Empire Offshore Wind LLC

Empire Wind 1 Project
Article VII Application

Pre-Filed Direct Testimony

June 2021

PRE-FILED DIRECT TESTIMONY

Pre-filed direct testimony in support of the Article VII Application for the Empire Wind 1 Project is presented by witnesses by subject area, as follows:

Witness	Exhibit(s) Sponsored
Laura Morales	Exhibit 1: General Information Regarding Application
Laura Morales, Nathalie Schils	Exhibit 2: Location of Facilities
Laura Morales, Joel Stadell, Sabrina Hepburn	Exhibit 3: Alternatives
Laura Morales, Joel Stadell, Sabrina Hepburn, Robert Jacoby, Katherine Miller, June Mire, Ryan Earley	Exhibit 4: Environmental Impact
Joel Stadell	Exhibit 5: Design Drawings
Julia Bovey, Geir Miskov, Joel Stadell	Exhibit 6: Economic Effects of Proposed Facility
Laura Morales, Joel Stadell, Sabrina Hepburn	Exhibit 7: Local Ordinances
Laura Morales, Nathalie Schils	Exhibit 8: Other Pending Filings
Geir Miskov, Joel Stadell	Exhibit 9: Cost of Proposed Facility
Joel Stadell	Exhibit E-1: Description of Proposed Transmission Facility
Joel Stadell	Exhibit E-2: Other Facilities
Joel Stadell	Exhibit E-3: Underground Construction
Georges Charles, Joel Stadell	Exhibit E-4: Engineering Justification
Laura Morales, Sabrina Hepburn	Exhibit E-5: Effect on Communications
Laura Morales, Sabrina Hepburn, Joel Stadell, Ryan Earley	Exhibit E-6: Effect on Transportation
Laura Morales, Erin Lincoln	Appendix B: Sediment Transport Analysis

Witness	Exhibit(s) Sponsored
Laura Morales, Katherine Miller	Appendix C: Coastal Zone Management Consistency Statement
Julia Bovey	Appendix D: Public Involvement Plan
Laura Morales, June Mire	Appendix E: Benthic Resource Characterization Reports
Benjamin R.T. Cotts and William H. Bailey, Katherine Miller	Appendix F: Electric- and Magnetic-Field Assessment
Laura Sliker, Sydne Marshall	Appendix G: Phase I Terrestrial Archeological Survey
Laura Sliker, Robert Jacoby	Appendix H: Analysis of Visual Effects on Historic Properties
Laura Sliker, Jennifer Chester	Appendix I: Visual Impact Assessment
Laura Morales, Tricia Pellerin	Appendix J: In-Air Acoustic Assessment

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

Application of Empire Offshore Wind LLC for a Certificate of Environmental Compatibility and Public Need for the Construction of Approximately 17.5 Miles of Transmission Lines from the Boundary of New York State Waters to a Point of Interconnection in Brooklyn, Kings County, New York	)	Case No.: 21-T-XXXX

DIRECT TESTIMONY OF JULIA BOVEY

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Julia Bovey. I am currently employed by Equinor US Wind, LLC as a Director of External Affairs. My business address is 120 Long Ridge Road #3E01, Stamford, CT 06902.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Master of Science in Journalism from Columbia University School of Journalism and Bachelor of Arts in History from Barnard College. As a Director of External Affairs, my responsibilities include (1) earning stakeholder support crucial to developing the Project; (2) managing on-the-ground communications and outreach for Empire Wind, (3) advising leaders, particularly in New York, on which policies and programs will lead to successful, cost-effective offshore wind deployment and supply chain development; and (4) creating meaningful partnerships with nonprofits, civic groups, and educational institutions to position Empire as a valued member of these communities. Since joining Equinor US Wind, LLC, I have worked with elected officials, community boards, advocacy

groups, environmental NGOs, local stakeholders, maritime interests, tribal nations, private developers and commercial entities, as well as with federal, state and local government agencies.

Q. Have you testified in other proceedings before this Commission?

A. No. However, I also served as the Director of the Long Island Office of the Department of Public Service from July 2014 to June 2016.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the Director of External Affairs, I am responsible for earning stakeholder support crucial to developing the Project and advising State and local leaders in New York on which policies and programs will lead to successful, cost-effective deployment and supply chain development for the Project. My team and I conducted the consultations and outreach with local community groups and stakeholders to advise them on the details of our interconnection plans as described in the Article VII application and ensure that their feedback was incorporated into our development plans wherever feasible.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am on the panel co-sponsoring Exhibit 6 (Economic Effects of Proposed Facility), and sponsoring Appendix D (Public Involvement Plan).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

JULIA BOVEY
(917) 283-0198, jbov@equinor.com

EXPERIENCE

EQUINOR New York, NY
Director, External Affairs 2017 - Present

- Responsible for earning the stakeholder support crucial to developing major offshore wind projects off the coasts of New York and New Jersey
- Responsible for advising State leaders, particularly in New York and New Jersey, on which policies and programs will lead to successful, cost-effective offshore wind deployment and supply chain development
- Create meaningful partnerships with nonprofits, civic groups, and educational institutions to position Equinor US Wind as a valued member of these communities
- Consult with stakeholders and communities and ensure feedback is incorporated in project plans

JHB STRATEGIES, LLC New York, NY
Independent Consultant 2016 - 2017

- Advised and made recommendations to organizations on their strategy and tactics to advance clean energy, create and enter new markets, engage stakeholders, and communicate their value
- Expertise provided included risk assessment, navigating policy conflicts, identifying opportunities or potential pitfalls, customer engagement, and strategic advocacy
- Identified for clients barriers and challenges to clean energy deployment and correcting inequities
- Advised clients how to pursue equitable treatment and access for all energy customers and new market participants

NEW YORK STATE DEPARTMENT OF PUBLIC SERVICE Long Island, NY
Director, Long Island Office 2014 - 2016

- As the first director of the Long Island office, lead the transition to a new utility system focused on providing Long Island's 1.1 million electric customers reliable, resilient, affordable, and fair electric service, while simultaneously implementing NY State Gov. Andrew Cuomo's "Reforming the Energy Vision," the nation's most ambitious effort to move quickly to clean, distributed, market-driven energy
- Created and lead a team of 25 dedicated auditors, engineers, attorneys, and customer service specialists to provide excellent utility oversight for the Long Island system
- Oversaw the first electric utility rate case on Long Island in more than 20 years, resulting in a 25% reduction in the utility's initial rate request while increasing needed funding for reliability, financial sustainability, and customer service

FIRST WIND Washington, DC
Vice President, Federal Policy 2010 – 2014

- Directed energy policy analysis and advocacy for an innovative, independent renewable energy company which developed, financed, built, owned, and operated wind and solar projects across the U.S. Promoted from Director to Vice President in 2012
- Strategic focus on identifying and breaking down barriers to renewable energy development. Supported commercial development through all stages, from planning to federal permitting, interconnection, finance, and community support
- Strove to win equitable tax and regulatory policies for renewable energy and design new frameworks for successful scaling of renewables by positioning First Wind as a leading voice in Washington for sound, sustainable, and fair long-term energy and tax policy.
- Responsible for earning the public, private, and political support crucial for the groundbreaking agenda of FERC Chairman Jon Wellinghoff to open the grid and the regulatory framework to renewable energy and demand-side resources. Directed and managed four divisions with a total staff of 22.
- Increased Commission work protecting consumers and engaging stakeholders. Served as the Commission's primary contact point with Congress, international, federal, state, and local governments, the general public, interest groups, and the media

FEDERAL ENERGY REGULATORY COMMISSION Washington, DC
Director, Office of External Affairs 2009-2010

- Appointed by President Obama to lead the office responsible for earning the public, private, and political support crucial for the Administration's energy agenda to open the grid and the regulatory framework to renewable energy. Directed and managed four divisions with a total staff of 22.
- Increased Commission work protecting consumers and engaging stakeholders. Served as the Commission's primary contact point with Congress, international, federal, state, and local governments, the public, interest groups, and the media.

NAUTRAL RESOURCE DEFENSE COUNCIL Washington, DC
National Media Director 2006 – 2009

- Directed communications to advance NRDC's environmental advocacy agenda, focused on fighting climate change and advancing clean energy. Began in 2006 as legislative press secretary. Promoted in 2007 to Federal Communications Director. In 2008, promoted to direct the entire media program, with staff of 18 in five U.S. offices and Beijing.
- Worked to pass the 2007 American Clean Energy and Security Act, which significantly increased fuel economy in cars and required major improvements in energy efficiency in lighting, appliances, and buildings, but fell short on a federal Clean Energy Standard.

CONSERVATION LAW FOUNDATION Boston, MA
Communications Director 2004 – 2006

- Restructured and modernized CLF's Communications Department to add power and depth to advocacy on issues including climate, clean energy, water, oceans, smart growth, and environmental justice. Lead all external messaging for six-state regional environmental advocacy organization with a total staff of 55.
- Utilized strategic planning, technology, and the media to achieve advocacy goals, including establishment of the nation's first carbon credit market (RGGI), support for New England's first commercial clean energy projects, new public transit for low-income communities, and protection of critical ocean habitat.

NEW ENGLAND CABLE NEWS Boston, MA
Reporter 1996 - 2004

- Covered local and national news for the nation's largest regional news network. Followed three New Hampshire presidential primaries and elections. Specialized in live reports and immediate analysis of events.
- Known for fast writing, synthesis of information, and ability to translate complicated, sometimes technical information into compelling, human stories.
- Transitioned from live, breaking-news to specialization in health and science reporting, with special focus on public health, climate change, and the health effects of air and water pollution

EDUCATION

COLUMBIA UNIVERSITY New York, New York
MS, School of Journalism, June 1993 1992-1993

COLUMBIA UNIVERSITY New York, New York
BA, Barnard College, June 1991 1987-1991
Honors: Cum Laude

ADDITIONAL INFORMATION

Professional Memberships and Boards:

- NY State Energy Research and Development Authority industry working groups on supply chain/workforce development and stakeholder engagement
- Grid Alternatives Tri State, Director
- Women in Renewable Industries and Sustainable Energy (WRISE), Director
- American Wind Energy Association – former WindPAC committee member
- American Wind Wildlife Association - former industry partner
- Vineyard Power Cooperative (community benefits partner of Vineyard Wind), former Director

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DIRECT TESTIMONY OF GEORGES CHARLES

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Georges Charles. I am currently employed by Equinor US Wind, LLC as a Head of Grid Interconnection for Renewable Projects. My business address is 120 Long Ridge Road #3E01, Stamford, CT 06902.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Masters in Business Administration from the University of Tennessee and a Bachelor of Science in Electrical Engineering from the University of Miami. I am a candidate for Project Management Certification and have studied Powerflow & Power System Engineering Software. As a Head of Grid Interconnection for Renewable Projects, my responsibilities include (1) managing, planning, and negotiate grid interconnection agreements for the Project; (2) ensuring that requirements in grid codes, standards, and tariffs relevant to interconnection processes in the US are incorporated into the Project design; (3) monitoring the development of grid framework conditions; (4) interacting with relevant authorities and grid owners/operators, project team, and together with the

regulatory team advise on how to engage; and (5) supporting the electrical discipline within the Project including interfacing with other disciplines. Since joining Equinor US Wind, LLC, I have worked with Consolidated Edison Company of New York (ConEdison) and NYISO.

Q. Have you testified in other proceedings before this Commission?

A. No

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the Head of Grid Interconnection, I am responsible for (1) managing, planning, and negotiate grid interconnection agreements, completion of required studies, and ensuring that requirements in grid codes, standards, and tariffs relevant are incorporated into the Empire Wind 1 Project design.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring Exhibit E-4 (Engineering Justification).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

Georges Charles, MBA
(203) 803-6741, gcharles818@gmail.com

EXPERIENCE

EQUINOR Stamford, CT
Head of Grid Interconnection for Renewable Projects 2019 - Present

- Support Equinor as one of the largest offshore wind and growing force in the renewables.
- Manage, plan and negotiate grid interconnection agreements for Equinor offshore wind projects in PJM, NYISO and NEISO control areas.
- Ensure that requirements in grid codes, standards and tariffs relevant to interconnection processes in the US are incorporated into the wind farm design.
- Monitor the development of grid framework conditions in relevant US markets and together with the regulatory team advise on how to engage.
- Interact with relevant authorities and grid owners/operators, project team, regulatory team and support project activities as required.
- Support the electrical discipline within the project including interfaces with other disciplines.

INNERGEX RENEWABLES USA Houston, TX
Transmission and Interconnection/Energy Market Manager 2018 - 2019

- Perform load flow and LMP nodal analysis to determine best project sites as related to Interconnection and market potential
- Responsible for interconnection and transmission related activities for a multiple of high-value wind and solar projects under development
- Prepare marketing and LMP analysis using (Security Constraint and Economic Dispatch) SCED reports from 3rd party consultants to determine economic constraints, congestion, and curtailment risks of projects
- Provide guidance to the development, engineering, M&A/Finance, Construction, and Operations and Maintenance teams regarding new and existing project opportunities

EDPR Renewables Houston, TX
Transmission Interconnection Manager 2016 - 2018

- Perform powerflow and loadflow analyses using PSSE/MUST on base case models from the ISO systems to determine potential impact on EDPR's project portfolio
- Works with the Transmission team to ensure that adequate transmission exists for EDPR's
- development pipeline by analyzing the implications of congestion on potential and existing
- projects
- Assists the Project Development team with transmission related work for regional projects to ensure each project has sufficient transmission or access competitiveness
- Works with Market Operations staff to ensure that a complete understanding of transmission and market-related risks are included in the development strategy
- Performs research regarding interconnection and transmission policy, including FERC record searches, reviews key topics, and research and review of market rules or processes

EXELON WIND AND SOLAR Des Moines, IA
Transmission Utility Manager 2013 - 2015

- Managed overall compliance with Power Purchase Agreements (PPAs), Interconnection Service Agreements (ISAs), and Regulatory requirements. Maintained close working relationships with partners as related to Exelon Wind generation assets.
- Supported regional leadership in business development of strategic plans, assisting in determining direction of asset growth and related business activities of Exelon Wind and Solar.
- Facilitated transmission requests to Regional Transmission Organization (RTOS) and Independent System Operators (ISOs) handling renewable energy projects, partnering with Southwest Power Tool and local utilities on a 300 MW interconnection agreement.
- Served as Project Lead and coordinator for all new Exelon Wind Development projects.

- Oversaw declaration of Commercial Operation of Fourmile Wind project (60 MW) in Maryland, allowing Exelon to begin to meet its project requirement as defined by its multi-billion dollar merger with Constellation Energy.
- Identified all design requirements of Transmission Owners for all wind projects and kept constant communication with design team, ensuring project met state requirements and stayed within budget.

APEX WIND ENERGY Charlottesville, VA
Transmission Manager and Project Manager 2012 - 2013

- Handled transmission interconnection requests for Independent System Operators (PJM, SPP, MISO, CAISO, ERCOT). Produced deliverability studies, filed interconnection requests, tracked projects, and coordinated with operators on design, schedule, and cost for wind development. Drafted request for proposals (RFPs) and supported bids for transmission equipment.
- Developed diversified portfolio of 4K MWs of generation through wind energy facilities throughout the US, supporting transmission activities related to all projects.
- Oversaw teams of up to 8 consultants with budgets of up to $150M, designing wind energy project powerflow studies, physical constructions of wind turbines, substation designs, and equipment vendors.
- Performed grid analysis that determined optimal interconnections for site prospecting by overseeing technical details in conjunction with electrical design consultants.
- Facilitated RFPs for 6 equipment vendors to bid on two 167 MVA transformers; compiled bid comparison analysis, negotiated pricing, determined delivery schedules, and built equipment specifications, using analytical process to make vendor selection and enabling use of tool for additional equipment vendor evaluation.
- Improved project tracking and resource projections, aiding in development of stronger bid process.

TENNESSEE VALLEY AUTHORITY Chattanooga, TN
Operational Performance Analyst 2010 - 2012

- Designed and implemented standard operational analysis reporting for transmission operations and nuclear / fossil generation and development for a $3B nuclear reactor budget. Issued reports directly to Chief Executive Officer. Improved content, analytic quality, timeliness, and breadth of weekly and monthly performance reporting for board of directors, executive council, and supporting councils, implementing strategic policies on moving company forward.

Senior Transmission Planning Engineer 2006 - 2010

- Tracked transmission reservation activities, reviewed monthly short-term resource plans, and prevented conflicts associated with 25 requests monthly. Monitored transmission congestion and provided analysis to the real-time trading group.
- Led $65M capital project to construct 500-kV for SeverCorr Steel Plant Industrial with a 440 MW load.
- Launched $120M project to open 3 generating facilities, totaling 2K MWs of generation in the Mississippi region.

Power Resources & Operations Planning Engineer 2001 - 2006

- Managed, monitored, and updated the Electric Forecasting Model for Tennessee Valley Authority generation resources.
- Identify and analyze issues affecting TVA's customer, sales, and peak demand growth.
- Develops and maintain indicators tracking economic conditions and energy usage.
- Research and propose new data sources and methods of analysis that supports development and preparation of forecasts and maintain load forecasting databases.
- Build new reports to support Operations group and resolve data integrity issues.

EDUCATION

UNIVERSITY OF TENNESSEE Chattanooga, TN
MBA, Executive Program, 2011
Honors: MBA Student of the Year, Outstanding Leadership, 2011

UNIVERSITY OF MIAMI Coral Gables, FL
BS, Electrical Engineering, 2001

ADDITIONAL INFORMATION

CERTIFICATIONS & PROFESSIONAL DEVELOPMENT

- Powerflow & Power System Engineering Software, Power Technology Institute, 2002
- Graduate, TVA Engineering Progression Plan (1,200+ hours), TVA University, 2007
- Candidate, Project Management Certification (PMP)

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

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DIRECT TESTIMONY OF JENNIFER CHESTER

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Jennifer Chester. I am currently employed by Tetra Tech, Inc. as a Senior Project Manager and GIS/Visual Discipline Lead. My business address is 1560 Broadway, Denver, CO 80202.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Equinor Wind was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Bachelor of Science in Environmental Science from Bowling Green State University. As a visual lead, my responsibilities include overseeing the preparation of the Visual Impact Assessment for the Project. In addition to my role as a visual lead, I am a Project Manager with over 20 years of experience in environmental permitting and preparation of a variety of environmental compliance documents. Since joining Tetra Tech, I have worked with (1) federal, state, and local agencies; (2) tribal nations; (3) private developers; (4) commercial entities; (5) utilities; (6) community groups; (7) and stakeholders on a variety of energy development projects.

Q. Have you testified in other proceedings before this Commission?

A. No. However, I have testified before the New York State Board on Electric Generation Siting and the Environment.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the visual lead, I am responsible for overseeing the Visual Impact Assessment completed for the Project.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring Appendix I (Visual Impact Assessment).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

TETRA TECH

Jennifer Chester
Visual Lead/Senior Project Manager

EXPERIENCE SUMMARY

Ms. Chester has more than 20 years of experience in environmental resource and utility planning projects. Technical skills include geographic information systems (GIS), cartographic and graphic design, r

emote sensing, visual simulations, natural and cultural resource mapping, and AutoCAD. Ms. Chester is also a Senior Project Manager with extensive experience in leading project teams and working with clients to execute successful projects. Ms. Chester applies her skills to a variety of energy projects including generation and transmission work, specializing in energy facility routing and siting and permitting.

RELEVANT EXPERIENCE

Visual Impact Assessment Coordinator, Various Offshore Wind/Solar/Electric Substation and Transmission Line Projects

Visual impact assessment coordinator responsible for completion of viewshed analysis, line of sight creation, field work, visual impact assessment, visualizations such as simulations, and public outreach materials. Extensive experience with controversial projects, agency coordination, and strategic and creative thinking on visual issues associated with projects. Project locations in New York, Colorado, Hawai'i, Ohio, Kentucky, Kansas, Texas, Oklahoma, offshore Atlantic Coast from Massachusetts to North Carolina.

Greene County Solar Facility, Hecate Energy Greene 1 LLC, Hecate Energy Greene 2 LLC, and Hecate Energy Greene County 3 LLC, New York

Hecate is proposing to construct the Greene County Solar Facility, an approximately 50-megawatt photovoltaic solar facility in Greene County New York. Ms. Chester and the Tetra Team developed the visual impact assessment and associated Article VII exhibit in support of project permitting. consulted with NYSDPS prepared the acoustic assessment for the project. The work included development of visibility studies, identification of potentially sensitive visual resources, photographic simulations, line of sight analysis, systematic review of potential project effects.

Coeymans Solar Farm, Hecate Energy Albany 1 LLC and Hecate Energy Albany 2 LLC, New York

Hecate is proposing to construct the Coeymans Solar Farm a 40-megawatt photovoltaic solar facility in Albany County, New York. Ms. Chester and the Tetra Team developed the visual impact assessment and associated Article VII exhibit in support of project permitting. consulted with NYSDPS prepared the acoustic assessment for the project. The work included development of visibility studies, identification of potentially sensitive visual resources, photographic simulations, line of sight analysis, systematic review of potential project effects.

Empire Offshore Wind Project, Equinor, New York and New Jersey

Equinor proposes to construct and operate an offshore wind facility located in the designated lease area and is located approximately 22 km south of Long Island, New York and 31.4 km east of Long Branch, New Jersey. The offshore infrastructure will consist of wind turbines, foundations, offshore substations, interarray and submarine export cables, and scour protection. Onshore infrastructure will be constructed at cable landfall locations. Tetra Tech is developing a comprehensive visual impact assessment for onshore and offshore project facilities in support of the Construction and Operations Plan submittals. Work included development of viewshed analysis, identification of sensitive visual resources across several states, field visual inventories, photo simulations, and systematic evaluation of potential project effects.

Bay State Offshore Wind Project, Ørsted, Massachusetts

Ørsted proposes to construct and operate an offshore wind facility located in the designated lease area approximately 14 miles of the southern coast of Martha's Vineyard, MA. The offshore infrastructure will consist of wind turbines, foundations, offshore substations, interarray and submarine export cables, and scour protection. Onshore infrastructure will be constructed at cable landfall locations. Tetra Tech developed a comprehensive visual impact assessment for onshore and offshore project facilities in support of the Construction and Operations Plan submittals. Work included development of viewshed analysis, identification of sensitive visual resources across several states, field visual inventories, photo simulations, and systematic evaluation of potential project effects.

EDUCATION

Bachelor Science, Environmental Science, 2000

AREAS OF EXPERTISE

Visual impact assessment

Geographic Information Systems

Spatial analysis, routing/siting, utility project permitting

OFFICE

Denver, Colorado

YEARS OF EXPERIENCE

20

YEARS WITHIN FIRM

8 years 2009-2014, 2017-2021

CONTACT

(303) 291-6299

Jennifer.chester@tetratech.com

Emerson Creek Wind Farm Transmission Interconnection, Apex Wind Energy, Ohio

Apex Wind Energy (Apex) proposed the single-circuit, 230-kV Emerson Creek Wind Farm transmission line interconnection as a means to deliver power from the Emerson Creek Wind Farm in north-central Ohio to load centers in the region. Apex contracted Tetra Tech to perform an opportunities and constraints analysis and a detailed routing study to identify preferred and alternative transmission line routes for the purposes of interconnecting the wind farm with the electric transmission grid. As part of the routing study, Tetra Tech collected resource data, performed an opportunity and constraints analysis, participated in a windshield level field reconnaissance, and analyzed the alternative transmission line routes in a comparative matrix. The routing study identified preferred and alternative transmission line routes, to be submitted by Apex to the Ohio Power and Siting Board as part of their permitting requirements.

Tri-State Generation and Transmission Association, Inc., Various Projects, Colorado, New Mexico, Wyoming, Nebraska

Tetra Tech provided cultural, biological, permitting, and visual resource services for several projects across Tri-State's service territory in Wyoming, Colorado, and New Mexico. Projects included: La Jara – San Ysidro 115-kV Transmission Line, Structure 447 Vehicle Access Project, Lazy Dog Delivery Point, Gateway Delivery Point, Pierce Switching Station, Boyd Substation Shoo-Fly, Lyons Substation Improvement Project, and San Luis Valley and Poncha cultural investigations. For these projects, Tetra Tech completed biological resource assessments (noxious weeds, wetlands and water of the U.S., special status species habitat assessment), special status species surveys including burrowing owls and raptors, wetland delineation, cultural resources review and pedestrian surveys, visual impact assessment, landscape screening plan development, and photographic simulations.

Plains & Eastern Transmission Line Environmental Impact Statement, Plains and Eastern Clean Line, LLC, and U.S. Department of Energy, Oklahoma, Arkansas, Tennessee

GIS Manager for a third-party contract with Plains and Eastern Clean Line, LLC and U.S. Department of Energy (DOE) for the Environmental Impact Statement (EIS) for the Plains & Eastern Project. Services provided include preparation for and attendance at 13 public scoping meetings, preparation of a public scoping summary report, development of a project website, review of alternative transmission line routes, and review of applicant prepared technical reports, assisting DOE with cooperating agency and Section 106 consultation, and preparation of the Draft EIS and administrative record. The six cooperating agencies included the U.S. Bureau of Indian Affairs, U.S. Department of Agriculture, Natural Resources Conservation Service, Tennessee Valley Authority, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service.

Thornton Substation, Public Service Company of Colorado/Xcel Energy, Colorado

Tetra Tech is providing siting/routing, public outreach, and land use permitting support for a new substation and associated underground transmission line in the City of Thornton and Adams County, Colorado. Tetra Tech is also providing construction drawing support for the site civil engineering work and landscape architecture design. Tetra Tech has developed permit applications, visual simulations, public meeting materials and notifications, website design, provided general project support, and assisted in strategy development for the project.

Lazy Dog Substation, United Power & Tri-State Generation and Transmission Assoc., Inc., Colorado

Project manager for a new greenfield substation development project. Tetra Tech performed biological and cultural resource surveys, development of three concurrent land use applications including visual simulations, and is providing ongoing project support, including avian nest monitoring prior to and during construction.

Palmetto Express Pipeline (Mountain Valley), Equitrans, L.P., Virginia and West Virginia

Routing Lead for the Palmetto Express Pipeline project routing study and fatal flaw analysis. Assisted in development of the siting study for the natural gas pipeline route including identification of opportunity and constraint criteria, coordination of collecting and mapping and analysis of over 150 layers of vector and raster GIS data from federal, state, and local private and public agencies. Identified alternative routes and route evaluation criteria and presented to the client team and conducted analysis for Critical Issues Analysis report.

Project Manager Working for Tri-State Generation & Transmission Association, Inc., Colorado, Wyoming, New Mexico

Project manager for a variety of greenfield substation development projects, new transmission line development, and maintenance and replacement project work across a multi-state service territory. Responsibilities included project initiation and coordination with member cooperatives and customers, contract development, cost estimate coordination, routing and site review, permitting, and construction tracking through project energization. Projects included two solar interconnections in the San Luis Valley and southeastern areas of Colorado.

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DIRECT TESTIMONY OF BENJAMIN R.T. COTTS AND WILLIAM H. BAILEY

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. Benjamin R.T. Cotts and William H. Bailey We are employed by Exponent Engineering PC. Our business address is 17000 Science Drive, Suite 200, Bowie, MD 20715.

Q. On whose behalf are you testifying?

A. We are testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of our testimony is to support Equinor Wind's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Dr. Cotts, in what capacity are you employed?

A. I am a Senior Managing Engineer in the Electrical Engineering & Computer Science practice.

Q. Please describe your education background and business experience.

A. My educational background includes a Bachelor of Science in Electrical Engineering (*summa cum laude*) from the University of Portland as well as an Master of Science and Ph.D. in Electrical Engineering from Stanford University. After graduation, I was awarded a postdoctoral fellowship in electrical engineering at the University of Colorado, Denver. I also am certified as a professional engineer in the state of California. My Curriculum Vitae is contained in Attachment BRTC-1.

As a Senior Managing Engineer in the Electrical Engineering and Computer Science Practice, my responsibilities include reviewing, analyzing, and conducting studies related to electromagnetic fields from natural and manmade sources. In addition to my role as a Senior Managing Engineer, I was previously a leading figure in coordinating scientific outreach to developing countries in the field of electromagnetics through the United Nations (UN) International Heliophysical Year (IHY) and International Space Weather Initiative (ISWI) programs. I was a founding member of a NASA/UN-sponsored conference series, organizing and leading multiple conferences on electromagnetic fields related to atmospheric electricity and space science.

I also am an officer in the Institute for Electrical and Electronic Engineer (IEEE) Power Engineering Society (PES) working group for Corona and Field Effects overseeing standards related to the modeling, measurement, and analysis of electric and magnetic fields (EMF), audible noise, and radio noise from alternating current (AC) and direct current (DC) transmission lines. In addition, I am a member of the IEEE TC95 committee of the International Committee for Electromagnetic Safety that develops standards related to electromagnetic safety, and a member of the Conseil International des Grands Réseaux Électriques (CIGRE).

Q. Have you testified in other proceedings before this Commission?

A. Yes. I have previously submitted testimony in Article VII proceedings before this Commission in as well as before commissions in other states and provinces.

Q. Dr. Bailey, in what capacity are you employed?

A. I am a Principal Scientist in the Center for Occupational & Environmental Health Assessment in the Health Sciences Practice.

Q. Please describe your education background and business experience.

A. I received a bachelor's degree from Dartmouth College, an M.B.A. from the University of Chicago, a Ph.D. in Neuropsychology from the City University of New York, and two years of postdoctoral training in Neurochemistry at The Rockefeller University in New York.

Much of my work over the past 35 years relates to the exposures and potential biological, environmental, and health effects associated with EMF and RF signals produced by a wide variety of electrical facilities and devices, including electric utility facilities such as transmission lines and substations, electrified railroad lines, industrial equipment, appliances, wireless communication systems, and medical devices. Exposure assessment is a key element in the assessment of potential risks of chemicals and physical agents and in environmental epidemiology studies. The science of exposure assessment encompasses studies based on chemical, biological, and physical principles required to analyze human exposure from single and multiple routes; occupational exposure studies; and population-based studies.

I also serve as an Associate Editor of the journal *Health Physics*, with primary responsibility for managing the peer review of manuscripts describing the results of research on electromagnetic fields and serve on the IEEE International Committee on Electromagnetic Safety Committee TC95, which sets standards for exposure of the public and workers to electromagnetic fields for frequencies from 0 – 300 Gigahertz. In addition, I have served as an advisor on health risk assessments and public policy to multiple international scientific and health agencies, including the World Health Organization (WHO) and state agencies, on topics relating to electromagnetic fields. I have published

or presented more than 90 scientific papers on this and related subjects. My curriculum vitae is included as Attachment WHB-1.

Q. Have you testified in other proceedings before this Commission?

A. Yes. I have testified in Article VII proceedings before this Commission and also before similar commissions in other states, provinces, and countries.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. Dr. Cotts was responsible for calculating the magnetic-field and induced electric-field levels associated with the proposed transmission lines along the various portions of the Project including the Submarine Export Cables and the Onshore Interconnection Cables, and evaluating compliance with the applicable EMF limits contained in the 1990 Statement of Interim Policy on Magnetic Fields of Major Transmission Facilities published by the New York State Public Service Commission.

Dr. Bailey's responsibilities include assessment of the potential effects of exposures to these fields on the physiology, detection thresholds, and behavioral responses of key species and species groups expected to inhabit the Project area, including resident and migratory bony fish, elasmobranchs, and marine invertebrates. This work is summarized in relevant sections of the Article VII application. Dr. Bailey is prepared, if requested, to testify regarding the state of EMF-related science.

Q. What Exhibits are you sponsoring in this proceeding?

A. We are co-sponsoring Appendix F (Electric- and Magnetic-Field Assessment).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

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Professional Profile

Dr. Bailey specializes in applying state-of-the-art assessment methods to environmental and occupational health issues. His 30 years of training and experience include laboratory and epidemiologic research, health risk assessment, and comprehensive exposure analysis. Dr. Bailey has investigated exposures to alternating current, direct current, and radiofrequency electromagnetic fields, 'stray voltage', and electrical shock, as well as to a variety of chemical agents and air pollutants. He is particularly well known for his research on potential effects of electromagnetic fields on the environment and health and has served as an advisor to numerous state, federal, and international agencies. Currently, he is involved in research on exposures to marine life from submarine cables, respiratory exposures to ultrafine- and nanoparticles, and EMF and RF exposure guidelines.

Dr. Bailey has been a visiting scientist at the Cornell University Medical College and has lectured at Rutgers University, the University of Texas (San Antonio), and the Harvard School of Public Health. He was formerly Head of the Laboratory of Neuropharmacology and Environmental Toxicology at the New York State Institute for Basic Research, Staten Island, New York, and an Assistant Professor and NIH postdoctoral fellow in Neurochemistry at The Rockefeller University in New York.

Academic Credentials & Professional Honors

Ph.D., Neuropsychology, City University of New York, 1975

M.B.A., University of Chicago, 1969

B.A., Dartmouth College, 1966

Sigma Xi

The Institute of Electrical and Electronics Engineers/International Committee on Electromagnetic Safety (Subcommittee 3, Safety Levels with Respect to Human Exposure to Fields (0 to -3 kHz) and Subcommittee 4, Safety Levels with Respect to Human Exposure to Radiofrequency Fields (3 kHz to 3 GHz)

Elected member of the Committee on Man and Radiation (COMAR) of the IEEE Engineering in Medicine and Biology Society, 1998-2001

Academic Appointments

Visiting Scientist, Department of Pharmacology, Cornell University Medical College, New York, NY, 1986-2012

Visiting Scientist, The Jackson Laboratory, Bar Harbor, ME, 1984-1985

Head, Laboratory of Neuropharmacology and Environmental Toxicology, NYS Institute for Basic Research in Developmental Disabilities, Staten Island, NY, 1983-1987

Assistant Professor, The Rockefeller University, New York, NY, 1976-1983

Postdoctoral Fellow, Neurochemistry, The Rockefeller University, New York, NY, 1974-1976

Dissertation Research, The Rockefeller University, New York, NY, 1972-1974

CUNY Research Fellow, Dept. of Psychology, Queens College, City University of New York, Flushing, NY, 1969-1971

Clinical Research Assistant, Department of Psychiatry, University of Chicago; Psychiatric Psychosomatic Inst., Michael Reese Hospital, and Illinois State Psychiatric Inst, Chicago, IL, 1968-1969

Teaching Appointments

Lecturer, University of Texas Health Science Center, Center for Environmental Radiation Toxicology, San Antonio, TX, 1998

Lecturer, Harvard School of Public Health, Office of Continuing Education, Boston, MA, 1995, 1997

Lecturer, Rutgers University, Office of Continuing Education, New Brunswick, NJ, 1991-1995

Adjunct Assistant Professor, Queens College, CUNY, Flushing, NY, 1978

Lecturer, Queens College, CUNY, Flushing, NY, 1969-1974

Prior Experience

President, Bailey Research Associates, Inc., 1991-2000

Vice President, Environmental Research Information, Inc., 1987-1990

Head of Laboratory of Environmental Toxicology and Neuropharmacology, New York State Institute for Basic Research, 1983-1987

Assistant Professor, The Rockefeller University, 1976-1983

Professional Affiliations

The Health Physics Society (Affiliate of the International Radiation Protection Society)

Society for Risk Analysis

International Society of Exposure Analysis

New York Academy of Sciences

American Association for the Advancement of Science (Life Time Member)

Society for Neuroscience/International Brain Research Organization

Bioelectromagnetics Society

The Institute of Electrical and Electronics Engineers (Life Member)

The Institute of Electrical and Electronics Engineers Engineering in Medicine and Biology Society

Conseil International des Grands Réseaux Électriques

Publications

Bailey WH, Cotts B, Dopart PJ. Wireless 5G radiofrequency technology - An overview of small cell exposures, standards and science. IEEE Access. 2020 Aug; 8:140792-140797. doi:0.1109/ACCESS.2020.3010677.

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Bailey WH, Williams AL, Leonhard MJ. Exposure of laboratory animals to small air ions: a systematic review of biological and behavioral studies. Biomed Eng Online. 2018 Jun 5;17(1):72. doi: 10.1186/s12938-018-0499-z

Schmiedchen K, Petri AK, Driessen S, Bailey WH. Systematic review of biological effects of exposure to static electric fields. Part II: Invertebrates and plants. Environ Res. 2018 Jan;160:60-76. doi: 10.1016/j.envres.2017.09.013. Epub 2017 Oct 3.

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Charry JM, Bailey WH, Weiss JM. Critical annotated bibliographical review of air ion effects on biology and behavior. Rockefeller University, New York, NY, 1982.

Bailey WH. Avoidance behavior in rats with hereditary hypothalamic diabetes insipidus. Dissertation, City University of New York, 1975.

Invited Presentations

Chou CK, Petersen R, Foster K, Hirata A, Ziskin M, Reilly JP, Tell R, Faraone A, Klauenberg BJ, Kavet R, Graf K, Cleveland R, Thansandote A, Bushberg J, Bailey W, Osepchuk J, Legros A, Yamazaki K, Bodemann R. Revision of IEEE Standards C95.1-2005 and C95.6-2002. BioEM2018 - Joint Annual Meeting of The Bioelectromagnetics Society and the European BioElectromagnetics Association, Piran, Portorož, Slovenia, June 29, 2018.

Bailey WH. Thresholds for peripheral nerve stimulation by ELF magnetic fields in humans. Presentation at Bundesamt für Strahlenschutz Workshop on Action and Perception Thresholds of Static and ELF Magnetic and Electric Fields and Contact Currents in Humans, Munich, Germany, October 26-27, 2016.

Bailey WH. Update on scientific developments regarding extremely low frequency and radiofrequency fields and health. Committee on Man and Radiation (COMAR) of the IEEE Engineering in Medicine and Biology Society, January 11, 2016.

Bailey WH. Measurements of charged aerosols around DC transmission lines and other locations. International Committee on Electromagnetic Safety TC95/ Subcommittee 3: Safety Levels with Respect to

Human Exposure to Electromagnetic Fields, 0 - 3 kHz, December 2011.

Bailey WH, Erdreich LS. Human sensitivity and variability in response to electromagnetic fields: Implications for standard setting. International Workshop on EMF Dosimetry and Biophysical Aspects Relevant to Setting Exposure Guidelines. International Commission on Non-Ionizing Radiation Protection, Berlin, March 2006.

Bailey WH. Research-based approach to setting electric and magnetic field exposure guidelines (0-3000 Hz). IEEE Committee on Electromagnetic Safety, December 2005.

Bailey WH. Conference Keynote Presentation. Research supporting 50/60 Hz electric and magnetic field exposure guidelines. Canadian Radiation Protection Association, Annual Conference, Winnipeg, June 2005.

Bailey WH. Scientific methodology for assessing public health issues: A case study of EMF. Canadian Radiation Protection Association, Annual Conference, Public Information for Teachers, Winnipeg, June 2005.

Bailey WH. Assessment of potential environmental effects of electromagnetic fields from submarine cables. Connecticut Academy of Science and Engineering, Long Island Sound Bottomlands Symposium: Study of Benthic Habitats, July 2004.

De Santo RS, Coe M, Bailey WH. Environmental justice assessment and the use of GIS tools and methods. National Association of Environmental Professionals, 27th Annual Conference, Dearborn, MI, June 2002.

Bailey WH. Applications to enhance safety: Research to understand and control potential risks. Human Factors and Safety Research, Volpe National Transportation Systems Center/Dutch Ministry of Transport, Cambridge, MA, November 2000.

Bailey WH. EMF health effects review. EMF Exposure Guideline Workshop, Brussels Belgium, June 2000.

Bailey WH. Dealing with uncertainty when formulating guidelines. EMF Exposure Guideline Workshop, Brussels Belgium, June 2000.

Bailey WH. Field parameters: Policy implications. EMF Engineering Review Symposium, Status and Summary of EMF Engineering Research, Charleston, SC, April 1998.

Bailey WH. Principles of risk assessment: Application to current issues. Symposium on EMF Risk Perception and Communication, World Health Organization, Ottawa, Canada, August 1998.

Bailey WH. Current guidelines for occupational exposure to power frequency magnetic fields. EPRI EMF Seminar, New Research Horizons, March 1997.

Bailey WH. Methods to assess potential health risks of cell telephone electromagnetic fields. IBC Conference — Cell Telephones: Is there a Health Risk? Washington, DC, June 1997.

Bailey WH. Principles of risk assessment and their limitations. Symposium on Risk Perception, Risk Communication and its Application to EMF Exposure, International Commission on Non-Ionizing Radiation Protection, Vienna, Austria, October 1997.

Bailey WH. Probabilistic approach for setting guidelines to limit induction effects. IEEE Standards Coordinating Committee 28: Non-Ionizing Radiation, Subcommittee 3 (0-3 kHz), June 1997.

Bailey WH. Power frequency field exposure guidelines. IEEE Standards Coordinating Committee 28: Non-Ionizing Radiation, Subcommittee 3 (0-3 kHz), June 1996.

Bailey WH. Epidemiology and experimental studies. American Industrial Hygiene Conference, Washington, DC, May 1996.

Bailey WH. Review of 60 Hz epidemiology studies. EMF Workshop, Canadian Radiation Protection Association, Ontario, Canada, June 1993.

Bailey WH. Biological and health research on electric and magnetic fields. American Industrial Hygiene Association, Fredrickton, New Brunswick, Canada, October 1992.

Bailey WH. Electromagnetic fields and health. Institute of Electrical and Electronics Engineers, Bethlehem, PA, January 1992.

Bailey WH, Weiss JM. Psychological factors in experimental heart pathology. Visiting Scholar Presentation, National Heart Lung and Blood Institute, Bethesda, MD, March 1977.

Presentations

Williams AI, Bailey WH. Toxicologic assessment of air ion exposures in laboratory animals. Poster presentation at 53rd Annual Meeting of the Society of Toxicology, Phoenix, AZ, March 26, 2014.

Perez V, Alexander DD, Bailey WH. Air ions and mood outcomes: A review and meta-analysis. Poster presentation at the American College of Epidemiology, Chicago, IL, September 8-11, 2012.

Shkolnikov Y, Bailey WH. Electromagnetic interference and exposure from household wireless networks. Product Safety Engineering Society Meeting, San Diego, CA, October 2011.

Nestler E, Trichas T, Pembroke A, Bailey W. Will undersea power cables from offshore wind projects affect sharks? North American Offshore Wind Conference & Exhibition, Atlantic City, NJ, October 2010.

Nestler E, Pembroke A, Bailey W. Effects of EMFs from undersea power lines on marine species. Energy Ocean International, Ft. Lauderdale, FL, June 2010.

Pembroke A, Bailey W. Effects of EMFs from undersea power cables on elasmobranchs and other marine species. Windpower 2010 Conference and Exhibition, Dallas, TX, 2010.

Bailey WH. Clarifying the neurological basis for ELF guidelines. Workshop on Practical Implementation of ELF and RF Guidelines. The Bioelectromagnetics Society 29th Annual Meeting, Kanazawa, Japan, June 2007.

Sun B, Urban B, Bailey W. AERMOD simulation of near-field dispersion of natural gas plume from accidental pipeline rupture. Air and Waste Management Association: Health Environments: Rebirth and Renewal, New Orleans, LA, June 2006.

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Bailey WH, Bracken TD, Senior RS. Long-term monitoring of static electric field and space charge near AC transmission Lines. The Bioelectromagnetics Society, 26th Annual Meeting, Washington, DC, June 2004.

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Bracken TD, Senior RS, Rankin RF, Bailey WH, Kavet R. Relevance of occupational guidelines to utility worker magnetic-field exposures. Second World Congress for Electricity and Magnetism in Biology and Medicine, Bologna, Italy, June 1997.

Weil DE, Erdreich LS, Bailey WH. Are 60-Hz magnetic fields cancer causing agents? Mechanisms and Prevention of Environmentally Caused Cancers, The Lovelace Institutes 1995 Annual Symposium, La Fonda, Santa Fe, NM, October 1995.

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Charry JM, Bailey WH. DC Electrical environment in proximity to VDTs. 7th Annual Meeting of the Bioelectromagnetics Society, June 1985.

Bailey WH, Collins RL, Lahita RG. Cerebral lateralization: Association with serum antibodies to DNA in selected bred mouse lines. Society for Neuroscience, 1985.

Kavet R, Bailey WH, Charry JM. Respiratory neuroendocrine cells: A plausible site for air ion effects. Seventh Annual Meeting of The Bioelectromagnetics Society, June 1985.

Bailey WH, Charry JM. Measurement of neurotransmitter release and utilization in selected brain regions of rats exposed to DC electric fields and atmospheric space charge. 23rd Hanford Life Sciences Symposium, Richland, WA, October 1984.

Bailey WH, Charry JM, Weiss JM, Cardle K, Shapiro M. Regional analysis of biogenic amine turnover in rat brain after exposure to electrically charged air molecules (air ions). Society for Neuroscience, 1983.

Bailey WH. Biological effects of air ions: Fact and fancy. American Institute of Medical Climatology Conference on Environmental Ions and Related Biological Effects, October 1982.

Goodman PA, Weiss JM, Hoffman LJ, Ambrose MJ, Bailey WH, Charry, JM. Reversal of behavioral depression by infusion of an A2 adrenergic agonist into the locus coeruleus. Society for Neuroscience, November 1982.

Charry JM, Bailey WH. Biochemical and behavioral effects of small air ions. Electric Power Research Institute Workshop, April 1981.

Bailey WH, Alsonso DR, Weiss JM, Chin S. Predictability: A psychologic/ behavioral variable affecting stress-induced myocardial pathology in the rat. Society for Neuroscience, November 1980.

Salman SL, Weiss JM, Bailey WH, Joh TH. Relationship between endogenous brain tyrosine hydroxylase and social behavior of rats. Society of Neuroscience, November 1980.

Bailey WH, Maclusky S. Appearance of creatine kinase isoenzymes in rat plasma following myocardial injury produced by isoproterenol. Fed Assoc Soc Exp Biol, April 1978.

Bailey WH, Maclusky S. Appearance of creatine kinase isoenzymes in rat plasma following myocardial injury by isoproterenol. Fed Proc 1978; 37:889.

Bailey WH, Weiss JM. Effect of ACTH 4-10 on passive avoidance of rats lacking vasopressin (Brattleboro strain). Eastern Psychological Association, April 1976.

Advisory Appointments

National Institute of Environmental Health Sciences, National Toxicology Program, Participation in research study to update Level of Concern categories to better integrate evidence for toxicity and extent of human exposure, 2017

Bundesamt für Strahlenschutz - Federal Office for Radiation Protection. Summarize recent research and recommend research direction on magnetic field stimulation of peripheral nerves, 2016

Federal Office for Radiation Protection - Germany, Technical input to assessment of static and ELF exposures to public from updating national transmission network, 2016

RWTH Aachen University. Workshop on human perception thresholds in static electric fields from high-voltage direct current (HVDC) transmission lines, 2015

ZonMw - Netherlands Organization for Health Research and Development, 2012; 2007-2008, reviewer for National Programme on EMF and Health

US Bureau of Ocean Energy Management, Regulation and Enforcement, 2009-2010

Canadian National Collaborating Centre for Environmental Health, reviewer of Centre reports, 2008

Island Regulatory and Appeals Commission, province of Prince Edward Island, Canada, 2008

National Institute of Environmental Health Sciences/ National Institutes of Health, Review Committee, Neurotoxicology, Superfund Hazardous Substances Basic Research and Training Program, 2004

National Institute of Environmental Health Sciences, Review Committee Role of Air Pollutants in Cardiovascular Disease, 2004

Working Group on Non-Ionizing Radiation, Static and Extremely Low-Frequency Electromagnetic Fields, International Agency for Research on Cancer, 2000-2002

Working Group, EMF Risk Perception and Communication, World Health Organization, 1998-2005

Member, International Committee on Electromagnetic Safety, Subcommittee 3 - Safety Levels with Respect to Human Exposure to Fields (0 to 3 kHz) and Subcommittee 4 - Safety Levels with Respect to Human Exposure (3kHz to 3GHz), Institute of Electrical and Electronics Engineers (IEEE), 1996-present

Invited participant, National Institute of Environmental Health Sciences, EMF Science Review Symposium: Clinical and In Vivo Laboratory Findings, 1998

Working Group, EMF Risk Perception and Communication, International Commission on Non-Ionizing Radiation Protection, 1997

U.S. Department of Energy, RAPID EMF Engineering Review, 1997

Oak Ridge National Laboratory, 1996

American Arbitration Association International Center for Dispute Resolution, 1995-1996

U.S. Department of Energy, 1995

National Institute for Occupational Safety and Health, 1994-1995

Federal Rail Administration, 1993-1996

U.S. Forest Service, 1993

New York State Department of Environmental Conservation, 1993

National Science Foundation

National Institutes of Health, Special Study Section — Electromagnetics, 1991-1993

Maryland Public Service Commission and Maryland Department of Natural Resources, Scientific Advisor on health issues pertaining to HVAC Transmission Lines, 1988-1989

Scientific advisor on biological aspects of electromagnetic fields, Electric Power Research Institute, Palo Alto, CA, 1985-1989

U.S. Public Health Service, NIMH: Psychopharmacology and Neuropsychology Review Committee, 1984

Consultant on biochemical analysis, Colgan Institute of Nutritional Science, Carlsbad, CA, 1982-1983

Behavioral Medicine Abstracts, Editor, animal behavior and physiology, 1981-1983

Consultant on biological and behavioral effects of high-voltage DC transmission lines, Vermont Department of Public Service, Montpelier, VT, 1981-1982

Scientific advisory committee on health and safety effects of a high-voltage DC transmission line, Minnesota Environmental Quality Board, St. Paul, MN, 1981-1982

Consultant on biochemical diagnostics, Biokinetix Corp., Stamford, CT, 1978-1980

Editorships & Editorial Review Boards

Associate Editor, Non-Ionizing Radiation, Health Physics, 1996-present

Exponent®
Engineering & Scientific Consulting

Benjamin R.T. Cotts, Ph.D., P.E.

Senior Managing Engineer | Electrical Engineering & Computer Science
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(301) 291-2519 tel | bcotts@exponent.com

Professional Profile

Dr. Cotts is experienced in both applied and theoretical electromagnetics and plasma physics including modeling and measurement analyses of natural and anthropogenic electromagnetic fields such as space weather, and geomagnetic storms as well as in the initiation, field effects, and characteristics of lightning discharges. Dr. Cotts performs modeling and measurement studies of power system EMF, audible noise, and radio noise including evaluations of 500-kV AC and ±560 kV DC transmission lines. Dr. Cotts has further experience in modeling magnetic fields and induced electric fields for offshore wind farms including those from wind turbines, offshore substations and subsea AC and DC transmission lines and is an officer in the IEEE working group for Corona and Field Effects overseeing IEEE standards 644, 430, 656, 1542, 1227, 2746, 1829 and 1308.

Dr. Cotts also performs various types of electromagnetic field evaluations for devices and systems including smart meter mesh networks and government/military communications facilities as well as exposure, EMI or EMC assessments. These assessments are provided for clients such as federal and state agencies, utilities, hospitals, medical-device manufacturers, construction developers, the U.S. military. In addition, Dr. Cotts regularly receives requests to perform exposure assessments for patients with pacemakers, ICDs, and other implantable medical devices and to remediate EMI issues for medical devices and in health care settings.

Dr. Cotts has been a leading figure in coordinating scientific outreach to developing countries through the United Nations International Heliophysical Year (IHY) and International Space Weather Initiative (ISWI) programs and was a founding member of a NASA/UN-sponsored conference series organized and led multiple conferences on atmospheric and space science.

Dr. Cotts's has a decade of experience with the initiation, field effects, and propagation of lightning discharges; combining remote sensing measurements of ionospheric disturbances with numerical modeling of atmospheric, ionospheric, and magnetospheric interactions to determine the role of global lightning on the removal of radiation belt electrons. These radiation belt electrons are a critical factor in space weather for determining the effective lifetime of spacecraft with electronics that can be irreversibly damaged by radiation belt electrons.

Additionally, Dr. Cotts software engineering experience includes the use of Matlab, C, C++, and a variety of other scientific packages including Mathematica and COMSOL. He has experience with auditing software processes and algorithms used during his investigations related to control systems involved in failure events.

Academic Credentials & Professional Honors

Ph.D., Electrical Engineering, Stanford University, 2011

M.S., Electrical Engineering, Stanford University, 2004

B.S., Electrical Engineering, University of Portland, summa cum laude, 2002

Outstanding Student Paper Award, AGU Fall Meeting, San Francisco, California, 2004

Tau Beta Pi Engineering Honor Society

Delta Epsilon Sigma, National Scholastic Honor Society

Awarded “2017 IEEE Standards Medallion” For contributions to standards development in power and energy distribution.

Awarded the "2014 Fire Protection Research Foundation Medal" by the NFPA's Fire Protection Research Foundation for the 2013 research project ("Best Practices for Emergency Response to Incidents Involving Electric Vehicles Battery Hazards: A Report on Full-Scale Testing Results") that best exemplified the Foundation's fire safety mission at the National Fire Protection Association's Conference & Exposition, June 2014

Licenses and Certifications

Licensed Professional Electrical Engineer, California, #21277

Prior Experience

Post Doctoral Scholar, University of Colorado, Denver, 2011

International Science Outreach Manager, Stanford University, 2007-2011

Research Assistant, Stanford University, 2002-2011

Energy Research Fellow, Stanford Linear Accelerator Center, 2001

Professional Affiliations

Institute of Electrical and Electronics Engineers — IEEE

International Committee on Electromagnetic Safety — ICES

International Council on Large Electric Systems — CIGRÉ

Publications

Peer Reviewed Publications

Gołkowski M, Gross NC, Moore RC, Cotts BRT, Mitchell M. Observation of local and conjugate ionospheric perturbations from individual oceanic lightning flashes. Geophysical Research Letters 2014; 41:273-279. doi:10.1002/2013GL058861.

NaitAmor, S, Cohen MB, T. Cotts BR, Ghalila H, AlAbdoadaim MA, Graf K. Characteristics of long

recovery early VLF events observed by the North African AWESOME Network. Journal of Geophysical Research: Space Physics 2013; 10.1002/jgra.50448

Haldoupis, C, Cohen M, Arnone E, Cotts B, Dietrich S. The VLF fingerprint of elves: Step-like and long-recovery early VLF perturbations caused by powerful ±CG lightning EM pulses. Journal of Geophysical Research: Space Physics, 2013. doi: 10.1002/jgra.50489.

Haldoupis C, Cohen M, Cotts B, Arnone E, Inan U. Long-lasting D-region ionospheric modifications, caused by intense lightning in association with elve and sprite pairs. Geophysical Research Letters 2012; 39:L16801. doi:10.1029/2012GL052765.

Salut MM, Abdullah M, Graf KL, Cohen MB, Cotts BRT, Kumar S. Long recovery VLF perturbations associated with lightning discharges. Journal of Geophysical Research 2012; 117:A08311. doi:10.1029/2012JA017567.

Cotts BRT, Gołkowski M, Moore RC. Ionospheric effects of whistler waves from rocket-triggered lightning. Geophysical Research Letters 2011; 38:L24805. doi:10.1029/2011GL049869.

Cotts BRT, Inan US, Lehtinen NG. Longitudinal dependence of lightning-induced electron precipitation. Journal of Geophysical Research 2011; 116:A10206. doi:10.1029/2011JA016581.

Cotts BRT. Global quantification of lightning-induced electron precipitation using very low frequency remote sensing. Doctoral Dissertation, Stanford University, 2011.

Haldoupis C, Amvrosiadi N, Cotts BRT, Van der Velde O, Chanrion O, Neubert T. More evidence for a one-to-one correlation between Sprites and Early VLF perturbations. Journal of Geophysical Research 2010, 115:A07304. doi:10.1029/2009JA015165.

NaitAmor S, Al Abdoadaim MA, Cohen MB, Cotts BRT, Neubeurt T, Soula S, Chanrion O, Abdelatif T. VLF observations of ionospheric disturbances in association with TLEs from the Eurosprite-2007 Campaign, Journal of Geophysical Research 2010; 115:A00E47. doi:10.1029/2009JA015026.

Cotts BRT, Inan US. VLF observation of long ionospheric recovery events. Geophysical Research Letters 2007; 34:L14809. doi:10.1029/2007GL030094.

Reports

Snyder DB, Bailey WH, Palmquist K, Cotts BRT, Olsen KR. Evaluation of Potential EMF Effects on Fish Species of Commercial or Recreational Fishing Importance in Southern New England. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Headquarters, Sterling, VA. OCS Study BOEM 2019-049, August 2019.

Long RT, Blum AF, Bress TJ, Cotts, BRT. Best practices for emergency response to incidents involving electric vehicle battery hazards. Fire Protection Research Foundation Report, 2013.

Other Publications

Cotts, BRT, Graf KL, Bailey, WH. Electromagnetic Interference Considerations for Electrical Power Systems. Ch. 5 in: The Power Grid: Smart, Secure, Green, and Reliable. D'Andrade B (ed). Elsevier Ltd., 2017, 137-170.

Cotts, BRT, Prigmore, JR, Graf KL. HVDC Transmission for Renewable Energy Integration. Ch. 6 in: The Power Grid: Smart, Secure, Green, and Reliable. D'Andrade B (ed). Elsevier Ltd., 2017, 171-196.

Pooley M, Cotts B, Brennan, III JF. Compatibility of medical devices with electromagnetic and wireless

signals. North Carolina Associate of Defense Attorneys The Resource; 2017 Sept.

Phan SK, Stepan J, Cotts BRT. Electrical Conductor Spacing Standards for Printed Circuit Boards. Exponent Electrical Engineering and Computer Science Newsletter. Vol. 4, 2016.

Cotts BRT, Inan US, Lehtinen NG. Theoretical prediction of longitudinal dependence of electron precipitation due to lightning. AGU Fall Meeting, San Francisco, CA, December 14-18, 2009.

Inan US, Cotts BRT, Lehtinen NG. Long recovery early/fast events as possible evidence of persistent ionization by Giant Blue Jets. IUGG, Perugia, Italy, July 2-13, 2007.

Cotts BRT, Inan US, Lehtinen NG. Long recovery early/fast events as possible evidence of persistent ionization by Giant Blue Jets. URSI, Ottawa, Canada, July 22-26, 2007.

Cotts BRT, Inan US. Observation of daytime perturbations of VLF transmitter signals. ICAE, Beijing, China, August 13-17, 2007.

Cotts BRT, Inan US. Daytime early VLF perturbations exhibiting long recoveries and wide-angle scattering. AGU, San Francisco, CA, December 10-14, 2007.

Cotts BRT, Inan US. VLF observation of long ionospheric recovery events. AGU, San Francisco, CA, December 11-15, 2006.

Cotts BRT, Inan US, Pasko VP. Ray tracing techniques applied to sky wave observations of lightning-induced ionospheric effects on short range VLF paths. URSI, Boulder, CO, January 5-8, 2005.

Cotts BRT, Inan US. Ray-based modeling of lightning-induced ionospheric effects on short range VLF skywave signals. AGU, San Francisco, CA, December 5-9, 2005.

Cotts BRT, Inan US. Short range VLF sky wave observations of lightning-induced ionospheric effects. AGU, San Francisco, CA, December 13-17, 2004.

Cotts BRT, Inan US, Golkowski M. Lightning-induced electron precipitation measurements with VLF and the Arecibo Radar. PARS Summer School, Arecibo, PR, August 10-21, 2004.

Cotts BRT, Inan US, Selser E. ELF/VLF near-field imaging of modulated auroral-electrojet currents using a VLF interferometer. PARS Summer School, University of Fairbanks Alaska, August 11-21, 2003.

Cotts BRT, Inan US. Precipitation of energetic electrons by Magnetospherically Reecting (MR) Whistlers. AGU, San Francisco, CA, December 8-12, 2003.

Peer Reviewer

Referee for Journal of Geophysical Research – Space Physics

Referee for Radiation Protection Dosimetry

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

Application of Empire Offshore Wind LLC for a Certificate of Environmental Compatibility and Public Need for the Construction of Approximately 17.5 Miles of Transmission Lines from the Boundary of New York State Waters to a Point of Interconnection in Brooklyn, Kings County, New York	)	Case No.: 21-T-XXXX

DIRECT TESTIMONY OF RYAN J. EARLEY

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Ryan J. Earley. I am currently employed by Tetra Tech Inc. as the lead for subsea cable route siting and as a Senior Marine Geophysicist. My business address is 10 Post Office Square, Suite 1100, Boston, MA 02109.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Master of Science in Marine Geology and Geophysics from Rutgers University and a Bachelor of Science in Physics from The College of New Jersey, as well as a Graduate Certificate in Engineering Geophysics from Rutgers University. As a subject matter expert in subsea cable siting, my responsibilities include providing route siting guidance to clients to identify and minimize key risks, constraints, and impacts, while optimizing routes that are installable and maintainable over the life of the system. This role also includes understanding the risk to subsea infrastructure and the factors that provide protection to a cable, such as burial and external protection. In addition to my role as a subsea cable siting subject matter expert, I also play an active role advising clients on

integrating the data and findings acquired by offshore wind developers' geophysical and geotechnical surveys into the needs of stakeholders and regulators as part of the consenting process. I also support the permitting of a variety of telecoms, transmission, and offshore energy projects for Tetra Tech's clients. Since joining Tetra Tech, I have worked with federal regulators (United States Army Corps of Engineers, Bureau of Ocean Energy Management, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, and others), on projects including for private clients (Equinor, Ørsted, Avangrid, Dominion, EDF Renewables, Deepwater Wind, Shell, NextEra, Emera, National Grid, Deepwater Wind, Mayflower Wind, EDPR, TE SubCom, David Ross Group, Orcas Powe and Light Cooperative, and others). All of these projects have included working with state coastal resource agencies and regulators on the Atlantic (MA, RI, NY, NJ, VA, NC, MD, Pacific (HI, WA), and Gulf of Mexico (TX). Public and non-governmental stakeholders include private citizens, commercial and recreational fishing interests, environmental advocacy groups, independent scientific researchers, and government oversight groups.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the lead consultant for subsea cable route siting, I am responsible for understanding the constraints and features encountered within the Project area and how those items drive the overall optimization of the siting of the offshore export cables. This requires an understanding of the features, such as navigation channels, anchorages, and shipping lanes

and features of importance, such as other seabed assets (e.g., cables and pipelines), biologically and environmentally sensitive and valuable areas, and potential cultural and historical resources. I design and optimize cable routes that avoid and minimize the impacts to features, assets, and resources to the extent practicable and endeavor to provide further mitigations to unavoidable impacts, while optimizing the length, complexity, installability, and survivability of the cable system.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am on the panels co-sponsoring Exhibit 4 (Environmental Impact) and Exhibit E-6 (Effect on Transportation).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

TETRA TECH

Ryan Earley

Lead Subsea Cable Route Design & Marine Geophysicist

EXPERIENCE SUMMARY

Mr. Earley is an accomplished subsea cable route engineer, marine geologist, and geophysicist with offshore, nearshore, and onshore experience working in more than 30 countries. He specializes in the design, planning, and optimization of pre-installation subsea cable routes and cable burial planning for power transmission and telecommunications systems. More broadly, he supports the planning, permitting, and development for a variety of offshore energy projects with an emphasis on US Offshore Wind Energy. A lifelong resident of the NJ/NY area, Mr. Earley's 20 years of hands-on experience in survey and field work on the marine geology and geotechnical properties of the US East Coast shelf and around the world combines with over 12 years in the subsea cable field to allow him to provide highly targeted insights and information specific to a client's needs.

RELEVANT EXPERIENCE

Lead Transmission Route Engineer, 2017–2021
Equinor (Statoil), Empire Wind & Boardwalk Wind, Submarine Cable Route Engineering, NY, NJ

Lead engineering responsible to identify and evaluate feasibility and risks to potential routes connecting the Empire Wind Offshore Wind Lease Area to a variety of points of interest in the state of NY and NJ. Assessed a variety of cable routes and cable landings in NY Harbor including boroughs of Brooklyn, Queens, and Staten Island, as well as on Long Island and in NJ. Extensive work with understanding and mapping existing NY Harbor underwater power cables and pipelines for route deconfliction and crossings. Detailed analysis of landing areas and evaluated risks related to dredged access to channels, piers, and bulkheads.

Lead Route Engineer and Desktop Study Author, 2019-2021 Client Confidential. Fiber Optic Telecom System in Canadian Arctic

Assemble datasets and author documentation; Design and update subsea cable routes to mitigate sea ice and iceberg risk, fishing risk, and other factors. Manage routes for 20+ landings in Nunavut, Nunavik, Newfoundland, and Greenland.

Risk Analyst and Study Author, 2020 Equinor, NY Harbor Cable Burial Risk Assessment

Coordinated the analysis and documentation of a cable burial risk assessment for multiple cable routes in NY Harbor, identifying adequate levels of cable burial to mitigate risk using a quantitative approach to risk analysis due to vessel traffic and anchor penetration into the seabed.

Lead Route Engineer, 2019 Confidential Client, Cable Landing Alternatives Evaluation in NY/NJ Bight

Lead route engineer and study author to identify and evaluate potential routes, landings, and points of interconnection for HVAC and HVDC offshore wind export cable transmission. Potential landings in Brooklyn, Queens, and Staten Island evaluated.

Lead Study Author, 2019 Confidential Client, Cable Route and Landing Critical Issues Analysis for Long Island

Lead study author and data analyst to identify and evaluate potential risk and issues to multiple routes, landings, and points of interconnection for HVAC and HVDC offshore wind export cable transmission along the southern shore of Long Island.

Geophysicist/Author, 2018–2019 Ørsted, Bay State Wind Construction & Operations Plan (COP)

Author for sections and figures of COP permitting documentation. Coordinated effort and aligned technical content of Marine Site Investigation Report and associated COP appendices to fulfill COP requirements.

EDUCATION

MSc., Marine Geology and Geophysics, Rutgers University, 2007

Graduate Certificate in Engineering Geophysics, Rutgers University, 2006

BSc., Physics/Earth Sciences, The College of New Jersey, 2002

AREAS OF EXPERTISE

Coordination of multi-jurisdictional, multidisciplinary energy siting/permitting studies

Subsea cable route siting, constraints analysis, and cable landing selection and design

Marine Survey geophysical and geotechnical planning, acquisition, data analysis, and reporting.

Cable Burial Risk Assessments and cable risk analysis, and cable protection design

Regulatory agency interaction

OFFICE LOCATION

Boston, MA & Parsippany, NJ

YEARS OF EXPERIENCE

12

Geophysicist/Author, 2018 Equinor (Statoil) Empire Wind Project Site Assessment Plan, NY

Authored Site Assessment Plan (SAP) sections and figures for the geological and archeological subsections of the Affected Environment section of the SAP document. Edited and managed Site Characterization report documentation and Marine Archeological report documentation to support the SAP submission.

Geophysicist/Author, 2017 Equinor (StatOil), Empire Wind Offshore Project, NJ

Authored text sections of the Authored Site Assessment Plan (SAP) and figures for the geological subsections of the Affected Environment section of the SAP document. Edited and managed Site Characterization report documentation and Marine Archeological report documentation to support the SAP submission.

Geophysicist/Author, 2016–2017 Ørsted (DONG Energy) Bay State Wind Offshore Wind Project Site Assessment Plan, MA

Authored Site Assessment Plan (SAP) section author for text sections and figures for the geological subsections of the Affected Environment section of the SAP document.

Geophysicist/Author, 2016–2017 Deepwater Wind, Deepwater One Offshore Project, MA, RI (2016–2017)

Authored Site Assessment Plan (SAP) section author for text sections and figures for the geological subsections of the Affected Environment section of the SAP document.

Geophysicist/Author, 2015 Dominion Virginia Offshore Wind, VA

Authored Site Assessment Plan (SAP) section author for text and revised text sections and figures for the geological subsections of the Affected Environment section of the SAP document.

Geophysicist/Author, 2015 Dominion, Coastal Virginia Offshore Wind (CVOW; formerly Virginia Offshore Wind Technology Advancement Project [VOWTAP]), VA

Research Activities Plan (RAP) section author for initial text and revised text sections and figures for the geological subsections of the Affected Environment section of the RAP document.

Cable Engineer, 2017 Confidential Client, HVAC Transmission Cable Routing, New England Region

As wind farm export transmission cable engineer, designed cable route and alternatives for a large high-voltage alternating current (HVAC) transmission cable utilizing desktop data, stakeholder inputs, and survey datasets. Conduct burial feasibility analysis.

Survey Manager, 2017 National Grid, Narragansett Bay, Rhode Island

As survey manager, managed all survey operations and conducted route analysis and engineering for preliminary burial assessment for an offshore power transmission cable project.

Cable Engineer, 2015–2017 Confidential Client, Subsea Cable Engineer for Route Planning, Maritime Canada and New England

Designed cable route and alternatives for a large international high-voltage direct current (HVDC) transmission cable utilizing desktop data, stakeholder inputs, and survey datasets. Conduct burial feasibility analysis. Support federal permitting efforts and stakeholder discussions.

Cable Engineer, 2015–2017 OPALCO Inter-Island Power Cable Project, San Juan Islands, WA

Cable route engineer for an inter-island subsea cable recovery and replacement project in the San Juan Islands.

Geophysicist, 2013 Confidential Client, Offshore Route Survey and Cable Engineering, Offshore Transmission Cable Project, MA

Provided real-time analysis and engineering solutions to direct survey operations and route development. Assess cable protection requirements and burial potential. Re-engineer cable route as required to fit project objectives. Create project documentation related to cable engineering for client and installation groups. Prepare final cable route engineering, cable engineering documentation and reports, Burial Feasibility Study, and assisted with geophysical and geotechnical data analysis, interpretation, and reporting and charting efforts.

Geophysicist, 2013 Dominion Resources Inc., Virginia Offshore Wind Technology Advancement Project, Virginia Beach, VA

Prepared cable corridor and block site descriptions and assisted with geophysical and geotechnical data analysis and reporting to BOEM specifications.

Geophysicist, 2013 StatOil Hywind-Maine Offshore Deepwater Wind Project, Boothbay Harbor, ME

Served as StatOil's offshore representative and engineer for lease block area and export cable route surveys for the Hywind-Maine project. Responsibilities included survey management and quality control, ensuring continued adherence to BOEM data

and reporting specifications, and route engineering of the export cable through very challenging terrain to optimize cable protection and burial.

Geophysicist, 2008–2012 TE SubCom (formerly Tyco Telecommunications)

Managed all aspects of international submarine fiber optic cable route survey operations and pre-installation engineering--from tender preparation and contractor selection (contracts from $1M USD to $20M USD); managing technical survey scopes of work; data QC and live route engineering offshore; engineering of subsea fiber optic telecoms cables; geotechnical evaluation and burial assessment for plow and ROV operations; facilitating engineering reviews with Purchasers; provide support for survey and lay permitting efforts; survey cost and plan-of-work estimation; provide support and technical advice for new bids & proposals. Cable engineering duties included direct interface with TE Labs and the Optical System Design team to work within system design constraints, including managing system lengths, fiber types, optical loss, dispersion, and component and amplifier placement. Cable route survey experience includes extensive hands-on work with geophysical systems (multibeam bathymetry, sidescan sonar, magnetometer and gradiometer surveys, and subbottom profiling systems) and geotechnical sampling (CPTs, vibracores, gravity cores, and piston cores). Specialized in the integration of geological interpretations into cable burial feasibility studies and installation work plans.

Geophysicist, 2011 GlobeNet Segment 5, TE SubCom, Bermuda to NJ

Responsible for all aspects of geophysical acquisition, CPT and gravity core and geotechnical survey campaigns, and all route engineering the for the USACE-regulated telecom project, including understanding and adherence to new BOEM specifications adopted by USACE for this cable route survey.

Geophysicist, 2007 Shallow Hazard and Geotechnical Survey for Integrated Ocean Drilling Program Leg 313, NJ Shelf Clinoform Drilling

Responsible for quality analysis and quality control of shallow-hazard and geotechnical data collected from boomer, magnetometer, and sidescan, as well as and overseeing the collection of vibracores at the drill sites. Extensive experience interpreting shallow and deep geophysical and geotechnical datasets for scientific project objectives offshore NJ.

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

Application of Empire Offshore Wind LLC for a Certificate of Environmental Compatibility and Public Need for the Construction of Approximately 17.5 Miles of Transmission Lines from the Boundary of New York State Waters to a Point of Interconnection in Brooklyn, Kings County, New York	)	Case No.: 21-T-XXXX

DIRECT TESTIMONY OF SABRINA HEPBURN

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Sabrina Hepburn. I am currently employed by Tetra Tech, Inc. as a Senior Project Manager. My business address is 350 Indiana Street, Suite 500, Golden, CO 80403.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1) Project. The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Bachelor of Arts in Biology from Dartmouth College and a Master of Science in Ecology and Evolutionary Biology from the University of Michigan. As a Senior Project Manager, my responsibilities include overseeing preparation of federal, state and local permit applications, addressing regulatory and permitting requirements, conducting critical issues analysis, managing environmental field studies and impact assessments, and coordinating with stakeholders and public outreach. In addition to my role as a Senior Project Manager, I also play an active role as an environmental technical lead in the areas of ecology and biology. Since joining Tetra Tech in 2019, I have worked with energy clients in navigating federal, state, and local regulatory requirements. In previous employment I was an Environmental Construction Permitting Team Lead with Enbridge

Inc., a Supervisor with Spectra Energy Corp., and an Environmental Consultant with TRC Companies, Inc. In these roles I have been responsible for managing preparation of Environmental Reports and supporting documents for Certificates of Public Convenience and Necessity applications to the Federal Energy Regulatory Commission (FERC), applicant-prepared Environmental Assessment, Clean Water Act Section 404 and 401 permitting, state wetlands and waterways permitting, and resource agency consultations, as well as supporting roles on other Article VII filings to the Commission, and I have worked with various state and federal agencies including the FERC, U.S. Army Corps of Engineers, and state environmental agencies such as the New York Department of Environmental Conservation, New Jersey Department of Environmental Protection, Massachusetts Department of Environmental Protection, and Pennsylvania Department of Environmental Protection, among others.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the state permitting consultant, I am responsible for overseeing the preparation of Article VII Exhibits and the incorporation of the supporting environmental documentation and data. I have also been responsible for aspects of coordination with New York State agency stakeholders.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring or on the panel co-sponsoring: Exhibit 3 (Alternatives), Exhibit 4 (Environmental Impact), Exhibit 7 (Local Ordinances), Exhibit E-5 (Effect on Communications), and Exhibit E-6 (Effect on Transportation).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

TETRA TECH

Sabrina Hepburn
Senior Project Manager

EXPERIENCE SUMMARY

Ms. Hepburn is a Senior Project Manager with 14 years of experience in environmental assessment, permitting and compliance in the energy industry, working out of Tetra Tech's office in Golden, Colorado. She is experienced in navigating federal, state and local regulatory requirements, supervising staff, managing consultants, and coordinating field activities. Her past experience includes working as a company Environmental Permitting Project Manager for natural gas transmission pipeline projects, including managing preparation of Environmental Reports and supporting documents for Certificate of Public Convenience and Necessity applications to the Federal Energy Regulatory Commission (FERC), applicant-prepared Environmental Assessment, Clean Water Act Section 404 and 401 permitting, state wetlands and waterways permitting, and resource agency consultations. She has also been responsible for managing and maintaining an environmental permitting and compliance program for operations and maintenance activities on an extensive FERC-regulated natural gas pipeline system throughout the eastern United States and served as a past chair of the Southern Gas Association's Environmental Committee.

RELEVANT EXPERIENCE

State Permitting Task Manager, 2019–Present
Equinor Wind US, Empire Offshore Wind Project and Boardwalk Offshore Wind Project, NY and NJ

Serving as lead for state permitting tasks, including preparation of an application under Article VII of the New York Public Service Law for Equinor's Empire Wind Project, and New Jersey state and local permitting for the Boardwalk Offshore Wind Project, including New Jersey Department of Environmental Protection permits under the New Jersey Division of Land Use, as well as a client and agency coordination.

Public Comment Response Lead and Preparer, April 2019 – 2020
FERC, Jordan Cove LNG Project EIS, OR

As a third-party consultant to the FERC, responsible for managing the preparation of summaries and responses for thousands of public comments provided on the draft Environmental Impact Statement (EIS) on the proposed Jordan Cove LNG Terminal and associated 200-mile Pacific Gas Connector Pipeline, as part of preparation and publication of the final EIS.

Task Manager, 2019
Avangrid Renewables, Kitty Hawk Offshore Wind Project, NC and VA

Responsible for preparing the onshore cable routing study, working with teams completing engineering and environmental constraints analysis.

State Permitting Lead, 2019
Ørsted A/S, Bay State Wind Project, MA and RI

Responsible for state permitting, including state siting filings with the Massachusetts and Rhode Island Energy Facility Siting Boards, as well as client, legal team and agency coordination tasks.

HRG Survey Planning, 2019
Equinor Wind US, Beacon Wind Project, MA

Responsible for preparing an initial High Resolution Geophysical and Geotechnical Survey Plan in accordance with requirements of the Bureau of Ocean Energy Management.

EDUCATION

MS, Ecology and Evolutionary Biology, University of Michigan, 2004

BA, Biological Sciences, Dartmouth College, 2001

PUBLICATIONS / PRESENTATIONS

Hepburn, S.K. 2004. Convergence and Divergence of Morphological Characters in the Genus Ceuthophilus. Master's thesis. University of Michigan, Ann Arbor.

Cottingham, K.L., S.K. Hepburn, and T.M.P. Robinson. 2001. Early warning indicators for sudden ecosystem change: modeling dominant feedbacks in shallow lakes. Presentation at the North American Lake Management Society, Madison, WI.

Hepburn, S.K. and K.L. Cottingham. 2001. Early warning indicators for sudden ecosystem change: monitoring dominant feedbacks in shallow lakes. Poster Presentation at the 86th Annual Meeting of the Ecological Society of America, Madison, WI.

TRAINING/CERTIFICATIONS

Environmental Review and Compliance for Natural Gas Facilities; FERC; 2011

Excellence in Project Management Training; TRC; 2011

Organization for Tropical Studies: An Introduction to Tropical Ecology; 2002

Section 106 and Tribal Consultation Workshop; FERC; 2015

Turtle Training for Utilities; Massachusetts Natural Heritage and Endangered Species Program; 2011

Wetland Assessment and Field Techniques; University of Massachusetts, Amherst; 2007

PROFESSIONAL ACCOMPLISHMENTS

Spectra Energy, Summit Award 2012 - New England Cottontail Habitat Enhancement Project

OFFICE

Golden, CO

YEARS OF EXPERIENCE

13

YEARS WITHIN FIRM

2

Project Manager, 2019–2021
Mountain Valley Pipeline, LLC, Greene Interconnect Project, WV

Responsible for managing preparation of the Environmental Report filed as part of a Prior Notice under Mountain Valley Pipeline's Blanket Certificate for the proposed Greene Interconnect Project in West Virginia and managing associated field work and consultations.

Team Lead/Supervisor, Environmental Construction Permitting, 2014–2018
Enbridge (formerly Spectra Energy), Waltham, MA

Managed and maintained Spectra Energy's program for environmental review, permitting and compliance on maintenance and small project construction activities for the US natural gas transmission pipeline system and supervised staff working on these activities. Business owner of a custom Sharepoint-based environmental database designed to track projects and activities requiring environmental permits from initiation through planning, permitting, work clearance, compliance and permit close-out. Served as an Environmental Project Manager taking projects from initial feasibility and estimating through permitting and compliance on a variety of natural gas transmission expansion and maintenance activities. Also responsible for conducting environmental awareness and compliance training, programmatic agreements, completing reporting requirements, and environmental inspections.

Associate Project Manager, 2010–2011; Project Scientist, 2007–2010
TRC Environmental, Lowell, MA

Worked with consultant teams to manage permitting and prepare federal, state, and local environmental permits for natural gas transmission and storage, wind energy generation, electric transmission, public utility, and public transit clients. This included preparing permit applications, writing portions of National Environmental Policy Act documents, environmental reports, and consultation related to environmental resources.

Environmental Project Manager, 2014–2017
Salem Lateral Project, Salem and Beverly, MA

Served as the applicant-side Project Manager on a pre-file application to the FERC for construction and operation of a 1.2 lateral pipeline tying into Algonquin Gas Transmission's offshore HubLine Pipeline, and construction of new metering and regulating facilities. As part of the FERC application, also managed an applicant-prepared EIS in accordance with FERC guidance. Permitting of the project involved a Massachusetts Environmental Protection Act (MEPA) Certificate, Essential Fish Habitat (EFH) Assessment, Coastal Zone Consistency Determination, Army Corps Section 10 and 404 permitting, Massachusetts Department of Environmental Protection (MADEP) 401 Water Quality Certification and Chapter 91 Waterways License, and Orders of Conditions from Conservation Commissions under the Massachusetts Wetlands Protection Act. Key issues included sediment management and transport at offshore tie-in area, protection of eelgrass beds, noise assessment and mitigation, mitigation for benthic impacts, fisheries, and preparation of a Utility-Related Abatement Measure for crossing contaminated sites.

Environmental Project Manager, 2016–2018
Bayway Lateral Project, Linden, NJ

Federal, state and local permitting of Texas Eastern Transmission's HDD-installed 0.4 mile lateral pipeline at Phillips 66 Bayway Refinery and Linden Cogen Power Plant facility. Certificate of Public Necessity and Convenience with a FERC traditional filing, this project also required New Jersey Department of Environmental Protection (NJDEP) Land Use Division freshwater wetlands and flood hazard permitting and tidelands license. Key issues included management of contaminated materials, wastewater discharge, and pre-construction bird nest surveys.

Project Scientist, 2007–2008
Minerals Management Service, Cape Wind Project, MA

Provided draft revisions and analysis as part of a multi-disciplinary team working on the third-party Final Environmental Impact Statement for the Minerals Management Service to assess the proposed offshore Cape Wind Project in Nantucket Sound, Massachusetts. Revisions included detailed review and response to comments received from government agencies and the public. Responsibilities primarily included responding to issues and concerns over environmental impacts to 1) non-avian terrestrial wildlife, 2) coastal and intertidal habitats, 3) eelgrass and 4) freshwater wetlands and other resource areas under the WPA along the onshore cable installation portion of the project.

Team Lead, 2014–2018
Spectra Energy/Enbridge, Operations and Maintenance Permitting and Compliance Program, ME, MA, RI, CT, NY, NJ, PA, VA, WV, OH, MD, TN, KY, TX, AR, MS, LA, USA

Primary responsibility for overseeing the permitting and compliance program for maintenance activities on Spectra Energy's US gas transmission system. Environmental project manager for obtaining and complying with required federal, state and local permits on numerous activities along the system annually, including anomaly investigations, pipe recoating, casing repairs and removals, cathodic protection installation, pipe replacement, shallow cover remediation and slip repair, new taps and interconnections and hydrostatic testing, particularly focused on work in MA, CT, NY, NJ, PA, OH, MD, TN and KY, and supervising team members working in other states along the pipeline system.

Team Lead, 2017–2018
Operations and Maintenance Permitting and Compliance for Maritimes & Northeast Pipeline, New Brunswick and Nova Scotia, Canada

As an extension of the oversight of the operations and maintenance permitting and compliance program on Spectra Energy's US gas transmission system, also had responsibility for reviewing and submitting operations and maintenance notifications to the National Energy Board (NEB) for the Maritimes & Northeast Pipeline system in eastern Canada, responding to requests for additional information, and managing provincial watercourse and wetland alteration permit applications as required.

Senior Environmental Permitting Specialist, 2013–2014; Division Environmental Permitting Specialist, 2011–2013; Contractor, Environmental Permitting, 2010–2011
Spectra Energy, Waltham, MA

Responsible for managing consultants and field crews, consulting and collaborating with internal experts, government agencies and non-agency stakeholders, and analyzing impacts to environmental resources such as wetlands, groundwater, and state and federally listed threatened and endangered species.

Environmental Project Manager, 2013–2014
Bailey East Mine Panel 1Ls and Bailey East Mine Panel 2L Project, Greene County, PA

Federal, state and local permitting for two sequential longwall mining mitigation pipeline maintenance and replacement projects on the Texas Eastern Transmission in Greene County, Pennsylvania. Certificate of Public Necessity and Convenience with separate FERC traditional filings, Army Corps and Pennsylvania Department of Environmental Protection wetland permitting, PA Chapter 102 erosion and sediment control and NPDES permits. Key issues included unconventional wetland and waterbody construction challenges associated with longwall mining pipeline mitigation, Endangered Species Act consultation and species surveys for Indiana and Northern Long-eared Bats, erosion and sediment control challenges and slip potential.

Environmental Project Manager, 2012–2014
Emerald Mine Panel D1 and D2 Projects, Greene County, PA

Permitting for a two sequential longwall mining mitigation pipeline maintenance and replacement projects on the Texas Eastern Transmission in Greene County, Pennsylvania. Certificate of Public Necessity and Convenience with separate FERC traditional filings, Army Corps and Pennsylvania Department of Environmental Protection wetland permitting, PA Chapter 102 erosion and sediment control and NPDES permits. Important issues included wetland and waterbody construction challenges, wetland and stream mitigation requirements including development of a stream enhancement mitigation project, and erosion and sediment control challenges.

Environmental Project Manager, 2013
Schuylkill River Pipeline Replacement Project, Montgomery County, PA

Blanket Certificate Prior Notice filing with FERC for an open cut replacement of two pipelines across the Schuylkill River in PA, and permits from Pennsylvania Department of Environmental Protection (PADEP) which included Section 401 and Chapter 105 individual permits and a new Submerged Lands License. Key issues included sediment control during the river crossing, state threatened species, and hydrostatic test water management.

Environmental Project Manager, 2011–2013
Lambertville Alternative Emissions Limit (AEL) Project, Lambertville, NJ

Compressor station reciprocating unit replacement project, including construction of a new compressor building, filed with FERC as an Advanced Notification under Section 2.55(b) Replacement Activities. Important issues included onsite wetland and waterbody permitting and avoidance, air, noise impacts and local permitting.
environmental resources.

Project Scientist, 2010–2011
Spectra Energy Algonquin Gas Transmission, HubLine / East to West Project, CT, MA, NY, NJ and RI

Assisted at pre-application meetings, open houses and public hearings, conducted wetland delineations and vernal pool surveys along the project route, technical lead preparing sections of the Environmental Resource Reports submitted to the FERC for a Certificate of Necessity and Compliance under Section 7(c) of the Natural Gas Act (NGA), assisted preparation of the Environmental Notification Form (ENF) in accordance with the Massachusetts Environmental Policy Act (MEPA), and Notices of Intent under the Massachusetts Wetlands Protection Act. Conducted functions and values assessments for impacted wetlands, and served as a technician for field work conducting electroshock surveys of fisheries resources, funnel trapping for blue-spotted salamander (*Ambystoma laterale*) and pedestrian surveys and radio-tracking of Eastern box turtle (*Terrapene carolina*).

Project Scientist, 2009–2010
ETC Tiger Pipeline, LLC, Tiger Pipeline Project, TX, LA

Technical lead for preparing sections on water use and water quality as part of the Environmental Resource Reports submitted to the FERC for the ETC Tiger Pipeline Project, a project consisting 174 miles of 42-inch-diameter pipeline for and associated aboveground facilities in Louisiana and eastern Texas.

Project Scientist, 2008–2009
Florida Gas Transmission, LLC, Phase VIII Expansion Project, FL, AL

Was responsible for preparing sections of the Environmental Resource Reports for an Application to the FERC for a Certificate of Public Necessity and Convenience under Section 7(c) of the NGA for Florida Gas Transmission's Phase VIII Expansion Project which involved over 480 miles of natural gas looping, greenfield pipeline and new compression facilities. Contributed technical review for numerous wetland drawings required for the Joint Environmental Resource Permit (ERP) in Florida and coordinated efforts to assess 83 federally-listed and more than 230 state-listed threatened, endangered, or special concern species potentially impacted by the project, working collaboratively with a team of wildlife biologists and subcontractors.

Project Scientist, 2007–2008
Midcontinent Express Pipeline, LLC, Midcontinent Express Pipeline, OK, TX, LA, MS, AL

Responsible for research and review of data on water use and quality, waterbody crossings, and public water resources along the proposed 480-mile pipeline project in Oklahoma, Texas, Louisiana, Mississippi, Alabama, as part of Midcontinent Express Pipeline LLC's (MEP) Application to the FERC for a Certificate of Public Convenience and Necessity, under Section 7c of the NGA, and consulted with state and local agencies to obtain supporting information on water resources and socioeconomic issues in the project area.

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

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DIRECT TESTIMONY OF ROBERT JACOBY

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Robert Jacoby. I am currently employed by Tetra Tech, Inc. as a Cultural Resources Specialist. My business address is 6 Century Drive, Suite 300, Parsippany, NJ 07054.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Bachelor of Arts in Anthropology and a Master of Arts in Historic Preservation. I am certified by the Register of Professional Archaeologists. As a Cultural Resources Specialist, my responsibilities include supervising project components of terrestrial archaeology. In addition to my role as an Archaeologist, I also play an active role as Architectural Historian and have been responsible for developing the Analysis of Visual Effects to Historic Properties. Since joining Tetra Tech, I have worked with (1) federal agencies, including, the Federal Energy Regulatory Commission, the United States (U.S.) Army Corps of Engineers, the National Resources Conservation Service, the National Park Service, and the U.S. Forest Service; (2) state agencies, including State Historic

Preservation Offices in New York, New Jersey, Pennsylvania, Ohio, Illinois, and Texas, plus the New York State Department of Environmental Conservation, the New Jersey Department of Environmental Protection, and the New York Public Service Commission; (3) municipal agencies, including the New York City Department of Environmental Protection; private developers, including NextEra, LS Power, Boralex, and EDP Renewables; and (4) utilities, including National Grid.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the Cultural Resources Specialist, I am responsible for supervising the terrestrial archaeology investigation and the analysis of visual effects to historic properties.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring or on the panel co-sponsoring Exhibit 4 (Environmental Impact) and Appendix H (Analysis of Visual Effects on Historic Properties).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

TETRA TECH

Robert Jacoby, MA
Consulting Social Scientist

EXPERIENCE SUMMARY

Robert Jacoby has 40 years of experience as an archaeologist. Responsibilities have included supervision of archeological research projects involving historic, prehistoric, and urban resources. Preparation of technical reports and artifact analyses for diverse public clients including, U.S. Army, U.S. Navy, NJ Department of Transportation, Delaware Department of Transportation, Vermont Agency of Transportation, U.S. Federal Bureau of Prisons, and General Services Administration, and private clients including Equitrans, Invenergy, NextEra Energy, CPV Energy, and Ridgeline Energy, among others.

Ten years of experience as an architectural historian. Responsibilities have included investigations for solar, wind, and electrical transmission projects, for energy-related clients including, Apex Energy, Rising Solar LLC, and LS Power.

CORPORATE PROJECT EXPERIENCE

Archaeologist

Archaeologist, January 2020-present

LS Power Grid New York LLC, Marcy to New Scotland Upgrade Project, Oneida, Herkimer, Montgomery, Schenectady, and Albany Counties, NY

Principal Investigator for Phase IA/IB archaeological survey of 93-mile electrical transmission corridor upgrade. In all, 196 acres of ROW was surveyed by 1,900 shovel tests and pedestrian reconnaissance. Lead author of report submitted to SHPO.

Archaeologist, May 2020 - present

Boralex, Greens Corners Solar Project, Jefferson County, NY

Principal Investigator for Phase IA/IB archaeological of solar project comprising 2,200 acres. Supervised records review, field reconnaissance and survey, and reporting of findings and recommendations.

Archaeologist, Oct 2018 - present

Equinor Wind US, Offshore Wind Project, New York and New Jersey, Phase I Archaeological and Historic Architecture Investigations

Principal Investigator for Phase I archaeological assessment and investigations of three terrestrial export cable routes and substations for offshore wind energy development. Supervised records review, field reconnaissance and survey, and reporting of findings and recommendations for the Construction and Operations Plan, filed with BOEM, April 2021.

Archaeologist, May 2019 - January 2010

New York City Department of Environmental Protection, Rehabilitation of Honk Falls Dam, Phase I Archaeological Investigation, Ulster County, New York

Principal Investigator for Phase IA archaeological assessment of proposed rehabilitation actions on 19th century dam and project areas. Recommended

EDUCATION

MA, Historic Preservation, Goucher College, 2009

BA, Anthropology, Northwestern University, 1976

AREA OF EXPERTISE

Archaeology, Precontact Eastern US

Architectural History

REGISTRATIONS/ CERTIFICATIONS

Registered Professional Archaeologist, Earned 2018

TRAINING

40-Hour OSHA Hazardous Waste Health and Safety Training; 2003

8-Hour OSHA Hazardous Waste Health and Safety Refresher Course; 2021

8-Hour OSHA Hazardous Waste Health and Safety Supervisor Training; 2008

DOT/IATA Hazardous Materials Safety Training, 2017

OFFICE

Parsippany, NJ

YEARS OF EXPERIENCE

40

YEARS WITHIN FIRM

15

avoidance or Phase IB testing of one area of archaeological sensitivity. Report submitted to NYC DEP.

Archaeologist, October 2019

Hecate Columbia LLC, Shepherd's Run Solar Facility, Phase I Archaeological Investigation, Columbia County, New York

Principal Investigator for archaeological assessment of 718-acre proposed solar energy facility. Conducted field reconnaissance, identified zones of potential archaeological sensitivity and recommended avoidance or Phase IB survey.

Archaeologist, September - October 2019

Rising Solar LLC, Rising Solar Site, Phase IA/IB Archaeological Survey, Orange County, New York

Principal Investigator for Phase IA/IB archaeological survey for 139-acre proposed solar energy facility. Supervised background research, site files review, field survey, and report preparation. Recommendation of No Effects.

Archaeologist, June - August 2018
Pine Gate Renewables LLC, PGR Solar Projects, Phase I Archaeological Survey, Providence and Washington counties, RI

Principal Investigator for Phase I archaeological assessments and investigations of five solar projects. Supervised records review, SHPO consultation, field survey, and reporting of results and recommendations. RI SHPO concurred with recommendations of No Effects to historical properties.

Architectural Historian

Architectural Historian-2021

Boralex Greens Corners Solar Project, Jefferson County, NY

Principal investigator for historic architecture resources survey for 2,200-acre solar energy project.

Architectural Historian-2020
LS Power Grid New York LLC, Marcy to New Scotland Upgrade Project, Oneida, Herkimer, Montgomery, Schenectady, and Albany Counties, NY

Principal investigator for historic architecture resources survey for 93-mile electrical transmission corridor upgrade. Assessed 55 historic properties. NY-SHPO concurred with work plan and recommendations.

Architectural Historian-2020
Geronimo Energy, Rising Solar Site, Orange County, New York

Principal investigator for historic architecture resources survey for solar energy development. Identified historic properties within 0.5-mile indirect effects APE. NY-SHPO concurred with work plan and recommendations.

Architectural Historian-2019
Apex Energy, Lincoln Land Wind Project, Historic Architectural Resources Survey, Morgan and Sangamon counties, Illinois

Principal Investigator for historic architectural resources survey for wind energy development. Identified, photographed, and assessed over 500 structures within a 1.5-mile radius of the project area. IL-SHPO concurred with work plan and recommendations.

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STATE OF NEW YORK

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DIRECT TESTIMONY OF ERIN M. LINCOLN

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Erin M Lincoln. I am currently employed by Tetra Tech, Inc. as a Senior Project Manager. My business address is 1899 Powers Ferry Rd Suite 400, Atlanta, GA 30339.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Bachelor of Science in Forest Environmental Resources from the University of Georgia and a Master of Science in Forest Biology from Virginia Tech. I am certified by the American Institute of Hydrology as a Professional Hydrologist. As a Senior Project Manager, my responsibilities include management of water quality and hydrology modeling studies, and management of watershed assessment and permitting projects. Since joining Tetra Tech, I have worked with the United States (U.S.) Environmental Protection Agency, U.S. Army Corps of Engineers, and state environmental government divisions throughout the U.S.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the hydrologist for the Project, I am responsible for sediment transport model analysis and water quality analysis.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring Appendix B (Sediment Transport Analysis).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

TETRA TECH

Erin Lincoln, PH
Water Resources Scientist

EXPERIENCE SUMMARY

Ms. Lincoln is a Senior Project Manager and specializes in water resources planning. She has conducted environmental and watershed assessment projects throughout the southeast, for private and public entities, where she has identified sources of pollutant loading to waterbodies and provided practical solutions to improve habitat and water quality. Work has included watershed improvement plans, smart stormwater feasibility evaluations, NRCS wetland reserve easement conservation assessments and mitigation plans, USACE water control master plans environmental impact statements (EIS), nuclear facilities and off-shore wind farms water quality and quantity environmental assessments (EAs), agricultural water use studies, 303(d) delisting feasibility studies, and water quality sampling and monitoring plans.

TETRA TECH PROJECT EXPERIENCE

Current and Seabed Mobility Study. Equinor ASA.
June 2020 – January 2021.
Senior Hydrologist. Tetra Tech reviewed and gathered existing measured and modeled data of tidal currents, flows, and wave-induced currents along the Empire Wind cable route. The data were used to estimate the current (velocity) speed extremes for both incoming and outgoing tides at critical locations along the cable route. The extremes were compared to published studies of seabed sediments to identify the critical velocities and storm return interval that would be bed sediments along the route. Ms. Lincoln oversaw the technical work of the project and coordinated with the client.

Coastal Virginia Offshore Wind Farm Modeling. Dominion Energy.
June 2020 – Present.
Senior Hydrologist. Tetra Tech developed the Construction Operations Plan for the Coastal Virginia Offshore Wind Farm located off the coast of Virginia. Ms. Lincoln provided an analysis of potential impacts to water quality and sediment in the offshore area and along a proposed cable route. Tetra Tech developed an analytical sediment transport model to assess the potential impacts of the proposed export cable burial activities during the construction of the wind farm in terms of suspended sediment concentrations in the water column and sediment deposition characteristics like deposition depth and sediment footprint to assess potential effects on surrounding water quality and habitats.

EDUCATION

M.S., Forest Soils and Hydrology, Virginia Tech, 2008

B.S., Forest Soils and Hydrology, University of Georgia, 2005

REGISTRATION/CERTIFICATION

Professional Hydrologist, 14-H-6006, Obtained 05/2014, Expires 12/2020

PROFESSIONAL AFFILIATION

Georgia Association of Water Resources Professionals

American Institute of Hydrology

Society of American Foresters

YEARS OF EXPERIENCE

16 Years

YEARS WITH TETRA TECH

11 Years

OFFICE LOCATION

Atlanta, GA

AREAS OF EXPERTISE

Watershed, water quality, and hydrodynamic modeling

Watershed assessment and management

Permitting support

GIS analysis

Water quality monitoring

Soil surveys/sediment analyses

Project management

Bad River Shoreline Stabilization Feasibility Analysis and Channelization Protection. Enbridge. April 2019 – Present.
Technical Reviewer. The Enbridge pipeline system right-of-way on the Bad River is being encroached upon by the river as a result of shoreline scour and channel migration which threatens the pipeline infrastructure. Additionally, channels are forming at the meander neck which can be stabilized to prevent further degradation of the banks and meander neck. Enbridge requested for Tetra Tech to develop a shoreline stability feasibility analysis of design options to stabilize the banks near Line 5 to address the bank erosion and river meandering at Bad River on the Bad River Reservation in Ashland County, Wisconsin. The considered alternatives include both green and more traditional engineering solutions. After the options were reviewed, Tetra Tech developed a conceptual design for a revetment system to stabilize the river shoreline in the vicinity of the bends in the Bad River near Enbridge Line 5 and a recommendation to limit the deepening and widening of channels forming across the meander neck near Enbridge Line 5.

Equinor Wind Farm Construction and Operations (COP) Report and Sediment Transport Modeling. Empire Wind. July 2018 - Present.
Senior Hydrologist. Tetra Tech developed the Construction Operations Plan for Equinor Wind Farm located off of the coast of New Jersey and New York. Ms. Lincoln provided an analysis of potential impacts to water quality and sediment in the offshore area and along three proposed cable routes. Tetra Tech developed an analytical sediment transport model to assess the potential impacts of the proposed export cable burial activities during the construction of the wind farm in terms of suspended sediment concentrations in the water column and sediment deposition characteristics like deposition depth and sediment footprint to assess potential effects on surrounding water quality and habitats.

Kitty Hawk Wind Farm Site Assessment Plan. Kitty Hawk Offshore Wind. July 2019 - Present.
Senior Hydrologist. The Kitty Hawk Offshore Wind Project, located off the coast of North Carolina, is currently begin assessed for project feasibility. Ms. Lincoln identified potential water quality and sediment impacts due to project construction and installation for the Site Assessment Plan.

North Channel Muskegon River Pipeline Protection. Marathon Petroleum Company. January 2019 - February 2019.
Project Manager. Evaluation of a 10” diameter pipeline operated by Marathon Petroleum Company (Marathon) becoming exposed within the North Channel Muskegon River near North Muskegon, MI. The North Channel of the Muskegon River is part of a network of meandering streams with headwaters in Roscommon County that ultimately drain into Lake Michigan. While the river is characterized by curves and high sinuosity, an analysis of historical aerial photography reveals that it has experienced no stream migration over the past 25 years. Marathon has twice utilized grout bags to temporarily stabilize the channel and protect the pipeline; however, this solution has twice resulted in an exposed pipeline. The precise causes of channel bed scour were unknown. Based upon the river hydraulics and an aerial photograph assessment, a crib type system of wood pile contained riprap pipeline protection system was evaluated for use in the channel because it would adequately prevent riverbed scouring, would not likely wash away during high velocity flood events, and would conform to the riverbed over time due to the self-healing characteristics of riprap.

Effluent Mixing Analysis for CFPUA NPDES Outfalls. Cape Fear Public Utility Authority.
November 2018 - December 2019.
Project Manager. Tetra Tech updated the Environmental Fluid Dynamics Code (EFDC) hydrodynamic model and the Jet Plume Environmental Fluid Dynamics Code (JP-EFDC) model developed for the Lower Cape Fear River Estuary to evaluate the near-field and far-field mixing of effluent from the Sweeney WTP and Southside WWTP during critical low-flow freshwater period for use by North Carolina Department of Environmental Quality (NCDEQ) in establishing appropriate dilution ratios to apply for regulatory purposes for both the NPDES permits.

Bay State Wind Offshore Wind Farm Construction and Operations (COP) Report and Sediment Transport Modeling. DONG Energy.
November 2016 - 2019.
Senior Hydrologist. Tetra Tech developed the Preliminary Environmental Information Report for DONG Energy for them to assess wind farm feasibility offshore of Maryland. Ms. Lincoln provided an analysis of potential impacts to water quality and sediment in the offshore area and along three proposed cable routes, including one route that traversed a large inland wetland area. Tetra Tech developed an analytical sediment transport model to assess the potential impacts of the proposed export cable burial activities during the construction of the wind farm in terms of suspended sediment concentrations in the water column and sediment deposition characteristics like deposition depth and sediment footprint to assess potential effects on surrounding water quality and habitats.

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STATE OF NEW YORK

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DIRECT TESTIMONY OF SYDNE B. MARSHALL, PH.D., RPA

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Sydne B. Marshall. I am currently employed by Tetra Tech, Inc. as a Cultural Resources Specialist. My business address is 6 Century Drive, Suite 300, Parsippany, NJ 07054.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Ph.D. in Anthropology from Columbia University, New York. I am certified by the Register of Professional Archaeologists. As Consulting Scientist/National Cultural Resources Discipline Lead, my responsibilities include: (1) helping clients to comply with cultural resources requirements of their projects, (2) overseeing work performed by Tetra Tech's cultural resources staff to assure technical accuracy and quality, (3) and working with project managers to assure they have the staff resources needed to fulfill project and client needs related to cultural resources. In addition to my role as a Consulting Scientist/National Cultural Resources Discipline Lead, I also play an active role as a Community Outreach Specialist and work with clients to communicate project information

to interested stakeholders. Since joining Tetra Tech, I have worked with federal, state and local agencies, tribal nations, private developers, commercial entities, utilities, community groups and stakeholders.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the National Cultural Resources Discipline Lead, I am responsible for oversight of the terrestrial archaeology surveys performed and the reports developed for the project.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring Appendix G (Phase I Terrestrial Archeological Survey).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

TETRA TECH

Sydne Marshall
Cultural Resources Specialist

EXPERIENCE SUMMARY

Dr. Marshall has over 40 years of experience in the investigation and management of cultural resources including archeological and architectural properties. She serves as Cultural Resources Discipline Lead, responsible for evaluating technical requirements of projects and assisting project managers in addressing cultural resources issues on their projects, some overseen by BOEM. Her technical responsibilities include performing NHPA Section 106 review studies, developing National Register of Historic Places nominations for significant historic properties, designing and implementing field investigations, performing peer reviews of staff and subcontracted deliverables, providing environmental input to engineers, and developing project impact assessments. Dr. Marshall has served as a third-party cultural resources' reviewer on numerous energy projects for a number of federal agencies including USCG and FERC. She served as a Project Manager for a FERC NEPA Project. She has provided cultural resources managerial oversight for numerous projects with responsibility for technical work completed by staff and subcontractors, and has coordinated cultural resources studies with multidisciplinary environmental analyses.

In addition, Dr. Marshall has more than 25 years of experience as a Community Outreach Specialist. She has arranged and facilitated numerous outreach meetings, including some focused solely on Section 106 issues. She has planned and implemented a full range of community outreach activities associated with a variety of federal and commercial projects.

CORPORATE PROJECT EXPERIENCE

Equinor Wind US, Empire Offshore Wind Project NY.
Serves as lead for cultural resources terrestrial archaeology and supports historic architecture visual effects assessment on historic properties for this BOEM-regulated project. Work performed complies with state regulations and addresses compliance with Section 106 of the National Historic Preservation Act. Cultural resources issues involve two state SHPOs (NY and NJ), multiple tribes, and multiple historic properties.

BP, Cape Vincent Wind Farm, NY
Assisted BP in addressing cultural resources issues and performing studies needed for Cultural Resources Exhibits that would be included within an Article 10 Application to the New York Department of Public Service (DPS). Cultural resources studies included archeology, historic architecture, and outreach to the Onondaga Nation. Participated in meetings with the New York Office of Parks, Recreation, and Historic Preservation (that serves as the State Historic Preservation Office), DPS, and the Onondaga Nation.

Wind Capital Group, Osage Wind Project, Osage County, OK
Responsible for cultural resources investigations performed to a level consistent with compliance with Section 106 of the National Historic Preservation Act. Work was performed by client voluntarily in case there would be a possible future federal nexus for the Project. Phase I and II

EDUCATION

PhD, Anthropology, Columbia University, 1981

MPhil, Anthropology, Columbia University, 1975

MA, Anthropology, Columbia University, 1974

BA, Anthropology, American University, 1972

AREA OF EXPERTISE

Archaeology

Historic Architecture

Third Party EIS

Section 106/NHPA

NEPA

Community Outreach

TRAINING

24-Hour Federal Bureau of Investigation Location of Human Remains Training Course; 1991

40-Hour OSHA Hazardous Waste Health and Safety Training; 1986

8-Hour OSHA Hazardous Waste Health and Safety Refresher Course; 2020

8-Hour OSHA Hazardous Waste Health and Safety Supervisor Training; 2020

Environmental Review and Compliance for Natural Gas Facilities; Federal Energy Regulatory Commission; 2013

OFFICE

Parsippany, NJ

YEARS OF EXPERIENCE

47

investigations were performed by a local contractor for the wind project that would comprise 94 turbines and 65 miles of linear corridor, and other associated support facilities. Of the 65 archeological sites identified, 4 were recommended as warranting Phase II investigation. Also supported the client in discussions with the Oklahoma State Archaeologist, the Oklahoma State Historic Preservation office, and the Tribal Historic Preservation Officer of the Osage Nation.

Hardin Wind Energy, LLC, Hardin Wind Farm, Hardin County, OH
Identified and addressed cultural resources issues associated with permitting proposed wind farm. Participated in consultation with Ohio Power Siting Board and Ohio State Historic Preservation Office. Developed and oversaw performance of archeological and historic architecture cultural resources surveys and assured quality of deliverables. The project as proposed comprised more than 200 turbines, approximately 63 miles of access road, 96 miles of buried electrical cable, a staging area, an interconnection substation, a transfer substation, and an O&M building.

CPV Renewable Energy Company, LLC, Ashley Wind Energy Project, McIntosh County, ND
Provided task oversight for historic architecture and Class I and Class III archeological surveys including literature search, field investigations, data analysis and report writing; development of an Unanticipated Finds Plan; and assistance in Tribal consultation. Worked with client to meet Tennessee Valley Authority requirements for NEPA and compliance with Section 106 of the National Historic Preservation Act in association with its Power Purchase Agreement for 200 MW of energy. Provided written testimony presented by Project Manager before North Dakota Public Service Commission.

CPV Renewable Energy Company, LLC, Cimarron Wind Energy Project–Phase 1, Gray County, KS
Provided task oversight for historic architecture and archeological surveys including literature search, field investigations, data analysis and report writing; and development of an Unanticipated Finds Plan. Work with client to meet Tennessee Valley Authority requirements for NEPA and compliance with Section 106 of the National Historic Preservation Act in association with TVA's Power Purchase Agreement for this Project.

St. Lawrence Windpower, LLC, St. Lawrence Wind Energy Project, Towns of Cape Vincent and Lyme, Jefferson County, NY
Responsible for cultural resources studies designed and implemented to identify cultural resources within the project's area of potential effects for both archeology and historic architecture. The Project, proposed to produce 128 MW, included the wind turbine locations, energy collection lines, roadways, and transmission lines that connect to the state's energy grid. The cultural resources team produced a Phase 1A archeology report and a One-Mile Ring historic architecture report for the Project, compliant with NY SHPO Guidelines for Wind Farm Projects. Developed cultural resources sections for the Project's NY State Environmental Quality Review (SEQR) Environmental Impact Statement.

Horizon Wind Energy, Jericho Rise Wind Farm, Franklin County, NY
Provided oversight of archeological and historic architecture studies performed in support of permitting for the Jericho Rise Wind Farm. Studies were designed to comply with NY State Environmental Quality Review (SEQR) and the New York SHPO Guidelines for Wind Farms. Studies involved archeological field investigations and historic architecture inventory and evaluations.

West Hill Windpower, LLC, Archeological and Architectural Historical Studies for West Hill Wind Farm, NY
Task Lead responsible for the development and implementation of cultural resources studies, including archeology and architectural history, in support of compliance with Section 106 of the National Historic Preservation Act and NY SEQR permitting of the proposed West Hill Wind Farm in Madison County, New York. The project included 25 wind turbines, 4.2 miles of access roads, 2.5 miles of underground interconnect electrical lines, and a 2.5 miles long aboveground transmission line. Work was performed implementing NY SHPO Guidelines for Cultural Resources Studies for Wind Projects.

Horizon Energy, Archeological and Architectural Historical Investigations for Alabama Ledge Wind Farm Project, NY
Task Lead responsible for the development and implementation of cultural resources studies, including archeology and architectural history, in support of compliance with Section 106 of the National Historic

Preservation Act and NY SEQR permitting of the proposed Batavia Wind Farm located in Genesee County, New York. The project included approximately 63 wind turbines along with associated access roads, underground interconnect electrical lines, and aboveground transmission line. Cultural resources studies were designed to implement NY SHPO Guidelines for Cultural Resources Studies for Wind Projects. Supported client with SHPO consultations and Native American consultations. A Native American monitor from the Tonawanda Seneca Nation accompanied the archeological field team during fieldwork.

Equitrans, LP, Mountain Valley Pipeline Project (MVP), WV and VA
Cultural resources co-lead for this 300-mile, 42-inch-diameter natural gas pipeline. The project is a joint venture of Equitrans, LP with NextEra Energy Resources. Cultural resources support included consultation with the State Historic Preservation Offices in WV and VA, development of scopes of work for archaeology studies and historic architecture studies and oversight of the implementation of these scopes, Native American outreach, and consultation with the US Forest Service–Jefferson and Washington National Forests and the National Park Service–Blue Ridge Parkway Unit. Work is performed in compliance with the state guidelines of WV and VA and guidelines of the FERC. Tetra Tech staff developed Resource Report 4, as required by FERC, based on the results of all studies performed. Also participated in 14 community outreach meetings throughout the Project area representing the cultural resources discipline with set up of displays and information stations, and collection of comments from the public.

PennEast Pipeline Company, LLC., PennEast Pipeline Third-Party FERC EIS, PA and NJ
Cultural resources lead for this third-party EIS written under direction of the Federal Energy Regulatory Commission in compliance with NEPA and Section 106 of the National Historic Preservation Act. Project comprises 120 miles of 36-inch-diameter natural gas pipeline. Cultural resources issues addressed numerous rural historic districts, archaeological sites, aboveground resources eligible or listed in the National Register of Historic Places, and many concerns expressed by local stakeholders regarding cultural resources Project impacts.

Invenergy Wind, LLC, Phase IA Cultural Resources Study, High Sheldon Wind Farm Project, NY
Task Lead for the development and implementation of background literature review and walkover survey of proposed High Sheldon Wind Farm Project. Proposed project included 107 wind turbines interconnected by underground transmission lines and an aboveground transmission line of approximately three miles. Project had potential to affect both prehistoric and historic period cultural resources.

Invenergy Wind LLC, Phase IA Cultural Resources Study, Stamford Wind Project, NY
Task Lead for the development and implementation of background literature review and walkover survey of proposed High Sheldon Wind Farm Project. Proposed project included 44 wind turbines, interconnected by about 9 miles of service roads and underground transmission lines. Project had potential to affect both prehistoric and historic cultural resources.

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

Application of Empire Offshore Wind LLC for a Certificate of Environmental Compatibility and Public Need for the Construction of Approximately 17.5 Miles of Transmission Lines from the Boundary of New York State Waters to a Point of Interconnection in Brooklyn, Kings County, New York	)	Case No.: 21-T-XXXX

DIRECT TESTIMONY OF KATHERINE MILLER

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Katherine Miller. I am currently employed by Tetra Tech, Inc. as a Marine Project Specialist. My business address is 10 Post Office Square, Suite 1100, Boston MA 02109.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Bachelor of Arts in Marine Affairs and Policy and International Studies from the University of Miami and a Master of Professional Science in Marine Ecosystems and Society from the University of Miami, Rosenstiel School of Marine and Atmospheric Science. As a Marine Project Specialist, my responsibilities include supporting development of permit applications, stakeholder engagement and completing assessments for offshore wind developments, inclusive of onshore transmission. Since joining Tetra Tech, I have worked with a variety of federal and state agencies, including the United States (U.S.) Army Corps of Engineers and the Bureau of Ocean Energy Management, as well as developers including Empire.

Q. Have you testified in other proceedings before this Commission?

A. No

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the Deputy Project Manager, I am responsible for supporting preparation of the Article VII application, inclusive of quality assurance/quality control (QA/QC) of Tetra Tech's deliverables to Empire.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring Appendix C (Coastal Zone Management Consistency Statement) and I am on the panel co-sponsoring Exhibit 4 (Environmental Impact) and Appendix F (Electric- and Magnetic-Field Assessment).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

TETRA TECH

Katherine Miller
Marine Project Specialist

EXPERIENCE SUMMARY

Ms. Miller has over 6 years' experience as an accomplished environmental consultant and project manager with leadership and management experience in the development and permitting of coastal and offshore projects. She has supported various siting and permitting tasks for both commercial scale traditional and alternative power projects. She is currently providing support for the planning, development, and permitting of offshore wind projects along the Atlantic. She is well-versed in the environmental regulatory requirements of numerous federal, state and local agencies, and has coordinated and integrated regulatory requirements for small and large projects.

Ms. Miller possesses a comprehensive knowledge of the local environment and the ability to solve complex problems and meet deadlines. She has worked closely with clients and governmental agencies to streamline approvals and ensure project success along the east coast, including Massachusetts, Rhode Island, New York, New Jersey, Virginia, and Florida. Additional strengths and certifications: Project Management, Field Experience, SSI Scuba Certified, Report Writing, Basic GIS, and Species Identification.

RELEVANT EXPERIENCE

NY State Offshore Wind Project, NY (2018-Present)

Ms. Miller is the Deputy Project Manager, providing support for permitting and consulting services for an offshore wind project off the coast of New York under Commercial Lease OCS-A 0512. Ms. Miller supported the development of a Site Assessment Plan (SAP) and the development of the Construction and Operations (COP). Ms. Miller is the lead author on many sections of the COP, including the Introduction, Project Description, Other Marine Uses, and Socioeconomic Resources. Responsibilities include coordinating field work (including visual, historic properties, wetlands, and a Phase 1B Shovel Testing Program), facilitating agency and stakeholder outreach (including preparing presentations, compiling and circulating minutes, and responding to client and stakeholder feedback), and coordinating with the project team.

Scientific Buoy Deployment Project, MA (2019-2020)

Ms. Miller was the Project Manager, responsible for the federal, state, and local permitting for a temporary scientific buoy deployment project off the coast of Martha's Vineyard, Massachusetts. Responsibilities include the drafting and submittal of applicable authorizations, as well as representing the project at a public hearing.

Submarine Telecommunications Cable Repair Project, MA (2018)

Ms. Miller was on the project management team, responsible for the permitting of a submarine telecommunications cable repair off the coast of Martha's Vineyard, Massachusetts. Ms. Miller coordinated with the federal, state, and local agencies to facilitate the quick authorization of the repair work.

VA Offshore Wind Project, VA (2018–Present)

Ms. Miller is supporting the project management team in providing support for permitting and consulting services for an offshore wind project located off the coast of Virginia. She also assisted in the development of the Request for the Taking of Marine Mammals Incidental to the Investigation of Unexploded Ordnance (UXO) as required by the Marine Mammal Protection Act, including the review and interpretation of BOEM lease stipulations, relevant regulations, HRG survey requirements, and COP guidelines to ensure that all guidelines and requirements were incorporated for the request. She also provides permitting and regulatory support, including the drafting of a Nationwide Permit for the U.S. Army Corps of Engineers.

MA Offshore Wind Project, MA (2018–Present)

Ms. Miller supported the project management team in development of the Construction and Operations (COP) Plan for Commercial Lease OCS-A 0500. Ms. Miller was the co-author on the Socioeconomic Resources and Marine Transportation and Navigation sections She also provides permitting and regulatory support.

EDUCATION

MS, Marine Ecosystems and Society, University of Miami, Rosenstiel School of Marine and Atmospheric Science, 2017

BA, Marine Affairs & Policy and International Studies, University of Miami, 2014

AREA OF EXPERTISE

NEPA

Marine Environment

TRAINING/CERTIFICATIONS

First Aid/CPR; 2021

SSI SCUBA Certified

OFFICE

Boston, Massachusetts

YEARS OF EXPERIENCE

6

YEARS WITHIN FIRM

3

CONTACT

Katherine.Miller@tetratech.com

Deepwater Port EIS, Corpus Christi, TX (2018)

Ms. Miller assisted in preparing a third-party EIS to satisfy a DWP license application for joint review by USCG/MARAD for a proposed DWP located in federal waters 12.7 nautical miles off the coast of Corpus Christi, Texas in a water depth of approximately 93 feet. Ms. Miller tracked and responded to comments from the public and from federal, state, and local agencies on the application and co-authored the Ocean Uses and Land Uses EIS sections.

Deepwater Port EIS, Brazoria County, TX (2019-Present)

Ms. Miller assisted in preparing a third-part EIS to satisfy a DWP license application for joint review by USCG/MARAD. Ms. Miller co-authored the Marine Mammal EIS section, in addition to the Biological Opinion.

Submarine Telecommunications Cable, VA (2019-2020)

Ms. Miller assisted the project management team in providing permitting and regulatory support for a submarine telecommunications cable installation project off the coast of Virginia.

RI Solar Facility Permitting Support (2018-2019)

Ms. Miller was on the Project Management team assisting in supporting the development and permitting of two solar facilities in Rhode Island. Tasks included preparing filings in accordance with local regulations and attending public meetings.

PREVIOUS EXPERIENCE

Project Manager, April 2014–July 2017 – Ocean Consulting, LLC, Miami, FL

Primary responsibilities were managing and working with a team to assist clients in gaining approval to build water-front structures, from drafting the proposal to receiving the proper permits through completion on projects throughout the United States, including Boston, MA, Louisville, KY, Pittsburgh, PA, and Nashville, TN. Assisted with field work, including resource surveys, monitoring turbidity levels and other environmental impacts, supervising project sites for interaction with endangered species, and purchasing field equipment. As project manager, corresponded with clients regarding the status of projects, and discussed the next steps in the project process. Worked with clients during all phases of the project to keep them apprised of progress and ensure deadlines were met. Also corresponded with city, county, state and federal environmental agency officials to provide supplemental information, discuss and revise the scope of work, and to detail how the project has avoided and minimized adverse impacts to the environment. Drafted weekly progress reports and formulate an Environmental Impact Assessment.

Intern, January 2013–March 2014 – U.S. Army Corps of Engineers, Miami, FL

Duties included drafting inter-agency correspondence and decision documents and resolving permit applications. Assisted the project manager in strategizing clear path to project resolution based on USACE regulation by shadowing the application process and assisting in the decision-making process. Performed site inspections (field work) with the project manager to verify the environmental conditions and resources present, document any unauthorized structures, and verify jurisdiction. Created files, mail agency correspondence, organized/labeled files per agency standards, and maintained filing system.

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

Application of Empire Offshore Wind LLC for a Certificate of Environmental Compatibility and Public Need for the Construction of Approximately 17.5 Miles of Transmission Lines from the Boundary of New York State Waters to a Point of Interconnection in Brooklyn, Kings County, New York	)	Case No.: 21-T-XXXX

DIRECT TESTIMONY OF JUNE B. MIRE, PHD

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is June Mire. I am currently employed by Tetra Tech, Inc. as a Senior Ecologist/Project Manager. My business address is 1500 City West, #1000, Houston, TX 77042.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a PhD in Zoology from the University of California at Berkeley and a Master of Science in Biological Sciences from the University of New Orleans. As a subject matter expert in benthic and fish resources, I am the lead author of the fisheries and benthic resource portions of the Critical Issues Analysis, Site Assessment Plan, Benthic Survey Protocol, Essential Fish Habitat Assessment, Construction and Operations Plan, and Article VII application for the project. As such, I am responsible for reviewing (1) existing habitat and species distribution data; (2) designing and overseeing project-specific field surveys to fill data gaps; (3) reviewing and applying scientific and technical literature to the analysis of potential impacts of the project on benthic and fish and invertebrate

resources; (4) describing baseline conditions of fish and invertebrate habitats; (5) interpreting benthic survey data; (6) analyzing non-project-related factors that influence the distribution and abundance of fishes and invertebrates resources in the area; (7) assessing potential adverse and beneficial effects of the project on fishes, invertebrates, and their habitats; and (8) designing mitigation and long-term monitoring plans for these resources. In addition to my role as a subject matter expert for the Project, I serve a similar role for several other offshore wind developments in the United States (U.S.) Atlantic regions. I have served as a National Environmental Policy Act (NEPA) analyst for numerous non-renewable offshore energy projects in the U.S. Atlantic and Gulf of Mexico. I am currently lead ecologist on major contaminated sediment remediation projects in the Anacostia River in Washington, DC. Since joining Tetra Tech in 1993, I have worked for federal agencies (e.g., U.S. Environmental Protection Agency, U.S. Navy, U.S. Coast Guard, U.S. Maritime Administration, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, and National Park Service, and for commercial clients seeking permits from federal agencies (Bureau of Ocean and Energy Management, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Federal Energy Regulatory Commission, and Nuclear Regulatory Commission). Private clients include Equinor, Ørsted, Avangrid, Dominion, EDF Renewables, Deepwater Wind, Shell Upstream Exploration and Development, Annova LNG, Delfin LNG, Exelon, Florida Power and Light, South Texas Project, and others. All of these projects have included working with state coastal resource agencies on the Atlantic (MA, RI, NY, NJ, VA, MD, and Washington DC), Pacific (HI, CA), and Gulf of Mexico (TX, LA, MS, AL, FL). Public and nongovernmental stakeholders include private citizens, commercial and recreational

fishing interests, environmental advocacy groups, independent scientific researchers, and government oversight groups.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the subject matter expert for benthic and fish and invertebrate resources, I am responsible for developing the fisheries and benthic resource portions of all federal and state permitting applications, including the Article VII Application, for the Empire Offshore Wind project. As such, I am responsible for (1) reviewing existing habitat and species distribution data; (2) designing and overseeing project-specific benthic field surveys to fill data gaps; (3) reviewing and applying scientific and technical literature to the project; (4) describing baseline conditions of fish and invertebrate habitats; (5) interpreting benthic survey data; (6) analyzing non-project-related factors that influence the distribution and abundance of fishes and invertebrates resources in the area; (7) assessing potential adverse and beneficial effects of the project on fishes, invertebrates, and their habitats; and (8) designing mitigation and long-term monitoring plans for these resources.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring Appendix E (Benthic Resource Characterization Reports) and I am on the panel co-sponsoring Exhibit 4 (Environmental Impact).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

TETRA TECH

June B Mire, PhD
Director of Ecological Services

EXPERIENCE SUMMARY

Dr. Mire has 37 years of experience in marine and aquatic ecology, environmental impact assessment, ecological risk assessment, natural resourceassessment and management, and aquatic habitat restoration. As Tetra Tech's subject matter expert, Dr. Mire directs the benthic habitat and fisheries characterizations and impact assessments for offshore wind projects on the U.S. Atlantic coast. She has advised clients and worked with state and federal resource agencies on the Empire Wind Project in New York and other offshore wind projects from Massachusetts to North Carolina.

Dr. Mire has prepared dozens of NEPA EISs and EAs and other impact analyses (including BAs/BEs and EFHAs) for federal proponents and 3rd-party applicants for offshore wind, Gulf of Mexico oil and gas, liquefied natural gas deepwater ports and terminals, and coastal nuclear energy projects, as well as programmatic analyses of operations of the U.S Coast Guard and U.S. Navy, among others. She excels at leading large, interdisciplinary teams of professionals to work together to solve complex environmental problems in a spirit of innovation and service to the client.

Dr. Mire is responsible for developing and evaluating technical approaches for ecological projects across the country and internationally and providing technical reviews of plans, permits, reports, and other project documents. She has served as a quality control (QC) coordinator for projects throughout the company for more than 25 years. Project experience includes advising clients on compliance with regulations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA; Superfund), National Environmental Policy Act (NEPA), Endangered Species Act, Resource Conservation and Recovery Act (RCRA), Magnuson-Stevens Fishery Conservation and Management Act (MSA), Oil Pollution Act (OPA), and other federal, state and local regulations. She has managed large environmental projects for the U.S. Environmental Protection Agency (EPA), U.S. Navy, U.S. Coast Guard (USCG), National Oceanographic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), and National Park Service (NPS), and for confidential clients seeking permits from the Bureau of Ocean Energy Management (BOEM), U.S. Fish and Wildlife Service (FWS), Federal Energy Regulatory Commission (FERC), U.S. Army Corps of Engineers (USACE), Nuclear Regulatory Commission (NRC), and multiple state resource agencies. She has led or supported projects in the U.S.,Canada, Indonesia, Japan, and New Zealand.

EDUCATION

PhD, Zoology, 1993, University of California at Berkeley

MS, Biological Sciences, 1987,University of New Orleans

BA, Science Education, 1984, University of New Orleans

TRAINING/CERTIFICATIONS

Advanced GIS for Fisheries Scientists, American Fisheries Society 2018

Passive Sampling: Hydrophobic Organic Compounds, Battelle 2017

Total PCB and Congener Analysis, TestAmerica 2016

Environmental Dredging, Battelle 2015

Natural Resource Damage Assessment, SETAC 2009

Tetra Tech Project Management Training, 2008, 2017

OSHA 40-hour Health and Safety Training; CPR and FirstAid, 2015

Louisiana Master Naturalist

OFFICE AFFILIATION

Houston, TX (Chicago)

YEARS OF EXPERIENCE

37

YEARS WITH TETRA TECH

28

CONTACT

june.mire@tetratech.com

Direct 1+ (504) 273-9186

SELECTED EXPERIENCE

OFFSHORE WIND ENERGY

Fisheries and Benthic Resources Subject Matter Expert
Empire Offshore Wind Project; Equinor US Wind, LLC.
Dr. Mire provides senior technical support for the construction and operations plan (COP), including benthic and fisheries habitat critical issues analyses, field surveys, and other plans for this offshorewind energy project 14 to 30 miles south of Long Island, New York. The resource characterization includes spatialanalysis of fisheries landings, fisheries socioeconomic data, substrate analysis, and other factors that influence the distribution and abundance of economically and culturally valuable fish and invertebrate resources in the area. Sheis the lead author of the fisheries and benthic resource portions of the Critical Issues Analysis, Site Assessment Plan, Benthic Survey Protocol, Essential Fish Habitat Assessment (EFHA), and construction and operations plan (COP) for the Empire Project, the first wind farm in the New York Bight. Subsea cables will be placed in state waters of New York, requiring close coordination with NYDEC and New England and Mid-Atlantic Fishery Management Councils (FMC) to identify, avoid, and mitigate potential impacts of construction, operations, and decommissioning of the project on benthic resources important to commercial andrecreational fisheries, especially the squid, scallop, and surfclam fleets.

Fisheries and Benthic Habitat Subject Matter Expert
Bay State Wind Offshore Wind Farm, J/V Ørsted North America Inc. and Eversource Investment LLC.
Dr. Mire provides senior technical support for the fisheriesand benthic habitat components of this 800-MW project off the southern coast of Massachusetts. She conducted aspatial analysis of more than 40 existing regional fisheries and habitat datasets to characterize fisheries and fish habitat resources in the project area, which includes Rhode Island coastal waters and Narragansett Bay. The habitatcharacterization relies on spatial analysis of fisheries landings, fisheries socioeconomic data, substrate composition,and other factors that influence the distribution and abundance of economically and culturally valuable fish and invertebrate resources in the area. She designed a Benthic Survey Protocol and supervised field collection of sediment grab samples, benthic infauna, and video imagery to characterize resources in the proposed project area. She wrote the fisheries and benthic resource portions of the Critical Issues Analysis, Site Assessment Plan, BenthicSurvey Protocol, Essential Fish Habitat Assessment (EFHA), and construction and operations plan (COP) for this project. She coordinated data acquisition with BOEM, NMFS, the New England Fisheries Management Council (NEFMC), state fisheries managers, fishing industry representatives, and other stakeholders. She designed and interpreted video transect and benthic grab surveys to address data gaps and characterize benthic habitat and resources to satisfy federal and state requirements and support the analysis of impacts associated with construction, operation, and decommissioning of the project.

Fisheries and Benthic Resources Subject Matter Expert
Kitty Hawk Offshore Wind Project; Avangrid Renewables.
Dr. Mire provides senior technical support for the construction and operations plan (COP), includingbenthic and fisheries habitat critical issues analysis, essential fish habitat assessment (EFHA), field surveys, and other plans for 1500-MW offshore wind energy project 35 nautical miles off the coast of North Carolina. The subseacable is anticipated to come ashore south of Virginia Beach, Virginia. Tasks are like those described above for Ørsted and Equinor, specifically to identify, avoid, and mitigate potential impacts of construction, operations, and decommissioning of the project on benthic resources important to commercial andrecreational fisheries. In addition, Dr. Mire collaborated with the geophysics team to characterize a mosaic of benthichabitats based on concurrent review and interpretation of numerous datasets (e.g., side scan sonar, multibeam bathymetry, towed video imagery, sediment grab sample infaunal composition, sediment grain size).

Fisheries and Benthic Resources Subject Matter Expert
Revolution Wind Project; Ørsted.
Dr. Mire provides technical expertise to the subsea export cable team for this 700-MW wind farm 15 miles off the coast of Rhode Island. Critical issues include completing cable installation in Narragansett Bay while avoiding bottom-disturbing activities during sensitive reproductive periods for winter flounder, quahog and other shellfish, anadromous fishes, seagrasses, and other ecological resources.

Fisheries and Benthic Resources Subject Matter Expert
Coastal Virginia Offshore Wind (CVOW) Commercial Project; Dominion Energy.
Dr. Mire provides senior technical support for the construction and operations plan (COP), including benthic and fisheries habitat critical issues analysis, essential fish habitat assessment (EFHA), field surveys, and other plans for this 880-MW offshore wind energy project about 23 nauticalmiles off the coast of Virginia. The cable landing is anticipated for Virginia Beach, Virginia. Tasks are like those described above for Equinor, Ørsted, and Avangrid, specifically to identify, avoid, and mitigate potential impacts of construction, operations, and decommissioning of the project on benthic resources important to commercial andrecreational fisheries.

Fisheries and Benthic Resources Subject Matter Expert
Ocean Wind Project; Ørsted.
Dr. Mire provided technical expertise on benthic characterization for the site assessment plan (SAP) for installation of FLiDAR and MetOcean buoys in preparation for development of this Wind Energy Area 20 km off the New Jersey coast. She also developed educational materials for stakeholders interested in the effects of electromagnetic fields on marine organisms along the subsea cable routes.

Fisheries and Benthic Habitat Subject Matter Expert
Sunrise Wind, Ørsted North America Inc.
Dr. Mire provided senior technical expertise on the development of the Benthic Survey Protocol in support of the constructionand operation plan (COP) for this 880-MW wind farm 30 miles off the coast of Montauk, Long Island, New York.

Fisheries and Benthic Resources Subject Matter Expert
Atlantic Shores Wind Project; EDF Renewables.
Dr. Mire provided senior technical support for the construction and operations plan (COP), including benthic and fisheries habitat critical issues analysis, field surveys, and other plans for this 1700-MW wind energy project 18 nautical miles off the coast of Atlantic City, New Jersey.

Technical Reviewer; Benthic Survey Report
Virginia Offshore Wind Technology Advancement Project (VOWTAP); Dominion Resources, Inc.
Dr. Mire lead the fisheries and benthic habitat team for this 500-MW demonstration project in federal waters off the coast of Virginia Beach that includes offshore wind turbine generators and a 45-km subsea cable linking offshore to onshore infrastructure. Dr. Mire prepared the benthic section of the site assessment plan (SAP) and provided technical direction for a benthic characterization report. Shealso wrote benthic and fisheries sections of the critical issues analysis and construction and operations plan (COP)to support the permit application for this project.

Benthic Survey Protocol
Deepwater Wind.
Dr. Mire supported the development of a benthic survey protocol forinclusion in the SAP Survey Plan for this wind energy project off the Rhode Island coast. The survey supported theSAP for deployment of two FLiDAR meteorological data buoys.

U.S COAST GUARD

Lead Author; U.S. Coast Guard
Atlantic Seaboard Maritime Operations Final Biological Assessment; Atlantic Area of Responsibility.
Dr. Mire developed the framework for this comprehensive biological assessment(BA) that included the western Atlantic Ocean and the Gulf of Mexico. The BA addressed potential risk to endangered species exposed to a wide variety of Coast Guard activities, including search and rescue, emergency response, and maritime security missions. Although the BA was prepared to address concerns under the EndangeredSpecies Act, the level of detail and structure was comparable to an EIS prepared under NEPA. This work was presented at the 2012 National Association of Environmental Professionals conference in Portland, Oregon (co- author Ann Zoidis).

Project Manager and Technical Lead; U.S. Coast Guard;
Programmatic Biological Evaluation and EssentialFish Habitat Assessment (BE/EFHA) for the Aids to Navigation Program; Nationwide.

Dr. Mire prepared a comprehensive BE/EFHA to support the Coast Guard's Endangered Species Act Section 7 consultation with the National Marine Fisheries Service and U.S. Fish and Wildlife Service on activities associated with its aids to navigation (ATON) program; the document also supports a parallel consultation with NMFS under the Magnuson-Stevens Fishery Conservation and Management Act. The BE/EFHA addressed potential effects on more than 400 protected and managed species throughout the U.S. and its territories, including 68 proposed threatened or endangered corals in the Caribbean and Pacific Islands. The action area included all marine waters within the U.S.Exclusive Economic Zone, the Great Lakes, and thousands of miles of U.S. rivers. The principal actions of the project include the maintenance of floating and fixed ATON, including pile driving and lifting and replacing concrete sinkers.

Project Manager and Technical Lead; U.S. Coast Guard
Programmatic NEPA Documentation for Evaluation of Ballast Water Treatment Systems; Nationwide.
Dr. Mire managed a 2-year project to develop NEPA documentation (EIS and EA) for evaluating impacts of program development for granting type approval to shipboard ballast water treatment systems designed to remove or disable nonindigenous species in ballast water prior to it being discharged. Key components included interpreting discharge patterns and predicting the environmental impact of ballast water discharge on water quality throughout all waters of the United States, including the U.S. Territories. Treatment systems included electrolytic chlorination devices, ultraviolet irradiation,heat, cavitation, and other technologies. The analysis included impacts to endangered species, essential fish habitat(EFH), water quality, socioeconomic resources, and other natural resources.

U.S. NAVY

Lead Author; U.S. Navy
Programmatic EIS; U.S. Atlantic.
Dr. Mire was a lead author of a comprehensive programmatic EIS prepared for the U.S. Navy for the Atlantic Fleet Testing and Training (AFTT) program. The PEIS covered naval operations throughout the Gulf of Mexico and western Atlantic Ocean, including sonar, missile,gunnery, torpedo, and other activities. Dr. Mire conducted literature reviews and wrote the baseline conditions andimpact sections for more than 15 marine and estuarine habitats (e.g., chemosynthetic communities, artificial reefs,live hardbottom, floating *Sargassum*, marine canyons, and others). She analyzed effects of Navy activities on coastaland marine fishes, including threatened and endangered species. The AFTT PEIS won a Chief of Naval Operationsand Secretary of the Navy (SECNAV) Environmental Award in 2012.

Lead Author; U.S. Navy
Atlantic Marine Resource Assessment.
Dr. Mire wrote the Marine Habitats chapter ofthe Marine Resources Assessment (MRA) for the Atlantic Ocean, extending from northern Canada to Patagonia. The MRA followed an ecoregional approach based on international marine ecosystem classification systems, including the Marine Ecosystems of the World (MEOW) for areas within the 200 nautical mile limit, and the GlobalOpen Ocean and Deep Seabed (GOODS) classification system for pelagic waters and benthic areas. She conductedextensive literature reviews and wrote summaries on the distribution, condition, threats, and management of 16 habitats, ranging from estuaries to the deep ocean (abyssal plain). All references were input to Tetra Tech's MarineResource Knowledge Management System (MR-KMS) using EndNote. Dr. Mire also contributed to the affected environments section of the EIS for the Navy's Atlantic Fleet Active Sonar Training proposed project.

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

Application of Empire Offshore Wind LLC for a Certificate of Environmental Compatibility and Public Need for the Construction of Approximately 17.5 Miles of Transmission Lines from the Boundary of New York State Waters to a Point of Interconnection in Brooklyn, Kings County, New York	)	Case No.: 21-T-XXXX

DIRECT TESTIMONY OF GEIR MISKOV

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Geir Miskov. I am currently employed by Equinor US Wind, LLC as a Project Control Manager. My business address is Martin Lingesvei 33 /Postboks 3
1330 Fornebu, Norway.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Graduate Degree in Economics from the University of Oslo and a Master of Management course from the Norwegian School of Management. I have completed Six Sigma Green Belt Certification. As a Project Control Manager, my responsibilities and commercial experience include contract follow-up, negotiations, procurement, cost control and analysis, estimating and the development and follow up of the project execution schedule.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the Project Control Manager for the Empire Wind 1 Project, I am responsible for cost control and analysis, estimating and the project execution schedule.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am on the panel co-sponsoring Exhibit 6 (Economic Effects of Proposed Facility) and co-sponsoring Exhibit 9 (Cost of Proposed Facility).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

GEIR MISKOV
+47 913 47 159, gmis@equinor.com

EXPERIENCE

EQUINOR Oslo, Norway
Project Control Manager – Empire Wind Development Project 2009 - Present

- Project Control Manager in the Empire Wind phase 1 and phase 2 projects since Jan 2020. Responsible for Project scheduling and estimating of Development Expenditure and Capital Expenditure Cost. Responsible for reporting and consolidation of expenditure and accruals in development project. Responsible for Information and Data Management, collaboration tools and system for document and information review. Responsible for administrational services in project.

Manager of the Quality and Administration (QA) Sector for Technology, Projects and Drilling (TPD) 2016-2020

- The QA sector consists of 215 + highly qualified personnel supporting TPD with Quality and Risk Management, Interface Management, Document Management, Administrative Assistance and Consultancy follow-up.
- The QA MC includes 7 resource leaders and two leading advisors

Department Leader Project Control and Analysis – Green Field Oslo 2013-2015

- Resource owner for project control personnel in Green Field Projects such as Mariner, Aasta Hansteen, Johan Castberg, Johan Sverdrup, Peregrino II, Dudgeon Wind Park, Hywind Scotland as well as other early phase projects such as Bressay and Tanzania Offshore Gas.
- Resource responsible for 39 employees and 5 consultants ranging from Senior Project Control Managers, Lead Planners, Cost Controllers, Project Control Engineers, Completion Planners and Project Economists

Project Manager in the TCM (Technology Center Mongstad) Project 2012-2013

- Total project value 5.9 BNOK

Company Representative on the Chilled Ammonia ECP Contract 2012-2013

- Contract value 1.4 BNOK

Company Representative on the Amine EPC Contract 2011-2013

- Contract value 1.2 BNOK

Cost Control Lead/Senior Project Controller on the TCM Project 2009-2011

AKER SOLUTIONS ASA / AKER KVAERNER ENGINEERING AND TECHNOLOGY Oslo, Norway
Department of Estimating and Project Controlling 2005-2009

Cost Control Lead on the Skarv EPCM

- Client BP

Business Manager on the Kashagan Hook Up Project

- Client Agip

Business Manager on the Mobil Test Unit EPC

- Client Aker Clean Carbon

Business Manager on Tender Kollsnes Flash Gas EPC

- Client Statoil

Business Manager on Tender Hywind Demo

- Client Statoil

Cost Estimator on Tenders

- Ichthys LNG, client Inpex
- Skarv FPSO development, client British Petroleum
- Yuri Korchagin, client Lukoil
- Gjøa Semi FEED, client Statoil
- Assorted Tenders such as Ekofisk 2/4 L – Accommodation Platform, Heimdal Power Generator and South Pars 15/16

CIVIL AVIATION AUTHORITIES NORWAY (CAA-N) Norway
Senior advisor / project leader / project manager 2000-2005

- Project manager of the project whose responsibility it was to move the CAA-N to Bodø as decided by the Norwegian Parliament. This assignment lasted from 2003 to 2005.
- Leader of the agency's procurement forum. This forum was responsible for the agency's procurement and compliance to Norwegian procurement regulations. It was also responsible for contract negotiations and specifications for external contracts.
- Leader of the strategy group for the agency's strategy 2004-2006.
- Leader of the project that implemented the new pan-European personnel certifications regulations in Norway.
- Member of several international working groups chaired by pan-European aviation organizations in Brussels, Amsterdam and London.

THE MINISTRY OF EDUCATION AND RESEARCH Norway
Advisor 1999-2000

- Budget coordinator in addition to being responsible for authoring a chapter in the ministry's fiscal budget for 2001.
- Was responsible for all control and contact with the Norwegian student loans organization.

EDUCATION

Norwegian School of Management Oslo, Norway
Master of Management Course 2001-2002; 2003-2004

University of Oslo Oslo, Norway
Graduate Degree in Economics 1992-1999

ADDITIONAL INFORMATION

Offshore wind qualifications: None

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DIRECT TESTIMONY OF LAURA MORALES

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Laura Morales. I am currently employed by Equinor US Wind, LLC as a NY Permitting Lead. My business address is 120 Long Ridge Road #3E01, Stamford, CT 06902.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Master of Arts in Environmental Management from Montclair State University in Montclair, NJ and a Bachelor of Science in Zoology from the State University of New York in Oswego, NY. I am certified in EPA Method 9 40 CFR 60 Appendix A (Visible Emissions Evaluation). As the Head of Permitting for Empire Wind, my responsibilities include (1) overseeing the permitting for the offshore and onshore development of the Empire Wind Lease Area and (2) interfacing with corporate leadership to communicate top risks/opportunities in the Project. In addition to my role with Empire Wind, I also play an active role as supporting permitting for the Beacon Wind Project and represent Equinor Wind within NYSERDA's New York State Environmental Technical Working Group.

Since joining Equinor US Wind, LLC, I have worked with NYSERDA, the Bureau of Ocean Energy Management, the U.S. Army Corps of Engineers, the New York State Department of Environmental Conservation and other federal, New York State and local agencies, tribal nations, private developers, commercial entities, utilities, community groups and stakeholders.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. I am responsible for overseeing the permitting of the offshore and onshore development of the Project.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am sponsoring Exhibit 1 (General Information Regarding Application) and I am co-sponsoring or on the panel co-sponsoring: Exhibit 2 (Location of Facilities), Exhibit 3 (Alternatives), Exhibit 4 (Environmental Impact), Exhibit 7 (Local Ordinances), Exhibit 8 (Other Pending Filings), Exhibit E-5 (Effect on Communications), Exhibit E-6 (Effect on Transportation), Appendix B (Sediment Transport Analysis, Appendix C (Coastal Zone Management Consistency Statement), Appendix E (Benthic Resource Characterization Reports), and Appendix J (in-Air Acoustic Assessment).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

LAURA MORALES
(917) 761-5106, lmora@equinor.com

EXPERIENCE

EQUINOR Stamford, CT
NY Permitting Lead 2020 – Current

- Oversee the permitting for the offshore and onshore development of the Empire Wind Lease Area
- Interface with corporate leadership to communicate top risks/opportunities in the project(s)
- Support permitting for Beacon Wind
- Representative for Equinor Wind within NYSERDA E-TWG
- Regional Wildlife Science Entity Steering Committee member for Developer Caucus

EQUINOR Stamford, CT
NY Permitting- Offshore Lead 2019 - 2020

- Managed offshore permitting for offshore wind development, including both federal and state
- requirements in both NY and NJ.
- Participated in stakeholder discussions (both regulatory and eNGOs) to facilitate outreach and project development.

EQUINOR Stamford, CT
NY Permitting- Onshore Lead 2018 - 2019

- Managed onshore permitting for offshore wind development, including both federal and state
- requirements in both NY and NJ.
- Participated in stakeholder discussions (both regulatory and eNGOs) to facilitate outreach and project development.

PSEG Fossil, LLC Ridgefield and Newark, NJ
Environmental, Health & Safety Manager 2011 - 2017

- Manage regulatory compliance in all disciplines (Title V, POTW industrial discharge permit,
- DPCC/DCR/SPCC, waste management) for one of PSEG's combined cycles located in Ridgefield, NJ
- Interface with EPA and NJDEP for regulatory compliance inspections
- Serve as the site Health & Safety Manager
- Provide EHS oversight during construction projects on site

Environmental Compliance & Program Manager (Water) 2011 - 2017

- Managed regulatory compliance and subject matter expert in water discipline for PSEG fossil generating
- stations fleet in NJ, NY and CT
- Interfaced with regulatory agencies on a regular basis (NMFS, NJDEP, CTDEEP, NYSDEC, DRBC)
- Served as the technical lead for field compliance managers for water program
- Supported land use development oversight for projects on PSEG power lands
- Interfaced with PSEG corporate Senior Leadership and plant management (operations, technical, maintenance) to communicate and solve essential issues
- Prepared field sites for compliance inspections and internal auditing
- Communicated between various departments within the company to achieve overall company objectives (e.g., legal, policy, corporate properties, maps and surveys)
- Managed Fossil budget and contractors that supported water compliance program
- Participated in industry coalitions
- Acted as remediation subject matter expert

Environmental Coordinator 2011- 2011

- Developed understanding of fleet water permitting program
- Enhanced environmental criteria for rights of entry/easements for third parties on fossil operated properties

- Managed IT development contractor in design and roll out of Environmental Management Information System (EMIS)
- Trained field compliance managers in the use of EMIS
- Managed fossil station remediation obligations, including organizing oversight of funding for legal remedial obligations
- Communicated remediation risks laterally and vertically within the company

EDUCATION

MONTCLAIR STATE UNIVERSITY Montclair, NJ
MA, Environmental Management, December 2007 2004-2007

STATE UNIVERSITY OF NEW YORK Oswego, NY
BS, Zoology, May, 1998 1996-1998

ADDITIONAL INFORMATION

Specialized Training

- Defensive Driving (November 2018)
- 4-hour EPA Hazardous Waste Management (40 CFR) Generator Improvement Rule Training (June 2017)
- DOT HAZMAT Employee and Hazardous Waste Standards for Generators (49 CFR 172.04(a) and 40 CFR Part 262) (November 2017)
- EPA Method 9 40 CFR 60 Appendix A Certification (Visible Emissions Evaluation) (October 2017)

Awards & Achievements

- Charting Your Course Mentor
  - Mentored for selected high potentials that hold positions in mid-management.
  - September 2016 - May 2017
- GROW Graduate
  - Selected as a high potential for participation in female-only development program.
  - October 2015 - March 2016
- TWIN (Tribute to Women in Industry) Awardee
  - April 2015

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DIRECT TESTIMONY OF TRICIA PELLERIN

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Tricia Pellerin. I am currently employed by Tetra Tech as a Senior Acoustic Engineer/Project Manager. My business address is 10 Post Office Square, 11th floor, Boston, MA, 02109.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Master of Science degree in Chemical and Biochemical Engineering from the University of Western Ontario in London, Ontario. I have over 15 years of varied theoretical and field-practical acoustical consulting experience. I specialize in acoustical studies analyzing both underwater and air-borne noise as well as vibration impacts on the human and biological environments. I am trained and certified as an advanced user for the internationally recognized state-of-the-art CadnaA noise modeling software. I have extensive experience in developing large complex three-dimensional noise models for evaluating significant sources of noise and their related impacts to the environment. My responsibilities include acting as a technical expert for acoustics and vibration, field

investigation work, management of field teams, deployment of measurement equipment, management of data acquisition systems, data analysis, and conducting a proficient level of computer modeling applications and techniques. I have presented at the Acoustical Society of America (ASA), Institute of Noise Control Engineering (INCE), American Wind Energy Association, and Wind Turbine Noise conferences. I have also provided expert testimony on the subject of noise on more than seven occasions in front of county and/or state-level siting/commissioning boards.

As a subject matter expert, my responsibilities include being the lead author of the noise section of the Article VII Application for the Empire Offshore Wind Project. In addition to my role as a subject matter expert for Empire Wind, I serve a similar role for several other offshore wind developments in the United States (U.S.) Atlantic regions and am currently working with BOEM on an offshore sound characterization study off the coat of Santa Barbara, CA. Since joining Tetra Tech in 2007, I have worked for federal agencies (e.g., U.S. Coast Guard, NOAA, NMFS, and National Park Service) and for commercial clients seeking permits from federal agencies (BOEM, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and the Federal Energy Regulatory Commission). Private clients include Equinor, Ørsted, Avangrid, Dominion, EDF Renewables, Deepwater Wind, Delfin LNG, Excelerate Energy, Liberty Natural Gas, and others. I have also worked with utilities such as National Grid and Southern Power.

Q. Have you testified in other proceedings before this Commission?

A. Yes, I have filed testimony in support of the following cases before the Commission:

- Coeymans Solar Farm (Case No. 17-F-0617);
- Greene County Solar Facility (Case No. 17-F-0619); and

- Edic/Marcy to New Scotland; Princetown to Rotterdam Project (Case No. 19-T-0549).

In addition to the above proceedings, I have also offered testimony for other entities including but not limited to the Ohio Power Siting Board, the North Dakota Public Utilities Commission, the South Dakota Public Utilities Commission, the Maine Board of Environmental Protection, the Tipton County Board of Zoning Appeals (Indiana), and the Reno County Planning Commission Kansas).

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the subject matter expert for acoustics, I am responsible for developing the acoustics resource portions of all federal and state permitting applications, including the Article VII Application, for the Empire Offshore Wind Project. As such, I am responsible for coordinating baseline sound surveys needed to document the ambient acoustic environment in the vicinity of relevant onshore facilities and assisted in conducting acoustic modeling analyses to evaluate potential Project-related noise impacts at nearby noise sensitive receptors (e.g., residences). In addition, the results of the acoustic modeling analyses were used to determine compliance relative to applicable noise regulations/requirements and noise mitigation measures were recommended as appropriate.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring Appendix J (In-Air Acoustic Assessment).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

TETRA TECH

Tricia Pellerin

Senior Acoustic Engineer/Project Manager

EXPERIENCE SUMMARY

Tricia Pellerin is a Senior Acoustic Engineer and Project Manager with the Boston office with a background in chemical and biochemical engineering. With more than 15 years of consulting experience, Ms. Pellerin has been involved in the planning and permitting of many small and large-scale environmental impact statements, noise impact assessments, and air quality impact assessments. Ms. Pellerin has extensive experience in assessing potential noise impacts, performing pre- and post-construction field studies, conducting acoustic modeling analyses, and performing regulatory compliance determinations for both conventional (transmission line, gas pipeline, peaking facilities, LNG terminals, upgraders, etc.) and renewable energy projects (wind energy, solar) throughout the United States, Canada and internationally. She has also been involved with conducting underwater acoustic modeling and impacts assessments for offshore wind energy projects and meteorological data collection towers with the purpose of assessing potential impacts on sensitive marine species.

RELEVANT EXPERIENCE

Equinor, Empire Offshore Wind Project, New York and New Jersey.

Equinor proposes to construct and operate an offshore wind facility located in the designated lease area and is located approximately 22 km south of Long Island, New York and 31.4 km east of Long Branch, New Jersey. The offshore infrastructure will consist of wind turbines, foundations, offshore substations, interarray and submarine export cables, and scour protection. Onshore infrastructure will be constructed at cable landfall locations. Tetra Tech completed both a comprehensive in-air and underwater acoustic modeling analysis and assessment. The underwater acoustic modeling analysis reviewed impact pile driving, vibratory pile driving and drilling sound sources. Results were compared with NOAA Fisheries and other relevant thresholds. The In-Air assessment established existing conditions through ambient sound surveys and modeling was completed using CadnaA and compliance was assessed relative to local, county and/or state requirements as applicable.

Jericho Rise LLC, Jericho Rise Wind Farm, New York.

In support of the draft environmental impact statement, Ms. Pellerin assisted in preparing the noise impact assessment and cumulative impacts assessment for Jericho Rise Wind Farm, located in the Towns of Chateaugay and Bellmont, New York. Intensive data analysis of baseline monitoring data was required and a thorough review of local (Chateaugay, Bellmont) and State (New York Department of Environmental Conservation) noise regulations was necessary to evaluate Project compliance. Cumulative impacts were assessed at selected receptors that could potentially be impacted by noise generated from the Project in conjunction with nearby Chateaugay and Bellmont wind parks. Other wind energy development projects in the region were screened out due to separation distance.

LS Power Grid New York, LLC, LS Power Grid New York Corporation, Marcy to New Scotland Upgrade Project, New York.

The existing yard will be retired at the Rotterdam Substation and the new station will have new onsite transformers. Ms. Pellerin conducted the acoustic assessment needed for the Project Article VII application to demonstrate compliance with the New York State Department of Environmental Conservation Noise Guidelines and Town of Rotterdam Noise Ordinance. Ambient sound measurements were collected to described existing conditions and potential operational sound emissions were predicted at nearby noise sensitive receptors. Ms. Pellerin provided direct testimony on behalf of LS Power in support of the Project application.

EDUCATION

Environmental Science Graduate Program, 2005

MESc, Chemical and Biochemical Engineering, 2005

BESc, Chemical and Biochemical Engineering, 2002

AREA OF EXPERTISE

Environmental acoustic modeling

Pre- and post-construction sound monitoring

Noise mitigation analysis and compliance assessment

REGISTRATIONS/ AFFILIATIONS

Institute of Noise Control Engineering

TRAINING/CERTIFICATIONS

Fundamentals of Engineering (EIT), MA, 2008

CALPUFF Training Course; 2006

CadnaA Basic and Advanced Seminars

Noise Control Course for Buildings, Manufacturing Plants, Equipment and Products; 2006

Underwater Acoustics and Signal Processing; 2011

Federal Energy Regulatory Commission Training Seminar, 2017

Irwin Carr Consulting, dBSea Underwater Noise Modeling Training, 2017

OFFICE

Boston. MA

YEARS OF EXPERIENCE

15

YEARS WITHIN FIRM

13

CONTACT

tricia.pellerin@tetratech.com

New York Energy Solution, National Grid, New York.

National Grid proposed to construct the New York Energy Solution Project, which consists of a 345-kV transmission line and several substations and switching stations. The Project would traverse eight counties and 31 towns between Utica and Poughkeepsie. The most restrictive and controlling requirements are those prescribed by the New York State Department of Environmental Conservation. Baseline sound data were collected in the vicinity of the proposed substations and switching stations. In addition, an assessment of construction and operational noise was conducted. More detailed modeling was completed using CadnaA for the substations and switching stations, analyzing different potential cooling methods. Noise mitigation options were also investigated and applied, as necessary, to comply with the applicable requirements. Results of the analysis were compiled in the Article VII application submitted to the New York Department of Public Service.

Greene County Solar Facility, Hecate Energy Greene 1 LLC, Hecate Energy Greene 2 LLC, and Hecate Energy Greene County 3 LLC, New York.

Hecate is proposing to construct the Greene County Solar Facility, an approximately 50-megawatt photovoltaic solar facility in Greene County New York. Ms. Pellerin consulted with NYSDPS prepared the acoustic assessment for the project. Ambient sound monitoring was completed as well as acoustic modeling of the construction and operational sound sources. Ms. Pellerin also produced Exhibit 19 and its post-construction noise monitoring plan.

Rochester Gas and Electric Corporation, Rochester Area Reliability Project, New York.

The Rochester Area Reliability Project consists of 345 and 115 Kilovolt transmission lines, improvements to three existing substations, and construction of one new 345 kV/115kV substation (Station 255) in Monroe County. Ms. Pellerin was involved with conducting the acoustic analysis in support of the Project's Article VII application. Both construction and operation were analyzed and modeled, and Project compliance was assessed against local requirements and the New York State Department of Environmental Conservation noise guidelines issued under the State Environmental Quality Review Act (SEQRA).

Coeymans Solar Farm, Hecate Energy Albany 1 LLC and Hecate Energy Albany 2 LLC, New York.

Hecate is proposing to construct the Coeymans Solar Farm a 40-megawatt photovoltaic solar facility in Albany County, New York. Ms. Pellerin consulted with NYSDPS prepared the acoustic assessment for the project. Ambient sound monitoring was completed as well as acoustic modeling of the construction and operational sound sources. Ms. Pellerin also produced Exhibit 19 and its associated appendices such as the post-construction noise monitoring plan.

Atlantic Sea Island Group, Safe Harbor Energy Project, New York.

The applicant proposed to construct, own and operate an LNG receiving, storage and regasification facility as a deepwater port that will be capable of delivering up to 1.15 bscfd of natural gas to the New York metropolitan region. Tetra Tech assisted in the EIS and permitting phase of this project with Ms. Pellerin primarily assisting with conducting underwater acoustic analysis of project activities. Underwater modeling was completed, taking into account source and receiver depth, and site-specific parameters including bathymetry and geoacoustic profiles of the seabed. Received sound levels were calculated to determine distances to biologically significant threshold levels as defined by the National Marine Fisheries Service (NMFS) to assess potential impacts on marine mammals.

Liberty Natural Gas, LLC, Port Ambrose Deepwater Port Third-Party EIS, New York.

Supporting the third-party EIS prepared as part of an environmental review of the Port Ambrose Deepwater Port license application. The project involves an offshore natural gas deepwater port facility that would be located in the New York Bight and would consist of two submerged turret loading buoys located in federal waters 17 nautical miles southeast of Jones Beach, New York and 24 nautical miles east of Long Branch, New Jersey. Responsibilities included reviewing in-air and underwater acoustic analyses conducted and preparing data requests, as necessary. Ms. Pellerin also helped to draft the noise related EIS sections.

Dominion Transmission Inc., New Market Project, New York.

Dominion Transmission, Inc. is seeking authorization from the Federal Energy Regulatory Commission (FERC) pursuant to Section 7(c) of the Natural Gas Act to construct and operate the proposed New Market Project. The Project consists of two new compressor station facilities and changes to four existing gas transmission facilities in Chemung, Tompkins, Madison, Herkimer, Montgomery and Schenectady Counties, New York. Ms. Pellerin was involved in the preparation of the Resource Report 9 acoustic analysis, which is a filing requirement under FERC. Noise generated by the proposed Project including that from construction and operation were analyzed and potential impacts to noise sensitive areas were assessed with respect to FERC noise criteria and applicable requirements at the state and local levels.

Deepwater Wind Block Island, LLC, Block Island Wind Farm and Transmission System, Rhode Island.

Deepwater is proposing to develop the Block Island Wind Farm, a 30-MW offshore wind energy facility off the coast of Block Island, Rhode Island. In connection with the wind farm, the Block Island Transmission System will also be developed. Noise would be generated during project construction and operation in-air and underwater. Ms. Pellerin was involved in the assessment of both potential in-air acoustic impacts on nearby residences as well as potential underwater acoustic impacts on marine species (e.g., marine mammals, sea turtles, etc.). In-air modeling was conducted using CadnaA and underwater modeling was conducted using the Range Dependent Acoustic Model (RAM) in Matlab. Mitigation measures were investigated where applicable. Ms. Pellerin also engaged in agency consultation in support of project permitting.

Dominion Energy. Coastal Virginia Offshore Wind (formerly VOWTP) Project. Virginia.

Tetra Tech has supported permitting of Dominion and Orsted's Coastal Virginia Offshore Wind Project through conducting many acoustic-related tasks including in-air and underwater acoustic modeling analyses and assessments. In addition, Tetra Tech has assisted in the calculations and language needed to assess potential noise impacts to marine mammals within the required IHA applications for the project. Lastly, Tetra Tech completed a field effort for pile ramming activities planned off the coast of Virginia Beach. Through the use of both real-time and passive acoustic monitoring, underwater sound pressure levels were measured, and the results were reported to regulatory agencies such as NOAA/NMFS.

Algonquin Power Co., Odell Wind Farm, Minnesota.

Ms. Pellerin drafted a protocol and conducted an operational sound survey for the Odell Wind Farm in Cottonwood, Jackson, Martin, and Watonwan counties, Minnesota. The protocol detailed the proposed survey methodology to satisfy site permit requirements issued by the Minnesota Public Utilities Commission and the Minnesota Department of Commerce, Energy Facility Permitting Guidance for Large Wind Energy Conversion System Noise Study Protocol and Report. The survey included six monitoring locations, collecting a combination of sound and weather data. Extensive analysis of both A-weighted and C-weighted sound levels was completed relative to a variety of meteorological parameters and compliance was assessed.

ENGIE North America Inc., Meridian Wind Project, South Dakota.

Ms. Pellerin assisted with the acoustic modeling analysis of the Meridian Wind Project, which is proposed near the Triple H Wind Farm in Hyde County, SD. Wind turbine design and layout modifications were evaluated as needed to evaluate compliance with the County noise ordinance at nearby noise sensitive receptors. An acoustic assessment report describing the findings of that analysis was prepared for permitting purposes.

AES, Na Pua Makani Wind Farm, Hawaii.

Champlin/GEI Wind Holdings, LLC is proposing to construct and operate the Na Pua Makani Wind Energy Project in Honolulu County, Hawaii. Ms. Pellerin was involved in an extensive baseline sound survey in support of the project, which included measurement of low frequency noise data. CadnaA was used to model project operation and compliance was assessed relative to the Hawaii Administrative Rule requirements as well as low frequency and infrasound guidelines given by the American National Standards Institute and the United Kingdom Department of Environment, Food, and Rural Affairs. A construction noise assessment was also completed, and a standalone noise impact assessment report was produced.

Patriot Renewables, LLC, Spruce Mountain Wind Project, Maine.

Ms. Pellerin provided noise permitting support for the Spruce Mountain Wind Project by first conducting the initial acoustic modeling assessment filed with Maine Department of Environment Protection Site Location Development Act permit application, which demonstrated compliance. Ms. Pellerin engaged in direct consultation with the DEP and their third-party noise expert. Subsequent acoustic modeling iterations were conducted, which included restricting a number of Project wind turbine to operate in noise reduced operation mode. The Department's draft Finding of Fact and Order for the Project was released on followed by a public review and comment period. Tetra Tech assisted in responding to noise related public comments during this comment period. As a result of the appeal to the Department's Order, a hearing before the Maine Board of Environmental Protection (BEP) was held. Ms. Pellerin was involved in providing BEP hearing testimony.

EDP Renewables, Timber Road I, II, III, and IV Wind Farms, Ohio.

Ms. Pellerin managed the acoustic analyses required for the Timber Road I, II, and III Wind Farms, all located in Paulding County, Ohio. A baseline sound survey was conducted for the combined Project areas and separate noise impact assessments were prepared in support of Project permitting, each analyzing several potential wind turbine models and project layout configurations in CadnaA. Ms. Pellerin also attended public meetings in support of the project and negotiated directly with the Ohio Power Siting Board regarding the noise-related certificate conditions proposed for the project. Supplementary analyses were completed as necessary at the request of the OPSB

BP Wind Energy, Mehoopany Wind Project, Pennsylvania.

BP's Mehoopany Wind Project is a 141 MW wind farm consisting of 88 GE wind turbines currently operating in Wyoming County, Pennsylvania. Ms. Pellerin conducted a post-construction operational sound survey for the project consistent with its permitting requirements. The objectives of the study were to very compliance with the Eaton absolute regulatory limit at non-participating residences, identify the incremental increase in area ambient noise attributable to the wind turbines and verify, to the extent possible, that the wind turbine source levels are within acceptable tolerances as compared to the level and spectra furnished by the manufacturer's specifications and used in the acoustic modeling calculations.

NextEra Energy Resources, Brady I and II Wind Energy Centers, North Dakota.

Ms. Pellerin conducted the acoustic modeling analysis and assessment for the Brady I and II Wind Energy Centers in Dickinson and Hettinger Counties, North Dakota. Several modeling iterations were conducted to analyze potential noise impacts associated with different project site layout configurations and wind turbine models. Other supplemental studies and exhibits were also prepared for both internal purposes (e.g., property line noise analysis) and for exhibits at the ND PSC hearing. Ms. Pellerin attended the ND PSC hearings as a witness to provide expert testimony on the subject of noise. Subsequent to Project operation, Ms. Pellerin also organized and led an operational sound survey to document operational sound levels.

Acciona Energy / Pacific Renewable Energy Generation, LLC. Lompoc Wind Energy Project, California.

Ms. Pellerin provided a quick response baseline sound survey in support of permitting for the Lompoc Wind Energy Project located in Santa Barbara County, California. The purpose of this task was to document the acoustic environment to provide an objective regulatory compliance determination with the California Environmental Quality Act noise impact guidelines, the criteria is determined relative to the existing acoustic environment. The equivalent sound level was then analyzed and correlated with wind speed data using standard regression analysis methodology to determine background sound levels at integer wind speed operational conditions. These data were then used to assess future project related incremental noise increases.

EDP Renewables, Top Crop Wind Energy Conversion Project, Illinois.

Ms. Pellerin was involved as an acoustical engineer for the Top Crop Wind Energy Conversion Project proposed to be constructed in Livingston, LaSalle, and Grundy Counties, Illinois. Initially, a screening level environmental noise impact assessment was conducted in adherence to the daytime/nighttime octave band noise level regulations set by the Illinois Pollution Control Board. After the screening analysis was submitted, the preferred wind turbine generator model was identified, and a full CadnaA acoustic modeling analysis was completed. The critical octave band frequency was determined in terms of potential noise impacts at residential receptors and the wind turbine array was consequently reconfigured to eliminate these issues.

BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

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DIRECT TESTIMONY OF NATHALIE SCHILS

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Nathalie Schils. I am currently employed by Tetra Tech, Inc. as the Project Manager and Director of Offshore Energy. My business address is 10 Post Office Square, 11th Floor, Boston, MA 02109.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Bachelor of Science in International Relations and Environmental Science. As a Project Manager, my responsibilities include supporting development of permit applications, stakeholder engagement and completing assessments for offshore wind developments, inclusive of onshore transmission. Since joining Tetra Tech, I have worked with a variety of federal and state agencies, including the Federal Energy Regulatory Commission and the United States (U.S.) Coast Guard, as well as developers including Empire.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the Project Manager for Tetra Tech, I am responsible for supporting preparation of the Article VII application, inclusive of quality assurance/quality control (QA/QC) of Tetra Tech's deliverables to Empire.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring Exhibit 2 (Location of Facilities) and Exhibit 8 (Other Pending Filings).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

Nathalie Schils
Procurement and Contract Manager / QA/QC

EXPERIENCE SUMMARY

Ms. Schils is the Director of Tetra Tech's Offshore Energy Program, responsible for managing a multi-million-dollar program including direct management of projects. Ms. Schils has a background in natural resource management and regulatory strategy and permitting for oil and gas projects as well as solar, transmission, and wind. Ms. Schils is an offshore wind permitting expert, having managed several large offshore wind projects along the East Coast and acted as the Project Manager in development of three Construction and Operations Plans (COPs). Building on an oil and gas background in the mid-Atlantic, New England and the Gulf of Mexico, Ms. Schils leads a team of Project Managers and Subject Matter Experts on a half-dozen offshore wind projects on the east and west coasts; from initial Critical Issues Analyses through full permitting and regulatory support for construction and operations of offshore wind projects. Previously, Ms. Schils supported both the Applicant and agency (third party) side in preparation and review of permit applications for oil and gas pipelines and deepwater LNG export/import facilities.

EDUCATION

BA, Environmental Studies and International Relations, Tufts University, 2012

TRAINING/CERTIFICATIONS

Leadership Academy; 2018

Sales Training, Tetra Tech; 2016

OFFICE LOCATION

Boston, MA

YEARS OF EXPERIENCE

9

RELEVANT EXPERIENCE

Mayflower Wind (Shell and EDPR), MA (2020-present)

Supported development of the COP through a sufficiency review of various COP chapters and providing input on permitting strategy. Supported cable routing and landfall assessment. Assessments include export cable routing, landfall assessment and preliminary Cable Burial Risk Assessment (CBRA).

Equinor US Wind, Empire Wind Project, NY and NJ (2017–Present)

Project Manager for an offshore wind farm project off the coasts of New York and New Jersey under Commercial Lease OCS-A 0512, inclusive of survey plans, Site Assessment Plan (SAP) and COP activities as well as full suite of federal and state permit applications. Coordination of field work and assessment activities across multiple resources for work that included visual and historic properties, wetlands, and Phase I ESA. Facilitating agency and stakeholder outreach, including preparing presentations, compiling and circulating minutes, and responding to client and stakeholder feedback.

Avangrid Renewables, Kitty Hawk Offshore Wind Farm, VA and NC (2019–Present)

Project Manager in support of the Site Assessment Term activities including survey planning. Successfully submitted and received approval of the SAP in 2019. Successfully developed and submitted the COP under Commercial Lease OCS-A 0508. Leading agency and stakeholder engagement at federal and state level.

Ørsted, Bay State Wind Offshore Wind Farm, MA (2016–Present)

Project Manager in development of the Site Assessment Plan (SAP) Survey Plan, SAP, COP Survey Plan, and COP for the Bay State Wind Offshore Wind Farm under Commercial Lease OCS-A 0500. Project received industry first SAP approval in June 2017. Prepared and submitted biweekly status updates to Ørsted (then DONG Energy). Scheduled and facilitated interagency kickoff meeting and other outreach with federal and state agencies and stakeholders. Responsible for land use, socioeconomic and recreation/tourism assessments in support of a Critical Issues Analysis and the COP.

Confidential Client, NY and NJ (2018–Present)

Project Manager in confidential analysis of potential export cable routes, cable landfall locations and points of interconnection along the New York and New Jersey coasts in support of upcoming BOEM leasing auction.

Liberty Energy, Port Ambrose Deepwater Port Project EIS, NY, NJ (2012–2014)

Attended and assisted with the USCG scoping meetings and DEIS/FEIS meetings held in Long Beach, New York and Edison, New Jersey for this liquefied natural gas deepwater port located off the coasts of New York and New Jersey. Prepared and maintained the comment matrix for the project which included downloading all scoping comments from the United States Coast Guard e-library. Each individual comment (more than 800 comments) was coded according to the section in the EIS in which each would be addressed. Prepared sections of the EIS on socioeconomics and environmental justice.

Delfin LNG, Delfin Deepwater Port EIS, LA, TX (2015–2017)

Attended and assisted with the USCG scoping and DEIS/FEIS meetings for this LNG deepwater port located off the coasts of Louisiana and Texas. Lead author for Land Use, Recreation and Aesthetics; secondary author for Alternatives section (DEIS and FEIS). Tracked and responded to comments from federal, state and local agencies and other stakeholders using regulations.gov portal.

Excelerate Energy, Lavaca Bay Liquefied Natural Gas Project, Lavaca Bay, TX (2013–2015)

Assisted in authoring Resource Report 2 (Water Use and Quality), Resource Report 3 (Fisheries, Vegetation, and Wildlife) and Resource Report 8 (Land Use, Recreation, and Aesthetics) to be filed with the FERC for a liquefied natural gas project in southern Texas. Conducted desktop research to identify potential impacts to wetlands located along the pipeline right-of-way. Responded to data requests for additional information that was not provided in the original resource reports based on additional research and field surveys. Completed field surveys including wetlands delineations and threatened and endangered species habitat assessments.

PennEast Pipeline Project, NJ and PA (2014–Present)

Prepared and submitted data requests for Resource Report 8 (Land Use, Recreation, and Aesthetics) for additional information not provided by the Applicant in the Resource Report for a FERC 7(c) application for a 110-mile-long LNG pipeline in New Jersey and Pennsylvania. Lead author of Section 2.5 (Land Use, Recreation, and Aesthetics) for the EIS. Assisted with the comment matrix for the project which included downloading and reviewing all scoping comments from the FERC e-library. Each individual comment was coded according to the section in the EIS that it would be addressed in. Attended scoping meetings and open houses and participated in site visit.

Equitrans, Mountain Valley Pipeline Project, VA and WV (2014–Present)

Lead author for Resource Report 8 (Land Use, Recreation, and Aesthetics) for the FERC 7(c) application of a 300-mile-long LNG pipeline in Virginia and West Virginia. Coordinated logistics and attended 16 open houses along the pipeline route held in 15 different counties each attended by approximately 150 people.

Columbia Gas Transmission, LLC East Side Expansion Project, PA, NJ, NY, and MD (2013–2014)

Attended and assisted with the FERC scoping meetings held in Woolwich, New Jersey, and Exton, Pennsylvania. Prepared and maintained the comment matrix for the project which included downloading and reviewing all scoping comments from the FERC e-library. Each individual comment was coded according to the section in the EIS in which each would be addressed. Prepared and submitted data requests for Resource Report 8 (Land Use, Recreation, and Aesthetics) for additional information not provided by Columbia Gas Transmission in the Resource Report. Prepared Section 2.5 (Land Use, Recreation, and Aesthetics) for the Environmental Assessment.

Columbia Pipeline Group, Tri-County Bare Steel Replacement Project, PA (2014–2016)

Prepared and maintained the comment matrix for the project which included downloading and reviewing all scoping comments from the FERC e-library. Each individual comment was coded according to the section in the EA that it would be addressed in. Prepared and submitted data requests for Resource Report 10 (Alternatives) for additional information not provided by Columbia in the Resource Report. Prepared Section 3.0 (Alternatives) for the Environmental Assessment.

Downeast LNG Export Project, Robbinston, ME (2014–2016)

Maintained the comment matrix for the project which included downloading and reviewing all scoping comments from the FERC e-library. Each individual comment was coded according to the resource report in which each would be addressed.

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DIRECT TESTIMONY OF LAURA SLIKER

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Laura Sliker. I am currently employed by Equinor US Wind, LLC as an Offshore Permitting Manager. My business address is 120 Long Ridge Road #3E01, Stamford, CT 06902.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Master of Studies in Environmental Law from Vermont Law School and a Bachelor of Science in Environmental Science and Public Policy from Northern Arizona University. I am certified by the National Registry of Environmental Professionals. As an Offshore Permitting Manager, my responsibilities include collaborating with engineering, technical and real estate teams, securing state and federal permits and approvals, and ensuring environmental compliance with the commitments associated with those permits. Since joining Equinor US Wind, LLC, I have worked with the Bureau of Ocean Energy Management, the US Army Corps of Engineers, US Coast Guard, Federal Aviation Administration, National Oceanic and Atmospheric Administration (National Marine

Fisheries Service), the Environmental Protection Agency, the National Park Service, New York Department of Environmental Conservation, NY Department of State, New York Office of Parks, Recreation and Historic Preservation, New Jersey Department of Environmental Protection, and various other affected stakeholders, Tribes, local governments, private developers, commercial entities, utilities and community groups.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the Offshore Permitting Manager, I am responsible for collaborating with marine operations and engineering to secure state and federal permits and approvals for offshore and nearshore surveys, work on the Construction and Operations Plan (COP), permit tracking and compliance. I am also the Section 106 Lead for the Empire Wind 1 Project and responsible for outreach to visually affected stakeholders and Tribes.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am co-sponsoring Appendix G (Phase I Terrestrial Archeological Survey), Appendix H (Analysis of Visual Effects on Historic Properties), and Appendix I (Visual Impact Assessment).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

LAURA SLIKER
(973) 987-7701, lslik@equinor.com

EXPERIENCE

EQUINOR Stamford, CT
Offshore Permitting Manager, Empire Offshore Wind 2020 - Current

- Offshore Permitting Manager for development of 2000+ MW offshore wind farm off the coast of Long Island, NY.
    - Responsibilities include collaborating with marine operations and engineering to secure state and federal permits and approvals for offshore geotechnical and geophysical surveys as well as subsequent permit tracking and compliance.
    - Involved in preparation of Construction and Operations Plan (COP) and ongoing coordination and preparation of supplementary COP documentation.
    - Section 106 Lead in outreach to visually affected stakeholders and Tribes.

ØRSTED NORTH AMERICA Boston, MA
Permitting Manager, Ocean Wind 2018 - 2020

- Permitting Manager for development of 1100 MW offshore wind farm off the coast of Atlantic City, NJ.
    - Responsibilities include collaborating with engineering, technical and real estate teams on cable route planning and landfall/substation site selection, identification of necessary Federal and State permits and preparation of the Construction and Operations Plan.
    - Also responsible for establishing and maintaining successful working relationships with Federal and State agencies as well as local communities.
    - The role also involves managing various subconsultants and contractors, managing plans and permits for onshore and offshore site investigations, managing project schedules and timelines and presenting the Project to eNGOs and stakeholders throughout the community.
- Providing permitting and local support in the development of an Operations and Maintenance Facility located in Atlantic City. Review deliverables produced by design subconsultant.
- Serve as NEPA analyst across all Ørsted North America offshore wind projects for the purpose of tracking Federal regulatory developments, coordinating with the Lead Federal Agency: BOEM, and streamlining projects through the NEPA process under BOEM.

DEWBERRY ENGINEERS Parsippany, NJ
Environmental Planner 2015 - 2018

- **Rebuild by Design Hudson River NEPA EIS (NJDEP/HUD)** - supported scoping, concept development, public involvement, agency coordination, EIS preparation, evaluation of cumulative impacts and drafting of ROD for $230 million flood resiliency project in Hoboken, NJ
- **Hudson Tunnel NEPA EIS (FRA/NJTRANSIT)** - prepared visual impacts assessment of above-ground elements of new Northeast Corridor rail tunnel
- **Hunts Point Interstate Access Improvement Project (NYSDOT/FHWA)** - prepared Section 4(f) Evaluation and managed visual impact assessment for new interchange in Bronx, NY
- **U.S. Route 6/10 Interchange Improvements (RIDOT/FHWA)** - prepared Re-Evaluation of 2005 FEIS and ROD for new interchange ramp and replacement of nine bridges in Providence, RI
- **Environmental Consulting Services for Construction Projects (MTA-NYCT)** - served as environmental task manager for various transit improvement projects throughout NYC

BEM SYSTEMS New Jersey
NEPA Project Manager 2014 - 2015

- **New Jersey Transit Superstorm Sandy Recovery and Resilience Program (FTA).** Managed the preparation of preliminary NEPA documentation for four major rail resiliency projects in New Jersey. Projects include the survey and inventory of all rail assets to plan for elevation and hardening as well as the siting of an electrical microgrid station capable of supplying power to the transit system during emergencies.

THE LOUIS BERGER GROUP, INC. Morristown, NJ
Senior Environmental Planner/Regulatory Analyst 2006 – 2014

- **Superconducting Maglev Advisory Services (confidential client)** - Conducted and prepared feasibility study, alternatives analysis and environmental constraints analysis for the location of potential high-speed rail alignments between Washington, DC and New York City
- **On-Call Environmental Planning Consulting Services (San Mateo County Transit District)** - Provided in-house NEPA and CEQA support for Capital Projects and environmental planning in collaboration with Bay Area Rapid Transit and California High Speed Rail. San Mateo, CA
- **Badlands National Park General Management Plan and EIS (DOI/NPS)** - Prepared NEPA analysis of cumulative impacts, energy and conservation requirements for NPS land management plan including a significant tribal involvement component. South Dakota
- **Texas High Speed Rail (Texas Central Railway)** - Conducted alternatives analysis and agency scoping in preparation for the initiation of a FRA EIS for a 240-mile privately funded high speed rail project from Dallas-Houston, TX
- **Goethals Bridge Replacement EIS (USCG)** - Analysis of indirect effects and cumulative impacts, Section 4(f) and Parkland Alienation related to interstate bridge replacement; Elizabeth NJ-Staten Island, NY

EDUCATION

VERMONT LAW SCHOOL South Royalton, VT
Master of Studies in Environmental Law, August, 2006 2005 - 2006

NORTHERN ARIZONA UNIVERSITY Flagstaff, AZ
BS, Environmental Science and Public Policy, December 2003 2001- 2003

ADDITIONAL INFORMATION

Publications & Research

- **Indefinite Delivery Indefinite Quantity (IDIQ) Contract: Federal Highway Administration; Office of Planning, Environment and Realty** Managed all aspects of proposals, contracts, budgets and schedules for seven task orders. Supported the development of an Electronic NEPA Collaboration Tool and the implementation of its pilot program in five states.

- **IDIQ Project 25-25 National Cooperative Highway Research Program; National Academy of Sciences.** Managed all aspects of proposals, contracts, budget and schedule for all task orders awarded. Conducted research in the form of interviews, surveys and literature reviews requiring collaboration across a wide range of disciplines in order to prepare studies, reports and presentations of findings for the following task order assignments:
    - Modification and Amendment of Environmental Permits on Design-Build Projects (Project 25-25 Task 25)
    - Legal Sufficiency Criteria for Indirect Effects and Cumulative Impacts as Related to NEPA Documents (Project 25-25 Task 43)
    - Compendium of Environmental Fieldwork Technologies (Project 25-25 Task 48)
    - Feasibility Study of Using Solar or Wind Power for Transportation Infrastructure (Project 25-25 Task 64)
    - Implementing Measures to Reduce Highway Impacts on Habitat Fragmentation (Project 25-25 Task 68)
    - Templates for Project-Level Analysis Using MOVES and AERMOD (Project 25-25 Task 71)
    - Successful Practices for Effective Tribal Consultation (Project 25-25 Task 79)
    - Establishing Representative Background Concentrations for Quantitative Hot-Spot Analyses for Particulate Matter (Project 25-25 Task 89)
    - Long-Term Construction and Maintenance Cost Comparison for Road Stream Crossings: Traditional Hydraulic Design vs. Aquatic Organism Passage Design (Project 25-25 Task 93)

Affiliations & Organizations

- National Registry of Environmental Professionals (REP) Certified since 2014

- Transportation Research Board: Environmental Issues in Transportation Law Committee (member since 2012)

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DIRECT TESTIMONY OF JOEL STADELL

ON BEHALF OF

EMPIRE OFFSHORE WIND LLC

Q. Please state your name, position and business address.

A. My name is Joel Stadell. I am currently employed by Equinor US Wind, LLC as a Project Leader. My business address Martin Linges vei 33, 364 Fonebu, Norway.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of Empire Offshore Wind LLC (Empire or the Applicant). Empire was one of the two winning bidders to the New York State Research and Development Authority (NYSERDA) 2018 offshore wind solicitation. Empire proposes to construct and operate the Empire Wind 1 (EW 1). The purpose of my testimony is to support Empire's application pursuant to New York Public Service Law (PSL) Article VII for a Certificate of Environmental Compatibility and Public Need to construct, operate, and maintain the portions of the EW 1 Project transmission system located within the State of New York (collectively, Project).

Q. Please describe your education background and business experience.

A. I have a Master of Science in Industrial Engineering and Management and a Bachelor of Business Administration in Marketing from Linköping Institute of Technology. As a Project Leader and Project Manager for the Electrical System and Infrastructure on the Empire Wind Project, my responsibilities include the delivery of the submarine export cables, onshore substation, interconnection cables, the interconnection to the grid and the overall field electrical system design. My responsibilities include managing the design of the electrical systems and infrastructure for the Project.

Q. Have you testified in other proceedings before this Commission?

A. No.

Q. Would you briefly describe your responsibilities in regard to the instant Article VII Application?

A. As the Project Leader and Project Manager for the Electrical System and Infrastructure on the Empire Wind 1 Project, I am responsible for the delivery of all facilities covered by the Article VII application, this includes managing the work performed by internal and external resources to design the facility covered by the Application.

Q. What Exhibits are you sponsoring in this proceeding?

A. I am sponsoring/co-sponsoring or on the panel co-sponsoring: Exhibit 3 (Alternatives), Exhibit 4 (Environmental Impact), Exhibit 5 (Design Drawings), Exhibit 6 (Economic Effects of Proposed Facility), Exhibit 7 (Local Ordinances), Exhibit 9 (Cost of Proposed Facility), Exhibit E-1 (Description of Proposed Transmission Facility), E-2 (Other Facilities), E-3 (Underground Construction), E-4 (Engineering Justification) and E-6 (Effect on Transportation).

Q. Were the Exhibits mentioned in the paragraph above prepared under your direction and supervision?

A. Yes.

Q. Does this complete your testimony?

A. Yes.

JOEL STADELL
+47 4790-3231, joesta@equinor.com

EXPERIENCE

EQUINOR Various Locations
Project Manager for Electrical System & Infrastructure in Empire Wind (Oslo, Norway) 2019 - Present

- Responsible for the delivery of the electrical infrastructure and electrical system design from the WTG to the Point of Interconnection

Completion Manager in Bay du Nord Project (Oslo, Norway) 2019

- Main tasks are to prepare input to ITT, and evaluation of Contracts for FEED and Execution.

Offshore Completion Manager in Mariner Project (Oslo, Norway) 2017 - 2019

- Offshore hock-up responsible for the Mariner topside including construction, commissioning and start up.

Project Manager in CATJ Project (Geoje, South Korea) 2015 - 2017

- Project Manager of the delivery of two jack up rigs, Askeladden and Askepotten, constructed by Samsung for Statoil. (34 000 ton each rig).

Engineering and Construction Manager for CATJ Project (Geoje, South Korea) 2015 – 2016

- Responsible for the engineering and construction of two jack up rigs, Askeladden and Askepotten , constructed by Samsung for Statoil. (34 000 ton each rig).

Construction Lead in Mariner Project (London, Oslo, South Korea) 2014 - 2015

- Acting construction manager for 6 months with preparation work for construction, and then responsible for the process module (10 000) and the construction group 2 including piping, mechanical, HVAC and preservation.

Engineering Manager in Bressay Project (Oslo, Norway and London, England) 2012 - 2013

- Responsible for the delivery of PDQ studies, concept study and pre-FEED. Responsible for the drilling module from 1st of March 2013 in London, during the pre-design for EPC, following the Mariner detail design.

Amine EPC Manager in CO2 Technology Centre Mongstad Project (Mongstad) 2010 – 2012

- Statoil's responsible for the delivery of ACC amine plant in the TCM project and having the roles as both company representative and construction lead in parallel, (6000 ton).

Senior Field Engineer in Peregrino FPSO Project 2008 – 2010

- Multidiscipline follows up of topside modules (10 000 ton); performing examination, following up module status in Contractors MC-system, progress reports and HSE on site.

Interface Coordinator in Gjøa Topside Project (Oslo, Norway) 2008

- Following up all technical interfaces between Aker topside EPC and other contractors during detail design in the Gjøa project.

NORSK HYDRO AS Stavanger, Molde, Oslo, Norway
Corporate Trainee in Project Management 2006 – 2007

LINKÖPING INSTITUTE OF TECHNOLOGY Linköping, Sweden
Teacher in Economic Analysis 2002 - 2006

- Work contents: Holding and planning lectures and lessons in Microeconomics, Decision-, Utility Game theory and Investment analysis. Preparing and correcting exams.

EDUCATION

LINKÖPING INSTITUTE OF TECHNOLOGY Linköping, Sweden

MS, Industrial Engineering and Management, July, 2006 1999 - 2006

LINKÖPING INSTITUTE OF TECHNOLOGY Linköping, Sweden
BA, Business Administration, **august**, 2006 2000 - 2006