STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 01-T-1474:	**APPLICATION OF NORTH BERGEN LIBERTY GENERATING, LLC, AS AUTHORIZED AGENT FOR CROSS HUDSON, LLC, FOR AN AMENDMENT TO A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED PURSUANT TO ARTICLE VII OF THE PUBLIC SERVICE LAW**

DIRECT TESTIMONY OF

STEPHEN B. WOOD and PAYSON R. WHITNEY, III

ON BEHALF OF NORTH BERGEN LIBERTY GENERATING, LLC

Dated: March 29, 2018

SBW/PRW

Q. Mr. Wood, please state your name, title and business address.

A. My name is Stephen B. Wood, Vice President and Senior Project Manager, ESS Group, Inc., 10 Hemingway Drive, 2nd Floor, East Providence, Rhode Island 02915.

Q. Please summarize your educational and professional background.

A. I received a Juris Doctor degree from Southern New England School of Law in 1996, a Masters in Business Administration from Western New England College in 1985, and a Bachelor of Arts in Biology from North Adams State College. I have worked for ESS Group, Inc., since 2000. Prior to that time, I was the Director of Environmental Affairs for Commonwealth Energy System. I have more than 30 years of experience in environmental licensing and permitting of major projects, including electric generation and transmission facilities in New York and other states.

Q. Mr. Wood does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Wood, what was your role in the North Bergen Liberty Generating project?

A. ESS Group was retained by North Bergen Liberty Generating, LLC to undertake the analysis and studies needed to inform and support an amendment filing to the New York State Public Service Law Article VII Certificate of Environmental Compatibility and Public Need issued for the Cross Hudson project.

Q. Mr. Whitney, please state your name, title and business address.

A. My name is Payson R. Whitney, III, Vice President of ESS Group, Inc., 100 Fifth Avenue, 5th Floor, Waltham, Massachusetts 02451.

Q. Mr. Whitney, please summarize your educational and professional background.

A. I received a Bachelor of Science in Civil Engineering from Lehigh University in 1994, and am a Professional Engineer, licensed in Massachusetts, Rhode Island, Virginia, New Hampshire, Maryland and Maine. I have over 23 years of experience as a Civil/Coastal Engineer and Project manager in a wide range of public and private sector projects, including project design and management activities in civil/site engineering, coastal permitting/shoreline assessment, and the planning and permitting of multiple electrical transmission projects in New York under Article VII as well as in other states.

Q. Mr. Whitney, what was your role in the North Bergen Liberty Generating project?

A. ESS Group was retained by North Bergen Liberty Generating, LLC to undertake the analysis and studies needed to inform and support an amendment filing to the New York State Public Service Law Article VII Certificate of Environmental Compatibility and Public Need issued for the Cross Hudson project.

Q. Mr.Whitney, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mssrs. Wood and Whitney, what was your role in the North Bergen Liberty Generating project?

A. Several portions of the Article VII application were either prepared by us or under our direction and supervision.

Q. Mssrs. Wood and Whitney, what is the purpose of your testimony?

A. The purpose of our testimony is to support Exhibit E-6 of the application which was prepared by us or under our direction and supervision.

Q. Mssrs. Wood and Whitney, does Exhibit E-6 accurately reflect the impacts of the proposed project on transportation?

A. Yes, it does. Impacts to vehicular, bicycle, and pedestrian traffic will be temporary and minimal and a traffic management plan will be developed during the EM&CP, which will include coordination with the appropriate City and State officials. Work along the bike path is anticipated to be conducted during night hours to minimize interference with its use. Work in City and State controlled streets will also be conducted during night hours to minimize interference. Operational details of the HDD and jet plow embedment of the submarine cables program in the Hudson River will be closely coordinated with the NYCEDC, HRPT, USCG, and New York Harbor Vessel Traffic Service, and Notices to Mariners will be posted as required.

Q. Gentlemen, does this complete your prefiled testimony at this time?

A. Yes.

STEPHEN B. WOOD
Vice President

Experience
ESS Group, Inc. – 2000 to present

Years of Prior Related Experience – 22

Education
JD, University of Massachusetts School of Law

MBA, Western New England University

BA, Biology, North Adams State College

Registrations/Affiliations
Admitted to the Massachusetts Bar
June 1996

Admitted to the United State District Court for Massachusetts
January 1997

Advisor – Electric Power Research Institute

Air & Water Management Association

Boston Bar Association, Environmental Section

Qualifications

Mr. Wood is a Vice President and Senior Project Manager with more than 30 years of experience in environmental licensing and permitting, as well as project management. Prior to joining ESS, he was the Director of Environmental Affairs for a major electric and gas utility company in Massachusetts, where he was responsible for directing and managing all aspects of environmental policy, programs, and licensing for electric and gas operations including generation, transmission, and distribution functions and environmental licensing and permitting for construction and operation of gas and electric facilities. He has significant experience in the preparation of filings for generation, electric, and gas transmission projects before energy facility siting boards in several states including Massachusetts, New York, Connecticut, and Vermont, where he has also provided expert testimony. Mr. Wood routinely provides feasibility assessments, permitting strategies, and licensing services for these major and complex projects. He has also managed the preparation of state and federal Environmental Impact Statements for energy generation and transmission projects, as well as the federal, state, and local permitting.

Representative Project Experience

National Grid Clay - Teall 115 kV Transmission Project – Onondaga County, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for an 18-mile long 115 kV electric transmission reconductoring project that will reinforce the National Grid transmission and the New York grid. Provided expert testimony in the Article VII proceedings. ESS is also preparing the Environmental management and Construction Plan, as well as the Storm Water Pollution Prevention Plan and Army Corps of Engineers wetland permit application and mitigation plan. ESS will provide agricultural and environmental monitoring during construction.

National Grid Mohican-Battenkill 115 kV Transmission Project – Washington and Saratoga Counties, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for a 14-mile 115 kV electric transmission project that will reinforce the National Grid transmission and the New York grid. Provided expert testimony in the Article VII proceedings. ESS is also preparing the Environmental management and Construction Plan as well as the Storm Water Pollution Prevention Plan and Army Corps of Engineers wetland permit application as and mitigation plan. ESS will provide agricultural and environmental monitoring during construction.

Upstate Power Transmission Project – Jefferson and Oswego Counties, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for a 50-mile 230 kV electric transmission project that will bring energy from the 280 MW Hounsfield Wind Farm on Gallo Island to the New York grid. The project also includes a routing evaluation, an assessment of the environmental impacts for the 9-mile underwater section and 42-mile upland project route and alternatives, and a public participation program. Provided expert testimony in the Article VII proceedings.

National Grid Mortimer, Golah 115 kV Transmission Project – Monroe County, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for a 10.3 mile 69-115 kV electric transmission rebuild and conversion project that will reinforce the National Grid transmission and the New York grid. Provided expert testimony in the Article VII proceedings. ESS is also preparing the Environmental management and Construction Plan, as well as the Storm Water Pollution Prevention Plan and Army Corps of Engineers wetland permit application as and mitigation plan.

New York Regional Interconnect – High Voltage DC Transmission Line, NY. Project Manager for the preparation and submittal of an Article VII filing to the New York Public Service Commission for a 450 kV DC transmission project over 190 miles in length. The project also includes a routing evaluation, the assessment of the environmental impacts for the project route and alternatives, and a public participation program. Provided expert testimony in the Article VII proceedings.

PSEG, Susquehanna-Roseland Transmission Project – PA and NJ. Provided senior technical and strategy assistance to the 500-kV project for the National Environmental Policy Act process for the section of the line passing through the Delaware Water Gap National Recreation Area. The National Park Service is the lead agency developing the Environmental Impact Statement for the project.

Northeast Utilities -Plumtree to Brookfield Junction 115-kV Transmission Line – Fairfield County, CT. Project manager for the preparation of a routing alternatives study for the upgrade of an approximately six-mile-long above ground transmission line including overhead and underground alternatives. The evaluation was prepared to support a Petition to the Connecticut Energy Facility Siting board for approval of the line.

Northeast Utilities – Transmission Line, CT. Project Manager for the preparation of an application to the Connecticut Siting Counsel for a 38-mile long 345 kV transmission line. The project also included the assessment of the environmental impact for the project route and alternatives, and preparation of the municipal consultation filing.

Environmental Licensing and Permitting for Submarine Electric and Telecommunications Cable -- Falmouth to Martha's Vineyard, MA. Responsible for licensing and permitting of several 23 kV submarine cables and a fiber optic telecommunication cable to serve Martha's Vineyard. This effort included numerous permits and submissions including those under Massachusetts Environmental Policy Act, a Chapter 91 Waterways License, US Army Corps of Engineers 404/10 requirements, Martha's Vineyard Commission submittal, and Wetland submittals for approval by three conservation commissions. Navigational and archeological evaluations were also undertaken as part of the licensing effort.

Eversource Electric 25 kV Feeder – Falmouth, MA. Project manager for the licensing and installation of a one-mile 25kV underground feeder in Falmouth, Massachusetts. ESS was responsible site/route evaluation and mapping; wetland delineation; threatened and endangered surveys/avian risk assessment; cultural resource surveys; soil and groundwater contamination evaluation; and federal, state, and local permits including MEPA review, Chapter 91 waterway licensing; Coastal Zone Management consistency, Army Corps of Engineers approval; and wetland protection act/conservation commission approval. ESS was also responsible for site survey, including existing utilities identification and for the as built drawings preparation. The underground electric line was installed in a sensitive coastal area, which includes coastal dunes, tidal streams, and estuarine habitat. The project also involved the use of horizontal directional drilling technology.

Commonwealth Electric New Bedford 115kV Transmission Line – New Bedford, MA. Project Manager for the licensing and permitting of a new 115 kV transmission line to serve the city of New Bedford, including Energy Facility Siting Board approval and certification by the Secretary of Environmental Affairs under Massachusetts Environmental Policy Act. The project also included the licensing of a horizontal directional bore beneath the Acushnet River, which crossed beneath an EPA Superfund site.

Cambridge Electric 115kV Transmission Line – Cambridge, MA. Responsible for the environmental licensing and permitting of a new underground 115kV transmission line to serve the city of Cambridge including Energy Facility Siting Board approval and certification by the Secretary of Environmental Affairs under MEPA.

US Power Generating Company – Licensing and Permitting Analysis for a Combined Cycle Power Plant, Queens, NY. Project Manager for the analysis and permitting of a new 400 MW combined cycle project. Responsibilities include the preparation of the air permit, air quality modeling, non-attainment review,

and managing the required field environmental surveys, technical studies, environmental impact evaluations, and the development of mitigation strategies for the preparation of the draft and final Environmental Impact Statements under the New York State Environmental Quality Review process.

Astoria Generating Company, Licensing and Permitting for Repowering Project – Astoria, NY. Project Manager for the analysis and permitting of the repowering of an existing 1250 MW generating facility under the Article X process to increase capacity to 1,816 MW. Air Permitting Manager responsible for air quality modeling, wet cooling tower assessments, prevention of significant deterioration, non-attainment review, and Title IV permit applications. Managed the required field environmental surveys, technical studies, air quality modeling, environmental impact evaluations, and the development of mitigation strategies. Provided expert testimony in air quality in the Article X proceedings.

US Power Generating Company, South Pier Improvement Project Peaking Power Plant – Brooklyn, NY. Senior Quality Assurance Reviewer and Task Manager for the air quality permit application and Environmental Impact Statement studies for the licensing of a state-of-the-art 100 MW combustion turbine through the New York State Environmental Quality Review process.

Rochester Gas & Electric, Licensing and Permitting for a Combined Cycle Power Plant – Rochester, NY. Managed the air quality task for a 300 MW generating facility, which will include air quality analysis for the New York State Environmental Quality Review Environmental Impact Statement process and the air permits. Responsible for air quality modeling, prevention of significant deterioration, non-attainment review, and coordination of the sound impact analysis.

BG North America, Licensing and Permitting for a Combined Cycle Power Plant – Killingly, CT. Project Manager for the addition of a fourth 400 MW unit to an existing 720 MW power generating facility. In addition to the air quality permit, wetlands assessment and local permitting, the project included the preparation of an application to the Connecticut Siting Council.

Licensing and Permitting MATEP 36 MW Expansion – Boston, MA. Responsible for the successful permitting and licensing analysis for the addition of three combined cycle combustion turbines at the MATEP generating facility. Also managed the preparation and filing of required permits and approval applications including Massachusetts Environmental Policy Act and Massachusetts Department of Environmental Protection Air Plan Approval.

Vermont Public Power Authority Peaking Generating Facility – VT. Project Manager for environmental permitting and licensing analysis of a 24 MW peaking combustion turbine facility in upstate Vermont. Responsibilities include the preparation of the air permit, air quality modeling, non-attainment review and preparation of the State Title V permit and Certificate of Public Good before the Public Service Board (PSB). Provided expert testimony on air and noise matters in the PSB filing.

Massachusetts Clean Energy Center, Offshore Transmission Assessment – MA. Project Manager of a team that prepared a report to analyze the transmission infrastructure necessary to interconnect future Massachusetts offshore wind projects to the regional electric grid. This report examined the technical aspects of offshore wind transmission interconnection and analyzed scenarios that minimize cost and environmental impact for the interconnection of offshore wind projects in the Massachusetts Wind Energy Area (MA WEA), which estimated to potentially host up to 5,000 MW of offshore wind. The results of the study supported MACZM update of the Massachusetts Ocean Management Plan.

Vineyard Wind – Offshore Renewable Energy Project, MA. Vineyard Wind – Offshore Renewable Energy Project, MA. Principal in Charge for environmental permitting of a proposed offshore 800 MW wind energy project and associated transmission line to be in the Massachusetts Wind Energy Area. ESS prepared the SAP, IHA and initiated the COP including coordination with Bureau of Ocean Energy Management and overall strategy. ESS also conducted export cable routing analysis to determine the most advantageous route to interconnect with the land-based grid through federal and state waters. ESS also conducted a data gap

analysis of the numerous studies and other available information to determine additional data needs under the SAP and COP. This included review of various environmental assessments including avian, marine mammal, benthic, geologic, physical, and coastal resources in addition to noise, essential fish habitat, submerged aquatic vegetation and marine cultural resources for the application.

New York Power Authority (NYPA) – Evaluation of Interconnection for Offshore Renewable Energy Project – NY. Project Manager to assist NYPA with an evaluation of the potential points of interconnection (POI) on Long Island or in lower New York for the integration of up to 2,300 MW of offshore wind proposed for development off the cost of New York. The evaluation included assessment of potential offshore cable routes from proposed and current Wind Energy Areas, identification of landfalls, upland routes and constraints associated with connecting to bulk substations. An initial high-level evaluation of power flows and possible capacity injection at the interconnection points was also conducted by ESS team member. The results identified several POIs for further evaluations.

Cape Wind Associates LLC, Offshore Renewable Electric Generation and Submarine Cable Project – Nantucket Sound. Project Manager for the preparation of a petition before the Massachusetts Energy Facility Siting Board for approval to construct and operate two 115 kV transmission lines, which would bring the power generated by the 454 MW off-shore wind farm to an interconnection with the Massachusetts and New England transmission system. Assessed alternative approaches to bring the power generated in Nantucket Sound to the transmission system and prepared a comprehensive routing analysis that examined the need for the facility, costs, and environmental impacts. Provided expert testimony before the Massachusetts Energy Facility Siting Board for the 17-mile 115 kV transmission interconnection project.

New York Power Authority (NYPA) - Offshore Renewable Energy Project – NY. Project manager to assist NYPA with an evaluation of the permitting and study requirements for the development of an offshore wind energy project on the OCS outside New York City. Services included developing multiple study and permitting scenarios, as well as schedules including costs to assist NYPA develop a strategy for the development of the project including possible PPA solicitation.

New York State Energy Research and Development Authority ("NYSERDA") Offshore Wind Planning Studies, Offshore NY. Project manager for supporting NYSERDA's assessment under the Offshore Wind Master Plan by providing expert critical review and feedback of the studies being produced under this program covering a variety of environmental, social, economic, regulatory, and infrastructure-related issues within an offshore study area (OSA) approximately 16,740-square-mile in size. This support included review of Work Scope for technical and regulatory data gaps, research needs, and overall content including guidance to improve documents. ESS is also reviewed reports for technical validity, content, validity of findings and provided guidance and recommendations on how to improve the documents.

New Hampshire Public Utilities Commission – Concord, NH. Project manager as part of a team providing the NHPUC with an evaluation and analysis of three large electric generating plants owned by PSNH, as well as nine hydroelectric plants. The project was part of the Commission's evaluation of whether to retain the current ownership structure or have PSNH divest itself of the plants, and if so, how best to accomplish divestiture. ESS was responsible for the environmental aspects in the development and analyses in order provide input for the economic evaluation.

Connecticut Energy Advisory Board – New Britain, CT. Project manager as part of a team providing consulting services to the CEAB for the development of a process to execute responsibilities for the solicitation and evaluation of proposals for the development and siting of transmission, generation, conservation load management, and other energy strategies under Connecticut statute. ESS was responsible for the environmental aspects in the development of a reactive process and proactive process for soliciting required energy facilities.

PAYSON R. WHITNEY, III, PE

Vice President

Experience
ESS Group: 1998 to present

Years of Prior Related Experience: 4

Education
BS, Civil Engineering, Lehigh University, 1994

Professional Registrations
Professional Engineer Licenses:

- MA, No. 41706, 2001
- RI, No. 8551, 2006
- VA, No. 50185, 2012
- NH, No. 14163, 2013
- MD, No. 47100, 2015
- ME, No. 14040, 2015

National Council of Examiners for Engineering and Surveying Record, No. 47445, 2011

Master Design Certificate for Low Impact Development, State of Rhode Island, No. 1106011, 2006

Affiliations
Boston Society of Civil Engineers Section of the American Society of Civil Engineers (BSCES)—Board of Government Member (1999-2000)

BSCES Waterways, Ports, Coastal & Ocean Technical Group—Chairman (1999-2000)

Environmental Business Council of New England Ocean and Coastal Resource Committee Chairman (2014-Present)

Qualifications

Mr. Whitney is a Professional Engineer with more than 23 years of experience as a Civil/Coastal Engineer and Project Manager in a wide range of public and private sector projects, including project design and management activities in civil/site engineering, coastal permitting/shoreline assessment, and the planning and permitting of electrical transmission projects. He specializes in planning, routing, surveying and installing High Voltage AC and DC submarine electric transmission cable systems, landfall transitions, and interconnections with local grid substations. Mr. Whitney has conducted submarine cable routing, constructability, and installation assessments and permitting along the eastern seaboard for some of the largest submarine cable system projects developed in the last 18 years. He is considered to be among the foremost submarine cable system planners in the industry with several successful projects under his leadership.

Mr. Whitney is also well versed in local, state, and federal environmental regulatory and land use permitting requirements and strategies, and has provided permitting services for projects in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, New Hampshire, Maine, Delaware, Maryland, Virginia, and The Bahamas. He has particular expertise in permitting projects subject to Massachusetts Chapter 91 Waterways regulations, New York Article VII regulations, and New Jersey Division of Land Use Regulation.

Representative Project Experience

West Point Partners, LLC – West Point Transmission Project – Athens, NY to Buchanan, NY. Project Manager responsible for development of the Project's overland and in-river transmission cable routes, managing initial stakeholder outreach meetings, and overseeing preparation of the Projects New York State Article VII and USACE Individual Permit applications. Responsible for day-to-day coordination of ESS services, coordination with the client and its project team, coordination with the selected installers, providing technical services related to submarine cable route design and construction, and for planning, directing, and overseeing in-river geophysical and geotechnical field investigations. Also responsible for overseeing development of the Project's Alternatives Analysis.

Hudson Transmission Partners, LLC – The Hudson Project, Ridgefield, NJ to New York City, NY. Provided and coordinated engineering support for regulatory permitting efforts for the construction of a new High Voltage DC, 66 MW electric transmission facility linking the regional PJM Interconnection with the New York Independent System Operator. The Project will include the construction of a new back-to-back AC-DC-AC Converter Station to be located in Ridgefield and installation of a new 230 kV AC link to the nearby PSE&G Bergen Substation, also in Ridgefield. From the Converter Station a new 345 kV AC electric transmission cable system will be routed in an overland underground configuration from Ridgefield to Edgewater, New Jersey where it will then cross the Lower Hudson River estuary in a buried submarine cable configuration

to make landfall at Piers 92 – 94 at the Mid-town Manhattan waterfront where it will then interconnect via upland underground cable to the existing Con Edison West 49th Street Substation.

Bayonne Energy Center, LLC – Bayonne Energy Center Project, Bayonne, NJ to Brooklyn, NY. Project Manager for environmental consulting, regulatory permitting, and preliminary engineering for the submarine electric transmission cable aspect of the project, which entailed the construction of a 512 MW electric generating plant in Bayonne, NJ. The plant is connected to the New York electrical grid via a 6.5-mile-long, 345 kV submarine electric transmission cable with an interconnection at the ConEdison Gowanus substation in Brooklyn. Responsible for day-to-day coordination of ESS services, coordination with the client and its project team, coordination with the project engineers, providing technical services related to submarine cable route design and construction, and for planning, directing, and overseeing marine geophysical and geotechnical field investigations. Responsible for developing the proposed submarine cable route and identifying from project survey and constraints information. Responsible for overseeing preparation of New York Article VII filing and U.S. Army Corps of Engineers permit application, as well as various separate supporting reports and responses to comments. Supported NJDEP Waterfront Development Permit application by preparing sections relevant to the submarine cable. During construction, was responsible for coordination with project owner and installation contractor to resolve routing challenges prior to installation, for verifying installer cable burial depth estimates, and for conducting required environmental inspections and monitoring in New York.

Hudson Transmission Partners, LLC – Hudson Project Submarine Cable Reconductoring, Edgewater, NJ to New York City, NY. Project Manager responsible for providing environmental consulting and regulatory permitting services for the 2017 replacement of the Hudson Project submarine cable. The Project operated successfully between June 2013 and January 1, 2016. In 2016, the submarine cable experienced three separate faults on the “C” Phase cable. The cause of these faults could not be determined despite thorough investigations. HTP determined that the long-term viability of the Project and its ability to provide New York Power Authority (NYPA) customers with power from the Project required the replacement of the existing submarine cable between its landfalls in Edgewater, NJ and Manhattan, NY with a new solid dielectric submarine cable. ESS was responsible for assisting HTP with developing and implement regulatory strategies for New York, New Jersey, and the USACE New York District. The work included preparing and submitting an application for a New Jersey In-Water Waterfront Development Individual Permit and Water Quality Certificate in less than three weeks to enable NJDEP to complete their review to meet the accelerated project schedule. Managed ESS environmental monitoring and inspection services required by the Project’s Article VII Certificate and EM&CP document during cable removal operations that included pre- and post-construction sediment and benthic monitoring, Independent Environmental Inspectors onboard the cable removal vessel, and TSS/Water Quality monitoring.

PSEG Power LLC – Cross Hudson Project, Ridgefield, NJ to New York City, NY. Project Manager for environmental consulting and engineering services for the construction of a submarine electric cable system to transmit power from the PSEG Bergen Station in Ridgefield, New Jersey to the ConEd West 49th Street substation in New York City. The cable system was to be approximately seven miles long (including upland and submarine portions), and would transmit approximately 500 MW of AC energy as well as fiber optic communications. Was responsible for day-to-day coordination of ESS services, coordination with the client, coordination with the project engineers, providing technical services related to submarine cable route design and construction, and for planning, directing, and overseeing multiple marine geophysical and geotechnical field investigations. Was responsible for developing the proposed submarine cable route from project survey and constraints information. Responsible for

overseeing preparation of New York Article VII filing and U.S. Army Corps of Engineers permit application, as well as various separate supporting reports and responses to comments.

Silver Run Electric, LLC – Silver Run Project – Odessa, DE to Lower Alloways Creek Township, NJ. Project Manager for environmental consulting and regulatory permitting services for the proposed 230 kV Silver Run Project, which will connect a new switchyard located east of Odessa, DE with the PSE&G Hope Creek Substation. The Project will include a Submarine Cable crossing of the Delaware River approximately three miles in length and an overland segment in Delaware approximately two miles in length. The proposed transmission line crossing of the Delaware River will consist of submarine cable installed beneath the riverbed via an injector using water jetting technology. The Project includes transition structures in the Delaware River near each shore in New Jersey and Delaware. ESS is responsible for sediment testing and analysis, environmental characterizations, and preparation for permit applications for submission to the USACE Philadelphia District and the NJDEP Division of Land Use Regulation.

Connecticut Light & Power Company and its Project Partners – Submarine Replacement Cable Project, Norwalk, CT to Northport, NY. Planned and directed an extensive marine geophysical and geotechnical field investigation program and provided technical support for permitting of an 11-mile, 300 MW AC submarine cable system that replaced an existing series of electric transmission cables connecting existing power stations in Connecticut and Long Island. The seven existing fluid-filled submarine cables were replaced with three new solid dielectric AC cables within the existing cable corridor in 2008. Two survey vessels conducted geophysical and geotechnical surveys simultaneously. The field investigation program included bathymetric, sub-bottom profiling, side-scan sonar, and magnetometer surveys, as well as advancing vibracores and surface sediment grabs, to evaluate surface and shallow subsurface sediment/geologic conditions along the proposed alternative routes. The program consisted of over 400 miles of geophysical survey tracklines, over 30 vibracores, and approximately 100 surface sediment grabs.

National Grid – Mohican-Battenkill Rebuild Project – Fort Edward, NY to Easton, NY. Responsible for providing oversight to the ESS-provided Independent Environmental Inspector during construction of the 14 mile, 115 kV replacement of an 80 year old transmission line with new monopoles and overhead wires. ESS was responsible for preparing the Article VII application and the Environmental Management & Construction Plan, which included working with National Grid to layout and select a variety of erosion and sediment control measures and stormwater best management practices. During construction, Mr. Whitney was responsible for reviewing weekly and post-storm event SWPPP inspection reports, working with National Grid to implement field changes to erosion and sediment controls, and making periodic site visits to observe the progress of work.

Confidential Submarine Electric Generator Lead Project – Northeast U.S. Project manager responsible for preparing the desktop routing study for proposed submarine electric cable generator lead and transmission projects that would reallocate power generated from an existing generating station to a different ISO control area than presently served by the generating station.

Confidential Submarine Electric Cable Projects – Northeast U.S. Project manager responsible for preparing the desktop routing studies for several proposed submarine electric cable projects that included potential merchant projects, reliability projects, and projects that were being investigated by developers for possible response to RFP's issued by regulated utilities to provide electricity to various ISO zones.

Confidential Client – Electric Generating Facility Siting, Long Island, NY. Provided services related to the siting of a proposed electric generating facility. Responsible for field reconnaissance of potential site locations within a 1,000-square-mile area utilizing applicable local regulations and site development requirements.

Cape Wind Associates, LLC – Cape Wind Project, Nantucket Sound, MA. Provided services related to the siting and design of a proposed renewable electric generating facility involving installation of 130 offshore wind turbine generators with a potential to generate 454 MW. The wind park is proposed to be sited on Horseshoe Shoal, and will interconnect with the regional power grid through an AC submarine cable system between the wind park and the southern shore of Cape Cod. Preparing conceptual facility layouts and evaluating geologic conditions for a project baseline environmental impact and feasibility study. Planning, directing, and overseeing extensive marine geophysical and geotechnical field investigation programs, included hydrographic, sub-bottom profiling, side-scan sonar, and magnetometer surveys, as well as advancing vibracores and surface sediment grabs, to evaluate surface and shallow/deep subsurface sediment/geologic conditions in the area of the proposed offshore renewable electric generating facility and the submarine electric cable links to the mainland electric grid. Prepared a detailed Navigational Risk Assessment, which was the first such assessment for an offshore wind energy facility submitted to the US Coast Guard, and assessed the possibility for project impacts to marine vessel traffic and USCG search and rescue operations.

Green Line Devco – Maine Green Line Project – Orrington, ME to Plymouth, MA. Project Manager for routing, environmental consulting, and regulatory strategy and permitting services provided by ESS as the lead environmental consultant for the Maine Green Line Project, which is a proposed regional HVDC overland and submarine electric transmission line from Maine through Penobscot Bay and the Gulf of Maine to coastal Massachusetts. Initial ESS services included working with Green Line Devco and its engineering team to evaluate potential overland and submarine cable routes for the Project. Our work on the overland routes involved both desktop and field review of environmental conditions along a number of alternative routes in both Maine and Massachusetts. Our work on the submarine portions involved desktop review of environmental and navigation conditions, sediment sampling and analysis, and development of potential submarine cable routes.

Confidential Fiber Optic Cable Project – VA. Project manager responsible for preparing the desktop routing study for a proposed submarine fiber optic cable crossing in Virginia. Responsible for overseeing development of submarine cable crossing route alternatives and for developing regulatory permitting strategy. ESS will be retained to provide environmental consulting services for regulatory permitting in 2013.

Hawaii Infrastructure Partners, LLC, Submarine Cable Routing and Assessment, HI. Project Manager for the completion of a due diligence and desktop routing assessment for the siting of submarine electric cables in the State of Hawaii. This assessment included site reconnaissance, regulatory outreach, and coordination and assessment of environmental constraints such as coral reefs, endangered species, geologic conditions, and cultural resources. Additionally, factors such as U.S. Naval operations and navigational concerns were researched and analyzed.

Pepco Holdings, Inc. – Mid-Atlantic Power Pathway Project, Chesapeake Bay, MD. Project Manager for preliminary Desktop Routing Analysis, Bay & River Technical Studies, and Submarine Cable Owner's Engineer services for the 320 kV HVDC submarine cable segment of the larger 150-mile project. The preliminary routing analysis identified potential routes, constraints (geologic, navigation, installation feasibility), and critical planning issues. ESS also provided marine geophysical survey observations and

landfall evaluations. PHI retained ESS to complete engineering and associated scientific evaluations to assess submarine cable system installation feasibility and constructability, including a marine sediment sampling and testing program, turbidity/water quality impact modeling, an environmental risk assessment, and assessing the proposed submarine cable route, the planned installation methods, the Impact Producing Factors associated with both installation and operation of the submarine cable. ESS was also retained as PHI's owner's engineer for the submarine cable component of the MAPP Project.

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PUBLIC SERVICE COMMISSION

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DIRECT TESTIMONY OF

STEPHEN B. WOOD, PAYSON R. WHITNEY, III, MATTHEW D. LADEWIG AND JASON R. RINGLER ON BEHALF OF NORTH BERGEN LIBERTY GENERATING, LLC

Dated: March 29, 2018

SBW/PRW/MDL/JRR

Q. Mr. Wood, please state your name, title and business address.

A. My name is Stephen B. Wood, Vice President and Senior Project Manager, ESS Group, Inc., 10 Hemingway Drive, 2nd Floor, East Providence, Rhode Island 02915.

Q. Please summarize your educational and professional background.

A. I received a Juris Doctor degree from Southern New England School of Law in 1996, a Masters in Business Administration from Western New England College in 1985, and a Bachelor of Arts in Biology from North Adams State College. I have worked for ESS Group, Inc., since 2000. Prior to that time, I was the Director of Environmental Affairs for Commonwealth Energy System. I have more than 30 years of experience in environmental licensing and permitting of major projects, including electric generation and transmission facilities in New York and other states.

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Q. Mr. Whitney, please summarize your educational and professional background.

A. I received a Bachelor of Science in Civil Engineering from Lehigh University in 1994, and am a Professional Engineer, licensed in Massachusetts, Rhode Island, Virginia, New Hampshire, Maryland and Maine. I have over 23 years of experience as a Civil/Coastal Engineer and Project manager in a wide range of public and private sector projects, including project design and management activities in civil/site engineering, coastal permitting/shoreline assessment, and the planning and permitting of multiple electrical transmission projects in New York under Article VII as well as in other states.

Q. Mr. Whitney, what was your role in the North Bergen Liberty Generating project?

A. ESS Group was retained by North Bergen Liberty Generating, LLC to undertake the analysis and studies needed to inform and support an amendment filing to the New York State Public Service Law Article VII Certificate of Environmental Compatibility and Public Need issued for the Cross Hudson project.

Q. Mr. Whitney, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Ladewig, please state your name, title and business address.

A. My name is Matthew D. Ladewig, Senior Scientist at ESS Group, Inc., 10 Hemingway Drive, 2nd Floor, East Providence, Rhode Island 02915.

Q. Mr. Ladewig, please summarize your educational and professional background.

A. I received a Bachelor of Arts in Physical Geography from the University of Illinois at Urbana-Champaign in 2000, and a Masters of Science in Aquatic Resource Ecology and Management from the University of Michigan in 2006. I have over 10 years of experience as a taxonomist, collecting and analyzing macroinvertebrate

samples collected from freshwater and marine habitats, and oversee ESS' invertebrate taxonomy services.

Q. Mr. Ladewig, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Ringler, please state your name, title and business address.

A. My name is Jason R. Ringler, Senior Scientist at ESS Group, Inc., 10 Hemingway Drive, 2nd Floor, East Providence, Rhode Island 02915.

Q. Mr. Ringler, please summarize your educational and professional background.

A. I received a Bachelor of Science in Wildlife Biology and Management from the University of Rhode Island in 1998 and am a Professional Wetland Scientist and a Certified Wildlife Biologist. I have more than 20 years of experience in wildlife assessments and wetland delineation, wetland and terrestrial ecology, environmental compliance monitoring and costal wetland restoration and mitigation design for a wide range of projects.

Q. Mr. Ringler, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mssrs. Wood, Whitney, Ladewig and Ringler, what was your role in the North Bergen Liberty Generating project?

A. Several portions of the Article VII application were either prepared by us or under our direction and supervision.

Q. Mr. Wood, what is the purpose of your testimony?

A. The purpose of my testimony is to support Sections 4.1 through 4.3, 4.10, 4.12 and 4.14 of Exhibit 4, as well as Exhibits 7 and 8 of the application, which were prepared by me or under my supervision.

Q. Mr. Wood, do Exhibits 7 and 8 of the application accurately set forth the New York City local ordinances applicable to the project, as well as the other pending filings which may be required?

A. Yes, Exhibit 7 sets forth the New York City local ordinances which we identified as being applicable to the construction and operation of the project. Exhibit 8 sets forth other permits and approvals which may be required for both the transmission line and the generating facility in New Jersey, as well as the status of each of those permits and approvals.

Q. Mr. Wood, do Sections 4.1 through 4.3, 4.10, 4.12 and 4.14 of Exhibit 4 accurately describe the relevant environmental characteristics of the location of the project, as well as any potential impacts from the project?

A. Yes, those sections describe the project setting, Topography, Geology, Soils and Groundwater, Land Use, Visual and Aesthetic Resources, and Noise. As described in those sections, the project, as proposed, will have minimal impacts to each of the relevant environmental areas of concern.

Q. Mr. Whitney, what is the purpose of your testimony?

A. The purpose of my testimony is to support Section 4.4 of Exhibit 4, which was prepared by me or under my supervision.

Q. Mr. Whitney, does Section 4.4 of Exhibit 4 accurately describe the Hudson River physical and chemical characteristics, as well as the potential impacts to that resource from the project?

A. Yes, Section 4.4 and the appendices upon which it is based accurately describes the Hudson River physical and chemical characteristics, based upon the studies included as Attachment 4-1 and Attachment 4-2 to the amendment application. In addition, ESS caused to be prepared a study, utilizing previously accepted modeling techniques, to demonstrate that the construction of the submarine portion of the cable will have minimal impact on the suspended sediment concentrations and sediment deposition in the River, as any impacts will be temporary. That study is included as Attachment 4-3 to the amendment application.

Q. Mr. Ladewig, what is the purpose of your testimony?

A. The purpose of my testimony is to support Sections 4.5, 4.6 and 4.9 of Exhibit 4, which were prepared by me or under my direction and supervision.

Q. Mr. Ladewig, do Sections 4.5, 4.6 and 4.9 of Exhibit 4 accurately describe the aquatic species within the Hudson River which could be affected by the project, and the potential impacts thereto?

A. Yes. ESS undertook a benthic survey of the Hudson River, the results of which are included in Attachment 4-4 and Attachment 4-5 to the amendment application. Based upon the results of that survey, and as discussed in those sections of Exhibit 4, there will only be minimal impacts to the aquatic species within the Hudson River. In addition, as discussed in Section 4.9, construction within the river will be

restricted at certain times of the year in order to avoid impacts to protected aquatic species.

Q. Mr. Ringler, what is the purpose of your testimony?

A. The purpose of my testimony is to support Sections 4.7 and 4.8 of Exhibit 4 of the amendment application, which were prepared by me or under my direction and supervision.

Q. Mr. Ringler, do Sections 4.7 and 4.8 of Exhibit 4 accurately describe the freshwater and tidal wetland resources, as well as wildlife and protected species which could be affected by the project, as well as any potential impacts thereto?

A. Yes, Sections 4.7 and 4.8 accurately describe the freshwater and tidal wetland resources, as well as wildlife and protect species which could be affected by the project, and as discussed therein, the project will avoid or minimize any potential impacts to those relevant environmental resources.

Q. Gentlemen, does this complete your prefiled testimony at this time?

A. Yes.

STEPHEN B. WOOD
Vice President

Experience
ESS Group, Inc. – 2000 to present

Years of Prior Related Experience – 22

Education
JD, University of Massachusetts School of Law

MBA, Western New England University

BA, Biology, North Adams State College

Registrations/Affiliations
Admitted to the Massachusetts Bar
June 1996

Admitted to the United State District Court for Massachusetts
January 1997

Advisor – Electric Power Research Institute

Air & Water Management Association

Boston Bar Association, Environmental Section

Qualifications

Mr. Wood is a Vice President and Senior Project Manager with more than 30 years of experience in environmental licensing and permitting, as well as project management. Prior to joining ESS, he was the Director of Environmental Affairs for a major electric and gas utility company in Massachusetts, where he was responsible for directing and managing all aspects of environmental policy, programs, and licensing for electric and gas operations including generation, transmission, and distribution functions and environmental licensing and permitting for construction and operation of gas and electric facilities. He has significant experience in the preparation of filings for generation, electric, and gas transmission projects before energy facility siting boards in several states including Massachusetts, New York, Connecticut, and Vermont, where he has also provided expert testimony. Mr. Wood routinely provides feasibility assessments, permitting strategies, and licensing services for these major and complex projects. He has also managed the preparation of state and federal Environmental Impact Statements for energy generation and transmission projects, as well as the federal, state, and local permitting.

Representative Project Experience

National Grid Clay - Teall 115 kV Transmission Project – Onondaga County, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for an 18-mile long 115 kV electric transmission reconductoring project that will reinforce the National Grid transmission and the New York grid. Provided expert testimony in the Article VII proceedings. ESS is also preparing the Environmental management and Construction Plan, as well as the Storm Water Pollution Prevention Plan and Army Corps of Engineers wetland permit application and mitigation plan. ESS will provide agricultural and environmental monitoring during construction.

National Grid Mohican-Battenkill 115 kV Transmission Project – Washington and Saratoga Counties, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for a 14-mile 115 kV electric transmission project that will reinforce the National Grid transmission and the New York grid. Provided expert testimony in the Article VII proceedings. ESS is also preparing the Environmental management and Construction Plan as well as the Storm Water Pollution Prevention Plan and Army Corps of Engineers wetland permit application as and mitigation plan. ESS will provide agricultural and environmental monitoring during construction.

Upstate Power Transmission Project – Jefferson and Oswego Counties, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for a 50-mile 230 kV electric transmission project that will bring energy from the 280 MW Hounsfield Wind Farm on Gallo Island to the New York grid. The project also includes a routing evaluation, an assessment of the environmental impacts for the 9-mile underwater section and 42-mile upland project route and alternatives, and a public participation program. Provided expert testimony in the Article VII proceedings.

National Grid Mortimer, Golah 115 kV Transmission Project – Monroe County, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for a 10.3 mile 69-115 kV electric transmission rebuild and conversion project that will reinforce the National Grid transmission and the New York grid. Provided expert testimony in the Article VII proceedings. ESS is also preparing the Environmental management and Construction Plan, as well as the Storm Water Pollution Prevention Plan and Army Corps of Engineers wetland permit application as and mitigation plan.

New York Regional Interconnect – High Voltage DC Transmission Line, NY. Project Manager for the preparation and submittal of an Article VII filing to the New York Public Service Commission for a 450 kV DC transmission project over 190 miles in length. The project also includes a routing evaluation, the assessment of the environmental impacts for the project route and alternatives, and a public participation program. Provided expert testimony in the Article VII proceedings.

PSEG, Susquehanna-Roseland Transmission Project – PA and NJ. Provided senior technical and strategy assistance to the 500-kV project for the National Environmental Policy Act process for the section of the line passing through the Delaware Water Gap National Recreation Area. The National Park Service is the lead agency developing the Environmental Impact Statement for the project.

Northeast Utilities -Plumtree to Brookfield Junction 115-kV Transmission Line – Fairfield County, CT. Project manager for the preparation of a routing alternatives study for the upgrade of an approximately six-mile-long above ground transmission line including overhead and underground alternatives. The evaluation was prepared to support a Petition to the Connecticut Energy Facility Siting board for approval of the line.

Northeast Utilities – Transmission Line, CT. Project Manager for the preparation of an application to the Connecticut Siting Counsel for a 38-mile long 345 kV transmission line. The project also included the assessment of the environmental impact for the project route and alternatives, and preparation of the municipal consultation filing.

Environmental Licensing and Permitting for Submarine Electric and Telecommunications Cable -- Falmouth to Martha's Vineyard, MA. Responsible for licensing and permitting of several 23 kV submarine cables and a fiber optic telecommunication cable to serve Martha's Vineyard. This effort included numerous permits and submissions including those under Massachusetts Environmental Policy Act, a Chapter 91 Waterways License, US Army Corps of Engineers 404/10 requirements, Martha's Vineyard Commission submittal, and Wetland submittals for approval by three conservation commissions. Navigational and archeological evaluations were also undertaken as part of the licensing effort.

Eversource Electric 25 kV Feeder – Falmouth, MA. Project manager for the licensing and installation of a one-mile 25kV underground feeder in Falmouth, Massachusetts. ESS was responsible site/route evaluation and mapping; wetland delineation; threatened and endangered surveys/avian risk assessment; cultural resource surveys; soil and groundwater contamination evaluation; and federal, state, and local permits including MEPA review, Chapter 91 waterway licensing; Coastal Zone Management consistency, Army Corps of Engineers approval; and wetland protection act/conservation commission approval. ESS was also responsible for site survey, including existing utilities identification and for the as built drawings preparation. The underground electric line was installed in a sensitive coastal area, which includes coastal dunes, tidal streams, and estuarine habitat. The project also involved the use of horizontal directional drilling technology.

Commonwealth Electric New Bedford 115kV Transmission Line – New Bedford, MA. Project Manager for the licensing and permitting of a new 115 kV transmission line to serve the city of New Bedford, including Energy Facility Siting Board approval and certification by the Secretary of Environmental Affairs under Massachusetts Environmental Policy Act. The project also included the licensing of a horizontal directional bore beneath the Acushnet River, which crossed beneath an EPA Superfund site.

Cambridge Electric 115kV Transmission Line – Cambridge, MA. Responsible for the environmental licensing and permitting of a new underground 115kV transmission line to serve the city of Cambridge including Energy Facility Siting Board approval and certification by the Secretary of Environmental Affairs under MEPA.

US Power Generating Company – Licensing and Permitting Analysis for a Combined Cycle Power Plant, Queens, NY. Project Manager for the analysis and permitting of a new 400 MW combined cycle project. Responsibilities include the preparation of the air permit, air quality modeling, non-attainment review,

and managing the required field environmental surveys, technical studies, environmental impact evaluations, and the development of mitigation strategies for the preparation of the draft and final Environmental Impact Statements under the New York State Environmental Quality Review process.

Astoria Generating Company, Licensing and Permitting for Repowering Project – Astoria, NY. Project Manager for the analysis and permitting of the repowering of an existing 1250 MW generating facility under the Article X process to increase capacity to 1,816 MW. Air Permitting Manager responsible for air quality modeling, wet cooling tower assessments, prevention of significant deterioration, non-attainment review, and Title IV permit applications. Managed the required field environmental surveys, technical studies, air quality modeling, environmental impact evaluations, and the development of mitigation strategies. Provided expert testimony in air quality in the Article X proceedings.

US Power Generating Company, South Pier Improvement Project Peaking Power Plant – Brooklyn, NY. Senior Quality Assurance Reviewer and Task Manager for the air quality permit application and Environmental Impact Statement studies for the licensing of a state-of-the-art 100 MW combustion turbine through the New York State Environmental Quality Review process.

Rochester Gas & Electric, Licensing and Permitting for a Combined Cycle Power Plant – Rochester, NY. Managed the air quality task for a 300 MW generating facility, which will include air quality analysis for the New York State Environmental Quality Review Environmental Impact Statement process and the air permits. Responsible for air quality modeling, prevention of significant deterioration, non-attainment review, and coordination of the sound impact analysis.

BG North America, Licensing and Permitting for a Combined Cycle Power Plant – Killingly, CT. Project Manager for the addition of a fourth 400 MW unit to an existing 720 MW power generating facility. In addition to the air quality permit, wetlands assessment and local permitting, the project included the preparation of an application to the Connecticut Siting Council.

Licensing and Permitting MATEP 36 MW Expansion – Boston, MA. Responsible for the successful permitting and licensing analysis for the addition of three combined cycle combustion turbines at the MATEP generating facility. Also managed the preparation and filing of required permits and approval applications including Massachusetts Environmental Policy Act and Massachusetts Department of Environmental Protection Air Plan Approval.

Vermont Public Power Authority Peaking Generating Facility – VT. Project Manager for environmental permitting and licensing analysis of a 24 MW peaking combustion turbine facility in upstate Vermont. Responsibilities include the preparation of the air permit, air quality modeling, non-attainment review and preparation of the State Title V permit and Certificate of Public Good before the Public Service Board (PSB). Provided expert testimony on air and noise matters in the PSB filing.

Massachusetts Clean Energy Center, Offshore Transmission Assessment – MA. Project Manager of a team that prepared a report to analyze the transmission infrastructure necessary to interconnect future Massachusetts offshore wind projects to the regional electric grid. This report examined the technical aspects of offshore wind transmission interconnection and analyzed scenarios that minimize cost and environmental impact for the interconnection of offshore wind projects in the Massachusetts Wind Energy Area (MA WEA), which estimated to potentially host up to 5,000 MW of offshore wind. The results of the study supported MACZM update of the Massachusetts Ocean Management Plan.

Vineyard Wind – Offshore Renewable Energy Project, MA. Vineyard Wind – Offshore Renewable Energy Project, MA. Principal in Charge for environmental permitting of a proposed offshore 800 MW wind energy project and associated transmission line to be in the Massachusetts Wind Energy Area. ESS prepared the SAP, IHA and initiated the COP including coordination with Bureau of Ocean Energy Management and overall strategy. ESS also conducted export cable routing analysis to determine the most advantageous route to interconnect with the land-based grid through federal and state waters. ESS also conducted a data gap

analysis of the numerous studies and other available information to determine additional data needs under the SAP and COP. This included review of various environmental assessments including avian, marine mammal, benthic, geologic, physical, and coastal resources in addition to noise, essential fish habitat, submerged aquatic vegetation and marine cultural resources for the application.

New York Power Authority (NYPA) – Evaluation of Interconnection for Offshore Renewable Energy Project – NY. Project Manager to assist NYPA with an evaluation of the potential points of interconnection (POI) on Long Island or in lower New York for the integration of up to 2,300 MW of offshore wind proposed for development off the cost of New York. The evaluation included assessment of potential offshore cable routes from proposed and current Wind Energy Areas, identification of landfalls, upland routes and constraints associated with connecting to bulk substations. An initial high-level evaluation of power flows and possible capacity injection at the interconnection points was also conducted by ESS team member. The results identified several POIs for further evaluations.

Cape Wind Associates LLC, Offshore Renewable Electric Generation and Submarine Cable Project – Nantucket Sound. Project Manager for the preparation of a petition before the Massachusetts Energy Facility Siting Board for approval to construct and operate two 115 kV transmission lines, which would bring the power generated by the 454 MW off-shore wind farm to an interconnection with the Massachusetts and New England transmission system. Assessed alternative approaches to bring the power generated in Nantucket Sound to the transmission system and prepared a comprehensive routing analysis that examined the need for the facility, costs, and environmental impacts. Provided expert testimony before the Massachusetts Energy Facility Siting Board for the 17-mile 115 kV transmission interconnection project.

New York Power Authority (NYPA) - Offshore Renewable Energy Project – NY. Project manager to assist NYPA with an evaluation of the permitting and study requirements for the development of an offshore wind energy project on the OCS outside New York City. Services included developing multiple study and permitting scenarios, as well as schedules including costs to assist NYPA develop a strategy for the development of the project including possible PPA solicitation.

New York State Energy Research and Development Authority ("NYSERDA") Offshore Wind Planning Studies, Offshore NY. Project manager for supporting NYSERDA's assessment under the Offshore Wind Master Plan by providing expert critical review and feedback of the studies being produced under this program covering a variety of environmental, social, economic, regulatory, and infrastructure-related issues within an offshore study area (OSA) approximately 16,740-square-mile in size. This support included review of Work Scope for technical and regulatory data gaps, research needs, and overall content including guidance to improve documents. ESS is also reviewed reports for technical validity, content, validity of findings and provided guidance and recommendations on how to improve the documents.

New Hampshire Public Utilities Commission – Concord, NH. Project manager as part of a team providing the NHPUC with an evaluation and analysis of three large electric generating plants owned by PSNH, as well as nine hydroelectric plants. The project was part of the Commission's evaluation of whether to retain the current ownership structure or have PSNH divest itself of the plants, and if so, how best to accomplish divestiture. ESS was responsible for the environmental aspects in the development and analyses in order provide input for the economic evaluation.

Connecticut Energy Advisory Board – New Britain, CT. Project manager as part of a team providing consulting services to the CEAB for the development of a process to execute responsibilities for the solicitation and evaluation of proposals for the development and siting of transmission, generation, conservation load management, and other energy strategies under Connecticut statute. ESS was responsible for the environmental aspects in the development of a reactive process and proactive process for soliciting required energy facilities.

PAYSON R. WHITNEY, III, PE

Vice President

Experience
ESS Group: 1998 to present

Years of Prior Related Experience: 4

Education
BS, Civil Engineering, Lehigh University, 1994

Professional Registrations
Professional Engineer Licenses:

- MA, No. 41706, 2001
- RI, No. 8551, 2006
- VA, No. 50185, 2012
- NH, No. 14163, 2013
- MD, No. 47100, 2015
- ME, No. 14040, 2015

National Council of Examiners for Engineering and Surveying Record, No. 47445, 2011

Master Design Certificate for Low Impact Development, State of Rhode Island, No. 1106011, 2006

Affiliations
Boston Society of Civil Engineers Section of the American Society of Civil Engineers (BSCES)—Board of Government Member (1999-2000)

BSCES Waterways, Ports, Coastal & Ocean Technical Group—Chairman (1999-2000)

Environmental Business Council of New England Ocean and Coastal Resource Committee Chairman (2014-Present)

Qualifications

Mr. Whitney is a Professional Engineer with more than 23 years of experience as a Civil/Coastal Engineer and Project Manager in a wide range of public and private sector projects, including project design and management activities in civil/site engineering, coastal permitting/shoreline assessment, and the planning and permitting of electrical transmission projects. He specializes in planning, routing, surveying and installing High Voltage AC and DC submarine electric transmission cable systems, landfall transitions, and interconnections with local grid substations. Mr. Whitney has conducted submarine cable routing, constructability, and installation assessments and permitting along the eastern seaboard for some of the largest submarine cable system projects developed in the last 18 years. He is considered to be among the foremost submarine cable system planners in the industry with several successful projects under his leadership.

Mr. Whitney is also well versed in local, state, and federal environmental regulatory and land use permitting requirements and strategies, and has provided permitting services for projects in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, New Hampshire, Maine, Delaware, Maryland, Virginia, and The Bahamas. He has particular expertise in permitting projects subject to Massachusetts Chapter 91 Waterways regulations, New York Article VII regulations, and New Jersey Division of Land Use Regulation.

Representative Project Experience

West Point Partners, LLC – West Point Transmission Project – Athens, NY to Buchanan, NY. Project Manager responsible for development of the Project's overland and in-river transmission cable routes, managing initial stakeholder outreach meetings, and overseeing preparation of the Projects New York State Article VII and USACE Individual Permit applications. Responsible for day-to-day coordination of ESS services, coordination with the client and its project team, coordination with the selected installers, providing technical services related to submarine cable route design and construction, and for planning, directing, and overseeing in-river geophysical and geotechnical field investigations. Also responsible for overseeing development of the Project's Alternatives Analysis.

Hudson Transmission Partners, LLC – The Hudson Project, Ridgefield, NJ to New York City, NY. Provided and coordinated engineering support for regulatory permitting efforts for the construction of a new High Voltage DC, 66 MW electric transmission facility linking the regional PJM Interconnection with the New York Independent System Operator. The Project will include the construction of a new back-to-back AC-DC-AC Converter Station to be located in Ridgefield and installation of a new 230 kV AC link to the nearby PSE&G Bergen Substation, also in Ridgefield. From the Converter Station a new 345 kV AC electric transmission cable system will be routed in an overland underground configuration from Ridgefield to Edgewater, New

Jersey where it will then cross the Lower Hudson River estuary in a buried submarine cable configuration to make landfall at Piers 92 – 94 at the Mid-town Manhattan waterfront where it will then interconnect via upland underground cable to the existing Con Edison West 49th Street Substation.

Bayonne Energy Center, LLC – Bayonne Energy Center Project, Bayonne, NJ to Brooklyn, NY. Project Manager for environmental consulting, regulatory permitting, and preliminary engineering for the submarine electric transmission cable aspect of the project, which entailed the construction of a 512 MW electric generating plant in Bayonne, NJ. The plant is connected to the New York electrical grid via a 6.5-mile-long, 345 kV submarine electric transmission cable with an interconnection at the ConEdison Gowanus substation in Brooklyn. Responsible for day-to-day coordination of ESS services, coordination with the client and its project team, coordination with the project engineers, providing technical services related to submarine cable route design and construction, and for planning, directing, and overseeing marine geophysical and geotechnical field investigations. Responsible for developing the proposed submarine cable route and identifying from project survey and constraints information. Responsible for overseeing preparation of New York Article VII filing and U.S. Army Corps of Engineers permit application, as well as various separate supporting reports and responses to comments. Supported NJDEP Waterfront Development Permit application by preparing sections relevant to the submarine cable. During construction, was responsible for coordination with project owner and installation contractor to resolve routing challenges prior to installation, for verifying installer cable burial depth estimates, and for conducting required environmental inspections and monitoring in New York.

Hudson Transmission Partners, LLC – Hudson Project Submarine Cable Reconductoring, Edgewater, NJ to New York City, NY. Project Manager responsible for providing environmental consulting and regulatory permitting services for the 2017 replacement of the Hudson Project submarine cable. The Project operated successfully between June 2013 and January 1, 2016. In 2016, the submarine cable experienced three separate faults on the “C” Phase cable. The cause of these faults could not be determined despite thorough investigations. HTP determined that the long-term viability of the Project and its ability to provide New York Power Authority (NYPA) customers with power from the Project required the replacement of the existing submarine cable between its landfalls in Edgewater, NJ and Manhattan, NY with a new solid dielectric submarine cable. ESS was responsible for assisting HTP with developing and implement regulatory strategies for New York, New Jersey, and the USACE New York District. The work included preparing and submitting an application for a New Jersey In-Water Waterfront Development Individual Permit and Water Quality Certificate in less than three weeks to enable NJDEP to complete their review to meet the accelerated project schedule. Managed ESS environmental monitoring and inspection services required by the Project’s Article VII Certificate and EM&CP document during cable removal operations that included pre- and post-construction sediment and benthic monitoring, Independent Environmental Inspectors onboard the cable removal vessel, and TSS/Water Quality monitoring.

PSEG Power LLC – Cross Hudson Project, Ridgefield, NJ to New York City, NY. Project Manager for environmental consulting and engineering services for the construction of a submarine electric cable system to transmit power from the PSEG Bergen Station in Ridgefield, New Jersey to the ConEd West 49th Street substation in New York City. The cable system was to be approximately seven miles long (including upland and submarine portions), and would transmit approximately 500 MW of AC energy as well as fiber optic communications. Was responsible for day-to-day coordination of ESS services, coordination with the client, coordination with the project engineers, providing technical services related to submarine cable route design and construction, and for planning, directing, and overseeing

multiple marine geophysical and geotechnical field investigations. Was responsible for developing the proposed submarine cable route from project survey and constraints information. Responsible for overseeing preparation of New York Article VII filing and U.S. Army Corps of Engineers permit application, as well as various separate supporting reports and responses to comments.

Silver Run Electric, LLC – Silver Run Project – Odessa, DE to Lower Alloways Creek Township, NJ. Project Manager for environmental consulting and regulatory permitting services for the proposed 230 kV Silver Run Project, which will connect a new switchyard located east of Odessa, DE with the PSE&G Hope Creek Substation. The Project will include a Submarine Cable crossing of the Delaware River approximately three miles in length and an overland segment in Delaware approximately two miles in length. The proposed transmission line crossing of the Delaware River will consist of submarine cable installed beneath the riverbed via an injector using water jetting technology. The Project includes transition structures in the Delaware River near each shore in New Jersey and Delaware. ESS is responsible for sediment testing and analysis, environmental characterizations, and preparation for permit applications for submission to the USACE Philadelphia District and the NJDEP Division of Land Use Regulation.

Connecticut Light & Power Company and its Project Partners – Submarine Replacement Cable Project, Norwalk, CT to Northport, NY. Planned and directed an extensive marine geophysical and geotechnical field investigation program and provided technical support for permitting of an 11-mile, 300 MW AC submarine cable system that replaced an existing series of electric transmission cables connecting existing power stations in Connecticut and Long Island. The seven existing fluid-filled submarine cables were replaced with three new solid dielectric AC cables within the existing cable corridor in 2008. Two survey vessels conducted geophysical and geotechnical surveys simultaneously. The field investigation program included bathymetric, sub-bottom profiling, side-scan sonar, and magnetometer surveys, as well as advancing vibracores and surface sediment grabs, to evaluate surface and shallow subsurface sediment/geologic conditions along the proposed alternative routes. The program consisted of over 400 miles of geophysical survey tracklines, over 30 vibracores, and approximately 100 surface sediment grabs.

National Grid – Mohican-Battenkill Rebuild Project – Fort Edward, NY to Easton, NY. Responsible for providing oversight to the ESS-provided Independent Environmental Inspector during construction of the 14 mile, 115 kV replacement of an 80 year old transmission line with new monopoles and overhead wires. ESS was responsible for preparing the Article VII application and the Environmental Management & Construction Plan, which included working with National Grid to layout and select a variety of erosion and sediment control measures and stormwater best management practices. During construction, Mr. Whitney was responsible for reviewing weekly and post-storm event SWPPP inspection reports, working with National Grid to implement field changes to erosion and sediment controls, and making periodic site visits to observe the progress of work.

Confidential Submarine Electric Generator Lead Project – Northeast U.S. Project manager responsible for preparing the desktop routing study for proposed submarine electric cable generator lead and transmission projects that would reallocate power generated from an existing generating station to a different ISO control area than presently served by the generating station.

Confidential Submarine Electric Cable Projects – Northeast U.S. Project manager responsible for preparing the desktop routing studies for several proposed submarine electric cable projects that included potential merchant projects, reliability projects, and projects that were being

investigated by developers for possible response to RFP's issued by regulated utilities to provide electricity to various ISO zones.

Confidential Client – Electric Generating Facility Siting, Long Island, NY. Provided services related to the siting of a proposed electric generating facility. Responsible for field reconnaissance of potential site locations within a 1,000-square-mile area utilizing applicable local regulations and site development requirements.

Cape Wind Associates, LLC – Cape Wind Project, Nantucket Sound, MA. Provided services related to the siting and design of a proposed renewable electric generating facility involving installation of 130 offshore wind turbine generators with a potential to generate 454 MW. The wind park is proposed to be sited on Horseshoe Shoal, and will interconnect with the regional power grid through an AC submarine cable system between the wind park and the southern shore of Cape Cod. Preparing conceptual facility layouts and evaluating geologic conditions for a project baseline environmental impact and feasibility study. Planning, directing, and overseeing extensive marine geophysical and geotechnical field investigation programs, included hydrographic, sub-bottom profiling, side-scan sonar, and magnetometer surveys, as well as advancing vibracores and surface sediment grabs, to evaluate surface and shallow/deep subsurface sediment/geologic conditions in the area of the proposed offshore renewable electric generating facility and the submarine electric cable links to the mainland electric grid. Prepared a detailed Navigational Risk Assessment, which was the first such assessment for an offshore wind energy facility submitted to the US Coast Guard, and assessed the possibility for project impacts to marine vessel traffic and USCG search and rescue operations.

Green Line Devco – Maine Green Line Project – Orrington, ME to Plymouth, MA. Project Manager for routing, environmental consulting, and regulatory strategy and permitting services provided by ESS as the lead environmental consultant for the Maine Green Line Project, which is a proposed regional HVDC overland and submarine electric transmission line from Maine through Penobscot Bay and the Gulf of Maine to coastal Massachusetts. Initial ESS services included working with Green Line Devco and its engineering team to evaluate potential overland and submarine cable routes for the Project. Our work on the overland routes involved both desktop and field review of environmental conditions along a number of alternative routes in both Maine and Massachusetts. Our work on the submarine portions involved desktop review of environmental and navigation conditions, sediment sampling and analysis, and development of potential submarine cable routes.

Confidential Fiber Optic Cable Project – VA. Project manager responsible for preparing the desktop routing study for a proposed submarine fiber optic cable crossing in Virginia. Responsible for overseeing development of submarine cable crossing route alternatives and for developing regulatory permitting strategy. ESS will be retained to provide environmental consulting services for regulatory permitting in 2013.

Hawaii Infrastructure Partners, LLC, Submarine Cable Routing and Assessment, HI. Project Manager for the completion of a due diligence and desktop routing assessment for the siting of submarine electric cables in the State of Hawaii. This assessment included site reconnaissance, regulatory outreach, and coordination and assessment of environmental constraints such as coral reefs, endangered species, geologic conditions, and cultural resources. Additionally, factors such as U.S. Naval operations and navigational concerns were researched and analyzed.

Pepco Holdings, Inc. – Mid-Atlantic Power Pathway Project, Chesapeake Bay, MD. Project Manager for preliminary Desktop Routing Analysis, Bay & River Technical Studies, and Submarine Cable

Owner's Engineer services for the 320 kV HVDC submarine cable segment of the larger 150-mile project. The preliminary routing analysis identified potential routes, constraints (geologic, navigation, installation feasibility), and critical planning issues. ESS also provided marine geophysical survey observations and landfall evaluations. PHI retained ESS to complete engineering and associated scientific evaluations to assess submarine cable system installation feasibility and constructability, including a marine sediment sampling and testing program, turbidity/water quality impact modeling, an environmental risk assessment, and assessing the proposed submarine cable route, the planned installation methods, the Impact Producing Factors associated with both installation and operation of the submarine cable. ESS was also retained as PHI's owner's engineer for the submarine cable component of the MAPP Project.

MATTHEW D. LADEWIG
Senior Scientist

Experience
ESS Group, Inc.: 2006 to present

Years of Prior Related Experience: 3

Education
MS, Aquatic Resource Ecology and Management, University of Michigan, 2006

BA, Physical Geography, University of Illinois at Urbana-Champaign, 2000

Professional Certifications
Society for Freshwater Science – Chironomidae and Eastern EPT Taxonomist

North American Lake Management Society – Certified Lake Manager

Boat Massachusetts Boat Safety Certification

8-hour Offshore Water Survival Certification

SafeGulf Marine Safety Certification

Affiliations
Rhode Island Environmental Monitoring Collaborative – Appointed Member (2013 to present)

Qualifications

Mr. Ladewig is an experienced taxonomist who has collected and analyzed thousands of macroinvertebrate samples collected from freshwater and marine habitats in the Northeast, the Mid-Atlantic, and the Bahamas. He holds taxonomic certifications from the Society for Freshwater Science and oversees ESS's invertebrate taxonomy services. Mr. Ladewig's taxonomic experience extends to a wide variety of other biological resources, including fish, birds, aquatic plants, and a number of rare species. Mr. Ladewig regularly completes field studies and environmental impact assessments associated with submarine cable, upland transmission, and renewable energy generation projects.

Representative Project Experience

West Point Partners, LLC – New York State Article VII – Hudson River, NY. Completed an assessment of existing water quality, sediment quality, and benthic and shellfish resources in the Hudson River for a proposed power transmission project between Athens and Buchanan, New York. As part of this assessment, identified and enumerated benthic macroinvertebrates from baseline benthic samples collected along the Proposed Subaquatic Route. This was used to help identify potential impacts of the electric transmission line for the New York Article VII filing.

Upstate NY Power Corporation – NYS Article VII Application – NY. Completed an assessment of existing benthic resources in Lake Ontario for a proposed power transmission project between a proposed wind farm on Galloo Island and the town of Mexico, New York. As part of this assessment, identified and enumerated benthic macroinvertebrates from baseline benthic samples collected along the Proposed Subaquatic Route. Additionally, assisted with the drafting of several sections of the New York Article VII application, including discussions of hydrology, wetlands, biological resources, and vegetation clearing. This was used, along with other studies, to identify potential impacts of the 51-mile, 230 kV electric transmission line and associated substations.

Hudson Transmission Partners, LLC – Submarine Cable Installation – Lower Hudson River, NY and NJ. Identified and enumerated macroinvertebrates from benthic samples collected in the lower Hudson River estuary. Summarized data in a report on baseline benthic resources in the Project area for New York Article VII submission.

Bayonne Energy Center – New York Landfall, Gowanus Bay – Brooklyn, NY. Independent Environmental Inspector for construction activities associated with the installation of a new submarine transmission cable from Bayonne, New Jersey to Brooklyn, New York. Provided inspection services, documented any environmental compliance issues and prepared daily written inspection reports during all in-water construction activities associated with the installation at the New York landfall. Also monitored water quality during cable installation in New York waters.

Cape Wind Associates, LLC – Cape Wind Offshore Renewable Energy Generation and Submarine Cable Project Geophysical and Geotechnical Surveys – Nantucket Sound, MA. Served as the onboard client representative for an extensive geotechnical program that will be used to support final engineering design of the 130-turbine Cape Wind offshore wind project. The geotechnical program included collection of vibracores, seabed cone penetrometer testing (CPT), deep CPT, and deep boring.

Poseidon Transmission 1, LLC – State and Federal Permitting of the Poseidon Project – Middlesex County, NJ to Huntington, NY. Completed an assessment of existing water quality, sediment quality, and benthic and shellfish resources in Raritan Bay and the New York Bight for a proposed electric transmission project between Middlesex County, New Jersey and Huntington, New York. As part of this assessment, assisted with wetland delineation and developed impact assessments for shellfish and benthic resources, sediment and water quality, and rare species. These impact assessments were used for the New York Article VII and New Jersey Land Use Regulation Program (LURP) filings.

New York Transmission Company, LLC – New York Regional Interconnection – NYS Article VII Application. NY. Used GIS software to digitize transmission routes and prepare summary tables for the Article VII application. Additionally, performed viewshed analyses of power line routes. This was used, along with other studies, to identify potential impacts of the 190-mile, 400 kV DC line and associated converter stations. When complete, the project will have the potential to move 1,200 MW of power from northern New York, Ontario, or Quebec to New York City.

Scenic Hudson, Inc., and Riverkeeper, Inc. – Technical Review of the NYS Article VII Application for Proposed Champlain Hudson Power Express – Albany, NY to New York City. Conducted a technical review of portions of the Application of Champlain Hudson Power Express for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII of the Public Service Law. The technical evaluation included a review of 100-mile submarine cable segment of the proposed project in NY. The Technical Evaluation Report provided a review of the submarine cable installation methods, sediment disturbances and re-suspension of PCBs, benthic aquatic impacts, impacts of Horizontal Directional Drilling at landfalls, stream impacts, impacts of thermal and electromagnetic fields as portrayed in the Article VII Application. The Technical Review Report was filed as part of the NYS PSC administrative case record.

US Wind – Maryland Offshore Wind Energy Project – Outer Continental Shelf, Federal Waters off the Coast of MD & Indian River Bay, DE. Assistant project manager and subject area expert for the Maryland Offshore Wind Energy Project, a 750 MW offshore wind farm development proposed for the Outer Continental Shelf off the coast of Maryland. Also served as the Senior Taxonomist and Quality Assurance Officer overseeing the safe handling, sorting, and identification and enumeration of all benthic samples collected. Samples were collected and processed in accordance with protocols approved by the federal Bureau of Ocean Energy Management (BOEM). US Wind has filed a Site Assessment Plan (SAP) with BOEM and ESS is currently working with US Wind to prepare the Construction and Operation Plan (COP) for the offshore wind farm and associated electric transmission cables.

Gamesa USA, LLC – Geotechnical and Benthic Surveys to Support Construction of an Offshore Wind Turbine – Cape Charles, VA. Collected vibracore and benthic grab samples near a proposed offshore prototype wind turbine and associated submarine transmission cable route. Provided quality assurance/quality control and taxonomic identification on benthic macroinvertebrate samples from the project area. Completed a benthic macroinvertebrate community assessment report as part of the joint permit application.

Cape Wind Associates, LLC – Cape Wind Offshore Renewable Energy Generation and Submarine Cable Project Permitting – Nantucket Sound, MA. Assisted with the drafting and editing of several segments of key documents in the permitting process for a groundbreaking offshore wind farm. Documents included the Environmental Management System (EMS) plan, an alternative sites analysis of existing marine benthic conditions and the Final Environmental Impact Report (FEIR). Also drafted responses to agency requests concerning benthic and fishery resources and assisted with the statistical design of the post-construction benthic monitoring plan. The project involved the siting, permitting, and construction of up to 130 wind turbines, an offshore electric service platform, as well as the submarine cable transmission link, and the upland cable interconnection with New England's power grid.

Town of Hull – Hull Wind Offshore Expansion – Hull, MA. Identified and enumerated macroinvertebrates from benthic samples collected in the Proposed Project Area as part of the baseline monitoring effort. Also completed analysis of targeted benthic samples in areas with the potential to support surf clam beds. Data from these efforts were summarized in a technical report on the baseline benthic resources.

CSA Ocean Sciences, Inc. – Bureau of Ocean Energy Management (BOEM) Programmatic Environmental Impact Statement for OCS Oil and Gas Leasing Program, 2017-2022 – Alaska, Gulf of Mexico and Atlantic. Served as the subject matter expert for avian resources in the Chukchi Sea, Beaufort Sea and Cook Inlet Planning Areas. Worked collaboratively with other subject matter experts from CSA and BOEM to develop the relevant affected resources and impact assessment narrative and supporting graphics. BOEM was required to complete this Programmatic Environmental Impact Statement (PEIS) for the OCS Oil and Gas Leasing Program pursuant to the National Environmental Policy Act (NEPA).

Silver Run Electric, LLC – Benthic Sample Analysis to Support Permitting of a Transmission Project – NJ and DE. Senior taxonomist and quality assurance officer overseeing the safe handling, sorting, and identification and enumeration of macrofaunal samples collected from estuarine waters of New Jersey and Delaware. Samples were collected and processed in accordance with protocols approved by NJDEP and DNREC.

Northeast Utilities – Long Island Submarine Cable Replacement Project – Norwalk, CT. Collected infaunal grab samples and oversaw diver collection of epifaunal samples as part of the submarine cable post-construction monitoring program conducted under a Connecticut Department of Environmental Protection approved protocol. Provided quality assurance/quality control and identified and enumerated benthic macroinvertebrates from these samples. Assisted with data analysis and reporting for 24-month and Final Summary Reports to monitor the impacts to benthic and shellfish resources near the submarine replacement cables. ESS continues to provide post-construction environmental monitoring, currently consisting of biennial hydrographic surveys of the three LIRC cables as well as benthic and water quality monitoring along the abandoned cable segments near Northport, New York.

Pepco Holdings, Inc. – Mid-Atlantic Power Pathway Project – Chesapeake Bay, MD. In accordance with protocols tailored to meet the standards of the Maryland Department of Natural Resources, collected vibracore and benthic grab samples from numerous locations along a proposed high voltage submarine transmission cable route in Chesapeake Bay and the Choptank River. Provided quality assurance/quality control and taxonomic identification of benthic macroinvertebrates from 40 grab samples. Analyzed data and completed report detailing the baseline benthic macrofaunal assessment. This assessment was included in the Environmental Review Document filed with the state of Maryland for project permitting. Also developed project-specific fact sheets to help the client conduct public outreach.

Confidential Client – Offshore Carbon Sequestration Pipeline Routing – NJ to Outer Continental Shelf. Conducted desktop routing study of threatened and endangered species, fisheries resources, and terrestrial wildlife habitat to support fatal flaw analysis and routing strategy for a proposed pipeline. Assisted with the development of protocols for a marine survey program. The proposed pipeline would carry carbon emissions from a power generating facility in New Jersey to the outer continental shelf for long-term sequestration deep in the sea floor.

Pawtuxet River Authority – Fish Passage Feasibility Study for Blackamore and Cranberry Ponds – Cranston and Warwick, RI. Project manager for an assessment of Blackamore and Cranberry Ponds and their outlet streams, with regard to their ability to support anadromous fish passage. The Pawtuxet River and its tributaries historically supported a population of anadromous river herring and American shad. However, construction of dams along the Pawtuxet River from the Industrial Revolution through the twentieth century resulted in exclusion of river herring and American shad from most of the river and its tributaries. This study and subsequent restoration efforts will support the larger goal of improving habitat connectivity and fish passage within the greater Pawtuxet River system.

Housatonic River Natural Resource Damage (NRD) Fund – Enhancement of Housatonic River Public Access – Western MA. Assessed hydrologic, geomorphic, and biological conditions at potential public access points along the Housatonic River to select priority sites (from a total of 41 locations) for construction of public access improvements. Conducted cross section surveys and discharge measurements at sites with the highest priority for public access. Also assessed high priority locations for the presence of rare, threatened, and endangered fish, mussel, and invertebrate species and their habitats. The assessment was based mainly on feasibility of access, ecological constraints and distance to the nearest existing river access point. Four access sites were successfully permitted and constructed.

Confidential Client – Stream Restoration – Westfield, MA. Conducted field survey of natural stream reaches above and below a culverted section of an intermittent stream. The field survey included establishment of surveyed cross sections, a longitudinal profile survey and photodocumentation of existing conditions. Also assisted with the design of a natural stream channel. The restored channel morphology was modeled after the existing natural channel above and below the culvert. Post-construction monitoring documented successful restoration of the stream geomorphology to a dynamic equilibrium with improved passage of fish in the stream channel and wildlife along the riparian corridor.

CH2M Hill – Nearshore and Upland Invasive Species Inventory and Control Surveys at Naval Station Newport – Newport, RI. As project manager, obtained collection permits and oversaw invasive species surveys in intertidal, freshwater and upland habitats at Naval Station Newport. Marine and freshwater benthos, algae and plants were the primary focus of the surveys. The results of the surveys were used to develop an invasive species control plan for the installation.

New Hampshire Department of Environmental Services (NHDES) – Wetland Macroinvertebrate Sample Analysis – Statewide, NH. Senior taxonomist and quality assurance officer overseeing the safe handling, sorting, and identification and enumeration of macroinvertebrate samples collected from multiple wetlands in New Hampshire. These samples were collected and evaluated in support of New Hampshire's Wetlands Monitoring Strategy. Also coordinated with NHDES on the refinement of laboratory protocols for the state's wetland biomonitoring program.

US Environmental Protection Agency (US EPA) – National Aquatic Resource Surveys (NARS) Great Lakes Connecting Channels Sampling – Great Lakes States. Project manager for three task orders involving analysis of water quality, sediment quality, and benthic macroinvertebrate samples collected from the Laurentian Great Lakes connecting channels, as part of the National Aquatic Resource Surveys (NARS) program. Participates in kick-off teleconferences with US EPA and subcontractors, coordinates shipment and analysis of samples, and facilitates quality assurance review of laboratory data.

JASON R. RINGLER, PWS, CWB®
Senior Scientist

Experience
ESS Group: 2016 to present

Years of Prior Related Experience: 19

Education
BS, Wildlife Biology and Management, University of Rhode Island, 1998

Professional Certifications
Certified Wildlife Biologist, The Wildlife Society

Federal Aviation Administration Qualified Airport Wildlife Biologist

Professional Wetland Scientist #1953, Society of Wetland Scientists

Rhode Island Certified Arborist #261, Rhode Island Department of Environmental Management

Rhode Island Coastal Invasive Manager #25, Rhode Island Coastal Resource Management Council

Technical Service Provider #10-6520, Natural Resources Conservation Service

OSHA 30-hour Construction Safety & Health Training

OSHA Compliance & Workplace Safety Training

RCRA Waste Management Regulation Training

Wildlife & Oil Spill Response Training

Qualifications

Jason Ringler is a Senior Scientist with more than 20 years of experience in wildlife assessments and wetland delineation, wetland and terrestrial ecology, environmental compliance monitoring, and coastal wetland restoration and mitigation design on a wide range of projects for federal, state, and private-sector clients. Mr. Ringler has successfully managed and prepared local, state, and federal environmental permitting documentation for numerous public and private sector clients for transportation, aviation, infrastructure, and ecological restoration projects. Furthermore, he has conducted over 3,500 and 15,000 nights of small mammal and amphibian (pitfall) trapping, respectively. His field research experience also includes bird point counts, Atlantic flyway waterfowl and shorebird surveys, and eelgrass and shellfish surveys. Mr. Ringler has held state-issued scientific collectors' permits, federal special-use permits, and he is a contributor to the Harvard Museum of Comparative Zoology small mammal specimen collection.

Representative Project Experience

Federal Aviation Administration Wildlife Hazard Assessments

Green Line DEVCO – Transmission Project – Holton, ME to Boston, MA: Senior scientist responsible for preparing preliminary land base routing analysis, scheduling of multi-state field crews, and environmental due diligence for the proposed 340-mile transmission line, which involves both upland and submarine project segments. Supervised the development of environmental due diligence mapping along the upland route alternatives in Maine and Massachusetts to identify wetland and stream features, threatened and endangered species habitat, invasive species, and vernal pools in an effort select a preferred route alternative. 2016

Poseidon Transmission – Wetland Delineation and Permitting Support – Hempstead, NY to Middlesex and Monmouth Counties, NJ: Senior Scientist who coordinated field crews and supervised the delineation of tidal and freshwater wetlands in accordance with US Army Corps of Engineers guidelines along a proposed electrical cable route in Middlesex and Monmouth Counties, New Jersey. Coordinated with NJDEP with issuance of a Letter of Interpretation (LOI). Assisted with the development of a DLUR application to NJDEP for the New Jersey portion of the cable route. 2017

National Grid – Mohican-Battenkill Rebuild Project – Saratoga and Washington Counties, NY: Senior scientist responsible for directing the layout of wetland plantings in 7.5-acre mitigation site for a portion of the project. Planting included endemic herbaceous, shrub and tree species. Several invasive species were noted which resulted in the development of a subsequent invasive species management plan. 2016

Narragansett Bay Combined Sewer Overflow Facilities – Phase II Permitting – Providence, RI: Senior Environmental Scientist for this wetland delineation and environmental permitting of Phase II combined sewer overflow facilities consisted of five miles of 10- to 40-feet-deep sewer interceptors, 230-foot deep drop shafts and associated facilities that will connect to the previously constructed facilities; two sewershed areas in which sewer separation will be performed; and a wetland storage facility. General program permitting included: RIDEM freshwater wetlands applications

(preliminary determination and application to alter), RIDEM 401 Water Quality Certification, Rhode Island CRMC state assent, and USACE Category II application.

Invenergy – Clear River Energy Center Biological Inventory Report – Burrillville, RI: Senior scientist responsible for field research/survey coordination for the biological inventory of the Clear River Energy Center site, a proposed 1,000 MW combined-cycle dual fuel power plant. The biological inventory of the proposed project site included thirteen field survey programs carried out over the course of four months designed to identify bird, mammal, reptile, amphibian, insect, and plant species occurring in the study area. Resultant data was presented in a biological inventory report detailing the methods and results of the study. 2017

Appalachian Power Company – 138-kV Wythe Area Improvements Project – Wythe County, VA: Senior environmental scientist responsible for developing a desktop habitat assessment methodology for the 17.6-mile-long proposed project route specifically for the state threatened loggerhead shrike (*Lanius ludovicianus*). The habitat assessment was reviewed and approved by Virginia Department of Game and Inland Fisheries, and Mr. Ringler validated the results of the desktop habitat assessment in the field and search for loggerhead shrikes during the 2014 breeding season. The purpose of the habitat assessment was to locate the proposed 100-foot right-of-way in a manner that avoids and/or minimizes impacts to suitable habitat of the loggerhead shrike and to identify areas where ground clearing and tree removal activities cannot occur between April 1 to July 31 of any given year. 2014

Berlin Federal Correctional Institution – Mitigation Monitoring – Berlin, NH: Senior environmental scientist responsible for the completion of the annual mitigation monitoring reports prepared in compliance with the Department of the Army Individual Permit for the construction of a medium-security Federal Correctional Institution on an approximately 700-acre site in Coos County, New Hampshire. Monitoring requirements included an assessment of mitigation site hydrology, vegetation, presence of invasive species, erosion control measures, and seasonal wildlife activity. Monitoring reports included a description of existing conditions within the restoration and creation mitigation areas, plant survivability, and observations of wildlife and pioneer species, and recommended future management activities were included with the report. 2012-2014

FirstEnergy – Bruce Mansfield-Glenwillow 345-kV Transmission Line Project – Ohio & Pennsylvania: Senior environmental scientist who provided routing and permitting services for FirstEnergy's proposed Bruce Mansfield- Glenwillow 345-kV Transmission Line Project. The project will run for more than 100 miles from FirstEnergy's Bruce Mansfield Plant in Beaver County, Pennsylvania, to a new substation in the Cleveland suburb of Glenwillow, Cuyahoga County, Ohio. As a wetland delineator, Mr. Ringler performed the routine delineation method described in the USACE 1987 Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0) that consisted of a pedestrian site reconnaissance, including identifying the vegetation communities, soils identification, a geomorphologic assessment of hydrology, and notation of disturbance. During field surveys, the physical boundaries of observed wetlands and other WOUS were recorded using sub-meter accurate Trimble Global Positioning System units. The GPS data were then reviewed, geo-corrected using GPS Pathfinder Office software (version 4.20), and edited for errors. The Ohio Environmental Protection Agency (Ohio EPA) Ohio Rapid Assessment Method for Wetlands v. 5.0 (ORAM) and the qualitative habitat evaluation index (QHEI) were used to determine the relative ecological quality and level of disturbance of a particular wetland and to provide a rapid determination of habitat features assessing physical characteristics of streams most desirable by fish and, to a lesser extent, macroinvertebrates and smaller microinvertebrates, respectively. The Ohio EPA Primary Headwater Habitat Evaluation Index, a rapid field assessment method for physical habitat was used to appraise the biological potential of most Primary Headwater Habitat. 2012

Environmental and Social Impact Assessment for the Lekki Port and Harbor Facilities – Lagos, Nigeria: Senior environmental scientist responsible for a conducting a biological assessment of flora and fauna which included local avian, mammalian, and threatened and endangered marine turtles to update the environmental and social impact assessment for a proposed port near Lagos, Nigeria. Mr. Ringler assisted in revising several environmental sections of the environmental and social impact assessment per the guidance of the African Development Bank Group and the International Finance Corporation. Upon completion, the Port at Lekki will feature a 1,500-meter-long main breakwater; a 6-kilometer-long, 14.5-meter-deep approach channel; a 1,500-meter-long quay wall; and cargo-handling equipment, enabling the facility to accommodate container vessels of up to 4,000 twenty-foot equivalent units and liquid bulk vessels of up to 45,000 deadweight tons. 2012-2013

National Park Service – Environmental Impact Statement/Environmental Impact Report – Wellfleet, MA: Senior environmental scientist responsible for assisting in the data sources review, specifically for wildlife and listed species, to determine data needs for inclusion in the affected environment (Chapter 3) of the draft environmental impact statement/environmental impact report. Along with NEPA compliance requirements, the project is undergoing a coordinated review under the Massachusetts Environmental Policy Act and Development of Regional Impact review under the Cape Cod Commission. The Herring River Project involves the restoration of self-sustaining coastal habitats throughout the 1,100-acre Herring River estuary in Wellfleet and Truro, Massachusetts. 2010

Rhode Island Department of Environmental Management (RIDEM) – Fort Adams State Park Construction of Fixed Pier and Wave Fence – Newport, RI: Served as the senior environmental scientist. RIDEM was constructing a new, pile-supported 24-foot-wide by 240-foot-long fixed pier and wave fence with an associated 12- foot-wide by 210-foot-long concrete floating dock. The open area to the north of Fort Adams State Park has potential to generate the largest waves due to a fetch of approximately 7 miles, extending to the northern tip of Conanicut Island and the southern tip of Prudence Island. The proposed wave fence would protect the existing Alofsin piers and increase the level of service by reducing the wave climate in the area adjacent to the existing Alofsin timber piers. The new fixed pier would allow Fort Adams to continue to be used as a world class special events facility to host international sailing races while also providing berthing for the State of Rhode Island's Official Sailing Education Vessel, the Oliver Hazard Perry. Mr. Ringler prepared and submitted a Rhode Island CRMC Category B Assent and a Category 2 General Permit to the USACE, New England District. 2013

New Hampshire Department of Transportation (NHDOT) – I-93 Salem to Manchester – Salem & Windham, NH: Senior Environmental Scientist for the design of the southern segment of the highway reconstruction, which included widening Interstate I-93 (from two lanes to four lanes) for approximately eight miles, as well as replacing 19 bridges. The design also included an upgrade to interchanges at exits 1, 2, and 3. Worked with project engineers to quantify wetland project impacts, wetland mitigation site reports, and provisions to improve wildlife and fish passage under the highway. 2013

New Hampshire Department of Transportation (NHDOT) - New Hampshire Route 101 Widening Project – Bedford, NH: Environmental Task Manager for The New Hampshire Route 101 widening project in the Town of Bedford extends from Wallace Road easterly approximately 2 miles to its intersection with NH Route 114/Boynton Street. The project proposes to widen this Principal Arterial (Class One Highway) roadway and includes the construction of turn lanes, medians, and sidewalks. Mr. Ringler was responsible for verifying wetland delineations performed by the Department, invasive species delineation with the project area and conducting a functional assessment based on the USACE Highway Methodology. In addition, Mr. Ringler was responsible for the development of New Hampshire Department of Environmental Services Major Wetlands Permit Application, New Hampshire Department of Environmental Services Section 401 Water Quality Certificate, and USACE Individual Permit. 2015

Massachusetts Department of Transportation (MassDOT) - Route 2 Crosby's Corner Safety Improvements Project – Concord to Lincoln, MA: Senior environmental scientist who conducted wetland delineation, prepared wetland permitting and final design plans that included two wetland mitigation areas and stream restoration plans. Responsible for developing a USACE Individual Permit, Massachusetts DEP Notice of Intent, Massachusetts DEP Superseding Order of Conditions, 401 Water Quality Certification, and Wetland Protection Act Variance Request. The primary purpose of the project was to provide safe and efficient traffic operations at Crosby's Corner intersection and to reduce or remove direct driveway and local road access off the Route 2 mainline between Bedford Road in Lincoln and Route 126 in Concord. 2009-2011

Massachusetts Bay Transportation Authority (MBTA) – Fairmount Line Over Neponset River – Boston, MA: Senior environmental scientist responsible for environmental compliance and permitting associated with the replacement of two structurally deficient MBTA bridge structures at two separate locations over the Neponset River in Dorchester. The replacement bridge structures consisted of a ballasted deck on prestressed concrete beam supported by new abutments on drilled shafts constructed behind the old abutments for two main tracks, and open deck on welded plate girders supported on existing abutments for spur tracks. Permitting included a Categorical Exclusion under NEPA, a Notice of Intent including a wildlife habitat evaluation, and a Section 404 Massachusetts General Permit. 2012

Massachusetts Bay Transportation Authority (MBTA) – West Route Mainline (Haverhill Commuter Line) over Shawsheen River – Andover, MA: Senior environmental scientist responsible for wetland delineation, environmental compliance, and permitting associated with the rehabilitation of two structurally deficient historic stone arch bridge structures at two separate locations over the Shawsheen River in Andover. This project included the construction of new, low-profile bridges over existing stone arches, remedial repair of the existing stone arch, scour repair below the waterline, and streambank stabilization through bioengineering practices. Permitting included a Categorical Exclusion under NEPA, a Notice of Intent, a Section 404 Massachusetts General Permit, and 401 Water Quality Certification. 2013

New Hampshire Department of Transportation (NHDOT) – 93 Salem-Manchester, Salem & Windham, NH: Senior environmental scientist responsible for designing of the southern segment of the reconstruction included widening of Interstate I-93 for approximately 8 miles and replacement of 19 bridges, from the Massachusetts border northerly through the towns of Salem and Windham, New Hampshire. The design consisted of expanding I-93 from existing two-lane facility to four-lanes and upgrade of interchanges at exits 1, 2, and 3. Mr. Ringler worked with project engineers to quantify wetland project impacts, wetland mitigation site reports, and provisions to improve wildlife and fish passage under the highway. 2012

US Army Corps of Engineers-New England District - South Coast Rail Project – Massachusetts: Senior environmental scientist supporting the development of a third-party draft and final environmental impact statement intended to advance the restoration of passenger rail between the cities of New Bedford and Fall River and South Station in Boston. Mr. Ringler prepared the biodiversity, threatened and endangered species, and wetlands chapters. The project combined the state (MEPA) and federal (NEPA) review into a joint review with two phases. Proposed by The Executive Office of Transportation and Massachusetts Bay Transportation, the project anticipated promoting sustainable economic growth for the South Coast region. 2009- 2013

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 01-T-1474:	**APPLICATION OF NORTH BERGEN LIBERTY GENERATING, LLC, AS AUTHORIZED AGENT FOR CROSS HUDSON, LLC, FOR AN AMENDMENT TO A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED PURSUANT TO ARTICLE VII OF THE PUBLIC SERVICE LAW**

DIRECT TESTIMONY OF

DAVID DEUTSCH, JEFFREY ANON and THOMAS "DAN" KENEIPP

ON BEHALF OF NORTH BERGEN LIBERTY GENERATING, LLC

Dated: March 29, 2018

DD/JA/TDK

Q. Mr. Deutsch, please state your name, title and business address.

A. **My name is David Deutsch, Vice President, Development, Diamond Generating Corporation, and Lead Project Manager for the North Bergen Liberty Generating Project. My business address is 633 West Fifth Street, Suite 1900, Los Angeles, California 90071.**

Q. Mr. Deutsch please summarize your educational and professional background.

A. I received a Masters in Business Administration in Finance and Accounting from the University of Texas at Austin in 1997 and Bachelor of Arts in Economics and Math from Lehigh University in 1990. I'm a 21-year veteran of the electric power industry with deep knowledge and experience in business development, mergers and acquisition, project finance, power and gas contracts and strategy, for both utility-scale and renewable and distributed generation.

Q. Mr. Deutsch, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Deutsch, what is your role in the North Bergen Liberty Generating Project?

A. I am the project manager and lead developer of the project, including both the power plant and transmission line into New York City.

Q. Mr. Anon, please state your name, title and business address.

A. My name is Jeffrey Anon, and am the Managing Partner of North Bergen Holdings LLC, a minority owner of the proposed North Bergen Liberty Generating Project. My business address is: 4295 San Felipe #200, Houston, Texas 77027.

Q. Mr. Anon, please summarize your educational and professional background.

A. I received a Bachelor of Science in accounting from the Ohio State University. I own interests in several oil and gas companies in the United States, have served on the Advisory Board for Reliant Energy Business Services, and as part of predecessor companies to Cavallo Power, I co-founded the company and successfully led the bidding for a 50 MW independent power generation project, co-located at the Freeport Electric Utility Plant 2, on Long Island, New York.

Q. Mr. Anon, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Anon, what is your role in the North Bergen Liberty Generating Project?

A. I am the managing member of CCH Holdings, LLC, which holds the membership interests in Cross Hudson, LLC, which is the current holder of the existing Article VII Certificate for the Cross Hudson project. I have remained actively engaged in the development of the North Bergen Liberty Generating project, and have authorized North Bergen Liberty Generating, LLC to act as an authorized agent for Cross Hudson, LLC to modify the existing certificate in this case.

Q. Mr. Keneipp, please state your name, title and business address.

A. My name is Thomas Keneipp (although I am known as Dan Keneipp), Director of Engineering and Construction, Diamond Generating Corporation, and Director of Engineering and Construction for the North Bergen Liberty Generating Project. My business address is 633 West Fifth Street, Suite 1900, Los Angeles, California 90071.

Q. Mr. Keneipp, please summarize your educational and professional background.

A. I received a Bachelor of Science in Marine Engineering from the California Maritime Academy, and a Master of Business Administration from the University of Phoenix. I am also a Master Project Manager from the American Academy of Project Management, a Certified International Project Manager, also from the American Academy of Project Management, and a licensed 3rd Assistant Engineer of Steam, Motor or Gas Turbine Vessels of Any Horsepower. I have 36 years of experience in the engineering, construction and operations fields in the power generation industry.

Q. Mr. Keneipp, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Keneipp, what is your role in the North Bergen Liberty Generating Project?

A. I am responsible for the engineering, design and construction management services for the North Bergen Liberty Generating Project.

Q. Mssrs Deutsch, Anon and Keneipp, what was your role in the North Bergen Liberty Generating Project?

A. Several portions of the Article VII application were either prepared by us or under our direction and supervision.

Q. Mssrs Deutsch and Anon, what is the purpose of your testimony?

A. The purpose of our testimony is to support Exhibit 1.

Q. Mssrs. Deutsch and Anon, does Exhibit 1 accurately reflect the information regarding the applicant in this amendment application?

A. Yes, it does.

Q. Mssrs. Deutsch and Keneipp, what is the purpose of your testimony?

A. The purpose of our testimony is to support Exhibit 9.

Q. Does the cost information contained in Exhibit 9 accurately reflect the cost information for the transmission line, to the best of your knowledge?

A. Yes, it does.

Q. Gentlemen, does this complete your prefiled testimony at this time?

A. Yes.

David Deutsch
16 Pine Street, Chatham, NJ 07928
(213) 507-0072
d.deutsch@dgc-us.com

CAREER SUMMARY

21-year veteran of the electric power industry with deep knowledge and experience in business development, M&A, project finance, power/gas contracts and strategy, for both utility-scale and renewable/distributed generation.

EXPERIENCE

Diamond Generating Corporation (DGC) – *Independent power producer subsidiary of Mitsubishi Corporation.*
(Mar-16 to Present) *Los Angeles, CA*
Vice President, Development:

- Responsible for development activities throughout the US for DGC.
- Lead project manager for the North Bergen Liberty Generating project.
  - Negotiate all real estate transactions.
  - Oversee permitting, gas/power interconnection, gas supply, project finance, public relations, water, major equipment, and EPC procurement, and emissions reduction activities.
  - Manage project team.

Dynamic Energy – *$25 million solar and cogeneration development and installation company.*
(Nov-10 to Feb-16) *Chatham, NJ*
Senior Vice President, Business Development:

- Responsible for overseeing sales and development of commercial/industrial and utility-scale ground/roof-mounted solar photovoltaic (PV) power projects in the Northeast US.
- Manage a small team of business development professionals.
- Successfully developed and closed 12 solar projects totaling over 10 MW by interfacing directly with C-level executives.
- Built a substantial Rolodex of channel partners (3rd party electric suppliers, PPA financiers, energy consultants, etc…) through which many new solar projects are sourced.
- Expanded Dynamic's geographic footprint by developing and selling projects in MA, CT, NY and MD.
- Promoted to SVP.

International Power – *$20 billion global independent power producer.*
(Feb-07 to Nov-10) *New York, NY*
Director, Business Development/M&A*:*

- Responsible for originating, evaluating, structuring, negotiating, financing and closing equity/asset purchases of power generating companies/facilities and corporate acquisitions.
- Deal lead on an 1,857 MW, four-power plant portfolio acquisition (please see "Deal Highlights" document).
- Developed renewable acquisition and growth strategy.
  - Evaluated various solar and wind companies/projects as potential acquisition targets.
  - Led commercial structuring, due diligence, and contract negotiations on the potential acquisition of a controlling interest in EverPower Wind (developer with a 2,000 MW project pipeline).

Alstom Power – *$23 billion global manufacturer of power generation equipment.*
(Aug-03 to Feb-07) *Windsor, CT*
Director, M&A*:*

- Responsible for identifying, developing, selling, and closing integrated commercial offerings and acquisitions.
- Developed acquisition growth strategy, evaluated potential acquisition/JV targets and presented recommendations to senior staff (please see "Deal Highlights" document).
  - Deal lead on Alstom's acquisition of Power Systems Manufacturing from Calpine out of bankruptcy.
  - Negotiated and sold $50 million condenser business and commercial real estate netting $10 million.
  - Led acquisition efforts on a potential $150 million stock purchase of Aquilex Holdings from First Reserve.

David Deutsch
16 Pine Street, Chatham, NJ 07928
(213) 507-0072
d.deutsch@dgc-us.com

Duke Energy North America – ***Unregulated subsidiary of Duke Energy with over 15,000 MW in operation (2002).***
(May-99 to Dec-02) *Houston, TX*
Director, M&A*:*

- Responsible for originating, evaluating, structuring, negotiating, and closing equity and asset purchases and sales, including partnerships in generating facilities and corporate acquisitions.
- Member or leader of small deal team on various transactions from origination to closing (please see "Deal Highlights" document).
  - Griffith Energy – formation of a partnership with PPLG to build, own, and operate a 500 MW power plant.
  - VMC Generating – formation of a partnership with Cinergy and sale of 50% interest in three power plants netting $100 million in EBIT.
  - Purchase and sale of multiple power plants in North America.

Conoco Global Power – ***Power subsidiary of Conoco, the world's largest independent E&P company.***
(May-98 to Apr-99) *Houston, TX*
Associate, Project Development*:*

- Responsible for economic analysis and development of power projects in North America.
- Assisted in negotiations with an industrial host leading to a signed LOI and exclusive development rights for a 440MW natural gas-fired cogeneration plant in SERC.
- Presented a complete power project economic analysis, including multiple structures and scenarios, to executive management resulting in a $50 million equity commitment.
- Negotiated various commercial agreements with industrials, power marketers, utilities, potential equity partners, and banks.

Entergy Power Marketing – ***Unregulated subsidiary of Entergy Corp., a $12.5 billion integrated energy company.***
(June-97 to May-98) *Houston, TX*
Commercial Associate*:*

- Worked with project developers, marketers, and traders on multiple projects.
- Analyzed and responded to RFPs for purchased capacity and energy, asset acquisition, and put/call options.
- Provided financial and market analysis for greenfield development projects.
- Priced financial options and developed trading strategies.

NationsBanc Capital Markets (May-96 to Aug-96) *Dallas, TX*
Global Finance Summer Associate*:* Two Rotations: 1) Mergers & Acquisitions; and 2) Corporate Finance.

- Assisted in developing a buy side fairness opinion for a regional cable company.
- Developed cash flow models and performed sensitivity analysis used in pricing a $300MM public debt issuance for TCI.
- Assisted in structuring and selling private debt and equity to telecommunications companies.

Reliance National Insurance (Jun-90 to Jul-95) *New York, NY*
Actuarial Analyst: Responsible for Large Account pricing and reserving; performed statistical simulations to predict loss frequency and severity; and assisted in developing a new rate structure for GL book.

EDUCATION
The University of Texas at Austin
MBA - Finance/Accounting, Graduated: Summa Cum Laude *May 1997*

Lehigh University – Bethlehem, PA
BA - Economics/Math, Graduated: Cum Laude *May 1990*

Jeffrey Anon
4295 San Felipe #200
Houston, Texas 77027

- Mr. Anon is the Managing Partner of North Bergen Holdings LLC, a minority owner of a 1,200 mw fossil power generation asset serving a highly congested North East power market.
- Mr. Anon has over twenty-five years of experience in the retail electricity industry. He has served on the Advisory Board for Reliant Energy Business Services, the retail electricity service provider for Houston, Texas. As part of predecessor companies to Cavallo, he co-founded the company and successfully led the bidding for a 50 MW independent power generation project, co-located at the Freeport Electric Utility Plant 2, on Long Island, New York.
- Mr. Anon owns interests in several oil and gas companies in the United States. His exhaustive business expertise is further established in his role as founder and President/CEO of Texas Drug Distributors, Inc., and Nortex Drug Distributors, Inc., which were among the largest privately-owned drug store chains in the United States, and also as the founder of CSCS Enterprise Inc., a national prescription drug monitoring company. He serves as CEO of Berryhill Baja Grill, a nationally acclaimed restaurant chain in Texas, and is CEO of Discount Amenities, a business-to-business distributor of amenities to health and country clubs nationally. Mr. Anon led the origination team for securing the Texas General Land Office's franchise for marketing retail electricity and gas under the Texas State Power Program. Currently working on gas, power development, and LNG imports/exports.
- Mr. Anon is active in the Houston community and is past President of the Houston Polo club. Mr. Anon received a B.S. Accounting from The Ohio State University.

Thomas "Dan" Keneipp, MBA, MPM, CIPM
26698 S. Brooks Lane
Beavercreek, OR 97004
Phone: (503) 803-8372
Email: dankcma82e@yahoo.com

Education

Bachelor of Science Marine Engineering – California Maritime Academy
Master of Business Administration – University of Phoenix
Master Project Manager – American Academy of Project Management
Certified International Project Manager – American Academy of Project Management
Licensed 3rd Assistant Engineer, of Steam, Motor or Gas Turbine Vessels of Any Horsepower

Experience

36 Years in Engineering, Construction, and Operations in the Power Generation field

Diamond Generating Corporation
Director Engineering and Construction July 2015 – Present

Provide engineering, design and construction management services for various projects undertaken by Diamond.

- Provide field/site oversight. Operating facilities.
  - Responsible for managing equipment supply and construction contracts.
- Provide technical assistance, engineering service and advice to Asset Management and Operations.
- Provide technical information and data to Development and Operations to obtain new and/or maintain existing local, state, and federal permits and licenses.
- Prepare all technical specifications, performance documents, and financial cost estimates for proposed new facilities or major modifications and repairs to existing facilities.
  - Prepare legal and technical portions of equipment supply agreements and engineering, procurement and construction contracts.
- Review technical and environmental performance of construction projects and existing facilities.
- Maintain contact with equipment vendors and contractors for technical improvements and identification of generic equipment problems.
- Monitor markets for equipment pricing for various types and technologies along with new technologies that can potentially be used for power generation.
- Lead technical / environmental due diligence for potential acquisitions.

Worley Parsons
Project Manager February 2015 to July 2015

Project Manager / Owners Representative for Calpine Corporation, at Los Esteros Critical Energy Facility in San Jose, CA.

- Managing the HRSG CO Catalyst Relocation Project:
  - Providing California Building Official (CBO) interface.
  - Owners Representative managing Vogt Power deliverables.
  - Site Project Manager, for Vogt, ARB and Groome during the removal, cleaning and relocation of the CO catalyst.

POWER Constructors, Inc.,

Business Unit Director September 2012 to Dec 2014:

My duties as Business Unit Director (BUD) for POWER include profit-loss for POWER Constructors, Inc. (PCI). PCI is a wholly owned subsidiary that functions within POWER Engineers (POWER) as an operating business unit. The organization's focus is to pursue and execute on Project Management (PM), Construction Management (CM), Inspection Services (IS) and design-build project opportunities (EPC, E+PC, EPCM, etc.) in the transmission/distribution industry. PCI works with the other business units within POWER to provide expertise for construction, field project and construction management, purchasing including vendor factor inspection and assessments.

AREVA Solar Inc. formally Ausra, Inc.

Vice President Construction July 2011 to September 2012:

Develop and execute standard construction / installation projects and strategies for target world regions. (Australia, India, MENA and South Africa) Prepare, train and qualify local construction and EPC partners. Develop strategies to reduce construction / installation costs for small and large solar projects and power blocks. Hire, train and qualify Project Construction Managers, Construction Superintendents and Engineers to support projects worldwide, duties include training local contractors as needed. Manage engineering, supply chain and construction projects from implementation through commissioning.

Senior Director Project Engineering, September 2008 to July 2011:

Develop and coordinate engineering, construction, purchasing, and operating resources, processes and systems required to assure that Business Development, Engineering, Procurement, Construction (EPC) and Management (EPCM) program efforts support corporate world wide business objectives. Define, provide and coordinate resources from conception of projects through completion. Provide engineering, estimates, budgets and schedules to meet project requirements. Work with multi-national business development program participants to identify customer / project requirements and coordinate the appropriate resource to establish project construction and execution strategy including cost, revenue, resource, and participant roles, responsibilities and work scopes.

Develop and implement processes to manage multiple projects throughout the world in accordance with contractual and corporate requirements.

Calpine Corporation

Senior Engineering Project Manager, June 2008 to September 2008:

For the following projects:

- Greenfield Energy Center, Courtright, Ontario, 1,005 MW Plant
- Mankato Expansion Phase II, Mankato, MN, 220 MW Expansion

Engineering Project Manager, September 2004 to May, 2006; May 2007 to June 2008:

Engineering Project Manager for the following projects:

- Otay Mesa Energy Center, San Diego, CA, 608 MW Plant
- Roseville Energy Center for Roseville Electric, Roseville, CA, 160 MW Plant
- Inland Empire Energy Center, Romoland, CA 800 MW Plant
- Asset Relocation for Greenfield Energy Center, Ontario, Canada 1,005 MW Plant
- Bethpage Energy Center, Long Island, NY. 80 MW Combined cycle, peaker plant

Organized and coordinated engineering and technical efforts for the design of power plant primary equipment, auxiliary equipment, pre and waste water treatment (zero

discharge, and municipal plants). Develop and coordinate switchyard design and interconnects to utilities. Evaluate project configuration constraints and technical parameters to ensure that costs and risks are identified and mitigated. Provide design input and management for linear pipelines including but not limited to natural gas, recycle water, waste water discharge pipelines and systems. Develop plant designs, provide technical input and coordinate assistance from engineering technical teams, construction management, operations and owners.
Interface and coordinate with State, Federal and local regulatory agencies to complete siting requirements. Interact with clients, vendors and owners with regards to all technical aspects of projects. Responsible for engineering and equipment purchase budget of $125 - $500 million dollars. Provide supervision for construction and operations on a as needed basis.

Field Engineering Manager / Senior Project Engineer, November 2002 to September 2004:

Field Engineering Manager for the construction of Metcalf Energy Center in San Jose, California. Responsible for construction budget cost in excess of $125 million, contract management, contract execution schedule and technical performance for project. Provided technical work scope for utilization and defining contract requirements for at least 50 interdependent construction contracts. As Field Engineering Manager, oversee staff of engineers and union employees. In-addition to responsibilities of a Field Engineering Manager, responsibilities include Quality Assurance and Quality Control Inspections, contract documentation, implementation and managing Technical Field Assistance Engineering Services. Was a member of the team that received Calpine Quality Project of the Year Award for 2005.

Senior Project Engineer, March 1999 to November 2002:

Senior Project Engineer for Hermiston Power Project. Hermiston Power Project was a 600 Megawatt merchant power plant. As Senior Engineer, the position encompassed all aspects of project implementation from the preliminary engineering stage, construction and through final commissioning of the power plant, water pretreatment, waste water treatment and switchyard. HPP project also required interface with City, County, State and Federal Regulatory Agencies. Managed a staff of 16 employees and provided technical direction and information to vendors, contractors for proper installation of equipment. Provided technical engineering details and requirements to Calpine business units and financial institutions for project financing. Project received Calpine Quality Project of the Year Award for 2002.

E.C. Corporation

Project Construction Manager: May 2006 to May 2007:

Construction Project Manager for new alternate energy construction. Responsible for making customer contacts, developing client / customer relationships for new projects. Assembly of project team to bid projects to clients. Field team to project locations and ensure that the project maintains safety, quality, schedule and purchasing cost perimeters.

Smurfit Newsprint Corporation

Environmental and Energy Services Manager, November 1990 to March 1999:

Energy: Responsible for engineering, operation, maintenance, budget and personnel for the powerhouse, hydroelectric plant, water treatment, primary waste treatment, secondary waste treatment, all utilities and waste disposal of Smurfit Newsprint, Oregon

City Division, in Oregon City, Oregon. Maintained 100% availability of all power generation equipment, raw water, waste water, steam, and pneumatic systems. Coordinated purchase of mills utilities with power marketers. Responsible for design and operations of steam systems, power generation systems, pre and post water treatment facilities and mill utilities.

Environmental: Responsible for the planning and directing of all environmental / safety compliance activities and permitting of the mill. Responsible for hydro(40 year) relicensing effort, working with NERC, Oregon State and public groups. Coordinate the activities of environmental supervisors to meet all state and federal regulations as stated in our water and air discharge permits. Work closely with Attorneys, State and Federal Regulators to define and implement new and future regulations. Worked with Washington State Environmental Departments on SPCC Issues on the Columbia River Basin. Successfully completed a Multi-Media inspection with EPA, Oregon Department of Environmental Quality and OSHA. Responsible for design and operations of environmental controls, equipment, not limited to; wastewater disposal, hazardous waste disposal, solid waste disposal, and raw water treatment systems.

Masonite Corporation

Manager of Utilities, October 1988 to November 1990:

Responsible for the engineering, operation, budget, maintenance and personnel for the following equipment and systems: multi fuel boilers, evaporation plant, water treatment plant, waste disposal, sewage treatment, mill air supply, product water, potable water and all fuel, steam, condensate and fire systems. Responsible for production and distribution of Masonex. Masonex is an alternate food supplement evaporated from refined wood sugars. Reporting to me as manager, 34 hourly personnel and 1 water treatment specialist.

Westinghouse Electric Corporation

Project Manager / Field Service Engineer, Power Generation Service Division, July 1982 to October 1988:

Responsible for interpreting and coordinating work in the Power Generation Industry. These work assignments must have required knowledge in the field of safety, construction and installation, repair and malfunction analysis of boilers, combustion turbines, steam turbines, hydroelectric generators, air cooled and hydrogen cooled generators, controls and auxiliary equipment. Major long-term assignments have been:

Washington Public Power Supply System – Nuclear Plant 2.
Assistant start-up engineer for the initial commissioning and loading of the 1100 MW nuclear turbine generator. The duties of the assignment included vibration diagnostics; balancing and analysis of the turbine drain system for the prevention of water induction.

Bonneville Pacific Corporation - American Atlas #1 Plant.
Plant engineer during the commissioning and testing of the cogeneration station, which included (3) 18MW combustion turbines and (1) 28 MW steam turbine. Responsibilities as plant engineer included all aspects of operation, performance testing, environmental compliance, maintenance, safety and purchasing of required capital items and consumables.

Montana Power Company - Colstrip Units 3 and 4

Responsibilities included during construction of the units included all aspects of installation of turbine generators, auxiliary equipment, electrical equipment. Following construction, was oil flush engineer, grave yard commissioning engineer and following successful installation was warranty engineer for project. The duties of the assignment included vibration diagnostics; balancing and analysis of the turbine drain system for the prevention of water induction.

PG&E – Diablo Canyon and Helms Project
Responsibilities included construction engineer for both projects. Responsibilities included during construction of the units included all aspects of installation of turbine, generators, (penstocks for Helms project), auxiliary equipment, electrical equipment. Following construction worked as pre-commissioning engineer.

License

Qualifying Party (QP) for Arizona State Contractors License. ROC 282265 License Class and Description of A General Engineering (AE)
U.S. Coast Guard, Merchant Marine Officer, 3rd Assistant Engineer, Steam, Motor and Gas Turbine Vessels, any horsepower
PADI Open Water Scuba Instructor

Honorable Discharge – United States Marine Corps

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 01-T-1474:	**APPLICATION OF NORTH BERGEN LIBERTY GENERATING, LLC, AS AUTHORIZED AGENT FOR CROSS HUDSON, LLC, FOR AN AMENDMENT TO A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED PURSUANT TO ARTICLE VII OF THE PUBLIC SERVICE LAW**

DIRECT TESTIMONY OF

PAYSON R. WHITNEY, III, DENNIS ERIC JOHNSON AND JASON PHILHOWER

ON BEHALF OF NORTH BERGEN LIBERTY GENERATING, LLC

Dated: March 29, 2018

PRW/DEJ/JP

Q. Mr. Whitney, please state your name, title and business address.

A. My name is Payson R. Whitney, III, Vice President of ESS Group, Inc., 100 Fifth Avenue, 5th Floor, Waltham, Massachusetts 02451.

Q. Mr. Whitney, please summarize your educational and professional background.

A. I received a Bachelor of Science in Civil Engineering from Lehigh University in 1994, and am a Professional Engineer, licensed in Massachusetts, Rhode Island, Virginia, New Hampshire, Maryland and Maine. I have over 23 years of experience as a Civil/Coastal Engineer and Project manager in a wide range of public and private sector projects, including project design and management activities in civil/site engineering, coastal permitting/shoreline assessment, and the planning and permitting of multiple electrical transmission projects in New York under Article VII as well as in other states.

Q. Mr. Whitney, what was your role in the North Bergen Liberty Generating project?

A. ESS Group was retained by North Bergen Liberty Generating, LLC to undertake the analysis and studies needed to inform and support an amendment filing to the New York State Public Service Law Article VII Certificate of Environmental Compatibility and Public Need issued for the Cross Hudson project.

Q. Mr. Whitney, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Johnson, please state your name, title and business address.

A. My name is Dennis Eric Johnson, Senior Underground Project Engineer at POWER Engineers, Inc., 16011 College Boulevard, Suite 130, Lenexa, Kansas 66129.

Q. Mr. Johnson, please summarize your educational and professional background.

A. I received a Bachelor of Science in Electrical Engineering from Brigham Young University, and have 32 years of experience in the design and construction of transmission and distribution systems. I have served as a design and project engineer on numerous substation, overhead and underground transmission projects at voltages ranging from 69 kV to 500 kV. I am a licensed Professional Engineer, Electric in multiple states, including New York.

Q. Mr. Johnson, does your curriculum vitae fairly and accurately describe your experience over the last 10 years?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Johnson, what was your role in the North Bergen Liberty Generating project?

A. Several portions of the Article VII application were either prepared by me or under my direction and supervision.

Q. Mr. Johnson, what is the purpose of your testimony?

A. The purpose of my testimony is to support Exhibits 5, E-1 and E-2 of the application, and together with Mr. Whitney, Exhibits 2 and E-3 of the application which were prepared by us or under our direction and supervision. In addition, together with Mr. Philhower, Section 4.13 of Exhibit 4, which was prepared by us or under our direction and supervision.

Q. Mr. Johnson, with respect to Exhibits 5, E-1 and E-2 of the application, do these exhibits accurately reflect the design drawings, electrical system description and other facilities for the transmission line which is the subject of this amendment application?

A. Yes.

Q. Mssrs. Whitney and Johnson, do Exhibits 2 and E-3 accurately reflect the location of the proposed transmission line, and the methods for underground construction?

A. Yes.

Q. Mr. Philhower, please state your name, title and business address.

A. My name is Jason Philhower, Senior Electrical Engineer at POWER Engineers, Inc., 800 Kinderkamack Road, Oradell, New Jersey 07649.

Q. Mr. Philhower, please summarize your educational and professional background.

A. I received a Bachelor of Science in Electrical Engineering, Power Concentration from the University of Hartford, a Masters of Engineering, Power Systems Engineering from Worcester Polytechnic Institute, and am a PhD candidate in Electrical Engineering at the University of Connecticut. I have over 24 years of electrical engineering experience, with specific expertise in protective relay theory and applications and distributed generation.

Q. Mr. Philhower, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Philhower, what was your role in the North Bergen Liberty Generating project?

A. Several portions of the Article VII application were either prepared by me or under my direction and supervision.

Q. Mr. Philhower, what is the purpose of your testimony?

A. The purpose of my testimony is to support Exhibit E-5 of the application which was prepared by me or under my direction and supervision, and with Mr. Johnson,

Section 4.13 of Exhibit 4, which was prepared by us or under our direction and supervision.

Q. Mssrs. Philhower and Johnson, does Section 4.13 of Exhibit 4 of the application accurately reflect the potential EMF emissions from the transmission line

A. Yes, for the most part. As discussed in Section 4.13 of Exhibit 4 and Appendix __ to the application, the transmission line will meet the Commission's standards for EMF for most of the transmission line. However, the current conservative modeling suggests that the transmission line will not meet the Commission's standards from EMF where the two cables transition from the river to the upland portion of the route. However, POWER completed simulations of example mitigation strategies for these cases and demonstrated that it is feasible to reduce magnetic fields to within 200 mG through shielding. During the detailed design phase of the project, the optimal mitigation method will be determined to yield the lowest practical magnetic field. Meeting the 200 mG limit will not be a concern as the designs advance. This demonstration will be made as part of the EM&CP.

Q. Mr. Philhower, does Exhibit E-5 of the application accurately reflect the potential impacts of the project on communication?

A. Yes, it does.

Q. Gentlemen, does this complete your prefiled testimony at this time?

A. Yes.

PAYSON R. WHITNEY, III, PE

Vice President

Experience
ESS Group: 1998 to present

Years of Prior Related Experience: 4

Education
BS, Civil Engineering, Lehigh University, 1994

Professional Registrations
Professional Engineer Licenses:

- MA, No. 41706, 2001
- RI, No. 8551, 2006
- VA, No. 50185, 2012
- NH, No. 14163, 2013
- MD, No. 47100, 2015
- ME, No. 14040, 2015

National Council of Examiners for Engineering and Surveying Record, No. 47445, 2011

Master Design Certificate for Low Impact Development, State of Rhode Island, No. 1106011, 2006

Affiliations
Boston Society of Civil Engineers Section of the American Society of Civil Engineers (BSCES)—Board of Government Member (1999-2000)

BSCES Waterways, Ports, Coastal & Ocean Technical Group—Chairman (1999-2000)

Environmental Business Council of New England Ocean and Coastal Resource Committee Chairman (2014-Present)

Qualifications

Mr. Whitney is a Professional Engineer with more than 23 years of experience as a Civil/Coastal Engineer and Project Manager in a wide range of public and private sector projects, including project design and management activities in civil/site engineering, coastal permitting/shoreline assessment, and the planning and permitting of electrical transmission projects. He specializes in planning, routing, surveying and installing High Voltage AC and DC submarine electric transmission cable systems, landfall transitions, and interconnections with local grid substations. Mr. Whitney has conducted submarine cable routing, constructability, and installation assessments and permitting along the eastern seaboard for some of the largest submarine cable system projects developed in the last 18 years. He is considered to be among the foremost submarine cable system planners in the industry with several successful projects under his leadership.

Mr. Whitney is also well versed in local, state, and federal environmental regulatory and land use permitting requirements and strategies, and has provided permitting services for projects in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, New Hampshire, Maine, Delaware, Maryland, Virginia, and The Bahamas. He has particular expertise in permitting projects subject to Massachusetts Chapter 91 Waterways regulations, New York Article VII regulations, and New Jersey Division of Land Use Regulation.

Representative Project Experience

West Point Partners, LLC – West Point Transmission Project – Athens, NY to Buchanan, NY. Project Manager responsible for development of the Project's overland and in-river transmission cable routes, managing initial stakeholder outreach meetings, and overseeing preparation of the Projects New York State Article VII and USACE Individual Permit applications. Responsible for day-to-day coordination of ESS services, coordination with the client and its project team, coordination with the selected installers, providing technical services related to submarine cable route design and construction, and for planning, directing, and overseeing in-river geophysical and geotechnical field investigations. Also responsible for overseeing development of the Project's Alternatives Analysis.

Hudson Transmission Partners, LLC – The Hudson Project, Ridgefield, NJ to New York City, NY. Provided and coordinated engineering support for regulatory permitting efforts for the construction of a new High Voltage DC, 66 MW electric transmission facility linking the regional PJM Interconnection with the New York Independent System Operator. The Project will include the construction of a new back-to-back AC-DC-AC Converter Station to be located in Ridgefield and installation of a new 230 kV AC link to the nearby PSE&G Bergen Substation, also in Ridgefield. From the Converter Station a new 345 kV AC electric transmission cable system will be routed in an overland underground configuration from Ridgefield to Edgewater, New

Jersey where it will then cross the Lower Hudson River estuary in a buried submarine cable configuration to make landfall at Piers 92 – 94 at the Mid-town Manhattan waterfront where it will then interconnect via upland underground cable to the existing Con Edison West 49th Street Substation.

Bayonne Energy Center, LLC – Bayonne Energy Center Project, Bayonne, NJ to Brooklyn, NY. Project Manager for environmental consulting, regulatory permitting, and preliminary engineering for the submarine electric transmission cable aspect of the project, which entailed the construction of a 512 MW electric generating plant in Bayonne, NJ. The plant is connected to the New York electrical grid via a 6.5-mile-long, 345 kV submarine electric transmission cable with an interconnection at the ConEdison Gowanus substation in Brooklyn. Responsible for day-to-day coordination of ESS services, coordination with the client and its project team, coordination with the project engineers, providing technical services related to submarine cable route design and construction, and for planning, directing, and overseeing marine geophysical and geotechnical field investigations. Responsible for developing the proposed submarine cable route and identifying from project survey and constraints information. Responsible for overseeing preparation of New York Article VII filing and U.S. Army Corps of Engineers permit application, as well as various separate supporting reports and responses to comments. Supported NJDEP Waterfront Development Permit application by preparing sections relevant to the submarine cable. During construction, was responsible for coordination with project owner and installation contractor to resolve routing challenges prior to installation, for verifying installer cable burial depth estimates, and for conducting required environmental inspections and monitoring in New York.

Hudson Transmission Partners, LLC – Hudson Project Submarine Cable Reconductoring, Edgewater, NJ to New York City, NY. Project Manager responsible for providing environmental consulting and regulatory permitting services for the 2017 replacement of the Hudson Project submarine cable. The Project operated successfully between June 2013 and January 1, 2016. In 2016, the submarine cable experienced three separate faults on the “C” Phase cable. The cause of these faults could not be determined despite thorough investigations. HTP determined that the long-term viability of the Project and its ability to provide New York Power Authority (NYPA) customers with power from the Project required the replacement of the existing submarine cable between its landfalls in Edgewater, NJ and Manhattan, NY with a new solid dielectric submarine cable. ESS was responsible for assisting HTP with developing and implement regulatory strategies for New York, New Jersey, and the USACE New York District. The work included preparing and submitting an application for a New Jersey In-Water Waterfront Development Individual Permit and Water Quality Certificate in less than three weeks to enable NJDEP to complete their review to meet the accelerated project schedule. Managed ESS environmental monitoring and inspection services required by the Project’s Article VII Certificate and EM&CP document during cable removal operations that included pre- and post-construction sediment and benthic monitoring, Independent Environmental Inspectors onboard the cable removal vessel, and TSS/Water Quality monitoring.

PSEG Power LLC – Cross Hudson Project, Ridgefield, NJ to New York City, NY. Project Manager for environmental consulting and engineering services for the construction of a submarine electric cable system to transmit power from the PSEG Bergen Station in Ridgefield, New Jersey to the ConEd West 49th Street substation in New York City. The cable system was to be approximately seven miles long (including upland and submarine portions), and would transmit approximately 500 MW of AC energy as well as fiber optic communications. Was responsible for day-to-day coordination of ESS services, coordination with the client, coordination with the project engineers, providing technical services related to submarine cable route design and construction, and for planning, directing, and overseeing

multiple marine geophysical and geotechnical field investigations. Was responsible for developing the proposed submarine cable route from project survey and constraints information. Responsible for overseeing preparation of New York Article VII filing and U.S. Army Corps of Engineers permit application, as well as various separate supporting reports and responses to comments.

Silver Run Electric, LLC – Silver Run Project – Odessa, DE to Lower Alloways Creek Township, NJ. Project Manager for environmental consulting and regulatory permitting services for the proposed 230 kV Silver Run Project, which will connect a new switchyard located east of Odessa, DE with the PSE&G Hope Creek Substation. The Project will include a Submarine Cable crossing of the Delaware River approximately three miles in length and an overland segment in Delaware approximately two miles in length. The proposed transmission line crossing of the Delaware River will consist of submarine cable installed beneath the riverbed via an injector using water jetting technology. The Project includes transition structures in the Delaware River near each shore in New Jersey and Delaware. ESS is responsible for sediment testing and analysis, environmental characterizations, and preparation for permit applications for submission to the USACE Philadelphia District and the NJDEP Division of Land Use Regulation.

Connecticut Light & Power Company and its Project Partners – Submarine Replacement Cable Project, Norwalk, CT to Northport, NY. Planned and directed an extensive marine geophysical and geotechnical field investigation program and provided technical support for permitting of an 11-mile, 300 MW AC submarine cable system that replaced an existing series of electric transmission cables connecting existing power stations in Connecticut and Long Island. The seven existing fluid-filled submarine cables were replaced with three new solid dielectric AC cables within the existing cable corridor in 2008. Two survey vessels conducted geophysical and geotechnical surveys simultaneously. The field investigation program included bathymetric, sub-bottom profiling, side-scan sonar, and magnetometer surveys, as well as advancing vibracores and surface sediment grabs, to evaluate surface and shallow subsurface sediment/geologic conditions along the proposed alternative routes. The program consisted of over 400 miles of geophysical survey tracklines, over 30 vibracores, and approximately 100 surface sediment grabs.

National Grid – Mohican-Battenkill Rebuild Project – Fort Edward, NY to Easton, NY. Responsible for providing oversight to the ESS-provided Independent Environmental Inspector during construction of the 14 mile, 115 kV replacement of an 80 year old transmission line with new monopoles and overhead wires. ESS was responsible for preparing the Article VII application and the Environmental Management & Construction Plan, which included working with National Grid to layout and select a variety of erosion and sediment control measures and stormwater best management practices. During construction, Mr. Whitney was responsible for reviewing weekly and post-storm event SWPPP inspection reports, working with National Grid to implement field changes to erosion and sediment controls, and making periodic site visits to observe the progress of work.

Confidential Submarine Electric Generator Lead Project – Northeast U.S. Project manager responsible for preparing the desktop routing study for proposed submarine electric cable generator lead and transmission projects that would reallocate power generated from an existing generating station to a different ISO control area than presently served by the generating station.

Confidential Submarine Electric Cable Projects – Northeast U.S. Project manager responsible for preparing the desktop routing studies for several proposed submarine electric cable projects that included potential merchant projects, reliability projects, and projects that were being

investigated by developers for possible response to RFP's issued by regulated utilities to provide electricity to various ISO zones.

Confidential Client – Electric Generating Facility Siting, Long Island, NY. Provided services related to the siting of a proposed electric generating facility. Responsible for field reconnaissance of potential site locations within a 1,000-square-mile area utilizing applicable local regulations and site development requirements.

Cape Wind Associates, LLC – Cape Wind Project, Nantucket Sound, MA. Provided services related to the siting and design of a proposed renewable electric generating facility involving installation of 130 offshore wind turbine generators with a potential to generate 454 MW. The wind park is proposed to be sited on Horseshoe Shoal, and will interconnect with the regional power grid through an AC submarine cable system between the wind park and the southern shore of Cape Cod. Preparing conceptual facility layouts and evaluating geologic conditions for a project baseline environmental impact and feasibility study. Planning, directing, and overseeing extensive marine geophysical and geotechnical field investigation programs, included hydrographic, sub-bottom profiling, side-scan sonar, and magnetometer surveys, as well as advancing vibracores and surface sediment grabs, to evaluate surface and shallow/deep subsurface sediment/geologic conditions in the area of the proposed offshore renewable electric generating facility and the submarine electric cable links to the mainland electric grid. Prepared a detailed Navigational Risk Assessment, which was the first such assessment for an offshore wind energy facility submitted to the US Coast Guard, and assessed the possibility for project impacts to marine vessel traffic and USCG search and rescue operations.

Green Line Devco – Maine Green Line Project – Orrington, ME to Plymouth, MA. Project Manager for routing, environmental consulting, and regulatory strategy and permitting services provided by ESS as the lead environmental consultant for the Maine Green Line Project, which is a proposed regional HVDC overland and submarine electric transmission line from Maine through Penobscot Bay and the Gulf of Maine to coastal Massachusetts. Initial ESS services included working with Green Line Devco and its engineering team to evaluate potential overland and submarine cable routes for the Project. Our work on the overland routes involved both desktop and field review of environmental conditions along a number of alternative routes in both Maine and Massachusetts. Our work on the submarine portions involved desktop review of environmental and navigation conditions, sediment sampling and analysis, and development of potential submarine cable routes.

Confidential Fiber Optic Cable Project – VA. Project manager responsible for preparing the desktop routing study for a proposed submarine fiber optic cable crossing in Virginia. Responsible for overseeing development of submarine cable crossing route alternatives and for developing regulatory permitting strategy. ESS will be retained to provide environmental consulting services for regulatory permitting in 2013.

Hawaii Infrastructure Partners, LLC, Submarine Cable Routing and Assessment, HI. Project Manager for the completion of a due diligence and desktop routing assessment for the siting of submarine electric cables in the State of Hawaii. This assessment included site reconnaissance, regulatory outreach, and coordination and assessment of environmental constraints such as coral reefs, endangered species, geologic conditions, and cultural resources. Additionally, factors such as U.S. Naval operations and navigational concerns were researched and analyzed.

Pepco Holdings, Inc. – Mid-Atlantic Power Pathway Project, Chesapeake Bay, MD. Project Manager for preliminary Desktop Routing Analysis, Bay & River Technical Studies, and Submarine Cable

Owner's Engineer services for the 320 kV HVDC submarine cable segment of the larger 150-mile project. The preliminary routing analysis identified potential routes, constraints (geologic, navigation, installation feasibility), and critical planning issues. ESS also provided marine geophysical survey observations and landfall evaluations. PHI retained ESS to complete engineering and associated scientific evaluations to assess submarine cable system installation feasibility and constructability, including a marine sediment sampling and testing program, turbidity/water quality impact modeling, an environmental risk assessment, and assessing the proposed submarine cable route, the planned installation methods, the Impact Producing Factors associated with both installation and operation of the submarine cable. ESS was also retained as PHI's owner's engineer for the submarine cable component of the MAPP Project.

DENNIS ERIC JOHNSON, P.E.

SENIOR UNDERGROUND ENGINEER

YEARS OF EXPERIENCE

32

EDUCATION

- B.S., Electrical Engineering, Brigham Young University

AREAS OF EXPERTISE

- Design of high and extra-high voltage underground transmission:
  - HPFF cable systems
  - SCFF cable systems
  - HVED cable systems
  - Submarine cable systems
  - Horizontal directional drilling
- Design of overhead and underground distribution
- Design of distribution and transmission substations
- Expert witness testimony
- Route and cable system selection
- Regulatory approval support
- Cost estimating

LICENSING

- P.E., Electrical: Arizona
- P.E., Electrical: California
- P.E., Electrical: Connecticut
- P.E., Electrical: Florida
- P.E., Electrical: Iowa
- P.E., Electrical: Kansas
- P.E., Electrical: Kentucky
- P.E., Electrical: New Jersey
- P.E., Electrical: Nevada
- P.E., Electrical: New York
- P.E., Electrical: Pennsylvania
- P.E., Electrical: Rhode Island
- P.E., Electrical: Texas
- P.E., Electrical: Virginia
- P.E., Electrical: Vermont

SEMINARS

- Presenter, "Bergen Linden Corridor Project," IEEE ICC Spring Conference, San Diego, CA, 2017
- Presenter, "Underground Cable

EXPERIENCE SUMMARY

Mr. Johnson has extensive experience in the design and construction of transmission and distribution systems. He has served as a design and project engineer on numerous substation, overhead, and underground transmission projects at voltages ranging from 69 kV to 345 kV. He has been involved in various engineer-procure-construct (EPC) projects. Mr. Johnson is an active voting member of the IEEE Insulated Conductors Committee (ICC). He is a member of various ICC subcommittees that are developing guides and standards for high voltage underground cable systems. Other experience includes various overhead distribution and transmission line relocation projects. During these assignments, Mr. Johnson performed field surveys of the existing overhead facilities, performed detailed design of overhead distribution and transmission lines and provided construction management services. He has taught multiple seminars around the nation focusing on underground power systems.

Eversource Energy, Bethel-Norwalk 345 kV Project, Connecticut

Project Engineer responsible for the design of 1.6 miles of 345 kV XLPE, 9.7 miles of 345 kV HPFF, and 6.0 miles of 115 kV XLPE underground cable systems. also provided expert witness testimony during the Connecticut Siting Council project approval process. The project involved the construction of a 20-mile overhead/underground 345 kV transmission line, a 12-mile overhead/underground 115 kV line, three transition stations and modifications to an existing substation. POWER provided a full range of project implementation services, from preliminary engineering through construction management and inspection. This complex project was completed ahead of schedule. It also featured an incentive program for which POWER received a 100% score.

Florida Power & Light, Davis to Miami 230 kV Underground Project, Florida

Project Engineer responsible for the overall design of the project and supervising the design staff. Served as an expert witness on the undergrounding of transmission line during the formal hearing process. POWER performed various studies and analyses to assist FPL with its planning for a new 230 kV transmission line. POWER performed feasibility studies for the following: undergrounding a portion of the line across the Miami River, including investigation of trenchless underground options (micro-tunneling and HDD); undergrounding the line along Highway 1 for a distance of about 10 miles; and installing cable on the Metro Rail, which parallels Highway 1 for the majority of the route. POWER analyzed three directionally bored crossings and performed a cable selection study to optimize the design.

Assessment Programs: Two Case Studies", Power Delivery Design Conference (PDDC), POWER Engineers, 2016
- Presenter, "Recent Forced Cooled Systems: Two Case Studies", Power Delivery Design Conference (PDDC), POWER Engineers, 2016
- Instructor, Underground Transmission HPFF Detail Design, EUCI, 2015
- Instructor, Overview of UG Cable Systems and UG Transmission Design Considerations, Multiple Venues, 2007-present
- Instructor, HVED Cable Testing from Manufacturing to Installation, POWER Line Conference, 2008
- Instructor, Grounding and Bonding & Installation Design, EPRI UG Reference Book, 2008
- Instructor, Available Cable Systems and HPFF Cable System Design, T&D World University Conference, 2007
- Instructor, UG Transmission Design Considerations and Basic Cable Design, T&D World University Conference, 2007

AFFILIATIONS

- IEEE
- IEEE, Insulated Conductors Committee, voting member
- CIGRE

PUBLICATIONS

- Contributing Author, *EPRI Underground Transmission Systems Reference Book*, 2007

Public Service Electric & Gas Company, Bergen Linden Corridor Underground Projects, New Jersey

Underground Line Engineer for a high profile project to design and install four new 345 kV XLPE circuits (totaling 20 miles of underground cable) located in the dense urban area around the Newark airport. Work includes the review of design drawings and attending project meetings, enforcement of the PSEG construction and design standards, and development of specific project drawings. POWER is providing complete underground engineering services from initial feasibility analysis preliminary estimates through construction inspection for the 20 miles of 345 kV underground cable. The project includes multiple trenchless installations through sensitive resources and among busy highways including two HDD underwater crossings through Newark Bay.

National Grid, Block Island Wind Farm Submarine Cable Project, Rhode Island

Project Engineer for design of the transmission interconnection for the Block Island Wind Farm, the first U.S. offshore energy project. Provided technical expertise to support permitting of both land and submarine cable applications. Work included development of submarine and land permit drawings, analysis of various land to shore trenchless installation methods and providing technical narrative in support of the permit application. AECOM, prime contractor, enlisted POWER, based on expertise in HDD underground cable engineering, to design 25 miles of 34.5 kV submarine cable and five miles of land cable, support the permitting effort, and assist with construction specifications. Located three miles off shore, the five turbine wind farm supplies the majority of Block Island's electricity and transmits excess electricity back to the main land. National Grid owns the electrical infrastructure, and Deepwater Wind is the developer for this project aimed to: provide the island with reliable, renewable energy, reduce reliance on diesel, lower electric rates by 40%, and minimize air pollution across southern New England.

DC Submarine Cable Study, New Brunswick - Boston DC Submarine Cable Study, Canada

Project Engineer responsible for performing a DC submarine cable study to install a 225 mile ±400 kV DC bipolar cable system, rated at 700 MVA, between New Brunswick and Boston. The route length includes both land and submarine sections. The study included the following: right of way width required to install and operate a ±400 kV DC submarine cable crossing under Boston Harbor; optimum cable size, type and number of individual cables; and, installation cost (including cable terminator and splicing materials/activities) for both the underground and submarine cable. Scope also included criteria and ballpark anticipated delta in cost per mile for urban versus rural underground cable construction.

Pacific Gas & Electric, Tri-Valley 230kV XLPE Underground Project, California

Project Engineer responsible for providing conceptual design documents for the permitting of a double circuit 230kV XLPE cable system. Responsibilities included providing expert witness testimony.

American Transmission Company, Rockdale to Middleton 345 kV Overhead & Underground Line Study, Wisconsin

Project Engineer responsible for the conceptual cable system design, preparation of cost estimates and overseeing the underground study. Also attended the CPCN hearings to provide technical support. POWER supported ATC during the regulatory approval process for a proposed new 345 kV transmission line. Scope included analyzing alternative potential route segments and overall routes, preparing preliminary designs, and developing cost estimates for overhead and underground alternatives. POWER developed the engineering sections of the CPCN document and prepared studies and reports addressing structure reliability, induced voltages in distribution lines, construction along major highways, and electromagnetic field and interference calculations.

Public Service Electric & Gas Company, Owner's Engineer Program for Transmission Line Services, New Jersey

Project Engineer for various underground transmission upgrade projects as part of a multi-year, multi-project improvement program. Duties include assisting PSE&G with upgrades of several existing 138 kV HPFF underground cable circuits to 230 kV, replacing existing hydraulic equipment, and updating underground cable standards. POWER's scope includes development of construction packages, analysis of existing systems, coordination of permits, vendor drawing reviews, assistance with bidding and awards, material procurement, and support during construction. POWER is supplementing PSE&G's in-house engineers and providing locally based engineering support for the program.

Baltimore Gas & Electric, Westport to Paca 115 kV XLPE UG Cable Project, Maryland

Project Engineer responsible for conceptual and detail design. POWER provided engineering services to add a new double-circuit 115 kV XLPE cable system, approximately 4.6 miles in length, to BG&E's downtown 115 kV cable network. The project included routing, ampacity studies, cable and duct system design, and material and construction specifications.

Bonneville Power Administration, I-5 500 kV Technical Feasibility Comparison, Northwestern US

Underground Project Engineer for a study to compare overhead and underground options for a new 70-mile, 500 kV transmission line along the Interstate 5 Corridor between Washington and Oregon. Responsible for the underground sections of the feasibility report including development of a conceptual design, cost estimates and comparisons of available underground cable technologies. The report, required for BPA's NEPA application and sole sourced to POWER based on expertise in transmission design and operating practices for EHV underground lines, outlined comparative technical requirements and cost estimates for the overhead and underground options. Due to prohibitive costs and technical requirements for the underground option, BPA chose an overhead route.

General Cable, Garrisonville to Stafford 230 kV Underground Project, Virginia

Project Manager/Engineer responsible for the leading the project team and for managing design activities. This project involved the installation of two 230 kV XLPE circuits with two cables per phase for Dominion Virginia Power. The cable system originates at the new Aquia transition station, and travels 5.5 miles to the new Garrisonville Substation. The project was designed with 24 different directional drills with the average drill being 1,700 feet. Work included development of design parameters, development of plan and profiles, ampacity calculations, trench design, HDD design, specification preparation and construction support.

General Cable, Pleasant View-Hamilton 230 kV Underground Cable, Virginia

Project Manager/Engineer responsible for the leading the project team and for managing design activities. POWER designed a two-mile section of 230 kV XLPE underground transmission along a popular bike path within an ultra-narrow corridor. The section was part of a new double-circuit 230 kV transmission line for Dominion Virginia Power. The corridor width averaged 30 feet, with some sections at less than 20 feet, and wound through heavily forested and hilly terrain. POWER's work included the development of design parameters, creation of plan and profile drawings, ampacity calculations, trench design, and specification preparation.

Lower Colorado River Authority Transmission Services Corporation, Manchaca to Friendship 138 kV Underground Line, Texas

Project Engineer responsible for providing conceptual and detail design for placing a segment of the new Friendship to Manchaca 138 kV overhead line underground. The underground segment is approximately one mile in length and features an energized fourth phase to act as a backup. Responsibilities included development of design parameters, cost estimates, route selection, ampacity calculations, trench design, OH/UG riser design and specification preparation.

MidAmerican Energy, Coralville 161 kV Underground Conversion, Iowa

Project Engineer responsible for overall design and implementation. This project entailed the conversion of approximately 4,800 feet of an existing 161 kV overhead line to 161 kV XLPE underground to accommodate construction of a new hotel/convention center in downtown Coralville, Iowa. POWER's services included development of design parameters, cost estimates, route selection, ampacity calculations, trench design, overhead/underground transition structure design, and specification preparation.

National Grid, Worcester 115 kV Underground Project, Massachusetts

Project Engineer responsible for engineering, design and quality of project deliverables. POWER provided engineering and design services to support the route selection, permitting, licensing and installation of an underground, 3.4 mile, 115 kV electric transmission line in a heavily congested area of

Worcester, Mass. Scope of work included assisting in the preparation of the application to the Commonwealth of Massachusetts Electric Facilities Siting Board, which required investigating several routes and selecting the preferred route for the installation of the 115 kV underground transmission line between the two substations. After route selection, POWER proceeded with the engineering and design of the 115 kV line including the cable system and duct bank.

TransWest Express, ±600 kV HVDC Transmission Line, Wyoming, Colorado, Utah, Nevada, Multiple States

Underground Line Engineer for a new 725-mile ±600 kV HVDC transmission line capable of transmitting 3,000 MW of wind generation from Wyoming to south of Las Vegas. Responsible for preparing a report to evaluate the current technology of DC underground cable systems. Report included a discussion on possible DC underground cable systems (SCFF, MIND, and XLPE) and budgetary cost estimate for installing 10 miles of the DC line underground. POWER is performing Owner's Engineer services for the project, including preliminary engineering to support project development and engineering support to the routing, siting and environmental permitting.

UTEC Constructors Corporation, Elizabeth River 230 kV Underground Transmission Line, Virginia

Project Manager for the design of a double circuit HPFF cable system underneath the Elizabeth River for Dominion Virginia Power. Managed all aspects of the design and permitting support. Also functioned as Project Engineer responsible for overall design and project quality control. POWER teamed with UTEC Constructors for the design and construction. Because the river is a major military and commercial shipping channel, the line was required to be drilled under the river. Horizontal directional drilling was used to make the approximately 7,500 foot river crossing, resulting in one of the longest HPFF pulls ever successfully completed. The cable extended an additional 600 feet from the river's edge to the termination structure. POWER services included designing the cable installation, termination structure, and foundation, developing drawings to support the permitting effort and performing ampacity calculations.

Public Service Electric and Gas, Owner's Engineer for 230 kV HPFF projects, New Jersey

Project Engineer responsible for providing Owner's Engineer services associated to review and design of various 230 kV HPFF cable projects. Involved in three large cable projects: Burlington-Camden Project, which consists of upgrading two existing HPFF circuits from 138 kV to 230 kV; North Central Reliability Project, which consists of upgrading two existing HPFF circuits from 138 kV and 230 kV; and Southern Reinforcement Project, which consists of three new 230 kV HPFF circuits. Work includes the review of design drawings and attending project meetings with other designs firms on PSEG's behalf, enforcement of the PSEG construction and design standards, and development of specific project drawings.

Eversource, Cape Cod Canal 345 kV UG Crossing Feasibility Report, Massachusetts

Project Engineer for the development of the feasibility report. The following factors were analyzed to determine the constructability of the underground cable system across the Cape Cod Canal:

- Size of the cable to determine the maximum length of cable that could be transported to the site
- Length and size of the drill to determine the required length of cable to make the crossing
- Availability of work space on either side of the crossing
- Feasibility of pulling the cable for the length of the crossing

Lower Colorado River Authority, Various Underground Transmission Cost Estimate Report Projects, Texas

Project Engineer responsible for preparing various conceptual design reports for placing existing and proposed overhead lines underground in support of LCRA's regulatory filings. Responsibilities include development of design parameters, cost estimates, cable system selection, and ampacity calculations for each underground segment investigated. The projects range in voltage from 138 kV to 345 kV.

Mirant Corporation, Bowline-Haverstraw-Ladentown 345 kV XLPE Project, New York

Project Engineer responsible for the design of a seven-mile 345 kV XLPE project connecting the Orange & Rockland Ladentown Substation to the Mirant Bowline Substation. The design will include the development of design parameters, trench design, specification preparation and cable design.

American Transmission Company, Femrite to Sprecher 138 kV Underground Transmission Line, Wisconsin

Project Engineer responsible for providing conceptual and detail design for placing a segment of the new Femrite to Sprecher 138 kV overhead line underground. The underground segment is approximately 1.4 miles in length. Responsibilities include development of design parameters, cost estimates route selection, ampacity calculations, trench design, OH/UG riser design and specification preparation.

PREVIOUS WORK HISTORY

Fredrickson Power, 230 kV XLPE Project, Washington

Project Engineer responsible for providing turnkey specification for one 230 kV XLPE underground cable circuit to connect the generating station to BPA, a distance of 5,000 feet. Responsibilities include development of design parameters and specification preparation.

Public Service of Colorado, Boulder 138 kV XLPE Cable Project, Colorado

Project Engineer responsible for providing detail design for the conversion of an existing overhead 138 kV line to an XLPE underground cable system. The underground segment is approximately 1300 feet in length. Responsibilities include development of design parameters, route selection, ampacity

calculations, trench design, OH/UG riser design and specification preparation.

GPU Energy, Mountain Creek 115 kV XLPE Cable Project, New Jersey

Project Engineer responsible for providing conceptual and detail design for the conversion of an existing overhead 115 kV line to an XLPE underground cable system. The underground segment is approximately 3500 feet in length. Responsibilities include development of design parameters, cost estimates route selection, ampacity calculations, trench design, OH/UG riser design and specification preparation.

Orange & Rockland Utilities, Middletown Tap 345/138 kV Substation, New York

Engineering Manager responsible for providing supervision, design, procurement and construction (EPC) services for a new 345 kV/138 kV switching station, modification to three 138 kV substations, construction of a .8 mile of double circuit 138 kV overload transmission substation. Duties included substation design, development of material specifications, procurement of materials, supervising design staff, coordination with client and monitoring project schedule and budget.

Omaha Public Power District, Substation Modifications, Nebraska

Design Engineer for the design of modifications to two 345 kV substations and three 161 kV substations, and the construction of one new 345 kV substation. Substation design includes physical layouts, development of schematics, wire drawings, line layout, and material and construction specifications. Responsibilities include supervising design staff and monitoring project schedule and budget.

Nevada Power Company, Caesar's Palace 138 kV Underground Project, Nevada

Design Engineer responsible for providing technical support and design review for an EPC double circuit 138 kV underground extruded dielectric cable system. The circuits connected an existing overhead line to a new substation. Responsibilities included preparation of the technical specification and review of the overall design.

JASON PHILHOWER, P.E.

SR. ELECTRICAL ENGINEER

YEARS OF EXPERIENCE

24

EDUCATION

- B.S., Electrical Engineering, Power Concentration, University of Hartford, Hartford, CT
- M.Eng., Power Systems Engineering, Worcester Polytechnic Institute, Worcester, MA
- PhD Candidate, Electrical Eng., University of Connecticut, Storrs, CT

LICENSING

- P.E., Electrical: Connecticut
- P.E., Electrical: Minnesota
- P.E., Electrical: New Hampshire
- P.E., Electrical: Texas
- P.E., Electrical: North Carolina
- P.E., Electrical: Ohio
- P.E., Electrical: West Virginia

SPECIAL TRAINING

- Schweitzer Engineering Laboratories (SEL) Distributed Generation, Generator Protection Courses/Training
- International Union of Elevators Constructors (Cincinnati, OH) - four-year Apprenticeship Program

CERTIFICATION

- Protective Relay Theory and Applications Certificate – Georgia Institute of Technology

HARDWARE/SOFTWARE

- PLC (IEC 1131-3)
- AutoCAD
- ETAP
- MatLab/Simulink

AFFILIATIONS

- IEEE Senior Member
- IEEE, Region 1 Chairman of Connecticut Power and Energy Society Chapter, Connecticut Chapter

EXPERIENCE SUMMARY

Mr. Philhower is a results-focused engineering leader who uses his strong management capabilities to lead technical projects. He holds specific expertise in protective relay theory and applications and distributed generation.

Siemens, 560 MW Duke Plant, Lincoln County, North Carolina

Senior Electrical Engineer with EOR responsibilities for balance of plant specifications, station protection, single line and three line diagrams and power systems studies. POWER Engineers is providing EOR engineering and design services to Siemens for the Duke power plant. The plant is a 560 MW, simple cycle electric generating station located in Lincoln County, North Carolina. The station design is based on a conventional simple plant configuration, featuring new GE combustion turbine technology. The facility includes wet-cooling condenser and dual-fuel operational capabilities.

Gemma Power Systems, 785 MW Towantic Energy Center, Oxford, Connecticut

Senior Electrical Engineer responsible for balance of plant specifications, CT/ST generation protection single line diagrams and ETAP model. POWER Engineers. Provided detailed engineering and design services to Gemma Power Systems for the CPV Towantic Energy Center. The plant is a 785 MW, combined cycle electric generating station located in Oxford, Connecticut. The station design is based on a conventional 2x1 plant configuration, featuring GE H-class combustion turbine and steam turbine technology. The facility includes air-cooled condenser and dual-fuel operational capabilities.

Entergy, Owner's Engineer

Senior Electrical Engineer/Owners Engineer for Entergy Louisiana and Entergy Texas. Prepared design documentation for multiple Entergy HV substations. Deliverables included single line diagrams, substation protective relay design and EPC scope of work documents.

Owners Engineer (OE) for multiple Entergy substation projects. OE task includes supporting design meetings and reviewing substation design submittals from Engineer of Record.

PREVIOUS WORK HISTORY

Gemma Power Systems, Electrical Engineering Manager/Lead, Glastonbury, CT

Responsible for directing all areas of electrical engineering in Gemma Power Systems engineering division.

- Managed electrical engineering team within Gemma Power.
- Managed subcontracted Engineer of Record, five+ engineers on $150M+ biomass project.
- Gemma Power Systems Lead Electrical Engineer for two (2) $380M+ combined cycle projects.
- Lead Electrical Engineer responsible for plant electrical distribution design. Create 1-line diagram, equipment list and preliminary AutoCAD / ETAP studies for Owners Engineer/Gemma Power for multiple bidding projects.
- Communicated across multiple levels of management, including providing updates to executive management on project progress.
- Lead electrical engineering interface for power plant utility/point of interconnect design and conformance.

Project highlights include:

50 MW Biomass Power Plant, Woodville, TX

- EPC Lead Electrical Engineer responsible for managing electrical engineering activities. Assisted with design of plant electrical distribution. Worked in Engineer of Record (EOR) office to assist with one-lines, two-lines, equipment specifications, design calculations, ETAP models and protection design. Provided support to field engineers during construction and commissioning.
- Support for procurement department detailed technical bid reviews and recommendations for all power plant electrical systems. Includes generator step up and station service transformer, MV and LV switchgear and MCCs, UPS, PCS, cable and bus systems.
- Lead electrical engineering interface for power plant Utility/Point of Interconnect design and conformance.

800 MW Combined Cycle Power Plants, Asylum and Clinton Township, PA

- EPC Lead Electrical Engineer responsible for managing electrical engineering activities. Final review responsibilities for Engineer of Record (EOR) plant electrical distribution design.
- Coordinate electrical interfaces between balance of plant and Siemens Power Island Equipment.
- Provide Gemma procurement department detailed technical bid reviews and recommendations for all power plant electrical systems. Includes generator step up and station service transformer, MV and LV switchgear and MCCs, UPS, PCS, cable and iso-phase bus design, plant facilities building design.
- Lead Electrical Engineering interface for site PJM/PPL/First Energy Interconnect design and conformance.

Zachry Engineering, Electrical Design Engineer II, Nuclear, Stonington, CT

- Responsible for supporting a variety of engineering and design activities involving power plant upgrades including development of specifications, calculations, engineering evaluations and design change packages. Responsible for working on project teams with other engineers to evaluate conditions, propose modifications and develop design changes which will improve plant performance, safety and reliability. Reviewed/PE Stamped and checks designs, drawings and data prepared by other engineers and designers.
- Co-lead for Cooper Nuclear Station Reactor Recirc MG-Set Field Breaker Modification. Prepared the Engineering Evaluation followed by a new component specification. Mod package and electrical calculations
- GINNA Nuclear Power Plant Calculation. Prepared the cable ampacity calculation for VFD pump motor.
- Mod package lead including calculations supporting MCC bucket changes for North Anna Nuclear Power Plant.
- Mentored young engineers. Assisted in Zachry FE and PE exam study groups.

United Technologies Corp (UTC) - Engineering, Senior Electrical Engineer, 400kW Stationary Power Plant, South Windsor, CT

- Electrical Lead for 400kW Fuel Cell Power Plant product.
- Electrical support for Power Section System. Ground fault protection design for 1200VDC distribution.
- Worked with ECS supplier and Product Safety/Reliability team to redesign NFPA79/UL508A non-conformance via Change Control Board process.
- Engineering design tasks for inverter based Power Conditioning System. Including IDLE and GRID Connect design.
- Engineering team member responsible for the startup of and debugging of verification and validation power plants.
- Multi-Unit Load Sharing (MULS) Design lead for Grid independent (Islanding) multi-unit configuration.
- Patent pending, sole inventor of patent *Fuel cell power plant with real and reactive power modes*

UTC Pratt & Whitney Power Systems, Senior Electrical Engineer, Geothermal/Waste Heat Power Plant, East Hartford, CT

- Lead EE responsible for electrical design changes to meet the Low Voltage/EMC directive/CE certification for geothermal product.
- Electrical Applications designs task in project bids.
- Power distribution design for induction generator power plant. Balance of plant design (motor/variable frequency drive selection and integration).

Projects:

- Senior Electrical Engineer, Thermo 1 – 10.3 MW Geothermal Power Plant, Beaver County, UT
- Senior Electrical Engineer, Yankee Power & Energy– 500kW Geothermal Power Plant, Yilan County, Taiwan
- Project Engineer, Kentucky Horse Park – 280kW Waste heat Power Plant, Lexington, KY

UTC - POMA/Otis Elevator, Automated People Mover Systems, Elevator Systems, Senior Electrical Engineer, Farmington, CT

- Responsible for the design and development of Automated Train Protection/Operation control system used in the POMA-OTIS APM rope propulsion product. Along with the development, responsibilities included close collaboration with TÜV and third party reviewer. Dual Modular Redundancy (DMR) design. Included dispatching and propulsion modules that interfaced with a GE Innovation Series AC drive.
- Responsible for conceptual design of regenerative power converter to replace dynamic braking resistor on non-regen AC VFDs.
- Design engineer E411M High Rise Elevator Controller / Drive System.

Projects:

- Lead Electrical Engineer, Minneapolis Hub Tram, Minneapolis-St. Paul Airport
- Lead Electrical Engineer, Detroit Airport
- Lead Electrical Engineer, Minneapolis Green Line Tram, Minneapolis-St. Paul Airport

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 01-T-1474:	**APPLICATION OF NORTH BERGEN LIBERTY GENERATING, LLC, AS AUTHORIZED AGENT FOR CROSS HUDSON, LLC, FOR AN AMENDMENT TO A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED PURSUANT TO ARTICLE VII OF THE PUBLIC SERVICE LAW**

DIRECT TESTIMONY OF

STEPHEN B. WOOD, JACOB A. FREEDMAN and JEFFREY M. ENRIGHT

ON BEHALF OF NORTH BERGEN LIBERTY GENERATING, LLC

Dated: March 29, 2018

SBW/JAF/JME

Q. Mr. Wood, please state your name, title and business address.

A. My name is Stephen B. Wood, Vice President and Senior Project Manager, ESS Group, Inc., 10 Hemingway Drive, 2nd Floor, East Providence, Rhode Island 02915.

Q. Please summarize your educational and professional background.

A. I received a Juris Doctor degree from Southern New England School of Law in 1996, a Masters in Business Administration from Western New England College in 1985, and a Bachelor of Arts in Biology from North Adams State College. I have worked for ESS Group, Inc., since 2000. Prior to that time, I was the Director of Environmental Affairs for Commonwealth Energy System. I have more than 30 years of experience in environmental licensing and permitting of major projects, including electric generation and transmission facilities in New York and other states.

Q. Mr. Wood does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Wood, what was your role in the North Bergen Liberty Generating project?

A. ESS Group was retained by North Bergen Liberty Generating, LLC to undertake the analysis and studies needed to inform and support an amendment filing to the New York State Public Service Law Article VII Certificate of Environmental Compatibility and Public Need issued for the Cross Hudson project.

Q. Mr. Freedman, please state your name, title and business address.

A. My name is Jacob A. Freedman, Project Manager at Search, Inc., 55 Melville Ave, Boston, Massachusetts 02124.

Q. Mr. Freedman, please summarize your educational and professional background.

A. I received a Bachelor of Arts and Masters of Art in Anthropology in 2004 from Brandeis University. I have 14 years of professional archaeological experience across the Northeast and have worked at SEARCH in a management capacity for the past six years. This experience includes the supervision and management of cultural resources compliance studies for energy projects across multiple sectors including power transmission projects up to 200 miles in length.

Q. Mr. Freedman, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Enright, please state your name, title and business address.

A. My name is Jeffrey M. Enright, Maritime Project Manager at Search, Inc., 700 North 9th Avenue, Pensacola, Florida 32501.

Q. Mr. Enright, please summarize your educational and professional background.

A. I received a Bachelor of Arts in Anthropology and History from the University of Miami in 1995, and a Masters of Arts in Maritime History and Nautical Archaeology from East Carolina University in 1999. I have 20 years of professional experience, and am one of the nation's leading submerged remote-sensing specialists.

Q. Mr. Enright, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mssrs. Wood, Freedman and Enright, what was your role in the North Bergen Liberty Generating project?

A. Section 4.11 and Attachment 4-6 of the application were either prepared by us or under our direction and supervision.

Q. Mssrs. Wood, Freedman and Enright, what is the purpose of your testimony?

A. The purpose of our testimony is to support Section 4.11 and Attachment 4-6 of the application which were prepared by us or under our direction and supervision.

Q. Mssrs. Wood, Freedman and Enright, does Section 4.11 and Attachment 4-6 accurately describe the archeological and historic resources which could be affected by the project, as well as the impacts of the proposed project on those resources?

A. Yes, it does. Through the analysis of previous cultural resources studies, search of the New York cultural resources information system, acquisition of detailed maritime remote sensing data, and consultation with ESS Group regarding construction methods Mr. Freedman and Mr. Enright oversaw analysis of the proposed maritime and terrestrial routes. Along the maritime route, SEARCH identified six targets for avoidance or further investigation. These targets were interpreted as potential shipwreck locations of unknown age and affiliation. Along the terrestrial route, SEARCH believes that no historic properties will be adversely effected by the undertaking. The project APE passes below a single historic property (Hudson River Bulkhead [USN 6101.009182]) by using a horizontal directional drill for cable installation. Previous consultation with the New York Office of Parks Recreation and Historic Preservation found that installation through this method would not impact this resource. This consultation was conducted in in relation to this project's Article VII certificate while these assets were under the control of the prior certificate holder (PSEG Cross Hudson

Corporation). The remainder of the terrestrial route crosses filled, disturbed urban land and would have only temporary, visual impacts to any other resources in the vicinity of the project. Therefore, SEARCH recommended no additional cultural resources survey along the terrestrial route.

Q. Gentlemen, does this complete your prefiled testimony at this time?

A. Yes.

STEPHEN B. WOOD
Vice President

Experience
ESS Group, Inc. – 2000 to present

Years of Prior Related Experience – 22

Education
JD, University of Massachusetts School of Law

MBA, Western New England University

BA, Biology, North Adams State College

Registrations/Affiliations
Admitted to the Massachusetts Bar
June 1996

Admitted to the United State District Court for Massachusetts
January 1997

Advisor – Electric Power Research Institute

Air & Water Management Association

Boston Bar Association, Environmental Section

Qualifications

Mr. Wood is a Vice President and Senior Project Manager with more than 30 years of experience in environmental licensing and permitting, as well as project management. Prior to joining ESS, he was the Director of Environmental Affairs for a major electric and gas utility company in Massachusetts, where he was responsible for directing and managing all aspects of environmental policy, programs, and licensing for electric and gas operations including generation, transmission, and distribution functions and environmental licensing and permitting for construction and operation of gas and electric facilities. He has significant experience in the preparation of filings for generation, electric, and gas transmission projects before energy facility siting boards in several states including Massachusetts, New York, Connecticut, and Vermont, where he has also provided expert testimony. Mr. Wood routinely provides feasibility assessments, permitting strategies, and licensing services for these major and complex projects. He has also managed the preparation of state and federal Environmental Impact Statements for energy generation and transmission projects, as well as the federal, state, and local permitting.

Representative Project Experience

National Grid Clay - Teall 115 kV Transmission Project – Onondaga County, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for an 18-mile long 115 kV electric transmission reconductoring project that will reinforce the National Grid transmission and the New York grid. Provided expert testimony in the Article VII proceedings. ESS is also preparing the Environmental management and Construction Plan, as well as the Storm Water Pollution Prevention Plan and Army Corps of Engineers wetland permit application and mitigation plan. ESS will provide agricultural and environmental monitoring during construction.

National Grid Mohican-Battenkill 115 kV Transmission Project – Washington and Saratoga Counties, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for a 14-mile 115 kV electric transmission project that will reinforce the National Grid transmission and the New York grid. Provided expert testimony in the Article VII proceedings. ESS is also preparing the Environmental management and Construction Plan as well as the Storm Water Pollution Prevention Plan and Army Corps of Engineers wetland permit application as and mitigation plan. ESS will provide agricultural and environmental monitoring during construction.

Upstate Power Transmission Project – Jefferson and Oswego Counties, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for a 50-mile 230 kV electric transmission project that will bring energy from the 280 MW Hounsfield Wind Farm on Gallo Island to the New York grid. The project also includes a routing evaluation, an assessment of the environmental impacts for the 9-mile underwater section and 42-mile upland project route and alternatives, and a public participation program. Provided expert testimony in the Article VII proceedings.

National Grid Mortimer, Golah 115 kV Transmission Project – Monroe County, NY. Project Manager for the preparation of an Article VII filing to the New York Public Service Commission for a 10.3 mile 69-115 kV electric transmission rebuild and conversion project that will reinforce the National Grid transmission and the New York grid. Provided expert testimony in the Article VII proceedings. ESS is also preparing the Environmental management and Construction Plan, as well as the Storm Water Pollution Prevention Plan and Army Corps of Engineers wetland permit application as and mitigation plan.

New York Regional Interconnect – High Voltage DC Transmission Line, NY. Project Manager for the preparation and submittal of an Article VII filing to the New York Public Service Commission for a 450 kV DC transmission project over 190 miles in length. The project also includes a routing evaluation, the assessment of the environmental impacts for the project route and alternatives, and a public participation program. Provided expert testimony in the Article VII proceedings.

PSEG, Susquehanna-Roseland Transmission Project – PA and NJ. Provided senior technical and strategy assistance to the 500-kV project for the National Environmental Policy Act process for the section of the line passing through the Delaware Water Gap National Recreation Area. The National Park Service is the lead agency developing the Environmental Impact Statement for the project.

Northeast Utilities -Plumtree to Brookfield Junction 115-kV Transmission Line – Fairfield County, CT. Project manager for the preparation of a routing alternatives study for the upgrade of an approximately six-mile-long above ground transmission line including overhead and underground alternatives. The evaluation was prepared to support a Petition to the Connecticut Energy Facility Siting board for approval of the line.

Northeast Utilities – Transmission Line, CT. Project Manager for the preparation of an application to the Connecticut Siting Counsel for a 38-mile long 345 kV transmission line. The project also included the assessment of the environmental impact for the project route and alternatives, and preparation of the municipal consultation filing.

Environmental Licensing and Permitting for Submarine Electric and Telecommunications Cable -- Falmouth to Martha's Vineyard, MA. Responsible for licensing and permitting of several 23 kV submarine cables and a fiber optic telecommunication cable to serve Martha's Vineyard. This effort included numerous permits and submissions including those under Massachusetts Environmental Policy Act, a Chapter 91 Waterways License, US Army Corps of Engineers 404/10 requirements, Martha's Vineyard Commission submittal, and Wetland submittals for approval by three conservation commissions. Navigational and archeological evaluations were also undertaken as part of the licensing effort.

Eversource Electric 25 kV Feeder – Falmouth, MA. Project manager for the licensing and installation of a one-mile 25kV underground feeder in Falmouth, Massachusetts. ESS was responsible site/route evaluation and mapping; wetland delineation; threatened and endangered surveys/avian risk assessment; cultural resource surveys; soil and groundwater contamination evaluation; and federal, state, and local permits including MEPA review, Chapter 91 waterway licensing; Coastal Zone Management consistency, Army Corps of Engineers approval; and wetland protection act/conservation commission approval. ESS was also responsible for site survey, including existing utilities identification and for the as built drawings preparation. The underground electric line was installed in a sensitive coastal area, which includes coastal dunes, tidal streams, and estuarine habitat. The project also involved the use of horizontal directional drilling technology.

Commonwealth Electric New Bedford 115kV Transmission Line – New Bedford, MA. Project Manager for the licensing and permitting of a new 115 kV transmission line to serve the city of New Bedford, including Energy Facility Siting Board approval and certification by the Secretary of Environmental Affairs under Massachusetts Environmental Policy Act. The project also included the licensing of a horizontal directional bore beneath the Acushnet River, which crossed beneath an EPA Superfund site.

Cambridge Electric 115kV Transmission Line – Cambridge, MA. Responsible for the environmental licensing and permitting of a new underground 115kV transmission line to serve the city of Cambridge including Energy Facility Siting Board approval and certification by the Secretary of Environmental Affairs under MEPA.

US Power Generating Company – Licensing and Permitting Analysis for a Combined Cycle Power Plant, Queens, NY. Project Manager for the analysis and permitting of a new 400 MW combined cycle project. Responsibilities include the preparation of the air permit, air quality modeling, non-attainment review,

and managing the required field environmental surveys, technical studies, environmental impact evaluations, and the development of mitigation strategies for the preparation of the draft and final Environmental Impact Statements under the New York State Environmental Quality Review process.

Astoria Generating Company, Licensing and Permitting for Repowering Project – Astoria, NY. Project Manager for the analysis and permitting of the repowering of an existing 1250 MW generating facility under the Article X process to increase capacity to 1,816 MW. Air Permitting Manager responsible for air quality modeling, wet cooling tower assessments, prevention of significant deterioration, non-attainment review, and Title IV permit applications. Managed the required field environmental surveys, technical studies, air quality modeling, environmental impact evaluations, and the development of mitigation strategies. Provided expert testimony in air quality in the Article X proceedings.

US Power Generating Company, South Pier Improvement Project Peaking Power Plant – Brooklyn, NY. Senior Quality Assurance Reviewer and Task Manager for the air quality permit application and Environmental Impact Statement studies for the licensing of a state-of-the-art 100 MW combustion turbine through the New York State Environmental Quality Review process.

Rochester Gas & Electric, Licensing and Permitting for a Combined Cycle Power Plant – Rochester, NY. Managed the air quality task for a 300 MW generating facility, which will include air quality analysis for the New York State Environmental Quality Review Environmental Impact Statement process and the air permits. Responsible for air quality modeling, prevention of significant deterioration, non-attainment review, and coordination of the sound impact analysis.

BG North America, Licensing and Permitting for a Combined Cycle Power Plant – Killingly, CT. Project Manager for the addition of a fourth 400 MW unit to an existing 720 MW power generating facility. In addition to the air quality permit, wetlands assessment and local permitting, the project included the preparation of an application to the Connecticut Siting Council.

Licensing and Permitting MATEP 36 MW Expansion – Boston, MA. Responsible for the successful permitting and licensing analysis for the addition of three combined cycle combustion turbines at the MATEP generating facility. Also managed the preparation and filing of required permits and approval applications including Massachusetts Environmental Policy Act and Massachusetts Department of Environmental Protection Air Plan Approval.

Vermont Public Power Authority Peaking Generating Facility – VT. Project Manager for environmental permitting and licensing analysis of a 24 MW peaking combustion turbine facility in upstate Vermont. Responsibilities include the preparation of the air permit, air quality modeling, non-attainment review and preparation of the State Title V permit and Certificate of Public Good before the Public Service Board (PSB). Provided expert testimony on air and noise matters in the PSB filing.

Massachusetts Clean Energy Center, Offshore Transmission Assessment – MA. Project Manager of a team that prepared a report to analyze the transmission infrastructure necessary to interconnect future Massachusetts offshore wind projects to the regional electric grid. This report examined the technical aspects of offshore wind transmission interconnection and analyzed scenarios that minimize cost and environmental impact for the interconnection of offshore wind projects in the Massachusetts Wind Energy Area (MA WEA), which estimated to potentially host up to 5,000 MW of offshore wind. The results of the study supported MACZM update of the Massachusetts Ocean Management Plan.

Vineyard Wind – Offshore Renewable Energy Project, MA. Vineyard Wind – Offshore Renewable Energy Project, MA. Principal in Charge for environmental permitting of a proposed offshore 800 MW wind energy project and associated transmission line to be in the Massachusetts Wind Energy Area. ESS prepared the SAP, IHA and initiated the COP including coordination with Bureau of Ocean Energy Management and overall strategy. ESS also conducted export cable routing analysis to determine the most advantageous route to interconnect with the land-based grid through federal and state waters. ESS also conducted a data gap

analysis of the numerous studies and other available information to determine additional data needs under the SAP and COP. This included review of various environmental assessments including avian, marine mammal, benthic, geologic, physical, and coastal resources in addition to noise, essential fish habitat, submerged aquatic vegetation and marine cultural resources for the application.

New York Power Authority (NYPA) – Evaluation of Interconnection for Offshore Renewable Energy Project – NY. Project Manager to assist NYPA with an evaluation of the potential points of interconnection (POI) on Long Island or in lower New York for the integration of up to 2,300 MW of offshore wind proposed for development off the cost of New York. The evaluation included assessment of potential offshore cable routes from proposed and current Wind Energy Areas, identification of landfalls, upland routes and constraints associated with connecting to bulk substations. An initial high-level evaluation of power flows and possible capacity injection at the interconnection points was also conducted by ESS team member. The results identified several POIs for further evaluations.

Cape Wind Associates LLC, Offshore Renewable Electric Generation and Submarine Cable Project – Nantucket Sound. Project Manager for the preparation of a petition before the Massachusetts Energy Facility Siting Board for approval to construct and operate two 115 kV transmission lines, which would bring the power generated by the 454 MW off-shore wind farm to an interconnection with the Massachusetts and New England transmission system. Assessed alternative approaches to bring the power generated in Nantucket Sound to the transmission system and prepared a comprehensive routing analysis that examined the need for the facility, costs, and environmental impacts. Provided expert testimony before the Massachusetts Energy Facility Siting Board for the 17-mile 115 kV transmission interconnection project.

New York Power Authority (NYPA) - Offshore Renewable Energy Project – NY. Project manager to assist NYPA with an evaluation of the permitting and study requirements for the development of an offshore wind energy project on the OCS outside New York City. Services included developing multiple study and permitting scenarios, as well as schedules including costs to assist NYPA develop a strategy for the development of the project including possible PPA solicitation.

New York State Energy Research and Development Authority ("NYSERDA") Offshore Wind Planning Studies, Offshore NY. Project manager for supporting NYSERDA's assessment under the Offshore Wind Master Plan by providing expert critical review and feedback of the studies being produced under this program covering a variety of environmental, social, economic, regulatory, and infrastructure-related issues within an offshore study area (OSA) approximately 16,740-square-mile in size. This support included review of Work Scope for technical and regulatory data gaps, research needs, and overall content including guidance to improve documents. ESS is also reviewed reports for technical validity, content, validity of findings and provided guidance and recommendations on how to improve the documents.

New Hampshire Public Utilities Commission – Concord, NH. Project manager as part of a team providing the NHPUC with an evaluation and analysis of three large electric generating plants owned by PSNH, as well as nine hydroelectric plants. The project was part of the Commission's evaluation of whether to retain the current ownership structure or have PSNH divest itself of the plants, and if so, how best to accomplish divestiture. ESS was responsible for the environmental aspects in the development and analyses in order provide input for the economic evaluation.

Connecticut Energy Advisory Board – New Britain, CT. Project manager as part of a team providing consulting services to the CEAB for the development of a process to execute responsibilities for the solicitation and evaluation of proposals for the development and siting of transmission, generation, conservation load management, and other energy strategies under Connecticut statute. ESS was responsible for the environmental aspects in the development of a reactive process and proactive process for soliciting required energy facilities.

Jacob A. Freedman, MA, RPA
Project Manager/Health and Safety Officer

Jacob A. Freedman, MA, joined SEARCH in 2012 and has 14 years of professional archaeology experience across the Northeast, with particular expertise in ceramic analysis, the excavation of deeply stratified sites, and the use of GIS technology. Mr. Freedman is currently one of only 14 prehistoric archaeologists approved to conduct Phase I, II, and III studies by the Maine Historic Preservation Commission and has also been approved to conduct similar studies in New Hampshire and Vermont. Mr. Freedman has extensive experience supervising all phases of survey, site evaluation, and excavation in the Northeast. This experience includes private development, government services, and multi-year energy sector projects. His additional responsibilities at SEARCH include health and safety, and he has prepared site-specific safety assessments, Health and Safety Plans, and Accident Prevention Plans, and has experience in their design and implementation, including dewatering and hydraulic shoring. He is trained in Section 106 of the NHPA, is listed on the Register of Professional Archaeologists.

EDUCATION

MA	2004	Anthropology. Brandeis University (MA/BA Program; simultaneously awarded).
BA	2004	Anthropology. Brandeis University.

PROFESSIONAL EXPERIENCE

2015-Present	Project Manager SEARCH
2012–2015	Principal Investigator SEARCH
2007–2012	Field Direction, Excavation Safety, Deep Testing, Site Reporting, Gray & Pape, Inc.
1998–2007	Field Direction, Site Reporting, Archaeological Laboratory and Field Technician, TRC Solutions, Inc. (formerly ARC, Inc.).

PROFESSIONAL REGISTRATIONS AND ASSOCIATIONS

Society for American Archaeology
Register of Professional Archaeologists

SELECT PROJECT EXPERIENCE

2015-Present

Mountain Valley Pipeline, Virginia and West Virginia Directed Phase I and Phase II archaeological survey, GIS, and report preparation. Managed all aspects of survey, reporting, and compliance for approximately 1/3rd of the project route.

2013–2015

Northern Pass Transmission Line Project, New Hampshire, Directed Phase IA archaeological survey, GIS, and report preparation. Conducted survey and recordation of historic and prehistoric archaeological site across multiple proposed routes.

2014

Thompson Barn Project, Berlin, New Hampshire, Directed Phase IB assessment of construction impact zone to facilitate the renovation of the historic structure.

2012

US Army Recruitment Center, Bloomsburg, Pennsylvania, Directed Phase IA, IB, and Geomorphological studies in compliance with Section 106 to facilitate transfer of the property out of federal ownership. Responsible for all phases of survey, GIS management, and report preparation.

2012

Wastewater Facilities Plan, North Kingstown, Rhode Island, Responsible for Phase IA and IB Identification, initial testing, and documentation of prehistoric Native American and historic resources within the impact area of the proposed sewer line and all phases of report preparation.

2011

TGP Line 300 Project, Pennsylvania/New Jersey, Identification, initial testing, and documentation of prehistoric Native American and historic resources within the impact area of the proposed pipeline. Responsibilities included logistics, crew management, direction of excavation, documentation of testing, and project documentation.

2008

South Hadley Electric Light Department, Massachusetts, Identification, initial testing, and documentation of prehistoric Native American resources within the expanded SHELD right of way. Responsibilities included crew management, direction of excavation, documentation of testing, site mapping, and report preparation.

2007–2009

Millennium Pipeline Project, Various Counties, New York, Responsible for site mitigation through data recovery (Phase III) at four sites as required by the New York SHPO as a term of FERC licensing. Intensive archaeological fieldwork included site layout, excavation, and project documentation. Responsible for project logistics, crew management, site mapping, direction of excavation, documentation of testing, analysis, and report preparation.

2006

W149 Transmission Line Replacement, New Hampshire, Identification, initial testing, and documentation of prehistoric Native American resources within the existing W149 right of way. Responsibilities included crew management, direction of excavation, documentation of testing, site mapping, and report preparation.

SELECT PUBLICATIONS AND PRESENTATIONS

2010 "Deep Testing Methodology, The 'Black Dirt' Peat Deposits, Warwick, New York." Society of American Archaeology Annual Meeting; St. Louis, Missouri; April 18, 2010.

2009 "Archaeology, Ethnohistory, and Ceramics." 2009 Northeast Anthropological Association Annual Meeting; Providence, Rhode Island; March 14, 2009.

2007 "Allensworth, Allen; Bond, Scott; Latta, Morgan London; Leonard, Sugar Ray; Morgan, Joe; Taylor, Lawrence; Williams, Isaac D; Williams, Sally (Aunt Sally)." *African American Encyclopedia of Biographies*. 1st Edition. Oxford University Press.

2007 *Archaeology, Ethnohistory, and Ceramics: The Northeast North American Context.* MA Thesis. Brandeis University, Waltham, Massachusetts.

Jeffrey M. Enright, MA, RPA

Maritime Project Manager / Senior GIS Specialist

Jeff Enright, MA, **RPA**, has 20 years of professional experience and is one of the nation's leading submerged remote-sensing specialists. Mr. Enright joined SEARCH in 2010 and he oversees remote-sensing surveys, GIS geodatabases of submerged cultural resources, multidisciplinary underwater biological and archaeological projects, marine spatial planning, and hydrographic surveying. His research specialties include early American maritime history, ship construction, and remote-sensing data analysis. He has worked on the data recovery of a variety of shipwrecks spanning several centuries, including a number of military conflicts. Mr. Enright has worked across the Southeast, Southwest, Mid-Atlantic, West Coast, West Indies, Pacific Islands, and Europe. He has conducted several large-scale submerged cultural resource GIS database projects that span the Atlantic Ocean, Gulf of Mexico, and Pacific Ocean Outer Continental Shelf. Mr. Enright has directed or participated in more than 150 maritime projects, and he has authored or co-authored more than 75 reports, professional papers, and articles. He has served as a guest maritime archaeology lecturer at ECU and UWF. Mr. Enright is listed on the Register of Professional Archaeologists and is an AAUS Scientific Diver.

EDUCATION

MA	1999	Maritime History and Nautical Archaeology. East Carolina University.
BA	1995	Anthropology and History. University of Miami.

RESEARCH SPECIALIZATIONS

Submerged Cultural Resources Management
Maritime Archaeology
Remote-Sensing Survey
Scientific Diving
Geographic Information Systems

PROFESSIONAL EXPERIENCE

2010–present	Maritime Project Manager/Senior GIS Specialist, SEARCH
2006–2010	Director of Maritime Archaeology and Hydrographic Surveying, BIO-WEST, Inc.
1999–2006	Scientist II/Nautical Archaeologist, PBS&J, Inc.
1998–1999	Principal Investigator, Site 18CV414, Maryland Historical Trust

AWARDS AND CERTIFICATIONS

2016	Emergency Responder (Emergency First Response Corp.)
2016	Emergency Oxygen Provider (PADI)
2013	California Boater Education
2012	HAZWOPER (Safety Unlimited)
2011	Helicopter Underwater Egress Training (Marine Survival Training Center)
2011	SafeGulf (PEC Premier)
2011	RIGPASS HSE Orientation (International Association of Drilling Contractors)
2009	YSI Training (Water Monitoring Solutions, Inc.)
2006	Project Management Training (40 professional development hours)
2004	Enriched Air Nitrox (National Association of Underwater Instructors)
2002	Sidescan Acquisition, Processing, & Mosaicing (CODA Technologies, Ltd.)
1998	Roy N. Lokken Scholarship in Early American History (East Carolina University)
1997	Scientific Diver (American Academy of Underwater Sciences)

PROFESSIONAL REGISTRATIONS AND ASSOCIATIONS

Register of Professional Archaeologists
Society for Historical Archaeology

SELECT PROJECT LIST

2016-2017

Project Manager/Principal Investigator. Phase I Archaeological Remote-Sensing Survey of Pearl Harbor (Section 106 & Section 110 investigations). Conducted for NAVFAC Pacific.

2015

Principal Investigator. Phase I and Phase II Underwater Archaeology Investigations of the Nanticoke River Shipwreck. Conducted for Maryland State Highway Administration.

2014

GIS Modelling Specialist. Modelled artifacts and created images for the CSS *Hunley* Project. Conducted for Navy History & Heritage Command.

Principal Investigator/GIS Manager. Maritime Archaeological Remote-Sensing Survey and Diver Investigations for the Mississippi Coastal Improvement Project. Conducted for USACE, Mobile District.

2013

Principal Investigator/GIS Manager. Maritime Archaeological Remote-Sensing Survey for Mobile Harbor Sediment Placement Project. Conducted for USACE, Mobile District.

Principal Investigator/Diving Supervisor. Maritime Archaeological Remote-Sensing Survey and Diver Investigations Pensacola Bay Bridge Expansion Project. Conducted for Florida Department of Transportation.

GIS Manager. Maritime Context Study of Gulf of Mexico Training Ranges. Conducted for Eglin Air Force Base.

2012

Database & GIS Manager. Submerged Cultural Resources Geodatabase Creation for the Pacific Ocean Outer Continental Shelf. Conducted for Bureau of Ocean Energy Management.

2011

Project Manager/Principal Investigator/GIS Manager. Phase II Evaluation of the Nova Scotia Fishing Schooner *Frances Geraldine* (Site 16CU74). Conducted for USACE, Galveston District.

Project Manager/Principal Investigator. Site Monitoring of a World War I Emergency Fleet Corporation Vessel (Site 41OR90). Conducted for AmaTerra and Texas Department of Transportation.

Database & GIS Manager/Remote-Sensing Specialist. Submerged Cultural Resources Response for the Gulf of Mexico Oil Spill, Gulf-Wide Response. Conducted for HDR, Inc. and BP.

2006

Project Archaeologist/Diving Supervisor. Phase II Investigation of the American Civil War Vessel *Westfield* (Site 41GV151). Conducted for USACE, Galveston District.

2005

Project Archaeologist/Lead Diver. National Register of Historic Places Evaluations of Submerged Sites on the Gulf of Mexico Outer Continental Shelf. Conducted for Minerals Management Service.

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 01-T-1474:	**APPLICATION OF NORTH BERGEN LIBERTY GENERATING, LLC, AS AUTHORIZED AGENT FOR CROSS HUDSON, LLC, FOR AN AMENDMENT TO A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED PURSUANT TO ARTICLE VII OF THE PUBLIC SERVICE LAW**

DIRECT TESTIMONY OF

DAVID DEUTSCH, THOMAS "DAN" KENEIPP, MARK REPSHER, JOHN NEILL, KEVIN J. MAHER AND GEORGE MCCOMB ON BEHALF OF NORTH BERGEN LIBERTY GENERATING, LLC

Dated: March 29, 2018 DD/TDK/MR/JN/KJM/GM

Q. Mr. Deutsch, please state your name, title and business address.

A. **My name is David Deutsch, Vice President, Development, Diamond Generating Corporation, and Lead Project Manager for the North Bergen Liberty Generating Project. My business address is 633 West Fifth Street, Suite 1900, Los Angeles, California 90071.**

Q. Mr. Deutsch please summarize your educational and professional background.

A. I received a Masters in Business Administration in Finance and Accounting from the University of Texas at Austin in 1997 and Bachelor of Arts in Economics and Math from Lehigh University in 1990. I'm a 21-year veteran of the electric power industry with deep knowledge and experience in business development, mergers and acquisition, project finance, power and gas contracts and strategy, for both utility-scale and renewable and distributed generation.

Q. Mr. Deutsch, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Deutsch, what is your role in the North Bergen Liberty Generating Project?

A. I am the project manager and lead developer of the project, including both the power plant and transmission line into New York City.

Q. Mr. Keneipp, please state your name, title and business address.

A. My name is Thomas Keneipp (although I am known as Dan Keneipp), Director of Engineering and Construction, Diamond Generating Corporation, and Director of Engineering and Construction for the North Bergen Liberty Generating Project. My business address is 633 West Fifth Street, Suite 1900, Los Angeles, California 90071.

Q. Mr. Keneipp, please summarize your educational and professional background.

A. I received a Bachelor of Science in Marine Engineering from the California Maritime Academy and a Master of Business Administration from the University of Phoenix. I am also a Master Project Manager from the American Academy of Project Management, a Certified International Project Manager, also from the American Academy of Project Management, and a licensed 3rd Assistant Engineer of Steam, Motor or Gas Turbine Vessels of Any Horsepower. I have 36 years of experience in the engineering, construction and operations fields in the power generation industry.

Q. Mr. Keneipp, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Keneipp, what is your role in the North Bergen Liberty Generating Project?

A. I am responsible for the engineering, design and construction management services for the North Bergen Liberty Generating Project.

Q. Mr. Repsher, please state your name, title and business address.

A. My name is Mark Repsher, Partner-in-Charge, PA Consulting Group's Management Group. My business address is 1700 Lincoln Street, Suite 1550, Denver, Colorado 80203.

Q. Mr. Repsher, please summarize your educational and professional background.

A. I received a Bachelor of Arts in Economics from the University of Virginia, and have over 15 years of experience in analyzing power asset strategies throughout the United States, Mexico and Latin America.

Q. Mr. Repsher, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Neill, please state your name, title and business address.

A. My name is John Neill, and I am a Vice President of AKRF, Inc. My business address is 440 Park Ave South, 7th Floor, New York, New York 10016.

Q. Mr. Neill, please summarize your educational and professional background.

A. I received a Bachelor of Arts, *cum laude*, in Economics and Public Policy Studies from Duke University in 1993, a Masters of Business Administration from Yale School of Management in 2000, and a Masters in Environmental Studies from the Yale School of Forestry and Environmental Studies, also in 2000. I have 18 years of experience providing economic and fiscal impact modeling and reporting (RIMS II and IMPLAN), performing market and feasibilities studies, and providing redevelopment and financing strategies to clients.

Q. Mr. Neill, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. Maher, please state your name, title and business address.

A. My name is Kevin J. Maher and I am Senior Vice President of AKRF, Inc. My business address is 307 Fellowship Road, Suite 214, Mt. Laurel, New Jersey 08054.

Q. Mr. Maher, please summarize your educational and professional background.

A. I received a Bachelor of Science in Environmental Planning and Design from Cook College of Rutgers University in 1990, and Master of Planning from the University of Southern California in 1993. I have over 20 years of experience in generation and transmission facility siting reviews and multi-media permit coordination on power

generation and electric transmission and distribution projects. I was licensed by the American Institute of Certified Planners in May, 1998.

Q. Mr. Maher, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Mr. McComb, please state your name, title and business address.

A. My name is George McComb, and I am Vice President of AKRF, Inc. My business address is 307 Fellowship Road, Suite 214, Mt. Laurel, New Jersey 08054.

Q. Mr. McComb, please summarize your educational and professional background.

A. I received a Bachelor of Science in Meteorology from Pennsylvania State University in 1969, and a Masters of Science in Environmental Science from Drexel University in 1978. I have over 45 years of experience in providing air quality consulting services for the energy sector.

Q. Mr. McComb, does your curriculum vitae fairly and accurately describe your experience?

A. Yes. It is attached to the prefiled testimony.

Q. Gentlemen, what was your role in the North Bergen Liberty Generating project?

A. Portions of the Article VII application were either prepared by us or under our direction and supervision.

Q. Mssrs Keneipp, Repsher and McComb, what is the purpose of your testimony?

A. The purpose of our testimony is to support Exhibit E-4 and the report upon which a portion of the Exhibit is based.

Q. Mssrs. Keneipp, Repsher and McComb, does Exhibit E-4 accurately reflect the engineering justification for this amendment application?

A. Yes, it does. As discussed in Exhibit E-4, the Project will increase the overall reliability of the Con Edison system, provide much needed capacity in a timeframe in which it is needed, displace inefficient units in the system dispatch order, help to reduce the supply constraints in the New York City gas market, and provide several other direct economic benefits during construction and operation. In addition, the Project will offer black start capability, thereby enhancing the reliability of the Zone J system.

Q. Mssrs. Deutsch, Keneipp, Repsher, Neill and Maher, what is the purpose of your testimony?

A. The purpose of our testimony is to support Exhibit 6 and the reports upon which it is based.

Q. Does the information contained in Exhibit 6, and the reports included as Appendices C and D, accurately reflect the economic effects of the proposed transmission line?

A. Yes, it does. As discussed in Exhibit 6, the project will provide enhanced reliability, and a reduction in the price of wholesale energy and capacity. In addition, the Project will add to the New York City tax base through increased property taxes, will add to the New York State tax base through the long-term lease of state-owned lands under the Hudson River, and will provide indirect economic benefits by employing local labor to the extent possible, as well as direct expenditures by NBLG and its contractors during the construction period.

Q. Gentlemen, does this complete your prefiled testimony at this time?

A. Yes.

David Deutsch
16 Pine Street, Chatham, NJ 07928
(213) 507-0072
d.deutsch@dgc-us.com

CAREER SUMMARY

21-year veteran of the electric power industry with deep knowledge and experience in business development, M&A, project finance, power/gas contracts and strategy, for both utility-scale and renewable/distributed generation.

EXPERIENCE

Diamond Generating Corporation (DGC) – *Independent power producer subsidiary of Mitsubishi Corporation.*
(Mar-16 to Present) *Los Angeles, CA*
Vice President, Development:

- Responsible for development activities throughout the US for DGC.
- Lead project manager for the North Bergen Liberty Generating project.
  - Negotiate all real estate transactions.
  - Oversee permitting, gas/power interconnection, gas supply, project finance, public relations, water, major equipment, and EPC procurement, and emissions reduction activities.
  - Manage project team.

Dynamic Energy – *$25 million solar and cogeneration development and installation company.*
(Nov-10 to Feb-16) *Chatham, NJ*
Senior Vice President, Business Development:

- Responsible for overseeing sales and development of commercial/industrial and utility-scale ground/roof-mounted solar photovoltaic (PV) power projects in the Northeast US.
- Manage a small team of business development professionals.
- Successfully developed and closed 12 solar projects totaling over 10 MW by interfacing directly with C-level executives.
- Built a substantial Rolodex of channel partners (3rd party electric suppliers, PPA financiers, energy consultants, etc…) through which many new solar projects are sourced.
- Expanded Dynamic's geographic footprint by developing and selling projects in MA, CT, NY and MD.
- Promoted to SVP.

International Power – *$20 billion global independent power producer.*
(Feb-07 to Nov-10) *New York, NY*
Director, Business Development/M&A*:*

- Responsible for originating, evaluating, structuring, negotiating, financing and closing equity/asset purchases of power generating companies/facilities and corporate acquisitions.
- Deal lead on an 1,857 MW, four-power plant portfolio acquisition (please see "Deal Highlights" document).
- Developed renewable acquisition and growth strategy.
  - Evaluated various solar and wind companies/projects as potential acquisition targets.
  - Led commercial structuring, due diligence, and contract negotiations on the potential acquisition of a controlling interest in EverPower Wind (developer with a 2,000 MW project pipeline).

Alstom Power – *$23 billion global manufacturer of power generation equipment.*
(Aug-03 to Feb-07) *Windsor, CT*
Director, M&A*:*

- Responsible for identifying, developing, selling, and closing integrated commercial offerings and acquisitions.
- Developed acquisition growth strategy, evaluated potential acquisition/JV targets and presented recommendations to senior staff (please see "Deal Highlights" document).
  - Deal lead on Alstom's acquisition of Power Systems Manufacturing from Calpine out of bankruptcy.
  - Negotiated and sold $50 million condenser business and commercial real estate netting $10 million.
  - Led acquisition efforts on a potential $150 million stock purchase of Aquilex Holdings from First Reserve.

David Deutsch
16 Pine Street, Chatham, NJ 07928
(213) 507-0072
d.deutsch@dgc-us.com

Duke Energy North America – ***Unregulated subsidiary of Duke Energy with over 15,000 MW in operation (2002).***
(May-99 to Dec-02) *Houston, TX*
Director, M&A*:*

- Responsible for originating, evaluating, structuring, negotiating, and closing equity and asset purchases and sales, including partnerships in generating facilities and corporate acquisitions.
- Member or leader of small deal team on various transactions from origination to closing (please see "Deal Highlights" document).
  - Griffith Energy – formation of a partnership with PPLG to build, own, and operate a 500 MW power plant.
  - VMC Generating – formation of a partnership with Cinergy and sale of 50% interest in three power plants netting $100 million in EBIT.
  - Purchase and sale of multiple power plants in North America.

Conoco Global Power – ***Power subsidiary of Conoco, the world's largest independent E&P company.***
(May-98 to Apr-99) *Houston, TX*
Associate, Project Development*:*

- Responsible for economic analysis and development of power projects in North America.
- Assisted in negotiations with an industrial host leading to a signed LOI and exclusive development rights for a 440MW natural gas-fired cogeneration plant in SERC.
- Presented a complete power project economic analysis, including multiple structures and scenarios, to executive management resulting in a $50 million equity commitment.
- Negotiated various commercial agreements with industrials, power marketers, utilities, potential equity partners, and banks.

Entergy Power Marketing – ***Unregulated subsidiary of Entergy Corp., a $12.5 billion integrated energy company.***
(June-97 to May-98) *Houston, TX*
Commercial Associate*:*

- Worked with project developers, marketers, and traders on multiple projects.
- Analyzed and responded to RFPs for purchased capacity and energy, asset acquisition, and put/call options.
- Provided financial and market analysis for greenfield development projects.
- Priced financial options and developed trading strategies.

NationsBanc Capital Markets (May-96 to Aug-96) *Dallas, TX*
Global Finance Summer Associate*:* Two Rotations: 1) Mergers & Acquisitions; and 2) Corporate Finance.

- Assisted in developing a buy side fairness opinion for a regional cable company.
- Developed cash flow models and performed sensitivity analysis used in pricing a $300MM public debt issuance for TCI.
- Assisted in structuring and selling private debt and equity to telecommunications companies.

Reliance National Insurance (Jun-90 to Jul-95) *New York, NY*
Actuarial Analyst: Responsible for Large Account pricing and reserving; performed statistical simulations to predict loss frequency and severity; and assisted in developing a new rate structure for GL book.

EDUCATION
The University of Texas at Austin
MBA - Finance/Accounting, Graduated: Summa Cum Laude *May 1997*

Lehigh University – Bethlehem, PA
BA - Economics/Math, Graduated: Cum Laude *May 1990*

Thomas "Dan" Keneipp, MBA, MPM, CIPM
26698 S. Brooks Lane
Beavercreek, OR 97004
Phone: (503) 803-8372
Email: dankcma82e@yahoo.com

Education

Bachelor of Science Marine Engineering – California Maritime Academy
Master of Business Administration – University of Phoenix
Master Project Manager – American Academy of Project Management
Certified International Project Manager – American Academy of Project Management
Licensed 3rd Assistant Engineer, of Steam, Motor or Gas Turbine Vessels of Any Horsepower

Experience

36 Years in Engineering, Construction, and Operations in the Power Generation field

Diamond Generating Corporation
Director Engineering and Construction July 2015 – Present

Provide engineering, design and construction management services for various projects undertaken by Diamond.

- Provide field/site oversight. Operating facilities.
  - Responsible for managing equipment supply and construction contracts.
- Provide technical assistance, engineering service and advice to Asset Management and Operations.
- Provide technical information and data to Development and Operations to obtain new and/or maintain existing local, state, and federal permits and licenses.
- Prepare all technical specifications, performance documents, and financial cost estimates for proposed new facilities or major modifications and repairs to existing facilities.
  - Prepare legal and technical portions of equipment supply agreements and engineering, procurement and construction contracts.
- Review technical and environmental performance of construction projects and existing facilities.
- Maintain contact with equipment vendors and contractors for technical improvements and identification of generic equipment problems.
- Monitor markets for equipment pricing for various types and technologies along with new technologies that can potentially be used for power generation.
- Lead technical / environmental due diligence for potential acquisitions.

Worley Parsons
Project Manager February 2015 to July 2015

Project Manager / Owners Representative for Calpine Corporation, at Los Esteros Critical Energy Facility in San Jose, CA.

- Managing the HRSG CO Catalyst Relocation Project:
  - Providing California Building Official (CBO) interface.
  - Owners Representative managing Vogt Power deliverables.
  - Site Project Manager, for Vogt, ARB and Groome during the removal, cleaning and relocation of the CO catalyst.

POWER Constructors, Inc.,

Business Unit Director September 2012 to Dec 2014:

My duties as Business Unit Director (BUD) for POWER include profit-loss for POWER Constructors, Inc. (PCI). PCI is a wholly owned subsidiary that functions within POWER Engineers (POWER) as an operating business unit. The organization's focus is to pursue and execute on Project Management (PM), Construction Management (CM), Inspection Services (IS) and design-build project opportunities (EPC, E+PC, EPCM, etc.) in the transmission/distribution industry. PCI works with the other business units within POWER to provide expertise for construction, field project and construction management, purchasing including vendor factor inspection and assessments.

AREVA Solar Inc. formally Ausra, Inc.

Vice President Construction July 2011 to September 2012:

Develop and execute standard construction / installation projects and strategies for target world regions. (Australia, India, MENA and South Africa) Prepare, train and qualify local construction and EPC partners. Develop strategies to reduce construction / installation costs for small and large solar projects and power blocks. Hire, train and qualify Project Construction Managers, Construction Superintendents and Engineers to support projects worldwide, duties include training local contractors as needed. Manage engineering, supply chain and construction projects from implementation through commissioning.

Senior Director Project Engineering, September 2008 to July 2011:

Develop and coordinate engineering, construction, purchasing, and operating resources, processes and systems required to assure that Business Development, Engineering, Procurement, Construction (EPC) and Management (EPCM) program efforts support corporate world wide business objectives. Define, provide and coordinate resources from conception of projects through completion. Provide engineering, estimates, budgets and schedules to meet project requirements. Work with multi-national business development program participants to identify customer / project requirements and coordinate the appropriate resource to establish project construction and execution strategy including cost, revenue, resource, and participant roles, responsibilities and work scopes.

Develop and implement processes to manage multiple projects throughout the world in accordance with contractual and corporate requirements.

Calpine Corporation

Senior Engineering Project Manager, June 2008 to September 2008:

For the following projects:

- Greenfield Energy Center, Courtright, Ontario, 1,005 MW Plant
- Mankato Expansion Phase II, Mankato, MN, 220 MW Expansion

Engineering Project Manager, September 2004 to May, 2006; May 2007 to June 2008:

Engineering Project Manager for the following projects:

- Otay Mesa Energy Center, San Diego, CA, 608 MW Plant
- Roseville Energy Center for Roseville Electric, Roseville, CA, 160 MW Plant
- Inland Empire Energy Center, Romoland, CA 800 MW Plant
- Asset Relocation for Greenfield Energy Center, Ontario, Canada 1,005 MW Plant
- Bethpage Energy Center, Long Island, NY. 80 MW Combined cycle, peaker plant

Organized and coordinated engineering and technical efforts for the design of power plant primary equipment, auxiliary equipment, pre and waste water treatment (zero

discharge, and municipal plants). Develop and coordinate switchyard design and interconnects to utilities. Evaluate project configuration constraints and technical parameters to ensure that costs and risks are identified and mitigated. Provide design input and management for linear pipelines including but not limited to natural gas, recycle water, waste water discharge pipelines and systems. Develop plant designs, provide technical input and coordinate assistance from engineering technical teams, construction management, operations and owners.
Interface and coordinate with State, Federal and local regulatory agencies to complete siting requirements. Interact with clients, vendors and owners with regards to all technical aspects of projects. Responsible for engineering and equipment purchase budget of $125 - $500 million dollars. Provide supervision for construction and operations on a as needed basis.

Field Engineering Manager / Senior Project Engineer, November 2002 to September 2004:

Field Engineering Manager for the construction of Metcalf Energy Center in San Jose, California. Responsible for construction budget cost in excess of $125 million, contract management, contract execution schedule and technical performance for project. Provided technical work scope for utilization and defining contract requirements for at least 50 interdependent construction contracts. As Field Engineering Manager, oversee staff of engineers and union employees. In-addition to responsibilities of a Field Engineering Manager, responsibilities include Quality Assurance and Quality Control Inspections, contract documentation, implementation and managing Technical Field Assistance Engineering Services. Was a member of the team that received Calpine Quality Project of the Year Award for 2005.

Senior Project Engineer, March 1999 to November 2002:

Senior Project Engineer for Hermiston Power Project. Hermiston Power Project was a 600 Megawatt merchant power plant. As Senior Engineer, the position encompassed all aspects of project implementation from the preliminary engineering stage, construction and through final commissioning of the power plant, water pretreatment, waste water treatment and switchyard. HPP project also required interface with City, County, State and Federal Regulatory Agencies. Managed a staff of 16 employees and provided technical direction and information to vendors, contractors for proper installation of equipment. Provided technical engineering details and requirements to Calpine business units and financial institutions for project financing. Project received Calpine Quality Project of the Year Award for 2002.

E.C. Corporation

Project Construction Manager: May 2006 to May 2007:

Construction Project Manager for new alternate energy construction. Responsible for making customer contacts, developing client / customer relationships for new projects. Assembly of project team to bid projects to clients. Field team to project locations and ensure that the project maintains safety, quality, schedule and purchasing cost perimeters.

Smurfit Newsprint Corporation

Environmental and Energy Services Manager, November 1990 to March 1999:

Energy: Responsible for engineering, operation, maintenance, budget and personnel for the powerhouse, hydroelectric plant, water treatment, primary waste treatment, secondary waste treatment, all utilities and waste disposal of Smurfit Newsprint, Oregon

City Division, in Oregon City, Oregon. Maintained 100% availability of all power generation equipment, raw water, waste water, steam, and pneumatic systems. Coordinated purchase of mills utilities with power marketers. Responsible for design and operations of steam systems, power generation systems, pre and post water treatment facilities and mill utilities.

Environmental: Responsible for the planning and directing of all environmental / safety compliance activities and permitting of the mill. Responsible for hydro(40 year) relicensing effort, working with NERC, Oregon State and public groups. Coordinate the activities of environmental supervisors to meet all state and federal regulations as stated in our water and air discharge permits. Work closely with Attorneys, State and Federal Regulators to define and implement new and future regulations. Worked with Washington State Environmental Departments on SPCC Issues on the Columbia River Basin. Successfully completed a Multi-Media inspection with EPA, Oregon Department of Environmental Quality and OSHA. Responsible for design and operations of environmental controls, equipment, not limited to; wastewater disposal, hazardous waste disposal, solid waste disposal, and raw water treatment systems.

Masonite Corporation

Manager of Utilities, October 1988 to November 1990:

Responsible for the engineering, operation, budget, maintenance and personnel for the following equipment and systems: multi fuel boilers, evaporation plant, water treatment plant, waste disposal, sewage treatment, mill air supply, product water, potable water and all fuel, steam, condensate and fire systems. Responsible for production and distribution of Masonex. Masonex is an alternate food supplement evaporated from refined wood sugars. Reporting to me as manager, 34 hourly personnel and 1 water treatment specialist.

Westinghouse Electric Corporation

Project Manager / Field Service Engineer, Power Generation Service Division, July 1982 to October 1988:

Responsible for interpreting and coordinating work in the Power Generation Industry. These work assignments must have required knowledge in the field of safety, construction and installation, repair and malfunction analysis of boilers, combustion turbines, steam turbines, hydroelectric generators, air cooled and hydrogen cooled generators, controls and auxiliary equipment. Major long-term assignments have been:

Washington Public Power Supply System – Nuclear Plant 2.
Assistant start-up engineer for the initial commissioning and loading of the 1100 MW nuclear turbine generator. The duties of the assignment included vibration diagnostics; balancing and analysis of the turbine drain system for the prevention of water induction.

Bonneville Pacific Corporation - American Atlas #1 Plant.
Plant engineer during the commissioning and testing of the cogeneration station, which included (3) 18MW combustion turbines and (1) 28 MW steam turbine. Responsibilities as plant engineer included all aspects of operation, performance testing, environmental compliance, maintenance, safety and purchasing of required capital items and consumables.

Montana Power Company - Colstrip Units 3 and 4

Responsibilities included during construction of the units included all aspects of installation of turbine generators, auxiliary equipment, electrical equipment. Following construction, was oil flush engineer, grave yard commissioning engineer and following successful installation was warranty engineer for project. The duties of the assignment included vibration diagnostics; balancing and analysis of the turbine drain system for the prevention of water induction.

PG&E – Diablo Canyon and Helms Project
Responsibilities included construction engineer for both projects. Responsibilities included during construction of the units included all aspects of installation of turbine, generators, (penstocks for Helms project), auxiliary equipment, electrical equipment. Following construction worked as pre-commissioning engineer.

License

Qualifying Party (QP) for Arizona State Contractors License. ROC 282265 License Class and Description of A General Engineering (AE)
U.S. Coast Guard, Merchant Marine Officer, 3rd Assistant Engineer, Steam, Motor and Gas Turbine Vessels, any horsepower
PADI Open Water Scuba Instructor

Honorable Discharge – United States Marine Corps

MARK REPSHER

MEMBER OF PA'S MANAGEMENT GROUP

Mark has invaluable experience analyzing complex power asset strategies throughout the U.S., Mexico and Latin America

Mr. Repsher is an energy advisor with deep experience in understanding environmental regulations, and for over fifteen years has guided clients through initiatives spanning strategic resource planning, divestitures of non-core assets to enhance shareholder return, mergers and acquisitions, project development, restructurings and other litigation, off-take contract structuring and valuation, asset financing, identification of concrete value "off-ramps" to realize investment returns for specific power assets, and best practice analyses. He has worked with and presented before various Boards, CEOs, CFOs and executive management teams of utilities, cooperatives, private equity, independent power producers, and infrastructure funds when delivering on the aforementioned initiatives. Mr. Repsher holds a B.A. in Economics.

BASED: DENVER, CO
ENERGY & UTILITIES

PRIMARY EXPERTISE

- Strategic resource and environmental compliance planning, including assisting clients with "no regrets" strategic planning.
- Asset and contract valuation/due diligence, including working with companies in disputed arbitration proceedings.
- Complex advisory support, including strategies regarding deployment of new business models in recently liberalised energy markets and emerging technologies in both established and developing markets (e.g., batteries).
- Environmental and coal asset modeling, including analysing environmental portfolio impacts and calculating environmental exposure risk.
- Support in numerous litigation and regulatory proceedings, including expert witness support, economic and ratepayer impact analysis, restructuring support, force majeure analysis and other contract disputes for energy, coal, natural gas and transportation agreements.

MAKING THE DIFFERENCE

International Conglomerate:

Mark led an assignment guiding a multinational corporation through the development of its Mexican investment strategy, for both existing and new thermal and renewable assets. In addition to assisting in the development of wholesale market analyses for the client, Mark led the effort to develop the conglomerate's going-forward investment thesis in the face of a rapidly evolving marketplace.

North American Equity Investor:

Over the past three (3) years, Mark has led a team assisting the investor in the development of its merchant investment strategy in the United States, after years of only investing in fully hedged (i.e., contracted) facilities. Initial steps included PA getting the client comfortable with merchant risk and the tools that can be utilized to mitigate these risks. Since that time, PA has helped the organization in two separate merchant power plant equity investments in the U.S., and is assisting the client as they look at new early stage development projects.

North American Developer:

Over the past four (4) years, Mark has led the team assisting a developer in the deployment of thermal assets across the U.S., U.K., and LATAM. Tasks have included debt syndication support, asset divestment assistance, and expert witness support for permitting applications before state siting boards, including analysis of direct and indirect economic and ratepayer impacts of the proposed thermal facility on the local economy.

Cooperative:

Over the past six (6) years, Mark has assisted a Midwestern U.S. cooperative on numerous occasions, supporting both the valuation of coal-fired resources under legacy sale-leaseback agreements as well as developing going forward strategic options for two coal-fired facilities. Mark presented before the cooperative's executive management team as well as its Board outlining the implications of its findings.

International Conglomerate:

Mark led an assignment guiding a multinational corporation through the potential acquisition of a combined liquefied natural gas ("LNG") import and combined cycle generating facility in Panama. Key tasks included helping the client develop a fundamental understanding of the Panamanian wholesale market, including opportunities and risks; contracting risks; the potential for distributed generation disruption of the wholesale energy market; new entry among other investors; and other investment risks inherent in Latin American investments.

JOHN NEILL

VICE PRESIDENT

John Neill is the Director of the firm's Economic and Real Estate Advisory Services practice and has been an Economist with AKRF for 18 years. Mr. Neill emphasizes a multi-disciplinary approach to analyses, stressing the need to inform work products with a range of considerations including demographics, land uses, neighborhood character, and market trends.

Mr. Neill manages AKRF's economic and fiscal impact modeling and reporting (RIMS II and IMPLAN), performs market and feasibility studies, and provides redevelopment and financing strategy to public and private clients. Mr. Neill also serves as a project manager for major Environmental Impact Statements (EISs) such as the Downtown Far Rockaway Redevelopment Project, and he is the technical lead on EIS socioeconomic analyses. In addition, Mr. Neill has particular expertise in developing public survey and outreach strategy. He designs merchant and consumer survey instruments, coordinates outreach efforts, and facilitates public discussions for development projects, policy making and design development. He has worked extensively with community boards and other stakeholder groups, and recognizes the importance of understanding the unique characteristics, challenges, and opportunities presented by a neighborhood.

BACKGROUND

Education

B.A., *cum laude* in Economics and Public Policy Studies, Duke University, 1993

M.B.A., Yale School of Management, 2000

M.E.S., Yale School of Forestry and Environmental Studies, 2000

Professional Memberships

Urban Land Institute (ULI)

International Council of Shopping Centers (ICSC)

Recent Publications

Contributing Author, *The EB-5 Book*, 2016-2017 Edition

Contributing Author, *Forming and Operating an EB-5 Regional Center: A Guide for Developers and Business Innovators*, 2014-2015 Edition

Years of Experience

Year started in company: 2000

Year started in industry: 1993

RELEVANT EXPERIENCE

Economic Impact of New York City's Real Estate Industry

AKRF was retained by the Real Estate Board of New York (REBNY) to estimate the economic and fiscal impacts of New York City's real estate industry. As Principal-in-Charge, Mr. Neill managed AKRF's assessment of industry

trends and modeling to estimate the direct and indirect benefits of real estate activity in New York City on an annual basis.

Intrepid Sea, Air, and Space Museum, New York, NY

Mr. Neill served as Principal-in-Charge of AKRF's economic and fiscal impact analysis for the museum's proposed $94 million expansion to house the Enterprise Space Shuttle. The report projected incremental visitation and spending post-expansion.

New York International Auto Show Economic Benefits Analysis, New York, NY

Mr. Neill served as Principal-in-Charge of AKRF's analysis and reporting of the economic and fiscal benefits of the New York International Auto Show. In addition to managing the assignment, Mr. Neill designed on-site intercept surveys as well as online visitor and vendor surveys that worked to identify expenditures.

New York University (NYU) 2031 Manhattan Core Plan, New York, NY

Mr. Neill served as Principal-in-Charge of various planning studies in support of NYU's future growth plans for its Manhattan campus, and managed the preparation of the NYU Core EIS, which facilitates the development of 2 million square feet of academic space by 2031. During the environmental review process Mr. Neill met with local community groups, and presented findings of the analysis at community board and City Planning Commission hearings.

The Africa Center Economic and Fiscal Benefits Analysis, New York, NY

Mr. Neill served as Principal-in-Charge of AKRF's reporting of the economic and fiscal benefits of the fit-out and annual operations of The Africa Center, a nonprofit, nonpartisan, multidisciplinary institution that recently opened its doors to the world at the northern end of Manhattan's Museum Mile. The institution includes Africa-focused programming on policy, business, and culture. In addition to the economic and fiscal benefits of fit-out and operations, AKRF described the economic effects within neighborhoods surrounding the Africa Center site.

Con Edison Development Sites/First Avenue Properties, New York, NY

Mr. Neill served as Project Manager for the proposed disposition and subsequent residential and commercial redevelopment of four city blocks in Manhattan formerly occupied by Con Edison facilities. Mr. Neill worked with involved agencies, presented the findings of the Draft Generic EIS and Draft Supplemental EIS at numerous community meetings, responded to questions from the public, and prepared the response to public comments as part of the public review process. Several of the community meetings in which Mr. Neill participated focused upon neighborhood concerns related to density, community facilities and public access to the waterfront. He also managed the analysis of potential cumulative impacts of planned projects in the vicinity of the Con Edison properties, which include the proposed UNDC building, the Second Avenue subway, and reconstruction of the FDR Drive.

New-York Historical Society Museum and Library Economic and Fiscal Benefits Analysis, New York, NY

The New-York Historical Society planned a major renovation of its Henry Luce III Center for the Study of American Culture (Luce Center), which houses the Museum's Tiffany lamp and glasswork collection in addition to other works. Mr. Neill was the Project Manager for AKRF's reporting of the estimated economic and fiscal benefits to New York City and New York State from the annual operation of the Museum upon completion of the renovated Luce Center. The results were broken out into benefits from Museum operation (staff and event expenditures) and from off-site visitor spending. In addition, the report presented the one-time benefits that will occur as a result of renovation construction expenditures.

Philadelphia Casino Economic and Fiscal Impact Analysis, Philadelphia, PA

Mr. Neill served as Principal-in-Charge of AKRF's technical support for the Philadelphia Department of Commerce's review of six casino development applications. In addition to oversight of the project, Mr. Neill focused on estimating the gaming and non-gaming tax revenues that would be generated by the proposed casino developments, potential competitive effects, and the potential for induced economic growth. He presented AKRF's findings as part of testimony to the Pennsylvania Gaming Control Board.

Montreign Resort Casino New York State Gaming License Application, Thompson, NY

Mr. Neill managed the preparation of the economic and fiscal impact reporting for Empire Resorts' successful application to develop and operate a gaming facility in New York State. The economic impact analysis projected the economic and fiscal benefits of the project to the Town of Thompson, Sullivan County, and New York State, and considered the fiscal ramifications to local municipalities if the project receives financial assistance under New York State's Industrial Development Agency Act. Mr. Neill also provided economic impact estimates in support of a Consolidated Funding Application for the project.

Atlantic Yards Arena and Redevelopment Project, Brooklyn, NY

Mr. Neill supported the socioeconomic and economic and fiscal benefits analyses associated with the EIS and Supplemental EIS for this project, which is redeveloping a 22-acre site adjacent to Downtown Brooklyn. The project includes a new arena for the Nets basketball team (opened in 2012), along with mixed-income residential, commercial office, retail, hotel, and community facility uses. For the Supplemental EIS, Mr. Neill developed the approach to a series of detailed New York City-based case studies to assess the effects of long-term construction projects on property values and other socioeconomic conditions in the areas immediately surrounding construction sites.

Economic and Fiscal Impact Assessment, Quincy, MA

Mr. Neill served as a Project Manager for AKRF's work in analyzing the economic and fiscal benefits associated with a public-private partnership in the redevelopment of Quincy Center in downtown Quincy, MA. Mr. Neill managed the work of several assessments: an econometric evaluation of the benefits from the construction and operation of the project; a tax increment assessment of future municipal revenues; an assessment of revenues and costs associated with the public investment in the project; and a case study of how such downtown projects effect the overall economic base of the larger municipality.

Downtown Yonkers Redevelopment Review, Yonkers, NY

On behalf of the City of Yonkers City Council, AKRF reviewed and refined the EIS for the $1.6-billion mixed-use downtown redevelopment plan proposed by the development team of Stuever Fidelco Cappelli (SFC). The development plan included nearly 1,400 housing units, 1.2 million square feet of commercial uses, nearly 5,000 parking spaces and a minor league ballpark. Mr. Neill prepared guidance documents for Yonkers City Council to facilitate their review of the project, and provided expert testimony at City Council hearings.

SoMa Newark, Newark, NJ

Mr. Neill served as Principal-in-Charge for AKRF's economic and fiscal impact analysis of SoMa Newark, a proposed 15-million-square-foot village and arts district in the heart of downtown Newark, New Jersey. The study evaluated the economic impact and financial feasibility of a development program that includes artists' lofts, market rate housing, theaters, restaurants, offices, hotel and retail shops.

Brooklyn Queens Expressway (BQE), Value Capture Analysis, Brooklyn, NY

For the New York City Department of Transportation (NYCDOT), AKRF quantified the value capture potential of new development and incremental value related to the removal of the BQE, an elevated urban highway. The analysis focused on three major value generation aspects: a) sales revenues from outright sales of properties currently occupies by the infrastructure; b) incremental property value increase of parcels adjacent to the BQE due

to increased quality of life and connectivity; and c) overall economic development benefits and increases in business activities and jobs. AKRF also identified mechanisms applied nationally and internationally, such as private-public partnerships and tax increment financing, to monetize future cash flow streams. Mr. Neill managed the risk assessment for the project.

Monetized Social Costs and Benefits of Technologies Pursuant to 40 CFR 122.21(r)(10-11), Various Locations

Mr. Neill provides peer-review support to AKRF sub-consultant reporting of the monetization of social costs and benefits associated with cooling water intake structures for power facilities. The reports are prepared using the U.S. Environmental Protection Agency's (EPA) Guidelines for Preparing Economic Analyses (EPA 2010) and guidance from the 2014 final rule for existing facilities implementing Section 316(b) of the Clean Water Act (Existing Facilities Rule). In his role as a peer-reviewer, Mr. Neill evaluates whether the estimates of social costs and benefits presented in the technical reports were developed following generally accepted economic principles and methodologies and relied upon reasonable and appropriate assumptions, and works with sub-consultants to correct deficiencies in reporting and better communicate analysis findings.

New NY Bridge Benefit Cost Analysis, Rockland/Westchester Counties

In connection with AKRF's role in preparing the EIS for the replacement of the Tappan Zee Bridge, Mr. Neill supported the preparation of a benefits cost analysis (BCA) focused on showing just how critical the link is by highlighting the incremental benefits in comparison to either doing nothing, or in the worst case, compared to a failure and closing of the bridge. The BCA focused on the avoidance of costly regional issues now associated with the bridge: ongoing maintenance and upgrades, safety, congestion and delay, potential disruptions to regional travel if the bridge were closed. Mr. Neill researched and applied various metrics to monetize the avoidance of these costs, including: estimated baseline, future no action, and future action accident profiles and their costs; person hours of lost time due to congestion and delay and diversion; cost inefficiencies of goods movement due to delay and diversion; additional air emissions associated with congestion and delay; and incremental VMT associated with diversion to other crossings (GWB, Bear Mt., I-84) and its effects on additional cost in fuel consumption, person hours of travel, air emissions, additional vehicle wear and tear, and cost of goods movement.

Cost of Services Study, Beacon, NY

The City of Beacon retained AKRF to estimate the economic and fiscal impacts of six development projects that collectively would introduce to the city nearly 1,400 dwelling units, over 130,000 square feet of commercial space, a 166-room hotel and conference center, and over 3,000 parking spaces. AKRF estimated the economic and fiscal benefits of the project, estimated the project-generated populations (including school-aged children), and projected the fiscal costs and revenues to the City of Beacon and the Beacon City School District. Mr. Neill was Principal-in-Charge of the study, and formulated a methodology to provide department-level fiscal impact projections that applied cost factors dependent upon the unique characteristics of each development project. Mr. Neill also presented the findings at stakeholder sessions and a Beacon City Council hearing.

World Trade Center Memorial and Redevelopment Plan GEIS, New York, NY

Mr. Neill assessed the socioeconomic impacts of the proposed redevelopment of the World Trade Center site, which will include substantial retail development in addition to new commercial office space, a memorial, and open space. Tasks included studying the potential effects of the proposed redevelopment on existing commercial office and retail activity in Lower Manhattan, including benefits derived from increased tourism. Mr. Neill also analyzed how the redevelopment of a large amount of office and retail space could affect the existing residential population and the overall socioeconomic characteristics of Lower Manhattan.

Farley Post Office/Moynihan Station Redevelopment Project, New York, NY

Mr. Neill assessed the socioeconomic impacts of the proposed conversion of the Farley Building into a new transit hub, which would include the development of approximately 2.4 million square feet—including a new intermodal

station, United States Postal Service (USPS) facilities, a hotel, banquet facilities and commercial retail, and up to 1 million square feet of additional commercial office or residential use. Tasks included evaluating potential changes in the value of space that may result from increased commercial and residential presence in the area, as well as potential indirect effects from the redistribution of vehicular and pedestrian trips in the study area.

Shea Stadium Redevelopment EIS, Queens, NY

Mr. Neill examined the socioeconomic, infrastructure, and energy impacts associated with development of a new multi-purpose 45,000-seat stadium on a portion of the parking field adjacent to the existing Shea Stadium, for use by the New York Mets.

Nassau Coliseum Redevelopment Economic Impact Analysis, Nassau County, NY

AKRF provided economic and fiscal impact analyses in support of Forest City Ratner Companies' (FCRC's) successful bid to redevelop Nassau Memorial Coliseum in Nassau County, New York. Mr. Neill managed AKRF's analysis and presenting the findings at FCRC's interview with Nassau County.

French-American School of New York, White Plains, NY

AKRF assisted the French-American School of New York (FASNY) on the planning and development of a new Campus in the City of White Plains to house up to 950 students in grades Pre-K through 12. AKRF provided initial due diligence and planning support for the Campus, and then prepared an Environmental Impact Statement (EIS) for review under SEQRA. For the EIS, Mr. Neill performed the economic and fiscal impact assessment, including detailed analyses of the indirect economic benefits to White Plains.

Amy's Kitchen Economic and Fiscal Impact Analysis, Goshen, NY

Amy's Kitchen—a family-owned business that has been manufacturing organize vegetarian convenience and frozen foods since 1987—plans to build an approximately 600,000-square-foot manufacturing facility in the Town of Goshen, New York. Amy's Kitchen retained AKRF to estimate the economic and fiscal benefits that would be generated by the proposed facility, and to examine whether the local labor and housing markets can meet the projected labor demand. Mr. Neill serves as Principal-in-Charge of AKRF's analysis and reporting.

Tuxedo Farms Fiscal Impact Study, Tuxedo, NY

Mr. Neill prepared detailed economic and fiscal impact studies for a proposed mixed-use development that includes single family homes, town houses, and multifamily units and a light-industrial complex. The analysis considered the costs of public services and future revenues to the Town of Tuxedo and the Tuxedo Union Free School District over three phases of development.

Silo Ridge Resort Economic and Fiscal Benefits Analysis, Amenia, NY

Mr. Neill served as Project Manager for the economic and fiscal benefits analysis of this planned residential community and all-season resort to be located in Amenia, New York. The project, which will be built out over an approximately seven-year period, includes over 300 luxury residential units, a hotel and spa, a renovated championship golf course, and neighborhood retail uses. As part of his role, Mr. Neill developed the overall analytical approach to estimating local economic and fiscal benefits over a 30-year period.

Belleayre Resort at Catskill Park, Middletown and Shandaken, NY

Mr. Neill assisted in preparing the economic impact analysis of a proposed $240 million resort development adjacent to the Belleayre Mountain Ski Center in the central Catskills. The study involved determining the overall effects on the regional economy of building the resort. As part of this task, Mr. Neill examined the current demographics of the study area and the likely socioeconomic effects of increased employment and expenditures to the study area.

KEVIN J. MAHER, AICP

SENIOR VICE PRESIDENT

Mr. Maher is a Senior Vice President with over 20 years of professional experience with an expertise in generation and transmission facility siting reviews and multi-media permit coordination on power generation and electric transmission and distribution projects. A significant portion of this experience includes project management and environmental permitting and evaluation under various state siting processes, including Article 10 and Article VII and of the New York State Public Service Law. Mr. Maher also has significant experience licensing energy projects under the New York State Environmental Quality Review Act (SEQRA). Mr. Maher's recent efforts have been in support of electric generation and transmission project proceedings before the New Jersey Department of Environmental Protection, the New York State Public Service Commission, the New York State Department of Public Service Staff, the New York State Department of Conservation, and the Pennsylvania Department of Environmental Protection. Mr. Maher recently joined AKRF's Energy Practice.

AREAS OF EXPERTISE

- Project Management
- Generation and Transmission Facility Siting Reviews
- Environmental Permitting and Licensing
- Environmental Impact Assessments
- Expert Testimony
- Land Use Impact and Zoning Compliance Assessments
- Public Participation and Community Outreach
- Construction Permitting

BACKGROUND

Education

Master of Planning, University of Southern California, 1993

B.S., Environmental Planning and Design, Cook College, Rutgers University, 1990

Licenses/Certifications

American Institute of Certified Planners, May 1998

Professional Memberships

American Planning Association, New Jersey Chapter

Years of Experience

Year started in company: 2014

Year started in industry: 1993

RELEVANT EXPERIENCE

Power Generation Facilities

Caithness Long Island II, LLC, Caithness Long Island Energy Center II - Town of Brookhaven, Suffolk County, NY

While at another firm, Mr. Maher served as Licensing Manager for the multimedia environmental permitting and SEQRA environmental review of a proposed 752 MW combined cycle facility to be developed by Caithness Energy, LLC in the Town of Brookhaven, Suffolk County, NY. Mr. Maher's primary work effort on the project is the management of the SEQRA Environmental review, for which the Town of Brookhaven served as the SEQRA Lead Agency. Required SEQRA documentation included the project's initial Environmental Assessment Form submittal, draft and final SEQRA scoping document, and a Draft and Final Environmental Impact Statement. The project's DEIS and FEIS were published in December 2014 and May 2014, respectively. The SEQRA process was completed in June 2014, only 10 months after receipt of notice to proceed from Caithness Energy. Mr. Maher also oversaw the preparation of the SPDES permit application for the project site and the Part 231 Prevention of Significant Deterioration Permit and Nonattainment New Source Review Air Permit Application.

Caithness Long Island, LLC, Caithness Long Island Energy Center - Town of Brookhaven, Suffolk County, NY

While at another firm, Mr. Maher served as Project Manager for the multimedia environmental permitting and SEQRA environmental review of a proposed 350 MW combined cycle facility and associated 138 kV electric transmission interconnection to be developed by Caithness Energy, LLC in the Town of Brookhaven, Suffolk County, NY. Mr. Maher's primary work effort on the project was the management of the SEQRA Environmental review, for which the Long Island Power Authority (LIPA) served as the SEQRA Lead Agency. Required SEQRA documentation included the project's initial Environmental Assessment Form submittal, draft SEQRA scoping document, SEQRA scoping document public comment response document, and a Draft and Final Environmental Impact Statement. One component of the DEIS/FEIS was an assessment of three proposed natural gas transmission lateral alternatives for which the preferred alternative was a 22-mile extension of an existing natural gas interstate pipeline. The project's DEIS and FEIS were published in March and June 2005, respectively. A SEQRA Findings Statement was issued by LIPA for the project in December 2005. Mr. Maher also oversaw the preparation of the SPDES permit application for the project site and the USEPA PSD/New York State Part 201 State Facility Air Permit Application, which were submitted in January and February 2005, respectively. Draft USEPA and NYSDEC permits were issued in January 2005. The project's final PSD permit was issued in April 2006 and final NYSDEC permits were issued in July 2006. The project commenced commercial operation in July 2009.

The Caithness Long Island project was bid into a LIPA solicitation for new electric generation on Long Island and was selected for development. During the bid selection process, Mr. Maher provided development advice to Caithness Energy relative to required SEQRA documentation and process and the development of preliminary permitting strategy for required air and SPDES permits. Additionally, Mr. Maher coordinated the preparation of technical responses to the environmental permitting questions submitted by LIPA during the proposal evaluation process.

National Grid Generation, LLC, Island Park Energy Center – A Repowering of E.F. Barrett Power Station

While at another firm, Mr. Maher served as Licensing Manager for the preparation of the Article 10 Application and NYSDEC multimedia permitting for the repowering of National Grid's E.F. Barrett Generating Station

located in the Town of Hempstead, Nassau County, New York. The proposed repowering will result in a new modern energy center at the Barrett Station through the installation of new, state-of-the art electric generators and the removal of all existing electric generating equipment currently on the site. The project is subject to review and approval under Article 10 of the New York State Public Service Law and applicable NYSDEC programs. At the outset of the project, Mr. Maher led the team that provided environmental design and permitting support to National Grid's Owners Engineer to develop a licensable facility design for the site. Article 10 documentation prepared to date under Mr. Maher's direction included development of the project's Public Involvement Program, Project Website, and Preliminary Scoping Statement.

KeySpan Energy Development Corporation, Glenwood Landing Energy Center – Glenwood Landing, Town of Oyster Bay, Nassau County, NY

While at another firm, Mr. Maher served as Project Manager for the SEQRA environmental review of a 79.9 MW combined cycle peaking facility proposed by KeySpan Energy Development Corporation in the Glenwood Landing area of the town of Oyster Bay, Nassau County, NY. SEQRA documentation prepared included a Full Environmental Assessment Form (EAF) with expanded environmental impact analyses. In addition a New York State Coastal Zone Consistency Evaluation was performed for the project. Detailed analyses were prepared to address potential concerns related to air quality, land use and zoning, visual and cultural resource impacts, and issues associated with site's former use as a propane peaking shaving facility. Expanded analyses were proposed to address agency/community concerns at the EAF stage in an effort to facilitate the issuance of a negative declaration for the proposed project and shorten the project's environmental review period. The EAF was submitted in November 2001 and provided the basis for the issuance of a SEQRA Negative Declaration by the lead agency, the Long Island Power Authority. In addition to preparing all required SEQRA documentation, the scope of work included preparation of a SPDES permit modification application for the project site and the Part 201 State Facility Air Permit Application, which included supporting detailed air quality modeling of facility emissions, for submittal to the New York State Department of Environmental Conservation. Mr. Maher's duties as Project Manager included the coordination of required technical studies, preparation of the expanded SEQRA EAF document and related SEQRA documentation, attendance at team development and agency meetings, and facilitation of project information/data between the client and consulting technical directors. The project's final Part 201 Air Permit and a modified SPDES permit for the project site were issued in January 2002. The project is now in operation.

KeySpan Energy Development Corporation, Port Jefferson Energy Center – Village of Port Jefferson, Suffolk County, NY

While at another firm, Mr. Maher served as Project Manager for the SEQRA environmental review of a 79.9 MW combined cycle peaking facility proposed by KeySpan Energy Development Corporation in the Village of Port Jefferson, Suffolk County, NY. SEQRA documentation prepared included a Full Environmental Assessment Form (EAF) with expanded environmental impact analyses. In addition a New York State Coastal Zone Consistency Evaluation was performed for the project. Detailed analyses were prepared to address potential concerns related to air quality, land use and zoning, cultural resource and visual impacts. Expanded analyses were proposed to address agency/community concerns at the EAF stage in an effort to facilitate the issuance of a negative declaration for the proposed project and shorten the project's environmental review period. The EAF was submitted in November 2001 and provided the basis for the issuance of a SEQRA Negative Declaration by the lead agency, the Long Island Power Authority. In addition to preparing all required SEQRA documentation, the team led by Mr. Maher prepared a Phase 1 ASTM Site Assessment, a SPDES permit modification application for the project site, and the Part 201 State Facility Air Permit Application, which included supporting detailed air quality modeling of facility emissions, for submittal to the New York State Department of Environmental Conservation. Mr. Maher's duties as Project Manager included the coordination of required technical and Phase I ASTM studies, preparation of the expanded SEQRA EAF document and related SEQRA documentation, attendance at team development and agency meetings, and facilitation of project information/data between the

client and consulting technical directors. The project's final Part 201 Air Permit and a modified SPDES permit for the project site were issued in January 2002. The project is now in operation.

Medford Energy, LLC, Medford Power Project –Town of Brookhaven, Suffolk County, NY

While at another firm, Mr. Maher served as Project Manager for the SEQRA environmental review of a 79.9 MW combined cycle peaking facility proposed by proposed by Medford Energy, a partnership of Hawkeye Construction and Northeast Utilities Enterprises, Inc., in the town of Brookhaven, Suffolk County, NY. SEQRA documentation prepared included a Full Environmental Assessment Form (EAF) with expanded environmental impact analyses. Detailed analyses were prepared to address potential concerns related to air quality, land use and zoning, cultural resource and visual impacts. In addition, the team led by Mr. Maher prepared a Phase I ASTM Environmental Assessment of the project site. Expanded analyses were proposed to address agency/community concerns at the EAF stage in an effort to facilitate the issuance of a negative declaration for the proposed project and shorten the project's environmental review period. The EAF was submitted to the Long Island Power Authority, the SEQRA Lead Agency, in November 2003. In addition to preparing all required SEQRA documentation, the scope of work included preparation of a SPDES permit application for the project site and the Part 201 State Facility Air Permit Application, which included supporting detailed air quality modeling of facility emissions, for submittal to the New York State Department of Environmental Conservation.

PSEG Power LLC, North Bellport Energy Center –Town of Brookhaven, Suffolk County, NY

While at another firm, Mr. Maher served as Project Manager for the SEQRA environmental review of a 79.9 MW simple cycle peaking facility proposed by PSEG Power Development LLC in the town of Brookhaven, Suffolk County, NY. SEQRA documentation prepared included a Full Environmental Assessment Form (EAF) with expanded environmental impact analyses. Expanded analyses were proposed to address agency/community concerns at the EAF stage in an effort to facilitate the issuance of a negative declaration for the proposed project and shorten the project's environmental review period. The EAF was submitted in November 2002 and provided the basis for the issuance of a SEQRA Negative Declaration by the lead agency, the Long Island Power Authority in November 2002. In addition to preparing all required SEQRA documentation, the team led by Mr. Maher prepared a Phase 1 ASTM Site Assessment, a SPDES permit application for the project site, and the Part 201 State Facility Air Permit Application, which included supporting detailed air quality modeling of facility emissions, for submittal to the New York State Department of Environmental Conservation. Mr. Maher's duties as Project Manager included the coordination of required technical and Phase I ASTM studies, preparation of the expanded SEQRA EAF document and related SEQRA documentation, attendance at team development and agency meetings, and facilitation of project information/data between the client and consulting technical directors. The project's draft Part 201 Air Permit and a SPDES permit for the project site were issued in December 2002.

Mirant New York, Bowline Unit 3 Article X Permitting – Haverstraw, Rockland County, NY

While at another firm, Mr. Maher served as Project Manager for the Article X environmental review for the proposed expansion of Mirant New York's Bowline Point Generating Station located on the Hudson River in the Town of Haverstraw, Rockland County, NY. The proposed expansion considers the construction of a 750 MW combined cycle power plant and is subject to the New York State Public Service Commission Article X process which included extensive environmental analysis and public outreach requirements. Sensitive issues addressed by the Article X process include potential impacts to Hudson River aquatic species, ecological impacts to the Haverstraw Bay, municipal water supply issues, and scenic impacts resulting from the construction of the proposed power facility and cooling tower in the Hudson River Valley. A Certificate of Environmental Compatibility and Public Need supporting the construction of the proposed Facility and final PSD and SPDES permits were issued in March 2002.

Consolidated Edison Company of New York, Inc., Hudson Avenue Replacement Project - Brooklyn, New York, NY

While at another firm, Mr. Maher served as Licensing Manager for Con Edison's Hudson Avenue Replacement Project, which proposed the development a new steam generating facility to fully replace the existing steam facility at Con Edison's Hudson Avenue Generating Station in Brooklyn, NY. Major approvals required by the project included a NYSDEC Part 201 Air Permit and SPDES Permit and completion and acceptance of environmental impact documentation pursuant to the New York State Environmental Quality Review Act. The project was cancelled following completion of the SEQRA scoping process and preparation of a draft air permit application.

Diamond Generating Corporation, North Bergen Liberty Generating Station – North Bergen, Hudson County, NJ

Mr. Maher is serving as Project Manager for the multimedia environmental permitting for the development of an approximately 1200 MW combined cycle generating facility in North Bergen, Hudson County, New Jersey. The overall project also proposes the installation of a natural gas lateral connecting to Con Edison's nearby gas transmission system and a new force main from the Bergen County Utilities Authority's Little Ferry Water Pollution Control Facility to provide reclaimed water to the site for use as process water make-up. Mr. Maher is responsible for the management of the AKRF team tasked with the acquisition of required land development approvals from the New Jersey Sports and Exposition Authority (formerly New Jersey Meadowlands Commission) and environmental approvals from the New Jersey Department of Environmental Protection (NJDEP), the U. S. Army Corps of Engineers, and the Bergen County and Hudson Essex Passaic Soil Conservation Districts. NJDEP approvals include a PSD Air Permit, Waterfront Development and Flood Hazard Area Permits, stormwater management approvals, tidelands approvals/grants and construction dewatering discharge and water allocation permits. Corp of Engineer permits included Nationwide Permit No. 7 approval for a new outfall structure and Nationwide Permit No. 12 for the proposed reclaimed water line HDD crossing of the Hackensack River.

PSEG Fossil LLC, Sewaren Unit 7 Combined Cycle Project – Woodbridge Township, Middlesex County, NJ.

Mr. Maher is serving as Project Manager for the multimedia pre-construction environmental permitting, construction permitting, and environmental compliance oversight program for the development of a 590 MW combined cycle generating facility at PSEG Fossil LLC's Sewaren Generating Station, located in Sewaren, Woodbridge Township, New Jersey. Mr. Maher was responsible for the management of the acquisition of required land development approvals from Woodbridge Township and environmental approvals from the New Jersey Department of Environmental Protection (NJDEP), the U. S. Army Corps of Engineers, and the Freehold Soil Conservation District. NJDEP approvals include Waterfront Development and Flood Hazard Area Permits, stormwater management approvals, NJPDES permit modifications approval, and Treatment Works and Water Supply Physical Connection Permit approvals. Corp of Engineer permits included Nationwide Permit No. 7 approval for a new outfall structure in the Arthur Kill and Nationwide Permit No. 33 approvals for proposed soil barging and heavy haul deliveries, which included the delivery of the project's HRSG which was constructed offsite. Pre-Construction Environmental and Land Development permitting was completed by AKRF within 7 months of release by the client. The project started construction in April 2016. Mr. Maher is currently providing construction permitting and environmental compliance oversight support during construction.

PSEG Power Connecticut LLC, Bridgeport Unit 5 Combined Cycle Project – City of Bridgeport, CT.

Mr. Maher served as Project Manager for the multimedia environmental permitting for the development of a 500 MW combined cycle facility at the site of PSEG Power's existing Bridgeport Harbor Station in Connecticut. The proposed 1x1 combined cycle facility will utilize natural gas as the primary fuel with provisions to use ultra-low sulfur distillate (ULSD) for up to 60 days per year as a back-up fuel. Permits and approval required by the project include Prevention of Significant Deterioration (PSD) permit; a Petition for Declaratory Ruling to the Connecticut

Siting Council; CTDEEP coastal zone reviews and permitting; and planning and zoning applications to the City of Bridgeport. The project's PSD permit application was submitted in October 2014 and a final permit issued in April 2017. The project is in construction.

PSEG Keys Energy Center LLC, Keys Energy Center, Prince George's County, Maryland

Mr. Maher provided permitting and project management coordination support to PSEG Power in support of the development of the Keys Energy Center project, a new nominal 735-megawatt (MW), combined-cycle, natural gas-fired, electric power generating plant being developed by PSEG in Prince George's County, Maryland. Mr. Maher led the AKRF team that provided due diligence licensing services to PSEG prior to the acquisition of the project. ARKF continues to support the project through provision of project management support and licensing services relative to the acquisition of the remaining outstanding pre-construction environmental and land development permits.

enXco LIPA Solar PV Project - Nassau and Suffolk Counties, New York

While at another firm, Mr. Maher served as Technical Manager for the environmental review under the New York State Environmental Quality Review Act (SEQRA) of enXco's proposed LIPA Solar PV Project, which proposed installation and operation of solar photovoltaic (PV) equipment on existing building rooftops and/or newly installed carports within existing parking lot areas at various, commercial, industrial, and institutional sites throughout Nassau and Suffolk Counties. The proposed solar PV equipment was be capable of producing up to 20 megawatts (MW) of solar energy for the Long Island Power Authority (LIPA) service area to help meet Long Island's long-term energy needs and LIPA and New York State's renewable energy goals. In addition to managing the project's SEQRA review, the team led by Mr. Maher assisted enXco with environmental and zoning due diligence for the project's 60 potential Solar PV development sites and is managing the project's environmental review under the New York State Environmental Quality Review Act (SEQRA). The team led by Mr. Maher also managed the initial public outreach efforts for the project, meeting with the elected leaders and planning and zoning officials of the site's host municipalities and participated in key development and project status meetings with LIPA.

Maxim Power Corp, Forked River Expansion Project, Lacey Township, Ocean County, New Jersey

Mr. Maher served as Project Manager for the preparation of a feasibility study in support of Phase 1 of Maxim Power Corp's proposed Forked River Expansion Project. The feasibility study evaluated various development options at its existing Forked River Generating Station in Lacey Township. Design and regulatory evaluations that are being performed by AKRF as part of the feasibility assessment include air quality regulatory review analyses included identification of required BACT/LAER and NJ SOTA levels for the types of equipment being considered and air quality modeling to determine an acceptable facility design configuration. Water supply and process discharge requirements and evaluation of various cooling technologies are also being addressed by the study. The study also assessed the proposed site development plan for compliance with NJDEP CAFRA and Lacey Township requirements, including compliance with applicable noise codes.

PSEG Fossil, LLC, Hudson Unit 2 Back Technology Project – Jersey City, Hudson County, NJ

While at another firm, Mr. Maher served as Project Manager for the multimedia environmental permitting for the installation of additional air pollution control equipment ("back-end technology" or "BET") at PSEG Fossil's Hudson Generating Station Unit 2 Boiler in Jersey City, New Jersey. The BET project components included installation of a Selective Catalytic Reduction (SCR) system for NOx control, two Semi-Dry Spray Dryer Absorber (SDA) flue gas desulphurization systems (FGDs) for SO2 control, a Pulse-Jet Fabric Filter (PJFF) for particulate control, and an Activated Carbon Injection (ACI) system for mercury control. Mr. Maher managed the acquisition of required land development approvals from the New Jersey Meadowlands Commission and environmental approvals from the New Jersey Department of Environmental Protection (NJDEP), the U. S. Army Corps of

Engineers, and the Hudson Essex Passaic Counties Soil Conservation District. NJDEP approvals included a Flood Hazard Area Permit and stormwater management approvals, NJPDES modifications approvals, and construction dewatering discharge and water allocation permits. Corp of Engineer permits included a wetlands jurisdictional determination and approval for a new outfall structure in the Hackensack River. Mr. Maher also managed the receipt of local land development approvals required for temporary office trailers required in support of site mobilization and construction activities. The project's land development and environmental permit applications were submitted in fall of 2007 with approvals received in winter 2008. During construction the team led by Mr. Maher continued to support both PSEG and the project's EPC contractors, Shaw Stone and Webster, Inc. and URS Washington Division through obtaining required construction and building code permits and approvals. The project is now in operation.

PSEG Fossil LLC Sewaren Generating Station Dock Removal and Bank Stabilization Project – Woodbridge Township, Middlesex County, NJ

Mr. Maher served as AKRF's Project Manager for the environmental permitting of PSEG Fossil LLC's (PSEG) proposed removal an existing 400 feet long by 50 feet wide dock followed by stabilization of the exposed bank at PSEG's Sewaren Generating Station located in Sewaren, Woodbridge Township, Middlesex County, New Jersey. Approvals required by the project included Army Corp of Engineers Nationwide Permit Nos 7, 13, and 33 approvals, NJDEP Waterfront Development Approval, and Freehold Soil Conservation District approval. The project was completed in October 2016

PSEG Fossil, LLC, Hudson Traveling Screens Replacement Project – Jersey City, Hudson County, NJ

While at another firm, Mr. Maher served as Project Manager for the multimedia environmental permitting for the replacement of existing conventional traveling water screens at the PSEG Fossil's Hudson Generating Station facility's existing intake structure with modified Ristroph type traveling water screens equipped with a fish return system. The new intake screen and fish return system were intended to reduce impingement related mortality associated with operation of the Facility's intake structure. Mr. Maher managed the acquisition of approvals required from the New Jersey Department of Environmental Protection (NJDEP), U. S. Army Corps of Engineers and from the New Jersey Meadowlands Commission. Required NJDEP approvals included a Waterfront Development Permit and Flood Hazard Area Permit jurisdictional determination. Corp of Engineer permits included nationwide permit approval for a new outfall structure in the Hackensack River. The project's land development and environmental permit applications were submitted in fall of 2007 with approvals received winter 2008. The project is now operational.

Entergy Power Group, Indian Point Peaking Facility - Village of Buchanan, Westchester County, NY

While at another firm, Mr. Maher served as Project Manager for the Article X environmental review of a proposed 360 MW simple cycle power facility to be developed by Entergy Power Group. The project's scope of studies for the project included evaluating plant design and operating options to find those that will minimize potential impacts as well as expedite the permitting process as well as the development of a permitting strategy to address site SPDES issues. The team led by Mr. Maher prepared air quality, noise and visual impact studies as well as the entire multi-volume Article X application. Mr. Maher's duties as Project Manager included the coordination of required technical studies, attendance at team development and agency meetings, coordination of preparation of the facility's Article X environmental documentation, preparation of responses to agency discovery requests, participation in public information meetings, and facilitation of project information/data between Entergy Power Group and consulting technical directors.

PSEG Fossil, LLC, Kearny Bulkhead Stabilization Project – Kearny, Hudson County, NJ

While at another firm, Mr. Maher served as Project Manager for the multimedia environmental permitting for the repair of a 200-foot section of collapsed bulkhead at the existing PSEG Kearny Generating Station located in

Kearny Township, Hudson County, New Jersey. Bulkhead maintenance and repair activities included the removal of loose, collapsed timber and associated debris from the Hackensack River; recontouring the face of the existing fill above the remaining deck to create a more structurally stable bank; and placement of geotextile fabric and a gabion mattress for bank stabilization over the recontoured slope. In addition, two (2) new obstruction buoys were installed to alert mariners of remaining submerged debris. Mr. Maher managed the acquisition of the Waterfront Development approval from the New Jersey Department of Environmental Protection (NJDEP) and submittal of Pre-Construction Notifications (PCN) for coverage under Nationwide Permit No. 1, Aid to Navigation and Nationwide Permit No.3 (a), Maintenance, to the U. S. Army Corps of Engineers. The project's environmental permit applications were submitted in October 2007 with approvals received November 2007. Construction was completed in winter 2008.

PSEG Fossil, LLC, Bergen Generating Station Gas Compressor By-Pass Project – Jersey City, Hudson County, NJ

While at another firm, Mr. Maher served as Project Manager for the local land development permitting for the installation of a gas compressor bypass system at the Bergen Generating Station site to improve fuel supply reliability at the Station. Mr. Maher managed the acquisition of local land approvals required from the New Jersey Meadowlands Commission and the Town of Ridgefield, New Jersey. The project's land development applications were submitted in March 2007 with approvals received July 2007. Construction was completed in September 2007.

AES Westover, L.L.C., Multi-Pollutant Control Project - Town of Union, Broome County, NY

While at another firm, Mr. Maher served as Project Manager for the multimedia environmental permitting for installation of a Multi-Pollutant Control (MPC) system at AES' Westover Generating Station in Broome County, New York. The MPC system was proposed in order to comply with a Consent Decree issued by the New York State Department of Environmental Conservation (NYSDEC) and its operation will result in a greater than 70% reduction in NOx emissions from the facility by and a 90% reduction in SO2 emissions. The MPC system components include a Selective Catalytic Reduction (SCR) system and a Dry Flue Gas Desulfurization System, with associated equipment including a 15,000 gallon aqueous ammonia tank, and a quick lime storage silo. Mr. Maher managed the acquisition of required land development approvals from the Town of Union Planning Board and the Town of Union Zoning Board of Appeals as well as an advisory recommendation from Broome County. Required approvals included a Flood Plain Special Management District Special Permit, Site Plan Approval, an Area Variance for Height, and a Construction Building Permit. The project's land development applications were submitted in December 2006 and final approvals were received in February 2007.

KeySpan Energy 250MW Ravenswood Cogeneration Facility - Long Island City, Queens, NY

While at another firm, Mr. Maher served as Project Planner for the environmental permitting and environmental impact assessment efforts in support of the development of a 250 megawatt cogeneration facility at KeySpan's Ravenswood Generating Station located in Long Island City, Queens, NY. The proposed facility was subject to the review and siting requirements established by Article X of the New York State Public Service Law. Mr. Maher assisted in the development of the project's Pre-Application Report, Article X Application and Environmental Justice Analysis Report. Sensitive issues addressed by the Article X process included potential visual and noise impacts to Roosevelt Island, located adjacent to the proposed facility across the East River, predicted air emissions, and traffic, land use and visual impacts. The Article X Certificate was issued in September 2001, construction started in March 2002, and commercial operation began in March 2004.

New York Power Authority, 500 MW Combined Cycle Facility - Astoria, Queens, NY

While at another firm, Mr. Maher served as Project Planner for the environmental permitting and assessment efforts in support of the development of a 500 megawatt, combined cycle power generating facility in Astoria, Queens, NY. The facility is proposed under Article X of the New York State Public Service Law and will be

developed on approximately four acres of the New York Power Authority's existing Charles Poletti Generating Facility. Mr. Maher assisted in preliminary planning efforts including preparation of the land use, transportation and terrestrial ecology sections of the project's Pre-Application Report and Article X Application. The Article X Certificate was issued in October 2002, construction started in January 2003, and commercial operation began in January 2006.

KeySpan Energy Development Corporation, Spagnoli Road Energy Center - Huntington, NY

While at another firm, Mr. Maher served as Project Planner for the Article X Application in support of the development of a 250-megawatt combined-cycle facility in the Town of Huntington, Nassau County, NY. Mr. Maher prepared the project's Land Use and Local Laws assessment and assisted in the overall preparation of the Article X Application. The Article X Certificate was issued in May 2003.

Environmental Assessments and Permitting – Transmission Facilities

PSEG-Long Island Reconductoring Projects. Long Island, New York

Principal-in-Charge for environmental permitting reviews and preparation of New York State Environmental Quality Review Act ("SEQRA") documentation for several proposed reconductoring and reconstruction projects proposed by PSEG Long Island. The projects included:

- Levittown to Plainedge Reconductoring Project
- East Garden City 69 kV By-Pass Project
- Buell Overhead Distribution Line
- Orchard Substation 13kv Underground Feeder & Overhead Improvements Project
- Barnum Island Bridge 33kV Reconstruction Project

The projects were proposed to increase the reliability of the existing distribution system, and required installation or replacement of utility poles for overhead circuits. The environmental review documentation included the preparation of the Full (i.e., long form) Environmental Assessment Form (EAF) with adequate supporting information to make a determination of significance for the reconstruction of the circuits. Supplemental analyses in support of the EAF included land use, aesthetic resources and visual impacts (based on photosimulations), natural resources, cultural resources, construction impacts, and energy.

Consolidated Edison Company of New York, Inc., Woodrow 138 kV Transmission and Distribution Lines Project - Staten Island, New York, NY

While at another firm, Mr. Maher served as Project Manager for the multi-media licensing for Con Edison's Woodrow Transmission and Distribution Lines Project, which proposed the construction and operation of a 3-mile, 138 kV underground transmission line and the replacement of two distribution lines in Staten Island, NY. The proposed transmission line connects Con Edison's existing 138/13 kV Fresh Kills Substation with the 138/13 kV Woodrow substation, both located in the Staten Island, New York City. Equipment required to accommodate the new feeder was required to be installed at both the Fresh Kills and Woodrow Substations. Construction and operation of the project was required to allow Con Edison to meet expected load growth in southern Staten Island. A Categorical Exclusion Request and NEPA Environmental Assessment was submitted to the New York State Department of Transportation (NYSDOT) and Federal Highway Work Administration (FHWA) for both the transmission line and distribution line components of the project. The Categorical Exclusion Requests each addressed potential issues associated with longitudinal placement of a transmission and distribution feeders within the federally-funded West Shore Expressway (NYS Route 440) and a detailed assessment of project alternatives. The Categorical Exclusion Request and NEPA Environmental Assessment for the distribution lines was submitted

in October 2007 and approved by the NYSDOT and FHWA in December 2007. The Categorical Exclusion Request for the project's transmission line was submitted to the NYSDOT and FHWA in April 2008 and was approved by the FHWA in May 2008. The project is now operational.

Consolidated Edison Company of New York, Inc., M29 345 kV Transmission Line Project – City of Yonkers to New York City, NY

While at another firm, Mr. Maher served as Deputy Project Manager for the proposed Con Edison 345 KV M29 Transmission Line Project Article VII Application. The project proposed the construction and operation of an approximately 9.5-miles of 345 kV high-pressure, fluid filled (HPFF pipe-type) transmission line, primarily underground, in the City of Yonkers, Westchester County and upper Manhattan, New York City. The Article VII Application addressed potential issues associated with the proposed crossing of the Harlem River via horizontal directional drilling (HDD); open-trench excavation within high-volume roadways; and potential impacts to a New York City Housing Authority housing complex as a result of establishing a HDD boring pit within the complex. The Article VII application was filed in September 2006, and the EM&CP was provided to the DPS staff in June 2007. The Article VII certification was issued August 2007. The project is now operational.

Consolidated Edison Company of New York, Inc., Cedar Street 138 kV Transmission Line Project - Westchester County, NY

While at another firm, Mr. Maher served as Deputy Project Manager for the proposed Con Edison 138 kV Cedar Street Transmission Line Project Article VII Application. The project proposed the construction and operation of a 3-mile, 138 kV underground transmission line in southern Westchester County, NY. The proposed transmission line connects Con Edison's existing 138/13 kV Washington Street Substation in the City of Mount Vernon with the 138/13 kV Cedar Street substation located in the City of New Rochelle. Equipment required to accommodate the new feeder was installed at both the Washington Street and Cedar Street Substations. An additional 138-13.8kV transformer was installed at the Cedar Street substation. Construction and operation of the project was required to allow Con Edison to meet expected load growth in southern Westchester County. The Article VII Application addressed potential issues associated with major roadway crossings via horizontal drilling, jacking, and open-trench excavation; potential impacts to the Hutchinson River; and historic issues associated with the crossing of the Hutchinson River Parkway via an existing parkway bridge. The Article VII Application was submitted to the New York State Public Service Commission in October 2005. A Certificate of Environmental Compatibility and Public Need was issued for the project by the NYSPSC in May 2006. The project's transmission line was energized in May 2007.

Rochester Gas and Electric Corporation, 218 to Clyde New Transmission Line Project, Wayne County, NY

While at another firm, Mr. Maher served as Licensing Manager for Rochester Gas and Electric's (RG&E) 218 to Clyde New Transmission Line Project. The project proposed the reconstruction of approximately 18 miles of 34.5 kV transmission lines within its eastern Wayne County New York service area. Multimedia licensing services managed by Mr. Maher included preparation of all applications for regulatory approvals, including: NYSDEC and USACE wetland applications; preparation of highway crossing designs and roadway opening permit applications and supporting maintenance and protection of traffic plans; and preparation of a construction stormwater pollution prevention plan (SWPPP). Additionally, Mr. Maher managed the preparation of the Project's SEQRA EAF document. Mr. Maher coordinated and oversaw all fieldwork required in support of the various permit applications. Project approvals were received in January 2014. As a follow-up study, Mr. Maher managed a routing assessment requested by RGE in support of anticipated condemnation proceedings.

Rochester Gas and Electric Corporation, Circuit 708 Rebuild Project, Wayne County, NY

While at another firm, Mr. Maher served as Licensing Manager for Rochester Gas and Electric's (RG&E) Circuit 708 Rebuild Project. The project proposed the reconstruction of approximately 3.2 miles of 34.5 kV transmission lines within its eastern Wayne County New York service area. Multimedia licensing services managed by Mr. Maher included preparation of all applications for regulatory approvals, including: NYSDEC and USACE wetland applications; preparation of highway crossing designs and roadway opening permit applications and supporting maintenance and protection of traffic plans; and preparation of a construction stormwater pollution prevention plan (SWPPP). Additionally, Mr. Maher managed the preparation of the Project's SEQRA EAF document. Mr. Maher coordinated and oversaw all fieldwork required in support of the various permit applications. Project approvals were received in February 2014.

New York State Electric and Gas, Chenango County Transmission Project - Chenango County, New York, NY

While at another firm, Mr. Maher served as Licensing Manager for New York State Electric and Gas' (NYSEG) Chenango County Transmission Project (CCTP), which consist of the development of a new, approximately 10.7-mile, overhead 46 kV line from NYSEG's existing County Line Substation to the new Columbus Substation through the Towns of Sherburne and Columbus to a newly constructed 46-12.5kV Columbus Substation. A total of 3.95 miles of this proposed transmission line was located on new right-of-way. Regulatory approvals required by the project included USACOE wetland permits, completion and acceptance of environmental impact documentation pursuant to the New York State Environmental Quality Review Act, and NYSDEC Construction Stormwater Pollution Prevention Plan Approval. Applications were submitted in Winter 2012 in support of a planned Summer 2012 construction date. In addition to acquisition of required environmental permits in support of the aggressive construction schedule, Mr. Maher assisted in the route selection process and conducted an alternative route evaluation that was used to support the project's SEQRA review and permitting process. The CCTP was proposed to enhance regional reliability and to meet the increasing demand for electricity in the Chenango County service area, particularly by Chobani, Inc. New York's largest dairy product manufacturer and the maker of Chobani® Greek Yogurt. The project is now operational.

New York State Electric and Gas, Corning Valley Transmission Project - Steuben County, New York, NY

While at another firm, Mr. Maher served as Licensing manager for New York State Electric and Gas' (NYSEG) Corning Valley Transmission Project (CVTP). The CVTP will increase electric power reliability in NYSEG's electrical service territory in Steuben County, New York and consist of the development of a new 230-115 kV, substation (i.e., the "Stoney Ridge Substation") in the Town of Campbell; the development of a new 115-12.5 kV substation (i.e., the "Sullivan Park Substation") in the Town of Erwin; as well as the development of a new 9.6 mile, 115 kV line from the new Stoney Ridge Substation to the existing West Erie Substation, located in the Town of Erwin. A total of 5.9 miles of this proposed transmission line was located on new right-of-way (between proposed Stoney Ridge and Sullivan Park Substations). The remaining 3.7 miles was located within existing transmission right-of-way, collocated with existing NYSEG transmission facilities. Regulatory approvals required by the project included local land development and subdivision approvals from the Towns of Campbell and Erwin; NYSDEC and USACOE wetland permits, completion and acceptance of environmental impact documentation pursuant to the New York State Environmental Quality Review Act and submittal and acceptance of a Part 102 environmental report to the New York State Public Service Commission. The project is now in operation.

New York State Electric and Gas, Line 862 Reconductoring Project – Orange County, NY

While at another firm, Mr. Maher served as Licensing Manager for Iberdrola USA Management Corporation's (IUMC) proposed reconstruction of its existing Walden-Central Hudson Circuit 862. The circuit to be reconstructed traversed approximately 1 mile within the Village of Walden and Town of Montgomery, Orange County, New York. Regulatory approvals required by the project include local land development approvals,

USACOE Nationwide Wetland Permit #12 approval, and NYSDEC Construction SWPPP approval. Regulatory approvals were obtained in January 2012 and the project is now operational.

New York State Electric and Gas, Line 426 Reconstruction Project – Broome County, NY

While at another firm, Mr. Maher served as Licensing Manager for Iberdrola USA Management Corporation (IUMC) proposed reconstruction of approximately three (3) miles of the 34.5 kV Chenango Forks to Kattelville Tap/Chenango Bridge Circuit 426 within the Binghamton Division of its New York State Electric and Gas Corporation ("NYSEG") service area. Regulatory approvals required by the project include USACOE Nationwide Wetland Permit #12 approval and NYSDEC Construction SWPPP approval. The project is now operational

Orange and Rockland Utilities, Inc., Line 28 Transmission Project, Orange and Rockland Counties, NY

While at another firm, Mr. Maher served as Principal-in-Charge for the preparation of environmental documentation under Article VII of the New York State Public Service Law in support of Orange and Rockland Utilities, Inc's ("ORU") Line 28 Transmission Project. The Line 28 Transmission Project proposes the addition of a second circuit ("Transmission Line 28") in the open position on certain existing transmission towers located between ORU's 345 kV Ramapo substation, located in the Town of Ramapo, Rockland County and ORU's new 138 kV Sugarloaf Substation, which is currently being constructed on the south side of Sugarloaf Mountain Road in the Town of Chester, Orange County, New York. Transmission Line 28 initially will operate at 138 kV. Environmental documentation prepared under the New York State Article VII process included an Environmental Management and Construction Plan (EM&CP). Due to the 20+ year timeframe from receipt of the Article VII approval to the installation of the line, per a request of the New York State Department of Public Service, the EM&CP included an "Environmental Assessment Update" that addressed NYSPSC Article VII environmental assessment requirements. Most substantively, the environmental update included summaries of the results of ecological studies addressing Bog Turtle and Timber Rattlesnake Habitats and associated regulatory consultations. The EM&CP also provided a Notice of Intent and information required to satisfy permitting requirements under New York State's SPDES General Permit for Discharges Associated with Construction Activity. The EM&CP document was filed in June 2010 and approved by the NYSPSC in January 2011. The project is now included a project to be developed under ORU's proposed Energy Highway filing.

Orange and Rockland Utilities, Inc., Line 31 Transmission Project, Orange and Rockland Counties, NY

While at another firm, Mr. Maher served as Licensing Manager for Orange & Rockland Utilities, Inc. (ORU) proposed Transmission Line 31 Transmission Project, which proposed the reconductoring and reconstruction of existing transmission line structures along an existing three-mile transmission line located in the Town of Ramapo and the Villages of Hillburn and Sloatsburg in Rockland County, New York. Mr. Maher oversaw the conduct of wetland delineations and threatened and endangered species surveys for the bog turtle (federally protected) and the timber rattlesnake (state protected) and preparation of associated regulatory reports and coordination. Primary applications prepared included NYSDEC Article 11 permit to address the potential for incidental "takes" of timber rattlesnakes; Rockland County Drainage Agency construction permit for activities in the floodplain of the Ramapo River; and the preparation of a NYSDEC Construction Stormwater Pollution Prevention Plan to obtain coverage under New York State's SPDES General Permit for Discharges Associated with Construction Activity. The project is now operational. Subsequent to project construction, the team led by Mr. Maher provided project compliance services by performing the post-construction timber rattlesnakes den surveys required as a condition of the project's Article 11 taking permit.

Rochester Gas and Electric Corporation, Rochester Transmission Project Article VII Application - Rochester, NY

While at another firm, Mr. Maher served as Deputy Project Manager for the Rochester Gas and Electric (RGE), Rochester Transmission Project Article VII Application. The Article VII Application addressed the installation of approximately 32.3 miles of new or rebuilt 115 kV transmission lines and equipment upgrades at several existing

substations in Monroe County and a new 5.7-mile 115 kV transmission line, a new 115 kV substation, and equipment upgrades at several existing substations in Wayne County, NY. The proposed improvements are required to reinforce the overall RGE 115 kV electric transmission system and its interface with the New York State bulk transmission system and are required to ensure that RGE will be able to adequately and reliably provide electricity to the Rochester area following the shutdown of its Russell Station. Mr. Maher prepared the required land use and zoning analyses for the project's Article VII Application as well as assisted in the coordination of the overall preparation of the Article VII Application, the project's joint proposal of settlement and proposed ordering clauses. Additionally, Mr. Maher participated at project public outreach meetings. The Article VII Application was submitted to the New York State Public Service Commission in September 2003. A Certificate of Environmental Compatibility and Public Need was issued for the project by the NYSPSC in December 2004. The project is currently operational.

Consolidated Edison Company of New York, Inc., Grasslands 138 kV Transmission Lines and Substation – Westchester County, NY

While at another firm, Mr. Maher served as Deputy Project Manager for the Con Edison 138 kV Transmission Lines and Grasslands Article VII Application. The project proposed the construction and operation of a maximum of five 138 kV underground transmission lines along two routes in central Westchester County, NY that connect Con Edison's existing 345/138 kV Eastview Substation in the Town of Greenburgh to a new 138/13 kV area distribution substation in the Town of Mount Pleasant ("Grasslands Substation"). The proposed substation was sited and constructed on 3-acres of County-owned land. Proposed transmission facilities would comprise 4.0 miles of feeders located within existing utility and roadway rights-of-way. The Article VII Application addressed potential issues associated with major roadway crossings; potential impacts to NYCDEP Water Supply Lands and the NYCDEP Catskill and Delaware Aqueducts that were located adjacent to the proposed substation site; visual impacts associated with the siting of the new substation; and security issues associated with the adjacent Westchester County Correctional Facility. In addition to efforts related to the preparation of the Article VII Application, Mr. Maher also prepared a joint application for Nationwide Permit for submittal to the NYSDEC and US Army Corps of Engineers to address required horizontal directional drilling activities beneath the Saw Mill River in support of the installation of a segment of the project's transmission lines. Additionally, Mr. Maher assisted in the preparation of the required State Pollution Discharge Elimination System permit applications for the proposed Grasslands Substation that include detailed Stormwater Pollution Prevention Plans for construction and operation of the substation; an Environmental Management and Construction Plan for the proposed transmission lines; and required applications to the NYSDOT for transmission and distribution work within New York State roadway rights-of-way. The Article VII Certificate for the Grasslands Project was issued in February 2003; construction of the proposed transmission facilities began in April 2003. The project's "southern transmission line" and new Grasslands Substation were energized in May 2004.

Mirant Bowline, L.L.C., Article VII Permitting for the Bowline Generating Station 345-kV Electric Transmission Line and Natural Gas Pipelines - Haverstraw, Rockland County, NY

While at another firm, Mr. Maher served as Deputy Project Manager for the Mirant Bowline, L.L.C. 345 kV Electric Transmission Line and Natural Gas Pipeline Article VII Applications. The proposed 7-mile, 345 kV transmission line and 4.2-mile, 24-inch diameter natural gas pipeline were designed to serve the proposed Bowline Unit 3 facility expansion at the existing Mirant New York Bowline Generating Station as well as provide transmission reliability to the existing 1200 MW of generating capacity at the generating station. The proposed facilities were to be located within an existing utility corridor, which required major roadway and wetland/waterway crossings. Services provided included: 1) the performance of technical studies and preparation of two Article VII Applications to individually address both the electric and gas facilities proposed; 2) provision of hearing support and expert testimony; and 3) preparation of a U.S. Department of the Army Section 404 Permit application. The Certificate of Environmental Compatibility and Public Need for the proposed natural gas

pipeline and transmission line were issued in March 2001 and January 2002, respectively. Construction of the natural gas pipeline has been completed.

PPL Electric Utilities, Manor-Graceton 230 kV Rebuild Project - Lancaster and York Counties, PA

While at another firm, Mr. Maher served as Licensing Manager for the reconstruction of the 14.5-mile portion of the existing Manor-Graceton 230 kV transmission line located in Lancaster and York Counties, in the Commonwealth of Pennsylvania. Regulatory approvals required by the project included a USACE Wetland Jurisdictional Determination, a Chapter 105 Waterways and Obstruction Permit and Joint Wetland Permit Approval (PASPGP-3) from the Pennsylvania Department of Environmental Protection (PaDEP) and a Construction NPDES approval (PaDEP GP-5) from the York County Conservation District. Approval from the United States Army Corps of Engineers (USACE) Baltimore District under Section 404 of the Clean Water Act was also required for the proposed impacts to wetlands. The project is now under construction.

PPL Elroy-Hatfield #1 and #2 138/69 kV Transmission Line Project – Hatfield and Franconia Townships, Montgomery County, PA

While at another firm, Mr. Maher served as Project Principal for the Elroy-Hatfield Transmission Line Project. PPL was proposing to install an approximately 2 mile line in Montgomery County, PA. The team led by Mr. Maher was tasked with preparing the initial permitting analysis for the project, updating the wetland delineations and field studies previously performed and preparing and submitting the required permit applications. Regulatory approvals required by the project include USACE Wetland Jurisdictional Determination, Chapter 105 Waterways and Obstruction Permit and Joint Wetland Permit Approval (PASPGP-4) from the PaDEP and Construction NPDES approval from the Northampton County Conservation District. The project is now operational.

Environmental Assessments and Permitting – Substation Facilities

New York State Electric and Gas, Hickling Substation Expansion Project – Corning, NY

While at another firm, Mr. Maher served as Licensing manager for the expansion of NYSEG's existing Hickling Substation located in the Town of Corning, New York. The Hickling Substation is located on the property of AES's Hickling Generating Station. The intent of the proposed improvements was to provide for separation of the substation controls that were currently housed within AES's Hickling Generating Station powerhouse for relocation, housing and installation within the fence line of NYSEG's improved substation. Required permits and approvals include receipt of a conditional use permit and site plan approval from the Town of Corning. The project is now operational.

New York State Electric and Gas, Jennison Substation Expansion Project – Corning, NY

While at another firm, Mr. Maher served as Licensing manager for the expansion of NYSEG's existing Jennison Substation located in the Town of Bainbridge, New York. NYSEG's Bainbridge Substation is located on the property of NYSEG's Jennison Generating Station. The intent of the proposed improvements was to provide for separation of the substation controls that were housed within AES's Jennison Generating Station powerhouse for relocation, housing and installation within the fence line of NYSEG's improved substation. Required permits and approvals include receipt of a site plan approval from the Town of Bainbridge. The project is now operational.

Rochester Gas and Electric Corporation, Proposed Station 42 Improvements – City of Rochester, NY

While at another firm, Mr. Maher served as Project Manager for the land use permitting of improvements proposed at Rochester Gas and Electric's Substation 42, located in Rochester, NY. Mr. Maher prepared the City of Rochester Land Use Applications and completed the required SEQRA environmental assessment documentation. Proposed station improvements included the replacement of two existing transformers and the installation of two additional transformers as well as the installation of an additional duct bank. Approvals required in support of the

proposed improvements include the issuance of an area variance by the City of Rochester Zoning Board of Appeals for improvements at a "pre-existing, non-conforming use" and the completion of the SEQRA review process. The project received all required approvals in March 2006 and is now in operation.

Consolidated Edison Company of New York, Inc., Installation of Series Reactors at Dunwoodie Substation - City of Yonkers, Westchester County, NY

While at another firm, Mr. Maher served as Project Manager for the environmental permitting and the completion of an environmental assessment under the New York State Environmental Quality Review Act for the proposed installation of two 345-kV Series Reactors at its Con Edison's Dunwoodie Substation, located in the City of Yonkers, Westchester County, NY. The installation of the Series Reactors was permitted under a fast track schedule in order to allow Con Edison to bring the reactors on-line in time to permit planned new generation from new electric generating facilities being constructed within the New York City metropolitan area to interconnect with Con Edison's transmission system. As part of the permitting effort, Mr. Maher coordinated and oversaw the preparation of a noise assessment study, which included detailed noise modeling and associated sound contour mapping of the proposed Series Reactor equipment, and the preparation of photographic simulations illustrating views of the new reactor equipment from selected sensitive receptors within the project area. The photographic simulations utilized a three-dimensional model of the proposed series reactors for the project. Both the noise study and photographic simulations were used in Con Edison's submittals to and at public hearings before the City of Yonkers Planning Board and City Council. The City of Yonkers Planning Board issued a SEQRA Negative Declaration and granted site plan approval for the proposed Series Reactor installation within one month of the submittal of Con Edison's site plan application.

Consolidated Edison Company of New York, Inc., Installation of Series Reactors at Sprain Brook Substation - City of Yonkers, Westchester County, NY

While at another firm, Mr. Maher served as Project Manager for the environmental permitting and the completion of an environmental assessment under the New York State Environmental Quality Review Act for the proposed installation of two 345-kV Series Reactors at its Con Edison's Sprain Brook Substation, located in the City of Yonkers, Westchester County, NY. The installation of the Series Reactors was permitted under a fast track schedule in order to allow Con Edison to bring the reactors on-line in time to permit planned new generation from new electric generating facilities being constructed within the New York City metropolitan area to interconnect with Con Edison's transmission system. As part of the permitting effort, Mr. Maher prepared the required SEQRA Environmental Assessment Form documentation and coordinated and oversaw the preparation of a noise assessment study, which included detailed noise modeling and associated sound contour mapping of the proposed series reactor equipment and the preparation of photographic simulations illustrating views of the new reactor equipment from selected sensitive receptors within the project area. The photographic simulations utilized a three-dimensional model of the proposed series reactors constructed for the project. Both the noise study and photographic simulations were used in Con Edison's submittals to and at public hearings before the City of Yonkers Planning Board and City Council. Additionally, Mr. Maher coordinated the preparation of a stormwater pollution prevention plan for the project and SPDES Permit Application addressing stormwater discharges for construction activities that was submitted to the NYSDEC. The project received final land development approvals from the City of Yonkers Planning Board in May 2003.

Con Edison White Plains Substation Improvements and Modernization - City Of White Plains, Westchester County, NY

While at another firm, Mr. Maher served as Deputy Project Manager for the completion of an environmental assessment under the New York State Environmental Quality Review Act for the proposed improvement and modernization of Consolidated Edison of New York's White Plains Substation. SEQRA documentation prepared included a Full Environmental Assessment Form (EAF). As Con Edison's SEQRA Consultant, the team led by

Mr. Maher provided a coordination role ensuring that the concerns of the City of White Plains, Westchester County Department of Transportation, the New York State Department of Environmental Conservation, and adjacent property owners were addressed by the SEQRA process. To facilitate the issuance of a negative declaration for the proposed project, the EAF included expanded analyses addressing potential environmental impacts/issues associated with the project. These issues included transportation impacts associated with the placement of 138-kV transmission and 13-kV distribution lines within major roadways in the City of White Plains downtown core area; the potential for subsurface soil or groundwater contamination associated with a former manufactured gas plant at the site; the removal of an existing drywell system, the abatement and removal of asbestos containing material associated with the existing substation operation, noise impacts, and stormwater management issues. The expanded EAF document was submitted to the City of White Plains Planning Board in June 2000 and a negative declaration was issued for the project in November 2000.

Allegheny Power, Black Oak Substation Proposed Static Var Compensator Addition – Allegany County, Maryland

While at another firm, Mr. Maher served as Project Manager for the licensing of the expansion of Allegheny Power's Black Oak Substation, located in Allegany County, Maryland. The improvements proposed at the Black Oak Substation consisted of the installation of a Static Var Compensator (SVC) and associated facilities immediately south of the existing substation facilities. Required permits and approvals included a land use development permits from Allegany County, wetland delineation and approvals from the Maryland Department of the Environment and the United States Army Corps of Engineers, and stormwater management approvals from Allegany County and the Maryland Department of the Environment. The project received all required approvals in February 2007 and construction activities commenced in the spring of 2007. The project is now operational.

GEORGE MCCOMB

VICE PRESIDENT

Mr. McComb manages AKRF's Air Quality and Meteorology Group within the Energy Practice. He is a meteorologist / environmental scientist with over 45 years of experience in providing air quality consulting services for the energy sector. During his career, he has provided compliance services such as Title V permit applications and renewals, permitting services, meteorological and dispersion modeling studies for over 60 existing and planned fossil-fueled and nuclear generating stations. Support services provided by Mr. McComb include regulatory analysis, emissions estimation, regional emissions inventories, technology evaluations (e.g., BACT, LAER and BART), dispersion modeling evaluations, design of air quality and meteorological monitoring networks and support of client internal strategic planning. Mr. McComb has been directly involved in the air permitting of over 4,700 MW of natural gas-fired combined cycle capacity and 1,600 MW of natural gas-fired simple cycle capacity that is either in-service, under construction, or currently in permitting. He is currently leading the air permitting effort for a major oil and gas-fired combined cycle facility in New Jersey. Additional industries served include iron and steel, LNG, natural gas pipelines, and the recycling industry.

Major power industry clients served during his career include LS Power, Exelon (PECO and Constellation), PSEG, First Energy (Allegheny Energy and JCPL) and Diamond Generating Corporation. Recent major projects supported include the air permitting of Diamond Generating Corporation's 1,200 MW northern New Jersey combined cycle project, PSEG Fossil's Kearny Generating Station Units 13 and 14 (simple cycle), PSEG's Sewaren Generating Station Unit 7 (combined cycle), PSEG's Bridgeport Harbor Station Unit 5 (combined cycle) and modeling studies of cumulative impacts required for LS Power's West Deptford Energy Station.

BACKGROUND

Education

BS, Meteorology, Pennsylvania State University, 1969
MS, Environmental Science, Drexel University, 1978

Licenses, Certifications, and Relevant Training

Certified Consulting Meteorologist (American Meteorological Society)

Years of Experience

Year started in company: 2013

Year started in industry: 1969

PROJECTS OF NOTE - RELEVANT EXPERIENCE

Confidential Combined Cycle Project, Diamond Generating Corporation, New Jersey

Mr. McComb is currently managing the PSD air quality permitting and modeling studies for construction of a nominal 1,200 MW natural gas-fired combined cycle generating facility in northern New Jersey. PSD applications and dispersion modeling protocols have been submitted to the NJDEP and EPA for two turbine equipment manufacturers. Use of oil backup fuel and installation of a large evaporative cooling tower are components of the application. The project is located in an ozone nonattainment area and therefore involves both nonattainment NSR permitting and PSD permitting. The AKRF air staff is working closely with the client's engineer and turbine manufacturers to optimize aspects of the facility design with respect to the impact analysis. Modeling activities are being closely coordinated with NJDEP and EPA Region II. The permitting includes BACT and LAER analyses with justification of proposed emission limits, prediction of project impacts for SIL comparisons, Class I area SIL analysis, modeling of cooling tower fogging and icing impacts, HAP risk assessment and all additional PSD analyses required by 40 CFR 52.21.

Air Permitting and Modeling, PSEG Fossil, LLC, Sewaren Combined Cycle Unit 7, Woodbridge, NJ

Mr. McComb is managing the AKRF NJ air group work in support of the proposed 540 MW Unit No. 7 combined cycle project at Sewaren Generating Station. The current project is based on the GE7HA.02 equipment; however, air permits were also successfully obtained previously by the same technical staff for a 2 X 1 7FA-based configuration which was not constructed.

The work scope included preparation of the PSD application, a Title V Significant Modification Application, and related analyses including BACT/LAER, Environmental Justice, Endangered Species, Class I increments, and hazardous air pollutants. New Jersey follows a serial process in regulatory air modeling which requires significant interaction with the agency to minimize impact on the project schedule. A dispersion modeling protocol for modeling the emissions of the proposed unit, a refined modeling report for the proposed unit, a multisource modeling protocol, a multisource modeling technical report and the permit application itself.

The final Title V Significant Modification and Prevention of Significant Deterioration permits for the project were successfully obtained and the project commenced construction in mid-March, 2016.

Air Modeling, LS Power West Deptford Energy Station Minimum Load Project, West Deptford, NJ

Mr. McComb managed a special dispersion modeling study of new, lower minimum turbine load conditions for the West Deptford Energy Station. Technological improvements since the initial construction of the station have allowed operation at loads less than those addressed in the initial permit. The study was submitted to and approved by the New Jersey Department of Environmental Protection.

Air Permitting and Modeling, PSEG Fossil, LLC, Hudson Generating Station, Jersey City, NJ

Managed air quality permitting and an associated modeling study for installation of two GE LM6000 simple cycle turbines at PSEG's Hudson Generating Station in northern NJ. As part of the study, aspects of the site general arrangement and equipment characteristics were iterated with project engineering and the equipment suppliers to achieve modeling results showing insignificant criteria pollutant impacts. The application and modeling protocols were submitted to the NJDEP.

Air Permitting and Modeling, PSEG Power Connecticut, Bridgeport Harbor Station Combined Cycle Project, Bridgeport, CT

Mr. McComb is managing a group of air quality specialists in the performance of air quality permitting and related technical studies for the proposed 535 MW Unit No. 5 combined cycle project to being constructed in the City of Bridgeport Connecticut. Management duties include development of project estimates, work requests, proposals, work plans and assignments, client interface, scheduling, and budgeting.

Air quality consulting services were provided in the evaluation of generating technology alternatives and, later, design alternatives for the chosen technology. These evaluations included modeling studies to allow consideration of relative

modeled impacts, interactions of various alternatives with other existing active units onsite, and potential interaction with other nearby large sources to evaluate the relative permitting risk of each alternative.

Contributed significant technical work on products submitted to the regulatory agencies which included authoring sections of the dispersion modeling protocol and refined modeling report. Mr. McComb performed several special modeling studies related to an error in the EPA AERMOD model that was negatively affecting the project by causing significant over predictions of pollutant impacts from both the proposed Unit No. 5 and existing Unit No. 3. Results of these studies were presented to the CT DEEP in an effort to gain state approval of the use of an EPA work-around to the model error.

The NSR air permit and PSD approval for this facility were successfully obtained in early 2017 and construction has commenced.

Air Permitting and Modeling, PSEG Fossil LLC, Kearny Generating Station Units 13 and 14 Project, Kearny, NJ

Mr. McComb was responsible for the air permitting and modeling on this project which consisted of the retirement of a number of FT4 turbines and the installation of six LM6000 simple cycle turbines with oxidation catalysts and SCR. The project triggered PSD requirements and both a PSD and a Significant Modification to the Station's Title V permit were successfully obtained. Responsibilities on this project included performance of certain dispersion modeling studies for the Client's internal planning use early in the development stage of the project including analysis of interactions between the Kearny Generating Station and other nearby sources and analysis of plume impacts on nearby elevated portions of the Pulaski Skyway.

Air Dispersion Modeling, PSEG Nuclear LLC, Hope Creek Generating Station, Artificial Island, NJ

Natural draft cooling tower emissions increase permitting requiring a significant modification to the Salem / Hope Creek Title V permit. Quantified increased emissions resulting from an increase in heat rejection by the tower to accommodate the increase in reactor power associated with the Extended Power Uprate project. The quantification required detailed evaluation of increased evaporation from the closed cooling system and the resultant increase in circulating water TDS. Mr. McComb worked closely with the NJDEP to explain the technical basis for the calculations and the final conclusions since NJDEP was unfamiliar with this type of project.

Air Dispersion Modeling, PSEG Fossil LLC, Hudson Generating Station, Jersey City, NJ

Performed an SO_2 and PM_{10} ispersion modeling study of the emissions from Hudson Unit No. 2 for submittal to the NJDEP and EPA in fulfillment of a consent order requirement. A regional emissions database was used and emissions were shown to produce impacts which did not significantly contribute to any NAAQS contravention. A culpability analysis was performed at the request of the NJDEP.

Air Dispersion Modeling, PSEG Fossil LLC, Bergen Generating Station Combined Cycle Unit 2, Ridgefield, NJ

Performed extensive dispersion modeling studies of combined cycle Unit No. 2 in support of permitting requirements. Protocols were prepared and negotiated with NJDEP. Modeling studies included the standard criteria pollutants as well as hazardous air pollutants, cooling tower emissions, impacts on the Brigantine Class I area and potential fogging impacts from the plume abatement cooling tower on the New Jersey Turnpike.

Air Dispersion Modeling, PSEG Fossil LLC, Linden Generating Station Units 5, 6, 7 and 8, Linden, NJ

Provided permitting support for the construction of two new combined cycle units with a capacity totaling approximately 1,300 MW. Units 1 and 2 each consist of two dual fuel GE 7FA turbines in a 2 X 1 configuration. Emissions credits from existing steam units to be retired were used in the modeling. The project was complicated by the proximity of Newark Liberty International Airport which placed a restriction on the stack heights. Cooling tower-generated particulate emissions were included in the analysis.

Air Dispersion Modeling and Emissions Estimation, PSEG Fossil LLC, Linden Generating Station Units 1 and 2, Linden, NJ

Performed dispersion modeling and emissions / stack flow estimations supporting permitting for a project replacing several simple cycle units with GE 7EA dual fuel turbines. Studied steady state and transient (load changes, startup) operation on natural gas and liquid fuels. The study was reviewed and approved by the NJDEP.

Air Permitting, PSEG Fossil LLC, Bergen Generating Station, Ridgefield, NJ

Mr. McComb and the air staff prepared a permit application under a special NJDEP incentive program (Environmental Improvement – Pilot Test) for the Bergen Generating Station humid air injection project.

Air Permitting and Modeling, LS Power, West Deptford Energy, West Deptford Energy Station, West Deptford, NJ

Air modeling and permitting services for this 1,100 MW combined cycle, natural gas-fired generating station were performed under Mr. McComb's direction. AKRF took over the Phase I and Phase II modeling from another consultant and was able to develop a modeling plan that allowed the project to move forward. The modeling protocol developed by AKRF was approved by the NJDEP and EPA Region II. The modeling produced predictions of significant impacts requiring a cumulative modeling study of the region. AKRF developed the emissions inventory for NO_2 and $PM_{2.5}$ for nearby portions of New Jersey, Pennsylvania and Delaware. The facility-alone and multi-source studies were reviewed and approved by NJDEP and EPA.

Additional work performed for the project included the permitting of a black start capability using large, onsite diesel generators, preparation of the Title V permit renewal application for the Phase I facility, and a modeling evaluation of an alternative operating condition.

Allegheny Energy Supply Company / First Energy Corporation
General Air Quality Consulting Services – Existing Stations

Mr. McComb led a team providing general air quality consulting services to Allegheny Energy under a General Services Agreement including dispersion modeling support of pollution control project design and permitting for certain coal-fired stations, compliance assistance, preparation of compliance assurance monitoring (CAM) plans for ESP's, design of air monitoring systems, regulatory watch, permitting assistance, strategic planning support and other assignments as required. Projects included Fort Martin SO_2 Pollution Control (coal, 1,107 MW); Hatfield Station SO_2 Pollution Control (coal, 1,710 MW); Pleasants Station scrubber bypass closure and new common stack (coal, 1,300 MW); Fort Martin, Harrison (1,972 MW) and Pleasants BART exemptions on the basis of CALPUFF-modeled insignificant Class I impacts; Mitchell (coal, 370 MW) and Hatfield BART analysis; Hatfield Station NAAQS analysis; Albright Station meteorological studies; CAM plans and CAM testing for five West Virginia and Pennsylvania Stations, and other projects.

Allegheny Energy Supply Company / First Energy Corporation
New / Major Modification Power Generation Permitting

Provided management and technical services for permitting of combined cycle and simple cycle new generation projects. These services included the successful air permitting of approximately 1000 MW of new capacity in Pennsylvania and Virginia. Fuels were natural gas, coal seam methane, and distillate oil. Managed a stack height study required by WVDEP for coal-fired Pleasants Power Station including mathematical and fluid modeling components. Performed air due diligence investigation for over 20 individual power-generating facilities. Managed preliminary modeling studies for the conversion of a simple cycle station to combined cycle. Provided written testimony before the Virginia State Corporation Commission in the matter of Buchanan Generation, LLC Units 1 and 2 air impacts.

PECO Energy Company
Philadelphia, Pennsylvania

Performed Title V services, including strategy development, permit application preparation, and subsequent agency permit negotiation for PECO Energy generating and gas facilities. Provided consulting services to PECO Energy Company for planning studies related to unit conversions, modifications, and retirements as well as NOx / VOC RACT. Technical contributor to a feasibility study regarding generation alternatives for PECO Energy Company. Assessments included air quality analyses and consideration for cooling tower impacts on structures in urban environments. Managed a major study of the air quality environmental impacts associated with possible fuel conversion of certain of PECO Energy Company's assets. Prepared environmental permitting risk analyses and associated testimony for PECO Energy Company in Limerick Nuclear Generating Station proceedings. Performed a regulatory analysis and review of existing permits and permit applications in support of a PECO Energy decision-making process regarding purchase of an existing power plant and installation of additional equipment at a landfill in southeastern PA. Study included initial dispersion studies to establish plant design parameters and to refine permitting strategy as well as preparation of a PSD application for possible addition of a new turbine.