NEW YORK STATE BOARD ON ELECTRIC
GENERATION SITING AND THE ENVIRONMENT

Case 17-F-0599 – Application of East Point Energy Center, LLC for a Certificate of Environmental Compatibility and Public Need Pursuant to Article 10 of the Public Service Law for Construction of a Solar Electric Generating Facility Located in the Town of Sharon, Schoharie County.

PRE-FILED DIRECT PANEL TESTIMONY
ON BEHALF OF
EAST POINT ENERGY CENTER, LLC

Panel Witnesses:

Kris Scornavacca
William Boer
Joe Cartaya
Daniel Marieni
Samantha Kranes
Rachel Silva
Judith Bartos
Andrew Dion
Patrick Fennell
Kirsten Johnson
John Mannix
Kevin Martin
Patrick Martin
George Mohan
Diane Reilly
Michael Ross
Timothy Sara
Jim Shea
Brianne Tylock
Nancy Vlahos
Ryan Callahan
Robert O'Neal

Dated: September 25, 2019

Q. Please state the names, employers, business addresses, and the purpose of the testimony of the individual members of the Panel.

A. Kris Scornavacca, NextEra Energy Resources ("NextEra"), 700 Universe Boulevard, Juno Beach, FL 33408.

Q. Please summarize your credentials.

A. My position at NextEra is Project Director for Development. I lead the development of renewable energy projects. I have been employed there for approximately six years. I have over three years of experience managing assets as part of NextEra's Asset Management group where I held the position of Business Manager and was directly responsible for the general business affairs for a nuclear power plant, a wind energy center, and a portfolio of energy storage projects. Responsibilities included, but were not limited to, managing revenue, hedging, contracts, regulatory affairs, and all financial planning activities. Prior to those responsibilities, I spent approximately two years in NextEra's Internal Audit group managing projects related to NextEra's Asset Management, Gas Infrastructure, and Energy Trading groups. I am a licensed C.P.A. in the State of Florida and have approximately eight additional years of experience performing audit and consulting services for various public and private enterprises in a wide range of industries. I have a Bachelor of Business Administration Degree from Stetson University and a Master of Accounting Degree from Florida Atlantic University.

I am currently a Project Director in NextEra's renewables group and am responsible for developing new projects. My role includes responsibilities related to acquiring leases for sites, origination, permitting projects, and managing the development

process until construction is complete and a new project is turned over to NextEra's Asset Management group.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center ("East Point") Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. I am sponsoring the entire East Point Application.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. William Boer, NextEra, 700 Universe Boulevard, Juno Beach, FL 33408.

Q. Please summarize your credentials.

A. My position at NextEra Energy Resources, LLC is Environmental Services Project Manager. I lead the permitting of renewable energy projects in New York State. I have been employed there for approximately one year and my responsibilities include managing and preparation of all applications and supporting environmental studies submitted under Article 10 of the Public Service Law and the State Environmental Quality Review Act for utility scale solar energy projects in New York. Prior to joining

NextEra, I worked with the company for five years as an outside consultant performing these same responsibilities. I have over 15 years of environmental permitting experience with a focus in energy-related projects. I have submitted numerous permit applications to federal and state agencies and site plan/special permit applications to local planning/zoning boards for renewable energy projects. I have a Bachelor of Science Degree from Plymouth State University in Environmental Planning. I am certified by the American Institute of Certified Planners and am a licensed Professional Planner in the State of New Jersey.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. I am sponsoring the entire East Point Application.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Joe Cartaya, NextEra, 700 Universe Boulevard, Juno Beach, FL 33408.

Q. Please summarize your credentials.

A. I joined NextEra in 2015. My previous role, in Project Controls, included the successful management of forecasts, risk mitigation, cash flow, and facilitation of project financing of over 500 MW of commercial solar projects. In my current role as Project Manager, I am responsible for managing the early state project support and daily coordination of engineering, estimating, supply chain, and construction resources. I am currently attending Florida International University seeking a Bachelor of Arts Degree in Sustainability and the Environment with a focus on renewable energy (expected graduation is spring 2020).

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 11 and construction/engineering portions throughout the Application.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Daniel Marieni, NextEra, 700 Universe Boulevard, Juno Beach, FL 33408.

Q. Please summarize your credentials.

A. My position at NextEra is Project Engineer for the Engineering and Construction Department. I provide engineering support during the design and construction of solar energy projects. My role responsibilities include establishing design criteria, supporting the procurement of major power plant equipment, and overseeing the engineering activities during the design and construction of solar energy projects. I also provide engineering support during development and permitting activities. Prior to working at NextEra, I was the Geotechnical Department Manager for an engineering consultant. Project experience within the energy sector included providing geotechnical engineering services for solar energy centers, transmission lines, substations and pipelines. I have also worked as an environmental engineer designing and managing remediation systems for petroleum contaminated sites. I am a licensed Professional Engineer in the State of Florida and have 10 years of engineering experience. I have a Bachelor of Science in Civil Engineering from the University of Connecticut.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 11, and design, engineering and construction portions throughout the Application.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce herself?

A. Samantha Kranes, TRC, 215 Greenfield Parkway, Suite 102, Liverpool, New York 13088.

Q. Please summarize your credentials.

A. I am a Senior Project Manager at TRC and have been employed here for over five years. My current role includes the management of multiple large-scale renewable energy projects (both wind and solar), as well as several community solar and traditional energy projects in New York State. I am experienced in environmental permitting, agency consultation, environmental assessments, SEQRA and NEPA, ecological risk assessment, and environmental compliance. I also have experience managing and preparing Article 10 and Article VII applications for other energy projects in New York, both as lead author, lead reviewer, and manager. Prior to working at TRC, I worked as an environmental scientist for over eight years in many capacities for another environmental consultant in the Syracuse area.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. I am sponsoring portions of the following Exhibits: Exhibit 2, Overview and Public Involvement; Exhibit 3, Location of Facilities; Exhibit 9, Alternatives; Exhibit 18, Safety and Security, Exhibit 22, Terrestrial Ecology and Wetlands; Exhibit 23, Water Resources and Aquatic Ecology.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce herself?

A. Rachel Silva, TRC, 2801 Wehrle Drive, Suite 8, Williamsville, New York 14221.

Q. Please summarize your credentials.

A. My position at TRC is Project Manager and Senior Scientist. I have worked at TRC for over 2 years, prior to which I worked as a Biologist for 2 other environmental consultants in the Buffalo area. My current role includes the management of multiple energy development and rebuild projects, for both renewable energy and traditional energy projects in New York State. I have over 10 years of experience in environmental permitting and licensing, agency consultation, environmental assessments, SEQRA and NEPA, and environmental compliance. I also have experience managing and preparing Article VII applications for other energy projects in New York, both as lead author and

reviewer/manager. I earned a Bachelor of Arts degree from Indiana University in Biology and Spanish with a minor in Animal Behavior.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. I coordinated the compilation of the entire East Point Application.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce herself?

A. Judith Bartos, TRC, 650 Suffolk Street, Wannalancit Mills, Lowell, Massachusetts, 01854.

Q. Please summarize your credentials.

A. My position at TRC is Senior GIS Analyst and Senior Scientist. My primary focus is providing technical analyses using ESRI GIS and Autodesk Max visualization software in addition to the regulatory report writing required for Visual Impact Assessments. I have been employed at TRC for approximately 20 years. I have a master's degree in Soil Science and formerly, a Bachelor of Fine Arts Degree in the Visual Arts with a minor in

art history. I have 28 years of experience in the environmental field primarily on energy-related projects.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. The Visual Impact Assessment (VIA) and Exhibit 24.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Andrew Dion, TRC, 10 Maxwell Drive, Suite 200, Clifton Park, New York 12065.

Q. Please summarize your credentials.

A. My position at TRC is Operation Manager for Substation Engineering. I lead a team that does substation engineering and design. I have been employed at TRC for approximately 12 years and have over 12 years of experience in substation design and engineering for both utilities and client facilities. Responsibilities include, but are not limited to, managing a client portfolio and individual projects, answering technical questions, providing engineering estimates, and reviewing deliverables prepared by my team. I have

a bachelor's degree in Electrical Engineering from Clarkson University and am a registered Professional Engineer in New York, Oklahoma, and Puerto Rico.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. I am sponsoring the Visual Impact Assessment (VIA) and Exhibit 24.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Patrick Fennell, TRC, 21 Griffin Road, North, Windsor Connecticut, 06095.

Q. Please summarize your credentials.

A. My position is Consulting Engineer in TRC's Air Quality Consulting practice, where I have been employed for 19 years. My responsibilities include preparing applications for air permits and state and federal approvals for fossil fuel and renewable energy power plants, natural gas pipelines, liquefied natural gas export terminals, and other industrial and commercial projects. I have a Bachelor of Science Degree in Civil Engineering from the University of Missouri in Columbia and a Master of Science Degree in Civil

Engineering from the University of Illinois in Urbana. Prior to TRC, I was employed by ABB and Combustion Engineering, first as a nuclear engineer and later as environmental engineer. I am a licensed Professional Engineer in Connecticut.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 17.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce herself?

A. Kirsten Johnson, TRC, 102 West State Street, 3rd Floor, Ithaca, New York 14850.

Q. Please summarize your credentials.

A. I am currently employed with TRC as an Environmental Scientist. I have been in the position for four months. My primary responsibilities have been the coordination and implementation of grassland breeding bird surveys across several renewable energy projects. I have also drafted critical issues analyses documents, conducted wetland screening efforts, and prepared various exhibits for Article 10 permit applications

associated with renewable energy developments. Prior to joining TRC I worked as an Ecologist/Biologist/Project Manager. My main duties included developing study plans for threatened/endangered species, conducting large bird surveys, performing wetland deliberations, conducting post-construction mortality monitoring, desktop habitat analyses for sensitive species, and developing bird and bat conservation strategies. Additionally, I prepared reports, proposals, budgets, and managed field staff. I spent three years managing a multi-state avian monitoring study documenting species response to habitat management at the Indiana University of Pennsylvania. I was also formerly employed by the Michigan Department of Natural Resources to conduct waterfowl banding and assist in developing statewide invasive species management initiatives. I hold a bachelor's degree from Michigan State University in Fisheries and Wildlife.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 22.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. John Mannix, P.E., TRC, 124 Grove Street, Suite 205, Franklin, Massachusetts 02038.

Q. Please summarize your credentials.

A. I am employed at TRC as a Senior Communications Engineer. I have responsibility for the design and implementation of wireless communications networks, primarily for electric utilities. I have been employed at TRC for seven years. Part of my role includes obtaining licensed frequencies from the Federal Communications Commission and ensuring frequency coordination and interference analysis is completed. I was previously employed by Verizon Communications and served as a Manager of Network Planning for over 15 years. I hold an undergraduate degree in Engineering and a graduate degree in Business Administration. I am licensed Professional Engineer in four states, including New York.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibits 26 and 40.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Kevin Martin, TRC, 215 Greenfield Parkway, Suite 102, Liverpool, New York 13088.

Q. Please summarize your credentials.

A. My position at TRC is Transmission Engineer III. My focus is underground cable projects and electrical studies for transmission line projects. I have been employed at TRC for approximately five years. I have over eight years of transmission line design experience and managing transmission assets for major utilities. Responsibilities include, but are not limited to cable ratings, EMF studies, insulation studies, project estimating, and failure analysis. I am a licensed Professional Engineer in the State of New York and have approximately five additional years of experience performing system integration and applications engineering. I have a Bachelor of Science Degree in Electrical Engineering from Alfred University and a Graduate Certificate in Power System Engineering from Worcester Polytechnic Institute.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 35 and Appendix 35-1 (EMF Study) and substation design.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Patrick Martin, P.E., TRC, 6 Ashley Drive, Scarborough, Maine 04074.

Q. Please summarize your credentials.

A. I am a Senior Civil Engineer at TRC, where I have been employed for approximately nine years. As a senior engineer, I lead engineering design teams in the development of site/civil components of a variety of energy related projects. I am a licensed professional engineer in Maine and New York, with 19 years of experience and progressive responsibility. My project experience includes site planning and layout, road design, grading and stormwater management design, hydrologic and hydraulic modeling, erosion and sediment control design, technical report writing, and permitting support. I earned a Bachelor of Science Degree in Environmental Engineering from Oregon State University.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. The civil design portions of Exhibit 11 as well as the civil design plans in Appendix 11-1.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. George Mohan, P.E., P.T.O.E., 1382 West Ninth Street, Suite 400, Cleveland, Ohio 44113.

Q. Please summarize your credentials.

A. My role at TRC is Senior Traffic Engineer. I am responsible for all aspects of traffic engineering from planning to design, which include traffic studies, traffic operations analysis, crash analysis, signal design, signing design, and pavement marking design. I have over 15 years of experience (over 1 year with the company). I went to Cleveland State University and graduated with a degree in Civil Engineering. My current responsibilities are primarily on the technical side, which includes mentoring younger staff and producing deliverables related to traffic engineering.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 25.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce herself?

A. Diane Reilly, TRC, 4155 Shackleford Road, Suite 225, Norcross, Georgia 30093.

Q. Please summarize your credentials.

A. I am an Economist for TRC and serve as a Technical Manager providing socioeconomic and recreation analysis for a variety of energy projects. I have been directly employed with TRC since 2012. For several years prior to that time, I provided sub-consulting services to TRC. I have over 20 years of experience in environmental consulting, evaluating socioeconomic and recreation issues. I received a Bachelor of Arts Degree in Economics and in Spanish from Furman University in Greenville, South Carolina. I have a Master of Arts Degree in Economics from the University of Georgia in Athens, Georgia and completed additional studies specializing in Finance and Public Finance. I have authored numerous EAs, EISs, and license applications addressing socioeconomics, Environmental Justice, and recreation. I provide economic modeling using the Jobs and Economic Development Impact (JEDI) Model developed by the National Research Energy Laboratory to evaluate local impacts from proposed wind, solar, and natural gas projects in New York State.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibits 27 and 28 and associated appendices.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Michael Ross, RLA, ASLA, TRC, 4900 Ritter Road, Suite 240, Mechanicsburg, Pennsylvania, 17055.

Q. Please summarize your credentials.

A. My position at TRC is a Landscape Architect. I manage a majority of the Landscape Architecture projects, tasks and services at TRC and I have been employed there for approximately two years and four months. I have been and continue to be directly responsible for the overall coordination, implementation, and submission of numerous Landscaping Plans for various solar projects throughout the northeast, mid-Atlantic, and midwestern states in the US. I have also been directly responsible for the overall coordination, implementation, and submission of various Vegetation Management Plans, E&S/NPDES Plans, and Forest Conservation Reforestation/Afforestation Plans. I have also participated as a panel member for Visual Impact Assessments related to a Wind

Energy Center and a Solar Energy Center. Prior to these responsibilities, I have had more than 20 years of additional experience within the profession of Landscape Architecture. I have a working knowledge and understanding of land development and construction document production which involves a range of responsibilities including but not limited to: site analysis, due diligence, conceptual design, utility coordination, preliminary and final design of land development plan set production, estimates of probable costs, construction documentation, site inspection, and all aspects of the permitting approvals process. Other related experience includes: Master planning, Estate planning, Hardscape and Planting design/implementation, and phased planning/design with a primary emphasis of design/build construction being a significant part of my overall performance skills and requirements. I have a Bachelor of Science in Landscape Architecture from The Pennsylvania State University and I am a current member of the American Society of Landscape Architects (ASLA). I am certified in Maryland as a Forest Conservation Professional and I am currently licensed as a Landscape Architect in Pennsylvania, Colorado, North Carolina, and West Virginia.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. The Landscaping Plans in Appendix 11-1.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Timothy Sara, RPA, TRC, 4425-B Forbes Boulevard, Lanham, Maryland 20706.

Q. Please summarize your credentials.

A. My position at TRC is Program Manager, Cultural Resources. I lead the cultural resources staff for compliance studies for permitting of renewable energy projects. I have been employed at TRC for approximately 12 years. I have over 34 years of experience conducting cultural resources studies for a variety of energy and transportation development projects. My responsibilities include, but are not limited to, preparing scopes of work, budgets, research designs, and technical reports for submittal to state and federal review agencies. I am a Registered Professional Archaeologist (RPA) and have developed most of my professional experience in New York State and other Northeastern states. I have a bachelor's degree from Binghamton University and a master's degree from Hunter College, City University of New York. I currently serve as Principal Investigator for ongoing cultural resources studies in support of NextEra's renewable energy projects. I have been a contributing author on more than 100 Environmental Assessments (EAs) and/or Environmental Impact Statements (EIS) and principal or contributing author to more than 300 cultural resources management reports. I also serve as Office Practice Leader for TRC's Lanham, Maryland office with responsibility for all business functions of the office as well as quality control and staff management.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 20 and Appendices 20-1 and 20-2.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. James Shea, TRC, 1382 West 9th Street, Suite 400, Cleveland, Ohio 44113.

Q. Please summarize your credentials.

A. My position at TRC is Transportation Engineer and I bring experience in planning, design, and traffic operations on various transportation projects for county, state, and local government agencies. I have worked at TRC for the past three years and graduated with a Bachelor of Science Degree in Civil Engineering in 2007 and a Master of Science Degree in Civil Engineering in 2013, both from Cleveland State University. Throughout my career, I have led various traffic-related projects including traffic impact studies and corridor timing studies, traffic signal design, traffic signal system design, and signing and marking design. I am a Professional Traffic Operations Engineer and have considerable

experience in traffic analysis using HCS and corridor modeling and simulation using Synchro. In addition to my traffic study experience, I have also served as project engineer on numerous roadway reconstruction, resurfacing, and reconfiguration projects with design experience, including horizontal and vertical alignments, drainage, waterworks, traffic control, and signal design.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 25.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce herself?

A. Brianne Tylock, TRC, 670 North Commercial Street, Manchester, New Hampshire 03101.

Q. Please summarize your credentials.

A. I have four years of solar-specific experience in the renewable industry. My qualifications include a vast focus on renewables, including distribution aspects, such as

purchasing and inspecting materials and building vendor relations, as well as design and permitting experience, including the creation of electrical drawings and site plans, attendance at town meetings for permits, writing grants and proposals, and even solar installation efforts. My background includes a focus on residential, commercial, and utility scale solar, with projects ranging from 3 kW to 130 MW. For the last year, I have served in the capacity of Electrical Engineer with a renewable focus for the Engineering Group in the Power Division. I received my Bachelor of Science Degree in Electrical Engineering Technology with a minor in Environmental Studies from Rochester Institute of Technology. My current responsibilities include managing a team of engineers as the electrical lead in the solar sphere. I engineer projects from their infancy, conducting feasibility studies and interconnection plans, pre-applications and utility applications, preliminary layouts and optimized site plans, all the way up to for-construction electrical permit sets.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. The electrical design in Exhibit 11 and Appendix 11-1.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce herself?

A. Nancy Vlahos, TRC, 10 Maxwell Drive, Clifton Park, New York 12065.

Q. Please summarize your credentials.

A. My position at TRC is Project Manager for the Planning, Permitting and Licensing Division where I manage the licensing and permitting efforts for numerous solar developments and support several Article 10 projects in New York State. I have been employed at TRC for approximately two years. I have over 15 years of experience in environmental consulting working on a variety of scientific and regulatory projects in the environmental field, including New York State SEQRA review, state and federal permitting and compliance, wildlife impact analyses and SWPPP development and inspection. My background includes extensive service to public and private-sector clientele. I have a Bachelor Science in Chemistry from Purchase College and a Master of Science in Environmental Science from Yale School of Forestry and Environmental Studies.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 31.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Ryan Callahan, Epsilon Associates, Inc. ("Epsilon"), 3 Mill & Main Place, Suite 250, Maynard, MA 01754.

Q. Please summarize your credentials.

A. I am a Senior Engineer in the Acoustics Group at Epsilon Associates and have been employed there for over two years. My responsibilities at Epsilon include project management, sound modeling, sound monitoring and analysis of sound data. For eleven years prior to joining Epsilon, I worked at another environmental consulting company as an engineer performing sound level impact studies. I am an expert in the application of the Cadna/A acoustic model to wind farms, industrial facilities, commercial developments, and power plants. I am a full member of the Institute of Noise Control Engineering (INCE). I have a Bachelor of Science in Civil Engineering from Northeastern University. I design and implement field monitoring programs for permitting purposes and for demonstrating compliance with local and state noise regulations. I have presented noise studies before town and county planning boards for several renewable energy projects.

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

A. To sponsor certain portions of the East Point Energy Center Application.

Q. What portion(s) of the Application is your testimony sponsoring?

A. Exhibit 19 and the appendices thereto.

Q. Were these Exhibits, Application sections, or studies prepared by you or under your direction and supervision?

A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

Q. Will the next member of the Panel please introduce himself?

A. Robert D. O'Neal, Epsilon, 3 Mill & Main Place, Suite 250, Maynard, MA 01754.

Q. Please summarize your credentials.

A. I am one of the Managing Principals at Epsilon Associates, and thus share in responsibility for overall direction and operation of the company. Prior to this position, I was a Principal and the leader of the Acoustics Group, where I managed staff and assigned resources on our noise-related projects. I have been employed at Epsilon for approximately 19 years. Prior to coming to Epsilon, I spent 13 years with other environmental consulting companies performing sound level impact studies, meteorological data analyses, and air pollution control modeling. I am a Certified Consulting Meteorologist (CCM) by the American Meteorological Society and Board

Certified in Noise Control Engineering through the Institute of Noise Control Engineering (INCE). I have a Bachelor of Arts in Engineering Science from Dartmouth College and a Master of Science in Atmospheric Science from Colorado State University. In addition to my current management responsibilities, I perform technical studies on a variety of energy and industrial projects ranging from sound level measurements, sound modeling, noise control design, and expert testimony. The energy projects range from renewables (wind; solar; battery storage) to fossil fuel (combustion turbines; internal combustion engines).

My CV is attached below.

Q. What is the purpose and scope of your testimony in this proceeding?

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A. Yes.

Q. In your testimony, will you refer to, or otherwise rely upon, any studies, publications, data, or documents produced by persons other than yourself or your company? If so, please cite these sources.

A. References are provided in corresponding Exhibits.

JUDITH A. BARTOS

EDUCATION

M.S., Soil Science, University of Massachusetts at Amherst, September 1994 *Thesis title: Heavy Metal Distribution in Massachusetts Soils*
B.S., Plant and Soil Sciences, University of Massachusetts at Amherst, 1989

AREAS OF EXPERTISE

Ms. Judith A. Bartos has 23 years of cumulative experience in the following:

- GIS 10.7 ArcInfo/Spatial Analyst/3D Analyst; ArcServer/sde Geodatabase; 3DS Max 2016; Global Mapper; Infraworks, Visual Nature Studio 3; AutoCad; ArcGISPro
- Three-Dimensional Modeling, Photosimulation, Viewshed Analysis, Line-of-Sights, Advanced Terrain Analysis, Linear Referencing, Shadow Study, Cut and Fill, Air Modeling and Groundwater Modeling Isopleths, Advanced Geodatabases
- Visual Impact Assessments
- Expert Testimony for Visual Impact Assessments and Photosimulations
- Wind Farm and Generating Facility siting studies
- Soils, Glacial Geology, Hydrology, Landform Interpretation, Ecology, Forest Community Assessment, Stream Characterization, Wildlife Habitat Assessment, Census demographics, Environmental Justice: raster and vector data analysis with occasional use of external relational and non-relational databases
- Tailoring natural gas pipeline engineering information to state and federal permitting applications. Previously have written Resource Reports for FERC applications as well as final GIS analysis and cartography.
- FGDC-compliant metadata
- Environmental Inspection (FERC Guidelines) Natural Gas Pipeline Construction
- Wetland Assessment and Delineation in CT, DE, MA, MD, ME, NH, NJ, PA, VT, & WV
- Ecology, Forest Community Assessment, Stream Characterization, Wildlife Habitat Assessment
- Environmental Permitting for Wetland Resource Areas and Hazardous Waste
- Construction Remediation Oversight, Hazardous Waste Management, Site Assessment, Remediation for large-scale infrastructure projects

REPRESENTATIVE EXPERIENCE

Geographic Information Systems (GIS)

Ms. Bartos currently works with an integrated collection of GIS and visual/3-dimensional software products enabling her to deploy GIS functionality and to provide a full range of computerized visualization services for qualitative and quantitative visual impact assessments. Her main area of expertise includes three dimensional modeling skills and photosimulations of proposed facilities in real world coordinates for those projects requiring visual impact studies, as well as viewshed analysis and lines-of-sight. She has provided expert testimony deposition and has assisted in the preparation of pretrial written testimony for visual assessments.

Ms. Bartos is capable of providing the relevant focus and environmental analysis behind the final deliverable due to her cumulative 23 years of experience with various nationwide state and federal

environmental permitting efforts, involvement with siting studies, extensive field experience, and academic research.

FPS Coxsackie Solar Project, Coxsackie, NY - (Sr. GIS Systems Analyst: 2018 to present).
The proposed solar facility will generate up to five megawatts (MW) of power on a 68-acre site in Coxsackie, NY. Visual and aesthetic impacts were assessed out to a 5-mile radius under the NY SEQR process. Viewshed analysis using LiDAR data was performed and photosimulations were produced. Simulations also showed proposed vegetative mitigation at planting time and at five years based on proposed project landscaping.

NextEra Energy Resources (NEER) Solar Development Upstate NY - (Sr. GIS Systems Analyst: 2017 to present).
NEER is currently submitting applications to construct four Article 10 solar facilities exceeding 25 MW in Montgomery, Schoharie, Schuyler, and St. Lawrence counties. Ms. Bartos is responsible for the production and oversight of Visual Impact Assessments and Exhibit 24 for all four facilities pursuant to 16 NYCRR §1001.24. Ms. Bartos has conducted pre-application testimony for the East Point Energy Center. The East Point and High River Energy Centers expects to submit the Article 10 application in September 2019.

National Grid Gardenville, Dunkirk 141-142 115kV Transmission Line North Angola to Gardenville Rebuild & Reconductor Project – Erie County NY - (Sr. GIS Systems Analyst: 2017 – present)
Under the NY Article VII process, the Applicant is reconstructing two existing 115kV transmission lines, approximately 20.45 miles (of 44.87 miles) of the Gardenville – Dunkirk 141 & 142 line in Erie County, NY. Ms. Bartos is providing several viewshed analyses comparing a visual change detection between the existing line and two proposed structure types (triple circuit vs. double circuit). Simulations showing various structure types and alignment options for comparison have been provided.

Eversource West Roxbury to Needham Transmission Reliability Project – MA (Sr. GIS Systems Analyst: 2016 – present)
Ms. Bartos provided Visualization Services and expert testimony to the EFSB regarding the proposed new build electric transmission line for the West Roxbury to Needham Reliability Project. The project was a new transmission line build traversing through the towns of Needham, Dedham, and Boston (West Roxbury) along an existing above ground transmission. The work provided was in response to an EFSB Information Data Request dated December 8, 2016. Comparative viewshed analyses and photosimulations were provided. The project was high profile and contentious.

Eversource Sudbury to Hudson Transmission Reliability Project – MA (Sr. GIS Systems Analyst: 2016 – present)
Ms. Bartos performed and prepared a Visual Impact Assessment in support for a petition to the EFSB pursuant to G.L. c. 164, § 69J for authority to construct, operate, and maintain an approximately 9-mile 115-kilovolt transmission line from Eversource's Sudbury Substation on Boston Post Road in Sudbury to Hudson Light & Power Department's substation at Forest Avenue in Hudson. Ms. Bartos provided a viewshed analysis to assess impacts at a regional landscape level as well as producing photosimulations. The project was high profile and contentious.

Eight Point Wind Energy Center – Steuben County, NY (Sr. GIS Systems Analyst: 2016 – 2019)
Eight Point Wind received its Article 10 Certificate in August 1019. Eight Point Wind proposes to install up 34 commercial scale wind turbines in addition to a collection substation and 16-mile overhead 115kv transmission line. Ms. Bartos has produced a combined Visual Impact Assessment for the project that was conducted according to the requirements in 16 NYCRR §1001.24 to be included as Exhibit 24 in an Article 10 application. The NYSDEC Program Policy "Assessing and Mitigating Visual Impacts was used in order to comply with NYSPSC requirements and Article VII process for the transmission part of the project. Ms. Bartos also provided testimony for this project.

NEXUS Gas Transmission Project – OH and MI (Sr. GIS Systems Analyst: 2015 – present)
Ms. Bartos was tasked to provide a Visual Impact Assessment in support of FERC required Resource Report 8 for 5 communications towers associated with 5 compressor station sites along the proposed NEXUS gas transmission line. FERC does not have visual requirements or guidance documentation for gas transmission or ancillary components at this time. For this project, visual impacts were assessed in terms of performing an inventory of existing visual resources within a designated study area and evaluating the potential for visibility of the towers at those resources using the results of viewshed analyses at each location. State LiDAR data for Ohio and Michigan was used for base elevations as well as building and tree heights.

Vermont Green Line – Addison County, VT & Clinton County, NY (Sr. GIS Systems Analyst: 2015 – present)
The Vermont Green Line Project is a high voltage direct current (HVDC) 400 MW electric power transmission system connecting the New York Power Authority (NYPA) Plattsburgh Substation in Beekmantown, Clinton County, New York, and the Vermont Electric Power Company (VELCO) New Haven Substation in New Haven, Addison County, Vermont. Ms. Bartos conducted visual impact assessments and corresponding analyses for the project. As part of the deliverable, the NYDEC Visual Policy was used to fulfill Article VII visual requirements for the state of NY and an extensive Quechee Analysis was performed for the VT part of the project to fulfill Section 248(b)(5) of Title 30 Vermont Statutes. In addition, she has submitted pre-trial written testimony for the project.

Lasher Road Substation Project – Saratoga County, NY (Sr. GIS Systems Analyst: 2015 – 2016)
As part of an Article VII application, Ms. Bartos provided visual impact studies and final report writing for a proposed 115kV distribution substation and associated 115 KV tap lines tying into National Grid's existing 115 kV Spier Falls to Rotterdam Transmission Line #2. The Article VII visual assessment used the NYDEC Visual Policy as guidelines for the submittal and included a visual resources inventory, viewshed analyses using existing point cloud LiDAR data and photosimulations.

Shoreham Solar Project – Suffolk County, NY (Sr. GIS Systems Analyst: 2015)
Shoreham Solar Commons, LLC proposes to construct and operate a 24.9MW ground-mounted, stationary/non-tracking solar array installed on mounting racks and associated electric interconnect infrastructure to LIPA's 69 kV power grid. The site is located in Brookhaven, Long Island, NY and subject to SEQRA and 6 NYCRR §617. Ms. Bartos provided technical oversight and analyses for a team providing visual simulations and authored a visual impact assessment following NYSDEC's Visual Program Policy.

Rover Pipeline Project – MI, OH, PA, WV (Sr. GIS Systems Analyst: 2014 – present)
The Rover Pipeline Project is a new natural gas pipeline system that will consist of approximately 711.2 miles of Supply Laterals and Mainlines, 10 compressor stations, and associated meter stations and other aboveground facilities that will be located in parts of West Virginia, Pennsylvania, Ohio, and Michigan. Ms. Bartos performed the GIS analysis, produced multiple final tables, and authored all text for Resource Report 7, as required under FERC guidelines and jurisdiction.

Island Park Energy Center LLC, The Island Park Energy Center, A Repowering of the E.F. Barrett Power Station – Town of Hempstead, Nassau County, NY (Sr. GIS Systems Analyst & GIS Coordinator: 2013 – Present)
Ms. Bartos is presently serving as Sr. GIS Analyst and GIS lead for the repowering of the existing E.F. Barrett Power Station for Island Park Energy Center LLC. Proposed is the development of a new approximately 690 MW combined cycle facility with an additional development of approximately 290 MWs of new peaking (simple cycle) capacity to be known as the Island Park Energy Center (IPEC). The project requires a Certificate of Environmental Compatibility and Public Need from the New York State Board on Electric Generation Siting and the Environment under Article 10 of the New York State Public Service Law. Ms. Bartos is also responsible for conducting a comprehensive Visual Impact Assessment according to 16 NYCRR §1001.24.

Enbridge Line 78 Project – IL, IN (Sr. GIS Analyst: 2014 – 2016)
Enbridge Energy, Limited Partnership is proposing to expand its existing pipeline system in Illinois and Indiana. The Line 78 Project will consist of approximately 78 miles of a new crude oil, 36-inch-diameter pipeline extending from Enbridge's Flanagan Terminal near Pontiac, Illinois to its Hartsdale Terminal near Griffith, Indiana. Ms. Bartos assisted with compiling biological resources survey data for agency submittal. She has also provided an sde Geodatabase-ArcServer interactive webviewer for the project.

NEETNY Enterprise Line Project – NY (Sr. GIS Systems Analyst & GIS Coordinator: 2013 – present)
NextEra Energy Transmission New York, Inc. proposed to construct and operate a new approximately 148-mile 345-kV single-circuit AC transmission line between the existing Marcy Substation in Oneida County and the existing Pleasant Valley Substation in Dutchess County. The effort for this project focused on the Article VII Part A and Part B Application process set forth in the New York State Public Service Commission's order in Case 12-T-0502 on April 22, 2013. Ms. Bartos' prime task is as GIS lead for all GIS related figures, analyses, and calculations issued in the submittal. In addition, she designed and constructed a GIS sde Geodatabase-ArcServer based interactive webviewer with project related information capable of file editing and data attribute extraction.

Caithness Long Island II – Suffolk County, NY (Sr. GIS Systems Analyst & GIS Coordinator: 2013)
On behalf Caithness Long Island II, LLC TRC provided a Draft Environmental Impact Statement prepared in support of Caithness' application for a Special Permit for Electric Generating Facility Use for its proposed Caithness Long Island Energy Center II (CLI-II). The Long Island Power Authority has a need for additional electrical resources based on existing and projected generation requirements established by the New York Independent System Operator and the New York State Reliability Council. LIPA selected the CLI-II project to help meet its baseload needs and will be an approximately 752 megawatt combined cycle generating facility, to be fueled primarily with natural gas with ultra-low sulfur distillate as a back-up fuel. Ms. Bartos served as GIS lead for all GIS project related material for the DEIS. She also produced a Visual Impact Assessment that included a field visit for field data acquisition, a balloon study,

a viewshed analysis and a suite of 10 photosimulations and related 3-dimensional work using 3-dimensional visualization software, as well as authoring the written document for the VIA. In addition, she developed an interactive sde Geodatabase-ArcServer project webviewer for the project.

Sabine Pass Liquefaction Expansion Project and Cheniere Creole Trail Pipeline Expansion Project – LA (Sr. GIS Systems Analyst: 2013)
The Liquefaction Expansion Project involves the Stage 3 (Trains 5 and 6) construction of the current Sabine Pass Liquefaction Project. The Pipeline Expansion Project proposes to expand and extend the existing Cheniere Creole Trail pipeline system. Ms. Bartos authored Resource Reports 6 and 7, Geology and Soils respectively, for FERC submittal. In addition she provided the GIS analyses and calculations relevant to each of the two chapters.

Browns Falls to Taylorville Structure Replacement Project – Lewis and St. Lawrence Counties, NY (Sr. GIS Systems Analyst: 2013)
This Project was part of National Grid's Conductor Clearance Replacement Program. Approximately half of the structures proposed for replacement were located in the Adirondack Park and are subject to the Adirondack Park Agency (APA) permitting requirements. A comprehensive visual analysis was conducted to satisfy the requirement of 16 NYCRR Part 102 to identify the presence of existing public visual resources within ½ mile of National Grid's Browns Falls-Taylorville #3&4 115kV Transmission Line. The impact assessment evaluated classes of areas pertaining to aesthetic resources as outlined in §102.3 of Part 102.

Rochester Gas & Electric Substation 251 Project – Rochester County, NY (Sr. GIS Systems Analyst: 2013)
Ms. Bartos created extensive 3d modeling of substation components per transmission and substation engineering specifications was performed to provide visual simulations regarding a proposed 115kV four transmission-line termination facility. Ancillary buildings, tie-transmission along with landscaping and mitigative measures were included. In addition to the simulations, she did a full visual resources inventory along with terrain and viewshed analyses were incorporated into a final Visual Impact Statement.

Latigo Wind Project – San Juan County, UT (Sr. GIS Systems Analyst: 2012)
Using 3d visualization software, Ms. Bartos created the 135 meter turbine proposed for the Project according to vendor specifications. She produced several photosimulations from known observation points in and around the town of Monticello, Utah.

Moses-Willis Double Circuit Contingency Project – Massena, NY (Sr. GIS Systems Analyst: 2012)
The purpose of this project is to correct a double contingency situation which occurs outside of the Authority's St. Lawrence—FDR Power Project switchyard. Photosimulations for 18 locations in addition to Lines of Site Analyses and accompanying documentation were produced for the New York Power Authority (NYPA) under an agreement between NYPA, NY SHPO, and the NY DPS. Ms. Bartos conducted the necessary field work and photosimulations to support the Authority with regards to the National Register of Historic Places nomination of the nearby Robert Moses State Park.

Uranez Energy Corporation Hank Unit ISR Project – Cambell County, WY (Sr. GIS Systems Analyst: 2012)
Uranerz Energy Corporation has proposed to develop and operate the Hank Unit in-situ recovery (ISR) project in southwestern Campbell County, WY. As part of analyses to aid in the BLM's compliance with Section 106 of the *National Historic Preservation Act*, TRC conducted an assessment of potential visual effects to visually sensitive cultural properties located near the proposed Hank Unit project area. Ms. Bartos produced photosimulations from sites that could potentially be visually affected by the proposed facility. As part of the visual mitigation plan, she incorporated the standard BLM environmental colors to aboveground elements of the project in order to reduce visual contrast.

Grandpa Knob – Pittsford, VT, (Sr. GIS Systems Analyst: 2012)
On behalf of Reunion Power, LLC and pursuant to 30 V.S.A. §§ 246 and 248, Ms. Bartos provided an aesthetic evaluation using the Vermont Environmental Boards's Quechee Analysis to determine if: 1) a proposed 180 foot meteorological tower will have an adverse impact; and 2) if an adverse impact is concluded, does the impact result in an undue adverse effect.

DCP Searsport LPG Terminal – Searsport, ME (Sr. GIS Systems Analyst: 2010 – 2012)
This project entails the installation of one LPG bulk storage tank, ship unloading facilities on the existing pier, a truck loading station, a rail car loading station and other ancillary equipment such as ethyl-mercaptan storage tanks, an LPG fuel tank, an emergency propane flare, and administration, compressor and motor control center buildings. Visual impact analyses (viewshed analysis and photosimulations) were performed to support Section 480-D of the NRPA permit. Additional work included complex 3D landscape visualizations showing the existing character of the area combined with the post-construction environment.

Wasatch Wind Pioneer Wind Park – Converse County, WY (Sr. GIS Systems Analyst: 2011)
Wasatch Wind's Pioneer Wind Park consists of two proposed 50 MW wind energy projects in Converse County, Wyoming. The turbines will be located approximately 9 miles south of the town of Glenrock and 7 miles south of Interstate 25. Ms. Bartos produced photosimulations consisting of various configurations and iterations of the proposed GE 1.6 xle turbines used for the project in attempts respond to community feedback and reduce visual impacts to surrounding landowners.

CMP Lewiston-Loop Project – Lewiston and Auburn, ME (Sr. GIS Systems Analyst: 2010)
CMP proposed to increase transmission capacity and reinforce their transmission system in the Lewiston/Auburn (L/A) area to support current and forecasted electrical load demand. Ms. Bartos conducted viewshed analyses and a suite of photosimulations for a proposed 115/34/12 kV substation and a new 115 kV overhead transmission line. An inventory of sensitive resources and a full report was produced according to the MDEP *Guidance for Assessing Impacts to Existing Scenic and Aesthetic Uses under the Natural Resources Protection Act, 2003.* Ms. Bartos has constructed a portion of the three dimensional modeling of necessary project components as well as integrated engineered PLS-Cadd designed portions of the transmission line.

Champlain Hudson Power Express – Yonkers, NY (Sr. GIS Systems Analyst: 2010)
Ms. Bartos produced a Visual Impact Assessment for a proposed HVDC converter station located in Yonkers, NY and a step-down 345/138kV transformer substation in Manhattan. The assessment was performed and produced according to the New York State Department of Environmental Conservation "Assessing and Mitigating Visual Impacts" guidance policy in support for Article VII filings and EM&CP

documents. An inventory of resources inventory within a designated study area as well as a photosimulation effort and full report was produced.

TransCanada Kibby Expansion Wind Power Project – ME (Sr. GIS Systems Analyst: 2009-2010)
The Kibby Expansion Project involves the addition of 15 turbines to the existing Kibby Wind Power Project in the Chain of Ponds and Kibby townships. The tasks for the Expansion Project include numerous viewshed analyses, photosimulations, and line of sight analysis to assess the impacts to the sensitive Chain of Ponds area and assessments of cumulative effects from the adjacent Kibby Wind Power Project wind farm. Wind farm 3-d model development and various photosimulations have been presented under the LURC expedited process and is currently undergoing rigorous review.

AES Wind Projects – PA, WV (Sr. GIS Systems Analyst: 2007 – 2010)

- AES Snowy Creek Wind Farm Project, Preston County, West Virginia, 2010
- AES Fox Hill Wind Project, Ulysses, Pennsylvania, 2010
- AES New Creek Mountain Project, Grant County West Virginia, 2008
- AES Laurel Mountain Wind Energy Project, Barbour/Randolph Counties, West Virginia, 2007 (Expert Testimony)
- AES Armenia Mountain, Tioga/Bradford Counties, Pennsylvania, 2007

Ms. Bartos has provided comprehensive visual assessments for five AES wind farm projects in support of federal, state, and local filings. Four are complete and Snowy Creek is ongoing. For each of these projects, a viewshed analysis incorporating the presence and effects of trees was performed to identify areas where the proposed wind turbines might potentially be seen within the landscape. Additional GIS data of various sensitive receptors were superimposed over the viewshed results to narrow down the focus for candidate sites suitable for photosimulations. Photosimulations were then produced to provide additional predictive visual modeling at sensitive receptor locations. For these efforts, three dimensional wind turbines were created for 118.5/121.25-meter 1.5sle/xleGE, 135-meter 2.5xlGE and 130-meter 2.5 C99 Clipper model turbines using vendor specifications. Line-of-Sight Profiles were also prepared as supplemental terrain analysis for New Creek Mountain. She has also prepared and provided written and oral expert testimony to the PSC in West Virginia.

Brookfield Resource Management Recycling Facility – Wawayanda, NY (Sr. GIS Systems Analyst: 2009)
Ms. Bartos was tasked to produce a Visual Impact Assessment for a proposed recycling facility in Wawayanda, NY. The assessment was performed and produced according to the New York State Department of Environmental Conservation “Assessing and Mitigating Visual Impacts” guidance policy. A comprehensive viewshed analysis and resources inventory including the evaluation of historic and eligible historic locations within 3-miles was performed. An extensive photosimulation effort with the effects of final landscaping was provided.

Astoria Energy Phase II Project – Astoria, NY (Sr. GIS Systems Analyst: 2009)
This project involved a transmission line upgrade to accommodate the existing 1,000 MW Astoria combined-cycle generating facility. The transmission line upgrade included larger structures and a 345 kV circuit. New photosimulations along several vantage points of the interconnect were produced to assess the visual impact of the upgrade.

CPV Valley Energy Center – Wawayanda, NY (Sr. GIS Systems Analyst: 2008 – 2009)
Ms. Bartos performed analyses and produced a Visual Impact Assessment Report for submittal, according to the New York State Department of Environmental Conservation "Assessing and Mitigating Visual Impacts" guidance policy for a proposed 500 MW combined cycle facility. These analyses included a viewshed analysis of a 5-mile study area and an extensive suite of photosimulations of the proposed project during daytime and nighttime lighting conditions, including panoramic views. She also provided a nighttime video simulation of the facility animated in 3DS Max 9 visualization software primarily focused and based on an FAA Type L-864 Flashing Red Obstruction Beacon, with a flashing frequency occurring once every three seconds (1.5 seconds on, 1.5 seconds off) for a total of 20 flashes per minute.

Connecticut Light and Power Substation Siting – CT (Sr. GIS Systems Analyst: 2008)
Ms. Bartos provided site photosimulations as part of an alternatives analysis for proposed 115 kV substation siting. A computerized 3-dimensinal model was constructed in a real world coordinate system based on 2-dimensional cad plan and profile engineering specifications provided by the client. Photos at selected potentially sensitive receptor points were taken and marked by GPS. The photos were incorporated into the 3-d environment to depict the type and quality of view at the selected locations. Additional the 3-d model also presented ancillary elements such a proposed hedgerow, chain link fence, as well as proposed site clearing. These photosimulations were also used as a preliminary presentation to local jurisdiction prior to Connecticut Siting Council review.

CPV Walpole – Walpole, MA (Sr. GIS Systems Analyst: 2007)
Ms. Bartos conducted an extensive visual assessment for the CPV Walpole project. This project proposed to construct a 500 mw combined cycle power plant and associated switchyard in the town of Walpole, Massachusetts. An initial viewshed analysis was performed and combined with sensitive receptor information to determine photo vantage points for visual photosimulations. A 3-d model of the facility and the switchyard was constructed and used for leaf-on and leaf-off photosimulations to determine visual impacts. An 'artist's rendering' of the facility, cooling towers, and switchyard within a terrain-correct environment combined with proposed landscaping was also created as well as an animated-flythrough of the facility.

CPV Wind County Line Project – Southwestern PA (Sr. GIS Systems Analyst: 2006)
Ms. Bartos provided GIS analysis and support for the initial critical issues phase to assess project feasibility. CPV proposed to construct and operate up to 45 wind turbines and associated facilities. Visibility analysis was performed to determine potential impacts to the visual environment. A viewshed analysis out to 10 miles was performed. This viewshed analysis showed areas that potentially could see all or some of the proposed facilities. The first phase of the analysis provided potential views using bare surface USGS digital elevation models. The second phase incorporated USGS based landcover data. The landcover data was reclassified to include deciduous and coniferous trees with an assigned average tree height. The viewshed was then performed again to provide potential views of the facility with trees and proposed cleared areas incorporated into the model.

Quoddy Bay LNG Import and Regasification Terminal Project – Quoddy Bay, ME (Sr. GIS Systems Analyst: 2006)
Ms. Bartos worked on extensive three dimensional modeling and photosimulations of the proposed Quoddy Bay LNG project. Modeled elements of the receiving terminal included pier sections, process platforms, typical dolphin mooring arrangements, berths, unloading platforms, two LNG tankers, and three

LNG tanks. Line-of-Sights utilizing digital elevation models were also performed to provide additional visibility analysis. Ms. Bartos also provided viewshed analysis out to 10 miles for both the proposed LNG tanks and tanker slip site. Additional sensitive resource data such as recreational areas, forests and parks, and cultural resources were overlaid on the final map to assist in assessing sensitive areas.

Additionally, a preliminary shadow study was performed to determine potential casting of shadows of the LNG tanks on a nearby residential area. This shadow study was also animated, showing a time range of shadow movement from 3:30 pm to darkness on a pre-determined day of December 21, 2006. Shadow studies were also produced to determine the effects of shadows produced by the berthing facilities on nearby shorebird habitats. Three different times during the day (7 am, 1 pm, and 6 pm) were depicted for the months of May, July, and September.

National Grid Wakefield Substation – Wakefield, MA (Sr. GIS Systems Analyst: 2006)
Ms. Bartos provided photosimulations for the proposed National Grid Wakefield Junction electric substation as a result of communications with concerned landowners residing in a nearby residential area who may potentially be visually impacted by the project. Photosimulations consisted of an extensive model of substation structures including steel pole structures, switchgear buildings and ancillary structures, and chain link fences rendered with photographs from strategic and selected vantage points to demonstrate that the proposed facility will not be visible from many of the vantage points of concern.

Jordan Cove Energy Project – North Bend, OR (Sr. GIS Systems Analyst: 2006)
Ms. Bartos provided photosimulation work to assess the visual impacts of a proposed 320,000 m^3 capacity LNG facility at Jordan Cove in Oregon. Three dimensional LNG tanks were modeled according to engineering specifications and accurately incorporated into site photographs with detailed information about camera settings, vantage points, and site conditions. The photos were used to depict the current surrounding vicinity and incorporated into the 3-d environment where photo renderings of the facility were subsequently performed for a FERC pre-filing.

Massachusetts Office of Coastal Zone Management – MA (Sr. GIS Systems Analyst: 2006)
Ms. Bartos performed GIS offshore investigation and analyses for existing and potential ocean-based energy facilities and associated infrastructure in Massachusetts waters out to 200 miles. The goal of this project was to identify candidate areas for ocean-based energy facility including: wind turbines; free flow hydropower turbines such as wave turbines; tidal (hydrokinetic); ocean thermal; ocean current; on-sea solar electric; solar thermal electric; and ocean-based liquefied natural gas (LNG) port and or ocean-based LNG storage and vaporization facilities. Part of the final deliverable included oversize GIS maps depicting the resulting areas as well as extensive documentation of FGDC-compliant metadata to accompany a final GIS geodatabase.

Entergy, Threatened and Endangered Species Study – Northeastern and Southern U.S. (Sr. GIS Systems Analyst: 2005)
Ms. Bartos performed a GIS desktop study for Entergy, Inc. assessing the presence of Threatened and Endangered Species (T&E) along Entergy's generation, transmission, and distribution assets in the states of Arkansas, Iowa, Louisiana, Massachusetts, Mississippi, Nebraska, New York, Texas, and Vermont. Ms. Bartos consulted extensively with state agencies and worked with NatureServe's network of natural heritage programs to acquire the final T&E dataset. The final deliverable was provided to Entergy in the form of a usable GIS interactive ArcExplorer visual database.

Niagara Mohawk Transmission Line Expansions – NY (Sr. GIS Systems Analyst: 2006)
Ms. Bartos provided extensive GIS services in Erie and Albany Counties, New York regarding the expansion and rebuild of existing transmission line. Ms. Bartos provided GIS support, viewshed analyses, and a suite of photosimulations representing potential visibility of proposed structures in select areas, in preparation for Article VII documents and filing.

Algonquin Gas Transmission, Massachusetts Bay – MA (Sr. GIS Systems Analyst: 2003)
Ms. Bartos provided extensive GIS support and analytical aquatic ocean investigations for the Northeast Gateway Project. This project involves bringing a new supply of natural gas to New England by establishing a submerged off-shore mooring, buoy, and piping system coupled with an on-board single vessel regasification plant.

Cherokee Northeast – Pennsauken, NJ (Sr. GIS Systems Analyst: 2003)
Ms. Bartos developed an internet-based MapGuide application that is used for the redevelopment of the Township of Pennsauken's Waterfront Redevelopment Area Project. TRC has been employed to implement the Scope of Work for the due diligence and site remediation portions of the Cramer Hill and Pennsauken Properties Redevelopment Projects located in Camden and Pennsauken, New Jersey. The client has the ability to access the secure website and utilize site-specific data along with orthoimagery to produce queried client-specific reports. These reports can be generated due to web-based integration with TRC's Project Optimization and Performance System (POPS) provided by TRC's IMG Group.

Mattiace – Glen Cove, NY (Sr. GIS Systems Analyst: 2006)
As part of TRC's Exit Strategy impetus, TRC has taken full statutory responsibility for environmental remediation of the former Mattiace Petrochemical site and is providing on-going operations, maintenance and monitoring. Cleanup has involved groundwater treatment and soil vapor extraction. As a part of EPA's requirement, Ms. Bartos has provided GIS analyses and graphical representation of groundwater and soil vapor concentration isopleths using database tables generated from the quarterly monitoring.

Larfarge Building Materials, Inc. – Ravena, NY (Sr. GIS Systems Analyst: 2004)
Utilizing ArcInfo Workstation, Ms. Bartos conducted visibility/raster viewshed analyses of new and existing structures for a project concerning the handling of materials for Tire Derived Fuel. The visibility analyses covered a 3-mile radius and incorporated New York State GAP data in order to obtain vegetated areas which was subsequently used in combination with 10-meter resolution digital elevation models. An inventory of existing resources including historic areas was also performed. This investigation was requested by the New York Department of Environmental Conservation as part of the SEQR review.

Confidential Client, Confidential Location – East Asia (Sr. GIS Systems Analyst: 2003)
Ms. Bartos recently worked on an international effort for a confidential client involving wind assessments and subsequent mapping. Ms. Bartos singularly performed the tasks for this comprehensive effort, entailing the preparation and calculation analyses of 5-year meteorological data sets obtained from the National Climatic Data Center detailing mean wind speeds and orientation coupled with digital terrain analysis, comparisons with weighted averages, the production of wind roses, and subsequent translation of the results to the GIS interface for the production of a final wind map.

TransGas Energy Systems – Brooklyn, NY (Sr. GIS Systems Analyst: 2003)
Ms. Bartos provided GIS support services for the proposed TransGas Energy Systems combined cycle 1100 MW electric generating facility. Ms Bartos provided GIS analyses focused on the compatibility of the

project with local laws, existing land uses, existing socioeconomic data, zoning districts, and land use planning within the Greenpoint, Brooklyn urban coastal zone and waterfront areas. GIS was also used to address Environmental Justice issues using TRC's Air Group, modeling air stack constituents of concern in relation to demographically sensitive areas within neighborhood districts and by providing a visual depiction of Environmental Justice locations utilizing EPA and New York Department of Environmental Conservation standards. Additionally, Ms. Bartos performed a Predictive Shadow Study as outlined in the City Environmental Quality Review (CEQR) Technical Manual. Using the results of the CEQR screening analysis, three dimensional predictive modeling software was used to render the proposed facility. The computer generated 3D image was then transposed into different landscapes using spatial data. Subsequently, shadow lengths and angles at different times of day and year were predicted as required in the CEQR Manual. The resulting visual data were used to evaluate possible shadow impacts on city parks, historic areas, and aquatic species in the adjacent watercourse.

Northern New England Wind Power Siting Analysis, New England Windpower – ME, Ma, NH, VT (Sr. GIS Systems Analyst: 2002)
Ms. Bartos coordinated and performed GIS analyses for a project identifying and evaluating the suitability of candidate sites for wind power development in Maine, Massachusetts, New Hampshire, and Vermont. Utilizing GIS, electronic digital overlays were compiled, reviewed and analyzed to obtain site-specific information used in determining high probability locations for wind power electric generating facility development. Parameters utilized in site identification and selection were developed and provided comparisons for development opportunities or constraints between potential areas. Sites were initially chosen from a macro-scale cartographic model. Candidate sites were then sequentially screened down as additional environmental constraints data were applied, narrowing the focus to locations that combined the greatest wind power potential with the least environmental constraints.

Freeport Electric Plant No. 2 – NY (GIS Systems Analyst: 2001)
Ms. Bartos prepared surface modeling and isopleth contouring associated with air quality modeling to document Environmental Justice (EJ) issues. EJ considers disproportionate adverse human health and environmental impacts on minority and low-income populations. Demonstrated that modeled air quality impacts from the proposed facility will not exceed EPA Significant Impact Levels and will not cause an NAAQS to be exceeded or violated. The initial screening area was selected by choosing census tracts that fall within or overlap a one-mile radius study area surrounding the generating facility sites. Total minority population and poverty rate were the main indicators used to determine the presence of a Community of Concern in the screening area.

Everett Lateral Project Critical Flaw Analysis, Algonquin Gas Transmission Company – MA (Sr. GIS Systems Analyst: 2003)
Ms. Bartos provided vector and raster image fatal flaw analysis for proposed 6.6-mile, natural gas pipeline configured to begin at the end of Algonquin's Deer Island Lateral and pass through the communities of Winthrop, East Boston and Chelsea and terminate in Everett, Massachusetts. She also assessed the developed nature of the off-shore and on-shore Project area. Ms. Bartos used results of GIS analyses to tailor cartographic efforts for federal and state filing.

Puerto Rican Environmental Quality Board – Vieques and Culebra Islands, Puerto Rico (Sr. GIS Systems Analyst: 2004)
Ms. Bartos provided a fast-track GIS mapping effort for the Puerto Rican Environmental Quality Board in depicting boundaries for ten Solid Waste Management Units/Areas of Concern regarding sites that are

under consideration for SuperFund listing, in addition to sites that have been impacted by unexploded ordnance. The client requested that each site boundary and basis of determination conservatively incorporate known and potential environmental impacts for the proposed SuperFund sites, and known or strong potential for explosive items for the other additional sites.

Rochester Gas & Electric – Monroe and Wayne Counties, NY (Sr. GIS Systems Analyst: 2003)
Ms. Bartos produced approximately 50 maps consisting of environmental constraints data and surveyed habitats mapping to support the efforts of an Article VII filing associated with the construction of new and rebuilding of existing overhead 115 kV transmission line in addition to reconstruction and upgrades to several substations.

Lake Erie Link Project, TransEnergie U.S. Ltd – PA to Canada (GIS Systems Analyst: 2001)
Ms. Bartos provided comprehensive GIS support services for site assessment and alternatives analysis for the construction a fiber optic cable proposed from Pennsylvania to Canada beneath Lake Erie. She analyzed and evaluated potential impacts to environmental resources vs. engineered design. This determined feasibility of several water crossings by the cable route.

Kings Park Energy, PPL, Wawayanda Energy Center, Calpine Corporation – NY (GIS Systems Analyst: 2001)
Ms. Bartos provided GIS services to support the permitting of these two proposed (600 MW and 540 MW, respectively) power generating facilities under Article X of the New York State Public Service Law. The Article X process included presenting cartographic information relative to environmental setting, potential environmental impacts and feasibility of facility operation, representation of reasonable alternatives and proposed mitigation.

Stamford Urban Transitway, City of Stamford – CT (GIS Systems Analyst: 2001)
Ms. Bartos provided GIS cartography and vector analyses for an Environmental Assessment regarding the construction of an intermodal transportation project in Stamford, CT, documenting impact assessment methodologies utilized, alternatives analysis, key input data sets, and quantitative results for zoning, land use and environmental impacts. Additionally performed the GIS mapping, analyses, and subsequent write-up of comprehensive land use analysis for New Starts Application for federal funding.

Wetland Survey, Environmental Permitting, Environmental Inspection

Ms. Bartos specializes in environmental impact assessments and siting studies in the Northeast and Mid-Atlantic. Projects have included multidisciplinary permitting and field efforts for power generating facilities, natural gas pipeline, fiber optic installation, and transmission line upgrades. Former field experience includes wetland assessment and delineation in CT, DE, MA, MD, ME, NH, NJ, PA, VT, VA, and WV with an emphasis on soil evaluation in addition to forest community assessment, stream characterization, and wildlife habitat assessment. Ms. Bartos has also formerly performed environmental site inspections (FERC Guidelines) for natural gas pipeline and energy facility construction projects. Ms. Bartos is familiar with sediment and erosion control methods, and has designed locally approved erosion control and/or Storm Water Pollution Prevention plans for pipeline and fiber optic installation projects.

Islander East Pipeline, Duke Energy – CT (Field Team Leader: 2000)
Ms. Bartos performed wetland delineations and oversight of wetland field team for natural gas pipeline corridor in Connecticut. Responsible for federal wetland determination in addition to determining state-regulated wetlands based primarily on soils criteria.

Newington Energy Facility, Con Edison – Newington, NH (Sr. Scientist: 2000)
Ms. Bartos provided environmental permitting services for Con Edison construction of a 520 MW power facility and ancillary features including the proposed Newington Industrial Corridor Road and Sprague Oil Pipeline. She performed site inspections of facility construction for environmental compliance in addition to oversight of the construction of new wetlands required under the mitigation plan.

National Grid USA Companies Contract Service Agreement – New England (Sr. Scientist: 1999-2000)
Ms. Bartos delineated wetlands, provided environmental site inspections, produced post-construction restoration plans along existing rights-of-way, and state and local environmental permitting for transmission line re-conductoring and pole replacement projects. She assisted client with fast track strategies to accomplish local permit filings within a limited time frame and in resolving public and environmental issues in problematic areas. Ms. Bartos presented projects to local Conservation Commissions in at least ten Massachusetts communities. In a three-year time frame she worked on 15 transmission lines for this client.

Millenium and ANP Blackstone Natural Gas Lateral Connects, Tennessee Gas Pipeline – MA (Environmental Site Inspector: 2000)
Ms. Bartos was the environmental site inspector for two natural gas pipeline connects in Charlton and Blackstone, Massachusetts. She ensured environmental compliance and provided oversight of contractor during pipeline construction activities, post-construction restoration, and wetland resource crossings under FERC guidelines, and in accordance with the previously obtained state and local permits.

Chesapeake Network Fiber Optic Project, Columbia Transmission Communications Corporation – MD (Sr. Scientist: 1999)
Ms. Bartos facilitated permit approvals at the state and local level for a new fiber optic installation in Montgomery, Howard, Baltimore, Harford, and Cecil Counties, Maryland. Revised and produced Soil Erosion and Sedimentation Control Plans for site specific wetland crossings and general upland BMPs in these counties. She assisted client with other fiber optic construction related tasks prior to final state permit approvals and agency sign-offs in Maryland and Pennsylvania.

Eastern Shore Natural Gas, ’99 Expansion Project – DE and PA (Sr. Scientist: 1998)
Ms. Bartos performed wetland delineation and stream characterization for natural gas pipeline linear project in Chester County, PA and Newcastle County, DE. Additional focus on assisting client in determining the suitability of initial survey route based on pipeline construction techniques required in various environments encountered along proposed corridor.

Charles County Loop Project, Washington Gas Company – MD (Sr. Scientist: 1997)
Ms. Bartos performed wetland and stream surveys along a proposed natural gas pipeline route in Charles and Prince George’s County, Maryland. Responsible for the project Erosion and Sedimentation Control Plan, and for obtaining the *Application for Erosion and Sedimentation Control Permit for Utility*

Construction in Prince George's County. Assisted in Maryland Joint Federal/State Application for non-tidal wetlands, and alternative site analyses.

Portland Natural Gas Transmission System, Consortium of Companies – Troy, VT to Haverhill, MA (Scientist: 1995)
Ms. Bartos delineated wetlands using the three-parameter federal methodology along an existing gas pipeline Right-of-Way for the Portland Natural Gas Transmission System (PNGTS) in Vermont, New Hampshire, and Maine. (130+ miles). Additional work consisted of wetland functional assessments, wildlife and songbird habitat evaluation, stream characterization, and forest cover type analyses. Associated permitting included report preparation for FERC application, and support for Vermont state environmental permitting. Assisted in preparing the Energy Facility Site Evaluation Committee state permit in New Hampshire with regards to PNGTS.

Hazardous Waste

Ms. Bartos formerly has seven years experience working on various construction sites in urban and rural areas and has worked extensively performing construction remediation oversight activities on several large infrastructure projects. She is familiar with the operation of heavy equipment often under chaotic environments or with strict working conditions. She has practical on-the-ground construction experience and has seen extensive dewatering operations and contaminated soil and water management, massive earthworks, and cut and fill activity.

NewPenn Trucking Terminal UST Removals, NewPenn Trucking – MA (Environmental Site Manager: 2000)
Ms. Bartos was the environmental site manager for 4-10,000 gallon UST removals. Encountered contamination during site activities and implemented soil and water cleanup activities under a limited removal action per MCP compliance and in accordance with the guidelines outlined in *the Underground Storage Tank Closure Assessment Manual*. Assisted in coordinating contractor construction activities and performed environmental sampling necessary for site closure.

Suffolk County House of Correction, Well Installation and Site Investigation – Boston, MA (On-Site Supervisor: 1997)
Ms. Bartos was the on-site supervisor and person responsible for installing 14 boring and monitoring wells in the "yard" of an active medium-security prison in Boston for site investigation of a parcel proposed for additional inmate quarters. Following well-installation and soil sampling, performed low-flow water sampling over a period of several weeks.

Logan 2000 Modernization Project, Massport – MA (Supervisor: 1997 – 1998)
Ms. Bartos provided extensive construction remediation oversight for groundwater and soil remediation, hazardous waste management, and environmental compliance during airside and landside construction activities at Logan International Airport (Boston, MA). Under this contract, Ms. Bartos was in a supervisory role involved in environmental compliance for; a) construction of an aircraft fueling system, hydrant water supply system, new terminal walkways installation, parking garage construction, International Terminal E expansion, fuel storage facility; and b) remedial activities for separate phase hydrocarbons (jet fuel) on airside including the installation of product recovery trenches and central treatment facility, multi-phase extraction wells, well-installation, sampling, and monitoring activities for Phase II investigations, soil vapor

extractions, airport wide NPDES permit compliance, UST removals, and underground storage vault demolitions.

Onsite Field Supervisor, Task Engineer – Ms. Bartos ensured design specification of selected remediation projects and environmental compliance was met, coordinated airside construction activities with daily airport and gate operations, staffed field activities, wrote scopes of work and cost estimates, reviewed specifications and environmental reports of subcontractors, data management; and

Field Site Inspector – Ms. Bartos performed environmental site inspections for MCP compliance during construction activities. Also performed chemical soil field screening of contaminated soils, groundwater and dewatering effluent sampling, oversight and sampling of drilling operations, and geotechnical inspection of excavations, oftentimes in active working terminals with moving aircraft or those residing on tarmack. Provided mandatory escort services for travel along perimeter road and across airport runways for those contractors without the required Class 2A or 2B licenses, in additional to mandatory supervision in areas of International Terminal E. Performed continual inspections of construction activity subject to stringent airport standards (i.e. dust levels and Foreign Object Detection) and communicated daily with airport operations personnel. Provided oversight and performed necessary activities for site closure for several UST removals, including a 50,000 and 100,000 gallon concrete vault demolition.

Permitting and Report Writing per MA MCP Compliance – Phase IV Remedy Implementation Plan, Immediate Response Action (IRA) Plan, IRA Completion Report, Response Action Outcome Statement, Release Abatement Measure (RAM) Plans, RAM Status reports, NPDES Permit Applications, NPDES Quarterly Analytical Reports.

William J. Boer, PP, AICP

Environmental Services Project Manager

EDUCATION
B.S., Environmental Planning, Plymouth State University, New Hampshire 2003

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS
American Institute of Certified Planners, (#021636), since 2009
Professional Planner, New Jersey, (License #33LI00599400), since 2007

PROFESSIONAL EXPERIENCE

***NextEra Energy Resources, LLC*, Environmental Services Project Manager (2018-Present)**

- Environmental Services Project Manager for renewable energy projects in the states of New York and New Jersey.
- Responsible for preparation of all applications and supporting environmental studies submitted under Article 10 of the Public Service Law and the State Environmental Quality Review Act including the following renewable energy projects:
    - Calverton Solar Energy Center – 22.9 MW solar project
    - East Point Energy Center – 50 MW solar project
    - High River Energy Center – 90 MW solar project
    - Watkins Glen Solar Energy Center – 50 MW solar project
    - Excelsior Energy Center – 280 MW solar and 20 MW energy storage project
    - Trelina Solar Energy Center – 80 MW solar project
- Manage all environmental development activities and permitting issues, energy facility siting, and report analyses/conclusions. Participate in agency, stakeholder and public meetings.

***Tetra Tech*, Supervising Project Manager (2018)**

- Responsible for providing project management on renewable energy projects located throughout the states of New York and New Jersey. Perform writing and coordination of required technical reports and studies, oversee direction of project information/data between clients and Tetra Tech technical directors, and provide general client support to advance projects through regulatory review processes and into construction.

***TRC Environmental Corporation*, Office Practice Leader/Environmental Planner (2013-2018)**

- Responsible for managing a staff of 17 employees in three separate offices (Lyndhurst, NJ; Ithaca, NY; Plymouth Meeting, PA) and providing project management on complex projects in varied fields such as electric generation facilities, infrastructure and pipelines.
- Liaison with federal and state agencies and local government officials for application review processes.
- Extensive experience with the New Jersey Department of Environmental Protection – Division of Land Use Regulation, New Jersey Municipal Land Use Law, New York State Board on Electric Generation Siting and the Environment (Article 10), New York State Department of Environmental Conservation, New York State Environmental Quality Review Act (SEQRA) and the United States Army Corps of Engineers.
- Preparation and submittal of jurisdictional permit applications to federal and state agencies and site plan/special permit applications to local planning/zoning boards for renewable energy projects.
- Review of environmental regulations in order to determine project compliance.

***French & Parrello Associates, P.A.*, Senior Staff Planner (2006-2013)**

- Member of the Land Development and Transportation departments and responsible for project planning from conceptual layout through project design and agency/permit approval for private and public sector clients.

Ryan Callahan, INCE

Senior Engineer

EDUCATION

B.S. Civil Engineering, Northeastern University

PROFESSIONAL MEMBERSHIP

Institute of Noise Control Engineering (INCE)

Mr. Callahan is an acoustic engineer with 11 years of experience as a noise consultant, in acoustic modeling, and sound level monitoring. Mr. Callahan is an expert in the application of the Cadna-A acoustic model (ISO 9613.2) to wind farms, construction noise, industrial facilities, commercial developments, and power plants.

Mr. Callahan designs and implements field monitoring programs for permitting purposes and for demonstrating compliance with local and state noise regulations. He also has extensive experience with the TNM (Traffic Noise Model) for federal highway development projects. He has successfully completed sound monitoring and modeling for over 200 different projects ranging from small commercial developments to a large 420 MW wind farm, and has presented noise studies before town and county planning boards.

SELECTED PROFESSIONAL EXPERIENCE

♦ *Apex Clean Energy, Galloo Island Wind, New York.* Mr. Callahan performed acoustic modeling in support of the Galloo Island Wind Project. The objective was the provide the State with information about potential sound impacts from a proposed collector substation as part of the Article 7 process.

♦ *Jordan Creek Wind Farm – Benton County, IN.* Performed a sound modeling analysis of a proposed 300 MW wind project in Benton and Warren counties of Indiana to evaluate potential impacts from the project on the surrounding community, and evaluated the project with respect to local sound level limits.

♦ *Ball Hill Wind Project – Villenova and Hanover, NY.* Performed a sound modeling analysis of a proposed 38 turbine wind project in New York State as part of the SEQRA process, and in support of a Supplemental Environmental Impact Statement.

♦ *Langdon Wind Project – Cavalier County, ND.* Performed a sound modeling analysis of a proposed repowering wind project in North Dakota in order to demonstrate the Project would comply with the North Dakota Administrative Code with respect to sound.

♦ *Heartland Divide Wind Energy Center – Audubon County, IA.* Performed a sound modeling analysis of a proposed 104 MW wind project in Iowa in order to evaluate potential impacts from the Project on the surrounding community.

♦ *National Grid – Lowell Area Gas Modernization Project.* Mr. Callahan performed acoustic modeling and monitoring in support of the National Grid Tewksbury Gas Transmission Project. The objective was to model noise impacts resulting from horizontal directional drilling and other construction activities required for the Project.

♦ *Medical Area Total Energy Plant (MATEP), Boston, MA*. Performed compliance sound level measurement programs for the plant following the installation of two combustion turbines, gas compressors, and cooling towers. These programs included background sound level measurements, compliance operational sound level measurements, and evaluations of noise mitigation.

♦ *Veolia Kendall Station, Cambridge, MA*. Managed a sound level measurement program for the natural gas power generation facility in support of a new air-cooled condenser unit (ACHX) with multiple fans, and fin-fan coolers on the station rooftop. Results were presented to demonstrate compliance with the City of Cambridge sound level limits.

♦ *MassCEC CAD Monitoring, New Bedford/Fairhaven, Massachusetts.* Prior to joining Epsilon, Mr. Callahan maintained a continuous unattended sound monitoring station at a residential property near the dredging and confined-aquatic-disposal (CAD) cell operations along the Fairhaven/New Bedford waterfront over a two-month period. The objective was to provide MassCEC twice-weekly reports of measured sound levels (tables and graphs) to determine compliance with the MassDEP Noise Policy.

♦ *Boston Redevelopment Authority Article 80 Noise Studies, Boston, Massachusetts.* Prior to joining Epsilon,Mr. Callahan has performed noise studies for 15 residential and commercial developments in the City of Boston as part the Boston Redevelopment Authority Article 80 regulations.

The noise studies require both noise monitoring and modeling analyses to demonstrate compliance with the City of Boston noise regulations and MassDEP Noise Policy.

♦ *Devens Enterprise Commision, Devens, Massachusetts.* Prior to joining Epsilon, as the Sound Consultant to the Devens Enterprise Commission (DEC), Tech Environmental provided technical assistance in resolving noise complaints from residences in Harvard, MA that are adjacent to the Evergreen Solar (EGS) manufacturing plant in Devens, MA. Sound sources at the plant exceeded the Devens Industrial Performance Standards for Noise at site property boundaries, and at times, at the nearest residences. Mr. Callahan reviewed previous documentation, continous monitoring data reports and noise protocol prepared by EGS' sound consultant and worked closely with the DEC staff, their previous sound consultant and EGS' sound consultant to develop a resolution to reduce sound levels from EGS cooling towers and VOC scrubber system.

♦ *Aggregate Industries, Littleton, Massachusetts.* Aggregate Industries owns and operates a nonmetallic mineral processing/crushing plant in Littleton, Massachusetts. Prior to joining Epsilon, Mr. Callahan performed acoustic modeling to assess the reconfiguration and upgrade of their existing crushing plant to improve overall crushing operations and to obtain access to future reserves of rock deposit onsite. The resulting analysis led to a number of sound mitigation measures that included installing earth berms and sound walls and rearranging stockpiles to reduce noise from the loudest sound sources. Mr. Callahan monitored the sound levels during post-mitigation operation in order to demonstrate that the relocated plant met the MassDEP Noise Policy and Littleton Noise Bylaw.

♦ *Noise Studies for Wind Energy Projects***.** Prior to joining Epsilon, Mr. Callahan has performed community sound level monitoring and acoustic modeling studies for a wide range of wind projects from a single 1-MW installation at Wayne School District in Ontario, NY to the 130-turbine, 420-MW offshore Cape Wind Project in Nantucket Sound. He has provided background sound monitoring, acoustic modeling, shadow flicker analysis, on over 85 wind energy projects in 15 States: Michigan, Indiana, Ohio, Minnesota, South Dakota, Oklahoma, Texas, Virginia, Maryland, Delaware, Pennsylvania, New York, Maine, Rhode Island, and Massachusetts.

♦ *General Electric Transportation, Schenectady, New York*. Prior to joining Epsilon, Mr. Callahan completed both noise monitoring and modeling for a new battery production plant in Schenectady, New York to assess the potential impacts on a nearby residential neighborhood as part of a New York State Department of Environmental Conservation (NYSDEC) application.

♦ *Noise and Underwater Sound Studies for the Calais LNG Terminal.* For the 1 billion cf/day LNG terminal in Calais, Maine. Prior to joining Epsilon, Mr. Callahan performed a comprehensive noise and underwater sound impact study of the facility's construction and operations, including LNG carrier transit from the Bay of Fundy through Passamaquoddy Bay and up the St. Croix River. Predicted noise levels were compared to Maine DEP and FERC limits. Underwater sound levels were compared to NMFS criteria and mitigation measures were proposed. Text was written for the federal EIS.

Joe F. Cartaya

Early Stage Development Project Manager

EDUCATION

B.A., Sustainability and the Environment, Florida International University, Florida 2020

PROFESSIONAL EXPERIENCE

***NextEra Energy Resources, LLC*, Early Stage Development Project Manager (2019)**

- Provide engineering support and daily coordination of Engineering, Estimating, Supply Chain, and Construction resources through the pre-construction activities for projects in the Development phase:
  - Quinebaug Solar Energy Center – 50 MW solar project
  - East Point Energy Center – 50 MW solar project
  - High River Energy Center – 90 MW solar project
  - Watkins Glen Solar Energy Center – 50 MW solar project
  - Excelsior Energy Center – 280 MW solar and 20 MWh energy storage project
  - Trelina Solar Energy Center – 80 MW solar project
  - Northside Solar Energy Center – 180 MW solar and 80 MWh energy storage project
  - Cortland Solar Energy Center – 50 MW solar project
  - Garnet Solar Energy Center – 200 MW solar and 80 MWh energy storage project
- Coordinate the project transition from preliminary design to execution once Management approval has been achieved.

***NextEra Energy Resources, LLC,* Project Controls Specialist (2015-2018)**

- Responsible for engineering, procurement, and construction oversight activities involved in execution, coordination, and control of technical, financial and contractual commitments during power plant construction.
- Monitor, track and analyze actual expenditures to ensure accurate capital postings for monthly reporting and variance explanations.
- Monitor, track and analyze project schedules to prepare and present corrective action plans and mitigation strategies based on a critical path analysis.
- Preform risk assessment and financial analysis to ensure accurate project forecasting.
- Understand all major contracts and ensure details are incorporated into the project forecast and cash flows.
- Prepare executive level reports and ensure write ups are accurate, complete, clear, and concise.

***Pryde Group Americas*, Division Manager (2010-2015)**

- Responsible for end-to-end business unit planning, forecasting and strategy development from market initiation to multi-channel campaign design and customer lifecycle sales and marketing programs.
- Developed a strategic brand and business-line vision, partnered with finance, logistics and global brand teams to harmonize efforts across an international organization.
- Created communications strategy, collateral/promotional design and end-to-end execution for highly successful lead-generation and business development events including Surf Expo Outdoor Retailer and other key trade shows.

***T-Mobile USA*, Corporate Trainer (2006-2009)**

- Responsible for coordinating and facilitating all corporate and retail trainings conducted in the South Florida Market. Trainings included new product launch, career development, employee onboarding, and sales strategy.

ANDREW K. DION, PE

EDUCATION

BS, Electrical Engineering, Clarkson University, 2007

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Professional Engineer, New York (#093958), 2014

AREAS OF EXPERTISE

Mr. Andrew K. Dion, P.E., has technical experience in the following general areas:

- Substation Design
- Engineering Management
- Protection and Control Design
- EPC Project Management
- Project Estimating
- Project Engineering
- Preliminary & Conceptual Design
- Drafting Services
- Equipment Specifications
- Construction Specifications
- Commissioning Engineer

REPRESENTATIVE EXPERIENCE

Mr. Dion has over eight years of experience and progressive responsibility in electrical engineering consulting. His qualifications include extensive field investigation, design, project management and engineering. Mr. Dion's background includes service to public and private-sector clientele including NGRID, Central Hudson, GlaxoSmithKline, PSEG, PPL and FirstEnergy. He currently serves in the capacity of Engineering Supervisor with project management, station/protection engineering, commission engineering and design responsibility.

PSEG-LI (Roslyn Breaker Replacement) (Principal Engineer: 2015)

Mr. Dion served as the Principal Engineer on the PSEG-LI Roslyn Breaker Replacement project. His duties included overall review and acceptance of substation electrical package. In addition Mr. Dion served as the single point of contact for the client and ensured the project was kept on schedule and included all applicable industry and client standards.

Exelon Power (RE POWER^{TM} Playbook, Cromby Station) (Utility Substation Engineer: 2014)

Mr. Dion served as the Utility Substation Engineer on the Cromby RE POWER^{TM} Playbook. His duties included reviewing the protection and controls, and communications connections for the adjacent utility substation that are located in the power block. Mr. Dion was tasked with developing and costing scopes of work for the relocation of these lines.

FirstEnergy (FirstEnergy TREP Program 2014) (Program Manager: 2014)

Mr. Dion served as Program Manager on the FirstEnergy TREP program with responsibility for the overall technical responsibility of all TREP station projects. The 2014 TREP program consisted of seven station with upgrades including transformer and breaker replacements, protection and control relay upgrades and

other various station upgrades. His duties included the coordination of design between all disciplines on the projects, ensure quality and customer specifications are followed and projects are kept on schedule and budget. Mr. Dion was responsible for cost estimation of the project, resource allocation and customer relations.

Public Service Electric & Gas (PSEG Ward Ave Station 230kV Station Upgrades) (Project Engineer: 2012-2014)

Mr. Dion served as Project Engineer with responsibility for the complete design of a new breaker and line position at Ward Ave Station. His duties included the coordination of design between all disciplines on the project. Mr. Dion was responsible for cost estimation of the project, resource allocation, technical clarifications and customer relations.

GlaxoSmithKline Pharmaceuticals, Building 36 Transformer Relay Replacement, King of Prussia, PA, (Lead Electrical Engineer: 2013)

Mr. Dion served as Lead Electrical Engineer with responsibility for the complete electrical design of the transformer relay replacement project. His duties included the complete demolition of the existing transformer relaying, developed electrical system arrangement drawings for new SEL-487E transformer relays, performed circuit design calculations and relay & protection design systems.

Public Service Electric & Gas (PSEG Bergen Station 230kV GIS Installation) (Lead Commissioning Engineer: 2012-2014)

Mr. Dion served as the Lead Commissioning Engineer. He was responsible for the interface with the onsite engineering firm, onsite electrical contractor and onsite PSE&G employees to install and commission the largest GIS substation in the USA. Bergen 230kV GIS included thirty-one (31) three pole GIS breakers and eighteen (18) line positions. Mr. Dion worked with PSE&G relay technicians to make design changes to circuit breaker control circuits, alarm circuits, transformer circuits, line relay circuits and ESOC RTU circuits to ensure all designs would function properly and meet PSE&G standards. He also performed and oversaw functional and circuit checkout on control, CT and PT circuits. He attended the final walkthrough and performed load checks when the equipment was placed into service. Mr. Dion was also responsible for assisting the PSE&G relay technicians in updating the final documentation at the close of the project to submit to PSE&G engineering.

Public Service Electric & Gas (PSEG), Cedar Grove Switching Station Two Line Single Breaker to Eight Bay Breaker and a Half Station Upgrade Capacitor Bank, Live Tank Breaker, Transformer and Ring Bus Addition (Lead Commissioning Engineer: 2011-2012)

Mr. Dion served as the Lead Commissioning Engineer. He was responsible for the interface with the onsite engineering firm, onsite electrical contractor and onsite PSE&G employees in order to upgrade and add various equipment. Mr. Dion worked with PSE&G relay technicians to make design changes to circuit breaker control circuits, alarm circuits, transformer circuits, line relay circuits and ESOC RTU circuits to ensure all designs would function properly and meet PSE&G standards. He also performed and oversaw functional and circuit checkout on control, CT and PT circuits. He attended the final walkthrough and performed load checks when the equipment was placed into service. Mr. Dion was also responsible for assisting the PSE&G relay technicians in updating the final documentation at the close of the project to submit to PSE&G engineering.

GlaxoSmithKline Pharmaceuticals, Building 14 Switchyard Rebuild King of Prussia, PA, (Lead Electrical Engineer: 2011)

Mr. Dion served as Lead Electrical Engineer with responsibility for the complete electrical design rebuild of Building 14 switchyard. Along with coordinating design efforts from various team members, Mr. Dion was responsible for outage sequence plans, construction cutovers and station reliability study.

Public Service Electric & Gas (PSEG), New Milford Line Relaying Replacement (Lead Commissioning Engineer: 2011)

Mr. Dion served as the Lead Commissioning Engineer. He was responsible for the interface with the onsite engineering firm, onsite electrical contractor and onsite PSE&G employees in order to upgrade and add various equipment. Mr. Dion worked with PSE&G relay technicians to make design changes to circuit breaker control circuits, alarm circuits, transformer circuits, line relay circuits and ESOC RTU circuits to ensure all designs would function properly and meet PSE&G standards. He also performed and oversaw functional and circuit checkout on control, CT and PT circuits. He attended the final walkthrough and performed load checks when the equipment was placed into service. Mr. Dion was also responsible for assisting the PSE&G relay technicians in updating the final documentation at the close of the project to submit to PSE&G engineering.

National Grid, Ridge Road Circuit Switcher Installation- Buffalo, NY (Engineer: 2008 - 2009)

Mr. Dion serves as an Engineer responsible for the electrical design of a new 115kV, 1200A Circuit Switcher at a transmission station including creating design drawings, grounding, conduit, physical connections and equipment specifications.

National Grid, Andover Capacitor Bank Addition- Andover, NY (Engineer: 2009)

Mr. Dion serves as an Engineer responsible for the electrical design adding a 15MVAR, 115kV Capacitor Bank at a 115/34.5kV transmission station. The design included adding 115kV, 3000A Circuit Breaker, 2000A group operated switch and surge arresters. He coordinated the new design, conduits, grounding, physical connections, lightning calculations, wire sizing, panel arrangements, AC and DC panel upgrades and ordered necessary equipment.

PATRICK J. FENNELL, PE, BCEE

EDUCATION

M.E., Environmental Engineering, University of Hartford, 1997

M.S., Civil Engineering, University of Illinois at Urbana, 1977

B.S., Civil Engineering, University of Missouri at Columbia, 1975

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Licensed Professional Engineer, Connecticut (#18763) 1995

Board Certified Environmental Engineer, American Academy of Environmental Engineers, 2008.

AREAS OF EXPERTISE

Patrick J. Fennell, PE. BCEE has demonstrated engineering and project management expertise in:

- Air Pollution Engineering and Permitting
- Oil and Gas Industry Permitting
- Power Plant Permitting
- Liquefied Natural Gas Terminal and Seaport Permitting
- Renewable Energy Permitting
- Surface Mine Permitting
- Odor Assessment and Environmental Compliance

REPRESENTATIVE EXPERIENCE

Mr. Fennell has 41 years of experience and progressive responsibility in Environmental, Civil, and Nuclear Engineering. He currently works in TRC's Planning, Permitting, and Licensing group, and supports Energy and Environmental Services clients on a range of projects.

Air Pollution Engineering and Permitting - Power Plants (TRC Environmental Corporation, 2000 - Present)

Mr. Fennell conducts engineering evaluations and prepares permit applications for power plants, including simple-cycle and combined-cycle combustion turbines, boilers, reciprocating engines, and integrated gasification combined-cycle facilities. He prepares stationary and mobile source emissions inventories for single-source and multi-source modeling. Mr. Fennell performs air pollution control technology assessments and economic analyses for BACT, LAER, BART, MACT, etc. He helps clients respond to problems that arise during startup and routine operation. Typical project experience includes the following:

> Long Island Fast Track Project - The project involved preparing the initial air permit applications for three simple-cycle GE LM6000 combustion turbine facilities (Edgewood, Equus, and Pine Lawn) in Long Island, New York. Also prepare submittals for subsequent power up-rates and compliance activities.
>
> Shoreham Solar Commons - The Project involved preparing the Environmental Assessment for a 24.9 MW solar photovoltaic facility in Brookhaven, New York.

Kleen Energy Systems - The project involved preparation of the NSR air permit application for a 620 MW combined-cycle dual fuel-fired power plant in Middletown, Connecticut.

FirstLight Power Resources - The project involved preparation of the NSR air permit application for the Waterbury Generation Project, a dual-fuel General Electric LMS-100 gas turbine generator in Waterbury, Connecticut.

Connecticut Municipal Electric Energy Cooperative - The project involved preparation of the NSR air permit application for the Alfred L. Pierce Generating Station Repowering Project, a dual-fuel simple-cycle General Electric 7EA gas turbine generator in Wallingford, Connecticut.

Connecticut Municipal Electric Energy Cooperative - The project involved preparation of applications to construct and operate twenty 2.5 MW diesel engines located at 10 sites in 5 Connecticut cities or towns plus another site on Fishers Island, New York.

Beacon Falls Energy Park - The project involved preparation of the air permit application to construct a 63.3 MW fuel cell park in Beacon Falls, Connecticut.

LS Power Wallingford Energy - The project involved preparation of the NSR air permit application for the addition of two GE LM6000 simple-cycle natural gas-fired combustion turbines at a power plant in Wallingford, Connecticut.

Lawrence Energy Center - The project involved preparation of the Permit to Install/Prevention of Significant Deterioration air permit application and corresponding sections of the Ohio Power Siting Board application for a combined-cycle natural gas-fired power plant in Lawrence County, Ohio.

Fremont Energy Center - The project involved preparation of the Permit to Install/Prevention of Significant Deterioration air permit application and corresponding sections of the Ohio Power Siting Board application for a combined-cycle natural gas-fired power plant in Fremont, Ohio.

CPV Warren - The project involved preparation of the PSD air permit application for a 580 MW combined-cycle power plant in Front Royal, Virginia.

CPV Fluvanna County - The project involved preparation of the PSD air permit application for a 520 MW combined-cycle power plant in Fluvanna County, Virginia.

CPV Valley Energy Center - The project involved preparation of the PSD air permit application for a 680 MW combined-cycle power plant in Middletown, New York.

Air Pollution Engineering and Permitting - Oil and Gas Industry (TRC Environmental Corporation, 2000 - Present)

Mr. Fennell prepares air permit applications and FERC environmental reports for oil and gas industry facilities, including natural gas compressor stations, storage facilities, and pipelines. He prepares emission inventories for facility construction and operation. Mr. Fennell prepares third-party environmental analyses and environmental impact statements under contract to FERC. He has also prepared general conformity submittals. Typical project experience includes the following:

Kemmerer Mine Relocation - The project involved the relocation of a natural gas pipeline in Wyoming to accommodate the ongoing operation of the Kemmerer Mine. Prepared the air emission calculations and the air quality section for the project's environmental assessment for the Bureau of Land Management.

Antelope Creek Oil and Gas Field - The project involved installation and operation of over 500 natural gas and oil wells in Utah. Prepared the air emission calculations and the air quality section for the project's environmental assessment for the Bureau of Indian Affairs.

Dominion Transmission New Market - The project involved construction and operation of two new natural gas compressor stations and modifications to three existing compressor stations and one metering station in New York State. Performed third-party review of resource report submittals and prepared the air quality-related portions of the environmental assessment for the FERC.

Dominion Transmission Allegheny Storage - The project involved the construction of new natural gas compressor stations in Maryland and Ohio, expansion of natural gas compressor stations in West Virginia and Pennsylvania, and construction of pipelines in these states. Prepared the pipeline construction calculations and made extensive revisions to the FERC Resource Report 9 (Air Quality) submittal prepared by another organization. Also prepared responses to numerous public comments submitted to the FERC concerning air quality.

Midcontinent Express Pipeline - The project involved construction and operation of an approximately 500 mile pipeline from Oklahoma to Alabama, including four new compressor stations, one booster station, and numerous meter and regulating stations. Prepared air permit applications in Texas, Louisiana, and Alabama, and the FERC Resource Report 9 (Air Quality).

Sawgrass Storage - The project involved a depleted natural gas reservoir located in Louisiana. Prepared the air permit application for the associated natural gas handling and compression facility.

Florida Gas Transmission Company Phase VIII Expansion - The project involved the construction and acquisition of approximately 500 miles of natural gas pipeline in Alabama and Florida. Prepared detailed air emissions calculations for the project construction for the FERC Resource Report 9 (Air Quality) submittal.

Ruston Compressor Replacement - The project involved replacement of natural gas compressors and ancillary equipment at the Ruston Compressor Station in Louisiana. Prepared the FERC Resource Report 9 (Air Quality) submittal.

Kosciusko Compressor Station - The project involved the replacement of existing natural gas compressors and ancillary equipment at the Kosciusko Compressor Station in Mississippi. Prepared the FERC Resource Report 9 (Air Quality) submittal.

Natural Gas Pipeline Company of America Compressor Station 201 - The project involved replacement of existing natural gas compressors and ancillary equipment, and the installation of additional compressors at the NGLP CS 201 in Illinois. Prepared the FERC Resource Report 9 (Air Quality) submittal.

Creole Trail Expansion - The project involved modifying the existing Creole Trail pipeline system to accommodate bi-directional gas flow. This entailed construction of a new compressor station and pipeline. Prepared the FERC Resource Report 9 (Air Quality) submittal.

Daleville Compressor Station - The project involved replacement of existing natural gas compressors and ancillary equipment at the Daleville Compressor Station in Pennsylvania. Prepared the Pennsylvania air plan approval and operating permit applications and the FERC Resource Report 9 (Air Quality) submittal.

Eastern Shore Natural Gas System Reliability Project - The project involved installation of a natural gas compressor and ancillary equipment at the Bridgeville Compressor Station and installation of 10 miles of pipeline Delaware. Prepared the Delaware synthetic minor operating permit application and the FERC Resource Report 9 (Air Quality) submittal.

Eastern Shore Natural Gas White Oak Mainline Expansion Project - The project involved installation of a natural gas compressor and ancillary equipment at the Delaware City Compressor Station and installation of 7 miles of pipeline in Pennsylvania. Prepared the Delaware Synthetic Minor Operating Permit application and the FERC Resource Report 9 (Air Quality) submittal.

Eastern Shore Natural Gas 2017 Expansion Project - The project involved installation of a natural gas compressor and ancillary equipment at the Daleville compressor station in Pennsylvania and installation of 32 miles of pipeline in Pennsylvania, Maryland, and Delaware. Prepared the Pennsylvania air plan approval application, and the FERC Resource Report 9 (Air Quality) submittal, and the applicant-prepared environmental assessment.

Air Pollution Engineering and Permitting - Liquefied Natural Gas Terminals and Seaports (TRC Environmental Corporation, 2000 - Present)

Mr. Fennell prepares air permit applications and FERC environmental reports for liquefied natural gas terminals. He has prepared third-party environmental analyses and environmental impact statements under contract to FERC. He has also prepared general conformity submittals. Mr. Fennell prepares air emissions inventories for seaport facilities on the Gulf of Mexico and Pacific Coasts. The inventories included emissions from stationary facilities, onshore mobile sources, construction, and shipping and tow vessels. Typical project experience includes the following:

Jordan Cove Energy Project - The project involved preparing detailed calculations of the construction air emissions for natural gas liquefaction and export facilities in Oregon.

Sabine Pass LNG Project - The project involved construction of a LNG terminal in Cameron Parish, Louisiana. Revised construction calculations performed by another organization to avoid general conformity review.

Driftwood LNG Liquefaction Project - The project involves construction and operation of an LNG production and export terminal, south of Lake Charles. Provided the third-party review of FERC Resource Report 9 submittals (Air Quality) for FERC.

Freeport LNG Liquefaction Project - The project involves construction and operation of natural gas liquefaction and export facilities at and near an existing LNG terminal in Freeport, Texas. Provided the third-party review of FERC Resource Report 9 submittals (Air Quality) for FERC jurisdictional and non-jurisdictional facilities.

Commonwealth LNG - The project involves construction and operation of an LNG liquefaction facility and a ship berth on Calcasieu Ship Channel near Johnson Bayou in Cameron Parish, Louisiana. Currently preparing the FERC Resource Report 9 (Air Quality) submittal.

Sabine Pass Liquefaction Expansion / Cheniere Creole Trail Pipeline Expansion - The project involved expansion of natural gas liquefaction and export facilities and pipeline facilities in Louisiana. Prepared the FERC Resource Report 9 (Air Quality) submittal.

Total Peaking Services - The project involved installation of new compressors, emergency engines, and vaporizers at a liquefied natural gas terminal in Milford, Connecticut. Prepared the FERC Resource Report 9 (Air Quality) submittal.

Air Pollution Engineering and Permitting - Renewable Energy (TRC Environmental Corporation, 2000 - Present)

Mr. Fennell prepared air quality impacts evaluations for renewable energy facilties. Typical project experience includes the following:

Eight Point Wind Energy Center The project involved construction of and operation of a 103.4 megawatts (MW) with 32 wind turbines in Steuben County, New York. Prepared the air quality exhibit for the Article 10 submittal to the New York State by the Board on Electric Generation Siting and the Environment (Siting Board).

Shoreham Solar Commons The project involved construction of and operation of a 24.9 MW solar photovoltaic facility in the Town of Brookhaven, New York. Prepared the air quality analyses and narrative for the Environmental Analysis.

Air Pollution Engineering and Permitting - Surface Mines (TRC Environmental Corporation, 2000 - Present)

Mr. Fennell prepared air permit applications and emissions inventories for surface mines. These included the tailpipe emissions from stationary and mobile mining equipment, blasting emissions, and fugitive dust emissions from mining operations and wind erosion. Typical project experience includes the following:

Great Northern Project Development South Heart Project - The project involved preparing the air permits for a lignite mine and a 600 MW circulating fluidized bed mine-mouth power plant in Stark County, North Dakota.

Odor Assessment and Environmental Compliance (TRC Environmental Corporation, 2000 - Present)

Mr. Fennell provides environmental compliance services to commercial, industrial and academic facilities. Typical project experience includes the following:

Due Diligence Assessment of Power Plant Acquisition (New York State) - Performed the due-diligence assessment of air quality-related concerns and liabilities associated with the potential acquisition of a 1,000 MW combined-cycle combustion turbine power plant in New York State.

Feasibility Assessments of Power Plant Permit Consolidation (Northern California) - Performed the feasibility assessments of the potential consolidation of the NSR and Title V operating permits for a reciprocating internal combustion engine power plant in the North Coast Air Quality Management District and a combustion turbine power plant in the Colusa County Air Pollution Control District.

Orange Grove Energy Center - Prepared routine and non-routine the air quality compliance submittals to the San Diego Air Pollution Control District, California Energy Commission, California Air Resources Board, and U.S. EPA for two simple-cycle LM6000 combustion turbines.

Waste Transfer Station Odor Study - Performed a third-party review for the City of Waterbury, Connecticut of the potential odor impacts of a proposed municipal solid waste transfer station. Testified at Planning and Zoning Board Hearing.

Asphalt Plant Odor Study - Performed a third-party assessment of odor impacts of an asphalt plant pursuant to a consent order with the Connecticut Department of Environmental Protection. Identified causes of potential nuisance odors and mitigation measures.

Wastewater Treatment Plant Odor Study - Performed an odor assessment of a Connecticut municipal wastewater treatment plant and sewage sludge incineration operation.

Environmental Laboratory Air Permitting and Enforcement Action Response - Assisted a Massachusetts environmental laboratory obtain an air permit for its operations and respond to an enforcement action by the Massachusetts Department of Environmental Protection and the Office of the Attorney General.

Odor Hotline - Staff an odor complaint hotline for a Connecticut municipal solid waste resource recovery facility. On a rotating basis, assume on-call responsibility for responding to odor complaint calls to a 24-hour hour hotline. Investigate complaints and report on findings.

Emergency Plans - Prepared spill prevention control and countermeasure plans, stormwater plans, and wastewater general permit applications for power plants, hospitals, office buildings, and industrial facilities.

ABB, Inc., Corporate Environmental Health and Safety - Windsor, CT (Senior Environmental Engineer: 1994 - 2000)

Mr. Fennell developed and implemented regulatory compliance programs and procedures, prepared permit applications, conducted inspections and audits, developed emergency plans, performed regulatory reviews, and conducted training for the ABB Windsor, Connecticut facility, a 600-acre site with nuclear and fossil energy engineering, research and development, construction, maintenance, and remediation activities. Also served as Program Manager for the successful ISO 14000 certification of three ABB facilities.

ABB Inc./Combustion Engineering, Nuclear Safety and Nuclear Licensing - Windsor, CT (Nuclear Engineer: 1977 - 1994)

Mr. Fennell held a series of positions from Staff Engineer to Principal Nuclear Engineer. His responsibilities included performing seismic and structural analyses and accident simulations for nuclear power plants, providing project management and regulatory compliance support for the decommissioning of a nuclear reactor fuel manufacturing facility, and performing compliance and licensing functions for an operating nuclear fuel manufacturing facility.

SPECIALIZED TRAINING

- California Climate Action Registry Green House Gas Verifier, 2007
- ABB, Inc. Courses in Environmental Management Systems, 1999 - 2000
- OSHA 40-Hour HAZWOPER Course, 1996
- DOT Hazardous Materials Transportation Courses, 1996
- Arthur D. Little Institute, Environmental Auditing Course, 1995

PROFESSIONAL AFFILIATIONS

Air and Waste Management Association

American Academy of Environmental Engineers - Board Certified Environmental Engineer

TEACHING AND ADVISORY

- Associate Adjunct Professor, College of Engineering, Technology, and Architecture, University of Hartford, 1998 to the present
- Industrial Advisory Committee, Department of Civil, Environmental, and Biomedical Engineering, University of Hartford, 2001 to the present.

KIRSTEN E. JOHNSON

EDUCATION

M.S. (ABD), Biology, Indiana University of Pennsylvania, 2019

B.S., Fisheries & Wildlife, Michigan State University, 2015

AREAS OF EXPERTISE

Ms. Kirsten E. Johnson has program management and/or technical experience in the following general areas:

- Avian Ecology, Habitat Management, and Survey Methods
- Wetland Delineation
- Invasive Species Monitoring and Management
- Pollinator Habitat Planning
- Environmental Impact Assessment
- Bird and Bat Conservation Strategy Developmfent
- Endangered Species Act (ESA)
- National Environmental Policy Act (NEPA)
- Wind Energy Guidance (WEG) and Eagle Conservation Plan Guidance (ECPG)

REPRESENTATIVE EXPERIENCE

Ms. Johnson has over 7 years of experience in coordinating and conducting a wide range of ecological surveys and project management. She holds a Bachelor's degree in Fisheries and Wildlife from Michigan State University and a Master of Science (ABD) in Biology from the Indiana University of Pennsylvania. Prior to consulting she held positions with the Cornell Lab of Ornithology (Ithaca, NY), Indiana University of Pennsylvania Research Institute (Indiana, PA) and Michigan Department of Natural Resources (Lansing, MI). Her qualifications include extensive hands-on planning and implementation of breeding bird surveys, vegetation monitoring, and wetlands delineation; data management; and results reporting. As a consultant, Ms. Johnson has provided regulatory compliance support to private-sector clientele through conservation strategy development, critical issues analyses, Tier 1 and 2 site assessments, and Tier 3 ecological surveys. She currently serves as an Environmental Scientist within the Planning, Permitting and Licensing Group.

Consulting Experience

Confidential Client, Solar Facility Development – New York (Technical Support: 2019)

Prepared multiple Critical Issue Analyses reports to identify permitting and environmental constraints associated with facility development.

Confidential Client, Solar Facility Development, Article 10 Projects – New York (Environmental Scientist/Technical Support: 2019)

Conducted Grassland Breeding Bird studies on two utility-scale proposed solar facilities in accordance with requirements for Article 10 Permitting. Supported preparation of exhibits pursuant to Article 10 Filing through data analysis and reporting.

Confidential Client, Solar Facility Development, Article 10 Projects – New York (Environmental Scientist/Technical Support: 2019)

Conducted Grassland Breeding Bird studies on two utility-scale proposed solar facilities in accordance with requirements for Article 10 Permitting. Supported preparation of exhibits pursuant to Article 10 Filing through data analysis and reporting

Confidential Client, Solar Facility Development – Michigan (Project Manager: 2018-2019)

Served as Project Manager of ecological tasks for numerous projects in varying stages of development. Project tasks included determination of need for surveys for regulatory compliance and permitting. Completed Critical Issues Analyses and provided overview of surveys likely to be required. Coordinated desktop wetlands mapping and planned field delineation efforts. Conducted agency consultation for RTE species. Developed pollinator habitat planting guide for implementation on solar energy facilities post-construction. Ms. Johnson served as Project lead for proposal and budget development, budget tracking, and preparation of all deliverables.

Liberty Power, Wind Farm Expansion – Pennsylvania (Project Ecologist: 2018-2019)

Served as project support in development of a Bird and Bat Conservation Strategy, Black Bear and Deer Impact studies, wetland field delineations, and tier 1 and 2 site assessments. Surveys were conducted on large-scale wind farm expansion and development projects (80-100 MW). Ms. Johnson served as project lead for completing surveys and reports, including working with sub—contractors to ensure deliverables met quality standards and adhered to proposed deadlines, preparing consultation communication for state agencies regarding RTE species and habitats, and proposal development and budget tracking for several project tasks.

Confidential Client, Proposed Wind Farm Development – Pennsylvania (Project Ecologist: 2018-2019)

Conducted surveys, performed data analysis and compiled report to determine eagle and raptor use of proposed wind energy facility. Served as project lead for providing monthly updates to client and finalizing reports.

Confidential Client, Deterrent Technology Research – New York (Project Planning: 2018-2019)

Ms. Johnson served as project support on a research team conducting a two-phase study of the effectiveness of acoustic deterrent technology for use at operational wind farms. Ms. Johnson provided technical editing of a manuscript in the final phases of peer review and assisted with manuscript preparation for submission and publication. Ms. Johnson also served as Project lead for a phase-two field study (slated for 2020) in budget and proposal development and field effort planning.

Confidential Client, Deterrent Technology Research – New York (Project Planning: 2018-2019)

Ms. Johnson served as project support on a research team conducting a two-phase study of the effectiveness of acoustic deterrent technology for use at operational wind farms. Ms. Johnson provided technical editing of a manuscript in the final phases of peer review and assisted with manuscript preparation for submission and publication. Ms. Johnson also served as Project lead for a phase-two field study (slated for 2020) in budget and proposal development and field effort planning.

Ecological Survey Experience

Indiana University of Pennsylvania Research Institute – Minnesota, Pennsylvania (Project Coordinator: 2015-2017)

Ms. Johnson served as Project Co-Coordinator on a large-scale monitoring effort to assess target species response to range-wide habitat management implemented under NRCS and National Fish and Wildlife Foundation research grants. Ms. Johnson planned a field effort involving annual monitoring of breeding birds at over 1,000 locations during the three-year study. She hired, trained and supervised a field team of up to 14 technicians in conducting all-species avian point counts and vegetation surveys. Ms. Johnson helped develop survey protocols, conducted quality control of data entry and management, performed data analysis and contributed to preparation of annual reports for funding agencies. Ms. Johnson also presented findings at professional and scientific conferences, developed and presented project results at professional workshops and in academic settings.

Michigan Department of Natural Resources – Southwest Michigan (Waterfowl Bander: 2014)

Worked on a two-man team to band waterfowl across Michigan's southern Lower Peninsula. Identified locations and secured permission to trap primarily on private lands; Constructed, deployed, baited and checked waterfowl traps; aged, sexed and banded 588 waterfowl; entered and submitted data to Bird Banding Lab.

Michigan State University Burke Lake Banding Station/Avian Health and Disease Ecology Lab – East Lansing, MI (Mist-netting Technician: 2012-2013)

As a member of the lab, Ms. Johnson conducted a two-year independent research project examining the pairing success of Kirtland's warblers on federal and state managed jack pine plantations. She prepared a project budget, secured funding and equipment, developed a work plan and completed permitting applications. Ms. Johnson conducted all field work including target-netting and banding of birds, re-sighting and data collection. She presented findings to the Kirtland's Warbler Working Group and at Wildlife Society conferences. As a member of the banding station staff, Ms. Johnson served as a lead mist-netting technician, primary bird-bleeding technician, and daily conducted station maintenance, performed data collection, processed blood and fecal samples, and assisted with data entry.

Volunteer Surveys

- Aquatic Invasive Species Surveys, Michigan DNR (2013-2014)
- Eastern Population Sandhill Crane Surveyor, US Fish and Wildlife Service (10/2014-12/2014)
- Massasauga rattlesnake surveys, Michigan Natural Features Inventory (2014)
- Deer pellet transect surveys, Quantitative Ecology Lab, Michigan State University (Winter 2013)
- Kirtland's Warbler Census Volunteer, US Forest Service (May 2012)

Agency/Other Experience

Cornell Lab of Ornithology, Conservation Science Department – New York (Program Assistant: 2018)

Provided technical assistance to the Conservation Science Department. Assisted with literature reviews and data analysis for backlogged projects including investigation of effects of external nutrient inputs by migratory birds. Served as a program assistant to the CLO Land Trust Initiative; assisting with

administrative/communication tasks for small grants program, developing content for website, and multimedia production.

Michigan Department of Natural Resources – Lansing, Michigan (Private Lands and Invasive Species Program Assistant: 2013-2015)

Assisted Program Coordinators with administrative tasks related to implementation of state-wide program initiatives. Ms. Johnson's primary contributions included significant written contributions to the Terrestrial Invasive Species Management Plan, development of decontamination procedures for agency staff, drafting an Environmental Impact Statement for state-wide invasive species treatment program, development of outreach documents and website content, facilitation of meetings, trainings, and outreach events, reviewed grant applications, and conducted interviews for part- and full-time staff.

Fenner Nature Center/Americorps – Lansing, MI (Volunteer Stewardship Program Coordinator: 2012-2013)

Coordinated volunteer programs and activities including invasive species removal and trail maintenance; facilitated public programs including weekly winter hikes and MLK Jr. Day of service activities. Ms. Johnson also formed a collaborative team to complete a prairie restoration project. Ms. Johnson facilitated communication and plan development for the project, which was completed in 2014.

SPECIALIZED TRAINING

- USACE- Wetland Delineation/Regional Supplement/ WOTUS 38-hour Training
- Woodcock Banding Training, Minnesota Department of Natural Resources
- Waterfowl Banding Training, Michigan Department of Natural Resources
- Managing Aquatic Invasive Species, Michigan Department of Natural Resources
- Small Mammal Trapping Techniques, The Wildlife Society, 2014
- IACUC Safe Handling Procedures for Small Mammals, Michigan State University, 2014

PROFESSIONAL AFFILIATIONS

American Ornithological Society, National Chapter

The Wildlife Society, National Chapter

Pheasants Forever, National Chapter

Rainforest Biodiversity Group, Board Member

AWARDS

- Dean's Choice Best Presentation Award 3rd Place, IUP Annual Graduate Research Symposium, April 2016.
- Janice Lee Fenske Memorial Award Finalist. The Wildlife Society. 2013
- Max McGraw Wildlife Foundation, Conservation Leaders for Tomorrow Scholarship Recipient. 2013.

SELECTED PUBLICATIONS AND PRESENTATIONS

1. **Johnson, K. E.,** F. Rodriguez-Vasquez, C. Fiss, L. Chavarria-Duriaux, G. Duriaux, M. Silas, J. L. Larkin. 2019. Avian community-habitat relationships in a production-based landscape in Nicaragua. (In prep).

2. **Johnson, K. E.,** S. McWilliams, R. McCullough, J. L. Larkin. 2018. Developing range-wide management targets through evaluating forest change; a case study for Golden-winged warbler habitat management. (In prep)

3. Bennett, R. E., W. Leuenberger, B. B. Bosarreyes Leja, A. Sagone Caceres, **K. Johnson**, J. L. Larkin. 2018. Conservation of neotropical migratory birds in tropical hardwood and oil palm plantations. Plos One 13(2): e0210293.

4. Larkin, J. L., D. J. McNeil, **K. Johnson**, C. Fiss, A. Rodewals, C. Lott, and A. Dayer. 2017. Assessing Avian Response to NRCS Conservation Programs Targeting Early-successional Habitats in the Appalachian Mountains and Western Great Lakes Regions. Natural Resource Conservation Service (NRCS), 62 pp.

5. **Johnson, K. E.** Full life-cycle monitoring & management for Golden-winged Warblers. Aitkin County Foresters Association Meeting. McGregor, MN. May 2017.

6. Erich P. Hofmann, Cameron J. Fiss, **Kirsten E. Johnson**, Fabiola Rodríguez, Jeffery T. Larkin, Jeffery L. Larkin, Liliana Chavarría-Duriaux, Georges Duriaux & Josiah H. Townsend. 2016. Inventario preliminar de herpetofauna de la Reserva Silvestre Privada El Jaguar (Jinotega, Nicaragua). Revista Nicaraguensede Biodiversidad 7.

7. **Johnson, K.E.**, D. McNeil, C. Fiss, A. Rodewald and J. L. Larkin. American Woodcock use of early successional communities managed for golden-winged warblers. Minnesota Department of Natural Resources Annual American Woodcock Training. Remer, MN. April 2016.

8. Michigan Terrestrial Invasive Species Core Team. 2016. Terrestrial Invasive Species State Management Plan. 36pp. (In public comment period)

9. **Johnson, K. E.** 2015. Environmental Assessment of treatment methods for controlling aquatic invasive species. Michigan Department of Natural Resources Wildlife Division. 267pp.

10. Michigan QOL Departments. 2014. Invasive Species Decontamination for Field Operations in Michigan Policy and Procedure QOL-2-2014. 5pp

SAMANTHA W. KRANES

EDUCATION
B.A., Environmental Studies, William Smith College, 2008
M.P.S., Ecology, SUNY College of Environmental Science and Forestry, 2015

PROFESSIONAL COURSEWORK & TRAINING
- NYSDEC Erosion & Sediment Control Training
- Technical Writing
- Natural Resource Policy (2012)
- Environmental Impact Analysis (2013)
- Watershed Ecology & Management (2013)
- Environmental Law and Policy (2014)
- Stormwater Management (2014)
- Natural Resource Law (2015)

AREAS OF EXPERTISE
- Environmental Permitting
- Agency Consultation
- Proposal Writing
- Project Management
- Wetland Delineation
- Environmental Assessments
- State Environmental Quality Review Act
- National Environmental Policy Act
- Ecological Risk Assessment
- Stormwater Pollution Prevention Plans & Inspections
- Environmental Compliance
- Environmental Impact Statements
- Implementation of Best Management Practices

REPRESENTATIVE EXPERIENCE
Ms. Kranes is a Project Manager with over ten years of experience working on a variety of scientific and regulatory projects in the environmental field, including federal, state and local permitting and compliance, wetland delineation and ecological assessment, risk assessment, project siting and stormwater pollution prevention plan development and inspection. She is experienced in client and regulatory coordination and prepares proposals and cost estimates for a variety of environmental projects. She manages projects from the proposal stage to project completion, including client coordination, staffing, oversight of project completion, monthly invoicing and project budget management.

Confidential Client, 101.8 MW Article 10 Wind Project – Steuben County, NY (Project Manager)
Manages the budget, monthly invoicing and client coordination for the preparation of an Article 10 Application for a wind energy project in Steuben County, New York. Tasks managed as part of the project include wetland delineation field work and data collection, completion and compilation of the Article 10 Application, coordination for review and submittal of the application to applicable agencies, and coordination with the client regarding project status and budget. Scope also includes the preparation of an Article VII Application for the associated project transmission line. Ms. Kranes is also the lead author on Exhibit 4 (Land Use), Exhibit 13 (Real Property), Exhibit 31 (Local Laws and Regulations), Exhibit 32 (State Laws and Regulations) and Exhibit 33 (Other Applications and Filings). She has also been a lead reviewer on several exhibits prior to submittal to the client.

Confidential Client, 50 MW, 50 MW, 90 MW, 180 MW Article 10 Solar Projects – Multiple Counties, NY (Project Manager)
Manages the budget, monthly invoicing and client coordination for four solar projects going through the Article 10 process in New York State. Tasks include oversight of data collection, including field surveys (wetland delineations, noise monitoring, visual photo collection, archaeological surveys, breeding bird surveys, etc.), preparation of Public Scoping Statements (PSSs) for each project, and local coordination and guidance on environmental requirements in New York State. Coordinates for review and submittal of documents to applicable agencies, and coordination with the client regarding project status and budget.

Dunkirk Gas Corporation, Article VII Application, Wetland Delineation and Mitigation (Planner)
Assisted in preparing responses to NYS Public Service Commission comments on the Environmental Effects section of the Article VII Application for Major Electric and Gas Transmission Facilities for the proposed Dunkirk Natural Gas Pipeline in western New York State. Assisted in wetland and waterbody delineations and impact calculations associated with revisions to the pipeline route and at potential mitigation site (*i.e*., wetland enhancement area). Perfomed Water Budget Analyses in accordance with the Pierce (1993) Methodology to evaluate current and future conditions at the mitigation site.

Confidential Client, Plattsburgh Solar Project, State Environmental Quality Review Act (Planner)
Prepared Part 1 of the State Environmental Quality Review Act (SEQRA) Full Environmental Assessment Form (FEAF) and supplemental information attachments to address SEQRA and concerns of town, county and state agencies as part of the siting, permitting and development of a 1.25 megawatt fixed-tilt ground-mounted solar photovoltaic system in Clinton County, New York. Performed desktop analysis of project site to evaluate potential permitting concerns and required approvals. Prepared project consultation packages and coordinated review with the New York State Historic Preservation Office (SHPO), New York Natural Heritage Program (NYNHP) and the US Fish and Wildlife Service (USFWS) as part of SEQRA review.

Confidential Client, Broome County Solar Project, State Environmental Quality Review Act (Planner)
Coordinated and oversaw the preparation of Part 1 of the State Environmental Quality Review Act (SEQRA) Full Environmental Assessment Form (FEAF) to address SEQRA and concerns of town, county and state agencies as part of the siting, permitting and development of a 5.46 megawatt fixed-tilt ground-mounted solar photovoltaic system in Broome County, New York. Performed desktop analysis of project site to evaluate potential permitting concerns and required approvals. Coordinated project consultation with the New York State Historic Preservation Office (SHPO), New York Natural Heritage Program (NYNHP) and the US Fish and Wildlife Service (USFWS) as part of SEQRA review.

Confidential Client, Multiple Solar Projects, State Environmental Quality Review Act and Local Permitting (Planner)
Coordinated and oversaw the preparation of Part 1 of the State Environmental Quality Review Act (SEQRA) Full Environmental Assessment Form (FEAF) to address SEQRA and concerns of town, county and state agencies as part of the siting, permitting and development of approximately eight commercial fixed-tilt ground-mounted solar photovoltaic systems throughout New York State. Performed desktop analysis of project site to evaluate potential permitting concerns and required approvals. Coordinated project consultation with the New York State Historic Preservation Office (SHPO), New York Natural Heritage Program (NYNHP) and the US Fish and Wildlife Service (USFWS) as part of SEQRA review. Coordinated with applicable agencies through formal consultation processes and prepared local permitting documents in accordance with local, regional, county and state requirements.

Confidential Client, Multiple Solar Projects, Local Permitting Review (Planner)
Evaluated local, state and county regulations for the development of multiple solar sites throughout New York State. Review included coordination with multiple local, state and county offices and evaluation of codes and regulations pertaining to solar development, as well as desktop review of mapped natural and historic resources.

Confidential Client, Multiple Solar Projects, Wetland Delineation Reporting (Planner)
Coordinated field teams for completion of wetland delineations on multiple potential solar development sites throughout New York State. Oversaw completion of wetland delineation reports according to the US Army Corps of Engineers (USACE) Wetland Delineation Manual (1987) and the Northcentral and Northeast Regional Supplement to the Wetland Delineation Manual (2012) for use in permitting.

Confidential Client – Multiple Solar Sites, Environmental Due Diligence
(Project Manager and Planner)
Managed the environmental due diligence and constraints analyses of over 70 proposed ground-mounted solar projects (approximately 1-2 MW in size) throughout New York State, including oversight of field work and associated reporting. Coordinated field work, including wetland delineation and other field surveys, and oversaw preparation of technical reports and GIS mapping. Consults client regarding regulatory requirements and potential agency jurisidiction for each of the project sites. Prepared formal consultation letters to agencies for their regulatory determination and advises client on local requirements. Perfomed regulatory database review of existing mapping, aerial photography, and online databases to evauate potential permitting implications for each Project site and completion of a Limited NEPA/SEQRA Report summarizing findings and recommendations to the client regarding siting, potential concerns, and permitting strategies.

Confidential Client – Ground-Mounted Solar Project, Town of Montgomery, Orange County
(Project Manager)
Manages the environmental due diligence and permitting of a ground-mounted solar project on approximately 20 acres in the Town of Montgomery, Orange County, New York. Applicable permits being sought include an Article 15 (Protection of Waters) permit from the NYSDEC for crossing of a Class B waterbody onsite. Coordinates and reviews the preparation of the permit application package to the NYSDEC and USACE and advises client on regulatory framework and recommended path forward. Coordinates with TRC civil engineers regarding preparation of the stream crossing design in line with agency requirements.

Confidential Client – 2 MW Solar Project, Town of Harpersfield, Delaware County
(Project Manager)
Manages the environmental due diligence and permitting of a ground-mounted solar project on approximately 60 acres in the Town of Harpersfield, Delaware County, New York. Attended multiple town meetings/hearings as the environmental representative to discuss the project and potential impacts to regulated resources, including wetlands and waterbodies, RTE species, land use and cover, archaeological resources, and stormwater. Advises client on agency consultations and recommended path forward.

JOHN C. MANNIX, PE

EDUCATION

M.B.A., Worcester Polytechnic Institute, 1985

B.S. Civil Engineering, University of Lowell, 1979

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Professional Engineer, Massachusetts, (#33042)

Professional Engineer, New Jersey, (#24GE05314100)

Professional Engineer, New York, (#096099)

Professional Engineer, Pennsylvania, (#PE087941)

Certified Public Water System Operator, Massachusetts, (#3880)

AREAS OF EXPERTISE

Mr. John Mannix has technical experience in the following general areas:

- Microwave & Mesh Radio Network Planning
- Fuel Cell, Solar and Battery back-up systems
- Telecom Network Infrastructure
- Digital Subscriber Line
- Fiber Network Design, Splicing Details and Optical Loss Budgeting
- Ethernet Over Copper
- Remote Terminal Design
- Project Management
- Equipment Vendor Evaluation and Selection
- Vendor Technical & Change Management
- Business Case Development
- Financial Modeling and Net Present Worth Analysis
- Mobile Radio, Mobile Data
- Bonding and Grounding

REPRESENTATIVE EXPERIENCE

Mr. Mannix started his engineering career with responsibility for the design and maintenance of telecommunications network facilities within Verizon. This included equipment selection and engineering plans related to implementation of new products and services. He also had responsibility for the oversight and modernization of existing communications assets.

Later in his career Mr. Mannix had responsibility for standardization of Access and Transport technologies, including vendor selection, management and deployment plans. Equipment platforms managed included Ethernet Routers, MPLS Switches, and Fiber to the Premises, Digital Subscriber Line and Microwave Radio.

TRC Engineers, Inc. Franklin, MA (2012 – Present)

New York Power Authority (2016 – Present)

Mr. Mannix is directing the Network and Site Design for the installation of Microwave radio links and Ethernet routers for NYPA's communications network. This work consists of two separate Microwave Radio projects including network design, structural analysis and drawing updates.

Public Service Electric & Gas (2017 – Present)

Mr. Mannix is providing engineering oversight to PSEG for the deployment of their Phase 1 Microwave Radio build, consisting of eight hops from Newark to Salem, NJ.

Central Hudson Gas & Electric (2014 – 2017)

Mr. Mannix led the Network design and selection of technology and installation partners for Central Hudson's Microwave and Mesh radio networks, to be used for mission critical communications.

Long Island Power Authority (2015 – 2016)

Mr. Mannix managed the replacement of two communications equipment shelters for LIPA. This work included an analysis of existing shelter foundations, vendor selection and coordination as well as a grounding design to R56 standards.

Vermont Electric Cooperative (2013 – 2014)

Mr. Mannix led the Network design of a 36 mile fiber communications cable deployment in the Northeast Kingdom, including; make ready details, system electronics, optical loss budgeting, splicing details and material lists.

Jemez Mountain Electric Cooperative (2013)

Mr. Mannix conducted a detailed Fiber to the Home feasibility study for JMEC. This analysis included estimates of capital build and network operational costs, a market assessment and projected revenues.

Verizon Communications, Boston, MA (1979 – 2011)

Mr. Mannix was the Microwave Technical Manager for Verizon. In this role he has responsibility for creating Microwave deployments guidelines, program management as well as vendor evaluation and selection.

Mr. Mannix was responsible for directing the development of corporate-wide equipment deployment guidelines for Verizon's Fiber to the Premises Program, including creation of Passive Optical Network and Fiber Distribution Hub engineering standards. He also participated in the selection of Optical Line Terminal and Optical Network Terminal equipment and vendors.

Daniel J. Marieni, PE

Solar Project Engineer

EDUCATION
B.S., Civil Engineering, University of Connecticut, 2009

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS
Professional Engineer, Florida (License Number 78629)
OSHA 40 HAZWOPER
Florida Stormwater, Erosion and Sedimentation Control Inspector

PROFESSIONAL EXPERIENCE

***NextEra Energy Resources, LLC*, Solar Project Engineer (2019-Present)**

- Project engineer for solar renewable energy projects in the states of New York and Florida.
- Oversees the engineering activities of the 3rd party contractor during the design and construction phases of utility scale solar projects.
- Supports the preparation of applications and environmental studies submitted under Article 10 of the Public Service Law and the State Environmental Quality Review Act including the following renewable energy projects:
    - East Point Energy Center – 50 MW solar project
    - High River Energy Center – 90 MW solar project
    - Watkins Glen Solar Energy Center – 50 MW solar project
    - Excelsior Energy Center – 280 MW solar and 20 MW energy storage project
    - Trelina Solar Energy Center – 80 MW solar project
- Provides engineering support to development activities and permitting issues, energy facility siting, and report analyses/conclusions.

***Terracon Consultants, Inc.*, Geotechnical Department Manager / Project Engineer (2013-2019)**

- Managed projects, deliverables, staff, scheduling and financials of the geotechnical engineering department.
- Direct supervisor of 10 employees including five professional staff and five field staff.
- Project manager for all phases of large-scale geotechnical projects including proposal preparation, permitting, health and safety planning, coordination of field personnel and subcontractors, laboratory testing, engineering analysis and design, report preparation, maintaining schedules and budgets.
- Collaborated with clients and design teams to determine the most appropriate approach, design and recommendations for complex geotechnical projects.
- Project experience within the energy sector included providing geotechnical engineering services for solar energy centers, transmission lines, substations and pipelines. Typical services include subsurface investigations, electrical and thermal resistivity testing, test pile installation, load testing, pile foundation design and analysis.

***Groundwater and Environmental Services, Inc.*, Associate Engineer (2010-2013)**

- Designed and managed remediation systems for various petroleum contaminated sites.
- Completed environmental site assessments, active remediation system design, system operation and maintenance, soil and groundwater monitoring and site closures.
- Coordinated and oversaw field activities including well installation, pilot testing, remediation system construction, equipment installation and startup activities.
- Prepared proposals, remedial action plans, design plans and specifications, bid packages and operation and maintenance reports.
- Review of environmental regulations in order to determine project compliance.

KEVIN G. MARTIN, PE

EDUCATION

Graduate Certificate, Power Systems Engineering, Worcester Polytechnic Institute, 2014

B.S., Electrical Engineering, Alfred University, 2005

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Professional Engineer, New York (#099090), 2018

AREAS OF EXPERTISE

Mr. Kevin G. Martin has technical experience in the following general areas:

- Underground (UG) Transmission Line Engineering and Design
- Thermal Ratings of Transmission Lines
- High Voltage Power Equipment
- Field Support of High Voltage Cable System Installation

REPRESENTATIVE EXPERIENCE

Mr. Martin has 11 years of experience and progressive responsibility in electrical engineering including 6 years in high voltage transmission with TRC Solutions and ITC Holdings. Prior to that, Mr. Martin spent 5 years in the electronics industry with AI Technology, Inc. and Lockheed Martin. His qualifications include field investigations, cost estimating, design, hands-on troubleshooting, and failure analysis. Mr. Martin's background includes detailed systems integration and requirements management. Mr. Martin has training and a strong focus in safe working practices.

ITC Holdings, UG Asset Management– Detroit, MI (Senior Engineer: 2014 – 2017)

Mr. Martin was responsible for overseeing field crews and contractors with the maintenance of ITC's 130 circuit miles of high voltage UG transmission cables and 180 miles of UG control cable and fiber. He was responsible for developing standards for ITC's cable systems and served as a subject matter expert for cable systems supporting capital and development projects.

ITC Holdings, Gordie Howe International Bridge Circuit Relocations – Detroit, MI (Senior Engineer: 2014 – 2017)

Mr. Martin worked extensively with government agencies to determine a relocation plan for three UG circuits to support the development of a proposed customs plaza for a new international bridge. Mr. Martin supported the design of approximately one mile of new double circuit ductbank which was installed for the relocation of two 120 kV Cross-Linked Polyethylene (XLPE) Circuits. Mr. Martin also supported the design of a Horizontal Directional Drill (HDD) relocation of a 120 kV High Pressure Gas Filled (HPGF) circuit.

ITC Holdings, Thermal Rating Project – Detroit, MI (Senior Engineer: 2014 – 2016)

The majority of ITC's UG transmission assets were acquired from Detroit Edison and the documentation supporting the thermal ratings of these lines was insufficient to support NERC Audits. In addition, the ratings appeared to be inconsistent with the current International Electrotechnical Commission (IEC) 60287 rating standards. To address this Mr. Martin evaluated each cable circuit and calculated new

thermal ratings for the line. These ratings were calculated to the IEC 60827 standard using CYMCAP software. In addition, Mr. Martin created a ratings procedure for ITC to document procedures and assumptions for calculating the ratings in a repeatable manner.

ITC Holdings, XLPE Cable Fault – Detroit, MI (Senior Engineer: 2016)

A splice on an XLPE cable system failed after being in service for 17 years. Mr. Martin was responsible for developing and coordinating the repair plan. When the splice failed, it allowed water to penetrate to the conductor and Mr. Martin determined that the cables would need to be replaced to the adjacent manholes. ITC did not have enough cable in inventory to support this replacement, so Mr. Martin coordinated with other utilities to find cable to allow for the repair, as well as with the cable supplier to install the new cable and required joints. Mr. Martin traveled to the cable factory where the failed splice was dissected to determine root cause of the failure.

ITC Holdings, Temple Substation – Detroit, MI (Senior Engineer: 2014 – 2015)

The scope of this project was to loop-in an existing HPGF pipe type cable into a new substation. Mr. Martin provided technical requirements' and oversight to the AE firm to design the loop in connections. Mr. Martin also developed design guides during this project to ensure consistency and minimize required spare inventory on future projects.

Public Service Electric & Gas, North East Grid Reliability Project – South Plainfield, NJ (Project Role: 2011 – 2014)

Mr. Martin served as PSE&G's owner's engineer for the electrical design of four new 230 kV underground transmission lines utilizing rapid circulation and forced cooling to increase circuit capacity as well as several substation XLPE connections. The assignment involved detailed review of field investigations and routes, system design, fiber communication, construction plans, specifications, and construction operations.

Public Service Electric & Gas, 138 kV Pipe Cable Reconductoring Project – South Plainfield, NJ (Project Role: 2011 – 2013)

Mr. Martin served as PSE&G's electrical engineer for the complete reconductoring of a 3.5 mile and a 6.6-mile, 138 kV, underground transmission lines to correct the negative effects of cable Thermal Mechanical Movement (TMM) and increase the circuit capacity. Included in this project was the installation of full hydraulic stop joints to reduce the risk of environmental disturbance at several river crossings.

Public Service Electric & Gas, Cable Condition Assessment – South Plainfield, NJ (Project Role: 2011 – 2012)

Mr. Martin supported the cable condition assessment program for PSE&G's underground transmission system. This included Dissolved Gas Analysis (DGA) in pipe-type cable dielectric fluid as well as x-ray analysis of cable splices. Mr. Martin also evaluated the effects of damaging conditions on the life of the cable system, including loss of fluid pressure and fire damage to stainless steel conduit. He examined failures for root cause analysis and lessons learned and created reconductoring project justifications for investment evaluation.

Public Service Electric & Gas, Bayonne Third Circuit – South Plainfield, NJ (Project Role: 2011 – 2012)

Mr. Martin provided engineering support to the design and build of a new 138 kV HPFF underground transmission circuit. Mr. Martin developed thermal envelop design software for PSE&G and evaluated soil thermal resistivity conditions along the route to complete the trench design. He also supported the creation of the contractor bid packages, as well as performed ampacity, and impedance calculations for the new circuit

SPECIALIZED TRAINING

- IEEE Power System Engineering I (ETAP)
- Transmission Line Lightning Protection & Grounding
- Sheath Bonding for Transmission and Distribution Cable Systems
- SF6 Circuit Breaker Installation, Operation and Maintenance
- Doble Insulation and Power Factor Theory
- Circuit Breaker Installation, Operation and Maintenance
- OHSA 30 Hour Construction Training
- Confined Space Competent Person
- Red Cross CPR / First Aid

PROFESSIONAL AFFILIATIONS

- Member of CIGRE Council on Large Electric Systems
- Member of IEEE Power and Energy Society (PES)
- Member of IEEE Dielectrics and Electrical Insulation Society
- Member of IEEE PES Insulated Conductor Committee

PATRICK M. MARTIN, PE

EDUCATION

B.S., Environmental Engineering – Oregon State University, Corvallis, OR, 2000

PROFESSIONAL REGISTRATION/ CERTIFICATES

Professional Engineer, Maine, (#12007) 2009

Professional Engineer, New York (#100151) 2018

AREAS OF EXPERTISE

Mr. Patrick M. Martin has technical experience in the following fields:

- Site/Civil Design
- Roadway Design
- Stormwater Management Design
- Erosion and Sediment Control Design
- Hydrologic and Hydraulic Modeling
- Floodway Analysis

REPRESENTATIVE EXPERIENCE

Mr. Martin is a civil engineer with more than eighteen years of professional consulting experience, with a background in Water Resources, Transportation, and Site-Civil engineering. His project experience includes work in both the public and private sectors, involving residential and commercial development, as well as educational, institutional, municipal, and federal level projects. Mr. Martin's responsibilities have included roadway design, site layout and grading, stormwater management design, utility design and coordination, hydrologic and hydraulic modeling, preparation of construction plans, and permitting. This range of experience provides him with a diverse, well-balanced engineering background. Mr. Martin currently serves as a Senior Civil Engineer for the Civil and Transmission Division.

Broome County Solar Project: Conklin, New York

Mr. Martin was involved in the Broome County solar generation facility project, which included design of a 5.5 MW facility in Conklin, New York. Mr. Martin was responsible for the stormwater management design of the site, which included hydrologic and hydraulic modelling, BMP and culvert design, and development of the erosion control plan in support of the permitting effort.

State Street Substation Expansion: Auburn, New York

This project involved construction of a 0.16-acre expansion of an existing substation in Auburn, NY. Mr. Martin's responsibilities included grading and drainage design, BMP design, hydrologic and hydraulic modelling, and plan preparation in support of the permitting effort.

Redmond Road Storage Facility: Williston, Vermont

Mr. Martin was involved the VELCO Redmond Road Storage Facility project which included construction of an approximately 5 acre permanent material and equipment storage yard. TRC's engineering scope of work included site layout and access road design, grading and drainage design, and development of construction notes and details. Mr. Martin led the civil design effort, was responsible for the stormwater management and erosion control design, and coordinated the permitting effort.

Palmer Solar Photovoltaic Project: Palmer, Massachusetts

Mr. Martin was involved in the Palmer solar generation facility project which included design of a 50 acre, 3 MW facility in Palmer, Massachusetts. TRC's engineering scope of work included preliminary civil design in support of project permitting. Mr. Martin led the site design effort and was responsible for stormwater management design. This included site grading, BMP design, Hydrologic and hydraulic modelling, erosion control design, and preparation of stormwater plans and report for inclusion in the project SWPPP.

Also, Sturbridge Solar Project (Sturbridge, MA), Pittsfield Solar Project (Pittsfield, MA), Winchendon Solar Project (Winchendon, MA)

Spier Falls – Rotterdam Transmission Line Improvements: Moreau, New York (Civil Engineer)

Mr. Martin was involved in the National Grid Spier Falls-Rotterdam Line project for the portion of the utility corridor in or adjacent to Moreau Lake State Park. TRC's engineering scope of work included design of a mountainside construction and access road and work pads. Mr. Martin led the civil design effort, designed the stormwater management system, and supported the environmental permitting effort. He also monitored roadway construction activities as the project owner's representative.

Collamer Crossing Substation: Dewitt, New York (Civil Engineer)

Mr. Martin was involved in the National Grid Collamer Crossing Substation project which included construction of a new substation located in DeWitt, New York. TRC's scope of work included preparation of the environmental permitting documents for the project. Mr. Martin worked in conjunction with the National Grid engineers preparing the permitting plans. He was responsible for developing the stormwater management and erosion control design for the project. This included site grading, BMP design, hydrologic modeling, and preparation of stormwater plans and report in support of the permitting effort.

Also, Porter Substation (Marcy, NY), Ogdenbrook Substation (Queensbury, NY), Florida Substation (Florida, NY), Lasher Road Substation (Ballston, NY)

Finnefrock Compressor Station Expansion: Leidy Township, Pennsylvania (Civil Engineer)

Mr. Martin was involved in the Finnefrock Compressor Station project which included the expansion of an existing gas compressor station located in central Pennsylvania. TRC's scope of work involved preparation of the environmental permitting documents for the project. Mr. Martin was responsible for developing the stormwater management and erosion control design for the project. This included site grading, BMP design, hydrologic modeling, and preparation of stormwater plans in support of the permitting effort.

Also, Daleville Compressor Station (Londonderry Township, PA)

Antrim 30 MW Windpark: Antrim, New Hampshire (Civil Engineer)

Mr. Martin was involved in the Antrim Windpark project which included the development of a permit-level design for a 9 turbine, 30 MW windpark located in southern New Hampshire. TRC's engineering scope of work included civil design of the turbine locations, four (4) miles of crane and access roads, and substation yard. Mr. Martin led the civil design effort, designed the stormwater management system, and supported the environmental and local permitting effort.

Oakfield II 110 MW Wind Farm: Oakfield, Maine (Civil Engineer)

Mr. Martin was involved in the Oakfield II project which included the development of a permit-level design for a 54 turbine, 110 MW wind farm located in the forested mountains and hills of Eastern Maine. TRC's scope of work included the civil design of the ridge-top turbine sites, about 20 miles of crane and access roads, 31 miles of 34.5 kV collector system including 2 miles of underground collector, a 34.5 to 115 kV substation, 60 miles of 115kV transmission system, and site design for the Operation and Maintenance facility. Mr. Martin assisted with the access and ridge road design and the project stormwater management and erosion control plans.

Eliot 345kV Switchyard: Eliot, Maine (Civil Engineer)

Mr. Martin was involved in the design of a 345kV electrical switchyard, as part of a regional effort to upgrade the power grid. As the lead civil engineer, Mr. Martin provided civil support to the substation team. His responsibilities included development of the site plan, grading and drainage design, and stormwater management design. He also supported the environmental permitting effort.

SPECIALIZED TRAINING

- AutoCAD Civil 3D 2018
- Auto-Turn
- HydroCAD
- HY-8
- HDS-5
- HEC-HMS
- HEC-RAS
- FlowMaster

George Mohan, PE, PTOE

Project Traffic Engineer

George Mohan, PE, PTOE brings 15 years of experience in traffic engineering including signing design, pavement marking design, traffic signals, highway lighting, and maintenance of traffic where brings expertise in state and local design and plan production standards. In addition to his traffic design experience, George is also experienced in traffic operations analysis, corridor progression analysis, safety studies, interchange modification/justification studies, traffic impact studies, crash analysis, traffic signal and turn lane warrant analysis and traffic data collection. George is responsible for leading complex traffic design tasks when working on roadway improvement projects and frequently leads the development of traffic studies. His engineering analysis and design software knowledge includes SignCAD, HCS, Synchro/SimTraffic, MicroStation, GEOPAK, and AutoCAD.

CREDENTIALS

Education:

- B.S., Civil Engineering, Cleveland State University, 2004

Professional Registrations/Certifications/ Training:

- Professional Engineer, Ohio
- Professional Traffic Operations Engineer

Ohio Traffic Academy:

- Safety Studies, 2014
- Interchange Studies, 2015
- Maintenance of Traffic, 2015
- Highway Lighting, 2015
- Traffic Signals, 2016

FHWA Training:

- Road Safety Audits, 2015
- Signalized Intersection Workshop, 2016

Holophane Lighting Training:

- Advanced Roadway Lighting Seminar, 2015
- Computer Lighting Calculations, 2015

Ohio LTAP Training:

- Traffic Signs and Pavement Markings, 2015
- HSM Focused Training
- HSM Freeway Training
- Reducing Roadway Departure Crashes, 2015
- ADA Self-Evaluations/ Transition Plans & Overview of Elements of PROWAG, 2016

EXPERIENCE

Professional Summary:

- 15 years of traffic experience.

Areas of Expertise:

- Traffic Engineering, Traffic Studies

PROJECT EXPERIENCE

High River Solar Energy Center – Montgomery County, New York (2019) – TRC is currently evaluating transportation and traffic operational impacts that the High River Solar Energy Center project will have on the adjacent transportation system. The High River Collector Substation will be built to collect roughly 90MW of PV solar power located in upstate New York and transmit to a nearby 115kV interconnection point. Coordination with the New York State DOT was completed to determine existing roadway ADT and to obtain existing accident history in the area to complete Exhibit 25: Effects on Transportation. The exhibit evaluates existing transportation conditions, develops site trips for peak construction activities, distributes trips onto the local roadway system and evaluates operational performance along two-lane highway, multi-lane highway, and basic freeway segments within the project influence area for both existing conditions and peak construction conditions. The exhibit will also evaluate safety, coordinate with local law enforcement and school district, and develop worker routing to the proposed site.

East Point Solar Energy Center – Schoharie County, New York (2019) – TRC is currently evaluating transportation and traffic operational impacts that the East Point Solar Energy Center project will have on the adjacent transportation system. The East Point Collector Substation will be built to collect roughly 50MW of PV solar power located in upstate New York and transmit to a nearby 69kV interconnection point. Coordination with the New York State DOT was completed to determine existing roadway ADT and to obtain existing accident history in the area to complete Exhibit 25: Effects on Transportation. The exhibit evaluates existing transportation conditions, develops site trips for peak construction activities, distributes trips onto the local roadway system and evaluates operational performance along two-lane highway, multi-lane highway, and basic freeway segments within the project influence area for both existing conditions and peak construction conditions. The exhibit will also evaluate safety, coordinate with local law enforcement and school district, and develop worker routing to the proposed site.

Commonwealth LNG Project – Traffic Impact Study – Cameron Parish, Louisiana (2019) – TRC was retained to perform a traffic impact study for the Commonwealth LNG natural gas facility and pipeline in Southwestern Louisiana. A combination of collected traffic data and existing ADT data from LaDOTD was used to develop the Design Hour Volume. Methodology from the Highway Capacity Manual was then used in developing the LOS at the proposed site driveways and adjacent street using HCS7 software. After determining the peak construction workforce, construction trips were added to the existing traffic volumes to generate Peak Construction Design Hour Volumes. These traffic volumes were evaluated using the same conditions as the existing data utilizing either a two-lane or unsignalized intersection capacity analysis. The two sets of data were then compared to determine mitigation techniques to be used and recommendations to the client.

1382 West Ninth Street, Suite 400, Cleveland, OH, USA, 44113
Tel: 216.598.6797 Email: gmohan@trccompanies.com

PROJECT EXPERIENCE (Cont'd)

Midship – Traffic Management Study – VAR, Oklahoma (2018) – TRC was retained to perform a traffic management study for the Midship pipeline being installed in Western Oklahoma. Using traffic counts provided by Oklahoma DOT, the existing ADT was used to develop the Design Hour Volume. Methodology from the Highway Capacity Manual was then used in developing the LOS for 22 selected locations along the pipeline under existing conditions using HCS7 software. After determining the peak construction workforce, construction trips were added to the existing traffic volumes to generate Peak Construction Design Hour Volumes. These traffic volumes were evaluated using the same conditions as the existing data utilizing either a two-lane or multi-lane highway capacity analysis. The two sets of data were then comparted to determine mitigation techniques to be used and recommendations to the client.

Ohio Department of Transportation, VAR-STW Safety Studies (2018-2 CMT), – MED-3-16.22-17.29 Safety Study – Medina, OH (2018) – TRC assisted in providing a combined safety, operational, and signal timing study for Medina SR 3 (Weymouth Road) from Foskett Road/Remsen Road to W. 130th Street. The study identified short-term and long-term safety and operational benefits in the area by looking at both signal timing and safety. TRC was responsible for capacity analysis using Highway Capacity Software (HCS), turn lane warrants and storage length calculations, signal warrant analysis, cost estimates, and the Modeling portion of the Signal Timing task.

Ohio Department of Transportation, VAR-STW Safety Studies (No. 2018-2 (CMT), 2018-3 (Lanham), 2018-4 (LJB) & 2019-1 (Mead & Hunt)) – TRC is currently providing various traffic and safety engineering services on three statewide safety study task order agreements. These task order agreements support ODOT's Highway Safety Improvement Program which works to improve safety by implementing improvements at high-crash and severe-crash locations. Engineering work tasks include crash scrubbing, development of collision diagrams, signal warrant analysis, queuing analysis, intersection and freeway capacity analysis including microsimulation, signal timing recommendations and implementation, countermeasure development and cost estimating. Crashes and countermeasures are evaluated based on HSM predictive methods which calculate predicted crash frequencies for an existing facility and predict crash frequencies for proposed conditions. Traffic and collision data are collected and evaluated through the use of ODOT's Transportation Information Management System (TIMS), GIS Crash Analysis Tool (GCAT), Economic Crash Analysis Tool (ECAT) and ODOT's Crash Analysis Module (CAM) tool.

Ohio Department of Transportation, VAR-STW Safety Studies (2018-2 CMT), – CUY-71-2.65 Interchange Operation Study – Strongsville, OH (2018) – TRC provided an Interchange Operation Study (IOS) at the I-71/SR 82 interchange. The IOS evaluated lane configuration changes on southbound I-71 between the Ohio Turnpike (I-80) interchange and the SR 82 (Royalton Road) interchange. Configuration changes included: modifying the southbound I-71 exit ramp to westbound SR 82 from a Type I (single lane) exit to a Type III (two lanes with 1 drop lane and 1 option lane) exit; forming an auxiliary lane connecting the SB I-71 entrance ramp from I-80 to the exit ramp to westbound SR 82; and reallocating the existing pavement width to accommodate a 4-lane section (3through lanes + 1 auxiliary lane) by reducing the widths of 3 through lanes on I-71 to 11-foot lanes. TRC used HCS to analyze all the freeway sections and intersection. A Synchro model was created to evaluate queuing along I-71 southbound exit ramp to westbound SR 82 and provide recommended turn lane lengths at the intersection. TRC prepared the IOS report per ODOT's Office of Roadway Engineering's studies guidance.

Ohio Department of Transportation, IR 75/SR 129 Interchange Modification Study - Butler County, OH (Traffic Engineer: 2017 - 2018). Responsible for preparing an IMS at the I-75/SR 129-Liberty Way interchange. The study limits extended to the I-75/Tylersville Road interchange to the south and I-75/SR 63 interchange to the north. Changes to the interchange involved extending SR 129 to the east and connecting to Liberty Way, removing existing ramp connections between SR 129 and Liberty Way, and adding capacity to signalized intersections. Project required coordination with OKI to develop weave volumes consistent with certified traffic projections. HCS was used for freeway and intersection analysis. Synchro was used to compare the results with a coordinated system.

Ohio Department of Transportation – District 7, SR 41 Corridor Study – Springfield, OH (Traffic Engineer: 2017). EMH&T provided a corridor study for SR 41 from Ridge Road/Titus Road to the Springfield corp limit near Lawnview Avenue. The purpose of this study was to decrease congestion and reduce incidents in the SR 41 corridor study area. The corridor study included crash analysis, speed zone study, geometric analysis, and traffic operations analysis. As a result of the analysis, the following improvements were suggested: restore signal system operations and run coordination signal timings, improve turn radii at SR 41/Ridge Road/Titus Road including signal replacement, add a signalized overlap at SR 41/Ridge Road/Titus Road, and relocating the Laybourne Road to SR 41 connection.

Grove City, Borror Road Site Traffic Impact Study - Grove City, OH (Traffic Engineer: 2017). Responsible for preparing a traffic impact study for Grove City. This study analyzed the impacts of a new residential site, Meadow Grove North which is located on the north side of Borror Road and east of Buckeye Parkway. The proposed development includes 175 single family homes as well as 44 condominiums. Capacity analysis was performed at 6 intersections using Synchro 9. Traffic analyses also included signal warrant, turn lane warrant, and turn lane storage lengths.

Robert D. O'Neal, CCM, INCE Board Certified

Managing Principal

EDUCATION

M.S., Atmospheric Science, Colorado State University

B.A., Engineering Science, Dartmouth College

PROFESSIONAL REGISTRATION

Certified Consulting Meteorologist, #578

Institute of Noise Control Engineering, Board Certified

PROFESSIONAL MEMBERSHIPS

American Meteorological Society

Institute of Noise Control Engineers (INCE), Board Certified Member, Board of Directors (2014-2016)

Acoustical Society of America

Mr. O'Neal is a Certified Consulting Meteorologist and is INCE Board Certified. He has more than 30 years of experience in the areas of community noise impact assessments, meteorological data collection and analyses, and air quality modeling. Mr. O'Neal's noise impact evaluation experience includes design and implementation of sound level measurement programs nationwide, modeling of future impacts, conceptual mitigation analyses, compliance testing, and expert witness testimony. He has also directed and reviewed shadow flicker studies for wind energy projects.

His expert witness testimony experience includes state and local boards, courts of law, and adjudicatory hearings. Specifically, Rob has testified before the MA Energy Facilities Siting Board, Maine Board of Environmental Protection, Vermont Superior Court, NH Site Evaluation Committee, NY DEC Administrative Law Judge, SD Public Utilities Commission, 42nd District Court of Texas, MA Land Court, Environmental Review Tribunals (Ontario, Canada), and Boards of County Commissioners.

Rob is a nationally recognized acoustics expert in the wind energy field having performed noise impact assessments in over 25 states across the U.S. and Canada.

Mr. O'Neal is active on siting and environmental committees associated with the wind and materials handling industries. He has presented the results of wind turbine low frequency noise and infrasound research at major conferences and peer-reviewed scientific journals. He was invited by the Commissioner of the Massachusetts Department of Environmental Protection to serve as a technical expert on the Wind Noise Technical Advisory Group (WNTAG). In addition, Rob has been an invited speaker at conferences on a variety of noise and meteorological topics.

RELEVANT PROFESSIONAL EXPERIENCE

♦ *Apex Clean Energy – Galloo Island Wind, Jefferson County, NY*. Mr. O'Neal developed an extensive sound level measurement and modeling program for a proposed 110-megawatt (MW) wind farm on an island in Lake Ontario. In addition to the technical noise studies, Epsilon provided input and response to comments for the Preliminary Scoping Statement and Stipulations as part of the Article 10 permitting process. The results will be presented as expert witness testimony during the NYS Public Service Board public hearings.

♦ *Apex Clean Energy – Lighthouse Wind, Orleans & Niagara Counties, NY*. Mr. O'Neal developed an extensive sound level measurement and modeling program for a proposed 200-megawatt (MW) wind farm in western NY. In addition to the technical noise studies, Epsilon provided input and response to comments for the Preliminary Scoping Statement and Stipulations as part of the Article 10 permitting process. The results will be presented as expert witness testimony during the NYS Public Service Board public hearings.

♦ *Avangrid Renewables– Deer River Wind, Lewis & Jefferson County, NY*. Mr. O'Neal developed an extensive sound level measurement and modeling program for a proposed 100-megawatt (MW) wind farm in the Tug Hill Plateau region of NY. In addition to the noise studies, Epsilon provided technical support as part of the Article 10 permitting process.

♦ *Avangrid Renewables– Mad River Wind, Oswego & Jefferson County, NY*. Mr. O'Neal developed an extensive sound level measurement and modeling program for a proposed 350-megawatt (MW) wind farm in the Tug Hill Plateau region of NY. In addition to the noise studies, Epsilon provided technical support as part of the Article 10 permitting process.

♦ *Avangrid Renewables– North Ridge Wind, St. Lawrence County, NY*. Mr. O'Neal developed an extensive sound level measurement and modeling program for a proposed 100-megawatt (MW) wind farm in northern NY. In addition to the noise studies, Epsilon provided technical support as part of the Article 10 permitting process.

♦ *Iberdrola Renewables – Groton Wind, Groton, NH.* Developed an extensive sound level measurement and modeling program for a proposed 48 MW wind farm near Plymouth, NH. Concurrent sound level data and meteorological data were collected and analyzed. The results were presented as expert witness testimony at community open houses and during the Site Evaluation Committee public hearings. Post-construction sound monitoring was conducted to confirm compliance with the permit conditions.

♦ *NextEra Energy Resources – Eight Point Wind, Steuben County, NY*. Mr. O'Neal developed an extensive sound level measurement and modeling program for a proposed 102-megawatt (MW) wind farm in the southern tier of NY. In addition to the noise studies, Epsilon provided technical support as part of the Article 10 permitting process.

♦ *Massachusetts Clean Energy Center – Research Study on Wind Turbine Acoustics*. The study includes measuring sound emissions from a variety of operating wind turbines in the Commonwealth of Massachusetts. Fieldwork includes measuring both the level and quality of sound emissions from

operating wind turbines under various wind regimes and topography. To better understand how wind speed and wind direction vary over the turbine height, meteorological data are collected using on-site meteorological towers and LiDAR systems. Acoustical data are measured at various distances from the wind turbines and include broadband, one-third octave band, low frequency and infrasound, and interior/exterior sound levels.

♦ *Confidential Client – Wind Energy Project, VT*. Reviewed materials prepared by an opposing expert in anticipation of litigation due to noise from a wind energy project. Provided expert noise testimony before the Vermont Public Service Board on behalf of wind energy's legal counsel as part of a Technical Hearing.

♦ *Juwi Wind – Peru Wind Energy, Peru, MA*. Mr. O'Neal developed an extensive sound level measurement and modeling program for a proposed wind farm in western MA. In addition to the noise studies, Mr. O'Neal provided expert witness testimony as part of the local permitting process.

♦ *Eolian Renewable Energy -- Antrim Wind, Antrim, NH.* Developed an extensive sound level measurement and modeling program for a proposed 30 MW wind farm in Antrim, NH. Concurrent sound level data and meteorological data were collected and analyzed. The results were presented as expert witness testimony at community open houses and during the NH Site Evaluation Committee public hearings.

♦ *NextEra Energy Resources – Lee-DeKalb Wind Farm, Lee & DeKalb County, IL*. Developed and executed a sound level compliance measurement program for a 218 MW wind farm in Illinois. Concurrent sound level data and meteorological data were collected and analyzed.

♦ *FPL Energy – Horse Hollow Wind Energy Center, Taylor County, TX*. Developed and executed an extensive sound level measurement program for a 735 MW wind farm in Taylor County, TX. Concurrent sound level data, meteorological data, and wind turbine power output data were collected and analyzed. The results were used in legal proceedings as part of expert witness testimony in the case.

♦ *FPL Energy – Wolf Ridge Wind Farm, Cooke County, TX*. Developed and executed an extensive sound level measurement and modeling program for a proposed wind farm in Cooke County, TX. Concurrent sound level data and meteorological data were collected and analyzed. The results were used in legal proceedings as part of expert witness testimony in the case.

♦ *John Deere Renewables –Michigan Thumb I Wind Farm, Huron County, MI*. Developed and executed a long-term sound level measurement program for an existing 69 MW wind farm in Michigan to determine compliance with the local noise ordinance. Concurrent sound level data and meteorological data were collected and analyzed.

♦ *NextEra Energy Resources (formerly FPL Energy) – Low Frequency & Infrasound Study, TX*. Developed and executed a sound level measurement program as part of a scientific study to determine low frequency and infrasound levels from two types of wind turbines. Both interior and exterior data were compared to independent impact criteria for audibility, vibration, rattle, and annoyance. The study results were published in the peer-reviewed Noise Control Engineering Journal.

♦ *NextEra Energy Resources (formerly FPL Energy) – Ashtabula Wind Farm, Barnes County, ND*. Developed and executed a sound level measurement program for an existing wind farm in North Dakota in response to noise complaints. Concurrent sound level data and meteorological data were collected and analyzed.

♦ *Gamesa Energy – Barton Chapel Wind Farm, Jack County, TX.* Developed an extensive sound level measurement and modeling program for a proposed 120 MW wind farm in Jack County, TX. Concurrent sound level data and meteorological data were collected and analyzed. The results were used in legal proceedings as part of expert witness testimony in the case.

♦ *Con Edison Development – Campbell County Wind, Campbell County, SD*. Mr. O'Neal conducted post-construction sound level measurements for a 93-megawatt (MW) wind farm in SD.

♦ *Babcock & Brown – Allegheny Ridge Wind Farm, Portage, PA*. Developed and executed a sound level measurement program for an 80 MW wind farm in Cambria and Blair Counties, PA. Concurrent sound level data, meteorological data, and wind turbine power output data were collected and analyzed. The results were used to demonstrate compliance with the noise standard of the Development Agreement with the local Township.

♦ *State of New Hampshire, Office of the Attorney General -- Lempster Mountain Wind Power Project, Lempster, NH*. Performed an independent review of a proposed 24 MW wind turbine farm. The applicant's noise impact analysis was evaluated and comments provided to the State of NH.

EXPERT TESTIMONY EXPERIENCE

Expert witness before NY DPS & DEC Administrative Law Judges on noise issues for a 125 MW wind energy facility (2019). Case #16-F-0559.

Expert witness before the South Dakota Public Utilities Commission, on noise and shadow flicker for Dakota Range I and Dakota Range II Energy Facility Permit, Pierre, SD (2018). Case #EL18-003.

Expert witness before the North Dakota Senate Subcommittee of Energy and Natural Resources, Draft law on Sound Levels from Wind Energy Facilities, Bismarck, ND, NextEra Energy Resources, LLC (2017).

Expert witness before the Maine Board of Environmental Protection, on noise issues for the Juniper Ridge Landfill expansion, Old Town, ME (2016). Case #S-020700-WD-BI-N and #L-19015-TG-D-N.

Expert witness before the Board of Commissioners, Chowan and Perquimans Counties, NC, on blade and ice drop for Timbermill Wind Conditional Use Permit (2016).

Expert witness before the Environmental Review Tribunal (via skype), Ontario, Canada on noise issues for wpd White Pines Wind, Prince Edward County, Ontario [Case ERT 15-071, Alliance to Protect Prince Edward Co. v. Director, Ministry of the Environment] (2015).

Expert witness before the Jackson Township Board of Supervisors, Cambria County, PA on noise issues for a 980 MW natural gas-fired combined-cycle power generation plant (2015).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for Grey Highlands Clean Energy GP Corp., Grey Highlands, Ontario [Case ERT 15-026, Fohr v. Director, Ministry of the Environment] (2015).

Expert witness in Vermont Superior Court, Environmental Division, Docket No. 179-10-10; on noise issues for an aggregate extraction and crushing operation, McCullough Crushing, Calais, VT (2015).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for Grey Highlands Zero Emission People Wind Farm, Grey Highlands, Ontario [Case ERT 15-011, Dingeldein v. Director, Ministry of the Environment] (2015).

Prepared witness statement for the Environmental Review Tribunal, Ontario, Canada on noise issues for Niagara Region Wind Corporation, Haldimand County, Ontario [Case ERT 14-096, Mothers Against Wind Turbines, Inc. v. Director, Ministry of the Environment] (2015).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for SP Armow Wind Ontario GP Inc., Kincardine, Ontario [Case ERT 13-124 to 13-125, Kroeplin v. Director, Ministry of the Environment] (2014).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for K2 Wind Ontario, Inc., Ashfield-Colbourne-Wawanosh, Ontario [Case ERT 13-097 to 13-098, Drennan v. Director, Ministry of the Environment] (2013).

Expert witness before the Environmental Review Tribunal, Ontario, Canada on noise issues for Dufferin Wind Power, Melancthon, Ontario [Case ERT 13-070 to 13-075, Bovaird v. Director, Ministry of the Environment] (2013).

Expert witness before the NH Site Evaluation Committee on noise and shadow flicker issues for the 30 MW Antrim Wind Project (2012; 2016) Docket No. 2015-02 and Docket No. 2012-01; 48 MW Groton Wind project (2010) Docket No. 2010-01.

Expert witness before the MA Energy Facilities Siting Board on noise issues for: 18-mile underground electric transmission line and substation project in the Boston Metropolitan area (2004-2005); Billerica Energy Center power plant (2007); Brockton Clean Energy (2008-2009), West Medway II power plant (2015), Woburn-Wakefield electric transmission line (2016), National Grid gas pipeline—Lowell/Tewksbury (2018), Vineyard Wind (2018).

Expert witness in Vermont Act 250 Land Use proceedings on noise issues for a proposed sand and gravel excavation site at Okemo Mountain (2007). Permit No. 2S1122.

Expert witness in the 42nd District Court of Texas on noise issues for a 735 MW wind turbine farm (2006).

Expert witness before NY DEC Administrative Law Judge on noise issues for a hard rock quarry facility (1997), two sand and gravel excavation sites (2001; 2003), and a cogeneration power plant (2003).

Expert witness for site assignment hearings on noise issues from solid waste transfer stations in Lowell, MA (1998); Marshfield, MA (1999); Holliston, MA (2004); Oxford, MA (2006).

Expert witness in Massachusetts Land Court on noise issues for a proposed sand and gravel pit (1991), a proposed cross-dock distribution center (2002), and an existing concrete batch plant (2005).

Expert witness in Vermont Act 250 Land Use process for air quality impacts at ski areas (1991; 1992; 1997).

Expert witness before MA DEP Administrative Law Judge for an asphalt plant in Boston (1996).

Expert witness before municipal boards on issues of air pollution and noise impacts from local industries (many years).

Invited specialty speaker on noise impact assessments for Boston University's Masters of Urban Planning degree program (1994; 1996).

PUBLICATIONS

O'Neal, R.D., Hellweg, Jr., R.D. and R. M. Lampeter, 2011. Low frequency sound and infrasound from wind turbines. Noise Control Engineering Journal, 59 (2), 135-157.

O'Neal, R.D., and R.M. Lampeter, 2007: Sound Defense for a Wind Turbine Farm. North American Windpower, Zackin Publications, Volume 4, Number 4, May 2007.

O'Neal, R.D., 1991: Predicting potential sound levels: A case study in an urban area. Journal of the Air & Waste Management Association, 41, 1355-1359.

McKee, T.B. and R.D. O'Neal, 1989: The role of valley geometry and energy budget in the formation of nocturnal valley winds. Journal of Applied Meteorology, 28, 445-456.

CONFERENCE PRESENTATIONS

O'Neal, R.D., 2019. Environmental Aspects of Renewables Workshop. Electric Power Research Institute, Chicago, IL.

Kaliski, K., Bastasch, M., O'Neal R.D., 2018. Regulating and predicting wind turbine sound in the U.S. Presented at INTER-NOISE 2018, Chicago, IL

O'Neal, R.D., 2017. Sound level impact studies for wind energy in NY State. Acoustical Society of America Fall Meeting, New Orleans, LA.

Kaliski, K., O'Neal, R.D., et al 2016. Massachusetts Research Study on Wind Turbine Acoustics: Over view and Conclusions. NOISE-CON 2016, Providence, RI.

O'Neal, R.D., 2014. Wind Energy Sound Monitoring Under High Wind Shear Conditions. NOISE-CON 2014, Fort Lauderdale, FL.

O'Neal, R.D. Lampeter, R.M., Emil, C.B. and B.A. Gallant, 2012. Evaluating and controlling noise from a metal shredder system. Presented at INTER-NOISE 2012, NY, NY.

O'Neal, R.D., 2011. Wind Turbine sound Levels: The Michigan I, Huron County, MI Study. Presented at Great Lakes Wind Collaborative 4th Annual Meeting, Ypsilanti, MI.

O'Neal, R.D., Hellweg, Jr., R.D. and R. M. Lampeter, 2011. Low frequency sound and infrasound from wind turbines. Presented at WINDPOWER 2011, Anaheim, CA.

O'Neal, R.D., Hellweg, Jr., R.D. and R. M. Lampeter, 2010. Low frequency sound and infrasound from wind turbines – a status update. NOISE-CON 2010, Baltimore, MD.

O'Neal, R.D., 2010. Noise control evaluation for a concrete batch plant. NOISE-CON 2010, Baltimore, MD.

O'Neal, R.D., and R.M. Lampeter, 2009: Nuisance noise and the defense of a wind farm. INTER-NOISE 2009, Ottawa, Canada, August 23-26, 2009.

O'Neal, R.D., and R.M. Lampeter, 2009: Sound from Wind Turbines: A Key Factor in Siting a Wind Farm. 12th Annual Energy & Environment Conference – EUEC 2009, Phoenix, AZ, February 2, 2009.

Diane E. Reilly

EDUCATION
M.A., Economics, University of Georgia
B.A., Economics and Spanish, Furman University

AREAS OF EXPERTISE
Ms. Diane E. Reilly has technical experience in the following general areas:

- Economic Impact Modeling for Solar and Wind Energy Projects
- FERC Hydroelectric Licensing & Compliance
- Economic/Socioeconomic Studies
- Recreation Use Studies
- Environmental Justice Analysis
- Environmental Impact Statements and Environmental Assessments

REPRESENTATIVE EXPERIENCE
Ms. Reilly has over 20 years of environmental consulting. She is experienced in providing economic modeling and analyses for the permitting of wind and solar power projects. She also evaluates socioeconomic and recreation issues for the Federal Energy Regulatory Commission (FERC) in the areas of hydropower licensing and license compliance. Ms. Reilly provides analyses of socioeconomic, recreational, and land use impacts for Environmental Assessments (EAs) and Environmental Impact Statements (EISs).

Solar, Wind, and Natural Gas Permitting

Danskammer Energy, Danskammer Energy Center—Newburgh, New York (Economist: 2019)
Ms. Reilly is evaluating the potential economic impacts associated with the proposed repowering of the existing 532 MW Danskammer generating facility with a state-of-the-art natural gas-fired combined cycle power generation facility. The National Renewable Energy Laboratory's Jobs and Economic Development Impact (JEDI) natural gas model will be used to analyze the Project's expected impacts on jobs, earnings, and output.

NextEra Energy Resources, East Point and High River Solar Projects—New York (Economist: 2018-2019)
Ms. Reilly is calculating economic impacts of the proposed solar power projects during the projects' construction phases and the operation and maintenance phases using the JEDI wind model. For the projects, she will be evaluating effects in terms of jobs, earnings, and output. Ms. Reilly is also providing demographic, housing, and employment analyses for the project area and evaluating Environmental Justice issues. The projects will culminate in Exhibits for the Article10 filing with New York State.

NextEra Energy Resources, Solar Power Projects— Maine, New Hampshire, New York, Rhode Island (Economist: 2018)
Ms. Reilly evaluated the economic effects of multiple proposed solar power projects using the JEDI solar voltaic model. The effort included calculating impacts in terms of jobs, earnings, and output for the construction phase and the operation and maintenance phase.

NextEra Energy Resources, Eight Point Wind Energy Center—Greenwood and West Union, New York (Economist: 2017-2019)
For the Eight Point Wind Energy Center, Ms. Reilly calculated the economic impacts of the proposed wind energy center during the project's construction phase and the operation and maintenance phase using the JEDI wind model. Ms. Reilly evaluated potential impacts effects in terms of jobs, earnings, and output. She provided demographic, housing, and employment analyses for the project area. Ms. Reilly also developed the Environmental Justice analysis. The analyses were presented as Exhibits for the Article 10 filing with New York State. Ms. Reilly provided expert testimony and ongoing support as part of the Rebuttal Panel.

NextEra Energy Resources, Wind Energy Projects—Moosehead Lake Region, Maine (Economist: 2018)
Ms. Reilly evaluated the economic effects of two proposed wind energy centers in the Moosehead Lake Region of Maine using the JEDI wind model. The analysis calculated impacts in terms of jobs, earnings, and output for the construction phase and the operation and maintenance phase.

NextEra Energy Resources, Bronco Plains Power Projects —Colorado (Economist: 2017)
Ms. Reilly evaluated the economic effects of two proposed wind projects and associated transmission lines and two proposed solar power projects. The project also required Ms. Reilly to model jobs, earnings, and output for projects using the JEDI wind, solar voltaic, and transmission line models.

TransCanada Energy, Ltd., Kibby Wind Power Project—Maine (Economist: 2006-2007)
Ms. Reilly determined recreational usage within the Kibby Wind Power Project Study Area for TransCanada Energy's 132-megawatt wind power generating facility in the Boundary Mountains of Western Maine. The recreation study involved determining recreational usage levels, activity types, and user-perceived impacts of the proposed project on recreation. The Project, which has now been completed, is the largest wind power project in New England.

Hydropower Projects

Eagle Creek Renewable Energy, Mongaup River Projects—Sullivan County, New York (Economist: 2018-2019)
Ms. Reilly is developing recreation use estimates by activity type and season for three hydropower projects on the Mongaup River in New York. She is also evaluating the results of a year-long user perception survey. As part of the project, she previously analyzed whitewater boating on two reaches of the Mongaup River.

Tennessee Valley Authority (TVA), Rock Island State Park —Rock Island, Tennessee (Economist: 2018)
For TVA, Ms. Reilly evaluated the anticipated socioeconomic effects of a proposed road construction project and the renovation of an historic mill into lodging and a restaurant. The project involved calculating direct impacts in terms of jobs, earnings, and output for the construction phase and the operation and maintenance phase. Ms. Reilly addressed potential recreation-related spending associated with the proposed inn and restaurant. She also analyzed area demographic, housing, and employment.

New York Power Authority, Blenheim-Gilboa Pumped Storage Project—Blenheim and Gilboa, New York (Technical Lead, Economics: 2012-2017)
Ms. Reilly served as technical lead for the socioeconomic issues related to the relicensing of NYPA's 1,160 MW Blenheim-Gilboa Pumped Storage Power Project. She authored the socioeconomic portion of the Pre-Application Document, the Socioeconomic Study, and portions of the Draft License Application. As the technical lead, Ms. Reilly managed the REMI analysis and participated in public meetings. Her recreation efforts include analyzing recreation use, activity data, and recreation user survey data.

FirstLight, Turners Falls/Northfield Mountain Hydropower Projects—Northfield and Turners Falls, MA (Economist: 2015-2017)
For the Turners Falls/Northfield Mountain Projects, Ms. Reilly developed seasonal and annual recreational use, recreation use by activity type, and future demands at each recreation site. She also analyzed capacity use by recreation site. Ms. Reilly supported the development of the relicense application and FERC Form 80s.

Exelon Power, Conowingo Project and Muddy Run Pumped Storage Project—Pennsylvania and Maryland (Economist: 2011—2015)
Ms. Reilly provided recreation analysis to support Exelon Generation Company, LLC (Exelon) during its FERC Form 80 filings and the relicensing process for its 573 MW Conowingo Project and its 800 MW Muddy Run Storage Project, with a total of 21 formal recreation sites. Ms. Reilly estimated specific use level, activity types, and capacity information for each of the projects' recreation facilities included in the study. The project also required forecasting future recreation demand and capacity by recreation site.

Georgia Power Company, Bartletts Ferry Hydropower Project—Georgia and Alabama (Recreation Technical Lead: 2008—2009)
Ms. Reilly was the technical lead for recreation during the FERC relicensing of Georgia Power's 173-MW Bartletts Ferry Project on the Chattahoochee River along the Georgia/Alabama border. The Project includes eight recreation sites along 156 miles of shoreline. Ms. Reilly calculated existing and future recreational demands and activity patterns from data collected during the FERC-approved recreation study. The resulting recreation study report served as the basis for the recreation portion of the license application.

Georgia Power Company, Morgan Falls Hydropower Project—Georgia (Recreation Technical Lead: 2005—2008)
Ms. Reilly served as the technical lead for recreation and socioeconomics during the FERC relicensing of Georgia Power's 16.8 MW Morgan Falls Project located in metropolitan Atlanta. The Project was one of the first to use the Integrated Licensing Process (ILP). Ms. Reilly developed the recreational use characterization for the project and the population and recreation demand projections. She also addressed future capacity issues, evaluating the need for additional facilities.

New York Power Authority, Niagara Power Project—Niagara Falls, NY (Technical Lead, Economics: 2002-2005)
Ms. Reilly assisted in the development of the Scope of Services, managed the REMI modeling, and authored sections of the socioeconomic report for the relicensing of the Niagara Power Project (2,755 MW). The project required the development of a new license application and a settlement structure to meet the needs of NYPA and the more than 100 interested parties.

EXPERT TESTIMONY

Provided deposition testimony on behalf of Eight Point Wind. LLC in its Application for a Certificate of Environmental Compatibility and Public Need pursuant to Article 10 to construct a wind energy project, (Case 16-F-0062) New York State Board on Electric Generation Siting and the Environment. November 2017. Provided Rebuttal Panel Testimony. February 2019.

Provided deposition testimony on behalf of Eight Point Wind. LLC in its Application for a Certificate of Environmental Compatibility and Public Need pursuant to Article VII to construct and operate a 16.5-mile 115KV transmission line. (Case 18-T-0202) New York State Board on Electric Generation Siting and the Environment. March 2018.

Michael J. Ross RLA ASLA

How will your expertise be utilized for TRC projects?

Having over 20 years of experience within the profession of Landscape Architecture has provided me with a background that is broad and diverse in nature which allows me to adapt to a variety of projects, perform various tasks, and has given me the ability to confidently address unknown and/or unforeseen challenges that may arise during the design phase of any project.

I strongly believe that the discipline of Landscape Architecture can play an important role and be an important component in any project, as the pure nature of the profession promotes collaboration between professionals and interacts with all aspects of the design process in some form or another and thereby compliments the other disciplines and talents and what they contribute to the project, as a whole, for our clients.

The inherent interaction and collaboration between other disciplines and talents over the years has provided me with strong coordination and communications skills that allows me to work well with others and effectively contribute to team efforts whenever asked.

Mr. Ross has more than 23 years of experience in the profession of Landscape Architecture. His background is diversified, encompassing the wide variety of responsibilities incorporated into this field. He has a working knowledge and understanding of land development and construction document production. This primary focus involves a range of responsibilities including but not limited to:

- Site analysis, field scoping views, and formal survey requests
- Due Diligence Reports
- Conceptual Design and Exhibit Presentations with Client.
- Prime and/or Sub-consultant interaction
- Initial utility coordination
- Preliminary/Pre-Final coordination and design of Land Development Plan Sets
- Production of Specification Packages
- Project quantities and cost estimates
- Final project coordination and design of Land Development and Construction Document Plan Sets
- All aspects of Permitting Approvals including: E&S/NPDES, HOP, PHMC, Zoning, Planning, and SALDO
- Upfront Bid Document preparation
- Review and Approval of contractor submittals.
- Site inspection and final approval.

CREDENTIALS

Education

- B.S., Landscape Architecture, The Pennsylvania State Univ., University Park, PA, 1995

Professional Registrations/Certifications/Training:

- Pennsylvania Registered Landscape Architect License No. LA002697
- West Virginia Registered Landscape Architect License No. 416
- Colorado Registered Landscape Architect License No. LA1362
- North Carolina Registered Landscape Architect License No. 2096
- Maryland DNR Forest Conservation Qualified Professional

Memberships/Associations:

- American Society of Landscape Architects (ASLA)
- Counsel of Landscape Architectural Registration Boards (CLARB)

EXPERIENCE

Professional Summary: Over 23 years- **Areas of Expertise:**

- All aspects of the Land Development Submission process
- Civil Site Plan Development
- Site Analysis, Field Scoping Views, and Formal Survey Requests
- Due Diligence Reports and Utility Coordination
- Conceptual Design and Exhibit Presentations for Client
- Prime and/or Sub-Consultant Interaction and Consultation
- LEED Certified and Sustainable project site design
- Master planning, Estate planning, and Streetscaping
- Hardscape and Planting design/implementation
- All aspects of Permitting Approvals including: E&S/NPDES, HOP, PHMC, Zoning, Planning, and SALDO
- Design/build implementation and processes and Phased planning/design
- Estimating project quantities and costs relating to construction materials and labor
- Project management and coordination with general and/or subcontractors throughout the construction process
- Final project completion, site inspections and approval
- Program Manager for project site Visual Simulation Efforts
- Conservation, Reforestation, and Afforestation Efforts

PROJECT EXPERIENCE

TRC SOLAR PROJECS: 2017-2019

Landscape Architect responsible for the overall coordination and implementation of appropriate design elements for Land Development Submission and Approval Processes on solar fields throughout the New England and Mid-Atlantic States. Responsibilities include preparation of Landscaping Plans, Planting Schedules, Planting Details, various BMPs, Seeding Mixes, and Notes. Additional responsibilities include Program Management of various site visualization simulation efforts.

TRC MISCELLANEOUS PROJECS:

Dominion Energy, Reforestation/Afforestation Efforts, Charles County, MD - Project Landscape Architect in the overall coordination and design for site remediation, reforestation, and afforestation efforts for a 17-acre project site. Tasks included coordination with Client, Project Management, and Environmental Team. Recommend the implementation of specific tree plantings according to Maryland Department of Natural Resources, Charles County, and FERC regulatory agencies. Generate Landscape Plans, appropriate Details, Planting Schedules, Planting Calculations, and Landscaping Notes for FERC approval. Coordinate and Assist Pm and team with RFP, Pre-Bid, and project site inspection needs.

McCarthy Tree Replacement and Estimates of Probable Costs, Washingtonville, NY - Project Landscape Architect in the overall coordination and presentation of Analysis Report and Estimates of Probable Costs for tree replacements on project site. Tasks included coordination with Client, Project Management, and Environmental Team to provide/generate a descriptive Analysis Report identifying cost values assigned to existing woodland forest to be cleared and removed. Additional tasks include: evaluating tree survey data, utilizing GIS and LiDAR capabilities to assume existing tree canopy coverage, providing/assigning/calculating tree costs and labor rates, and generating a report for public presentation.

Shieldalloy Metallurgical Corporation, Site Restoration, Burlington/Gloucester Counties, NJ - Project Landscape Architect in the overall coordination and design for site remediation and exit strategy efforts of a 19-acre contaminated site. Tasks included coordination with environmental and engineering design teams. Recommending the implementation of specific BMPs. Generating Landscape Plans, appropriate Details, Planting Schedules, and Landscaping Notes for NJ DEP permit approval. 2017

Colonial Pipeline Dig Site 34-37, Delaware County, PA - Project Landscape Architect in the overall coordination and design for Erosion and Sediment Control efforts of a pipeline maintenance work site. Tasks included coordination with environmental and engineering design teams. Recommending the implementation of specific BMPs. Generating Erosion and Sediment Control Plans, appropriate Details, Notes for PA DEP permit approval. 2017

Harvard Press Redevelopment, Essex County, NJ - Project Landscape Architect in overall coordination of the project Redevelopment, Minor Subdivision, and Site Plan. Tasks included coordination efforts with Project Management and design team. Implementing appropriate design elements and generate a Revised Plan Set that addresses comments for Land Development Submission and Approval. 2017-2018

Lambertville and Penn East Compressor Stations, Hunterdon County, NJ - Project Landscape Architect in overall coordination of project Stormwater and Erosion Control design efforts. Tasks included strong coordination efforts with

Project Management and design team. Implementation of two retention and detention basins for stormwater quality and control. Generate an appropriate Landscape Plan Set with appropriate planting and seed mixes, planting schedules, details, and notes to address the requirements of the NJ DEP permit approval process. 2017-2018

Eight Point Wind Turbine Farm, Steuben County, NY - Panel member participant for a Visual Impact Assessment of a Wind Energy Center located in southcentral New York State. Tasks included strong coordination efforts with Project Management and strong participation efforts in the visualization assessment and rating system required by the NY State **Article 10 Permitting Approval Process. 2017**

SMUD – Sacramento Municipal Utility District Franklin Boulevard Substation, Sacramento County, CA - Project Landscape Architect responsible for overall coordination and implementation of Landscaping and Irrigation Plans for a new Electrical Substation. Tasks included strong coordination efforts with Project Management throughout the design process. Generating Landscaping Plans, Details, Planting Schedules, and Notes to satisfy the Permitting Approval Process. Generating and Estimate of Probable Costs. 2017-2018

Boston Harborwalk/K Street Pedestrian Trail Connector, The City of Boston, MA - Project Landscape Architect responsible for the conceptual design and layout for a trail connector project within the Boston Harborwalk pedestrian trail system. Tasks included overall coordination and implementation of the conceptual design and Site Plan layout, Client interaction and strong coordination efforts with Project Management throughout the design process. Generating a Plan Set with Site Renderings and Visualizations, Details, Section Elevations, and Notes to satisfy the Permitting Approval Process with the MASS DEP. Generating and Estimate of Probable Costs. 2018

CSX Baltimore Demolition Project, The City of Baltimore, MD - Project Landscape Architect responsible for the overall production and coordination of generating a Demolition Plan Set for the razing of a structure owned by CSX Railroad Corporation located within the city limits of Baltimore. Tasks included utility coordination, Demolition Plan Set production with and Erosion and Sediment Control Plan, Details, and Notes, and strong coordination efforts with the City of Baltimore to satisfy the Permitting Approval Process. 2017-2018

Senior Designer/Landscape Architect- Gibson-Thomas Engineering Co., Inc.

CEDA COG/PennDOT District 2-0, SR 0022/322 Commuter Parking Feasibility Study, Juniata County, PA - Perform a Commuter Analysis, determine the required parking facility size, and coordinate Site recommendations to CEDA COG and PennDOT District 2-0 for a New Commuter Parking Facility in Juniata County. Additional tasks included: Coordination with local and state government agencies. Generate and distribute windshield surveys for data collection purposes. Determine future growth factors. Generate Study Maps and Sketches, Data Matrix and Tables, and Cost estimates for submission to CEDA COG and PennDOT District 2-0. Conduct Project Kick-Off, Status, and Recommendation Meetings. Coordinate with local property owners, business owners, and stakeholders. Conduct a Real-Estate search for potential properties that could accommodate the New Commuter Parking Facility. Review and consider areas for storm water management and local Zoning and SALDO requirements. Generate and Estimate of Probable Costs. 2010-2011

PennDOT District 5-0, SR 1002, Section 01B, Pottsville Street Bridge Over Mill Creek, Borough of Port Carbon, Schuylkill County, PA - Assist in generating Erosion and Sediment Pollution Control Plans and Narrative to gain permit approval for bridge reconstruction. Additional tasks included: coordination with Adams county Conservation District,

propose various Best Management Practice (BMP) solutions, generate a construction sequence, and provide appropriate notes, charts, and construction details for plan submission and approval. 2012-2013

PennDOT District 8-0, SR 0034, Section 037, Carlisle Road Bridge Over Quaker Run, Menallen Township, Adams County, PA - Assist in generating Erosion and Sediment Pollution Control Plans and Narrative to gain permit approval for bridge reconstruction. Additional tasks included: coordination with Adams County Conservation District, propose various Best Management Practice (BMP) solutions, generate a construction sequence, and provide appropriate notes, charts, and construction details for plan submission and approval. 2012-2013

The Pennsylvania Turnpike Commission, Access Ramp Design Improvements Milepost 238, Lower Allen Township Cumberland County, PA - Design various layouts for emergency access ramps on and off the Pennsylvania Turnpike at the Lisburn Road bridge structure overpass. Perform zoning, SALDO, and deed research to obtain necessary survey and site distance requirements. Incorporate LIDAR survey into plan set. Generate estimate of probable costs. Generate grading plans and alignment cross sections and identify required right-of-way needed for proposed access ramps and mainline widening. 2012-2013

The Pennsylvania Turnpike Commission, Bituminous Overlay Between Milepost 345.75 and 351.75 in Montgomery and Bucks Counties, PA - Assist in the overall coordination and design of a bituminous overlay project. Additional tasks included: Generate a comprehensive plan set with numerous Section Elevations, Details, and Tabulations. Identify and incorporate all utilities into the plan set. Generate Maintenance and Protection of Traffic Plans, Gore Area Striping Plans, and Cost Estimates for submission. 2012-2013

Project Landscape Architect- BL Companies

LeTort Regional Authority Trail and Urban Greenway Feasibility Study, Cumberland County, PA - Project Landscape Architect assisting in the overall coordination, design, and layout of a trail and urban greenway system within four local municipalities in Cumberland County that would stem from the internationally famous trout stream- The LeTort Spring Run. Tasks included coordination with local and state government agencies including PENNDOT, The Pennsylvania Turnpike Commission, Cumberland County Planning Commission, DEP, and DCNR. Participation in numerous public meetings and presentations. Generating Study Maps, Section Elevations, Details and Cost Estimates to submit to the LeTort Regional Authority. 2007-2008

LeTort Regional Authority Trail and Urban Greenway Conceptual Construction Documents for funding submission, Cumberland County, PA - Project Landscape Architect in the overall coordination and design of Conceptual Construction Documents used by the LeTort Regional Authority for presentation and submission to obtain various grant funding opportunities. Tasks included GPS data collection to station the trail alignments. Generation Construction Documents. Proposed various BMP solutions throughout the Trail and Urban Greenway. 2007-2008

Gettysburg College Athletic Facility, Adams County, PA - Project Landscape Architect in the overall coordination and design of a newly renovated and LEED Accredited Athletic Facility. Tasks included coordination with college officials and complete design team. Generating Landscape Plans and hardscape details for Land Development approval. Generating Construction Document plans for submittal and bidding purposes. 2007-2008

Gettysburg College Sustainable Parking Lot, Adams County, PA - Project Landscape Architect in the overall coordination

and design of a new sustainable parking lot facility that utilized CU Engineered Soil enabling the harvest and storage of on-site and off-site stormwater runoff. Tasks included coordination with college officials. Generating Land Development plans for submission and municipal approval. 2007-2008

Chalfont Gateway Shopping Center, Montgomery County, PA - Project Landscape Architect in the overall coordination and design of a new Gateway Shopping Center including a bank, pharmacy, office buildings, retail buildings, and a Malvern School for Children. Tasks included: Initial site layout of proposed building structures. Landscape design and layout for Land Development submission and approval. 2006-2008

Princeton Junction Retail Center, Mercer County, NJ - Project Landscape Architect in the overall coordination and design of a new Retail Shopping Center including a restaurant, pharmacy, retail shops, and a coffee shop. Tasks included: Initial site layout of proposed building structures. Design of outdoor court and eating areas. Landscape design and layout for Land Development submission and approval. 2008-2009

In Addition: Mr. Ross has been involved in numerous commercial projects at BL Companies that required full Land Development approval and Construction Document preparation for bidding and construction purposes. 2006-2009

Landscape Designer- DCNR Bureau of Facility Design and Construction

Hick's Run Elk Viewing Site, Cameron County, PA- Project manager/designer in the overall coordination and design of one in a series of elk/wildlife viewing sites that were incorporated into the overall Pennsylvania Wilds Program. 2004-2006

Skippack Golf Course Parking Lot Renovations, Montgomery County, PA - Project manager/designer in the overall coordination and design renovation of a 108-space parking lot. Numerous BMP design elements played a significant role in the NPDES Permit approval process. 2003-2005

Pine Creek Rail Trail Phase IV, Tioga County, PA - Project manager/designer in the overall coordination and design of the final phase of a 57.8-mile rail trail. The trail runs through the Pennsylvania Grand Canyon and is rated by USA TODAY as one of the top 10 places to take a bike tour. 2003-2006

Lehigh George Park Improvements, Luzerne and Carbon Counties, PA - Project Coordinator and Representative for DCNR, acting as the primary point of contact for the Consultant in advising and assisting in the overall design process for park improvements including a new vehicular access, white water boat launch areas, and a main street bicycle/pedestrian route. 2004-2005

Presque Isle Site layout for Amphitheater structure, Erie County, PA - Project manager/designer in the overall design and coordination of the site layout and design of a new amphitheater at the Tom Ridge Education Center. 2003-2004

Lackawanna State Park Office Addition, Lackawanna County, PA - Project Landscape designer in the overall coordination and site design/layout of a park office addition. Design elements incorporated to meet LEED Certification goals. 2004-2005

Hyner Run/View State Park, Clinton County, PA - Project manager/designer for Phase II which involved the rehab of approximately 7 miles of state park road. 2003-2004

Landscape Designer- The RBA Group

Chester Valley Trail Extension, Montgomery County, PA - Project landscape designer working with a team of bicycle/pedestrian experts designing 8 miles of bikeway through traffic-congested communities within the county. 2002-2003

French Creek Trail and Greenway Project, Chester County, PA - Project landscape designer assisting in overall coordination and design of the project. Tasks performed included initial utility, site layout and grading, quantity and cost tabulations, and product specification. 2002-2003

AES Ironwood Park, Lebanon County, PA - Project team member for a 19-acre park renovation project assisting the AES Ironwood Foundation to provide a high-quality park for the local communities. 2002-2003

OTHER RELATED EXPERIENCE

Include: Master planning, Estate planning, Hardscape and Planting design/implementation, and phased planning/design. Most of my projects involved design/build implementation and processes and was primarily focused within upper-end residential sites. I oversaw the implementation of all aspects of his projects: Beginning with client interaction and conceptual design processes, estimating project quantities and costs relating to construction materials and labor, project management and coordination with general and/or subcontractors throughout the construction process, to final project completion and site inspections and approval. A primary emphasis of design/build construction and hardscape implementation was a significant part of my overall performance skills.

TIMOTHY R. SARA, RPA

EDUCATION

M.A., Anthropology, Hunter College, City University of New York, 1994

B.A., Anthropology and Geography, State University of New York at Binghamton, 1984

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Register of Professional Archaeologists (1995 – Present)

REPRESENTATIVE EXPERIENCE

Mr. Sara is a Registered Professional Archaeologist (RPA) with 34 years of professional experience in cultural resources management and historic preservation planning. Over the course of amassing his experience he has designed and directed surveys and excavations of historic and prehistoric archaeological resources in the Northeast, Mid-Atlantic, Southeast, Midwest, Southwest, and Caribbean. He has also obtained a thorough knowledge of Section 110 and Section 106 and of the National Historic Preservation Act as amended (NHPA) and applying the National Register of Historic Places (NRHP) eligibility criteria to cultural resources. Mr. Sara has received honors and awards for both his academic and professional studies.

Mr. Sara serves as Program Manager, Archaeology and Office Practice Leader for TRC's Lanham, Maryland office with responsibility for all business functions of the office as well as quality control and staff management. He is the Principal Investigator on a series of proposed electrical generating and transmission projects in Albany, Chenango, Greene, Orange, Rensselaer, Steuben, Suffolk, and Ulster counties, New York. Mr. Sara has also served as Principal Investigator on a series of solar energy development projects in Gloucester and Hunterdon counties, New Jersey. Mr. Sara coordinates project reviews on a regular basis with SHPO staff members in the Northeast and Mid-Atlantic and has an excellent knowledge of the archaeology of these regions.

As a professional in the field of cultural resources management, Mr. Sara has also worked directly with other environmental conservation program areas implemented by the National Environmental Policy Act (NEPA). He has served as a key member of overall environmental planning teams, working with other environmental professionals including soil scientists, wetlands specialists, biologists, and hazardous waste managers. He has been a contributing author on more than 100 Environmental Assessments (EAs) and/or Environmental Impact Statements (EIS) and principal or contributing author to more than 300 cultural resources management reports. Mr. Sara has a broad knowledge of cultural resource management principles and practices, archaeological survey, evaluation, and data recovery methodologies, and presentation of research results within Federal and state agency, academic, and public sector frameworks. His areas of expertise include:

- Northeastern Historical and Prehistoric Archaeology
- Cultural Resource Permitting for Energy Development Projects
- Survey and Resource Evaluation
- Project Management for Cultural Resources Studies
- Environmental Impact Assessment and Studies
- Public Outreach and Exhibit Services

NextEra Excelsior Solar Energy Center Project, Phase IA Archaeological Study, Genesee County, New York (Principal Investigator/Project Manager 2019).

Prepared research design and directed all aspects of archaeological background research associated with solar energy development project in western New York. Contributing author of report submitted to NextEra Energy Resources, LLC, and New York State Historic Preservation Office. Prepared Exhibit 20 (Cultural Resources) for Article X New York State Public Service Commission environmental documentation.

NextEra Trelina Solar Energy Center Project, Phase IA Archaeological Study, Seneca County, New York (Principal Investigator/Project Manager 2019).

Prepared research design and directed all aspects of archaeological background research associated with solar energy development project in western New York. Contributing author of report submitted to NextEra Energy Resources, LLC, and New York State Historic Preservation Office. Prepared Exhibit 20 (Cultural Resources) for Article X New York State Public Service Commission environmental documentation.

NextEra Watkins Glen Solar Energy Center Project, Phase IA Archaeological Study, Schuyler County, New York (Principal Investigator/Project Manager 2019).

Prepared research design and directed all aspects of archaeological background research associated with solar energy development project in eastern New York. Contributing author of report submitted to NextEra Energy Resources, LLC, and New York State Historic Preservation Office. Prepared Exhibit 20 (Cultural Resources) for Article X New York State Public Service Commission environmental documentation.

NextEra East Point Solar Energy Center Project, Phase IA and IB Archaeological Studies, Schoharie County, New York (Principal Investigator/Project Manager 2018 - 2019).

Prepared research design and directed all aspects of archaeological background and field research associated with solar energy development project in eastern New York. Contributing author of report submitted to NextEra Energy Resources, LLC, and New York State Historic Preservation Office. Prepared Exhibit 20 (Cultural Resources) for Article X New York State Public Service Commission environmental documentation.

NextEra High River Solar Energy Center Project, Phase IA and IB Archaeological Studies, Montgomery County, New York (Principal Investigator/Project Manager 2018 - 2019).

Prepared research design and directed all aspects of archaeological background and field research associated with solar energy development project in eastern New York. Contributing author of report submitted to NextEra Energy Resources, LLC, and New York State Historic Preservation Office. Prepared Exhibit 20 (Cultural Resources) for Article X New York State Public Service Commission environmental documentation.

Public Service Enterprise Group Long Island LLC, Multiple Repeater Site Projects, Nassau and Suffolk Counties, New York (Principal Investigator/Project Manager (2018).

Mr. Sara directed background research and evaluated archaeological sensitivity for 18 proposed communication tower locations across Long Island. On behalf of PESG, he also prepared consultation

letters to the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) and fifteen Native American Tribes soliciting their concurrence for no effect to archaeological resources. The work was conducted in accordance with the *New York State Guidelines, State Environmental Quality Review Act* requirements, and the *Federal Communications Commission Nationwide Programmatic Agreement*. The OPRHP and Tribes subsequently concurred with all 18 no adverse effects recommendations.

Eight Point Wind Energy Center, Steuben County, New York (Project Manager/Principal Investigator 2016 - 2019).

Prepared research design and directed all aspects of archaeological background and field research associated with wind energy development project in central New York. Contributing author of report submitted to NextEra Energy Resources, LLC, and New York State Historic Preservation Office. Prepared Exhibit 20 (Cultural Resources) for Article X New York State PSC environmental documentation.

Phase II Archaeological Evaluation of Sites 28HU566 and 28HU567 and Historic Architecture Studies of the Edward Fox House and Fox/Phillips/Pittenger House in the Frenchtown III Solar Park, Hunterdon County, New Jersey, (Project Manager/Principal Investigator 2013-14).

Directed all aspects of archaeological research in support of solar park development. The work was conducted for Con Edison Development, Valhalla, NY under Subcontract to Whitman, Cranbury, New Jersey. Contributing author of technical report and public outreach program in preparation for the New Jersey Historic Preservation Office.

Northfield Mountain Pumped Storage Project (No. 2485) and Turners Falls Hydroelectric Project (No. 1889), Franklin County, Massachusetts and Cheshire County, New Hampshire, and Windham County, Vermont (2013-2019). (Project Manager/Principal Investigator 2013- present).

Directed Phase IA archival and Phase IB and Phase II field investigations as part of environmental impact studies required for 30-year license renewal. Principal author of reports submitted to FirstLight Power Resources and the Massachusetts, New Hampshire, and Vermont SHPOs.

Dunkirk Natural Gas Pipeline Project, Phase I Archaeological Survey, Chautauqua County, New York (Project Manager/Principal Investigator 2014-2015).

Directed all aspects of Phase I archaeological study for proposed 11 miles of new 16-inch buried pipeline to transport natural gas from the Tennessee Gas Transmission Pipeline to the Dunkirk Generating Station. Principal author of project report and Article VII documentation submitted to Dunkirk Gas Corporation and the NY SHPO.

Entergy Nuclear Indian Point 2, LLC and Entergy Nuclear Indian Point 3, LLC (Senior Archaeologist 2013-14).

Conducted background research and prepared Cultural Resources section of Draft SEIS for State Pollutant Discharge Elimination System (SPDES) Permit (No. NY-0004472), as required by New York State Environmental Quality Review Act. Submitted to Entergy Services, Inc., Jackson, Mississippi.

Mantua Grove Solar Energy Project, Gloucester County, New Jersey, Phase I and II Archaeological Studies (Project Manager/Principal Investigator 2009-2010)

Prepared research design and supervised all aspects of field and laboratory research in support of proposed photovoltaic solar array in southern New Jersey. Conducted Phase II National Register eligibility evaluations of two multicomponent sites (28GL417 and 28GL418). Principal author of project reports submitted to SunPower Corporation and the New Jersey State Museum.

Paradise Solar Energy Project, Gloucester County New Jersey; Phase I and II Archaeological Studies (Project Manager/Principal Investigator 2009-2010)

Prepared research design and supervised all aspects of field and laboratory research in support of a proposed photovoltaic solar array in southern New Jersey. Conducted Phase II National Register eligibility evaluations of prehistoric site 28GL415. Principal author of project reports submitted to Paradise Solar, LLC (NextEra) and the New Jersey State Museum.

Caithness Long Island Energy Center II, Phase I Archaeological Survey, Town of Brookhaven, Suffolk County, New York (Project Manager/Principal Investigator 2013)

Directed all aspects of Phase I archaeological study for proposed natural gas fired power facility in Town of Brookhaven. Principal author of project report and Environmental Impact Statement submitted to Caithness Long Island II, LLC and state and municipal review agencies.

NYSEG Corning Valley Upgrade Project, Towns of Erwin and Campbell, Steuben County, New York Phase I Archaeological Survey (Project Manager/Principal Investigator 2009-10)

Prepared research design and oversaw all aspects of archival research, field and laboratory research in support of modernization of a 9-mile electrical transmission corridor and substations. Principal author of project report submitted to New York State Electric and Gas and the New York Office of Parks Recreation and Historic Preservation.

Eastern System Upgrade Project, Orange, Sullivan, Delaware, and Rockland Counties, New York, Phase I Archaeological Investigation (Project Manager/Principal Investigator 2015-16)

Oversaw all aspects of archaeological background and field research associated with proposed 7.3-mile natural gas pipeline construction project in southern New York. Contributing author of the technical report to be submitted to FERC and Millennium Pipeline Company.

CPV Valley Energy Center and Transmission Corridors, Archaeological Studies, Town of Wawayanda, Orange County, New York (Project Manager/Principal Investigator 2008-2015)

Prepared research design and oversaw all aspects of field and laboratory research in support a proposed gas-fired 630MW power plant. Principal author of project report and Environmental Impact Statement submitted to CPV Valley, LLC and state and municipal review agencies.

Section 106 Oversight for USDA/Natural Resources Conservation Service, New York (Principal Investigator and Project Manager)

Mr. Sara managed a year-long program for conducting Initial Project Reviews, Field Inspections, and Phase 1 surveys for all planned NRCS conservation projects throughout New York State. He directed a project team of historians, project archaeologists, and GIS specialists in executing Section 106 compliance review process on behalf of the NRCS and OPRHP (NY SHPO).

PROFESSIONAL AFFILIATIONS

Society for American Archaeology

New York Archaeological Council

Kristian D. Scornavacca

Professional Experience----------

***NextEra Energy Resources*, Project Director (September 2017 – Current)**

- Responsible for the origination, development, and execution of new renewable energy projects through management of all aspects of the transaction process to ensure competitive and cost effective results
- Coordinate key deal functions such as financial feasibility analyses, land acquisition, technical engineering/design, legal review, permitting activities, and regulatory requirements
- Act as a liaison between internal and external specialists regarding procurement, contracting, permitting, and interconnection
- Negotiate agreements with customers, consultants and sub-contractors
- Foster relationships with customers, regulators, and members of the communities in which the Company is developing or intends to develop renewable energy projects

***NextEra Energy Resources*, Senior Business Manager (September 2014 – September 2017)**

- Direct profit and loss responsibility for a $1B premier merchant nuclear power plant, a $200M merchant wind energy center, and a $50M portfolio of merchant battery energy storage projects
- Primary responsibilities within a matrix organization included revenue and contract management, hedging activities, budgeting, forecasting, financial modeling, management financial reporting, asset financing activities, supported acquisitions, managed regulatory risk, and monitored all daily asset activities to optimize profitability
- Supported executive leadership in the development of strategic plans and prepared analyses and recommendations to improve asset profitability

***Nextera Energy, Inc.*, Internal Auditor, Energy Trading (August 2012 – September 2014)**

- Performed assigned audits primarily for the deregulated and energy trading entities
- Gathered financial, operational, and internal control information and applied various quantitative, qualitative, and statistical analyses to form an objective opinion on the adequacy of internal management control structures
- Prepared formal written reports used as the basis for the communication of audit findings to department leadership

***McGladrey LLP*, Project Manager (January 2010 – August 2012)**

- Coordinated audits and quarterly reviews necessary for client 10K, 10Q, S-1, and S-4 filings
- Directly responsible for ensuring client accounting methods, financial statements, and disclosures were in accordance with GAAP, SEC reporting rules, and applicable Federal/State laws
- Prepared research related to technical accounting matters and prepared all aspects of client financial statements
- Supervised engagement teams and managed all aspects of planning and completing client engagements

***Daszkal Bolton LLP*, Supervisor (August 2007 – December 2009)**

- Performed audit, review, and compilation procedures for public and private entities
- Performed due diligence procedures for public and private entities, including new debt and equity issuances, joint ventures, and securitizations
- Prepared all aspects of the Financial Statements for private entity clients

***Ernst & Young LLP*, Staff Accountant (January 2006 – July 2007)**

- Performed audit and review procedures for public and private entities
- Performed audit procedures related to compliance with ***2002 Sarbanes-Oxley Act***
- Performed due diligence procedures related to a billion dollar real property asset securitization

Professional Designations and Education----------

- *Certified Public Accountant (C.P.A.), FL*
- *CFA Institute – Completed CFA Level 1*
- *Florida Atlantic University* -- Master of Accounting
- *Stetson University* -- Bachelor of Business Administration

Jim Shea, PE, PTOE

Project Traffic Engineer

CREDENTIALS

Education:

- M.S., Civil Engineering, Cleveland State University, 2013
- B.S., Civil Engineering, Cleveland State University, 2007

Professional Registrations / Certifications:

- Professional Traffic Operations Engineer, 2013
- Land Surveyor Intern, OH, 2012
- Professional Engineer, OH, 2011

Training:

- IMSA Traffic Signal Technician Level II
- NHI Designing for Pedestrian Safety
- NHI Bicycle Facility Design
- NHI Alternative Intersections and Interchanges
- NHI Intersection Safety
- ODOT Safety Studies Training
- ODOT Traffic Academy – Traffic Signals
- ODOT Traffic Academy – Signing and Pavement Markings
- ODOT Traffic Academy – Maintenance of Traffic
- ODOT Traffic Academy – Interchange Studies
- ODOT Highway Safety Manual Focused Training

Jim T. Shea, PE, PTOE serves as Project Manager/Transportation Engineer and brings experience in a variety of preliminary engineering studies, including traffic impact studies, corridor alternative studies, interchange modification studies, safety studies, road diets, and circulation studies. He has a Professional Traffic Operations Engineer and has considerable experience in traffic analysis using HCS and corridor modeling and simulation using Synchro. In addition to his traffic study experience, Mr. Shea has served as project engineer on numerous roadway reconstruction, resurfacing, and reconfiguration projects with design experience, including horizontal and vertical alignments, drainage, waterworks, traffic control, and signal design.

KEY PROJECT EXPERIENCE

High River Solar Energy Center – Montgomery County, New York (2019) – TRC is currently evaluating transportation and traffic operational impacts that the High River Solar Energy Center project will have on the adjacent transportation system. The High River Collector Substation will be built to collect roughly 90MW of PV solar power located in upstate New York and transmit to a nearby 115kV interconnection point. Coordination with the New York State DOT was completed to determine existing roadway ADT and to obtain existing accident history in the area to complete Exhibit 25: Effects on Transportation. The exhibit evaluates existing transportation conditions, develops site trips for peak construction activities, distributes trips onto the local roadway system and evaluates operational performance along two-lane highway, multi-lane highway, and basic freeway segments within the project influence area for both existing conditions and peak construction conditions. The exhibit will also evaluate safety, coordinate with local law enforcement and school district, and develop worker routing to the proposed site.

East Point Solar Energy Center – Schoharie County, New York (2019) – TRC is currently evaluating transportation and traffic operational impacts that the East Point Solar Energy Center project will have on the adjacent transportation system. The East Point Collector Substation will be built to collect roughly 50MW of PV solar power located in upstate New York and transmit to a nearby 69kV interconnection point. Coordination with the New York State DOT was completed to determine existing roadway ADT and to obtain existing accident history in the area to complete Exhibit 25: Effects on Transportation. The exhibit evaluates existing transportation conditions, develops site trips for peak construction activities, distributes trips onto the local roadway system and evaluates operational performance along two-lane highway, multi-lane highway, and basic freeway segments within the project influence area for both existing conditions and peak construction conditions. The exhibit will also evaluate safety, coordinate with local law enforcement and school district, and develop worker routing to the proposed site.

Commonwealth LNG Project – Traffic Impact Study – Cameron Parish, Louisiana (2019) – TRC was retained to perform a traffic impact study for the Commonwealth LNG natural gas facility and pipeline in Southwestern Louisiana. A combination of collected traffic data and existing ADT data from LaDOTD was used to develop the Design Hour Volume. Methodology from the Highway Capacity Manual was then used in developing the LOS at the proposed site driveways and adjacent street using HCS7 software. After determining the peak construction workforce, construction trips were added to the existing traffic volumes to generate Peak Construction Design Hour Volumes. These traffic volumes were evaluated using the same conditions as the existing data utilizing either a two-lane or unsignalized intersection capacity analysis. The two sets of data were then compared to determine mitigation techniques to be used and recommendations to the client.

Driftwood LNG Terminal Facilities – Traffic Impact Study Review – Calcasieu Parish, Louisiana (2017) – TRC served as a third-party contractor supporting the FERC in the preparation of an EIS (Docket No. PF16-6, CP17-117, and CP17-118) for the Driftwood Project, a proposed LNG liquefaction and export facility and natural gas pipeline project on the Calcasieu Channel. The proposed project consisted of a 26-MTPA LNG liquefaction facility, berths for three LNG carriers, a material offloading facility, and approximately 96-mile-long, single 36-through 48-inch-diameter pipeline to transport natural gas from existing pipeline systems to the LNG terminal facilities. TRC was responsible for the review of the Traffic Impact Study (TIS) developed to evaluate the impacts of the proposed facilities construction workforce of over 5,000 workers on the adjacent roadway system. The study included intersection operational performance analysis at various park and ride locations as well as at the proposed site.

1382 West Ninth Street, Suite 400, Cleveland, OH, USA, 44113
Tel: 216.505.8579 Email: jshea@trccompanies.com

PROJECT EXPERIENCE (Cont'd)

Eight Point Wind Energy Center – Effects on Transportation – Allegany and Steuben Counties, New York (2016 – 2017) – TRC evaluated transportation and traffic operational impacts of the Eight Point Wind Energy Center project on the adjacent transportation system. The project consisted of constructing over 30 wind turbines in Allegany and Steuben Counties, New York. Coordination with New York State DOT was completed to determine existing roadway ADT and to obtain existing accident history in the area in order to complete Exhibit 25: Effects on Transportation. The exhibit evaluated existing transportation conditions, developed site trips for peak construction activities, distributed tips onto the local roadway system and evaluated operational performance along two-lane highway segments within the project influence area for both existing conditions and peak construction conditions. The exhibit also evaluated safety, coordinated with local law enforcement, coordinated with local schools and developed worker routings to each proposed site.

Ohio Department of Transportation, VAR-STW Safety Studies (No. 2018-2 (CMT), 2018-3 (Lanham), 2018-4 (LJB) & 2019-1 (Mead & Hunt)) – TRC is currently providing various traffic and safety engineering services on three statewide safety study task order agreements. These task order agreements support ODOT's Highway Safety Improvement Program which works to improve safety by implementing improvements at high-crash and severe-crash locations. Engineering work tasks include crash scrubbing, development of collision diagrams, signal warrant analysis, queuing analysis, intersection and freeway capacity analysis including microsimulation, signal timing recommendations, countermeasure development and cost estimating. Crashes and countermeasures are evaluated based on HSM predictive methods which calculate predicted crash frequencies for an existing facility and predict crash frequencies for proposed conditions. Traffic and collision data are collected and evaluated through the use of ODOT's Transportation Information Management System (TIMS), GIS Crash Analysis Tool (GCAT), Economic Crash Analysis Tool (ECAT) and ODOT's Crash Analysis Module (CAM) tool.

Ohio Department of Transportation, VAR-STW Safety Studies (2018-3 Lanham), FRA-71-18.02- 20.28 Safety Study – Columbus, OH (2018) – TRC assisted in providing safety analysis along the I-71 corridor stretching from the I-670 interchange north to the East 17th Avenue interchange. TRC was responsible for scrubbing crash data, providing a hand log for corrections and developing crash diagrams for the segment of I-71 from I-670 to just north of East 5th Avenue. Additionally, TRC assisted with the development of the study by developing detailed cost estimates, plan view layouts and critical cross-sections for short, medium, and long-term countermeasures that included variable speed limit signs and pavement marking upgrades (short-term), installation of additional dynamic message signs to warn traffic of congestion (medium-term) and the potential for an additional lane of capacity or hard shoulder running (long-term).

Ohio Department of Transportation, VAR-STW Safety Studies (2018-3 Lanham), FRA-33-22.90 Safety Study – Columbus, OH (2018) – TRC assisted in the geometric review for at the US 33/SR 104 interchange including ramp geometry to Winchester Pike, Refugee Road and James Road. Geometric review included documentation of all horizontal curve data, superelevation data and vertical curve data. With this information TRC was able to provide a comparison of posted speed limits to maximum speed limits based on the geometry. This review also allowed for a comparison of mainline speeds to ramp speeds to determine if the geometry was contributing to accidents.

Ohio Department of Transportation, VAR-STW Safety Studies (2018-2 CMT), – MED-3-16.22-17.29 Safety Study – Medina, OH (2018) – TRC assisted in providing a combined safety, operational, and signal timing study for Medina SR 3 (Weymouth Road) from Foskett Road/Remsen Road to W. 130th Street. The study identified short-term and long-term safety and operational benefits in the area by looking at both signal timing and safety. TRC was responsible for capacity analysis using Highway Capacity Software (HCS), turn lane warrants and storage length calculations, signal warrant analysis, cost estimates, and the Modeling portion of the Signal Timing task.

Ohio Department of Transportation, VAR-STW Safety Studies (2018-2 CMT), – CUY-71-2.65 Interchange Operation Study – Strongsville, OH (2018) – TRC provided an Interchange Operation Study (IOS) at the I-71/SR 82 interchange. The IOS evaluated lane configuration changes on southbound I-71 between the Ohio Turnpike (I-80) interchange and the SR 82 (Royalton Road) interchange. Configuration changes included: modifying the southbound I-71 exit ramp to westbound SR 82 from a Type I (single lane) exit to a Type III (two lanes with 1 drop lane and 1 option lane) exit; forming an auxiliary lane connecting the SB I-71 entrance ramp from I-80 to the exit ramp to westbound SR 82; and reallocating the existing pavement width to accommodate a 4-lane section (3 through lanes + 1 auxiliary lane) by reducing the widths of 3 through lanes on I-71 to 11-foot lanes. TRC used Highway Capacity Software (HCS) to analyze all the freeway sections and intersection. A Synchro model was also created to evaluate queuing along I-71 southbound exit ramp to westbound SR 82 and provide recommended turn lane lengths at the intersection. TRC also prepared the IOS report per ODOT's Office of Roadway Engineering's studies guidance.

ODOT – District 7, CLA-72-6.70/SHE-75-8.53 – Clark and Shelby Counties, OH (Project Engineer: 2017) – Provided traffic engineering and related services for traffic control upgrades at two interstate interchanges. The recently reconstructed IR 75/SR 29 interchange required the installation of traffic signals at both the NB and SB ramp intersections to accommodate additional turning lanes. The IR 70/SR 72 interchange was identified within ODOT's Safety Program for improvements to reduce crashes and improve mobility. Improvements included signal installation at the WB exit ramp and pavement marking revisions along SR 72 to provide an add lane for the existing EB loop exit ramp. Jim served as the project engineer responsible for the development of two separate plan sets on a fast-track, 4-month design schedule so that District 7 could sell the project on time. Both projects were bid under budget and experienced limited change orders during construction.

RACHEL SILVA, PMP

EDUCATION

B.A., Biology and Spanish, Indiana University, 2006

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Project Management Professional, 2019

AREAS OF EXPERTISE

Ms. Rachel E. Silva has project and program management and technical experience in the following general areas:

- Environmental Assessments, Environmental Impact Statements, and Environmental Reports
- Water Quality Permitting
- Public Comment Response
- Invasive Species Management
- Documentation Management
- Community Involvement
- New York State Environmental Quality Review Act (SEQRA)
- Article VII (NYS)
- Article 10 (NYS)
- Critical Issues Analyses

REPRESENTATIVE EXPERIENCE

Ms. Silva has over 10 years of experience and progressive responsibility in environmental consulting. Her qualifications include extensive hands-on planning, permitting, federal and state regulatory literacy, teamwork, and project management. Ms. Silva's background includes extensive service to public and private-sector clientele including various domestic energy clients, as well as state and federal government agencies. She currently serves in the capacity of Project Manager for a number of electric transmission rebuild and conductor clearance refurbishment projects in New York State, with responsibility for the quality of technical knowledge, as well as contractual and financial duties.

Electric Transmission

New York State Electric and Gas, Tilly Foster Metropolitan Transportation Authority (MTA) Project – Putnam County, NY (Project Manager: 2018 - present)

Ms. Silva manages the environmental permitting requirements of an electric transmission rebuild project in the town of Southeast, NY to support energy demand for the MTA. She provided quality review and project management, including coordination with state and local agencies, in addition to client support.

National Grid, Gardenville-Dunkirk 141/142 Rebuild Project Article VII – Erie County, NY (Project Manager: 2017 - present)

Ms. Silva manages a team of environmental scientists for preparation of an Article VII application to the New York State Public Service Commission for a 20-mile transmission line rebuild. She coordinates with

state and federal agencies, engineers, GIS support, and manages written components of the Article VII application.

National Grid, Boonville-Rome #3/#4 Conductor Clearance Refurbishment Project Part 102 – Oneida and Lewis Counties, NY (Project Manager: 2017 - 2018)

Ms. Silva provided technical support and quality review to submit a Part 102 Report to New York State Public Service Commission for a 26-mile conductor clearance refurbishment project.

National Grid, Tilden-Cortland #18 Conductor Clearance Refurbishment Project Part 102 – Onondaga County, NY (Project Manager: 2017 - 2018)

Ms. Silva provided technical support and quality review to submit a Part 102 Report to New York State Public Service Commission for a 31-mile conductor clearance refurbishment project.

National Grid, Niagara-Lockport 101/102 Maintenance Project – Niagara County, NY (Project Manager: 2017)

Ms. Silva provided quality review and management of Stormwater Pollution Prevention Plan inspection reporting for a maintenance project of an existing linear transmission line. She coordinated with state and local agencies and provided client support.

Battery Energy Storage

E.ON Climate & Renewables North America, Stillwater Battery Energy Storage – Saratoga County, NY (Permitting Coordinator: 2018)

Ms. Silva oversaw coordination of local permits and state water quality permits for a battery energy storage system in Saratoga County, NY. Ms. Silva coordinated with civil engineering contractors to address local site plan and special use permit requirements. She provided quality review for the local and state permit applications for a timely submittal to the local planning board.

Oil/Gas

National Fuel Gas Supply Corporation and Empire Pipeline, Inc., Northern Access 2016 Project – McKean County, PA and Allegany, Cattaraugus, Erie, and Niagara Counties, NY (Senior Scientist: 2014-2016).

For the Northern Access 2016 Project, Ms. Silva wrote FERC Resource Reports 8 Land Use, Recreation, and Aesthetics), 10 (Alternatives Analysis), 11 (Safety and Reliability), and 12 PCB Contamination). She also coordinated outreach to municipalities for information on proposed future land use development to support resource report development and cumulative impact analysis. She also responded to public comments and FERC data requests.

Sunoco Logistics, Pennsylvania Pipeline Project (Mariner East Phase II) – Commonwealth of PA (Stormwater and Floodplain Compliance Coordinator: 2015 to 2016)

Ms. Silva served as a stormwater and floodplain compliance coordinator to local municipalities and counties crossed by a 306-mile natural gas pipeline in Pennsylvania. Ms. Silva contacted municipal

offices and sought compliance for stormwater and floodplain management, under Chapter 106 and Act 167, respectively, from dozens of local municipalities within 17 counties. For this, she liaised with the municipalities, client, and project engineers to bring project details into compliance with local ordinances under Commonwealth of Pennsylvania water quality standards. She also worked with a team to compile the extensive Chapter 105 Water Obstruction and Encroachment/Chapter 102 Erosion and Sediment Control General Permit Joint Permit Application to the Pennsylvania Department of Environmental Protection for the project.

Dominion Transmission, Inc. (DTI), Borger Station Engine Replacement Project – Tompkins County, NY (Deputy Project Manager: 2016)

Ms. Silva wrote FERC Resource Report 8 (Land Use, Recreation, and Aesthetics) for a compressor station upgrade project in Tompkins County, NY. She also performed document QA/QC and editing for all Resource Reports.

Tennessee Gas Pipeline Company, Susquehanna West Project – Tioga and Bradford Counties, PA (Senior Scientist: 2014-2015)

For an 8.1-mile pipeline looping project in Tioga and Bradford Counties, Pennsylvania, which included compression updates to three existing compressor stations, Ms. Silva wrote FERC Resource Report 8 (Land Use, Recreation, and Aesthetics), as well as a comprehensive cumulative impacts analysis.

Tennessee Gas Pipeline Company, Triad Expansion Project – Susquehanna County, PA (Senior Scientist: 2015-2016)

For an 8.1-mile pipeline looping project in Susquehanna County, Pennsylvania, Ms. Silva wrote FERC Resource Report 8 (Land Use, Recreation, and Aesthetics), as well as a comprehensive cumulative impacts analysis.

Williams Gas Pipelines-Transco, Atlantic Sunrise Project – PA, VA, and MD (Biologist: 2014)

Ms. Silva conducted agency consultation for water quality resources and land use for the 177-mile greenfield pipeline project, including 12 miles of pipeline looping, two new compressor stations, upgrades to three existing compressor stations, and appurtenant underground and aboveground facilities in Susquehanna, Luzerne, Lancaster, Wyoming, and Columbia Counties, Pennsylvania; Prince William County, Virginia; and Howard County, Maryland. Ms. Silva also collaborated on public comment organization and response.

Tennessee Gas Pipeline Company, Marcellus Pooling Project (MPP) – Potter, Mercer, Venango and McKean Counties, PA (Biologist: 2011-2012)

For Tennessee Gas Pipeline Company's MPP project, consisting of an 8-mile long natural gas pipeline loop and updates to four existing compressor stations, Ms. Silva wrote Resource Reports 2 (Water Use and Quality) and 7 (Soil), as well as the Noxious and Invasive Weed Control Plan needed as part of the application for a certificate of public convenience and necessity submitted to FERC. For her sections, she established agency contacts for data acquisition and coordinated figure and data table production.

Williams Gas Pipelines-Transco, Northeast Supply Link – PA, NJ, and DE (Task Manager: 2010)

To support the preparation of a feasibility study for this three-state pipeline expansion project, Ms. Silva helped organize edit, and verify stream visual assessment protocol data sheets to ensure compilation of the correct stream condition assessment scores under National Resource Conservation Service guidelines; as well as wetland determination data forms to ensure accurate identification of vegetation and soil types and condition. She also coordinated with team GIS specialists for the creation and updating of maps and figures for the stream and wetland report; and she organized and monitored the schedule for provision of QA/QC reviews for all map and figure updates. In 2011, Ms. Silva participated in wetland delineations and biological surveys along a newly established project right-of-way (ROW) in Pennsylvania. She helped identify plant and animal species found along the ROW and near an existing compressor station.

Tennessee Gas Pipeline Company, Northeast Supply Diversification Project – Tioga and Bradford Counties, PA and Erie, Niagara, and Livingston Counties, NY (Task Manager: 2010)

Ms. Silva completed a desktop fatal-flaw analysis for a two-state pipeline expansion involving updates to compressor stations as well as installation of two natural gas pipeline loops. She wrote the sections of the analysis addressing biological resources for threatened and endangered species, land use, and regulatory considerations. She also contributed to FERC Resource Report 11 (Reliability and Safety) and to the noxious and invasive species plan.

Williams Transco, Transco Rockaway Lateral – Queens County, NY (Task Manager: 2009)

Ms. Silva evaluated sediment report data and prepared a draft sampling report for Transco's 26 inch-diameter, 3-mile offshore pipeline that is proposed to extend from the existing Transco Lower New York Bay Lateral to a connection point with the National Grid System in the Rockaways (Long Island south shore). She also developed a summary of the Jamaica Bay Watershed Protection Plan and supported the coastal zone consistency determination, responding specifically to issues highlighted by a representative of the New York State Department of State.

Kern River Gas Transmission Company, Kern River Apex Expansion Project – WY, NV, and UT (Biologist: 2009-2010)

For Kern River Gas Transmission Company, she contributed to the preparation of FERC Resource Report 2 (Water Use and Quality) and environmental permit applications for this natural gas project involving 29 miles of pipeline looping and five compressor stations. Ms. Silva responded to client comments on various Resource Report 2 drafts; investigated various water classification data; used field data to prepare descriptions of surface water conditions; and investigated stormwater permitting regulations for Wyoming, Nevada, and Utah.

Sustainability/Resiliency/Conservation Planning

New York State Energy Research and Development Authority, Cleaner, Greener Community Program Phase I: Western New York Regional Sustainability Plan – Allegany, Cattaraugus, Chautauqua, Erie, and Niagara Counties, NY (Working Group Coordinator: 2011-2012)

Ms. Silva was a member of the project team that supported the development of a regional sustainability plan for the five-county Western New York Region. The project was funded through a grant from the New York State Energy Research and Development Authority (NYSERDA) under the State's Cleaner, Greener Communities program. Ms. Silva was the coordinator responsible for organizing monthly meetings, minutes, public events, and document distribution for seven different working groups representing about 150 local stakeholders concerned with agriculture and forestry, waste management, water management, energy, land use and livable communities, transportation, and economic development. She compiled and consolidated revisions and comments from stakeholders and colleagues and provided coordination with the graphics department.

NYS Governor's Office of Storm Recovery, New York Rising Community Reconstruction and Resilience Plans – NY (Subcontracting Coordinator: 2014-2015)

For a larger effort of developing reconstruction and resilience plans for several communities in New York State devastated by flooding following Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy, Ms. Silva performed the task of subcontractor coordination for this project. She helped ensure grant requirements were met in terms of subcontracting to minority and women-owned business enterprises, and also provided media advertising support for public meetings and contributed to planning documents.

New York State Energy Research and Development Authority, Cleaner, Greener Community Program Phase II – NY (Regional Outreach Coordinator: 2014-2015)

In collaboration with NYSERDA, Ms. Silva provided financial management support services for Phase II of the Cleaner, Greener Communities program. Phase II of the program provided funding for projects that met the goals of the regional sustainability plans developed in Phase I. She streamlined the permitting process by serving as task lead for reviewing category 1 applications—those ranging in worth from $2,500 to $10,000—for municipalities to implement photovoltaic or electric vehicle supply equipment. She screened applicants for eligibility and worked with them to ensure documentation was completed accurately so they could receive the financial award. Ms. Silva also acted as regional outreach coordinator, working directly with grant awardees to develop statements of work and contracts.

Western New York Land Conservancy, Niagara Escarpment Conservation Plan – Niagara County, NY (Deputy Project Manager: 2013-2014)

As deputy project manager, Ms. Silva coordinated the 2013 spring and summer field efforts for the 26 miles of the Niagara Escarpment study area, which included comprehensive surveys of natural resources of the Niagara Escarpment to identify properties for acquisition, conservation, and restoration. She coordinated and obtained landowner access for public and private landowners, consolidated field data, supported public outreach efforts, and contributed to writing the final plan.

New York State Department of Agriculture and Markets, Invasive Species Management Strategy – NY (Deputy Project Manager: 2010-2011)

To assist the New York State Department of Agriculture and Markets, Ms. Silva had a key role in the development of a strategy for the control of invasive species statewide, which the State officially accepted and published. Initially, she distributed questionnaires to ecological professionals in various disciplines across New York State, as well as domestically and internationally. Responsible for collecting and organizing the questionnaire results, she communicated with the client and worked to assure the quality, accuracy, and focus of the survey report. By attending the Invasive Species Symposium held in Albany, New York, in spring 2011, Ms. Silva established additional rapport with various representatives of nongovernment organizations, state agencies, and academic institutions in the Northeast. She also researched invasive species management strategies in other states and conducted telephone interviews with professionals involved in invasive species management. As the primary author of the final report, Ms. Silva oversaw the team's development of a cohesively formatted document, supervised graphics, and coordinated overall document production.

Biological Surveying

El Paso Corporation (now Kinder Morgan, Inc.), Ruby Natural Gas Pipeline – OR and UT (Field Scientist: 2010)

Ms. Silva conducted water quality sampling and turbidity monitoring for the Utah portion of this 675-mile natural gas pipeline. She helped facilitate effective communication with the environmental inspectors and other project team personnel.

Williams Gas Pipelines-Transco, Northeast Supply Link – PA, NJ, and DE (Field Scientist: 2011)

Ms. Silva assisted in field work to support biological habitat surveys, migratory bird surveys, and vegetation surveys in New Jersey along proposed right-of-way and existing compressor station sites.

SPECIALIZED TRAINING

- Project Manager Training, 2017
- NEPA Compliance Course, 2014
- DOT Hazardous Materials Shipping, 2010-2014
- Eight-Hour OSHA HAZWOPER Refresher, 2012, 2013
- Forty-Hour OSHA HAZWOPER Training, 2009

LANGUAGES

- Spanish (fluent)

BRIANNE A. TYLOCK

EDUCATION

B.S., Electrical Engineering Technology; Minor, Environmental Studies, Rochester Institute of Technology, 2015

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

OSHA 30 Hour, (#36-601454566), 2017

AREAS OF EXPERTISE

Mrs. Brianne A. Tylock, technical experience in the following general areas:

- SCADA
- Prefabrication Planning
- Building Management Systems
- Solar Site Plans
- Solar Electrical Drawings
- Solar Installation
- Programming
- Warehouse Management
- Customer Service

REPRESENTATIVE EXPERIENCE

Mrs. Tylock has four years of solar specific experience in the renewable industry. Her qualifications include a vast focus on renewables; from the distribution side, purchasing and inspecting materials, as well as building vendor relations, to the design and permitting side, drawing up electrical drawings and site plans, going to town meetings for permits, writing grants proposals, and even solar installs. Mrs. Tylock's background includes a focus on Residential, Commercial, and Utility scale solar, with projects ranging from 3kW to 80MW. She currently serves in the capacity of Electrical Engineer with a renewable focus for the Engineering Group in the Power Division.

Walden Green Energy, Potter Solar, 35MW PJM Interconnection Support (February 2019)

Mrs. Tylock served as the lead engineer for the development and design of an electrical one-line drawing to support the PJM queue in Pennsylvania. Together with the electrical drawing, a preliminary layout and PVsyst report were generated for this 35MW site. The layout focused on an initial look at the site to determine approximate array locations based on setbacks from roads, residential properties, and the ROW that runs through the property. It also showed an approximate boundary for any necessary clearing of trees on the property. The PVsyst report was generated to reflect the same inter-row spacing and general layout of modules as were placed in the layout. Further production optimization will be evaluated and reflected in future applications.

SolAmerica Energy, Legacy Community Sites, 2MW ABP Interconnection Support (December 2018 – February 2019)

Mrs. Tylock served as the lead electrical engineer for the development and design of fourteen electrical one-line drawings with corresponding site layouts to support the Adjustable Block Program in Illinois. Each electrical drawing was PE stamped and in regulation with the appropriate utility requirements at the

corresponding POI. Preliminary layouts and PVsyst reports of each of the fourteen 2MW AC sites were developed and optimized in accordance with previously developed SUP buildable area limitations. Each individual layout focused on an optimizing the array locations and tracker positions, sizing and positioning strings and panelboards for install ease, setbacks from roads, residential properties, property lines, wetlands, and archeological sites, and shading analysis for clearing considerations. In addition, all electrical equipment, inverters, electrical equipment pads, and site access roads, utility overhead lines, and POI were specified. A PVsyst report was generated to reflect each of the system layouts, and was used to determine modifications in spacing and array location based on the system losses and shading details, which the software develops.

ibV Energy Partners, Henry County Alabama Solar, 80MW RFP Interconnection Support (October 2018)

Mrs. Tylock served as the lead engineer for the support of a quick turn-around PV RFP for an 80MW site in Henry County, Alabama. The design required the development of an electrical one-line drawing to support the interconnection and assistance in gathering information for future Interconnection Application development. A preliminary layout and PVsyst report were also generated for this 80MW site, focusing on an initial look at the site to determine approximate array locations based on setbacks from roads, property lines, and the pre-determined wetlands. The PVsyst report was generated to reflect the same inter-row spacing of modules as were placed in the layout.

Olivewood Energy Developments / Granite Apollo, Miscellaneous Solar Feasibility Studies (September 2018 – Present)

Mrs. Tylock serves on a team of engineers who assess the feasibility of various NH PV sites. The sites range from 10MW to 50MW, and the assessments cover the analysis of POI availability, existing substation equipment and current generation on the line, and interconnecting cost estimates. Interconnection Pre-Applications are developed by the team and submitted to the utility or ISO NE for official assessment of the determined interconnection line for projects that are determined worthy of pursuing. Mrs. Tylock and TRC's engineering team has progressed some of these feasibility studies to Interconnection Application support and Electrical One-Line Drawing development.

O'Connell Electric / Rochester Solar Technologies – Victor, NY (Solar System Design Engineer: 2016 – 2018)

Mrs. Tylock served as the Solar Design Engineer at Rochester Solar Technologies for 2 years. Her primary role in this position was to develop solar PV three-line electrical drawings and site plans for all residential and commercial projects. This work included stringing all inverters, measuring conduit runs and wire for prefabrication work, voltage drops, checking proper weight distribution, product counts and purchases, accurate panel count proposals, rapid shutdown compliance to the NEC and setback compliance to each individual town code.

Other hats worn by Mrs. Tylock at RST included:

- Creating large ground mount templates to submit to the utility (distributed generation applications) and to NYSERDA for incentive applications for quick turn-around purposes.
- Working with towns for permitting and going to town hall meetings to present proposals.
- Writing grants and feasibility requests for customers to help provide financial assistance and gain access to additional incentive money, including two battery storage applications.

- Doing significant research into SCADA developments and curtailment options and helping to program a PLC to perform the building management functions required to curtail the system.
- Taking customer service calls in the office and accompanying the team to marketing events to perform community outreach, talk with customers, and gain exposure to the company.

VP Supply Corp, Renewable Division – Rochester, NY (Head of Purchasing, Warehousing, Inventory Control, and Logistics: 2015-2016)

As head of purchasing, Mrs. Tylock maintained vendor relations and consulted with vendors for pricing and other product related information. She also placed orders with vendors and ensured accurate order confirmation, shipment, and delivery. Other duties consisted of the following:

- Inspected product deliveries for damage and accurate counts. Received products into system and ensured that products were stored within the warehouse properly and safely. Reconciled any discrepancies with shipments internally and externally.
- Organized warehouse to become more efficient and reliable. This included recounts of all products, determining old stock and utilizing the space available. All products, once organized, were given locations, which were then entered into the system so that anyone – not just the warehouse crew – would be able to find any part.
- Coordinated with sales staff to schedule deliveries to meet customer demands. Picked and pulled orders when assistance was needed or a deadline needed to be met. As needed, took orders over the phone and filed paperwork when other sales team members were busy or unavailable.
- Frequently checked inventory and placed purchase orders as needed to maintain adequate stock to meet customer demands.

Sustainable Energy Developments – Ontario, NY (Internship: 2015)

Mrs. Tylock completed her final semester of co-op with SED and was asked to stay on through the summer after school ended. During this internship, she got her first look into renewables, getting to do many tasks for the company, including the following:

- Assisted sales in contacting leads, setting up appointments, creating preliminary analysis tools, CRM's, and creating commercial lead lists.
    - Work required discussions with potential clients and explanation of the process of adding solar power to the customer's site. In addition, spreadsheets were created todetermine the estimated potential cost and size of the required photovoltaic system based on the discussion with the client as well as Google Earth site review.
- Contacted all Solarize leads to discuss the program, answer questions, and schedule site visits.
    - Required analysis of site and collection of information about the potential system in order to hand over to the sales team so they would have all information necessary for their scheduled site visit.
- Worked with Operations team on design tasks, including:
    - NYSERDA applications
    - interconnection packets
    - Residential and small commercial site plans
    - Gathering parcel information and designing aerial layouts with setbacks
    - 3-line diagrams
- Experience in the field installing residential photovoltaic systems.

- Worked with a team to plan, design, and write up a feasibility RFP for NYSERDA.
    - Personal tasks included writing initial draft, creating the site layouts, organizing and leading meetings to discuss next steps, reviewing future drafts to be sure all requirements were met, and maintaining contact with utility for support.
- Researched business models, microgrid solutions, zero net energy systems, etc. and presented the results to the CEO.
- Gathered, organized, and assembled USDA REAP Grant Applications, and construction books.
- Created, updated, and maintained a PV construction schedule for both field and sales use.

Iberdrola USA (RG&E) – Rochester, NY (Co-Op: 2013)

Mrs. Tylock completed her first Co-Op with the local utility Rochester Gas & Electric in the summer on 2013 and was asked to extend the internship through the Fall semester. In this position, she performed fault simulations, installed reclosers, reviewed photovoltaic systems and updated databases and elementary diagrams.

SPECIALIZED TRAINING

- Completion of a number of NABCEP hours for courses in:
    - AP Systems
    - SMA Sunnyboy Products
    - SMA Tripower
    - SMA Power+
    - SMA Core1
    - Solectria
    - SonnenBatterie Installation
    - QuickMount PV
    - Ecolibrium
    - Canadian Solar
    - Hanwa Q Cells
    - Helioscope
- 2-week Site Prep and Installation of a Vanadium Redox Flow Battery

Nancy Vlahos
Project Manager

Nancy Vlahos has over 15 years of experience and progressive responsibility in environmental consulting working on a variety of scientific and regulatory projects in the environmental field, including New York State SEQRA review, state and federal permitting and compliance, wildlife impact analyses and SWPPP development and inspection. Her qualifications include extensive hands-on planning, site inspections, permitting, and project management. Ms. Vlahos' background includes extensive service to public and private-sector clientele. She currently serves in the capacity of Project Manager for the Planning, Permitting and Licensing Division where she is managing the licensing and permitting efforts for numerous community-scale solar developments and supports several Article 10 projects in New York State. She has been assisting with completion and compilation of the Article 10 Application, coordination for review and submittal of the application to applicable agencies.

CREDENTIALS

Education:

- M.S., Environmental Science, Yale School of Forestry and Environmental Studies, 1999
- B.S., Chemistry, Purchase College, 1994

Professional Registrations/Certifications/Training:

- GP-0-15-002 Erosion & Sediment Control (2017)

EXPERIENCE

Professional Summary:

- 20 years of experience

Areas of Expertise:

- NYS Article 10 Permitting
- NYS Article VII Permitting
- Project Management
- Environmental Permitting
- Zoning and Land Use Regulations
- Agency Consultation
- Environmental Assessments
- State Environmental Quality Review Act (SEQRA)
- Environmental Impact Statements
- Stormwater Permitting and Compliance
- Stormwater Pollution Prevention Plans
- Stormwater Inspections

PROJECT EXPERIENCE

NextEra Energy Resources, Trelina 80 MW Solar Energy Center, Article 10 Project located in Waterloo, NY (Assistant Project Manager: 2018 – Present)
Ms. Vlahos assists with the project management of the Trelina Solar Energy Center Article 10 Project in New York State. Tasks include oversight of data collection, including field surveys (wetland delineations, noise monitoring, visual photo collection, archaeological surveys, breeding bird surveys, etc.), preparation of Public Scoping Statements (PSSs), and local coordination and guidance on environmental requirements in New York State. Coordinates for review and submittal of documents to applicable agencies, and coordination with the client regarding project status and budget.

Confidential Client, 200 MW Wind Power Generation, Article 10 Project located in Burke, NY (Assistant Project Manager: 2018 – Present)
Ms. Vlahos assists with the project management of a 200 MW Wind Energy Article 10 Project in New York State. Tasks include preparation of Public Involvement Plan (PIP), and local coordination and guidance on environmental requirements in New York State. Coordination of review and submittal of documents to applicable agencies, and coordination with the client regarding project status and budget.

ForeFront Power, LLC, Multiple Projects – NY (Project Manager: 2018 – Present)
Ms. Vlahos is responsible for the project management of multiple community-scale solar

development projects, primarily in New York. She manages projects from the proposal stage to project completion, including client coordination, staffing, and oversight of project schedule and budget. She oversees the preparation of wetland and waterbody delineation reports, SWPPPs, Limited NEPA/SEQR Reports, agency consultations, and evaluating the feasibility and suitability of the Projects.

Cypress Creek Renewables, LLC, Multiple Projects – NY (Project Manager: 2018 – Present)
Ms. Vlahos is responsible for the project management of multiple community-scale solar development projects, primarily in New York. She manages projects from the proposal stage to project completion, including client coordination, staffing, and oversight of project schedule and budget. She oversees the preparation of wetland and waterbody delineation reports, SWPPPs, Limited NEPA/SEQR Reports, agency consultations, and evaluating the feasibility and suitability of the Projects.

E.ON Climate & Renewables North America, Stillwater Battery Energy Storage, Stillwater, NY (Project Manager: 2018)
For this project, Ms. Vlahos oversaw coordination of local permits and state water quality permits for a battery energy storage system in Saratoga County, NY. She coordinated with civil engineering contractors to address local site plan and special use permit requirements. She provided quality review for the local and state permit applications for a timely submittal to the local planning board.

National Grid, Various Rebuild/Removal/New Construction Projects – Multiple Locations (Environmental Scientist: 2018 – Present)
Ms. Vlahos assists with the environmental due diligence and permitting on multiple National Grid projects of varying scale and scope. She assists with writing agency consultation letters, Article VII Exhibits, Environmental Assessment Reports, Wetland Delineation Reports, USACE Section 10 Pre-Construction Notifications, Part 102 Reports, SWPPPs, and APA Major Permit Applications when required.

Town of Malta Stormwater Management Officer / Senior Planner – NY (2011 – 2013)
Ms. Vlahos managed the Town of Malta's MS4 Program, conducted stormwater inspections and responded to stormwater complaints. She also completed and filed annual MS4 Reports. As the Town's Senior Planner, she met with applicants and reviewed and prepared site plan, special use, and subdivision reviews for development applications. She staffed monthly Planning Board meetings and performed field inspections to verify that development complied with approved plans.

The Chazen Companies, Senior Planner – NY (2002 – 2009)
As Senior Planner, Ms. Vlahos managed multiple large NYS SEQR reviews for land development projects within budgetary and time restrictions. She was involved in the preparation and review of EAF, EIS, FEIS and Findings Statements. She provided quality review to supporting drawings, figures, memos, and documents. Created Public Scoping Documents and related media presentations, attended scoping meetings, and regularly interacted with regulatory agencies. She regularly presented on behalf of applicants at Planning Board meetings and served as the Planning Consultant to local municipalities. Her responsibilities included managing staff schedules and workload and recruiting and training new hires.