planning, renewable energy, energy efficiency, and resource procurement. Conducted supporting research and policy development. Represented SACE on numerous legislative, utility, and private committees across a wide range of climate and energy related topics.
- 2001–06* **Executive Director, Galveston-Houston Association for Smog Prevention.** Directed advocacy and regulatory policy related to air pollution reduction, including ozone, air toxics, and other related pollutants in the industrial, utility, and transportation sectors. Served on the Regional Air Quality Planning Committee, Transportation Policy Technical Advisory Committee, and Steering Committee of the TCEQ Interim Science Committee.
- 2000–01* **Senior Associate, The Goodman Corporation.** Provided transportation and urban planning consultant services to cities and business districts across Texas.
- 1997–99* **Senior Legislative Analyst and Technology Projects Coordinator, Office of Program Policy Analysis and Government Accountability, Florida Legislature.** Author or team member for reports on water supply policy, environmental permitting, community development corporations, school district financial management and other issues – most recommendations implemented by the 1998 and 1999 Florida Legislatures. Edited statewide government accountability newsletter and coordinated online and internal technical projects.
- 1997* **Environmental Management Consultant, Florida State University.** Project staff for Florida Assessment of Coastal Trends.

1992-96 **Research Associate, Center for Global Studies, Houston Advanced Research Center.** Coordinated and led research for projects assessing environmental and resource issues in the Rio Grande / Rio Bravo river basin and across the Greater Houston region. Coordinated task force and edited book on climate change in Texas.

## EDUCATION

BA, Physics (with honors) and history, Rice University, 1990.

MPP, John F. Kennedy School of Government, Harvard University, 1992. Concentration areas: Environment, negotiation, economic and analytic methods.

## PUBLICATIONS

“Urban Areas,” with Judith Clarkson and Wolfgang Roeseler, in Gerald R. North, Jurgen Schmandt and Judith Clarkson, *The Impact of Global Warming on Texas: A Report of the Task Force on Climate Change in Texas*, 1995.

“Quality of Life and Comparative Risk in Houston,” with Janet E. Kohlhase and Sabrina Strawn, *Urban Ecosystems*, Vol. 3, Issue 2, July 1999.

“Seeking Consistency in Performance Incentives for Utility Energy Efficiency Programs,” with Tom Franks and J. Richard Hornby, *2010 American Council for an Energy-Efficient Economy Summer Study on Energy Efficiency in Buildings*, August 2010.

“Monopsony Behavior in the Power Generation Market,” with Mike O’Boyle and Ron Lehr, *Electricity Journal*, August-September 2020.

## REPORTS

“Policy Options: Responding to Climate Change in Texas,” Houston Advanced Research Center, US EPA and Texas Water Commission, October 1993.

Houston Environmental Foresight Science Panel, *Houston Environment 1995*, Houston Advanced Research Center, 1996.

Houston Environmental Foresight Committee, *Seeking Environmental Improvement*, Houston Advanced Research Center, January 1996.

Florida Coastal Management Program, *Florida Assessment of Coastal Trends*, June 1997.

Office of Program Policy Analysis and Government Accountability, *Best Financial Management Practices for Florida School Districts*, Report No. 97-08, October 1997.

Office of Program Policy Analysis and Government Accountability, *Review of the Community Development Corporation Support and Assistance Program*, Report No. 97-45, February 1998.

Office of Program Policy Analysis and Government Accountability, *Review of the Expedited Permitting Process Coordinated by the Governor's Office of Tourism, Trade, and Economic Development*, Report No. 98-17, October 1998.

Office of Program Policy Analysis and Government Accountability, *Florida Water Policy: Discouraging Competing Applications for Water Permits; Encouraging Cost-Effective Water Development*, Report No. 99-06, August 1999.

“Smoke in the Water: Air Pollution Hidden in the Water Vapor from Cooling Towers – Agencies Fail to Enforce Against Polluters,” Galveston Houston Association for Smog Prevention, February 2004.

“Reducing Air Pollution from Houston-Area School Buses,” Galveston Houston Association for Smog Prevention, March 2004.

“Who’s Counting: The Systematic Underreporting of Toxic Air Emissions,” Environmental Integrity Project and Galveston Houston Association for Smog Prevention, June 2004.

“Mercury in Galveston and Houston Fish: Contamination by Neurotoxin Places Children at Risk,” Galveston Houston Association for Smog Prevention, October 2004.

“Exceeding the Limit: Industry Violations of New Rule Almost Slid Under State’s Radar,” Galveston Houston Association for Smog Prevention, January 2006.

“Whiners Matter! Citizen Complaints Lead to Improved Regional Air Quality Control,” Galveston Houston Association for Smog Prevention, June 2006.

“Bringing Clean Energy to the Southeastern United States: Achieving the Federal Renewable Energy Standard,” Southern Alliance for Clean Energy, February 2008.

“Cornerstones: Building a Secure Foundation for North Carolina’s Energy Future,” Southern Alliance for Clean Energy, May 2008.

“Yes We Can: Southern Solutions for a National Renewable Energy Standard,” Southern Alliance for Clean Energy, February 2009.

“Green in the Grid: Renewable Electricity Opportunities in the Southeast United States,” with Dennis Creech, Eliot Metzger, and Samantha Putt Del Pino, World Resources Institute Issue Briefs, April 2009.

“Local Clean Power,” with Dennis Creech, Eliot Metzger, and Samantha Putt Del Pino, World Resources Institute Issue Briefs, April 2009.

“Energy Efficiency Program Impacts and Policies in the Southeast,” Southern Alliance for Clean Energy, May 2009.

“Recommendations for Feed-In-Tariff Program Implementation In The Southeast Region To Accelerate Renewable Energy Development,” Southern Alliance for Clean Energy, March 2011.

“Renewable Energy Standard Offer: A Tennessee Valley Authority Case Study,” Southern Alliance for Clean Energy, November 2012.

“Increased Levels of Renewable Energy Will Be Compatible with Reliable Electric Service in the Southeast,” Southern Alliance for Clean Energy, November 2014.

“Cleaner Energy for Southern Company: Finding a Low Cost Path to Clean Power Plan Compliance,” Southern Alliance for Clean Energy, July 2015.

“Analysis of Solar Capacity Equivalent Values for Duke Energy Carolinas and Duke Energy Progress Systems,” prepared for and filed by Southern Alliance for Clean Energy, Natural Resources Defense Council, and Sierra Club in North Carolina NCUC Docket No. E-100, Sub 147, February 17, 2017.

“Seasonal Electric Demand in the Southeastern United States,” Southern Alliance for Clean Energy, March 2017.

“Analysis of Solar Capacity Equivalent Values for the South Carolina Electric and Gas System,” Southern Alliance for Clean Energy, March 2017.

“Solar in the Southeast, 2017 Annual Report,” with Bryan Jacob, Southern Alliance for Clean Energy, February 2018.

“Energy Efficiency in the Southeast, 2018 Annual Report,” with Forest Bradley-Wright, Southern Alliance for Clean Energy, December 2018.

“Solar in the Southeast, 2018 Annual Report,” with Bryan Jacob, Southern Alliance for Clean Energy, April 2018.

“Tracking Decarbonization in the Southeast, 2019 Generation and CO<sub>2</sub> Emissions Report,” with Heather Pohman and Maggie Shober, Southern Alliance for Clean Energy, August 2019.

“Seasonal Electric Demand in the Southeastern United States,” with Maggie Shober, Southern Alliance for Clean Energy, April 2020.

“Making the Most of the Power Plant Market: Best Practices for All-Source Electric Generation Procurement,” with Mike O’Boyle, Ron Lehr, and Mark Detsky, Energy Innovation Policy & Technology LLC and Southern Alliance for Clean Energy, April 2020.

“Monopsony Behavior in the Power Generation Market,” *The Electricity Journal* 33, with Mike O’Boyle and Ron Lehr (2020).

“Review of Nova Scotia Power’s 2020 Integrated Resource Plan,” prepared for the Nova Scotia Consumer Advocate, NSUARB Matter No. M08059, with Paul Chernick (January 2021).

“Implementing All-Source Procurement in the Carolinas,” prepared for Natural Resources Defense Council, Sierra Club, Southern Alliance for Clean Energy, South Carolina Coastal Conservation League and Upstate Forever, for submission in NCUC Docket E-100, Sub 165, and SCPSC Dockets 2019-224-E and 2019-225-E (February 2021).

## **PRESENTATIONS**

“Clean Energy Solutions for Western North Carolina,” presentation to Progress Energy Carolinas WNC Community Energy Advisory Council, February 7, 2008.

“Energy Efficiency: Regulating Cost-Effectiveness,” Florida Public Service Commission undocketed workshop, April 25, 2008.

“Utility-Scale Renewable Energy,” presentation on behalf of Southern Alliance for Clean Energy to the Board of the Tennessee Valley Authority, March 5, 2008.

“An Advocates Perspective on the Duke Save-a-Watt Approach,” ACEEE 5th National Conference on Energy Efficiency as a Resource, September 2009.

“Building the Energy Efficiency Resource for the TVA Region,” presentation on behalf of Southern Alliance for Clean Energy to the Tennessee Valley Authority Integrated Resource Planning Stakeholder Review Group, December 10, 2009.

“Florida Energy Policy Discussion,” testimony before Energy & Utilities Policy Committee, Florida House of Representatives, January 2010.

“The Changing Face of Energy Supply in Florida (and the Southeast),” 37th Annual PURC Conference, February 2010.

“Bringing Energy Efficiency to Southerners,” Environmental and Energy Study Institute panel on “Energy Efficiency in the South,” April 10, 2010.

“Energy Efficiency: The Southeast Considers its Options,” NAESCO Southeast Regional Workshop, September 2010.

“Energy Efficiency Delivers Growth and Savings for Florida,” testimony before Energy & Utilities Subcommittee, Florida House of Representatives, February 2011.

“Rates vs. Energy Efficiency,” 2013 ACEEE National Conference on Energy Efficiency as a Resource, September 2013.

“TVA IRP Update,” TenneSEIA Annual Meeting, November 19, 2014.

“Views on TVA EE Modeling Approach,” presentation with Natalie Mims to Tennessee Valley Authority’s Evaluating Energy Efficiency in Utility Resource Planning Meeting, February 10, 2015.

“The Clean Power Plan Can Be Implemented While Maintaining Reliable Electric Service in the Southeast,” FERC Eastern Region Technical Conference on EPA’s Clean Power Plan Proposed Rule, March 11, 2015.

“Renewable Energy & Reliability,” 5th Annual Southeast Clean Power Summit, EUCI, March 2016.

“Challenges to a Southeast Carbon Market,” 5th Annual Southeast Clean Power Summit, EUCI, March 2016.

“Solar Capacity Value: Preview of Analysis to Date,” Florida Alliance for Accelerating Solar and Storage Technology Readiness (FAASSTeR) meeting, Orlando, FL, November 2017.

“Making the Most of the Power Plant Market: Best Practices for All-Source Electric Generation Procurement,” Southeast Energy and Environmental Leadership Forum, Nicholas Institute for Environmental Policy Solutions, August 2020.

“Making the Most of the Power Plant Market: Best Practices for All-Source Electric Generation Procurement,” Indiana State Bar Association, Utility Law Section, Virtual Fall Seminar, September 2020.

## **EXPERT TESTIMONY**

*2008*     **South Carolina PSC** Docket No. 2007-358-E, surrebuttal testimony on behalf of Environmental Defense, the South Carolina Coastal Conservation League, Southern Alliance for Clean Energy and the Southern Environmental Law Center. Cost recovery mechanism for energy efficiency, including shareholder incentive and lost revenue adjustment mechanism.

*2009*     **North Carolina NCUC** Docket No. E-7, Sub 831, direct testimony on behalf of Environmental Defense Fund, Natural Resources Defense Council, Southern Alliance for Clean Energy, and Southern Environmental Law Center. Cost recovery mechanism for energy efficiency, including shareholder incentive and lost revenue adjustment mechanism.

**Florida PSC** Docket Nos. 080407-EG through 080413-EG, direct testimony on behalf of Southern Alliance for Clean Energy and the Natural Resources Defense Council. Energy efficiency potential and utility program goals.

**South Carolina PSC** Docket No. 2009-226-E, direct testimony in general rate case on behalf of Environmental Defense, the Natural Resources Defense Council, the South Carolina Coastal Conservation League, Southern Alliance for Clean Energy and the Southern Environmental Law Center. Cost recovery mechanism for energy efficiency, including shareholder incentive and lost revenue adjustment mechanism.

*2010*     **North Carolina NCUC** Docket No. E-100, Sub 124, direct testimony on behalf of Environmental Defense Fund, the Sierra Club, Southern Alliance for Clean Energy, and Southern Environmental Law Center. Adequacy of consideration of energy efficiency in Duke Energy Carolinas and Progress Energy Carolinas’ 2009 integrated resource plans.

**Georgia PSC** Docket No. 31081, direct testimony on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of energy efficiency in



Georgia Power's 2010 integrated resource plan, including cost effectiveness, rate and bill impacts, and lost revenues.

**Georgia PSC** Docket No. 31082, direct testimony on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of energy efficiency in Georgia Power's 2010 demand side management plan, including program revisions, planning process, stakeholder engagement, and shareholder incentive mechanism.

*2011* **South Carolina PSC** Docket No. 2011-09-E, allowable ex parte briefing on behalf of Southern Alliance for Clean Energy, South Carolina Coastal Conservation League, and Upstate Forever. Adequacy of South Carolina Electric & Gas's 2011 integrated resource plan, including resource mix, sensitivity analysis, alternative supply and demand side options, and load growth scenarios.

**South Carolina PSC** Docket Nos. 2011-08-E and 2011-10-E, allowable ex parte briefing on behalf of Southern Alliance for Clean Energy, South Carolina Coastal Conservation League, and Upstate Forever. Adequacy of Progress Energy Carolinas and Duke Energy Carolinas' 2011 integrated resource plans, including resource mix, sensitivity analysis, alternative supply and demand side options, cost escalation, uncertainty of nuclear and economic impact modeling.

*2013* **Georgia PSC** Docket No. 36498, direct testimony on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of energy efficiency in Georgia Power's 2013 integrated resource plan, including cost effectiveness, rate and bill impacts, and lost revenues, economics of fuel switching and renewable resources.

**South Carolina PSC** Docket No. 2013-392-E, direct testimony with Hamilton Davis in Duke Energy Carolinas need certification case on behalf of the South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. Need for capacity, adequacy of energy efficiency and renewable energy alternatives, and use of solar power as an energy resource.

*2014* **South Carolina PSC** Docket No. 2014-246-E, direct testimony generic proceeding on behalf of the South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. Methods for calculating dependable capacity credit for renewable resources and application to determination of avoided cost.

*2015* **Florida PSC** Docket No. 150196-EI, direct testimony in Florida Power & Light need certification case on behalf of Southern Alliance for Clean Energy. Appropriate reserve margin and system reliability need.

*2016* **Georgia PSC** Docket No. 40161, direct testimony on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of renewable energy in Georgia Power's 2016 integrated resource plan, including portfolio diversity,

operational and implementation risk, analysis of project-specific costs and benefits (including location and technology considerations), and methods for calculating dependable capacity credit for renewable resources.

2019 **Georgia PSC** Docket Nos. 42310 and 42311, direct testimony with Bryan A. Jacob in Georgia Power's 2019 integrated resource plan and demand side management plan on behalf of Southern Alliance for Clean Energy. Adequacy of consideration of renewable energy in IRP, retirement of uneconomic plants, and use of all-source procurement process. Shareholder incentive mechanism for both renewable energy and DSM plan.

2020 **Nova Scotia UARB** Matter No. M09519, direct testimony with Paul Chernick in Nova Scotia Power's application for approval of the Smart Grid Nova Scotia Project on behalf of the Nova Scotia Consumer Advocate. Cost classification, decommissioning costs, justification for software vendor selection, and suggested changes to project scope.

**Nova Scotia UARB** Matter No. M09499, direct testimony with Paul Chernick in Nova Scotia Power's 2020 annual capital expenditure plan on behalf of the Nova Scotia Consumer Advocate. Potential to decommission hydroelectric systems, review of annually recurring capital projects, use of project contingencies, and cost minimization practices.

**Nova Scotia UARB** Matter No. M09579, direct testimony with Paul Chernick in Nova Scotia Power's application for the Gaspereau Dam Safety Remedial Works on behalf of the Nova Scotia Consumer Advocate. Alternatives to proposed project, project contingency factor, estimation of archaeological costs, and replacement energy cost calculation.

**Nova Scotia UARB** Matter No. M09707, direct testimony with Paul Chernick on Nova Scotia Power's 2020 Load Forecast on behalf of the Nova Scotia Consumer Advocate. Impacts of recession, application of end-use studies, improvements to forecast components, and impact of time-varying pricing.

**California PUC** Docket A.19-10-012, direct and rebuttal testimony with Paul Chernick in San Diego Gas & Electric's application for the Power Your Drive Electric Vehicle Charging Program on behalf of the Small Business Utility Advocates. Ensuring that utility-installed chargers advance California goal for electric vehicles. Budget controls. Reporting requirements. Evaluation, monitoring and verification processes. Outreach to small business customers.

**California PUC** Docket A.19-08-013, direct testimony in Southern California Edison's 2021 general rate case (track 2) on behalf of the Small Business Utility Advocates. Reasonableness of remedial software costs to be included in authorized revenue requirement.

**Georgia PSC** Docket Nos. 4822, 16573 and 19279, direct, rebuttal and surrebuttal testimony in Georgia Power Company's PURPA avoided cost review

on behalf of the Georgia Large Scale Solar Association. Reviewing compliance with prior Commission orders. Application of capacity need forecast in projection of avoided capacity cost. Calculation of cost of new capacity. Proposal of standard offer contract.

**California PUC** Docket A.19-11-019, direct and reply testimony with Paul Chernick in Pacific Gas & Electric's 2021 general rate case (phase 2) on behalf of the Small Business Utility Advocates. Cost of service methods. Rate design, including customer charges, demand charges, real time pricing tariffs, TOU differentials and periods.

**Nova Scotia UARB** Matter No. M09548, direct testimony on the audit of Nova Scotia Power's Fuel Adjustment Mechanism on behalf of the Nova Scotia Consumer Advocate. Reasonableness of fuel contract costs. Scope of study on dispatch practices. Impact of greenhouse gas shadow pricing. Compliance issues related to resource planning.

2021 **California PUC** Docket R.20-11-003, direct and reply testimony on rulemaking to ensure reliable electric service in the event of an extreme weather event on behalf of the Small Business Utility Advocates. Modifications to Critical Peak Pricing programs and Time of Use periods. Modifications to load management programs.

**Nova Scotia UARB** Matter No. M09898, direct testimony on Nova Scotia Power's Annually Adjusted Rates on behalf of the Nova Scotia Consumer Advocate. Effect of delays in power contract. Unit modeling assumptions. Variable capital costs. Application of Time-Varying Pricing.

**Nova Scotia UARB** Matter No. M09920, direct testimony on Nova Scotia Power's Annual Capital Expenditure Plan for 2021 on behalf of the Nova Scotia Consumer Advocate. Cost minimization. Project contingency. Economic analysis model. Analysis of specific projects.

**Nova Scotia UARB** Matter No. M09777, direct testimony on Nova Scotia Power's Time-Varying Pricing Tariff Application on behalf of the Nova Scotia Consumer Advocate. Effect of proposed TVP tariffs on load, capacity savings, and energy costs. Recommended CPP tariffs. Treatment of demand charges in TVP tariffs. Implementation and evaluation of TVP tariffs. Lost revenue adjustment mechanism.

**South Carolina PSC** Docket Nos. 2019-224-E and 2019-225-E, surrebuttal testimony on 2020 Integrated Resource Plans filed by Duke Energy Carolinas and Duke Energy Progress. All-source procurement process. Process for resolution of disputed issues in IRP proceedings.