PREPARED BY GDS ASSOCIATES, INC.

EERMC

THE RHODE ISLAND ENERGY EFFICIENCY AND RESOURCES MANAGEMENT COUNCIL

TECHNICAL PROPOSAL

RFP Number EERMC-2020-01

Policy & Program Planning Consultant Services

August 3, 2020

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Johnson
CONSULTING GROUP

Demand Side Analytics

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

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August 3, 2020

Ms. Becca Trietch
Rhode Island Office of Energy Resources
One Capitol Hill 4th Floor
Providence, Rhode Island 02908

RE: *EERMC-2020-01 Policy & Program Planning Consultant Services – Technical Proposal*

Dear Ms. Trietch:

GDS Associates, Inc. ("GDS") in partnership with Demand Side Analytics and Johnson Consulting Group (herein referred to as the "GDS Team") is pleased to submit the enclosed technical proposal to the Rhode Island Energy Efficiency and Resources Management Council ("EERMC") to support the EERMC in its review and oversight of energy efficiency and system reliability programs and initiatives proposed and administered by the electric and gas distribution company.

The GDS Team consultants for this project possess extensive experience conducting primary and secondary research as well as designing, implementing, and evaluating energy efficiency, electric rate, and other types of utility programs. GDS Associates, having worked in Rhode Island since 2005, will serve as the prime contractor and has sub-contracted with industry experts Demand Side Analytics and Rhode Island certified Women-owned business, the Johnson Consulting Group. This team combination will provide the expertise needed in order to provide high value to the EERMC.

I am authorized to make representations on GDS' behalf with EERMC. Rich Hasselman, Managing Director at GDS, will serve as the point of contact regarding any questions concerning our proposed scope of work or qualifications. Mr. Hasselman can be reached at (608) 354-0192 or via email at rich.hasselman@gdsassociates.com. You may also contact Josh Duckwall at (770) 799-2437 or josh.duckwall@gdsasssociates.com. We are excited about the prospect of working with EERMC and look forward to answering any questions you might have regarding our proposed approach and our team's qualifications and experience.

Sincerely,

Matt Siska
Principal

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RFP Cover Sheet

Offeror's Name:	GDS Associates, Inc.

RFP Information	
Title of RFP:	Policy & Program Planning Consultant Services
RFP Number:	EERMC-2020-01

Offeror Information	
Legal Name of Offeror:	GDS Associates, Inc.
Type of Entity (i.e. corporation, partnership, sole proprietorship):	C Corporation
Mailing Address of Primary Place of Business	1850 Parkway Place SE Suite 800 Marietta, Georgia 30067
Phone Number:	770-425-8100
Website:	https://www.gdsassociates.com

Contact Person for the Offeror	
Name:	Rich Hasselman
Title:	Managing Director
Mailing Address:	1850 Parkway Place SE Suite 800 Marietta, Georgia 30067
Phone Number:	608-273-0182 office / 608-354-0192 direct
Email Address:	rich.hasselman@gdsassociates.com

Signature of Authorized Person

August 3, 2020
Date

Matt Siska, Principal
Printed Name, Title

II Technical Proposal

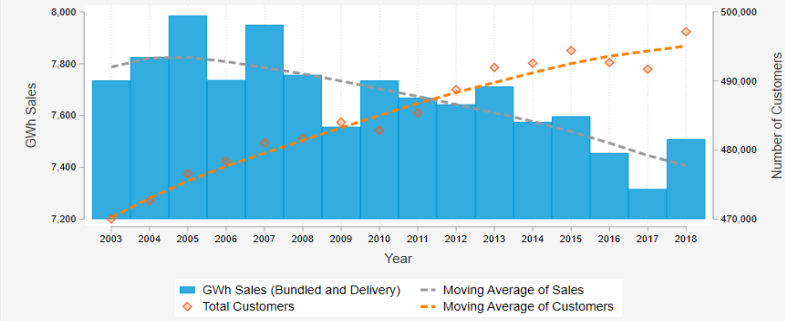
II.A **OVERVIEW**

GDS Associates, Inc., ("GDS") in partnership with Johnson Consulting Group and Demand Side Analytics (herein referred to as the "GDS Team") fully understands the complexities and duties of a council like the Energy Efficiency and Resources Management Council ("EERMC"). From our experience in both statewide energy efficiency and regional engagements of a similar nature, the skillsets of our consultants are a distinct advantage to the EERMC and its current efforts. We are very familiar with the utility and regulatory atmosphere in Rhode Island, having held contracts at the state level since 2005.

In 2021, EERMC faces a new decade, new leadership and new opportunities to promote energy efficiency across the state. A new EERMC consulting team will bring a fresh perspective to the EERMC as it begins a new chapter. Our team members bring a national perspective informed by the work we complete in other jurisdictions from coast to coast, providing a different vantage point. We will use this background to assist the EERMC in moving forward by identifying new and emerging opportunities in promoting EE throughout the state.

Our immediate goal is to build on the success that the Council has already achieved. For example, Figure II-1 highlights the achievements of Rhode Island's conservation efforts since passage of the Comprehensive Energy Conservation, Efficiency, & Affordability Act of 2006. The data comes directly from FERC form 861 and are not weather-normalized or otherwise adjusted. Despite an increasing number of electric accounts, National Grid Rhode Island has shown a downward trajectory in consumption due in part to the collective efforts of the EERMC, OER, National Grid, and other stakeholders.

FIGURE II-1. NATIONAL GRID (RI) ELECTRIC SALES AND CUSTOMERS 2003-2018



II.B **WORK PLAN**

This section of the proposal provides a detailed, proposed project work plan and how the GDS Team will provide the required services to meet and exceed all responsibilities defined in the scope of work.

II.B.1 Responsibility 1. Related to EERMC Oversight

EERMC members play a critical role in setting the course for Rhode Island's energy efficiency programs. Our consultants will work proactively with the EERMC members to ensure they have thorough understanding of the key issues such as: Least Cost Procurement (LCP) standards and requirements, EERMC's unique responsibilities, proven and emerging approaches to promote energy efficient technologies and the key energy policies that will influence RI's future plans. To ensure that there is a smooth and efficient transition to the GDS Team, we will establish ongoing procedures to support EERMC members:

- Establish efficient, two-way communication processes to schedule both regular meetings and meetings to address specific ad-hoc tasks. Using Doodle Polls, for example, will streamline the scheduling process, reduce unnecessary email traffic, and ensure that these meetings are held at a time that works best for all critical stakeholders.
- Prepare member briefings on relevant topics including preparing issue-specific reports and summary presentations.
- Organize and facilitate the Annual Retreat, which will provide an opportunity to identify and discuss emerging EE issues.
- Establish an EERMC password-protected SharePoint-style site which will house all relevant documents, meeting minutes and materials, presentations, and background reports. The password will be provided to each EERMC member and staff.
- Manage EERMC website maintenance, updates, and monthly meeting materials uploads.
- Supervise and coordinate all activities completed by outside consultants to conduct task-specific projects, such as the recently completed Potential Study.

The GDS Team routinely incorporates these management tools in all of our stakeholder collaboratives—with positive results. This approach ensures that all EERMC members and interested parties will have access to the specific information they need in a timely manner.

The GDS Team will actively participate and provide expertise in EERMC meetings through a combination of in-person representation and virtual attendance by our subject matter experts. At least one senior GDS Team member will attend all in person meetings with the EERMC, EERMC Executive Council, OER, PUC and Demand Collaborative. Besides preparing meeting materials and presentations, we will provide ongoing support in developing and distributing meeting agendas, preparing meeting minutes, and cataloguing these on our project SharePoint-style site. We will implement the same successful strategy that we use to prepare and organize meeting materials to ensure productive outcomes. We anticipate attending at least 50 in-person meetings annually, subject to COVID operating procedures. Senior staff, including Dr. Johnson, will attend these meetings in-person, accompanied by additional support staff from the GDS Team as needed. Other GDS subject matter experts will participate in these meetings either in-person or "virtually" as appropriate. The GDS Team's experience in organizing and facilitating stakeholder meetings and collaborative discussions is a distinguishing characteristic of the Team, an example being Dr. Johnson's mention in SEEA's Action Report[1].

As directed by EERMC, the GDS Team will develop, review, and summarize the critical findings that will inform energy planning and implementation, system reliability standards, and progress towards achieving energy efficiency savings targets relative to program budgets. The GDS Team members

[1] SEEA Action Energy Efficiency Collaboratives- Driving Ratepayer-Funded Efficiency through Regulatory Polices Working Groups, September 2015; attachment in the February 16, 2018 EESE Meeting Minutes.

already prepare annual evaluation, measurement, and verification (EM&V) reports summarizing program achievement relative to goals in several jurisdictions. We will leverage our experiences in other collaborative settings to refine financing program offerings, expand programs to low-income or vulnerable populations and assess the effectiveness of utility performance incentives.

The GDS Team will leverage its deep bench of technical expertise and experience to develop actionable recommendations for stakeholders on variety of EE topics. We will provide the following types of reports or analyses, as directed by EERMC's priorities:

- Policy summaries of past of potential legislative or PUC directives, including describing the impacts regarding EE and system reliability.
- White paper analyses of emerging technologies and impacts; and
- Technical analyses and inputs to ensure utility plans conform to the LCP standards.

II.B.2 Responsibility 2. Related to Development of Work Products & Representations of the EERMC

Our Team will provide the EERMC with the essential work products needed for each relevant PUC docket. GDS Team member Dr. Katherine Johnson, who provides ongoing support for several commissions regarding the development and implementation annual electric and natural gas efficiency programs, will provide key direction for this task. Dr. Johnson is highly skilled in this area, and currently prepares annual testimony summarizing the findings and recommendations from the seven EM&V reports prepared for the electric and natural gas utilities in Arkansas. She also provides recommendations on strategies to improve program reporting, delivery, and energy effectiveness in these filings. Other GDS Team members will bring experience born from advising commission staff in multiple states throughout the country, including Rhode Island.

Proceeds from RGGI and ISO-New England's Forward Capacity Market (FCM) represent approximately 20% of EE funding in Rhode Island. The revenue generated by FCM participation reduces the EE surcharges required to fund programs and the injection of low-cost supply from EE places downward pressure on clearing prices (e.g. DRIPE benefits). GDS Team members have completed the required M&V compliance reviews in Maine, New Hampshire, and Massachusetts and provided consulting services to several PJM utilities on FCM bidding strategy. There are currently several changes under consideration at ISO-NE about EE participation in FCM with non-trivial implications for this important revenue stream. Our team has the applied experience and understanding of market operations to inform and support the EERMC's position in these technical discussions.

As part of our ongoing and proactive approach, we will work with the EERMC to prepare the required annual reports for the General Assembly. Given the April deadline, preparing the materials for this report will be one of our highest priorities during the first quarter of each year.

Our team members are already actively engaged with many stakeholder forums, either as contributors, authors or participants. For example, GDS is currently working on a 3-year plan as part of the EERS committee in New Hampshire, and is active in multiple Massachusetts technical working groups focused on utility evaluation and technical process. We will leverage these contacts and provide ongoing representation at a variety of stakeholder forums including:

- Codes and Standards Initiatives (LEED, ASHRAE, Green Buildings)

- Alliance for Healthy Homes and Green and Healthy Homes Initiative
- Power Sector Transformation Initiative
- Forums sponsored by industry partnerships such as NEEP (i.e. EM&V Forum, CEE forums)
- Participation and attendance in weatherization-specific conferences and organizations such as the Home Performance Coalition
- Identification of new and emerging organizations that are seeking input to ensure energy efficiency programs address social justice issues, like energy inequity.

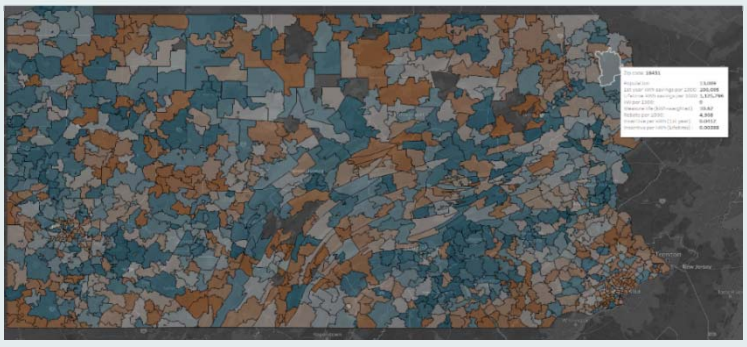
The GDS Team will coordinate and manage monthly strategy meetings with National Grid staff concerning its residential, C&I, and EM&V issues. Our team will be led by subject matter experts and will include close monitoring of program activities and results. We will provide monthly updates of National Grid's progress and immediately share with the EERMC any areas that are underperforming. We will also engage with other key stakeholders involved in National Grid's programs, inviting members from OER, consultant staff and other subject-matter experts to participate in these meetings as appropriate. We will provide quarterly written reports to the EERMC and include regular updates in EERMC meetings.

As a way to ensure that the diverse activities are properly identified and tracked throughout the year, our team will develop a strawman schedule of deliverables, activities, and events in late January 2021.

II.B.3 Responsibility 3. Related to Energy Efficiency & System Reliability Program Design and Delivery

The GDS Team understands the importance of its support for the EERMC to ensure utility-administered energy efficiency and system reliability programs exhibit transparency, service excellence that maximizes energy efficiency benefits, and are in alignment with other Rhode Island clean energy programs. The GDS Team will provide oversight services related to program design and delivery in coordination with other EERMC support task areas. The GDS Team will leverage its expertise across this full program lifecycle (potential, planning and design, implementation, and evaluation) and maintain a constant presence to drive optimized program outcomes for Rhode Island ratepayers, maintaining alignment with policy goals and in concert with other clean energy programs in the State.

FIGURE II-2. PENNSYLVANIA EE DASHBOARD – ZIP CODE METRICS



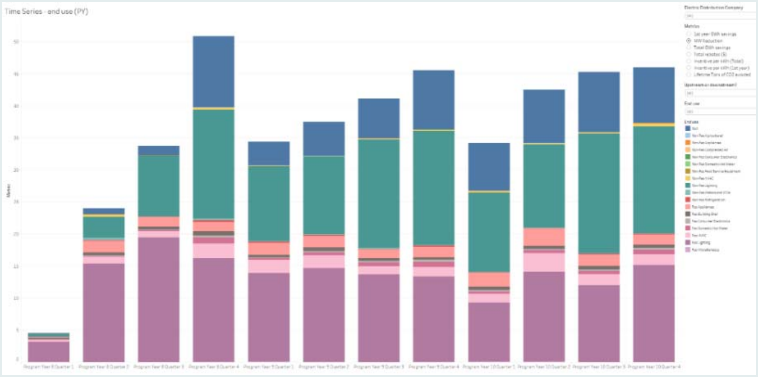
To do so, the GDS Team will engage with the EERMC, National Grid, and other Rhode Island programs. With the EERMC, the GDS Team will maintain standing meetings and ad hoc discussions to ensure that the EERMC's priorities are incorporated into the GDS Team's work and the discuss the wide range of program topics, including current and future program designs, evaluation results, program data, and progress towards goals. The GDS Team will develop meeting agendas with input from the EERMC and ensure that meeting topics and materials cover the priorities of the EERMC.

In addition to engaging with the EERMC, the GDS Team will engage with National Grid to participate in regular meetings. Doing so will ensure that the GDS Team can provide up to date information to the EERMC but also support an oversight function. By having a steady presence and working in a collegial manner, the GDS Team can be viewed as a resource by National Grid while also maintaining an arm's length distance to maintain independence. The regular engagement with National Grid will also enable the GDS Team to develop a more complete understanding issues, opportunities, and challenges for energy efficiency and system reliability programs, increasing the value of information and perspectives provided to the EERMC.

Additionally, the GDS Team understands that the EERMC expects its consultants to leverage their experience to enhance information flowing to National Grid. This includes providing technical support and recommendations on program design and implementation, providing oversight of third-party analyses and studies commissioned by the EERMC. The GDS Team has expertise across the entire spectrum of energy efficiency and system reliability programs, with direct program, evaluation, market research, program design and experience, as described in later sections of this proposal. This experience will enable the GDS Team to leverage information and experience from other jurisdictions and also provide direct input into the review and oversight of program data, design, and implementation.

In addition to coordinating with National Grid, the GDS Team will also continue our working relationship with OER. Subcontractor Demand Side Analytics recently completed a project with the Rhode Island OER (RFP# 7597562 Energy Efficiency Programs Evaluation Study) that required extensive collaboration with OER staff, National Grid, and other Rhode Island stakeholders, so we anticipate that our team can engage with OER seamlessly. This relationship will help ensure that a holistic perspective of Rhode Island's clean energy programs across the diverse subject areas. Doing so will help ensure that energy efficiency and system stability programs are being delivered in a coordinated manner, and in alignment with policies and other programs. The GDS Team envisions that with shared information exchanges and support, the EERMC and other stakeholders will have a full perspective on how the energy efficiency and system stability programs fit into the larger set of clean energy programs and work to meet State and stakeholder clean energy goals.

FIGURE II-3. TIME-SERIES METRICS BY END USE



The GDS Team is well equipped to deliver all aspects of the work to support the EERMC's interests in the design and delivery of energy efficiency and system reliability. At its core, our method is one of collaboration and information across the wide range of stakeholders, including the EERMC, OER, National Grid, and others. To facilitate this outcome, we will engage in standing periodic meetings, ensure the GDS Team is part of the information flow from the diverse stakeholders, share information, provide support, and ensure that the EERMC's priorities are maintained front-and-center. In advocating for program improvements or the EERMC's priorities, the GDS Team will work

in a collegial and collaborative manner to help ensure positive outcomes that lead to the realization of the EERMC's priorities and positive outcomes for all stakeholders.

The GDS Team believes that data transfers in an agreed-upon format and regular cadence are critical for this type of project. In Pennsylvania, we receive complete tracking data extracts every quarter from the seven electric distribution companies. This data is stored in a statewide tracking database and is the foundation for a wide range of audit activities. The data are also used to populate a Tableau dashboard, which provides stakeholders visibility into program activity.

The GDS Team understands that the core deliverables for this responsibility include the following:

- Represent the EERMC priorities in program planning
- Provide technical support and recommendations to the utility and other stakeholders
- Advocate for program design and delivery improvements, particularly for traditionally underserved sectors (e.g. income limited or small businesses)
- Independently review and assess utility data reports and information (and suggest improvements)
- Review and conduct the cost-effectiveness of triennial energy efficiency plans
- Provide oversight of EERMC third-party analyses and studies, including market potential studies, and advocate for to ensure results are incorporated into program plans
- Inform the EERMC of what other jurisdictions are doing that may improve the quality and delivery of energy efficiency and system reliability programs.
- Monitor and facilitate, and report on the implementation and progress toward goals of annual energy efficiency program plans
- Meet regularly with National Grid program managers and other stakeholders to facilitate all of the above activities, including working with National Grid to enhance the comprehensiveness and timely exchanges of data for the EERMC or OER.

II.B.4 Responsibility 4. Related to Advancing Integrated Approaches & Addressing Emerging Issues

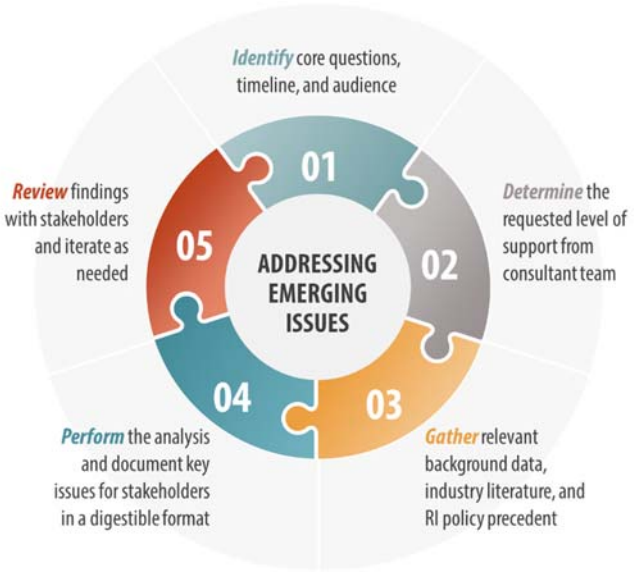
As a leader in energy and conservation policy, Rhode Island is certain to find itself on the forefront of emerging issues. It will be critical to retain an EERMC technical consultant with the relevant skill sets and experience to navigate these issues in a measured way. Several issues that will become increasingly important over the contract period, that we believe the GDS Team is exceptionally qualified on are:

- ***Strategic Electrification:*** Conversion of space heating, water heating, and cooking end uses from fossil fuel combustion to electricity will be a key component of Rhode Island's aggressive climate goals. Accurately measuring and valuing electrification initiatives are quite complex and require accurate accounting of the type and quantity of fossil fuel resources avoided as well as the timing of incremental electric loads. The timing and diversity of these loads is important for quantifying capacity impacts. In the same way that traditional EE measures reduce capacity costs through peak demand reduction, electrification can create increase capacity costs by adding peak loads. With sufficient penetration, whole networks can switch from summer-peaking to winter-peaking. Strategic electrification introduces a whole new dynamic to electric/gas integration and

performance incentives that will need to be considered carefully, even for a dual fuel utility like National Grid.

- ***Non-Wire and Non-Pipe Alternatives:*** Rhode Island's current benefit-cost approach relies on system-wide avoided cost of distribution capacity assumptions. In any system, there are circuits and feeders that can accommodate significant growth where the avoided cost is zero and there are locations where peak demand reductions can avoid or defer capital projects and generate millions in benefits. The traditional system-wide approach masks the true distribution of locational value on the system. Accurately quantifying locational value is critical to understanding the true economics of storage, electrification, demand response, and renewables offerings. Our review of the Commission's Docket 4600, Rhode Island's Power Sector Transformation Report, and National Grid's System Reliability Procurement Plan Reports indicate that this methodology is gaining traction in Rhode Island. Subcontractor Demand Side Analytics has recently completed electric and gas locational value studies for multiple New York utilities. GDS Associates has an entire division of transmission of distribution engineers and planners. In short, we believe the GDS Team is uniquely positioned to help move Rhode Island forward in this area.
- ***Increased Penetration of Connected Devices:*** Connected devices are a key opportunity as EE programs move beyond LED lighting. Optimization of the savings opportunities from connected devices requires the correct program design signals. Subcontractor Demand Side Analytics has been an industry leader in leveraging the wealth of granular end-use data connected devices offer for different planning, evaluation, and valuation applications.
- ***Infrastructure Investments and AMI Business Case:*** One area that Rhode Island has lagged the nation rather than lead is AMI deployment. Advanced metering infrastructure is foundational to several ambitious program offerings and energy policies such as time-varying pricing. We anticipate this issue will continue to arise and receive attention to the magnitude of the investment required. Our team has worked on AMI business cases in California, Vermont, and New York and can help the EERMC navigate this key policy issue.

FIGURE II-4. PROCESS OVERVIEW FOR ADDRESSING EMERGING ISSUES



As emerging issues arise that warrant involvement from the EERMC consultant team, we propose a process like the one shown in **Error! Reference source not found.**. After identifying the core research or policy questions at hand and the anticipated role of the consultant team, we will share an estimated budget and timeline to ensure that all parties have a clear understanding of the GDS Team's roles and responsibilities to the issue up front. This will help manage expectations and budgets for emerging issues where prior templates often may not exist.

A key advantage of the GDS Team is our national experience. Many of the approaches and improvements listed in the RFP are currently being considered or tested in other jurisdictions where GDS Team members are actively involved. Knowing where to find relevant regulatory proceedings and studies and summarizing them in a concise format can be an extremely valuable as Rhode Island looks to consider the advantages and disadvantage of different approaches.

II.B.5 Illustrative Annual Timeline

The GDS Team has proposed a hypothetical schedule based on historical activities by the EERMC, as well as the key requests in the RFP, understanding that this is a tentative outline and subject to modification. See Figure II-5 on page 9 for an illustrative annual timeline.

II.C **COMPANY PROFILE**

Since its inception in 1986, GDS has enjoyed considerable growth and now employs a staff of more than 180 persons, of which more than 50 consultants work on energy efficiency and demand response program planning, implementation, and evaluation projects. Our firm operates as a for-profit corporation with headquarters located in Marietta, Georgia and offices in Washington, Oregon, New Hampshire, Maine, Wisconsin, Alabama, Texas, and Florida.

Our consultants are recognized leaders in their respective fields, dedicated to their clients, innovative in their approach to meeting unique challenges, and known for consistently being available when needed. Our broad range of expertise focuses on clients associated with, or affected by, electric, natural gas, water, and wastewater utilities.

Our staff of highly qualified consultants and analysists assist clients with the complexities of multi-faceted energy efficiency, demand response, and renewable energy program planning, implementation, and evaluation. GDS has completed numerous energy projects for utility commissions, regional planning organizations, and utilities themselves. Beyond energy efficiency planning, GDS offers information technology, market research and statistical services to a diverse client base. For more information on the services that GDS provides please visit our website at gdsassociates.com.

II.D **RELEVANT EXPERIENCE**

The GDS Team has provided a snapshot of some of our relevant projects by concentration, in alignment with the focus of the RFP (see Table II-1 on page 10). Additional project information can be found in ***Appendix A.***

FIGURE II-5 ILLUSTRATIVE ANNUAL TIMELINE

Task	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Council Business												
EERMC Annual Report				15								
EERMC Annual Retreat							*					
EERMC Annual Public Engagement Event											*	
National Grid Meetings												
Residential Program Updates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
C&I Program Updates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EM&V Updates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AD HOC Studies (example)												
Research Drafts				✓				✓				
Research Final Reports						✓				✓		
Technical Analysis/Policy Briefings					✓				✓			
Briefings			✓								✓	
EE and SRP Standards Reporting												
Annual Planning Process				✓	✓	✓	✓	✓	✓	✓	✓	
Annual Plan Completed										✓		
On Going Management Tasks												
Website Maintenance and Updates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Status Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Reports on Emerging Issues			TBD				TBD			TBD		

** event*

TABLE II-1 GDS TEAM SUMMARY OF RELEVANT EXPERIENCE

Project Name	Project Year(s)	Subject Area			
		Oversight & Planning	Policy & Legislative	Potential Studies & Economic Analysis	Program Design/ Innovation
Central Electric Power Cooperative: DR Pilot Evaluations & DR Management System	2017-present			▲	▲
Rhode Island PUC: Renewable Energy Standards (RES) Act Administration Support	2006-present	▲	▲		▲
Vermont Department of Public Service: Statewide Market Potential Study	2016-2017			▲	▲
PA PUC: Oversight of Statewide Evaluation Team	2009-2016	▲	▲	▲	▲
Colorado Energy Office: Beneficial Electrification Study	2019-present		▲	▲	▲
Georgia Public Service Commission: IRP Review Technical Support	2016-present		▲	▲	
Central Hudson: Distributed System Implementation Plan Support	2014-present	▲	▲	▲	▲
CPUC: Integrated Resource Plan - Electric Vehicle Forecast	2019-present	▲			
Efficiency Maine, ISO-NE: Forward Capacity Market Compliance Review	2018-2019	▲	▲		
PA PUC: C&I Baseline Study	2016-2021	▲	▲		
PA PUC: Total Resource Cost Test Order and Avoided Cost Calculator	2019-2020	▲	▲	▲	
PA PUC: Phase IV Demand Response and Distributed Generation Potential Studies	2014-2021	▲	▲	▲	▲
PA PUC: Statewide Evaluator Behavioral Evaluation	2016-2021	▲	▲	▲	
PG&E: T&D Pilot: Integration of Load Management into Distribution Operations & Planning	2014-2017	▲			▲
PSEG LI: Locational Avoided T&D Cost Study	2019-present	▲			▲
SDG&E: Small Commercial TOU, CPP, & Smart Thermostat Evaluation	2016-present	▲		▲	
WA UTC: Assessment of Utility T&D Planning Capabilities and DER integration Practices	2017	▲	▲	▲	
Lansing Board of Water and Light: Integrated Market Potential Study	2016, 2019		▲	▲	
Arkansas Public Utilities Commission- Independent Evaluation Monitor	2011-present	▲	▲	▲	▲
Maine Public Utilities Commission- TRM Review	2017-2018	▲	▲	▲	
British Columbia Public Utilities Commission	2016-2018	▲	▲	▲	
Spire Energy Natural Gas Utility	2017-present	▲		▲	
ComEdison- NEI Review	2018-present	▲	▲	▲	▲

II.D.1 Relevant Experience of GDS Associates, Inc.

The GDS consultants assigned to this project understand the quantitative and qualitative issues associated with the design, implementation and evaluation of successful energy efficiency programs. We use our technical expertise to minimize financial risks and maximize the savings and other benefits from energy efficiency policies for our clients. GDS has provided impact and process consulting services to utilities, public utility commissions and other regulatory agencies in states across the country. Our energy consulting services include:

- Development and evaluation of energy efficiency, demand response and renewable energy potential studies
- Program design for energy efficiency, distributed generation, demand response, and innovation
- Development of evaluation frameworks, program evaluation plans, schedules, and budgets
- Development of sampling plans
- Impact evaluations
- Process evaluations
- Technical Reference Manual (TRM) development
- Program logic model development
- Cost-effectiveness model development (energy efficiency, demand response and renewables/distributed generation)
- Measure, program, and portfolio-level benefit cost analysis
- Development of data tracking and reporting systems for program evaluations
- Market characterization, assessment, and baseline studies
- Formal program evaluations filings with regulatory commissions
- Expert testimony

GDS has performed over 75 market potential studies over the past 20 years, for clients of all types, as shown in APPENDIX **A.** RFP Section II E Examples of Prior Work A. In addition to traditional potential assessments, GDS has been involved in innovative versions of this work as the energy delivery market and common business models have evolved. In Minnesota, GDS led a first of its kind market potential study analyzing the characteristics of electric utility infrastructure improvements as conservation measures on both the generation side (heat rate improvement), as well as the Transmission and Distribution side, in partnership with Demand Side Analytics. We helped the MN Department of Commerce to prioritize these efforts by leading stakeholder meetings, developing TRM measures, analyzing market potential for over 125 municipal utilities and performing outreach to drive the implementation of the measure uptake.

GDS has also provided program design and implementation services in many states including Colorado, Georgia, Hawaii, Indiana, Maine, Minnesota, Illinois, Massachusetts, New Hampshire, North Carolina, South Carolina, Vermont, and Wisconsin. Our work often includes regular interaction with those groups responsible for program evaluation. In addition, dealing directly with customers through program delivery, we have gained significant insights and experience with identifying and successfully overcoming barriers to program participation. As such, our experts understand both the challenges and opportunities in designing and implementing energy efficiency programs and the value in providing timely and actionable feedback that can make good programs even better.

GDS' highly successful existing and ongoing energy efficiency work with MassSave, NHSaves, Ameren Illinois, Wisconsin Focus on Energy, Efficiency Maine, Efficiency Vermont, NYSERDA, Colorado Energy Office, Massachusetts Municipal Wholesale Electric Company (MMWEC), Alectra (Ontario utility) and other utilities and government agencies in North America allows the GDS Team to provide this project with program implementation best practices and significant direct knowledge and detailed information on hundreds of energy efficiency measures suitable for Rhode Island. We understand the importance of local energy use, regional energy issues, and cost-effective delivery options that are unique to the territory at hand, but may be improved upon by experience in other jurisdictions.

Rapidly advancing technology in energy efficiency also requires up-to-date knowledge on the interaction of other areas like distributed generation, innovation/emerging tech, combined heat and power, and other renewable energy resources. GDS provides expertise in addressing the complex economic, engineering, scientific, and governmental issues associated with these focus areas and resources that impact utilities, government agencies, developers, and their customers. GDS has provided non-conventional energy analytical services to several utilities, government agencies, and private clients including:

- Orlando Utilities Commission – Smart City Pilot Project Design and Implementation
- Georgia Environmental Financing Authority (GEFA) – Solar and Storage Municipal Analysis
- Lansing Board of Water & Light Solar, CHP and Electric Vehicle potential studies
- Oglethorpe Power Corporation, GA - Solar PV Calculator and White Paper
- New Hampshire Office of Energy and Planning: NH Residential Rooftop Solar PV Permitting, Zoning and Interconnection Guide, Team Engineering, NH - Solar PV Design Review and Construction Support
- Pennsylvania Public Utility Commission – Behavioral Persistence of Savings Study
- Rhode Island Public Utilities Commission: Rhode Island Renewable Energy Expert project reviews
- SJH and Co, Massachusetts - Anaerobic Digester Feasibility Study
- State of New Hampshire, The Adjutant General's Department: NH Army National Guard Alternative Backup Power Feasibility Study – 14 New Hampshire Sites
- East Texas Electric Cooperative, Inc.: Woodville Biomass (Woodville, Texas)

II.D.2 Relevant Experience of Johnson Consulting Group

Johnson Consulting Group focuses providing program design and evaluation services for energy efficiency organizations across North America. This woman-owned consulting firm was the logical extension of Dr. Katherine Johnson's successful career in EM&V, having completed more than 200 evaluations during the past 30 years. Founded in 2008, Johnson Consulting Group, Dr. Johnson has directed program evaluations investigating the effectiveness of energy efficiency programs and policies across residential and C&I market sectors. For the past 11 years, Dr. Johnson has been leading collaborative forums to help guide decision-making regarding the evaluation and cost-effectiveness of current and emerging energy efficiency tools and policy initiatives.

Our primary business focus is on providing technical expertise in program design and evaluation across all market sectors. We also serve as subject matter experts supporting public service

commissions, quantifying Non Energy Benefits, and developing specific program initiatives in response to specific policy goals. Our services include:

- Technical advice and guidance for EM&V program planning and execution
- Evaluations for energy efficiency and demand response pilot and programs
- Developing EM&V Frameworks and Decision Guidance for NTG approaches for EE programs
- Quantifying Non Energy Benefits (NEBs) for cost-effectiveness testing
- Expert testimony regarding program evaluation results and recommendations
- Preparing white papers and technical briefs on emerging EE technologies including: advances in plug-load technologies, smart thermostats, heat pumps, water heating, combi gas systems and beneficial electrification.
- Conducting primary and secondary market research and analysis, focus groups, and in-depth interviews
- Organizing and facilitating successful stakeholder collaborations on a variety of topics including low-income, financing, and EM&V approaches.

Recent Johnson Consulting Group projects include:

- Arkansas Public Service Commission: Weatherization Collaborative Facilitation: Dr. Johnson led the facilitation and development a new unified statewide approach to weatherization programs at the request of the Arkansas Public Service Commission. Dr. Johnson led a literature review and analysis of current NEBs policies and estimates at the request of the Commission. She also facilitated the stakeholder process that led to the establishment of quantifying four NEBs in annual EM&V studies beginning in PY2017. Dr. Johnson led the facilitation and development a new unified statewide approach to weatherization programs at the request of the Arkansas Public Service Commission. She also co-authored the NSPM Case Study documenting Arkansas' progress relative to this new cost-effectiveness framework.
- British Columbia Utilities Commission: Energy Efficiency Consultant: Dr. Johnson provided ongoing technical and expert guidance regarding the practicality and feasibility of proposed energy efficiency plans, filings, and cost-effectiveness calculations.
- California Public Utilities Commission: EM&V Advisor: Dr. Johnson provided technical advice and support to the Energy Division of the CPUC specifically regarding the effectiveness of energy efficiency programs targeting Regional Energy Networks, Local Government Partnerships, Disadvantaged Communities, and multifamily strategies.
- Maine Public Utilities Commission: EM&V Technical Advisor: Working with Mesa Point Energy, Dr. Johnson completed a fast-turnaround project designed to assess the effectiveness of Maine's triennial plan. Her work included reviewing current EM&V reports, identifying gaps and preparing supporting materials for the Public Utility Commission staff. Her contract was extended to assist the PSC in identifying best practices for TRM updates.
- Missouri Public Service Commission: EM&V Auditor: Dr. Johnson led the team of EM&V Auditors to review EM&V plans and reports prepared by third-party evaluation firms to ensure that these reports reflect industry best practices and are consistent with industry approved protocols such as the IPMVP for the past four years.
- Commonwealth Edison: As a subcontractor to Navigant Consulting, Dr. Johnson has been serving as a technical advisor to quantify NEIs for ComEd's entire energy efficiency portfolio. She has

developed specialized surveys and conducted independent analysis into NEI quantification strategies and estimates in other jurisdictions and approaches to avoid NEI double counting.

- Spire Energy: Led the comprehensive program evaluations for the residential and C&I space and water heating programs for the largest gas utility in Missouri. Her responsibilities included conducting the process evaluations, supervising the impact and cost-effectiveness evaluations, determining NTG and preparing summary reports and presentations to key stakeholders.
- Delta-Montrose Electric Association: Developed the protocols and tools for on-bill financing program for geothermal heat pump program; developed solar PV calculator for roof-top solar. Designed new program initiatives for the residential and commercial markets.
- Montana Energy Office: Fielded a survey of willingness to pay models among customers testing the receptivity of community solar projects.

II.D.3 Relevant Experience of Demand Side Analytics

Demand Side Analytics offers extensive expertise in EM&V, distributed energy resource integration, transmission, and distribution system planning, targeting analytics, and benefit cost analysis. The team assigned to this project includes data scientists, applied statisticians, economists, and public policy experts. DSA has a proven record for conducting high-quality, accurate, and unbiased analysis and is meticulous about ensuring that research is useful for policy decisions, operations, and implementation.

DSA's core services include:

- ***Energy Efficiency evaluations***
- ***Demand Response evaluations***
- ***Behavioral program evaluations***
- ***Process and outcome evaluations***
- ***Market potential studies***
- ***End-Use saturation and baseline studies***
- ***Time varying pricing analysis and planning***
- ***End-use/load profile studies and research***
- ***Design and implementation of pilots and controlled deployments***
- ***Expert testimony***
- ***Distributed energy resource integration into planning and operations***
- ***Location specific, probabilistic forecasting for system, transmission and distribution planning (electric and gas)***
- ***Granular analysis (8760) and forecasting of distributed energy resource adoption and impacts on the grid***
- ***Non-wire alternative and non-pipe alternative project assessments***

The DSA staff assigned to this project have:

- Conducted over 100 large scale EE, DR, and TOU evaluation studies across North America and dozens of pilots.
- Completed market potential studies and supported integrated resource plans in California, Texas, New Mexico, Pennsylvania, Michigan, South Carolina, Indiana, New York, and Ohio. Several of these studies included significant primary data collection (e.g. appliance saturation or baseline studies)
- Performed ISO-New England Forward Capacity Market M&V certifications for passive resources in Maine, New Hampshire, and Massachusetts and a portfolio of active resources that spans the ISO-New England footprint.

- Developed many of the probabilistic forecasting methods that New York utilities are required to implement as a part of the Distributed System Implementation Plans. Led the DSIP filings for Central Hudson Gas and Electric in 2018 and 2020.
- Developed avoided costs and performed benefit-cost modeling for numerous program administrators.
- Served as the statewide evaluator in Pennsylvania and New Mexico providing review of utility plans and evaluations along with technical and policy support to regulators on a wide range of energy and conservation issues. In Pennsylvania, developed a statewide tracking database and online dashboard of all DSM activity across the seven investor-owned utilities.
- Authored the demand response evaluation protocols for California, Pennsylvania, and Ontario and the behavioral conservation evaluation protocol for Pennsylvania.
- Led the data processing and analytics for the CREED LightTracker national lighting sales modeling for the last five years

II.E EXAMPLES OF PRIOR WORK

Appendix A of our Team's proposal provides examples of prior work as well as references that best display our Team's ability and experience with work of a similar nature.

II.F REFERENCE INFORMATION

Appendix B presents two former or current client references for which the GDS Team members have performed work in the last three years.

II.G IDENTIFICATION OF STAFF & SUBCONTRACTORS

The identification of staff and subcontractors is provided in ***Appendix C***, We have listed all staff, including subcontractors, that are proposed members of the GDS Team.

II.H STAFF RESPONSIBILITIES

Appendix D, in response to RFP *Section II H Staff Responsibilities*, presents the duties, responsibilities, and areas of concentration for this engagement for each member of the GDS Team.

II.I STAFF EXPERIENCE

Appendix E comprises biographies of the GDS Team, resumes detailing germane experience and credentials (see ***Appendix E-1***) and an organizational chart.

II.J CONFLICTS OF INTEREST

Conflict of Interest statements are provided in ***Appendix F***.

II.K LITIGATION

Litigation statements from each member of the GDS Team have been provided in ***Appendix G***, in response to RFP *Section II K Litigation*.

II.L INVESTIGATION

Statements from each member of the GDS Team addressing RFP *Section II L Investigation* have been provided in ***Appendix H.***

APPENDIX A. RFP Section II E Examples of Prior Work

Provided below are examples of prior work as well as references that best display our Team's ability and experience with work of a similar nature. These examples address RFP *Section II E Examples of Prior Work*.

A.1 GDS ASSOCIATES, INC. EXAMPLES OF PRIOR WORK

GDS was retained by the **Georgia Public Service Commission** to provide technical support for the 2019 to 2021 time-period, which has included the review of Georgia Power Company's 2019 Integrated Resource Plan Filing, assistance with discovery, preparation, and presentation of testimony on IRP technical and policy issues. GDS has also provided technical support for supply-side and demand-side resource certification hearings held before the Commission and continues to provide technical support for monitoring the implementation of energy efficiency and demand response resources that have received certificates from the Commission. The DSM monitoring portion of this work will extend through December 2021. This includes providing technical support for review of Georgia Power Company program evaluation plans, sampling plans, survey instruments and EM&V reports. GDS held a similar contract with the GPSC from 2016 to 2019 to advise on the 2016 Georgia Power IRP filing.

GDS recently completed a **Beneficial Electrification Potential Study** for the **Colorado Energy Office** as part of a contract awarded in late 2019. Led by Rich Hasselman, GDS developed a market assessment for the State of Colorado, including market barriers and policy options related to beneficial electrification. The modeling analysis was being structured as a potential study, utilizing both federal and state government datasets as well as Colorado utility datasets to develop a statewide analysis of the potential for beneficial electrification to impact Colorado's natural gas and propane markets, along with the impact of increased electricity sales. Combining current Colorado legislated social cost of carbon and electric utility targets for carbon emissions, GDS also developed an analysis of greenhouse gas emissions impacts and cost-effectiveness testing using Colorado's modified TRC test. GDS provided two reports. The first was a modeling report with the expected energy and greenhouse gas impacts from electrification adoptions through 2030. A second report covered market barriers and policy recommendations, developed via in-depth interviews with numerous Colorado stakeholders and policy research focused on Colorado's current policies, as well as those from other jurisdictions. Both reports provided key findings and recommendations related to the opportunities and challenges associated with driving beneficial electrification, along with recommendations on approaches and policies to overcome hurdles. This work was completed in July 2020.

From 2009 to 2017 GDS served under contract to the **Pennsylvania Public Utility Commission** to lead the Pennsylvania **Statewide Evaluation Team (SWE)** for Act 129 EE&C programs being implemented by seven investor-owned utilities. As the SWE, GDS provided a review of utility process and impact evaluations and verified the accuracy of kWh and kW savings reported by the seven EDCs in Pennsylvania subject to the requirements of Act 129. GDS also provided an assessment of the methodologies being used by each EDC, a review of cost-effectiveness calculations, quarterly process updates, and biannual improvement workshops with the EDCs. The annual reports provided the Commission with recommendations for improving the EE&C programs. GDS managed multiple sub-contractors throughout the project and led numerous technical working groups with utility

personnel, evaluation consultants, and state government staff. GDS also produced an accurate assessment of the future potential for energy savings through a market assessment study.

Since 2006, GDS has served under contract to the **Rhode Island Public Utilities Commission** as a **Renewable Energy Consultant** in support of the Rhode Island Renewable Energy Standard Act (RES). Our staff leads a team of experts responsible for reviewing applications for eligibility and reporting to the Commission; monitoring ongoing eligibility of renewable energy generators and the production of such generating units; reviewing demonstrations of compliance including compliance reports from obligated entities for compliance with the Rules and Regulations of RI's Renewable Energy Standard Act and for accuracy and reporting to the Commission on findings and recommendations; remaining conversant with current NEPOOL GIS rules; having a general knowledge of RPS programs in other New England States; and drafting applications and compliance forms as needed.

In May of 2017, GDS was hired by **NB Power (Énergie NB Power)** in New Brunswick to assist with the program design and implementation of both a midstream commercial lighting rebate program and an industrial prescriptive equipment program. The efforts of our team include audit tool and database design, program delivery consulting, program plan creation, application design, implementation process and QA/QC design, as well as assisting the client in the initial months of program launch. Our consultants provide program guideline training to service providers and utility staff, marketing materials, and other operation forms required to implement the program. GDS also performs as needed implementation of the program through rebate administration and operational change consulting, ongoing since 2017.

EM&V Consultant to Massachusetts Gas Utilities; Berkshire Gas Company, Unitil, Liberty Utilities, and Columbia Gas (2014-present). In 2014 GDS was hired to provide EM&V documents review and meeting support to Berkshire Gas and Liberty Utilities in Massachusetts, with Columbia Gas and Unitil subsequently joining the group. Rich Hasselman began leading this effort in 2019. EM&V support includes: reviewing commercial/industrial, cross-cutting and residential program evaluation work plans, sample designs, survey instruments, draft and final reports; participating in evaluation-related planning, progress tracking and working group meetings as utilities' representative; taking and communicating notes/areas of interest or issues with potential to impact program designs and delivery; and assisting with incorporating results from evaluation reports into evolving utility program design and delivery plans. GDS works collaboratively with program administrators, EEAC consultants, evaluation contractors, and other stakeholders to drive high quality and relevant evaluation efforts in Massachusetts. GDS also provides representation in technical working groups.

Lansing Board of Water and Light (BWL) - Integrated Demand Side Management Potential Analysis (2019, 2016) GDS conducted an electric energy efficiency potential study along with an integrated demand response potential study for the BWL. The study provided technical, economic, and two levels of achievable potential. The study also included an assessment of penetration rates for customer-owned Distributed Energy Resources and Electric Vehicles. This study updated a prior potential study conducted by GDS in 2016.

Ameren Missouri - Energy Efficiency, Demand Response and Distributed Energy Resource Potential Study (2019, 2016) Ameren-Missouri retained GDS in 2016 to develop energy efficiency, demand response, combined heat and power and distributed generation potential studies for the

Company's service area. These studies provided estimates of the technical, economic and achievable potential for electric energy efficiency and demand response measures and programs for the Company's service area. In 2019, GDS was again retained to assess future DSM potential. The 2019 study included a more detailed assessment of low-income sector potential and future distributed energy resource potential in the Ameren Missouri service area. These studies are completed as part of the Ameren Missouri's IRP planning cycle.

Vermont Department of Public Service - Statewide Energy Efficiency Potential Study (2019) GDS was retained by the Vermont Department of Public Service (DPS) to conduct an updated assessment of the cost-effective achievable potential for electric and natural gas energy efficiency and conservation resources in the State of Vermont. As part of this assessment, GDS analyzed the partial electrification of natural gas technologies to reflect increased adoption of heat pump technologies throughout the state and impacts to both electric and natural gas utilities. Additionally, the combined impact of both electric and natural gas savings on greenhouse gas emissions was calculated using fuel-specific emission rate factors to assess the long-term environmental impacts of 20-year energy efficiency potential.

Evaluation of Green Mountain Power Energy Assistance Program, Vermont Department of Public Service (2019) GDS was hired by the Vermont Department of Public Service to evaluation the Green Mountain Power Energy Assistance Program for the purpose of developing recommendations to increase program enrollment. The Energy Assistance Program offers Green Mountain Power's eligible low-income residential customers with a discounted rate for electricity as well as arrearage forgiveness. To conduct the evaluation, Rich Hasselman led the GDS Team to research other similar utility programs and industry best practices, as well as conduct interview with key stakeholders in Vermont to discuss the program and develop ideas for expanding enrollment. Rich developed interview guides, conducted expert interviews, planned and facilitated a workshop, and summarized results for interim memos and a final report.

Vectren Energy Delivery of Indiana - Energy Efficiency and Demand Response Market Potential Study and Action Plan (2018) This study determined potential gas savings, electric energy and demand savings that can be achieved by demand-side management (DSM) programs for Vectren's Indiana service territory. The study analyzed both energy efficiency and demand response opportunities for the residential, commercial, and industrial customer classes. The results of the potential study assessment are being used as the basis for the development of Vectren's DSM Action Plan for the 2020-2025 timeframe. The study also included primary market research to support the development of the potential study assumptions via onsite assessment of 70 commercial facilities and willingness to participate research to inform adoption rates across all customer segments.

Pennsylvania Public Utility Commission - Residential Baseline and Potential Studies (2011-2012, 2013-2014) GDS conducted residential surveys for the PA PUC in 2011 and 2013. The studies were conducted throughout Pennsylvania to establish a comprehensive statewide baseline of the residential market across a broad range of electric energy measures throughout the seven electric distribution companies (EDCs) located in PA. The overall objective of the study was to understand the residential building stock and associated energy use, including the saturations of energy consuming equipment (electric, natural gas, and other fuels) and the penetrations of energy efficient electric equipment, building characteristics and energy management practices. The studies

also collected customer household and demographic information and included willingness-to-participate surveys. Results were initially weighted to produce both EDC-specific and Statewide-level results. The studies were ultimately used to inform baseline energy equipment saturations as well as electric equipment efficiency levels for a subsequent residential electric energy efficiency potential assessment, also performed by GDS. The willingness-to-participate surveys were used to estimate long term market adoption rates for energy efficient equipment across a variety of end-uses. Baseline study results were also used to update default values in the Pennsylvania TRM. GDS also completed market potential studies for each of the seven investor-owned EDCs.

New York State Energy Research and Development Authority, Residential Baseline Study *(2012-2014)* As part of a larger evaluation team, GDS was hired to assist the New York State Energy Research and Development Authority (NYSERDA), in collaboration with the Evaluation Advisory Group (EAG) led by the New York State Department of Public Service (DPS), in conducting a statewide residential baseline study and potential study across a broad range of customer segments and energy measures. New York State residential energy users were included in the scope of this study. The information gleaned from this study was used by NYSERDA, the DPS, other New York program administrators and other stakeholders to help inform program operations and evaluations.

Efficiency Maine Trust, 2015 Maine Electric Energy Efficiency Potential Study (May 2015-September 2015) In May 2015, GDS was retained by the Efficiency Maine Trust to prepare a report with findings on the technical, economic, achievable and program potential for electric efficiency measures and programs for the State of Maine. The final report was completed in September 2015. This study also included an assessment of the technical and economic potential for additional CHP deployment in Maine. The results of this potential study provided a foundation for the new Triennial Plan for the Efficiency Maine Trust.

A.2 JOHNSON CONSULTING GROUP EXAMPLES OF PRIOR WORK

Since 2011, Johnson Consulting Group remains the lead contractor and serves as the Independent Evaluation Monitor (IEM) on behalf of the ***Arkansas Public Service Commission.*** As part of this effort, the Johnson Consulting Group team developed the first set of EM&V protocols and facilitated the streamlining of the Technical Reference Manual for the Parties Working Collaboratively (PWC), which include utilities, third-party implementers, and intervener groups. For the second phase of this project, Johnson Consulting Group is leading all tasks to review all current and planned EM&V activities to ensure compliance with the EM&V protocols, provide annual updates to the TRM, and provide ongoing guidance and direction to EM&V contractors. The IEM prepares annual reports documenting progress towards stated energy efficiency goals and objectives that are presented to the Arkansas Public Service Commission. The IEM also facilitates and assists in on-going program planning for the entire program portfolio in Arkansas, establishes energy efficiency goals and develops new program designs including those targeting low-income and hard to reach customer segments at the Commission's request.

Johnson Consulting Group is the lead EM&V contractor for ***Spire Energy***, the largest natural gas utility in Missouri in 2017 and is currently conducting the process and impact evaluation for the 2018-2020 program cycle. Dr. Johnson served as the project manager and lead for the program evaluations of its Residential Heating and Water Heating Program and the Commercial & Industrial Prescriptive and Custom Programs for its two operating companies. This evaluation included

conducting process, impact, and cost-effectiveness evaluations of these utility programs. Dr. Johnson directed the process evaluation tasks including completing in-depth interviews with programs' staff, designing and analyzing the participant and non-participant surveys and preparing summary reports filed with the Missouri Public Service Commission.

For the ***Delaware Sustainable Energy Utility,*** Dr. Johnson led the process evaluation of DE SEU's Home Performance with Energy Star statewide program. In this capacity, she is directing the analysis of customer surveys, conducting in-depth interviews with staff, implementers, and contractors and reviewed critical program databases and materials.

For ***Mass Save***, Dr. Johnson completed an independent review and analysis of the major HP software packages currently being used or under consideration in Massachusetts for its MASS Save program. Provided recommendations on the best ways the state could develop a common software approach which would both meet the needs of the Program Administrators (PAs) and the HP contractors looking to expand their business opportunities.

A.3 DEMAND SIDE ANALYTICS EXAMPLES OF PRIOR WORK

Pennsylvania Statewide Evaluator (2016 – Present). Since 2016 Demand Side Analytics has been part of the Statewide Evaluation Team for Pennsylvania's energy efficiency and demand response programs for Phase III of Act 129 DSM programs (2016-2021). DSA partner Jesse Smith has been a key member of the team since 2011. The Statewide Evaluator's role is to provide guidance and oversight to each of the seven electric distribution companies (EDCs) in the state and to audit the energy and peak demand savings values reported to the PA PUC. As a member of the Statewide Evaluation Team, DSA has performed numerous studies and evaluations to support Pennsylvania's Public Utilities Commission. Some examples of these projects are included below:

- ***Demand Response Evaluation Protocol*** – In 2016, DSA developed a detailed evaluation protocol for demand response programs which is included as Section 6.2 of the Pennsylvania Evaluation Framework. This protocols details the procedures that each of the EDCs in the state are required to follow when evaluating C&I demand response programs. It details the selection of baseline methods for different types of loads, calculation of uncertainty, and reporting of impacts to the PUC. Following each summer demand response season, DSA is responsible for auditing the DR savings methods and calculations and assessing EDC progress toward performance targets.
- ***Behavioral Evaluation Protocol*** – In 2016, DSA developed a detailed evaluation protocol for behavioral conservation programs which is included as Section 6.1 of the Pennsylvania Evaluation Framework. This protocol details the procedures that each of the EDCs in the state are required to follow when evaluating Home Energy Report and Business Energy Report programs.
- ***Incremental Cost Database Update*** – In 2017 and 2020, Demand Side Analytics completed updates to the statewide incremental cost database including a detailed analysis non-residential lighting equipment costs.
- ***Statewide C&I Baseline Study*** – In 2018, DSA lead the Evaluation Team to conduct the 2018 statewide C&I baseline study. DSA developed an online data collection tool that was used in the field to inspect 500 non-residential businesses across Pennsylvania. DSA also performed quality

control throughout the process by performing weekly data cleaning processes and holding follow-up meetings with site inspectors. The rich data set enabled detailed, bottom up analysis of end use, energy use intensity, and efficiency purchase behaviors across several end uses. In addition, results were provided by sector (large versus small), EDC (seven total), and about a dozen industry segments. Results of the C&I baseline study served as key inputs to the 2019 TRM update and market potential study.

- ***Demand Response Potential Study*** – In 2020, DSA, as a member of the Pennsylvania Public Utility Commission, completed the Phase IV Demand Response Potential Study in 2020 which evaluated seven electric distribution companies. The study included EDC specific estimates for DR Potential and examined the costs and benefits of statewide policies to encourage the development and deployment of DR resources.
- ***Pennsylvania TRM Update*** – In 2019, DSA led updates to the Pennsylvania Technical Reference Manual, which standardizes the algorithm and assumptions used to calculate energy and peak demand savings.
- ***Pennsylvania Phase IV Implementation Order and Total Resource Cost Test Orders*** – DSA staff have been the primary authors of several PUC orders. The Implementation Order prescribes consumption savings targets for each of the seven EDCs to achieve in Phase IV of the state's Energy Efficiency and Conservation program and outlines the requirements for reporting and evaluating each EDCs' performance. The TRC Test Order provides detailed guidance on all matters related to benefit-cost analysis, including the development of avoided costs.

Rhode Island Office of Energy Resources – National Grid Energy Efficiency Programs Evaluation (2019 – Present). Demand Side Analytics was part of the team selected by OER to complete a legislatively mandated review of National Grid's energy efficiency program evaluations (gas and electric). DSA performed a billing analysis for any non-residential premise that installed an incented retrofit measure between 2015 and 2019. Example retrofit measures offered by the program include lighting measures, steam traps, and VSDs on HVAC systems. Because a billing analysis is not the best way to measure savings for all premises/measures, several premises were filtered out of the analysis. The final billing analysis included over 250 electric customers and approximately 40 gas customers. For each customer, estimates of weather-normalized savings and avoided energy use were produced. Billing analysis savings estimates were then compared to gross savings estimates stored in the tracking data, as well as adjusted gross savings estimates that accounted for in-service rates and realization rates. Throughout the project, DSA collaborated with members of the EERMC and the current consultant team.

DC Sustainable Energy Utility – Portfolio Evaluation and Benefit-Cost Lead (2017 – Present). Demand Side Analytics is a member of the evaluation team for the District of Columbia's Sustainable Energy Unit (DC SEU). As part of the evaluation team, DSA performed a cost-effectiveness evaluation and developed a detailed, flexible benefit cost model for assessing the project, program, portfolio level cost-effectiveness of DC SEU's energy efficiency and renewable energy programs. The model included functionality for dynamically assessing all four cost effectiveness tests (TRC/SCT, PACT, UCT, and RIM) and a variety of cost effectiveness scenarios, including a base scenario replicating DC SEU cost-effectiveness and scenarios for layering in updated avoided cost assumptions, realization rates, net to gross yield, and environmental benefits. The underlying modeling and assessment performed by DSA incorporated key cost-effectiveness considerations, such as adjusted baselines.

Since developing the benefit-cost model, DSA has managed and guided DC SEU analysts in rapid updating of cost-effectiveness calculations for several years, facilitated by the flexible model architecture.

DSA also evaluated the impacts of the Nest Seasonal Savings program. Seasonal Savings is a thermostat optimization algorithm that uses incremental adjustments to a participant's heating or cooling schedules. DC SEU implemented a randomized encouragement design covering cooling seasons in 2017 and 2018. There were 12,000 participants in the intent to treat group and 7,000 participants actively engaged in the program. Impact analysis required a difference in difference regression structure and estimated combined verified savings over the two years of 380,000 kWh and 245 kW. In 2020, DSA evaluated the impacts of a winter Seasonal Savings deployment in the District. The winter analysis is more complex because participants have a mix of electric and fossil fuel heating systems. The winter runtime analysis was conducted separately for furnaces, heat pump compressors, and heat pump auxiliary resistance. Connected load assumptions were developed and applied to the different heating system components to convert runtime impacts to energy savings.

APPENDIX B. RFP Section II F Reference Information

In reference to RFP *Section II F Reference Information*, ***Appendix B*** presents two former or current client references for which the GDS Team members have performed work in the last three years. Members of the GDS Team give EERMC permission to contact the references.

B.1 REFERENCES FOR GDS ASSOCIATES, INC.

REFERENCE NO. 1	RHODE ISLAND PUBLIC UTILITIES COMMISSION		
Contact Name & Title	Todd Bianco, Principal Policy Associate		
Phone	401-780-2106	**Email**	Todd.Bianco@puc.ri.gov
GDS grants EERMC permission to contact this reference.			

REFERENCE NO. 2	GEORGIA PUBLIC SERVICE COMMISSION		
Contact Name & Title	Jamie Barber, Director – Energy Efficiency and Renewable Unit		
Phone	404-651-5958	**Email**	jamieb@psc.state.ga.us
GDS grants EERMC permission to contact this reference.			

B.2 REFERENCES FOR JOHNSON CONSULTING GROUP

REFERENCE NO. 1	ARKANSAS PUBLIC SERVICE COMMISSION		
Contact Name & Title	Mr. Robert Swaim, Sr. Rate Case Analyst- Cost Allocation and Rate Design		
Phone	501-683-4060	**Email**	Robert.swaim@psc.state.ar.us
Johnson Consulting grants EERMC permission to contact this reference.			

REFERENCE NO. 2	SPIRE ENERGY		
Contact Name & Title	Mr. Shaylyn Dean, Manager, Energy Efficiency Program		
Phone	816-360-5759	**Email**	Shaylyn.Dean@spireenergy.com
Johnson Consulting grants EERMC permission to contact this reference.			

B.3 REFERENCES FOR DEMAND SIDE ANALYTICS

REFERENCE NO. 1	CENTRAL ELECTRIC POWER COOPERATIVE, INC.		
Contact Name & Title	Scott Hammond, Director of Member Services		
Phone	803-255-2796	**Email**	shammond@cepci.org
Demand Side Analytics grants EERMC permission to contact this reference.			

REFERENCE NO. 2	PENNSYLVANIA PUBLIC UTILITY COMMISSION		
Contact Name & Title	Darren Gill, Deputy Director		
Phone	717-783-5244	**Email**	DGILL@state.pa.us
Demand Side Analytics grants EERMC permission to contact this reference.			

APPENDIX C. RFP Section II G Identification of Staff & Subcontractors

Table C-1 identifies the staff and subcontractors for this engagement. Section C.1 provides an overview of the subcontractors, Johnson Consulting Group and Demand Side Analytics, that GDS will utilize for this project. Detailed information regarding our team's experience and qualifications, as well as the assigned roles for each consultant can be found in Section II.H and II.I respectively.

TABLE C-1 IDENTIFICATION OF STAFF

GDS Associates, Inc. (Prime Contractor)	
Rich Hasselman *Managing Director*	Kaytie Harrah *Project Consultant*
Matt Siska *Principal*	Melissa Young *Engineer*
Jeffrey Huber *Managing Director*	Michael Coty *Analyst*
Josh Duckwall *Project Manager*	Alyssa Gianotti *Associate Engineer*
Warren Hirons *Project Manager*	
Johnson Consulting Group (Subcontractor)	
Katherine Johnson *President*	Diane Mahon *Project Coordinator*
Corine Mahon *Project Manager*	
Demand Side Analytics (Subcontractor)	
Jesse Smith *Partner*	Josh Bode *Partner*
Alana Lemarchand *Partner*	Adriana Ciccone *Principal Consultant*
Steve Morris *Senior Quantitative Analyst*	Mark Noll *Senior Quantitative Analyst*
Katherine Burley *Quantitative Analyst*	

C.1 SUBCONTRACTORS

C.1.1 Johnson Consulting Group

Johnson Consulting Group, founded by Dr. Katherine Johnson in 2008, is a woman-owned strategic consulting firm specializing in the energy efficiency field. Headquartered in metro Washington D.C., we also have an administrative office in Portland, Oregon and satellite offices in Winter Park, Florida, Braintree, Massachusetts and Ouray, Colorado. The firm, which operates a Limited Liability Corporation (LLC), has three employees: one based in Frederick, Maryland and two based in Portland, Oregon and has been certified as a Woman-Owned Business (see ***Appendix C-1*** for WBE certification). To learn more about Johnson Consulting Group, please visit www.johnsonconsults.com.

C.1.2 Demand Side Analytics

Demand Side Analytics was formed in 2016 to help utilities and regulatory agencies navigate the technical, economic, and policy challenges of building a smarter and cleaner energy future. Through cutting edge research design and analysis methods DSA provides DSM program administrators with data-driven insights into how various technologies and interventions affect the way homes and businesses use energy.

Appendix C-1. *Johnson Consulting Group WBE Certification*

STATE OF RHODE ISLAND

Department of Administration
OFFICE OF DIVERSITY, EQUITY AND OPPORTUNITY
Minority Business Enterprise Compliance Office
One Capitol Hill
Providence, RI 02908-5860
Office: (401) 574-8670
RI Relay: 711
www.odeo.ri.gov

July 23, 2020

Ms. Katherine Johnson
Johnson Consulting Group, LLC
1033 Lindfield Drive
Frederick, MD 21702

Dear Ms. Johnson:

Based on the annual review package provided by you, a determination has been made that your firm remains eligible for certification as a WBE for the State of Rhode Island Minority Business Enterprise Program. Your "Minority Business Certification Number" which you can utilize as proof of your status is MBCN 2005. Your company has been approved as a **WBE** for the following scope: **"energy consulting services and management consulting services**" firm under primary NAICS Code 541611 and additional NAICS Codes 541618, 541690, 541990.

In order to maintain your certification during the certification period, you must submit your annual review package thirty (30) days prior to your annual review date which is **7/31/2021**. Your annual review package must include: a) a completed No Change Affidavit (b) current corporate federal tax returns, including all federal schedules and attachments, for the applicant firm and any affiliate firms as applicable; (c) copy of your current certification letter from your home state UCP if firm is not based in Rhode Island, and (d) copy of pertinent Rhode Island licenses if business is operating in a licensed industry. Failure to submit your annual review package will result in an administrative removal of your certification. Further, please be advised that it is your responsibility to notify the Minority Business Enterprise Compliance Office of any changes in the ownership or control of your business within thirty (30) days of such changes.

In addition, please be advised that all certified firms undergo a more substantive review, including a new site visit, as well as a review of personal financial information and economic disadvantage status, every five (5) years. Our records indicate that your firm is due for such a review on or about **7/31/2024**.

We wish you success in the State of Rhode Island's Minority Business Enterprise Program; and if we can be of further assistance to you, please contact this office.

Sincerely,

Dorinda L. Keene
Assistant Administrator – MBE Compliance

APPENDIX D. RFP Section II H Staff Responsibilities

Appendix D, in response to RFP *Section II H Staff Responsibilities*, presents the duties, responsibilities, and areas of concentration for this engagement for each member of the GDS Team. Table D-1 describes the duties, responsibilities, and areas of concentration for the GDS Team consultants. The GDS Team has been arranged specifically to address the needs of EERMC, bringing together the most relevant experience and ideas to provide exceptional service in oversight, technical work products, program design, evaluation, and stakeholder management. Rich Hasselman, Managing Director for GDS, will be the chief point of contact with EERMC and will also serve as the overall project manager.

TABLE D-1 GDS TEAM DUTIES, RESPONSIBILITIES, & AREAS OF CONCENTRATION

Name & Title	Duties & Responsibilities	Areas of Concentration
GDS Associates, Inc. (Prime Contractor)		
Rich Hasselman ***Managing Director***	Overall GDS project manager, development of work plans, delegation of work assignments, liaison with EERMC staff, regular progress reporting, quality assurance	Oversight, working group facilitation, utility plan analysis, program evaluation
Matt Siska ***Principal***	Senior technical advisor to the GDS Team	Utility program plans, technical evaluation
Jeffrey Huber ***Managing Director***	Lead for review of energy efficiency program design analysis	Cost-effectiveness of program plans, evaluation
Josh Duckwall ***Project Manager***	Deputy project manager, EERMC oversight and liaison	Technical working groups, EERMC education, stakeholder management
Warren Hirons ***Project Manager***	Support for energy efficiency program and system reliability	Program cost-effectiveness, legislative analysis
Kaytie Harrah ***Project Consultant***	Meeting facilitation, website maintenance, public presentations	EERMC meetings and technical editor

Name & Title	Duties & Responsibilities	Areas of Concentration
Melissa Young ***Engineer***	Technical support for all tasks	Cost-effectiveness, evaluation, program design technical analysis
Michael Coty ***Analyst***	Technical support for all tasks	Cost-effectiveness, evaluation, program design technical analysis
Alyssa Gianotti ***Associate Engineer***	Technical support for all tasks	Program implementation, technical analysis
Johnson Consulting Group (Subcontractor)		
Katherine Johnson ***President***	JCG senior staff assigned to EERMC oversight, coordination, development of technical and ad-hoc reports and participating in all related EERMC meetings as appropriate.	EM&V, Program Planning, Management, and Policy Reviews
Corine Mahon ***Project Manager***	JCG support staff for preparing and deploying meeting deliverables, including meeting minutes, agendas and related materials.	Administrative Support
Diane Mahon ***Project Coordinator***	JCG lead for data analysis and tracking of key EE issues, stakeholder follow up and review of EM&V findings	EM&V, data tracking and analysis
Demand Side Analytics (Subcontractor)		
Jesse Smith ***Partner***	DSA project lead responsible for coordinating staff assignments and participating in EERMC proceedings as needed	EM&V, Program Planning, and Policy
Josh Bode ***Partner***	DSA technical lead for specific areas	Non-Wire Alternatives, Load Forecasting, AMI Business Cases, Time-Varying Pricing

Name & Title	Duties & Responsibilities	Areas of Concentration
Alana Lemarchand *Partner*	DSA lead for benefit-cost modeling and avoided cost development	Benefit-cost modeling, electric vehicles
Adriana Ciccone *Principal*	DSA lead for topics related to demand response programs	Demand Response
Steve Morris *Senior Quantitative Analyst*	DSA lead for tracking system review and billing analysis	Tracking data, billing analysis
Mark Noll *Senior Quantitative Analyst*	Integrated resource planning and emissions impacts	System planning, integration of renewables
Katherine Burley *Quantitative Analyst*	Statistical analysis of energy efficiency and demand response offerings	Connected devices, econometrics

APPENDIX E. RFP Section II I Staff Experience

Appendix E is composed of the following information to demonstrate staff experience, addressing the RFP requirements provided in *Section II I Staff Experience*.

- Biographies for each member of the project team detailing prior experience and qualifications
- Resumes for all members of the GDS Team that further detail germane experience and credentials (see ***Appendix E-1***)
- Organizational Chart depicting the organizational overview for this engagement, including identification of key staff and the roles/responsibilities on this project

E.1 BIOGRAPHIES OF GDS ASSOCIATES, INC. STAFF

Rich Hasselman, CEM, CRM, Managing Director is responsible for project management of technology and market research projects, feasibility studies, and evaluation projects at GDS. Prior to rejoining GDS in 2019, he worked in evaluation, developing extensive experience evaluating energy efficiency and demand response programs. He currently leads GDS services to support a consortium of Massachusetts program administrators (Columbia Gas, Liberty Utilities, Unitil, and Berkshire Gas) with their engagements with MassSave© evaluators. As part of this work he participates in evaluation planning and results reviews related to residential and cross-cutting evaluation studies. Rich is also engaged on the electrification front, currently completing a statewide beneficial electrification market study for the State of Colorado. This study is forecasting the ten-year potential for beneficial electrification to help meet Colorado's greenhouse gas reduction goals. As part of this work Rich is leading GDS's team to analyze building electrification for the residential and commercial sectors. Rich has experience working with building energy simulations, with direct experience evaluating whole-building new construction programs using a variety of software, including REM Design BEopt, and related software tools.

Josh Duckwall, CEM, LEED AP, Project Manager at GDS, specializes in residential, commercial, and industrial energy efficiency. He is a licensed residential and commercial general contractor, certified Renewable Energy Professional (REP), and a former Home Energy Rating System (HERS) trainer with more than 17 years of experience managing energy efficiency programs and projects. Mr. Duckwall focuses on projects with regional or statewide efficiency programs, emerging technology and renewable integration, as well as facility level analysis and energy audits. Some of his recent projects include consultation to the Rhode Island PUC on administration of the Renewable Energy Standard (RES) program, a beneficial electrification potential study for the state of Colorado, management of a solar+storage municipal building analysis project for the state of Georgia, leadership of a smart city pilot program for the Orlando Utilities Commission, and serving on the statewide evaluation team (SWE) for Pennsylvania. Mr. Duckwall joined GDS in November 2013 and prior to joining GDS, spent many years managing new and existing home energy certifications for the Southface Energy Institute before joining a small group of consultants to provide LEED certifications for commercial and industrial customers, and most recently served as a project manager for a commercial and industrial design-build firm. Mr. Duckwall holds a Bachelor's Degree from the University of Georgia.

Matt Siska, PE, CEM, CWEP, TSP, Principal for GDS, manages the commercial, industrial, and agricultural services group for GDS' Manchester NH office. In this capacity, Matt oversees the engineering services group responsible for conducting engineering peer reviews, developing energy analyses, site inspections, TA studies, M&V studies, and program implementation throughout Massachusetts and the region. Matt also oversees a planning department that provides benefit cost modeling, evaluation monitoring, and reporting support to multiple Massachusetts Program Administrators. A significant portion of Matt's work involves the administration and implementation of energy efficiency programs throughout the Northeast. Specific activities include project tracking and reporting, conducting energy audits, identifying and analyzing energy efficiency measures, overseeing and verifying installations and preparing professional customer-specific and client program reports. In this capacity, Matt is responsible for clearly understanding and specifying the scope and energy savings of projects to both represent the interest of his clients, the utilities, and their customers. This requires constant and clear communication to keep projects moving forward and responding to any questions or problems that arise. Matt is an experienced project manager with strong organizational and communication skills, based on experience both from time at GDS and through a prior position in which he was responsible for managing the code compliance of large new construction commercial facilities throughout the United States and overseas. Matt has personally led the design and evaluation of multiple demand response programs including recent residential and C&I demand response pilots in Connecticut. Matt was intimately involved in the recent three-year planning process in Massachusetts having provided planning and benefit cost modeling support to multiple Massachusetts program administrators and quality checking portions of the online TRL. Matt is a Certified Energy Manager (CEM) through the Association of Energy Engineers and holds a Professional Engineering license in five states.

Jeffrey Huber, CEM, CMVP, BESA, Managing Director at GDS, is responsible for project management of energy efficiency and demand response potential studies and market and policy research projects for GDS clients. He has completed over 30 DSM potential studies, including electric and natural gas studies in Michigan, Vermont, and Maine. He also led the completion of the Pennsylvania Residential Baseline study in 2011-12 and conducted similar studies in Mississippi, Maine, and Indiana (Hoosier Energy). Jeffrey also provides technical support to GDS clients on energy efficiency program design and implementation projects, benefit/cost analyses for energy efficiency programs, regulatory policy and other market research studies. Jeffrey is experienced in conducting statistical analyses (frequency distributions, cross tabulations, multivariate analyses) and he is proficient in MS Office (Word, Excel, PowerPoint). Jeffrey has a BA degree (2001) from the University of Florida and a MA degree (2004) in Anthropology with a minor in Statistics from the University of Tennessee.

Warren Hirons, P.E., CEM, Project Manager at GDS, has assisted with the development of energy efficiency potential studies and benefit/cost analysis of energy efficiency and demand response measures and programs. He has been the lead consultant for GDS on a six-year project with the North Carolina Utilities Commission to provide oversight of the evaluation, measurement and verification reporting done by regulated utilities in North Carolina. As part of this project he has conducted analyses to compare the energy efficiency cost recovery methods used by the utilities to cost

recovery methods used in other states and his examined the advantages and disadvantages of various cost recovery methods. Mr. Hirons has developed designs and plans as well as economic feasibility studies for energy efficiency and demand response programs. He is experienced in conducting residential and commercial energy audits and assisted with the analysis of energy data for these sites. Mr. Hirons has managed energy efficiency projects and has provided impact and process evaluations of energy efficiency and demand response programs. Mr. Hirons has a Bachelor's degree in Environmental Engineering from North Carolina State University and a BS Degree in Environmental Economics and Management from the University of Georgia.

Kaytie Harrah, Project Consultant for GDS, holds an MBA and Bachelor's Degree in Management from Shorter University. Kaytie has more than 17 years of experience in the administrative and consulting fields. At GDS, she provides data collection, data analysis and administrative support to engineers, consultants, and executives of GDS. Ms. Harrah assists with the preparation, formatting, and technical editing of various reports. She has been responsible for the development and formatting of numerous program impact and process evaluations, energy efficiency and demand response potential studies, as well as monthly progress reports for program evaluation projects. Ms. Harrah is responsible for the reporting requirements essential to delivering technically sound and clearly prepared reports to reach a multitude of audiences. She performs in-depth reviews and formatting of client reports and proposals to achieve these results. She has been involved in the development, compilation, comprehensive editing, and formatting of a variety of client studies. Additionally, Ms. Harrah possesses WordPress experience assisting with frequent updates, altering content, or updating parts of an existing website.

Melissa Young, EIT, Engineer at GDS, graduated from the Georgia Institute of Technology in Atlanta, Georgia and received her BS in Mechanical Engineering in May 2015. She joined GDS in 2012 and has completed demand response potential studies for Consumers Energy, DTE Energy, Lansing (Michigan) Board of Water and Light, Austin Energy, Ameren Missouri, East Kentucky Power Cooperative, NIPSCO, Vectren Indiana and Indianapolis Power and Light. Melissa has further developed the GDS Demand Response Model (DR Model) to assist in the completion of these potential studies. The DR Model assesses the potential for demand response resources and also conducts benefit-cost analysis of demand response options. The GDS DR Model also calculate the total demand response savings potential by type of demand response measure. In addition to demand response potential studies, Ms. Young has completed renewable energy potential studies for the Efficiency Maine Trust, the District of Columbia Department of Energy, and Ameren Missouri during her time at GDS. Melissa worked on a Residential Low-Income Household Energy Efficiency Baseline Study in Maine to coordinate efforts to conduct 68 on-site energy surveys of low-income homes in Maine. She traveled to Maine to conduct some of the surveys and organized and analyzed data to develop findings and recommendations relating to remaining energy savings opportunities and potential programs for low-income households in Maine. She has worked on an energy efficiency potential study for the Pennsylvania Public Utilities Commission and assisted colleagues with various other energy efficiency. She has been responsible for using engineering algorithms and models to calculate energy and demand savings and technical potential data for various demand response, energy efficiency and renewable energy programs. Melissa has completed a professional certificate

program in data analytics from Kennesaw State University. This program focused on data analytics and applied statistics using Statistical Analysis Software.

Michael Coty, EMIT, Analyst with GDS provides energy efficiency consulting services. Michael works on commercial, industrial, and municipal projects. He conducts technical analysis to evaluate energy and cost savings for electric and gas utility rebate programs, and completes energy scoping audits for customers. Mr. Coty also conducts energy audits for agricultural producers through the Massachusetts Farm Energy Program, and manages the projects for the Manchester office. From 2015 to 2017, Mr. Coty managed day-to-day operations for the NYSERDA Region 1 Small Commercial and Energy Efficiency Assessment Program which provided free energy audits to small businesses and non-profits. He has been a team member for multiple municipal building energy audits, and has worked on several energy audits and green physical needs assessments for various public housing authorities. Michael's other experience includes managing a large municipal HVAC inventory project, reviewing draft reports for the Massachusetts Program Administrators and Energy Efficiency Advisory Council Consultants on behalf of Berkshire Gas, Liberty Gas, and Unitil Gas and Electric, and conducting analysis for a NYSERDA Technical Potential Study. Prior to joining GDS, Michael worked for over 12 years as an environmental consultant and project manager. He earned a Bachelor of Science in Resource Economics from the University of New Hampshire and a Master's in Urban Environmental Policy and Planning from Tufts University.

Alyssa Gianotti, Associate Engineer began working for GDS in April of 2018 as an Associate Engineer. In her time with GDS, Alyssa has been working on technical analyses for electric and conservation measures as well as savings verifications for commercial and industrial facilities. Prior to joining the GDS Team, Alyssa was working as a risk engineer for a global insurance company focusing on partnering with customers to develop cost effective risk improvement actions in order to help the customer limit their loss potentials and protect the business's bottom line. Alyssa graduated from the University of New Haven with a Bachelor of Engineering degree in Mechanical Engineering. In her senior year, Alyssa researched and designed a three-dimensional test apparatus for force generators used on helicopters as her capstone project.

E.2 BIOGRAPHIES OF JOHNSON CONSULTING GROUP STAFF

Dr. Katherine Johnson, President of Johnson Consulting Group [2] She has provided EM&V advice and technical support to the following public service commissions in the following jurisdictions:

- Independent Evaluation Monitor for the Arkansas Public Service Commission
- EM&V Auditor for the Missouri Public Service Commission
- EM&V Advisor for the California Public Service
- TRM Advisor for the Public Service Commission in Texas

Dr. Johnson has also provided guidance in assisting two jurisdictions in quantifying Non Energy Impacts (NEIs). Her responsibilities included conducting extensive literature reviews on current quantification practices, developing recommendations to quantify Non Energy Impacts and avoid double counting. She is also a well-regarded industry thought leader, having served for nine years on the Board of the Association of Energy Services Professionals (AESP), and presented findings from her work in both energy evaluation and stakeholder collaboration at national and international conferences

Corine Mahon, Project Manager for Johnson Consulting Group, provides administrative support for Johnson Consulting Group's clients posting meeting agendas and presentation materials on our dedicated project dashboard, preparing and finalizing meeting materials, and summarizing and posting meeting minutes. She also assists in preparing the final reports and presentations. She will assist Dr. Johnson throughout this engagement in meeting facilitation and administrative support.

Diane Mahon, Project Coordinator for Johnson Consulting Group, assists in areas of project coordination. Ms. Mahon is being mentored in the EM&V field by Dr. Katherine Johnson. She has a Bachelor of Science degree in Criminology and Criminal Justice from Portland State University. Through studies at Portland State she learned how to study and analyze data for programs that are aimed at changing behavior and improve communities.

[2] SEEA Action Energy Efficiency Collaboratives- Driving Ratepayer-Funded Efficiency through Regulatory Polices Working Groups, September 2015; attachment in the February 16, 2018 EESE Meeting Minutes.

E.3 BIOGRAPHIES OF DEMAND SIDE ANALYTICS STAFF

Jesse Smith, Partner at DSA will be the project lead responsible for coordinating staff assignments and participating in EERMC proceedings as needed. Mr. Smith is an experienced utility analyst and consultant whose work is focused on estimating the impacts and economics of demand side interventions to alter the way homes and businesses use energy and helping clients improve those offerings. Over the last decade in the energy industry Jesse has been involved in the evaluation of a wide variety of energy efficiency, demand response, and dynamic pricing programs implemented by electric and gas utilities across North America. Mr. Smith specializes in statistical analysis of energy usage data, sampling, matching, experimental design, and benefit cost modeling. Mr. Smith is a member of the IPMVP Uncertainty Committee, and recently completed a protocol to estimate uncertainty of Option C whole building models using monthly, daily, and hourly data. He holds a Master's in Applied Statistics from Kennesaw State University and B.S. in Psychology from the University of North Carolina at Chapel Hill.

Josh Bode, Partner at DSA, will serve as the technical lead for the project in various topic areas, including non-wires alternatives, load forecasting, AMI business cases, and time-varying pricing. Mr. Bode specializes in advanced applications of data analytics using large volumes of hourly and sub-hourly data for evaluation, valuation, planning and forecasting in the energy sector. He has led over 50 studies including some of the first innovations and largest applications of smart meter and SCADA data analytics in energy efficiency, time varying pricing, behavioral programs, and demand response. Mr. Bode has analyzed smart meter data for tens of millions of residential and small and medium business and with the full population of large customers from numerous utilities. Most recently, he has worked on projects designed to align distributed energy resources with grid value and in developing location specific, probabilistic forecasts and T&D marginal costs. He holds a Master's in Public Policy Analysis from University of California, Berkeley and has worked continuously conducting policy and data analysis in the energy sector since 2004.

Alana Lemarchand, Partner at DSA, will serve as the team lead for benefit-cost modeling and avoided cost development. Ms. Lemarchand's professional experience has been focused on strategy, quantitative customer research, and program design optimization. She has worked on engagements ranging from program impact and process evaluations to strategic support helping large utilities identify frameworks for valuing the impacts of distributed energy resources. She has also managed and advised market research projects for California utilities assessing customer enrollment in demand response programs. Her areas of expertise include program evaluation, market research, and distributed energy resources. She holds a B.S. in Environmental Economics from University of California, Berkeley.

Adriana Ciccone, Principal Consultant at DSA, will be the team lead for topics related to demand response programs. Ms. Ciccone leverages large-scale data to answer meaningful questions about demand response and customer energy consumption. Her work has focused on program evaluation for both residential and commercial populations as well as analytics applications that use machine learning

techniques to support utility operations and customer engagement activities. As a member of California's ISO Baseline Accuracy Working Group, Ms. Ciccone analyzed tens of thousands of residential, commercial and industrial baseline methods for accuracy and worked with the group to provide a recommendation of new settlement baselines to be adopted statewide. She holds a Master's in Environmental Science and Policy from the University of Chicago, and a B.S. from MIT, where she doubled majored in Operations Research and Materials Science & Engineering. She is also a two-time Jeopardy champion.

Steve Morris, ***Senior Quantitative Analyst*** at DSA, will be the team lead for tracking system review and billing analysis. Mr. Morris is an applied statistician with wide exposure to residential program evaluations using smart meter and billing data. He brings a strong background in mathematics to Demand Side Analytics. He was the lead analyst on DSA's 2019-2020 contract with Rhode Island OER to perform a billing analysis of National Grid commercial retrofit projects. Since 2016, Steve has been a key member of the impact evaluation team for IESO's Energy Manager and has been responsible for developing ex-post savings estimates for 10-15 embedded energy managers from industries such as mining, paper processing, breweries, universities, and hospitals. Steve was the primary author of recent updates to Bonneville Power Administration's Regression Guide for M&V protocol. He is versed in the most prominent statistical packages (R, SAS, and Stata) and has experience translating code from one language to another. He holds a Master's in Statistics and Bachelor's in Statistics and Sociology from the University of Georgia.

Mark Noll, ***Senior Quantitative Analyst*** at DSA, will provide analytical support for the project, concentrating on integrated resource planning and emissions impacts. Mr. Noll's primary experience is in electricity market modeling for applications including asset valuation, transaction work, and integrated resource planning for government, utility, and private sector clients. He has also worked on technology cost projections, capacity market design, and market concentration indices in the natural gas market. He is experienced with statistical computing and visualization languages including Stata, R, and Excel, as well as the Aurora electricity market forecasting software. He holds a B.A. in Economics from Georgetown University.

Katherine Burley, ***Quantitative Analyst*** at DSA, will provide analytical support for the project, concentrating on connected devices and econometrics. Ms. Burley's primary interests include program impact evaluation, energy efficiency policy analysis, and benefit-cost analysis. During her time at Demand Side Analytics, she has performed energy efficiency and demand response evaluations, including the winter energy efficiency analysis of ecobee's connected thermostat pilot on over 250,000 homes across North America. She is experienced in several statistical programming languages including Stata, R, and Python. She holds a Master's in Economics from the University of Texas at Austin and a B.S. in Economics from Louisiana State University.

E.4 ORGANIZATIONAL CHART

A chart depicting the organizational overview for this engagement, including identification of key staff and the roles/responsibilities on this project is included as Figure E-1.

FIGURE E-1 GDS TEAM ORGANIZATIONAL CHART

Appendix E-1. *Resumes of Key Personnel*

GDS Associates, Inc.
ENGINEERS & CONSULTANTS
gdsassociates.com

Rich Hasselman, CEM, CRM
Managing Director

EDUCATION

MBA, University of Wisconsin, 2008

MS, Land Resources, University of Wisconsin, 1998; certificate in Energy Analysis and Policy

BA, Geography, Radford University – Radford, Virginia, 1994

PROFESSIONAL HIGHLIGHTS

Rich has over 20 years of experience in the energy sector for clients in private sector companies and utilities, as well as governments and regulators. His experience includes managing market research projects; and conducting impact and process evaluations of energy efficiency, demand response, and renewable energy programs. He has implemented energy efficiency and renewable energy programs and conducted specialized analyses related to market and economic development. In this experience, Rich has developed an understanding of customer and utility perspectives and cost considerations for energy investments, including non-energy impacts. Additionally, Rich has led stakeholder workshops and trainings on wind energy, biogas, solar energy, and energy efficiency in a variety of settings, including to university, professional development, and general population audiences.

PROFESSIONAL EXPERIENCE

Evaluation, Market Research, Measurement and Verification

Rich has been involved with evaluation, market research, and measurement and verification since the beginning of his career. He currently supports a consortium of natural gas and electric PAs in their engagement with evaluation studies in Massachusetts, leading the GDS team and providing input and review of evaluation strategy, planning, practices, and results. He recently completed an evaluation study in Vermont related to income qualified rate discount and arrearage forgiveness, identifying opportunities for program expansion and the utilization of best practices. He has led evaluations across multiple jurisdictions in the U.S. covering all aspects of residential, commercial and industrial, renewable, and demand response programs. Rich has worked in nearly major impact EM&V method areas, including TRM development and use, custom calculations, behavior programs, billing analysis, and simulations. He has led and supported both net to gross and process evaluations as well, with substantial experience conducting in-depth interviews for evaluation and market research purposes.

Potential Studies

Rich has led and supported GDS potential studies. These include traditional potential studies investigating the potential for energy efficiency and demand response programs, as well as a statewide potential and market adoption potential study for beneficial electrification in Colorado. His experience covers measure-level development and estimating current market penetration and future market adoptions. He has developed benefit cost modeling using the traditional benefit-cost tests as well as incorporating non-energy impacts, including the social cost of carbon. He has developed techniques for incorporating the changes in electricity grid carbon emissions rates to model portfolio carbon emissions impacts across forecast periods.

Program Planning, Design, and Operations

Rich been involved with program planning, design, and operations. In the early 2000s, Rich helped plan and design programs focused on agribusiness and community-based outreach. Working as part of a large team of implementers, Rich coordinated efforts to meet energy goals, leverage cross-program customer engagement, develop community energy plans, and implement programs. Rich led a wind energy program, overseeing a network of site assessors and specialized trade allies, developing incentives and marketing materials, and conducting internal program M&V to improve realization rates. Rich has led the development of trade ally networks, managed a staff of energy advisors, and tracked KPIs to manage programs toward meeting goals. As an evaluator, Rich has also engaged with program implementation to understand evaluation needs and discussing solutions to challenges that align with program designs and practices.

GDS ASSOCIATES INC
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770-425-8100 • Fax 866-611-3791 • rich.hasselman@gdsassociates.com
Marietta GA • Austin TX • Auburn AL • Madison WI • Manchester NH • Orlando FL • Augusta ME • gdsassociates.com

Stakeholder Engagement, and Workshops, and Presentations
Throughout his career, Rich has led efforts to engage with stakeholders in committee formats, workshops, and educational presentations to a variety of audiences. These engagements have included professional conference presentations on energy efficiency and renewable energy, leading groups of diverse stakeholders to set strategic directions, and conveying complex technical issues to lay audiences.

IRP and Regulatory Support
Rich has supported GDS clients with IRP reviews and regulatory support for renewable energy and energy efficiency topics. Support includes investigations of analyses and assumptions as well as compliance and ratemaking assumptions related to utility achievement of renewable energy standards.

Policy Research, Recommendations, and Modeling
Rich has supported clients in researching potential policy options, translating the experience of other jurisdictions into meaningful considerations for his clients' jurisdictions. Topics include low-income discount and arrearage programs, renewable energy policies, and beneficial electrification policies. Rich has also modeled policy scenarios for both energy and economic impacts. For example, he developed an offshore wind energy and economic impact analysis for the State of Maryland related to legislation being considered by the State, incorporating job and non-energy benefits into the overall economic modeling.

Survey and Interview Guide Development
Rich has extensive experience developing structured surveys and in-depth interviews to support market research and program evaluations. Topics have ranged from energy efficiency to renewable energy and demand response. Respondents have included both participant, non-participants, trade allies, program managers, and policy makers. The results are often combined to present a holistic look at a particular subject to drive program, technology, or policy recommendations.

EMPLOYMENT HISTORY●

Energy Center of Wisconsin (1996 to 2001)
GDS Associates (2001 to 2013)
Tetra Tech (2013 to 2019)
GDS Associates (2019-present)

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Matthew Siska, P.E., CEM
Principal

EDUCATION

M.S., Fire Protection Engineering, Worcester Polytechnic Institute (WPI), 2005 B.S., Civil Engineering, Worcester Polytechnic Institute (WPI), 2002

PROFESSIONAL CERTIFICATIONS & MEMBERSHIPS

- Association of Energy Engineers (AEE)
- Society of Fire Protection Engineers (SFPE), National and New England Chapters
- National Fire Protection Association (NFPA)
- Licensed Professional Engineer (Architectural/Fire Protection) in the states of CA, NH, MA, IL
- Certified Energy Manager (CEM)
- Registered Technical Service Provider (TSP)
- Certified Water Efficiency Professional, Association of Energy Engineers (CWEP)

PROFESSIONAL EXPERIENCE

Matt has over 18 years' experience in the building science industry, beginning his professional career as a code consultant for complex commercial facilities and working with GDS since 2008 on a range of energy efficiency related engagements. Since joining GDS, Matt has led hundreds of energy audits and assessments from small businesses to large industrial facilities and educational campuses. Matt oversees the day-to-day administration of multiple utility-sponsored energy efficiency programs in the State of Massachusetts and is responsible for coordinating a team of engineers and field staff, identifying energy conservation measures, working with trade allies to develop cost-effective projects, preparing energy analyses, and ensuring all work is completed to the highest standards.

In his capacity managing various energy efficiency program implementation engagements, Matt is responsible for technical oversight of energy audits and project reviews, end use customer outreach and relationship management, budget management, and ensuring all projects are properly documented to the utility standards. This includes benefit-cost screening of measures, identifying and justifying appropriate baselines for end of life replacement and new construction projects, and applying best engineering practices to custom energy analyses.

Apart from energy audits and Commercial/Industrial efficiency program implementation, Matt is actively involved in EE program planning and benefit cost modeling and has completed multiple projects related to renewable energy systems and smart grid pilot programs. Matt has led renewable energy feasibility studies which were used to support REAP grant applications and included consideration of technical, economic, financial, and management feasibility. Matt is an experienced project manager with abilities to clearly communicate responsibilities to team members to deliver projects on schedule and on budget.

Prior to joining GDS in 2008, Matt worked in the building construction industry for over 6 years as a professional Fire Protection Engineer and building code consultant. Matt has been involved in the design, construction and commissioning of numerous commercial and residential facilities.

Specific Experience Includes

- Led or conducted over 300 energy audits and technical assessments of commercial, industrial, and agricultural facilities producing actionable and transparent measure recommendations across HVAC, building envelope, refrigeration, process, hot water, compressed air, and lighting end uses.
- Managed GDS' engagement with multiple Massachusetts Investor Owned Utilities providing technical support, customer outreach, QA/QC analysis, and energy modeling. Services included thorough energy analysis and documentation, measure identification and development, and measurement and verification activities. (2013-current)

- Designed a residential energy optimization pilot program for Eversource in Connecticut focused on displacing oil or propane heating fuel with cold climate air source heat pumps with integrated controls (2019).
- Led impact and process evaluations of demand response programs for residential and commercial users in Connecticut. The residential program consisted of aggregated wi-fi enabled thermostats using either cycling or setback strategies, while the C&I initiative used real time data and enabling controls to limit peak demand below pre-determine thresholds (2018)
- Managed the implementation of commercial and industrial energy efficiency programs for multiple municipal utilities in Massachusetts, including energy audits, budget management, savings analysis, data tracking and reporting, and measurement and verification (2010-2016)
- Designed and managed the implementation of a smart grid pilot program in New Hampshire, including the development of an evaluation plan, customer surveys, sampling plan, and M&V approach, along with coordination of the utilities internal billing, customer service, information systems and metering departments (2009)
- Participated in the process to develop three-year gas and electric efficiency plans in Massachusetts including participation in working groups, budget and savings analysis, analysis of prior year program performance, and evaluation of implementation issues
- Preparation of feasibility studies for large scale biomass, solar photovoltaics, and anaerobic digestion
- Commercial, industrial and agricultural audits including write-ups of existing conditions, identification of efficiency opportunities, energy savings quantification, grant preparation, and implementation support
- Specialized expertise in the hospitality industry; energy audits and consulting, end of life replacement planning, life cycle cost analysis, energy procurement.

EMPLOYMENT HISTORY ●

- **GDS Associates, Inc.,** ***Principal***, 2019 to Present / *Senior Project Manager*, 2017 to 2018 / *Project Manager*, 2011-2017 / *Project Engineer*, 2008 to 2011
- **Schirmer Engineering Corporation,** ***Associate Consultant***, 2002 to 2008

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Jeffrey Huber, CEM, CMVP, BESA
Managing Director

EDUCATION

MA in Anthropology, Minor in Statistics, University of Tennessee, 2004

BA in Criminology & Anthropology, University of Florida, 2001

PROFESSIONAL CERTIFICATIONS & QUALIFICATIONS

Mr. Huber is a Certified Energy Manager (CEM), Certified Measurement & Verification Professional (CMVP) and Building Energy Simulation Analyst (BESA). He is experienced in conducting statistical analyses (frequency distributions, cross tabulations, regression, and multivariate analyses) and he is proficient in MS Office. Mr. Huber is also familiar with the REM/Rate, BEopt, and Wright Soft building modeling software.

EXPERIENCE

GDS Associates, Inc., Marietta, Georgia, October 2005 to Present
Managing Director
Mr. Huber performs project management and conducts quantitative and qualitative data analysis for a broad range of projects, including DSM potentials assessment, program planning, cost-effectiveness, and market research. He is also experienced in the areas of codes and standards, technical reference manuals (TRM), evaluation, and measurement and verification (M&V).

RELATED POTENTIAL STUDY EXPERIENCE

Potential Studies. Mr. Huber has managed assessments of electric and natural gas DSM potential across all customer sectors. He has contributed to more than 35 potential studies electric and natural gas utilities across the country. Mr. Huber is currently leading a potential assessment for several public-power utilities in California, and over the last 5 years has contributed or led studies in Missouri, Colorado, Vermont, Kentucky, Indiana, Michigan, Pennsylvania, and Massachusetts. Collectively, these studies have addressed electric, natural gas, and electrification potential across numerous jurisdictions.

Mr. Huber has also had the lead responsibility for completing residential and/or low-income sector energy efficiency potential studies for utilities in Alabama, Arkansas, District of Columbia, Maine, Maryland, North Carolina, and South Carolina. This involves overseeing and coordinating all project activities, including data collection, measure characterization, modeling, and developing estimates of technical, economic, and achievable potential.

Cost-Effectiveness Analysis. Mr. Huber has assessed the cost-effectiveness of many DSM resources for a wide variety of clients. This includes assessment of measures, programs, and DSM portfolios for the planning, reporting, and evaluation purposes. He assisted in the re-design of GDS Benefit-Cost Screening model, as well as many other Excel-based calculators for specialized analysis.

IRP Support. Based on estimates of future potential, Mr. Huber has supported the development of DSM-related inputs into utility integrated resource plans. Mr. Huber has developed 8,760 annual inputs, participated in IRP stakeholder meetings, and submitted written testimony supporting the development of future potential estimates for future resource planning needs.

RELATED MARKET RESEARCH

Baseline Assessments. Mr. Huber has developed mail, online, and on-site survey instruments and conducted on-site assessments for residential sector baseline studies in several states, including Maine, Indiana, Pennsylvania and Mississippi. He has also led online/onsite assessments in the commercial sector for across several utilities in Indiana. These baseline study efforts also included sampling design, data cleansing, data analysis, and drafting the final market assessment reports.

Market Barriers and Market Adoption Research. Jeffrey has led several surveys to understand residential and nonresidential consumers perceptions of energy efficiency technologies and their likelihood to adopt energy efficiency measures in the future. This research has been utilized to better estimate future potential as part of DSM potential study research and IRP planning.

Focus Groups and Client Interviews. Mr. Huber has conducted focus group research to under customer attitudes and perceptions regarding the effectiveness of DSM program offerings. This research assessed the effectiveness of program marketing strategies, program education and outreach, and general concerns regarding the program administrator. In addition, Jeffrey has conducted internal client interviews to better under program processes and make recommendations for future improvement.

OTHER RELATED EXPERIENCE

Program Planning & Design. Much of the analysis Mr. Huber performs feeds directly into utility planning efforts. This includes information on DSM resource costs, savings, and potential program participants. In addition to the work noted above, Mr. Huber has assisted utilities in developing estimates of program potential and DSM program portfolio plans. This included drafting recommended program designs, assisting product managers determine appropriate measures and rebate levels, performing cost-effectiveness analysis, and working with utility program managers. He has also provided quality assurance, technical support, and/or developed measures for technical reference manuals (TRMs) for Maine and Pennsylvania, and provided deemed measure savings databases for electric cooperatives in Indiana, Kentucky, and North Carolina.

Program Evaluation. Mr. Huber has worked on multiple evaluations and/or evaluation reviews of utilities' energy efficiency programs. He has conducted impact evaluations of low-income weatherization programs and behavioral programs and has conducted evaluation oversight of residential and commercial programs in Pennsylvania, North Carolina, and Georgia. Mr. Huber has also developed focus group interview guides for Efficiency Maine to assess successful practices, market barriers, and identify program recommendations.

GDS Associates, Inc.
ENGINEERS & CONSULTANTS
gdsassociates.com

Josh H. Duckwall, CEM, LEED AP, GC

Project Manager

EDUCATION

B.S.A in Biological Science, University of Georgia, 2002

PROFESSIONAL REGISTRATIONS

Certified Energy Manager (CEM), LEED Accredited Professional (LEED AP), Certified Renewable Energy Professional, (REP), EPA Universal Refrigerant License, Licensed Residential and Commercial General Contractor (GC)

EXPERIENCE

Experienced energy professional with more than 16 years of effective leadership in all aspects of sustainability management, energy efficiency, and project oversight.

GDS Associates, Inc., 2013-Present

Project Manager for Energy Efficiency Department

- Serves as a project manager in the EERD department (Energy Efficiency, Renewables, Distributed Generation), a special focus on deemed savings measure development, utility incentive design, renewable integration, and program evaluation.
- Currently serves on a contract as administrator of the Rhode Island Public Utilities Commission Renewable Energy Standards Act reviewing applications for eligibility; reviewing demonstrations of compliance including compliance reports from obligated entities for compliance with the Rules and Regulations of RI's Renewable Energy Standard Act and for accuracy and reporting to the Commission on findings and recommendations;
- Served on the Pennsylvania Statewide Evaluator (SWE) Team from 2013-2017 performing impact evaluations and managing TRM (savings technical reference manual) delivery and savings measure development.
- Performed market potential studies with a focus on renewables (PV), combined heat and power (CHP), and electric utility infrastructure (EUI) for clients including Ameren Missouri, Minnesota Department of Commerce, and DTE in Michigan.
- In 2018, completed a substantial water/energy efficiency analysis and energy management plan for the City of Columbus, GA / Columbus Water Works.
- In 2017, completed Evaluation of Non-Road Electrification Technology program for JEA in Jacksonville, as well a rebate program design and implementation plan for residential and commercial battery storage incentives.
- Currently serves as the evaluation consultant to the Delaware Electric Cooperative, utility consultant and ESCO evaluator for the Metropolitan Atlanta Rapid Transit Authority (MARTA), Smart City consultant to the City of Orlando/OUC, and ESCO (energy services) project evaluator for the State of Louisiana.

E4E Solutions, Atlanta, GA, 2010 – 2013

Senior Project Manager

- Managed design-build energy and water projects for commercial and industrial clients ranging from $10k to $5M.
- Conducted energy and water audits on numerous building types to gauge client use of HVAC, water, refrigeration, lighting, and building automation with a focus on implementing turnkey projects.
- Served as the property owner's representative on multiple projects, advising the design team on energy efficiency and sustainability in new construction and retrofit applications.
- Procured significant financial incentives from a broad range of large utility programs, ranging from prescriptive rebates to highly customized submittals averaging $250k-$300k per project.
- Increased company visibility, brand identity, and client interest through development and launch of the company website, marketing literature, and case studies.
- Managed support of senior and junior engineering staff needed to service demanding project requirements.

H2 Ecodesign, Atlanta, GA, 2008 – 2010

Senior Project Manager

- Managed LEED certification initiatives for commercial and industrial customers while directing operations of the firm's independent consultant network.

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- Served as a full-service consultant for domestic and international clients seeking to incorporate water efficiency, energy efficiency, and sustainability into their building projects.
- Delivered high-impact presentations to clients that effectively outlined the measures needed to satisfy LEED requirements for the targeted goal, addressing concerns by multiple stakeholders.
- Managed the junior support staff, adjusting the auxiliary support for each project based on client priorities and project needs.
- Designed, implemented, and deployed a project collaboration and management software platform via Microsoft SharePoint, which served as a company standard across other departments.

Southface Energy Institute, Atlanta, GA, 2004 – 2008

Operations Manager

- Managed multiple energy and water efficiency and sustainable building programs, including EarthCraft House, ENERGY STAR, and Jackson EMC's RightChoice Program, providing comfort and energy guarantees and rebates.
- Served as the primary decision maker and risk mitigation manager for comfort and energy use policies with a client base of over 800 properties and 400 builders, overseeing a staff of 12 technicians and analysts.
- Led instructional training throughout Georgia and Alabama on energy efficiency, advanced construction, energy certification programs, HERS ratings, IECC energy code, and ENERGY STAR.
- Designed and implemented a company-wide project tracking database via Ruby on Rails (SQL type) that allows real-time carbon and energy savings data to be queried instantaneously.
- Trained in the energy modeling and design programs REMRate, ComCheck, and eQUEST, as well as experienced in AutoCAD; obtained EPA Universal certification.
- Served on the Georgia Energy Code task force as commissioned by the Department of Community Affairs, promoting energy efficiency within the Georgia energy code legislation.
- Acted as a liaison to the Home Builders Association, Jackson EMC, Georgia Power, Georgia Department of Community Affairs, and other partners to provide coordination of critical Southface initiatives and program standards.

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Warren Hirons, P.E., CEM, CMVP
Project Manager

EDUCATION

Murdoch University, *coursework in Renewable Energy*

B.S. Environmental Engineering, N.C. State University, May 2009

B.S.E.S. Environmental Economics & Management, University of Georgia, May 2006

PROFESSIONAL CERTIFICATIONS & QUALIFICATIONS

Licensed Professional Engineer (PE) ***in the state of Georgia***

Certified Energy Manager (CEM)

Certified Measurement & Verification Professional (CMVP)

Experienced user of REM/Rate and BEopt building energy simulation modeling software.

EXPERIENCE

GDS Associates, Inc., Marietta, Georgia, 2012 to Present

Project Manager

Mr. Hirons performs project management and conducts quantitative and qualitative data collection and analysis, engineering feasibility studies, modeling of energy systems and program evaluation for GDS clients (e.g. utilities, government agencies, and regulatory agencies). He is also experienced in the areas of codes and standards, technical reference manuals (TRM), evaluation, and measurement and verification (M&V).

PROGRAM EVALUATION

Mr. Hirons has worked on impact and process program evaluation projects for state utility commissions and other GDS clients. He is a Certified Measurement and Verification Professional (CMVP) as well as a licensed professional engineer. He worked on the Pennsylvania Statewide Evaluator Team from 2012 to 2017 and assisted with preparing reports to the Pennsylvania PUC on gross and verified savings from the energy efficiency programs of seven investor-owned utilities in Pennsylvania. He has served as the program evaluation consultant for the North Carolina Utilities Commission (NCUC) since 2012 and is responsible for reviewing the evaluation, measurement and verification (EM&V) reports submitted by the North Carolina electric utilities to the NCUC as part of their application for cost recovery in various electric rate case proceedings. He has submitted testimony and helped prepare affidavits and data requests on behalf of the NCUC in these proceedings. Other evaluation projects include the following:

- Developed program evaluation plans for a utility in Canada.
- Reviewed utility EM&V reports and prepared data requests to collect information in order to examine the basis for reported kWh, kW and therm savings filed in utility cost recovery proceedings. Reviews included impact, process, market effects (net-to-gross), educational, and marketing programs evaluations.
- Provided regulatory support and testimony in cost recovery proceedings
- Developed program theory models
- Reviewed EM&V plans for future programs to advise clients on the adequacy of the plans

MARKET RESEARCH

Mr. Hirons has assisted with the development of telephone, web-based and on-site survey instruments and conducted on-site assessments for energy efficiency studies in several states, including Maine, Indiana, Pennsylvania and Mississippi. These market research projects also included data cleansing, data analysis, and drafting the final market assessment and baseline reports.

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COST-EFFECTIVENESS ANALYSIS

Mr. Hirons has assessed the cost-effectiveness of many energy efficiency and demand response resources for a wide variety of GDS clients. This includes assessment of measures, programs, and DSM portfolios for planning, reporting, and evaluation purposes.

DSM POTENTIAL ASSESSMENT

Mr. Hirons has completed assessments of electric and natural gas DSM potential across all customer sectors. He specializes in developing estimates of residential sector energy efficiency potential in utility service areas or states. He has completed numerous residential sector energy efficiency potential assessments for GDS clients, including the following studies:

- Indianapolis Power and Light (2019)
- Vectren Indiana (2019)
- Vermont Department of Public Service: electric and natural gas service territories (2017 & 2019)
- DTE Energy: electric (2018) and natural gas service (2016) territories
- Consumers Energy: electric service territory (2016); natural gas service territory (2019)
- Ameren Missouri: electric service territory (2016);
- Efficiency Maine Trust: electric and natural gas service territories (2015 and 2014);
- Pennsylvania PUC: electric service territories of seven electric distribution companies (2015).

He performs the following tasks as they relate to performing energy efficiency and demand response potential studies:

- Collects data on the costs, savings, useful lives and saturation of energy efficiency and demand response measures
- Estimates energy efficiency and demand response potential in various regions of North America
- Conducts building energy simulation models and billing and metering data analysis to support energy and demand savings estimates developed for energy efficiency potential studies and evaluation analysis
- Conducts benefit/cost analysis of energy efficiency and demand response measures and programs
- Conducts statistical and uncertainty/sensitivity analysis of data
- Develops and reviews engineering estimates of energy use and savings for energy efficiency and demand response measures and programs using simple and complex engineering models and formulas

REGULATORY SUPPORT

Mr. Hirons has provided regulatory support services to GDS government and utility clients:

- Served on a team of advisors to help the Connecticut (CT) Office of Consumer Counsel represent the state's utility customers in energy efficiency proceedings.
- Provided analysis to utility and government clients regarding proposed utility shareholder incentive mechanisms
- Provided analysis of utility DSM plans in several states
- Performed research into best practices for providing DSM program
- Served as a consultant in natural gas rate case proceedings for municipalities in Texas
- Reviews utility EM&V reports and prepares data requests in an effort to require the utilities show sufficient evidence of reported savings in cost recovery proceedings. Reviews include impact, process, market effects (net-to-gross), educational, and marketing programs evaluations.
- Provides regulatory support and testimony in cost recovery proceedings
- Develops program theory models
- Reviews EM&V plans for future programs to advise clients on the adequacy of the plans

PROGRAM PLANNING AND DESIGN

Much of the work performed by Mr. Hirons feeds directly into utility planning efforts. This includes information on DSM resource costs, savings, and potential program participants. In addition to the work noted above, Mr. Hirons has assisted utilities in developing estimates of program potential and DSM program portfolio plans. This included drafting recommended program designs, assisting program managers to determine appropriate measures and rebate levels, and performing cost-effectiveness analyses.

He has also provided quality assurance, technical support, and/or developed measures for technical reference manuals (TRMs) for Maine and Pennsylvania and provided deemed measure savings databases for several electric cooperative clients.

WORK EXPERIENCE PRIOR TO JOINGING GDS●

Brown and Caldwell, Virginia Beach, VA
Engineer II *– Business Consulting Practice*
Mr. Hirons worked with multiple contractors and the City of Virginia Beach Department of Public Utilities (DPU) to complete an investigation of the City's sanitary sewer infrastructure. The job required supervising contractor fieldwork activities, analyzing fieldwork data, compiling data and generating condition assessment reports. He also worked on a project to re-write the City's DPU design standards manual, and led an investigation into the stormwater infrastructure serving a portion of the Ft. Eustis military base in Newport News, VA.

Southern Energy Management, Morrisville, NC
Building Science Plan Review Analyst
Mr. Hirons worked on residential energy savings efforts by helping builders construct homes that earned Energy Star certification. His duties included conducting plan reviews by analyzing construction design drawings and entering the results of the analysis along with builder supplied specifications into the REM/*Rate* software program to estimate the energy efficiency of new homes. Mr. Hirons consulted with builders to help them make decisions regarding cost effective upgrades in energy efficiency.

United States Department of Agriculture-Agricultural Research Service, Raleigh, NC
Biological Science Aide
Mr. Hirons provided support to the plant physiologist in charge of completing tasks associated with conducting air quality experiments designed to investigate the effects of carbon dioxide and ozone on crop yield.

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Kaytie D. Harrah
Project Consultant

EDUCATION

Master of Business Administration, Shorter University, Rome, Georgia 2016

Bachelor of Science in Management, Shorter University, Rome, Georgia, December 2006

PROFESSIONAL MEMBERSHIPS

Association of Energy Services Professionals, *member since 2008*

Association of Proposal Management Professionals (APMP), *member since 2017*

EXPERIENCE

Ms. Harrah has an MBA and Bachelor's Degree in Management from Shorter University and has more than 16 years of experience in the administrative and consulting fields. At GDS, Ms. Harrah provides data collection, data analysis and administrative support to engineers, consultants and executives of GDS. She assists with report preparation, formatting and technical editing of various reports. She has been responsible for the development and formatting of numerous program impact and process evaluations, energy efficiency and demand response potential studies as well as monthly progress reports for program evaluation projects. Ms. Harrah is responsible for the reporting requirements essential to delivering technically sound and clearly prepared reports to reach a multitude of audiences. She performs in-depth reviews and formatting of client reports and proposals to achieve these results. She has been involved in the development, compilation, comprehensive editing, and formatting of the following client potential studies:

- *Pennsylvania Public Utility Commission*
- *Ameren Missouri*
- *Vermont Department of Public Service*
- *Big Rivers Electric Corporation*
- *GreenCo Solutions*
- *Michigan Public Service Commission*
- *Efficiency Maine Trust*
- *Maryland Energy Administration*
- *Maryland Department of Housing & Community Development*
- *District of Columbia Energy Office*

GDS Associates, Inc., Marietta, GA, 2008-Present
Executive Assistant (2008 – 2014)
Project Consultant (2015)

- Responsible for assisting with design and implementation of energy efficiency programs.
- Responsible for assisting company executives with various projects and reports.
- Responsible for composing and editing text for various projects.
- Assists engineers, consultants and executives with administrative functions.
- Conducts technical reviews and formatting of proposals and client reports.
- Prepares necessary and appropriate graphics for clients reports and proposals.

Moore Investment Group, Inc., Atlanta, GA, 2003-2007
Office Manager/Executive Assistant

- Responsible for assisting company executives with various projects and reports.
- Responsible for all administrative duties.
- Managed accounts with duties including general ledger reconciliations, bank reconciliations and accounts payable.
- Managed office staff and office operations.

Chattahoochee National Bank, Alpharetta, GA, 1999-2003
Operations Specialist

- Responsible for assisting company executives with various projects and reports.
- Managed accounts with duties including general ledger reconciliations, bank reconciliations and accounts payable.
- Trained new staff on accounting software and bank operations.

SKILLS ●

- Microsoft Office Suite: Excel, Word, PowerPoint
- Adobe: Illustrator, Photoshop, InDesign, Advanced Acrobat XI

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Melissa Young, EIT, CEM
Engineer

EDUCATION

BS, Mechanical Engineering, Georgia Institute of Technology, Atlanta, Georgia, 2015

PROFESSIONAL CERTIFICATIONS & QUALIFICATIONS

- Engineer in Training (EIT) ***in Georgia***
- Certified Energy Manager (CEM)
- Association of Energy Services Professionals (AESP)

EXPERIENCE

GDS Associates, Inc., Marietta, GA, 2012 to Present
Engineer

Ms. Young started at GDS as a coop student in 2012 and began full-time employment in 2015 after she graduated from Georgia Institute of Technology. Some of her responsibilities have included:

- Responsible for using tables and models to generate savings data on various energy efficiency and demand response programs.
- Responsible for research and reporting of energy efficiency and demand response programs.
- Responsible for writing technical sections of proposals.
- Evaluated demand response potential for Vectren in Indiana. Analyzed several direct load control and rate programs.
- Worked on update to NIPSCO's 2019-2021 DSM plan, extending it for a 30-year planning period. This project determined demand response updates, as well as the addition of many energy efficiency measures.
- Evaluated demand response potential for East Kentucky Power Cooperative. Analyzed several direct load control and rate programs.
- Worked on the Maine Residential Low-Income Household Energy Efficiency Baseline Study put together for the Maine Office of the Public Advocate. Coordinated efforts to conduct 68 on-site energy surveys of low-income homes in Maine. Traveled to Maine to conduct some of the surveys. Organized and analyzed data to develop findings and recommendations relating to remaining energy savings opportunities for low-income households in Maine.
- Worked on project for Austin Energy to determine the value of demand response in its service territory. A benefit-cost analysis was conducted, along with a review of how Austin Energy's current programs at the time interacted in the ERCOT market. GDS identified the most applicable end uses and customer types for demand response and evaluated the potential savings.
- Researched and collected program administrative and incentive costs information for electric energy efficiency and demand response programs around the country and reported them to Ameren Missouri. Information provided in this report was used to compare Ameren's administrative and incentive costs to many other utilities and determine if these costs fell within a reasonable range.
- Evaluated demand response potential for Ameren Missouri. Analyzed demand response programs, including direct load control and rate programs. Conducted research to determine appropriate market penetration rates for demand response programs.
- Worked on Demand Response Potential Studies for three utilities in Michigan. Analyzed demand response programs, including direct load control and rate programs. Traveled to Michigan to present results to utilities and Michigan Public Service Commission.
- Worked on Distributed Generation Potential Study for Efficiency Maine. Calculated technical and economic potential energy for renewable energy and CHP technologies, using several types of "clean" fuels. Analyzed cost-effectiveness of same technologies.
- Worked on Renewable Energy Potential Study for the Washington, D.C. Department of the Environment (DOE). Calculated potential energy for six forms of renewable energy.

- Worked on Statewide Evaluator Residential Potential Study for the state of Pennsylvania. Calculated energy efficiency saturation figures for each utility by extracting data from individual surveys and analyzing those numbers to calculate statistics for individual measure saturations.

SKILLS ●

- Microsoft Office Suite- Excel, Word, PowerPoint, Publisher, Access
- SolidWorks
- SAS (Statistical Analysis Software)
- Autodesk Inventor
- AutoCAD
- MATLAB

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Michael Coty, EMIT
Analyst

EDUCATION

M.A., Urban Environmental Policy and Planning, Tufts University, 2015

Graduate Certificate, Water: Systems, Science and Society, Tufts University, 2014

B.S., Resource Economics, University of New Hampshire, 1996

PROFESSIONAL CERTIFICATIONS & MEMBERSHIPS

- AEE Energy Manager in Training (EMIT)
- MA Wastewater Treatment Plant Operator – Grade 2, Industrial
- U.S. Green Building Council – NH Chapter Board Member
- Association of Energy Engineers (AEE)
- Association of Energy Services Professionals (AESP)

PROFESSIONAL EXPERIENCE

Mr. Coty provides technical analysis and research for GDS' Energy Efficiency and Renewables Department in Manchester, NH with a focus on commercial and industrial projects. Recent projects have included analysis for HVAC measures, refrigeration, lighting retrofits, variable frequency drives (VFDs), and snowmaking equipment. Additionally, Mr. Coty manages day-to-day operations for the NYSERDA Region 1 Small Commercial and Energy Efficiency Assessment Program which provides free energy audits to small businesses and non-profits. His is other work includes conducting energy and cost savings analysis for utility rebate programs, performing scoping audits for commercial and industrial properties, and reviewing technical reports for various clients. Mr. Coty also has experience conducting research and analysis for a recent NYSERDA Technical Potential Study and utility Market Characterization Study. He is familiar with verification analysis, and was recently involved in the review of multiple Efficiency Vermont projects. Prior to joining GDS, Mr. Coty worked for over 12 years as an environmental project manager and consultant. In 2012, he was accepted to the Urban Environmental Policy and Planning Master's Program at Tufts University with a core concentration in environmental management, energy policy, and watershed planning. Mr. Coty recently completed an intensive energy manager course and passed the Certified Energy Manager exam.

EMPLOYMENT HISTORY

GDS Associates, Inc., Analyst, 2014 to Present
ENPRO Services, Inc., Environmental Consultant, 2012 to 2014
Sustainability Intern, IDEXX Laboratories, Inc., June – November 2013
ENPRO Services, Inc., Project Manager, 2001 to 2012

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GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Alyssa M. Gianotti
Associate Engineer

EDUCATION

B.E. Mechanical Engineering, University of New Haven, May 2016

PROFESSIONAL EXPERIENCE

Ms. Gianotti began at GDS Associates, Inc. in April of 2018 as an Associate Engineer. Since her arrival, Alyssa has been working on technical analysis for electric and conservation measures in the industrial and commercial department. Alyssa brings experience in risk assessment in the industrial realm, and has extensive experience working with customers' management teams. Alyssa's technical writing abilities will be an asset for any commercial or industrial application.

EMPLOYMENT HISTORY

- GDS Associates, Inc. ***Associate Engineer*** April 2018-present
- Zurich North America ***Risk Engineering Representative*** June 2016 – April 2018
- Whiting-Turner ***Project Engineering Intern*** December 2015 – January 2016
- Frontier Communications ***Engineering College Summer Intern*** June 2015 – August 2015

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Katherine Johnson | President
Email: kjohnson@johnsonconsults.com
Office: 301 461 4865
Website: www.johnsonconsults.com

Professional Highlights

Dr. Katherine Johnson is President of Johnson Consulting Group, a woman-owned consulting firm specializing in the energy efficiency field. For more than 25 years, she has directed program evaluations investigating the effectiveness of energy efficiency programs and policies across residential and C&I market sectors. For the past eleven years, she has been leading collaborative forums to help guide decision-making regarding the evaluation and cost-effectiveness of current and emerging energy efficiency tools and policy initiatives.

Recent Project Experience

Statewide EM&V Guidance Projects

- **Arkansas Public Service Commission: Independent Evaluation Monitor (IEM):** Since 2011, Dr. Johnson has been working with the Parties Working Collaboratively (PWC) to help Arkansas inform, direct, and work towards consensus in achieving consistent reporting standards that conform to EM&V "Best Practices" for both the EM&V Protocols and the Technical Reference Manual (TRM). She also has supervised the annual updating of Arkansas Technical Reference Manual, developed the current EM&V Protocols incorporated into Arkansas TRM V.6. Her responsibilities include reviewing the third-party implementation plans and reports, and preparing an Annual Report to the Arkansas Public Service Commission each June. She has testified before the Arkansas Public Service Commission as an expert in EM&V issues.
    - **Arkansas Public Service Commission: Weatherization Collaborative Facilitation:** Dr. Johnson led the facilitation and development a new unified statewide approach to weatherization programs at the request of the Arkansas Public Service Commission.
    - **Arkansas Public Service Commission: NEBs Quantification:** Dr. Johnson led a literature review and analysis of current NEBs policies and estimates at the request of the Commission. She also facilitated the stakeholder process that led to the establishment of quantifying four NEBs in annual EM&V studies beginning in PY2017.
- **British Columbia Utilities Commission: Energy Efficiency Consultant**: Dr. Johnson provided ongoing technical and expert guidance regarding the practicality and feasibility of proposed energy efficiency plans, filings, and cost-effectiveness calculations.
- **California Public Utilities Commission: EM&V Advisor**: Dr. Johnson provided technical advice and support to the Energy Division of the CPUC specifically regarding the effectiveness of energy efficiency programs targeting Regional Energy Networks, Local Government Partnerships, Disadvantaged Communities, and multifamily strategies.
- **Maine Public Utilities Commission**: **EM&V Technical Advisor**: Working with Mesa Point Energy, Dr. Johnson completed a fast-turnaround project designed to assess the effectiveness of Maine's triennial plan. Her work included reviewing current EM&V reports, identifying gaps and preparing supporting materials for the Public Utility Commission staff. Her contract was extended to assist the PSC in identifying best practices for TRM updates.
- **Missouri Public Service Commission: EM&V Auditor:** Dr. Johnson led the team of EM&V Auditors to review EM&V plans and reports prepared by third-party evaluation firms to ensure that these reports reflect industry best practices and are consistent with industry approved protocols such as the IPMVP for the past four years.
- **New York State Energy Research and Development Authority (NYSERDA):** Dr. Johnson conducted extensive research on current "Best Practices" in EM&V activities nationwide which led to the development of the first set of EM&V Protocols for the Arkansas Public Service Commission and the first ever set of Process Evaluation Protocols for New York State.

Selected EM&V Experience

- **City Utilities of Springfield (MO):** Dr. Johnson led the first program portfolio evaluation of this municipal utility's residential and commercial program offerings. Dr. Johnson also directed the benchmarking of the municipal utility on key performance metrics to all of the other municipal utilities throughout the US. She directed the cost-benefit analysis for the program evaluation, supervised the impact evaluation, and developed case studies based on a desk review and program analysis for several C&I lighting installations.
- **Commonwealth Edison:** As a subcontractor to Navigant Consulting, Dr. Johnson has been serving as a technical advisor to quantify NEIs for ComEd's entire energy efficiency portfolio. She has developed specialized surveys and conducted independent analysis into NEI quantification strategies and estimates in other jurisdictions and approaches to avoid NEI double counting.
- **Delaware Sustainable Energy Utility:** Dr. Johnson led the process evaluation of DE SEU's Home Performance with Energy Star statewide program. In this capacity, she is directing the analysis of customer surveys, conducting in-depth interviews with staff, implementers, and contractors and reviewed critical program databases and materials.
- **MASS Save:** Completed an independent review and analysis of the major HP software packages currently being used or under consideration in Massachusetts for its MASS Save program. Provided recommendations on the best ways the state could develop a common software approach which would both meet the needs of the Program Administrators (PAs) and the HP contractors looking to expand their business opportunities.
- **Spire Energy:** Led the comprehensive program evaluations for the residential and C&I space and water heating programs for the largest gas utility in Missouri. Her responsibilities included conducting the process evaluations, supervising the impact and cost-effectiveness evaluations, determining NTG and preparing summary reports and presentations to key stakeholders.

Principal, KJ Consulting, Frederick, MD (1997-2006): A woman-owned marketing and management firm headquartered in Metropolitan Washington, D.C.

Marketing and Finance Manager, **Geothermal Heat Pump Consortium, Inc., Washington, D.C. (1995-1996)**

Associate, Barakat & Chamberlin, Washington D.C. (1993-1995)

Research Director, The Corps Group, St. Louis, MO. (1992-1993)

Project Manager, Aragon Consulting Group, St. Louis, MO. (1991-1992)

EDUCATION

Doctor of Business Administration (July 2010)
University of Southern Queensland, Toowoomba, Australia

Masters of Business Administration (Dean's List: 1990)
Rollins College, Roy E. Crummer Graduate School of Business, Winter Park, FL

Bachelor of Science in Business and Journalism (Dean's List: 1983)
Indiana University School of Business, Bloomington, IN

SELECTED PUBLICATIONS AND CONFERENCE PAPERS

Johnson, K. 2017. *"Baby, It's Cold Outside: Lessons Learned from Geothermal Heat Pump Installations in the United States,"* Cold Climate HVAC Conference, March, Kiruna, Sweden, 2017

Johnson, K. & Klucher, M. 2015, "*Getting Our Ducts in a Row: Using Evaluation Results to Create a Statewide Weatherization Program,"* IEPEC Conference, Long Beach, CA. August

Johnson, K. 2014, "*Decision-Framework for Determining Net Savings Approach – Supplemental Document #2 to Principles and Guidance,"* Northeast Energy Efficiency Partnership, released May 2016.

Corine Mahon | Project Manager
Johnson Consulting Group
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Professional Highlights

Corine Mahon is Project Manager with Johnson Consulting Group responsible for editorial review, online material support, and logistical support for Johnson Consulting Group. She has a Bachelor of Arts degree with a major in Communications from California State University, Fullerton, CA.

EXPERIENCE

More than 15 years of experience in various phases of marketing both print and Internet, website creation and maintenance, and technical support for small to medium-sized companies.

Johnson Consulting Group, MD (2008 – present) Provides logistical support to JCG, maintains the website and sites for events and organizations controlled by the Johnson Consulting Group. Duties include online event coordination and meeting summaries; production of corporate communications and publications; and maintenance of certifications as required by states plus MBE certifications.

Market Development Group, CO (2006-2008) Joined Katherine Johnson and Ed Thomas as Project Coordinator. Handled four websites, created marketing pieces for print or Internet, online event registration, support of webinars/workshops, and coordination of various publications.

Freelance work, CA (2000-2006) Provided website support for Association of Energy Service Professionals, Utility Communicators International, Peak Load Management Alliance, Delta-Montrose Electric Association, and Intermountain Energy before joining Market Development Group. Supported the creation and publication of the "Leading Energy Utility Marketing Programs" and its Reports: Home Energy Audits, Home Energy Loans, and Geo Heat Pumps.

Volt VIEWtech, Anaheim, CA (1993-2000) Promoted from Executive Assistant to Technical Support Specialist responsible for assisting in the launch of one of the first on-line Home Energy Audits.

Carter Hawley Hale, Anaheim, CA (1990-1992) Executive Assistant to the Vice President of Security in charge of employee identification/security in a database of 500 employees.

Southern California Training Council, Newport Beach, CA (1988-1989) Associate Project Manager for government subsidized training. Responsible for computer tracking of trainee progress, course scheduling, and brochure creation.

Docutel-Olivetti, Newport Beach, CA (1983-1985) Account Consultant for automated teller machine manufacturer. Responsible for technical training of client bank staff, coordination of physical construction of ATMs, and coordination of promotional campaigns.

EDUCATION

Bachelor of Arts with a major in Communications, 1988, California State University, Fullerton, CA Associate in Arts Degree, Banking and Finance, (Dean's List honors: 1986), Fullerton Community College, Fullerton, CA

AFFILIATION

Member of Association of Energy Service Professions since 2008.

Diane Mahon | Project Coordinator

Johnson Consulting Group
Email: dmahon@johnsonconsults.com
Cell: 503.807.0646
Website www.johnsonconsults.com

Professional Highlights

Diane Mahon is Project Coordinator with Johnson Consulting Group. She assists in areas of project coordination. She is being mentored in the EM&V field by Dr. Katherine Johnson. She has a Bachelor of Science degree in Criminology and Criminal Justice from Portland State University. Through studies at Portland State she learned how to study and analyze data for programs that are aimed at changing behavior and improve communities.

EXPERIENCE

More than 6 years of experience in survey analysis plus proposal and report coordination for client companies in several states.

Johnson Consulting Group, MD (2011-present) She is responsible for customer and trade alley surveys/interviews analysis and online preparation. She assists in statistical analysis, creates charts and graphs from evaluation data, and assists in other areas of project coordination. She has been heavily involved in the production of reports for clients including Columbia Gas of Virginia (VA), City Utilities of Springfield (MO), Energy Trust of Oregon (OR), Parties Working Collaboratively (AR), Partners in Energy Services (CO), PECO (PA), PSNC Energy (NC). She also assists in proposal preparation and meeting summaries.

Management at Taco Bell (2003-2009) Worked in various Locations: Yorba Linda and Anaheim, CA; Tigard and Oregon City, OR. Responsibilities included management of time, employees, food safety, high cash values, bank deposits, opening/closing the store and customer service.

Internship with Portland State University Student Legal and Mediation Services (2009) Handled a variety of cases in criminal and family law. Worked closely with lawyers, police, court houses and international students. Also maintained the website for the Student Legal and Mediation Services through Drupal internet website building program.

EDUCATION

Bachelor of Science in Criminology and Criminal Justice, 2009, Portland State University, Portland, OR

Internship with the Student Legal and Mediation Services, Portland State University, Portland, OR

ADDITIONAL CERTIFICATIONS/TRAINING

Currently enrolled in Proofreading Certification Program

Drupal program website training (open source)

GIS Mapping Program

Senior Capstone in impact of community gardens

AFFILIATIONS

Member of Association of Energy Service Professionals since 2011

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

JESSE SMITH – PARTNER

DSM Potential Studies

- **Consumers Energy** – Demand response potential study and Integrated Resource Plan support (2020).
- **NIPSCO –** Demand response market potential study and IRP Support (2020-2021).
- **Pennsylvania Public Utility Commission –** Demand response potential study lead (2019). Used to establish goals for the state's seven electric distribution companies.
- **Indianapolis Power and Light –** Demand response potential study lead. Support measured energy efficiency and behavioral measure characterizations (2019).
- **Pennsylvania Public Utility Commission –** Demand response potential study lead (2014-2015). Extensive research on program design and PJM integration.
- **Central Electric Power Cooperative –** DSM potential study and IRP support (2020). Includes energy efficiency, demand response, beneficial electrification, and renewables.
- **Central Hudson Gas and Electric –** Non-residential baseline study (2019). Primary data collection designed to inform a DSM potential study.
- **Pennsylvania Public Utility Commission –** Non-Residential baseline study (2013-2014 and 2018-2019). Each study included approximately 500 on-site audits.
- **Advanced Energy Economy –** Demand response and battery potential in Indiana (2017-2018)

Energy Efficiency Evaluations

- **Central Hudson Gas and Electric** – Portfolio Impact Evaluation and C&I Baseline Study (2019-2021)
- **Pennsylvania Statewide Evaluation Team** – TRM Development (2011-2019)
- **ecobee eco+** – Connected thermostat optimization evaluation (2019-Present)
- **Independent Electricity System Operator (IESO) of Ontario** - Industrial Energy Manager Program Evaluation (2016-2019)
- **CREED Light Tracker** – National Lighting Analysis for NTG (2016-2019)
- **Columbia Gas of Virginia** – Impact Evaluation of CARE Portfolio of Natural Gas DSM Programs (2016-2019)
- **Efficiency Maine** – Large Customer and Business Incentive program evaluations (2014-2016)
- **Efficiency Maine** – LED Lighting and Heat Pump Water Heater Pricing Trials (2017-2018)

Demand Response Evaluations

- **Pennsylvania Public Utility Commission** – Statewide Audit of demand response program evaluations (2017-2021) Responsible for the review and all demand response EM&V plans, baseline selections, and load impact calculations for states 500 MW demand response portfolio. Program types include C&I load curtailment, AC load control and behavioral DR.

Education

Master of Science, Applied Statistics 2010
Kennesaw State University

Bachelor of Science in Psychology 2001
University of North Carolina, Chapel Hill

Work History

Demand Side Analytics, LLC - Atlanta, GA
Partner and Principal Consultant 2016-now

Nexant – Malvern, PA
Managing Consultant 2015-2016
Project Manager 2013-2015
Senior Analyst 2011-2013

GoodCents Solutions, Inc. – Atlanta, GA
Load Research Analyst 2010-2011

- **Public Service New Mexico** – Power Saver residential AC Cycling and Peak Saver C&I curtailment evaluations (2017-present). Annual load impact evaluation of PNM's 60 MW demand response portfolio.
- **Southern California Edison** – Smart Energy Program (2019-2020) – Annual load impact evaluation of 35 MW residential demand response program for 52,000 participants
- **Central Electric Power Cooperative** – Beat the Peak behavioral demand response pilot evaluation (2018-2019). Includes both winter and summer DR. Impact evaluation uses AMI data and is based on an alternating treatment design developed by Mr. Smith following a detailed power analysis.
- **Georgia Power** – Power Credit AC cycling switch operability assessment (2017) Field study of a random sample of 140 participating households to estimate the operability rate of the programs 50,000 load control switches.
- **CPS Energy** – Home Manager evaluation (2012-2014) – Annual impact evaluation of the DR impacts from air conditioners, water heaters, and pool pumps.

Behavioral Evaluations

- **Union Gas** – Home Energy Report Program (2017-2018) Impact and process evaluation of a large randomized control trial implemented by Oracle. Included a dual participation and cost-effectiveness analysis.
- **Pennsylvania Public Utility Commission** – Home Energy Report Persistence Study (2015 and 2018) Analysis of the persistence of savings in households that stopped receiving HERs. Study results were synthesized into a TRM protocol to account for measure life, decay, and savings accounting in a more accurate fashion.
- **Avista Utilities** – Evaluation of Opower program impacts (2016) Natural gas and electric billing analysis of a large HER deployment.
- **Duke Energy** – MyHER Program Impact Evaluation (2014-2016) Impact evaluation of the largest HER program in the country with over two million treatment group homes.
- **Seattle City Light** – Home Energy Report Program Impact Evaluation (2016) Evaluation of HER impact for two implementers (Opower and Tendril) using bi-monthly billing data. The process evaluation included a comparison of the customer experience across the two vendors.

Connected Thermostat Research

- **Tendril** – Orchestrated Energy Pilot Evaluation. Energy efficiency & demand response. (2017 & 2018) Orchestrated Energy is a thermostat optimization algorithm implemented by Tendril for several investor-owned utilities including Indiana Michigan Power. In 2017 and 2018, Mr. Smith performed an 'internal evaluation' of program impacts for Tendril.
- **DC Sustainable Energy Utility** – Nest Seasonal Savings evaluation (2019-2020). Analysis of summer and winter thermostat optimization deployments.
- **Central Electric Power Cooperative** – Smart Thermostat program evaluation. Energy efficiency and demand response. Includes both winter and summer DR (2017-2018) DSA also developed the demand response management system that CEPC uses to manage and evaluate this program.
- **Energy Trust of Oregon** – Nest Seasonal Savings Pilot Evaluation. Energy efficiency only (2017) The pilot was delivered as a randomized encouragement design (RED) and included an impact evaluation using both thermostat runtime and utility gas and electric billing data.
- **Columbia Gas of Virginia** – Smart Thermostat Rebate Impact Evaluation. Energy efficiency only (2017) Regression based billing analysis of natural gas and electric savings from smart thermostats.
- **Avista Utilities** – Smart Thermostat Analysis. Energy efficiency only (2016) Regression based billing analysis of natural gas and electric savings from smart thermostats.

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

JOSH BODE – PARTNER

T&D Planning, Forecasting, and Marginal Costs

- **PSEG Long Island Locational Value Study (2019-2020)** – Analysis of T&D loads and valuation of the DERs.
- **Central Hudson Distributed System Implementation Plan Support (2018, 2020)**
  - Development of probabilistic forecasting and planning methodology
  - Produce five years of historical and five years of hourly (8760) forecasted demand for all substations
  - Develop probabilistic 10-year 8760 load forecasts for all substations, transmission areas, and planning areas in service territory
  - Forecast adoption of DERs and their dispersion for each individual circuit feeder, including EE, solar, and EV's.
  - Produce 8760 load shapes with and without DERs for all substations and feeder in service territory
  - Identifying locations beneficial locations for DERs
  - Advanced metering infrastructure analysis and business case
- **Central Hudson Probabilistic T&D Planning (2017)**: Development of distribution planning tools and training for planners.
- **Central Hudson Same Day and Day Ahead Transmission and Distribution Forecasting Model (2018)**: Location specific same day and day ahead forecasting models for all substations, transmission areas, and non-wire alternative projects.
- **Central Hudson EV Adoption and Load Impact Forecasting and NWA Assessment (2015-2018)**: Analyzed and provided expertise regarding 5 non-wire alternative project proposals designed to avoid or defer distribution and transmission investments.
- **PG&E (2014)** - Development of tools for modeling 8760 customer and end use load, including solar and EV's, for all PG&E's 2900 circuits and 800 substations.

Distributed Energy Resource Valuation and Cost-Effectiveness

- **SDG&E (2019 – present)**: Analysis of Impact of rates, solar, battery storage, and DR for all non-residential customers, targeting analysis, and development of online tools.
- **AEEI Valuing DERs in ERCOT (2019)**.
- **State of Washington** – Distributed Energy Resource Planning Assessment (2017).

EDUCATION

Master of Public Policy University of California, Berkeley	2005
Bachelor of Science in Economics Willamette University	1999

WORK HISTORY

Demand Side Analytics, LLC

Partner and Principal Consultant	2017-now

Nexant – San Francisco, CA

Vice President, Strategy & Planning	2016-2017
Principal Consultant	2014-2015

Freeman, Sullivan & Co – San Francisco, CA

Principal Consultant	2013
Senior Consultant	2010–2012
Consultant	2008–2009
Senior Analyst	2005–2007

U.S. Federal Energy Regulatory Commission – Washington D.C.

Energy Industry Analyst	2005

California Public Utilities Commission - San Francisco, CA

Office of Commissioner Kennedy	2004–2005

- **Dominion Energy West (Questar Gas) –** Development of Peak Moment Valuation Framework (2017).
- **Consolidated Edison** – Brooklyn Queen Demand Management Project (2014): Framework and model for assessing bids and from demand and supply side resources with different operating characteristics.
- **Consolidated Edison** – REV Market Design Support – Designing and Unlocking Markets for Distributed Energy Resources (2015).
- **Central Hudson –** Non-Wire Alternatives (NWA) Assessments (2015 to Present): Analysis of load patterns, modeling of DERs, optimization of resource mix, and benefit costs analysis
  - NW Corridor transmission project – 10 MW of load relief (2015-ongoing)
  - Fishkill/Shenandoah distribution deferral – 5 MW of load relief (2015 – ongoing)
  - Merritt Park feeder circuit project – 1 MW of load relief (2015 – ongoing)
  - Ohioville substation project – 4 MW of load relief planned. Project aborted because Nexant analysis showed overages too large to successfully mitigate given timeline.
  - Coldenham feeder circuit project – 2 MW of load relief initially projected. Project was postponed because Nexant analysis showed natural adoption of solar and a load transfer deferred need for project
- **PG&E** – Demand Response for T&D Pilot Phase II (2017): Report on 10 demonstration projects for integration of demand response into T&D planning and operations.
- **PG&E** – Demand Response for T&D Pilot Phase I (2014): Study of PG&E Needs for Integration of Load Management into Distribution Operations and Planning.

Energy Efficiency and Behavioral Studies

- **Central Hudson DSM Portfolio** (2019-present) - Josh is the impact lead for multiple programs including Home Energy Reports, Retail Lighting, C&I Prescriptive, and Small Business Direct Install.
- **Fortis BC** Smart Learning Thermostats Pilot (2017-present).
- **Duke Energy Indiana and Carolinas** Education Kit Program (2017).
- **Duke Energy Carolinas and Duke Energy Progress** Business Energy Report Pilot (2015-2017).
- **Tendril** – Orchestrated Energy Randomized Control Trial (2017).
- **Energy Trust of Oregon** – Smart Learning Thermostat Seasonal Savings Randomized Control Trial (2017).
- **Questar Gas** – Home Energy Report Multi-Year Effects, Persistence, and Frequency: A Meta-analysis of Randomized Control Trials (2016).
- **PG&E** – Business Energy Reports Emerging Technology Evaluation (2014-2015).
- **PG&E** – Small Commercial EMS Pilot (2015): Analysis using whole building data.
- **SDG&E** – Smart Energy Solutions Pilot (2012): Small business direct install pilot.
- **Pennsylvania** Low Income Programs Evaluation on Contractor Performance (2014).
- **Southern California Edison**: Demand Response Summer Discount Plan (2019-2020).

Time Varying Pricing Evaluations and Rate Design

- **ComEd –** PTR Evaluation and Baseline Assessments (2013-2015)
- **PG&E –** Load Impact Evaluation of Residential TOU Tariffs (2009, 2010 and 2011)
- **PG&E –** Load Impact Evaluation for PG&E's Residential SmartRate™ Tariff (2008-2010)
- **SMUD** - Smart Options Pilot (2014)

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

ALANA LEMARCHAND – PARTNER

EDUCATION

B.S. in Environmental Economics 2010
University of California, Berkeley

WORK HISTORY

Demand Side Analytics, LLC
Partner and Principal Consultant 2018-now
Principal Consultant 2017-2018

Nexant
Senior Consultant 2014-2017

Simon-Kucher and Partners
Senior Consultant 2010-2014

Overview

- **PSEG Long Island –** Locational Avoided T&D Cost Study (2019-Present): Managed and conducted evaluation of locational T&D avoided T&D cost study based on an analysis of 5 years of 8760 hourly SCADA data for about 1500 distribution assets. The study quantified the value associated with an increase or decrease of kW coincident with location specific peaks. It employed methodologies that have been applied and approved by other New York utilities, namely granular, probabilistic load forecasting and deferral value estimation which quantifies the option value of reducing peak demand in specific locations in the PSEG-LI system.
- **DC SEU Portfolio Cost-effectiveness –** Built detailed, flexible benefit cost model for assessing project, program, portfolio level cost-effectiveness for DC SEU energy efficiency and renewable energy programs. (2018-2020)
- **Central Hudson Gas & Electric –** Non-Pipes Alternative Evaluation Study (2018): Conducted gas load disaggregation analysis to support determination of gas peak load drivers and NPA opportunities
- **Central Hudson Gas & Electric –** Distribution System Implementation Plan (2016-2020): Supported preparation of Distribution System Implementation Plan (DSIP) filing in 2016, in compliance with Renewing the Energy Vision (REV) proceeding. Included development of granular (circuit level) forecasts of penetration and system and local peak impacts of various distributed energy resources (DERs) and incorporated granular, stochastic load forecasts. Also included development of AMI business case. Currently supporting 2018 DSIP filing including updates to incorporate probabilistic approach to DER forecasting.
- **Consolidated Edison:** Led design and implementation support for a "prices-to-devices" demonstration of more dynamic, cost reflective rates with a research cell focused on evaluating the impact on bills and. Investigation of innovative pricing designs including time varying and demand based rates for residential and small business customers. (2016-2019)
- **SDG&E –** Evaluation of TOU & TOU-CPP Rates, Smart Thermostat DR Programs (2017-2020): Since 2017, led evaluations of SDG&E's small commercial CPP and smart thermostat DR programs. Evaluated both TOU and CPP impacts for over 120 thousand commercial customers, 18 thousand devices, 5 commercial programs, and since 2019, 18 thousand residential customers, devices, and dozens of events. Granular impact modeling for bottom up segments, and production of ex ante and time temperature matrix weather normalized impact forecasts.

Distributed Energy Resources

- **Joint California IOUs –** EV Submetering Pilot Accuracy Assessment and Process Evaluation and Conjoint Market Study (2015-2017): Advised, designed, and led implementation and analysis of conjoint survey of EV

owners across all three IOUs to assess their preferences for different submetering features including bill savings and data access and how those preferences affect the likelihood of enrolling in a submetering plan.

- **Large Investor Owned Utility –** Value of Solar Literature Review and Renewable Generation Regulatory Support (2014-2016): Provided overall regulatory and technical support for this utility during their proceedings for their 2016 Integrated Resource Plan
- **SMUD –** Grid 3.0 Strategy Support – Grid Modernization and DER Strategy Harmonization (2015-2016): Coordinate and developed a long-term vision and strategy for operating in an environment in which distributed energy resources (DERs) play a much larger role than in meeting consumer demand for electricity
- **Con Edison** – Designing and Unlocking Markets for Distributed Energy Resources (REV Market Design) (2015): Provided analytic services in conjunction with market design effort as part of the Reforming the Energy Vision (REV) proceeding
- **Con Edison** – Brooklyn-Queens Demand Management Project: Valuation framework and prototype for assessing bids and DER options (2014): Assisted with the development of a comprehensive valuation framework and model for assessing various DER options for specific demand management project.

Locational Value and Time-Varying Rates

- **Central Hudson Gas & Electric –** Targeted Demand Management Demonstration Project and Distribution System Implementation Plan Support (2016, 2018)
- **Con Edison Smart Home Rate –** Research Design, Rate Design, and Implementation Support (2016-2018)
- **PECO –** TOU Rate Impact Analysis and Participant Survey (2014-2015): Analyzed participant surveys and peak load impact analysis for residential and small business TOU opt-in pilot using AMI data. Required dynamic matched control group approach to address rate coordination with AMI rollout. Augmented process and impact results but combining the two to combing actual versus reported bill savings.
- **SDG&E –** Evaluation of TOU and TOU-CPP Rates (2015), Small Non-Residential TOU & TOU-CPP Evaluation (2018)

Market Research

- **SDG&E –** Non-Residential Smart Thermostat Evaluation (2018, 2020), and Residential Smart Thermostat Evaluation (2020): Lead the evaluation for multiple years and multiple aspects of smart thermostat and demand response programs.
- **Efficiency Maine** – LED and Heat Pump Water Heater Pricing Trials (2016-2018): Developed practical experimental design, analyzed sales data for a series of discount levels, and provided estimates of free ridership to support program design, budgets, and savings goals for Triennial Plans.
- **Central Hudson –** Non-Residential Baseline Study (2019): Lead and managed the survey design and data collection. Facilitated analysis and reporting of all end uses, energy use intensity, and willingness to pay components of study. Provided necessary parameters used for Central Hudson Potential Study.
- **Pennsylvania Public Utilities Commission –** C&I Baseline Study (2018): Lead and managed the survey design and data collection. Facilitated analysis and reporting of all end uses, energy use intensity, and willingness to pay components of study. Provided necessary parameters used for Pennsylvania Potential Study.
- **SMUD** – Residential Demand Response Conjoint Market Research Study and Program Design Optimization (2015): Led and conducted a market research study of hundreds of SMUD customers to assess drivers of customer enrollment in demand response programs.

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

ADRIANA CICCONE – PRINCIPAL CONSULTANT

Education

M.S., Environmental Science and Public Policy
University of Chicago 2015

B.S., Materials Science
B.S., Management Science/Operations Research
Massachusetts Institute of Technology 2009

Work History

Demand Side Analytics, LLC
Senior Consultant 2018-now

Nexant
Senior Consultant 2015-2018

Proctor & Gamble
Competitive Intelligence Analyst 2009-2013

Overview

- **Southern California Edison –** Portfolio (2019-2022). Project Manager and Analyst for portfolio of DR programs which included 300MW of savings.
- **Pennsylvania PUC –** DR Potential Study (2020). Lead analyst of residential modeling for DR Potential Study covering 7 EDCs
- **PSEG Long Island –** Non-wire alternative tool design (2020).
- **California –** Statewide Baseline Interruptible Program (2016). Performed three demand response evaluations of large industrial customers (at PG&E, SCE and SDG&E) using individual customer regressions. This analysis had extensive focus on model specification development and out-of-sample testing
- **Southern California Edison** – Agricultural Pump Interruptible Evaluation (2015, 2017). Performed the impact evaluation of an emergency demand response program for agricultural pumping loads.

Assessments of Accuracy of Evaluation and Settlement Methods

- **Central Hudson Gas & Electric** – Residential Thermostat and DLC Study of Baseline Accuracy (2019). Assessed accuracy for over 10,000 baseline settlement alternatives for a residential and small commercial thermostat and DLC demand response program.
- **ComEd** – Peak Time Rebate Winter Baseline Accuracy Assessment (2018). Performed an assessment comparing ComEd's existing customer baseline performance for the expansion of the program to winter months, relying on interval data and placebo event days to determine whether the accuracy and precision of the existing baseline was similar for both summer and winter events.
- **CAISO** – Study of baseline accuracy for market settlement, including weather sensitive, agricultural, and industrial loads (2017). Assessed accuracy for over 6,000 baseline settlement alternatives for each of ten DR programs at SDG&E, PG&E, and SCE using smart meter data from 580,000customers, including all large C&I customers. Presented results in an iterative, consensus-building process to a variety of stakeholders at IOUs, the CAISO, and aggregators.

Thermostat, Plug Load, and Load Control Evaluations

- **Power New Mexico** – Power Saver DLC Program (2018-2019). Evaluated the performance of a DLC program across residential, small and medium commercial customers in New Mexico. Relied on baselines, alternating treatment designs, and individual customer regressions to identify accurate and precise program impacts. Developed ex ante impacts under specific program peaking conditions.

- **Tendril** – Orchestrated Energy Evaluation of demand response (2018). Orchestrated Energy is a thermostat optimization algorithm implemented by Tendril for several investor-owned utilities including Xcel Energy. The algorithm includes both an EE and DR component. Ms. Ciccone evaluated the demand response component for four utilities in the program.
- **Georgia Power** – Residential Thermostat Energy Savings Evaluation (2018). Performed an assessment of energy savings associated with a thermostat rebate program and exploration of the incremental benefits of using large scale AMI data (over 1 billion rows) for energy efficiency program evaluation compared to traditional billing data methods.
- **SDG&E** – Small Commercial Technology Deployment (2016). Performed an analysis of demand response capabilities for small commercial customers with programmable communicating thermostats. This evaluation used a triple-differences method to develop ex post and ex ante impacts.

Time Varying Pricing Evaluations and Rate Design

- **Con Edison** – Innovate Pricing Pilot Design, implementation support, and evaluation (2017-2018). The pilot is focused of assessing innovative delivery rates and assessing customer acceptance, load impacts, and bill impacts of rates with time-of-use demand charges and demand subscription rates. Both opt-in and default enrollment were being tested for residential and non-residential customers. Ms. Ciccone analyzed hundreds of potential revenue-neutral rates for customer bill volatility and revenue stability.
- **Con Edison and O&R** – SmartHome Pilot Design, implementation Support, and evaluation (2016 to present). A prices-to-devices pilot designed to assess the ability of customers to respond through technology (battery storage, thermostats, EV's and home energy management systems) to location specific and time varying prices that better reflect all costs components. Ms. Ciccone analyzed hundreds of potential revenue-neutral rates for customer bill volatility and revenue stability.
- **California** – Statewide Demand Response Potential Study Support (LNBL- 2016). Ms. Ciccone quantified the DR impacts of default or opt-in TOU rates in California as part of the statewide DR potential study conducted by LBNL.
- **California** – Statewide Critical Peak Pricing Evaluation (2015-2016). Assessed impacts associated with a voluntary critical peak pricing rate for California C&I customers. Methods used for evaluation included propensity score matching, out of sample testing, and a difference-in-differences framework.
- **SDG&E** – Evaluation of TOU and TOU-CPP Rates for Small Commercial & Agricultural Customers (2015-2016). Performed an evaluation assessing the impact of a voluntary (2015) and default (2016) rollout of TOU rates to SDG&E's small and medium business population

Behavioral Studies

- **Union Gas & Enbridge Gas** – Cost Effectiveness of Behavioral Program Persistence (2019). Performed a cost-benefit analysis using TRC+ methodology to assess program cost-effectiveness under four distinct persistence scenarios.
- **Pennsylvania Public Utility Commission** – Home Energy Report Persistence Study (2018). Analyzed the persistence of savings in residential households that stopped receiving HERs.
- **Seattle City Light** – Home Energy Reports Evaluation (2016-2018). Performed an evaluation of behavioral conservation program, including measuring differences in savings between vendors, report delivery frequency, and sub-population treatment arms. Analyzed customer satisfaction and conservation perception surveys to assess the effects of report delivery on qualitative measures.

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

STEVE MORRIS – SENIOR QUANTITATIVE ANALYST

Billing Analysis

- **Rhode Island Office of Energy Resources** – National Grid Energy Efficiency Programs Evaluation (2019-present). National Grid's energy efficiency programs (gas and electric) were evaluated by performing a billing analysis for any premise that installed an incented retrofit measure between 2015 and 2019. Example retrofit measures offered by the program include lighting measures, steam traps, and VSDs on HVAC systems.
- **Pennsylvania Public Utility Commission** – Audit Home Energy Report Impact Evaluations (2017-2018): Audited impact evaluations of several HER programs in the state. Key audit steps included cleaning and calendaring large volumes of billing data and running a variety of regression models on the prepared data.
- **Energy Trust of Oregon** – Nest Seasonal Savings Pilot Evaluation (2017): Contributed to the cooling analysis, which leveraged thermostat runtime data, interval meter data, and fixed effects regression models. Also worked on the heating analysis, which leveraged gas billing data.
- **Columbia Gas of Virginia** – Smart Thermostat Rebate Impact Evaluation (2017): Regression based billing analysis of natural gas billing data to determine the impacts of smart thermostat installation on daily gas consumption. Produced weather-normalized impacts.

EDUCATION

Master of Science, Statistics University of Georgia, Athens	2014
Bachelor of Science in Statistics University of Georgia, Athens	2010
Bachelor of Science in Sociology University of Georgia, Athens	2010

WORK HISTORY

Demand Side Analytics, LLC – Atlanta, GA

Senior Quantitative Analyst	2019-now
Quantitative Analyst	2016-2019

Kennesaw State University – Kennesaw, GA

Part-Time Faculty	2016-now

University of Georgia – Athens, GA

Instructor	2014-2016
Graduate Teaching Assistant	2012-2014

Energy Efficiency

- **Pennsylvania Public Utility Commission** – Statewide Evaluation Team (2016-2021). Developed and maintain a statewide tracking database that tracks program activity and savings. Perform audits of claimed savings using said database. Assisted in updating the C&I and Agriculture sections of the state's TRM. Regularly assist in the reviewing of EM&V plans.
- **Efficiency Maine** – ISO-NE Forward Capacity Market Review (2018-2020). For the last three years led the bottom-up component of the M&V compliance review for FCM resources.
- **Independent Electricity System Operator (IESO) of Ontario:** EM&V of Industrial Programs (2017-2019) Impact evaluation lead for strategic energy management program for Industrial customers. Develop 8760 savings estimates for complex measures in diverse industries. Work closely with facility energy managers to develop data collection plans and refine savings methodologies.
- **Central Hudson – Retail Lighting Evaluation (2019-2020):** Lead analyst for the gross impact evaluation of Central Hudson's point-of-sale LED lighting program. Developed cross-sector sales factors to supplement the lighting protocol in the New York TRM.

- **Efficiency Maine – Retail and Distributor Lighting Evaluation (2019-2020):** Lead analyst for concurrent impact evaluations, which includes a socket saturation study, lighting loggers deployed in 170 homes and businesses.
- **CREED – National Lighting Analysis of LED Costs (2017-2020):** Processed and cleaned large volumes of light bulb point-of-sale data purchased through Nielsen. Helped develop an incremental cost report, which compared the average price of different light bulb types and styles across the U.S. Helped develop a regression model that was used to predict the market share of LED light bulbs in each state. This model was the basis for NTG research in several states.
- **Independent Electricity System Operator of Ontario – Industrial Energy Manager Program Evaluation (2017-2018):** Audited ex-ante energy and demand savings values for a variety of projects, including LED lighting upgrades, facility-wide operational changes, HVAC schedule optimization, and the reconfiguration of heat pump systems.
- **BPA:** M&V Protocols Revisions and Update (2017-2019) This project consisted of updating BPA's measurement and verification protocols. These M&V protocols provide BPA engineers, staff at BPA partner utilities, and 3rd party implementation contractors comprehensive guidance for developing ex-ante savings estimates for custom non-residential energy efficiency projects.
- **IMVP:** Uncertainty Assessment- Option C: Whole Building (2017-2019) Option C is an M&V approach that utilizes whole facility utility meter or sub-meter data, as opposed to engineering calculations or energy use simulations, to estimate the energy savings associated with the installation of energy conservation measures.
- **ISO-NE:** Baseline Accuracy Study (2017) On behalf of ISO New England, DSA led a study into the baseline accuracy and performance accuracy for its 557 large commercial and industrial assets. Baseline accuracy focuses on the magnitude of errors of the baseline estimates while performance accuracy recognizes that baselines are simply a tool to estimate demand reductions and instead focuses on the accuracy of the magnitude of demand reduction estimated using baselines.

Demand Response Evaluations

- **Central Electric Power Cooperative** – Smart Thermostat Pilot (2017) and DR Management System (2018-2020): Used thermostat runtime data to assess group equivalency and estimate summer and winter demand response impacts. Helped develop an automated reporting tool that provides the client with rapid feedback concerning DR performance and participation levels.
- **Southern California Edison** — Demand Response Summer Discount Plan (2019-2020): Implemented matched control group and difference in difference analysis to estimate residential DR impacts of 197 MW and commercial DR impacts of 23 MW
- **Public Service New Mexico** – Power Saver residential AC Cycling and Peak Saver C&I curtailment evaluations (2017-2020): Annual load impact evaluation of PNM's 60 MW demand response portfolio. Also performed a weather sensitivity analysis to determine which sites are candidates for a day-of baseline adjustment and managed a field study to estimate operability rate of Power Saver devices.

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

MARK NOLL – SENIOR QUANTITATIVE ANALYST

EDUCATION

B.A. in Economics 2017
Georgetown University

WORK HISTORY

Demand Side Analytics, LLC – Atlanta, GA
Quantitative Analyst 2019-present

Charles River Associates – Washington, DC
Associate 2018-2019
Analyst 2017-2018

Georgetown University – Washington, DC
Research Assistant 2015-2017
Teaching Assistant 2016

Integrated Resource Planning

- **Consumer's Energy** – Demand Response Potential Study (2020). Analyzed AMI data for a sample of 20,000 customers to isolate cooling and heating load and estimate peak coincident loads. Analyze the marketing data to develop adoption propensity model. Estimated levelized costs for 100 customer segments and produced the supply curves.
- **Utility 1** – For a mid-sized Midwest utility, helped lead a forecasting effort to evaluate coal unit retirement and replacement resource options. This consisted of setting up the utility portfolio and calibrating power plant dispatch; developing capital cost assumptions and generation profiles for new renewable and battery technologies; developing a base case forecast and alternative scenarios; and summarizing results for combinations of scenarios and retirement options.
- **Empire District Electric Company** – For a mid-sized Midwest utility as part of an integrated resource plan filing, formulated a strategy to evaluate the locational benefits of distributed solar and storage solutions as alternatives to utility-scale supply-side options.

Distributed Energy Resources

- **Central Hudson Gas & Electric** – Distribution System Implementation Plan (2020). Analyzed substation (62), feeder (270+), and transmission load pocket loads (10) to develop estimate growth, weather normalize loads, and produce hourly (8760) forecasts for 10 years. Analyzed distributed solar and battery storage adoption. Produced substation level 10-year forecast of DER adoption and DER loads (8760) for residential, non-residential and community distributed solar, and for battery storage.
- **Central Hudson Gas & Electric** – Battery Storage Simulation Model (2020). Supported the development of a model to simulate battery storage operations and market revenues from capacity, energy arbitrage, and ancillary services. The model was designed to assess battery storage bids.
- **PG&E** – WattSaver Pilot (2020). PG&E implemented a pilot to assess the ability to use two new smart water heater technologies to provide thermal storage and shift the energy use profile to lower energy costs and avoid congestion on the grid. The analysis was implement using 5-minute end-use interval data and reporting was automated to produce updates on request for the program or individual sites.

Energy Efficiency & Demand Response Evaluations

- **Southern California Gas Company** – Central Water Heater Multifamily Building Solution (2019-present) Lead analyst for DSA's contract to provide advanced M&V for the SoCal Gas' Central Water Heater Multifamily Building Solution (CWHMBS) program. Processed hourly billing data to predict pre- and post-period usage for TMY year based on weather data for buildings with natural gas water heater upgrades; and automated the process for analysis and reporting.

- **Central Hudson Gas & Electric** – Small Business Direct Install Impact Analysis (2019-2020)– Assessed the realization rates and verified gross savings of SBDI program via billing analysis with a matched control group of non-participants. (2019)
- **ecobee** – eco+ Pilot (2019). Implemented the demand response and energy efficiency analysis portions of a nation-wide Randomized Encouragement Design pilot including 250,000 homes. The analysis was implemented using 5-minute end-use data for all sites.
- **Central Electric Power Cooperative** – Generac Pilot (2019). The goal of the pilot was to assess the ability of the utility to dispatch distributed generators in a coordinated manner to control peak loads.

Electricity Market Design

- **Alberta Department of Energy / Market Surveillance** Administrator – Advised on several aspects of the province of Alberta's transition to a capacity market with comparisons to US markets, including on market governance and revision and on specific proposed market design elements.
- **Dominion Energy** – Helped to draft written testimony concerning rule changes to the PJM capacity market across several regulatory proceedings before the Federal Energy Regulatory Commission (FERC).
- **Dominion Energy** – Measured market concentration for natural gas pipeline availability in support of a merger between Dominion and SCANA before the North Carolina Utilities Commission.

Market Forecasting and Asset Valuation Experience

- **Utility 3** – Contributed to a valuation of a large electric and gas utility in the Pacific Northwest on behalf of a potential investor group, by helping to produce a load forecast, capital and operational expenditures forecast for generation, transmission, and distribution facilities, and financial model.
- **Various engagements** – For a variety of clients, provided forecasts for market prices and/or unit dispatch and associated reports and testimony across multiple electricity markets in the United States (ISO-NE, NYISO, PJM, MISO, CAISO, ERCOT), using the Aurora software and Excel-based dispatch models and capacity price forecasting tools.

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

KATHERINE BURLEY – QUANTITATIVE ANALYST

EDUCATION

Master of Arts, Economics 2019
University of Texas - Austin

Bachelor of Science, Economics 2017
Louisiana State University

WORK HISTORY

Demand Side Analytics, LLC - Atlanta, GA
Quantitative Analyst 2020-present

Mather Economics – Atlanta, GA
Associate Consultant 2019-2020

TXP, Inc – Austin, TX
Research Analyst 2018

Capitol Market Research – Austin, TX
Market Analysis Intern 2017-2018

LSU AgCenter
Research Assistant 2016-2017

Demand Side Analytics

- **ecobee** – eco+ Evaluation (2020). Analysis of eco+ energy efficiency features during Winter 2019-2020 using a nationwide randomized encouragement design of 250,000 thermostats.
- **SDG&E** – DR & DER Analysis (2020). Performed a demand response propensity analysis for non-residential customers
- **Pennsylvania Statewide Evaluation Team** – Demand Response Program Evaluation (2020). Verification of reported savings from a summer demand response program for one Pennsylvania utility.
- **CEPC** – Generac Pilot Evaluation (2020). Estimated demand impacts for pilot customers during winter demand response events.

Mather Economics

- Managed subscription pricing strategy for 28 newspaper markets nationwide
- Performed applied econometric analysis to track pricing program success and produce regular and ad hoc reporting for clients in Stata and Excel

TXP, Inc

- Researched and collected five years of renewable energy data to generate a database of taxable assets and taxes paid by wind and solar projects in Texas
- Analyzed tax data to identify the impact of the renewable energy industry on local government revenues

Capitol Market Research

- Collaborated with a team of five to prepare market feasibility reports for Austin area development projects
- Collected and cleaned data to maintain a central Texas real estate data base for client reports and bi-annual market updates
- Analyzed occupational employment statistics for the Austin area to generate an office demand forecast using various data sources, including US Census Bureau, BLS, Texas Workforce Commission, etc.

LSU AgCenter

- Organized and compiled local government financial statements for analysis by researchers in the LSU Agricultural Economics department
- Conducted research project investigating the impact of the Great Recession on local government finances in Louisiana's 64 parishes (counties) with shift share, diversity, and peak/trough analytical methods

APPENDIX F. RFP Section II J Conflicts of Interest Statement

Conflict of Interest statements from each member of the GDS Team have been provided below in response to RFP *Section II J Conflicts of Interest*.

F.1 CONFLICTS OF INTEREST STATEMENT FOR GDS ASSOCIATES, INC.

GDS has no known conflicts of interest between EERMC, an affiliate of EERMC and any distribution company, or any affiliates of the foregoing. Further, GDS has no known conflicts of interest between an affiliate of GDS and any member of the EERMC.

F.2 CONFLICTS OF INTEREST STATEMENT FOR JOHNSON CONSULTING GROUP

Johnson Consulting Group has no known conflicts of interest between EERMC, an affiliate of EERMC and any distribution company, or any affiliates of the foregoing. Further, GDS has no known conflicts of interest between an affiliate of GDS and any member of the EERMC.

F.3 CONFLICTS OF INTEREST STATEMENT FOR DEMAND SIDE ANALYTICS

One of DSA's core strengths is our familiarity with New England utilities, and the policy and market frameworks they operate in. However, we have no past or current contracts with National Grid in Rhode Island, Massachusetts, or New York. In 2010, at a previous employer, DSA partner Josh Bode worked with National Grid Rhode Island to develop a tool for assessing non-wires alternatives to transmission and distribution investments. DSA recently completed a project with the Rhode Island Office of Energy Resources (RFP# 7597562 Energy Efficiency Programs Evaluation Study) as a subcontractor to Brightline Group, LLC. We do not believe these projects creates a conflict of interest with the EERMC consultant role on a forward-looking basis. The OER project required DSA to have access to significant amounts of National Grid EE tracking and billing data so several DSA staff members have completed the necessary National Grid background check process. In addition, DSA has no prior relationships with any member of the EERMC or Rhode Island Public Utilities Commission that could create a real or perceived conflict of interest.

APPENDIX G. RFP Section II K Litigation

In response to RFP *Section II K Litigation,* litigation statements from each member of the GDS Team have been provided below.

G.1 LITIGATION STATEMENT FOR GDS ASSOCIATES, INC.

In the past five years, three lawsuits without merit have been filed against GDS.

Hampton. Currently GDS is one of two named parties in an electrical worker injury case which occurred in Joaquin, Texas. The injured employee was working for a high voltage electric contractor and has filed suit against the electric utility and GDS Associates. GDS Associates believes this lawsuit is entirely without merit. GDS was not responsible for the design of the project and GDS had no responsibility for site safety.

Greaff. Currently, GDS is one of two named parties in a landowner lawsuit filed in Texas associated with an East Texas Electric Cooperative generation project in Woodville, Texas. GDS believes this lawsuit is entirely without merit. GDS did not design or construct and does not operate the aforementioned generation project.

Hibler. GDS was one of several named parties in a landowner lawsuit filed in Texas associated with an East Texas Electric Cooperative combustion turbine generation project in San Jacinto County, Texas. GDS did not design or construct the aforementioned generation project. All claims were settled by the parties out of court.

G.2 LITIGATION STATEMENT FOR JOHNSON CONSULTING GROUP

Johnson Consulting Group has no pending legal cases nor lawsuits.

G.3 LITIGATION STATEMENT FOR DEMAND SIDE ANALYTICS

DSA has not been involved in any litigation, bankruptcy, arbitration, or other preceding since its inception. DSA has no former or current disputes, claims or complaints, events of default, or failures to satisfy contractual obligations or to deliver products. DSA is registered in Georgia and California and is in good standing with the Secretary of State, Revenue, and Labor departments in both states.

APPENDIX H. RFP Section II L Investigation

Statements from each member of the GDS Team addressing RFP *Section II L Investigation* have been provided below.

H.1 **INVESTIGATION STATEMENT FOR GDS ASSOCIATES, INC.**

This statement confirms that GDS, nor any directors, employees, agents or any affiliate of GDS, are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by state or federal law in any jurisdiction.

H.2 **INVESTIGATION STATEMENT FOR JOHNSON CONSULTING GROUP**

This statement confirms that Johnson Consulting, nor any directors, employees, agents or any affiliate of Johnson Consulting, are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by state or federal law in any jurisdiction.

H.3 **INVESTIGATION STATEMENT FOR DEMAND SIDE ANALYTICS**

This statement confirms that DSA, nor any directors, employees, agents or any affiliate of DSA, are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by state or federal law in any jurisdiction.

PREPARED BY GDS ASSOCIATES, INC.

EERMC

THE RHODE ISLAND ENERGY EFFICIENCY AND RESOURCES MANAGEMENT COUNCIL

TECHNICAL PROPOSAL

RFP Number EERMC-2020-01

Policy & Program Planning Consultant Services

August 3, 2020

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

Johnson
CONSULTING GROUP

Demand Side Analytics