Section 4

Technical Ability

Section 4. Technical Ability

4.1 State Standards

Pursuant to the State's Site Law, applicants must demonstrate prior experience and provide resumes for key project personnel.

4.2 Prior Experience

The Applicant is a project company founded to hold the assets of the Project. It is backed via a development group comprised of ACE and Palmer. As described in Section 3, the principals developing the project also developed, permitted, and managed the construction of the RoxWind project in Roxbury, Maine, that was commissioned in 2021. RoxWind LLC received a Final Order from the Department in August 2019.

Palmer has been financing and developing alternative energy projects for over 40 years and has participated in over 60 projects during that time. Its principals have been involved in 15 wind projects since 2009.

For a list of Palmer's projects, see Section 3: Financing.

4.3 Personnel

The Applicant is composed of a team of individuals with prior experience developing, financing, managing, and constructing renewable energy projects. The principals of the team include the following eight individuals. Resumes for each of these individuals are included in Exhibit 4-1.

Name	**Task**
Lindsay Deane-Mayer	Project Management
Sumul Shah	Engineering, Design and GIS
Gordon Deane	Palmer President
Scott Kaplan	Financial Modeling
Steve Von Vogt	Project Developer
Anthony Dowling	Project Developer
John Richardson	Project Developer
Eric Kingsley	Project Developer

In addition to the principals of the development group, the team includes the following consultants who were selected based on their extensive experience and expertise in their respective disciplines.

Consultant	Task
James W. Sewall	Civil Engineer, Design and Permitting
Flycatcher, LLC	Resource and Wildlife Assessments, Soils
Bodwell EnviroAccoustics	Noise Studies
Viewshed (previously TJD&A and Spatial Alternatives)	Visual Impact Analysis
The Public Archaeology Laboratory (PAL)	Historic Assessment
SGC Engineering	Electrical Engineer
DNV	Shadow Flicker Assessment
Verrill	Legal Counsel

Their resumes are also included in Exhibit 4-1.

The Applicant and it consultants have years of experience and expertise. The Project team has the technical ability to complete the Project.

Exhibit 4-1
Key Personnel Resumes

Education

Alliant International University
San Francisco, CA
2008 - 2010
Master of Arts in Education
Teaching Credential

Dartmouth College
Hanover, NH
2004 - 2008
Bachelor of Arts Double Major
Environmental Studies
Engineering mod. w/ Studio Art

Select Projects

- Led the development of the RoxWind project in Roxbury, ME.
- Led the development of the Jericho Power project in Berlin, NH.
- Developed and manages the Scituate Wind project in Scituate, MA.
- Developed and manages the Fairhaven Wind project in Fairhaven, MA.

Current Volunteer Positions

- Head Agent for Class: Dartmouth College Fund
- Steering Committee: XIX Society
- Fellow: National Tropical Botanical Gardens

Contact

781-383-3200

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PALMER
www.palmcap.com

Lindsay Deane-Mayer

Senior Vice President

Senior Vice President of Business Development for Palmer specializing in the development and financing of renewable energy projects. Leads wind energy development and operations.

Work & Experience

Senior Vice President | Palmer
Developing 1.7 GW of wind, solar and other renewable energy projects throughout the United States.

- Leads the development of wind energy assets.
- Managed and financed ~$100MM of community wind energy assets through 2022.
- Leads stakeholder and community engagement, including negotiating land agreements.
- Secured $1MM in grant money for project development.
- Secured over $4MM in federally subsidized bonds.
- Originated and negotiated PPAs, Turbine Supply, Operating and Maintenance Agreements.
- Designed and contracted various EPCs in Puerto Rico.
- Developed, negotiated, and managed project construction agreements and budgets.
- Manages current operating wind assets.

Project Analyst | Palmer 2010-2016
Evaluated project opportunities for fatal flaws and economic success.

- Managed project development.
- Engaged with stakeholders.
- Placed over $6MM in federally subsidized bonds.
- Provided oversight during construction, ensuring compliance with permits and major contracts.

Corps Member | Teach for America 2008-2010
National teacher corps of highly selective college graduates who commit two years to teach in under-resourced public schools. Certified mathematics educator for secondary school students in Oakland Unified School District, Oakland, CA.

- Educated 140+ students annually.
- Recognized by school leaders for consistently enhancing student outcomes through improved classroom management and high expectations.
- Collaborated with district officials to redefine the math curriculum for 900+ students.

Past Volunteer Positions

Board Member | 'Mid Pines Foundation 2018-2022

- Raised funds to provide "camperships" so that more girls have the opportunity to experience the great outdoors at summer camp.

Mentor | The DREAM Program, Inc. 2004-2008

- Fostered communities of families living in affordable housing complexes.
- Mentored college students to improve their self-awareness, set goals and recognize their potential.
- Fundraised and collaborated with local businesses to increase accessibility to regional resources.
- Recognized by Governer of Vermont for community service efforts.

Education

M.I.T.
Cambridge, MA
1994-1995
M.S. in Civil Engineering
Recipient of Schoettler Fellowship

Brown University
Providence, RI
1990-1994
B.S. with Honors in Civil Engineering

Achievements

- US Small Business Person of the Year (1st Runner Up) 2009 | US SBA
- Massachusetts Small Business Person of the Year 2009 | US SBA
- Prime Contractor of the Year 2003 | US SBA
- Award of Excellence 2002 & 2003 | US SBA
- *Mitigating the Contractor's Risks from Community Involvement and Behavioral Issues in Hazardous Waste Remediation Projects*
- *Computer Programming Applications for the Static Analysis of Isotropic Solids and Reinforced Concrete Structures Using the Finite Element Method*

Contact

781-389-4671

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PALMER
www.palmcap.com

Sumul Shah

Partner

Partner at Palmer serving as the technical-lead for construction of renewable energy projects in all phases of project lifespan, including development, construction and operation.

Work & Experience

Partner | Palmer
Developing 1.7 GW of wind, solar and other renewable energy projects throughout the United States.
- Manages stakeholder engagement, development, and construction of energy projects.
- Leads project design efforts and provides construction expertise and oversight.
- Actively identifies new project opportunities, such as IslaSol, which provides solar energy to businesses in Puerto Rico.

President & Founder | Solaya Energy Corporation
Founder, Owner and President of a renewable energy development and management company.
- Manages operations for community-wind projects in MA
- Co-developed wind projects including in Roxbury, ME; Berlin, NH; Fairhaven, MA; Scituate, MA.
- Constructed, maintained and/or operated over 30 independent wind, solar, geothermal or fuel cell energy facilities.

Executive Project Manager | One Way Development
Oversees the strategic growth plan for the company that has led to a 150% increase in revenue year over year.
- Developed JV relationships with several large general contractors to help accelerate the growth of the company.
- Managed government projects for the Bureau of Prisons, National Park Service, Army Corps of Engineers, and the Coast Guard.
- Managed commercial projects for UPS at Logan Airport, Encore Boston Harbor, Mass General Hospital and Northeastern University.
- Managed residential construction of new affordable housing throughout the City of Boston.

President & Founder | Lumus Construction 1998-2013
Developed 450+ projects totaling $350 million in restoration, military, healthcare, and wind turbine and solar construction.
- Oversaw operational and financial performance for a public sector general, mechanical, and electrical design and construction firm.
- Managed over 220 employees on projects throughout Northeastern US from West Virginia to Maine.
- Sample of major projects completed:
  - Renovations to major historical landmarks including numerous US Presidential homes, the USS Constitution and Museum, the Bunker Hill Monument, Alexander Hamilton's residence, and Acadia National Park.
  - Dozens of construction projects at US Coast Guard bases throughout New England to improve homeland security.
  - Upgrades to various US Navy, Air Force, and Army facilities at military installations throughout New England.
  - Critical renovations to several VA Hospitals and other science research facilities.

Education

M.I.T.
Cambridge, MA
1975-1976
Special Grad. Student/Energy Policy

Harvard University
Cambridge, MA
1971-1973
M.S. in Environmental Health

Oberlin College
Oberlin, OH
1967-1971
A.B. with Honors in Physics

Directorships

- Board Chair| National Tropical Botanical Garden | ntbg.org
- Founding Fellow & Trustee | Brain Chemistry Labs | brainchemistrylabs.org
- Overseer | South Shore Conservatory of Music southshoreconservatory.org
- Trustee | Atlantic Symphony Orchestra|atlanticsymphony.org

Contact

781-383-3200

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PALMER
www.palmcap.com

Gordon Deane

Owner and President of Palmer

Leads executive team in the development and financing of alternative energy projects. Oversees all projects under development and in operations.

Work & Experience

Owner, President | Palmer
Developing 1.7 GW of wind, solar and other renewable energy projects throughout the United States.

- Leads firm.
- Responsible for the financial and operational management of developement and operating projects.
- Develops and finances alternative energy projects.
- Manages day to day operations of corporation and affiliates.
- Actively participates in all aspects of project development, finance, and operations.
- Developed first USA commercial landfill gas-to-electric project.
- Consultant to US Export Council for Renewable Energy – Caribbean Basin Renewable Energy Initiative.
- Completed over $2.6 billion in energy financings.
- Developed over 200 MW of alternative energy projects.
- Structured and managed 14 synthetic coal projects, generating over $1.63 billion of tax credits to investors.
- Designed and contracted various EPCs in Puerto Rico.

President | Renewable Investment Corporation
Founder, Owner and President of a consulting service to provide and structure financing for different renewable energy ventures.

Director | DRV Investment, LLC
Founder, Owner and Director of a series of investment vehicles.

- Manages investments and corporate structures.
- Funded over $10 million in start-up financing for 5 companies.
- Successfully exited certain investments; many ongoing.

Program Manager | New England Regional Commission 1977-1981
Manager for Alternative Energy for 6-state regional economic development agency.

- Developed national pilot program for US Department of Energy to assist NE industries pursuing wood fuel choices.

Senior Scientist | GCA/Technology Division 1973-1977
Senior Scientist managing varied national and state environmental studies.

Honorary, Professional

- Climate Action Business Association
- Federation of American Scientists
- Solid Waste Association of North America; Hall of Flame Inductee
- American Wind Energy Association
- Environmental Business Council of New England
- Northeast Energy and Commerce Association
- Sigma Xi

Education

F.W. Olin Graduate School
Babson College
Wellesley, MA
1989-1991
Master of Business Administration

Connecticut College
New London, CT
1983-1987
Bachelor of Arts
Economics

Select Projects

- Leading development of utility-scale and C&I projects in MA & VA
- Led development and manages a landfill solar project in Cohasset, MA
- Developed rooftop solar project in Lowell, MA
- Developed tax credit monetization program for largest landfill gas projects in New England (Johnston, RI) and western U.S. (Puente Hills, CA)

Contact

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PALMER
www.palmcap.com

Scott Kaplan

Senior Vice President

Senior Vice President of Business Development, specializing in the development and financing of renewable energy projects. Leads solar energy development and operations.

Work & Experience

Senior Vice President | Palmer
Developing 1.7 GW of wind, solar and other renewable energy projects throughout the United States.

- Identifies candidate projects for financing, structuring, development and management of renewable energy projects.
- Determines if projects are financeable and generates proposals. Prepares financial planning and budgeting for post-transaction activities.
- Conducts in-depth financial analysis of operating performance.
- Marketed acquisition program resulting in the closing of 5 transactions with financial commitments over $70 million.
- Developed 2 projects with equity contributions in excess of $125 million.
- Assisted a tax-oriented investor with a monetization program having projected tax credits of $600 million over 7 years.
- Aided in a facility sale, relocation and restructuring with client projected to receive $37 million in contingent payments.
- Developed over 200 MW of alternative energy projects.
- Designed and contracted various EPCs in Puerto Rico.
- Discovered over $5 million in state tax credits for joint venture project.

Senior Accountant | City of Wilmington 1993-1995
Senior Accountant for Department of Finance of Wilmington, Delaware.

- Prepared financial statements for auditors, rating agencies and $68 million bond offering.
- Performed general ledger, payroll and accounts payable functions.
- Supervised accounts payable division.
- Served on task force for the privatization of public utilities.
- Awarded Certificate of Achievement for Excellence in financial reporting.
- Presented discounted cash flow valuation demonstrating wastewater treatment plant worth 1.2 times more than proposed book value.
- Determined $67 million compensation package for divesture of port city.

Stephen Von Vogt

2 Portland Fish Pier, STE 211, Portland, Maine 04101
207-828-1414

EDUCATION:

MPA, ***Finance concentration,*** **Harvard University,** Cambridge, MA **1983**
MS, ***Library and Information Science,*** **University of Illinois, Urbana, IL 1975**
BA, ***English and Philosophy,*** **University of Illinois,** Urbana, IL **1974**

Experience: Extensive experience in the management of large projects, technology development and commercialization, repurposing and construction of industrial facilities and development of energy projects.

PROFESSIONAL EXPERIENCE:

Principal, Androscoggin Clean Energy, Portland, ME **2021 – Current**
Principal, Mill Development Modeling, Portland, ME **2017 – Current**
Principal, Horseshoe Valley Wind, Portland, ME **2014 – Current**
Managing Director, Maine **Composites Alliance, Portland, ME** **2008 – Current**
President and CEO**, Maine Marine Composites, Portland**, ME **2006 – Current**

President and CEO**, Maine Marine Manufacturing LLC, Portland**, ME **2004 – 2006**
Controller, Manager of Special Projects, Hodgdon Yachts Inc., East Boothbay, ME **1999 - 2004**
Founded as the high technology spin-off from University of Maine and Hodgdon Yachts Inc. that brought together a team to design and build high-speed composite craft resulting in $14M Navy contract.

Principal, **Veritas Consulting Group,** Portland, ME **1996 - current**
Provide a wide range of consulting services to develop and achieve strategic goals: strategic assessment and planning; business development; financial analysis and strategy; management team development; financing and investment management; process and infrastructure design; government relations; business valuation; project management; compensation, benefits, and insurance; and leadership coaching.

Administrator/Consultant, Moon**, Moss, McGill & Bachelder,** Portland, ME **1995 – 96**
Consulted to the firm's clients on complex insurance defense, ERISA, and health care funding issues. Continue as a strategic consultant to the firm's management team.

CEO, **Maine Education Association Benefits Trust,** Augusta, ME **1994 - 95**
Led the turnaround of a struggling ERISA trust operating the largest health plan in the state (26,000 contracts, $100M in annual premiums, and $30M in reserves). Rebuilt and strengthened the Trust's relationship with the MEA and its Board; renegotiated and managed contracts reduce costs; introduced innovative plan designs; diversified investments and improved trust performance; and developed a marketing strategy. Within two years, the Trust provided the best coverage for the lowest premium in the state and increased school district participation from 70 to 93%.

Chief Operating Officer, **Richardson & Troubh,** Portland, ME **1990 - 94**
Administrator, **Thompson, McNaboe, Ashley & Bull,** Portland, ME **1985 - 90**
Mahoney, Hawkes & Goldings, Boston, MA **1983 - 85**
First administrator for three growing law firms. In all cases, initiated changes that significantly improved profit performance, client service, management team performance, and staff morale. Introduced and upgraded information systems; redirected financial and staffing strategies; refocused firms toward more profitable practice areas; consulted to management teams on partner relations as well as strategic issues; and managed up to 60 staff. Retained by all three firms as a strategic consultant on a long-term basis.

Co-Chair and Member, Maine Economic Growth Council **2010 - present**

Co-Chair, Governors Energy Office Offshore Wind Road Mapping Taskforce (Supply Chain) **2021 - present**

ANTHONY H. DOWLING

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About

Tony Dowling is a partner in Potomac Law Group, PLLC. He practices in the areas of executive compensation, private equity, and transactional business law.

Mr. Dowling has more than twenty years' experience representing companies, investors, and executives in all aspects of executive compensation, including compensation design, employment agreements, change in control transactions, equity and cash incentive programs, deferred compensation, separation and severance, tax, securities, fiduciary duties, and restrictive covenants. This work includes structuring for 409A compliance, planning for 280G, and designing, writing, and negotiating profits interest, stock option, restricted stock, RSU and other structures and programs.

Mr. Dowling has been practicing transactional business law for twenty-five years. His practice includes business organization, capitalization, venture capital and private equity, tax, mergers and acquisitions, joint ventures, and representation of companies and investors through all stages and transactions from start-up through exit. Mr. Dowling also advises private equity firms and their principals in connection with fund formation and structuring, as well as with the acquisition, management, and disposition of portfolio company investments.

His clients include public and private companies, private equity firms, and executives in a wide range of industries located throughout the United States.

Mr. Dowling lives in Falmouth, Maine with his wife and four daughters. He coaches FIS-level competitive mogul skiing for Carrabassett Valley Academy.

Practice Areas

Executive Compensation
Private Equity
Corporate, Partnership, and Limited Liability Company Matters
Business Transactions
Tax

Experience

Potomac Law Group, PLLC
Partner
April, 2022 to present

Dowling, LLC
Principal
September, 2016 to April, 2022

Bachelder & Dowling, P.A.
Partner
May, 2000 to September, 2016

Goodwin Procter LLP
Associate
September, 1994 to May, 2000

Education

J.D., University of Virginia School of Law, 1994

A.B., Dartmouth College, 1991

Honors

Virginia Law Review

Best Lawyers in America, 2010 to present, Corporate Law and Employee Benefits, Lawyer of the Year, 2014

US Ski Team, 1986-1991

Bar Admissions

Massachusetts, 1994

Maine, 2000

John Richardson

Vice President of Finance, Member of the Board

John has over 10 years of investment banking, development and investing experience in renewable energy and sustainable infrastructure. Prior to leading the finance team at Mission Clean Energy, John co-founded Acadia Infrastructure Capital in 2023 and was CohnReznick Capital's Director of Business Development & Investor Relations. In addition to transaction advisory, John led CohnReznick Capital's investor network development and relationship management.

John has participated in advising or investing in over $2 billion of transactions, totaling over 15GW of renewable energy projects and pipeline. John's financing and M&A experience includes development stage through operating projects. He has experience with utility-scale solar and wind, community and distributed energy, energy storage and geothermal energy.

John founded Juniors in Energy Finance (JiEF) in 2015, the largest national nonprofit networking group for early-career energy finance professionals. Under his leadership, the organization advanced to over 600 members from investment banks, hedge funds, private equity firms, and energy strategics.

John currently serves on the Board of Trustees for Cheverus High School in Portland, Maine and is a Volunteer and Mentor for Big Brothers & Big Sisters of Southern Maine. In his spare time, John develops community-scale wind projects with his partners in Maine.

John received his B.B.A. in Business, Economics and Public Policy from The George Washington University where he served as Student Association President.

Eric W. Kingsley

Vice President, Innovative Natural Resource Solutions LLC

kingsley@inrsllc.com

Vice-President, Innovative Natural Resource Solutions LLC, 2000 - Present

Twenty years of professional experience consulting, leadership and research for wood product manufacturing, renewable energy projects and economics of natural resource-based industries, with a concentration on forest industries.

Focus of practice includes development of new markets for forest products, analysis of business opportunities, and financing of forest and forest industry projects.

Experienced *Biomass Fuel Analyst*, with significant experience evaluating woody biomass, agricultural residues and dedicated energy crops for a range of projects. This includes the identification, storage, transportation and processing of a range of biomass fuels. Over 100 wood resource assessments conducted for a range of clients in the United States.

Project Responsibilities (Partial)

Biomass Resource Analysis: Regularly perform biomass availability analysis for private clients interested in developing, purchasing, selling or re-starting biomass energy facilities. Clients include thermal energy projects, wood pellet mills, biomass electric facilities, biofuel projects, and the investors in each of these.

Renewable Energy Facility Development: Work with merchant, utility and municipal developers of renewable energy facilities on economic, regulatory and fuel supply aspects of projects. Issues include siting and permitting, off-take agreements, interconnection issues, identification of funding opportunities, and off-grid or behind-the-meter electricity production.

Biomass Fuel Supply Risk Management. Developed methodology to hedge the price risk in biomass supply (e.g., pulpwood, biomass fuel, agricultural residues, etc.), allowing for greater price certainty for long-term fuel supply. This tool assists large-scale biomass users secure financing for projects without firm supply agreements.

Mass Timber. Developed information on wood supply and potential markets as part of a team assembled by the New England Forestry Foundation, with support from the USDA Forest Service. Analysis of preferred location for mass timber manufacturing facility for private client. Member of the University of Maine's Mass Timber Advisory Committee.

Maine Future Forest Economy: Led comprehensive sector-by-sector analysis of Maine's wood using industries, including analysis of biomass facilities in Maine and opportunities to generate own power or sell renewable power into the grid using forest product manufacturing by-product. Clients: Maine Department of Conservation and Maine Technology Institute, 2004 – 2005.

Regional Coordinator, Forest Resources Association, 2015 – present

Northeast Region contract support for national forest products industry trade association focusing on supply chain support and development.

Executive Director, New Hampshire Timberland Owners Association, 1995 –2000

• Responsible for day-to-day operation of 1,500 member 501.c.6 forestry trade association, representing the full spectrum of New Hampshire's commercial forestry community, including wood-using industries
• Represent organization in all legislative and administrative matters, including a successful full-time presence in the state legislature
• Represent organization as counsel pro se on all matters related to wood-fired utilities and utility restructuring before the state's Public Utility Commission
• Testified before U.S. House of Representatives Subcommittee on Forests & Forest Health regarding the future of the Forest Service in September 2000, and the Committee on Agriculture regarding Forest Health Legislation, June 1997

Education

Master of Science, Resource Economics, May 1995
University of New Hampshire, Durham, New Hampshire

Bachelor of Arts, Major in Philosophy, May 1990
Ithaca College, Ithaca, New York

Organizational Leadership

Maine Forest Products Council. Statewide trade association representing landowners and wood-using industries. Board Member 2012 – present, Executive Committee 2017 – present.

Carbon Tree LLC. Subsidiary of the Empire State Forest Products Association working to reward forest landowners for management activities that support increased carbon sequestration. Board Member 2010 – 2014.

Maine Technology Institute. Chair, Technology Board for Forestry & Agriculture, 2010 – present.

CEI Capital Management Limited. Organization responsible for $683 million of investment capacity using the federal New Market Tax Credits to drive investment in underserved rural areas. Significant investment in rural and agricultural industries across the country. Board Member 2009 -2014, Chair 2013.

Brett C. Hart, P.E.

Vice President of Engineering

Brett Hart joined the James W. Sewall Company in 1999. Mr. Hart brings to Sewall over 25 years' experience in site development and permitting, roadway and intersection design, surveying, and construction administration. He works with private developers, municipalities, and regulatory agencies to ensure successful completion to client endeavors. He has successfully managed numerous projects throughout the State of Maine including master plan development, site design, roadway/utility design, state and local permitting, and transportation planning. Recently, Brett has been responsible for managing civil engineering efforts on several wind turbine projects located within the State of Maine and New England.

EDUCATION

B.S., Bio-Resource Engineering Technology, University of Maine, Orono
Traffic and Transportation Engineering, Northwestern University, Evanston Illinois

PROFESSIONAL LICENSES AND AFFILIATES

Licensed Professional Engineer, Maine #10658, Vermont #122931, Georgia PE041988

RELEVANT EXPERIENCE

Weaver Wind LLC, Osborn, Eastbrook, Maine. Project Manager for civil road and site design for a 72.6-megawatt (MW) wind farm including 22 Vestas V126 wind turbine generators. Responsible for oversight and development of permit and construction level civil design plans and associated Maine Department of Environmental Protection (MaineDEP) permitting submittals. This project is currently under construction.

Passadumkeag Wind Project, Grand Falls TWP, Maine. Project Manager for civil road and site design for a 42-megawatt (MW) wind farm including 14 Vestas V112 3.0-MW wind turbine generators. Responsible for oversight and development of permit and construction level civil design plans and Maine Department of Environmental Protection (MaineDEP) permitting submittals.

Oakfield Wind Project, Oakfield, Maine. Project Manager for civil road and site design for a 144-megawatt (MW) wind farm including 48 Vestas V112 3.0-MW wind turbine generators. Responsible for value-engineering permit design to improve project constructability and reduce overall construction costs as well as oversight and development of final construction plans.

Blue Sky East LLC/Bull Hill, T16 MD, Maine. Project Manager for civil road and site design for a 34.2-megawatt (MW) wind farm including 19 Vestas V100 1.8-MW wind turbine generators. Responsible for oversight and development of permit and construction level civil design plans and associated Land Use Regulation Commission (LURC) permitting submittals. Review required by LURC and MaineDEP.

Antrim Wind Project, Antrim, New Hampshire. Senior Review Engineer for civil road and site design for a 28.8-megawatt (MW) wind farm including 9 Siemens SWT 3.2-113 wind turbine generators. Responsible for value-engineering permit design to improve project constructability and reduce overall construction costs, oversight and development of final construction plans, and obtaining required environmental permit modifications from the New Hampshire Department of Environmental Services (NHDES).

Rollins Wind Project, Lincoln, Lee, & Burlington, Maine. Project Manager for civil road and site design for a 60-megawatt (MW) wind farm including 40 General Electric 1.5-MW wind turbine generators. Responsible for value-engineering existing permit-level design to improve project constructability and reduce overall construction costs as well as oversight and development of final construction plans.

Hancock Wind LLC/T 22 MD, T16 MD, Maine. Project Manager for civil road and site design for a 51-megawatt (MW) wind farm including 17 Vestas V117 3.0-MW wind turbine generators. Responsible for oversight and development of permit and construction level civil design plans and associated Maine Department of Environmental Protection (MaineDEP) permitting submittals. Review required by MaineDEP and LUPC.

Kibby Wind Power Project, Kibby & Skinner Townships, Maine. Project Manager for civil road and site design for the 132-megawatt (MW) wind farm including 44 Vestas V90 3.0-MW wind turbine generators. Initially responsible for value-engineering existing design to improve project constructability and reduce overall construction costs. Ultimately responsible for oversight and development of new design plans and Land Use Regulation Commission (LURC) permitting submittals for the Owner's revised turbine layout.

Record Hill Wind Project, Roxbury, Maine. Project Manager for civil road and site design for a 50.6-megawatt (MW) wind farm including 22 Siemens SWT 2.3-MW wind turbine generators. Responsible for oversight and development of permit and construction level design plans and Maine Department of Environmental Protection (MaineDEP) permitting submittals.

Highland Wind Project, Highland Plantation, Maine. Project Manager for civil road and site design for a proposed 128.6-megawatt (MW) wind farm including 48 wind turbine generators. Responsible for oversight and development of project design plans and Land Use Regulation Commission (LURC) permitting submittals. Review required by LURC and MaineDEP.

Bowers Wind, Carroll Plantation & Kossuth Township, Maine. Senior Review Engineer for civil road and site design for a proposed 48-megawatt (MW) wind farm including 16 Siemens SWT 3.0-MW-113 wind turbine generators. Responsible for oversight and development of permit and construction level design plans and Maine Department of Environmental Protection (MaineDEP) permitting submittals. Review required by MaineDEP.

Wind Component Transportation Route Study & Design. Project Manager responsible for identifying the transportation route and the civil design of the roadway/intersection improvements necessary for wind turbine component delivery for numerous wind projects located in Maine. Projects included route analysis, civil design of roadway and intersection improvements for dozens of individual locations, obtaining appropriate MaineDOT permits, and obtaining all required municipal approvals.

Jodi O'Neal, PE, CPESC

Project Manager

Mrs. O'Neal joined the James W. Sewall Company in January of 2007. She has nearly 20 years of experience in engineering design and permitting. Her primary focus is in wind power, highway design, commercial/retail development and subdivision design which includes site and utility design, stormwater management, and environmental and construction related permitting.

EDUCATION

BS in Civil Engineering, University of Maine, 2002

PROFESSIONAL CERTIFICATION

Licensed Professional Engineer Maine #13020
Certified Professional in Erosion and Sediment Control #3888

RELEVANT EXPERIENCE

PROJECT ENGINEER

Stormwater Design and Analyses. Successfully designed and permitted many stormwater systems for many different types of sites from complex wind power projects, commercial developments, subdivisions and mining operations to small site reconfigurations throughout the state. She uses the existing grade of the land to accomplish stormwater treatment to the best extent possible. This preserves the natural beauty of the site and minimizes development costs.

Weaver Wind LLC, Osborn, Eastbrook, Maine. Stormwater design/analysis, erosion and sedimentation control, and permitting for civil road and site design for a 72.6-megawatt (MW) wind farm including 22 Vestas V126 wind turbine generators. Permitting was done through the Maine Department of Environmental Protection for a Site Location of Development Act permit. This project is currently under construction.

Antrim Wind Project, Antrim, New Hampshire. Project Manager for civil road and site design for a 28.8-megawatt (MW) wind farm including 9 Siemens SWT 3.2-113 wind turbine generators. Responsible for development of final construction plans, construction oversight and inspections and permit compliance. Permitting was done through the New Hampshire Department of Environmental Services. A permit amendment was obtained for changes made during construction.

Passadumkeag Wind Project, Grand Falls TWP, Maine. Stormwater design/analysis, erosion and sedimentation control, permitting, construction inspections for civil road and site design for proposed 42-megawatt (MW) wind farm including 14 Vestas V112

3.0-MW wind turbine generators. Permitting was done through the Maine Department of Environmental Protection for a Site Location of Development Act permit.

Oakfield Wind Project, Oakfield, Maine. Provided stormwater analysis/design, erosion and sedimentation control, permitting and construction inspections for civil road and site design for a 144-megawatt (MW) wind farm including 48 Vestas V112, 3-MW wind turbine generators. Permitting was done through the Maine Department of Environmental Protection for a Site Location of Development Act permit.

Hancock Wind LLC/T 22 MD, T16 MD, Maine. Provided stormwater analysis/design, erosion and sedimentation control, permitting and construction inspections for the civil road and site design for a 51-megawatt (MW) wind farm including 17 Vestas V117 3.0-MW wind turbine generators. Permitting was done through the Maine Department of Environmental Protection for a Site Location of Development Act permit and LUPC.

Bull Hill Wind Power Project, T16 MD, Maine. Stormwater analysis, erosion and sedimentation control and permitting for civil road and site redesign for proposed 34.2MW wind farm including 19 Vestas V100 1.8MW wind turbine generators. Permitting was done through the Maine Land Use Regulation Commission.

Record Hill Wind Project, Roxbury, Maine. Stormwater analysis, erosion and sedimentation control and permitting for civil road and site redesign for proposed 50.6MW wind farm including 22 Siemens 23MW wind turbine generators. Permitting was done through the Maine Department of Environmental Protection for a Site Location of Development Act permit.

Coldbrook Road & Newburgh Road Road Reconstruction Project, Hermon, Maine. Designed full depth reclamation with HMA overlay, ditching, and culvert replacements along a 2.27 mile section of Newburgh Road. In addition, the project included a preservation project along a 1.14 mile section of Coldbrook Road involving a 1.25 inch overlay, shim, ditching, and culvert replacement. Sewall worked with the Town and MaineDOT on this Business Partnership Initiative project.

Route 2/6 (West Broadway) Widening Project, Lincoln, Maine. Designed a continuous two-way left turn lane (CTWLTL), 2-12' travel ways and 2-5' shoulders along 4,542 feet of US Route 2 in Lincoln. These improvements resulted in the widening of West Broadway, stormwater management improvements, new curb and guardrail. Sewall worked with the Town and MaineDOT on this Business Partnership Initiative project.

Route 201 (Maine Avenue) Reconstruction, Farmingdale, Maine. Stormwater management and design for 1.5 mile reconstruction of Route 201 Design Build Project for MaineDOT. Project includes modifications to existing horizontal and vertical alignments, drainage improvements, retaining walls, and new curb and sidewalk.

Katelin Nickerson

Project Director

PROFILE

- 15 years' experience in environmental consulting, serving multiple sectors including: energy, commercial, transportation, residential, municipal and land trusts.
- Skilled manager of complex projects, overseeing a multi-disciplinary team of consulting scientists and subject matter experts.
- Experienced consulting scientist and environmental inspector providing construction oversight to support permit compliance and protection of natural resources and wildlife during construction.
- Experienced in landowner outreach, stakeholder engagement, project development, and permitting at the local, state, and federal levels throughout the northeast.
- Experienced lead wetland scientist and ecologist, performing wetland delineations, stream mapping, vernal pools assessments, and other ecological investigations throughout Maine and the northeast.

EDUCATION

- B.A., Environmental Studies, William Smith College (2007)

PREVIOUS CAREER EXPERIENC

- Tetra Tech: Project Manager, Senior Wetland Scientist; Portland, Maine (2017 - 2021)
- Stantec Consulting: Project Scientist; Topsham, Maine (2008 - 2017)
- Biodiversity Research Institute, Field Technician, Gorham, Maine (2008, 2009)

PROFESSIONAL CERTIFICATIONS/AFFILIATIONS

- Professional Wetland Scientist (PWS), Society of Wetland Scientists
- Certified Wetland Scientist (CWS), State of New Hampshire
- President, Maine Association of Wetland Scientists

RECENT/RELEVANT PROJECT EXPERIENCE

Baldwin Solar Project | Baldwin, Maine, 2021

Katelin served as the project manager in the local and state permitting effort of a proposed 5 megawatt solar array in the town of Baldwin. Katelin worked with the project team to develop a Site Location of Development Act Permit application, as well as navigate the local permitting process including site walks with the planning board, and a public hearing. The project received its local permit in August 2021 and Site Law permit in the winter of 2022.

Fairfield Solar Project | Fairfield, Maine, 2021-2022

As the project manager Katelin supported the local, state, and federal permitting effort for this proposed 20 megawatt solar facility in Fairfield. With 27,730 square feet of proposed permanent wetland impacts and 233,884 square feet of proposed conversion of forested freshwater wetlands, the project required a Site Location of Development Act Permit, a Natural Resources Protection Act Permit, and a permit by rule form the US Army Corps of Engineers under the Maine General Permit. Katelin supported the project team with a robust public engagement process including two public informational meetings, and additional outreach to inform and engage the local community during the permitting process. The Project received federal permits in the fall of 2021, and state permits in the winter of 2022.

Quinebaug Solar Project | Brooklyn and Canterbury, Connecticut (Project Manager)

Katelin was responsible for leading the project through the survey, reporting, and permitting processes. Served as the program manger working as the lead consultant managing multiple subcontractors. She worked with the project team to navigate the regulatory process with state environmental agency representatives and represented the client as an expert witness during the Connecticut Siting Council hearing providing written and verbal testimony. Katelin worked with her team to develop a compliance handbook and completed an environmental compliance training for subcontractors during project construction. The project was approved by the Siting Council in April 2020 and started commercial operation December 2021.

Brunswick Environmental Assessment | Brunswick, Maine, 2022

Katelin served as the project manager to support the town of Brunswick in completing an Environmental Assessment (EA) for a transfer of the status of land conserved through section 6(f) of the Land and Water Conservation Fund (LWCF) Act. Katelin worked with the town to review current and potential environmental conditions between the parcels, and to develop a robust EA for review under the National Environmental Policy Act (NEPA). Flycatcher completed field surveys along with agency outreach, desktop review, and consultation with the town to develop the EA that will be submitted for review by administrators for the LWCF.

Bodwell EnviroAcoustics LLC

R. Scott Bodwell, P.E., *Principal*
Bodwell EnviroAcoustics, LLC

Education and Credentials

B.A., Engineering Sciences
Dartmouth College, Hanover, New Hampshire

Licensed Professional Engineer in Maine since 1994 and member of the Acoustical Society of America.

Numerous graduate and continuing education courses: ocean engineering, geotechnical engineering, business management, and acoustics.

Summary

R. Scott Bodwell, P.E. is the founder and Principal of Bodwell EnviroAcoustics, LLC, an engineering consulting firm that services the energy and industrial sector and specializes in Environmental Acoustics and Noise Control Engineering.

As a consulting engineer in Maine since 1987, Mr. Bodwell has conducted acoustic studies for over 300 industrial and commercial development projects and is recognized as a leading authority on Environmental Acoustics in the northeast United States.

Responsible for acoustic studies and testing of all compressor stations and construction activity in Maine associated with the Maritimes & Northeast Pipeline and numerous utility-scale wind projects since 2002. These include the first two inland projects (Stetson Wind in Washington County and Mars Hill Wind Farm in Aroostook County) and the first offshore wind project (Maine Aqua Ventus I).

Professional Experience

Over 30 years of experience in environmental assessments, project engineering and design, and regulatory permitting for major industrial and power generation facilities, wind power projects, and natural gas and utility transmission projects in the northeast. Recently, he conducted a sound assessment for a utility-scale solar energy project in eastern Maine, an offshore wind project near Monhegan Island for the University of Maine, and hydroacoustic monitoring of pile driving for a railroad bridge rehabilitation project in Massachusetts. In 2016, his work for the Maine Public Utilities Commission (PUC) revealed adverse impacts from unexpected sound excursions associated with two major new substations that led to extensive noise mitigation.

Since 1998, he has been the principal acoustical engineer for natural gas transmission facilities associated with construction and operation of the Maritimes & Northeast Pipeline. He conducted acoustic studies for seven new compressor stations, expansions of two compressor stations, a meter station in Massachusetts and several horizontal directional drilling sites. This included construction monitoring, operations and diagnostic sound testing, and noise mitigation. Resource reports were prepared for submittal to the Federal Energy Regulatory Commission (FERC) and sound assessment reports for state and local project review. He was also responsible for an acoustic study of construction and operation of a proposed LNG terminal in eastern Maine including pre-development ambient monitoring, predictive modeling and calculations, preparation of equipment sound performance specifications, and underwater sound assessment of construction and operations. He provided expert testimony at public hearings for these energy projects.

Mr. Bodwell has conducted peer reviews of environmental sound assessments for the Maine Department of Environmental Protection, the Maine Public Utilities Commission, the Saco River Corridor Commission and several municipalities in Maine. He has provided noise impact assessments and acoustic modeling for community projects such as schools, libraries, emergency helipads, and regional transportation planning, and assisted municipalities with development of local noise control ordinances. He also developed and conducted an Environmental Acoustics Seminar for project managers and technical staff at the Maine Department of Environmental Protection (DEP).

As a Principal Engineer, he has provided expert testimony at state hearings and municipal reviews in successful support of major industrial, institutional and energy projects in Maine including Oakfield Wind, Bull Hill Wind, Stetson Wind, Rollins Wind, Maritimes & Northeast Pipeline, Bath Iron Works, Maine Medical Center, and Waste Management of Maine.

Other major industrial projects include bottling plants, pump stations, paper mills, wood chipping and fiberboard plants, wood pellet and lumber mills, natural gas and biomass power generation facilities, landfills, resource recovery and recycling operations, rock quarries, gravel extraction and aggregate processing (rock crushing and asphalt plants), and transportation facilities. Acoustic studies were conducted to quantify major noise sources and develop designs and specifications for effective environmental and interior noise control.

Mr. Bodwell has worked closely with the Maine DEP and independent acoustical consultants to develop and refine procedures and methods for prediction, measurement and assessment of sound from wind energy projects and natural gas compressor stations. Specialized measurement protocols and techniques were developed based on several hundred hours of sound testing of operating wind turbines in Maine to minimize operational impacts. He has promoted initiatives for national wind turbine sound testing protocols to the American Wind Energy Association and National Renewable Energy Laboratory.

Ongoing and Recent Projects

Downeast Wind, Washington County, Maine – 40 Turbines, 168 MW
Identify/map noise sensitive areas, turbine sound characterization, predictive sound modeling, and compliance evaluation, including analysis of tonal and short duration repetitive (SDR) sounds, for preparation of Sound Level Assessment for Maine DEP site permit.

Westbrook Xpress Project/Maritimes & Northeast Pipeline/Enbridge - New Compressor Unit, Westbrook, Maine
Sound source characterization, predictive sound calculations, analysis of operations sound test results, compliance evaluation and sound level assessment report of new turbine compressor unit for expansion of existing natural gas compressor station. Review local noise ordinances and prepare land use mapping to identify protected locations and federal, state and local sound limits for compliance evaluation.

Three Rivers Solar Energy Project, Hancock County, Maine – 500 MW
Land use mapping, research project components and sound ratings, predictive sound modeling, compliance evaluation, analysis of tonal and SDR sounds, and Sound Level Assessment report for utility-scale solar energy project.

Winter Operations Protocol, Oakfield Wind, Aroostook County, Maine - 48 Turbines, 144 MW
Long-term winter operations sound testing, ultrasonic wind measurements, and analysis of sound levels versus site conditions, to evaluate increased turbine sound levels during blade icing events. Detailed analysis and research turbine power degradation versus sound output and predictive sound modeling to develop a Winter Operations Protocol for turbine adjustments during icing to maintain compliance with applicable state and local sound limits.

Weaver Wind, Hancock County, Maine – 23 Turbines, 76 MW
Identify/map noise sensitive areas, ambient sound monitoring, predictive sound modeling, assess serrated trailing edge turbine blades, and compliance evaluation including analysis of tonal and SDR sounds. Prepare Acoustic Study report for state and local permits, and participate in public information meetings.

Maine Aqua Ventus I, University of Maine, Monhegan Island, Maine – 2 Offshore Wind Turbines, 12 MW
Identify/map noise sensitive areas, conduct ambient sound monitoring at community locations and measurement of existing noise sources (diesel generator and water supply pump stations) on Monhegan Island, over water sound propagation analysis and assess potential noise impacts for various wind profiles and ocean conditions. Develop work study plans for airborne and underwater sound assessments and prepare Noise Impact Study for construction and operation of the offshore project pursuant to the National Environmental Policy Act. Participation in several community meetings on Monhegan Island.

Poland Spring Bottling Facility, Wright-Pierce - Rumford, Maine
Land use and sound limit mapping, review sound studies of similar facilities, research planned equipment and sound ratings, predictive sound modeling, initial compliance evaluation, and provide recommendations to resolve compliance issues.

MB Bark Recycling Facility and Expansion - Auburn and Poland, Maine
Operations sound testing and compliance evaluation of existing wood waste and mulch processing facilities, measurement and source definition of proposed asphalt recycling facility, predictive sound model, analysis/development of noise mitigation plan and compliance evaluation, analysis of tonal and SDR sounds, and Sound Level Assessment report for existing, proposed and combined facility operations.

Natural Gas & Utility Transmission Projects

Maine Public Utilities Commission, CMP Maine Power Reliability Project, 345kV Substations - Benton and Kennebunk, Maine
Third party review of all acoustic studies and sound measurements for new Substations including pre-construction sound level assessment, ambient sound measurements, operations sound testing, noise impact assessment, low frequency and tonal analysis, and noise mitigation options for autotransformer and reactors. Respond to landowner complaints concerning sound excursions, conduct response and continuous sound testing at community locations, prepare sound level analysis report, and presentations to Maine PUC staff and Central Maine Power. Participation in Maine PUC hearings with PUC Ombudsman regarding adverse noise impact on affected landowners.

Portland Xpress Project/Maritimes & Northeast Pipeline/Enbridge, Compressor Station Expansions - Eliot and Westbrook, Maine
Sound source characterization, predictive sound calculations, analysis of operations sound test results, compliance evaluation and sound level assessment reports for expansions of two existing natural gas compressor stations. Review local noise ordinances and prepare land use mapping to identify protected locations and federal, state and local sound limits for compliance evaluation.

Duke Energy/Maritimes & Northeast Pipeline
New construction of natural gas pipeline from Nova Scotia to Massachusetts.

- *Richmond CS, Richmond, Maine*
- *Baileyville CS, Baileyville, Maine*
- *Dracut Meter Station, Dracut, Massachusetts*

Pre-construction ambient sound monitoring, predictive sound modeling and calculations, sound level assessment reports, operations sound testing protocols and measurements, compliance evaluation and test reports. Diagnostic testing at Richmond Compressor Station with Solar Turbine engineering group, on-site presentation to FERC staff, noise mitigation planning and specifications, and performance verification measurements. Prepared FERC resource reports and sound level assessments for Maine DEP Site Location Permits. Provided expert testimony at Maine DEP and local public hearings on the project. Equipment sound testing and site reviews were also conducted at compressor stations in Lebanon, Ohio and Chaplin, Connecticut.

Dracut Meter Station – ambient sound measurements, operations sound testing protocol and measurements under specific operating pressures and control, acoustical evaluation of in-line natural gas heaters and flow control valves including noise mitigation design and specification.

Spectra Energy/Maritimes & Northeast Pipeline, Phase IV Expansion *Five new compressor stations and modifications to two existing compressor stations for expansion of interstate natural gas pipeline.*

- *Woodchopping Ridge CS, T35 MD, Maine*
- *Brewer CS, Brewer, Maine*
- *Searsmont CS, Searsmont, Maine*
- *Westbrook CS, Westbrook, Maine*
- *Eliot CS, Eliot, Maine*
- *Baileyville Compressor Station (modifications)*
- *Richmond Compressor Station (modifications)*

Pre-construction ambient sound monitoring, predictive sound modeling and calculations, material and sound performance specifications, sound level assessment reports, operations sound testing protocols and sound level measurements, compliance evaluation and test reports. Prepared FERC resource reports and sound level assessment reports for Maine DEP permits and sound measurement reports for demonstration of compliance. Sound level assessment and test reports were approved by FERC and Maine DEP.

Downeast LNG Terminal Facility - Washington County, Maine
Pre-construction ambient sound monitoring, predictive sound model calculations, material and sound performance specifications, and sound level assessment reports for construction and operation of a proposed liquefied natural gas terminal, transfer facility and connecting pipeline. Prepare FERC resource report and sound level assessment for Maine DEP site permit. Evaluate sound levels from HDD for pipeline construction in the Moosehorn National Wildlife Refuge. In conjunction with Jasco Applied Sciences, characterize and evaluate underwater sound sources and sound propagation for construction and operation of terminal port facility. Provided expert testimony at Maine DEP public hearings on the project.

345 kV Generator Lead Line - Aroostook County, Maine
Research, evaluate and prepare sound level assessment of transmission line conductors and substation under various weather and load conditions for proposed new 345 kV Generator Lead Line. This work was in conjunction with the proposed Number Nine Wind Farm.

Bangor Hydro Electric Company, 115kV Substation - Trenton, Maine
Sound level assessment including mapping of noise sensitive areas, ambient sound measurements, sound calculations from substation components, and compliance evaluation.

Construction Monitoring & Related Projects

Baltimore Gas & Electric Company, Key Crossing Reliability Initiative, Transmission Line Project, Baltimore, Maryland – Century Engineering, Prime Contractor
HydroAcoustic (underwater sound) monitoring of pile driving activity associated with construction of in-water towers for major electrical power transmission line crossing of the Patapsco River. Real-time monitoring and evaluation, and reporting of underwater sound at multiple locations per US Army Corps and National Marine Fisheries Service criteria and for evaluation of underwater sound attenuation in the project area. Preparation of daily monitoring reports and overall final report of all hydroacoustic monitoring.

Merrimack River Railroad Bridge Rehabilitation Project, Massachusetts Bay Area Transit Authority, Haverhill, Massachusetts - Cianbro Corporation, Prime Contractor
HydroAcoustic (underwater sound) monitoring of pile driving activity associated with reconstruction of railroad bridge piers in the Merrimack River. Real-time evaluation per US Army Corps and National Marine Fisheries Service underwater sound criteria and reporting to on-site construction manager. Coordination with MBTA environmental staff and consultant to verify river underwater sound criteria. Preparation of daily monitoring reports and overall report of all hydroacoustic monitoring.

Maritimes & Northeast Pipeline, Horizontal Directional Drilling - Penobscot, Kennebec, Sheepscot and Presumpscot Rivers, Maine
Sound measurements, analysis, noise mitigation plans, and sound level assessments for numerous pipeline construction sites with 24-hour per day HDD equipment and installation of gas pipeline below several major rivers in Maine. Noise mitigation included acoustical treatment of equipment shelters and partial enclosures. Sound testing was conducted at nearby receptors to confirm compliance of HDD construction activity.

Downeast LNG Terminal & Pipeline – Washington County, Maine
Assessment of airborne and underwater sound levels from construction and operation of proposed LNG terminal facility including vertical and horizontal directional drilling, pile driving, and vessel activity. In conjunction with wildlife biologist, plan and conduct simulation of construction noise impact on feeding shorebirds. Preparation of pre-filed testimony and participation in Maine DEP public hearings.

Bath Iron Works, Land Level Transfer Facility - Bath, Maine
Sound testing of major shipyard construction equipment and facility operation to prepare sound level prediction model for major shipyard expansion. Prepare sound level assessment report and conduct full-time nighttime compliance testing of LLTF construction operations including river dredging and drilling operation, and impact and

vibratory pile driving. Preparation of pre-filed testimony and participation in Maine DEP public hearings and community meetings during project construction.

Front Street Shipyard - Belfast, Maine
HydroAcoustic (underwater sound) monitoring of pile driving activity associated with construction of new commercial marina dock and slip installation in Belfast Harbor. Coordination with National Marine Fisheries Service and project environmental consultant to confirm underwater sound criteria and real-time evaluation per US Army Corps permit criteria. Prepare report of all hydroacoustic monitoring results for regulatory submittal.

Wind Energy Facilities and Related Projects

- *Long Mountain Wind, Oxford County, Maine – 13 Turbines, 40 MW*
  Predictive sound model, compliance evaluation, analysis of tonal and SDR sounds, and serrated trailing edge blades, Acoustic Study report, and public information meetings.
- *Number Nine Wind Farm, Aroostook County, Maine – 125 Turbines, 250 MW*
  Predictive sound model, noise-reduced operating plan, Acoustic Study report, compliance evaluation, analysis of tonal and SDR sounds, assist with sound easements and public information meetings.
- *Bingham Wind, Somerset County, Maine - 62 Turbines, 191 MW*
  Predictive sound model, Acoustic Study report, compliance evaluation, analysis of tonal and SDR sounds, assist with sound easements and public information meetings. Prepare test plan and conduct Operations Sound Testing to demonstrate compliance under rigorous test criteria for Maine wind energy projects.
- *Hancock Wind, Hancock County, Maine - 18 Turbines, 55 MW*
  Predictive sound model, Acoustic Study report, evaluate combined wind projects and compliance with state and local noise standards, analysis of tonal and SDR sounds. Prepare test plan and conduct Operations Sound Testing to demonstrate compliance under rigorous test criteria for Maine wind energy projects.
- *Oakfield Wind, Aroostook County, Maine - 50 Turbines, 154 MW*
  Predictive sound model, Acoustic Study report, nighttime noise-reduced operating plan, analysis of tonal and SDR sounds, and electrical Substation. Assessment of low frequency and infrasound for large diameter wind turbines and in relation to wind shear and turbulence, presentation and participation in local wind energy committee workshops. Prepare test plan and conduct Operations Sound Testing to demonstrate compliance under rigorous test criteria for Maine wind energy projects and winter conditions.
- *Vermont Public Interest Group (VPIRG), Proposed Rulemaking, Vermont Public Service Board*.
  Evaluation of proposed wind energy noise regulations, review comments and testimony from stakeholders, prepare formal submittals for filing with Vermont PSB, and preset direct testimony to the PSB, and participate in public hearings on behalf of VPIRG to promote alternative energy projects in Vermont
- *Bowers Wind, Washington County, Maine - 16 Turbines, 48 MW*
  Independent review and assist Stantec Consulting with application of Maine DEP noise regulation for wind energy facilities.
- *Maine Board of Environmental Protection Rulemaking.*
  Direct testimony on behalf of Maine wind power industry, synopsis of wind turbine sound level prediction and testing in Maine, annualized sound level calculation from actual turbine operations and comparison with WHO night noise guidelines, and review of amplitude modulation test results. Testimony led to key findings by the State of Maine for preparation of new noise standards for Wind Energy facilities.
- *Bull Hill Wind, Hancock County, Maine - 19 Turbines, 34 MW.*
  Predictive and as-built sound models, Acoustic Study report, presentation and participation in local wind energy committee workshops and direct testimony at Maine Land Use Regulation Commission hearings. Post-construction operations test protocol and advanced operations sound testing, compliance evaluation with analysis of SDR sounds.

- *Rollins Wind, Penobscot County, Maine - 40 Turbines, 60 MW*
  Predictive modeling, Acoustic Study report, direct testimony at Maine Board of Environmental Protection (BEP) Appeal Hearing, local planning board review meetings, support financial due diligence, operations sound test protocol and testing, and compliance evaluation, analysis of tonal and SDR sounds.
- *GE Energy, GE 1.5 sle, Rollins Wind, Penobscot County, Maine*
  Analytical and IEC 61400-11 sound testing to evaluate the relationship between turbine blade angle and sound emissions including amplitude modulation and tonal sounds. Adjustments to turbine blade angle settings for noise mitigation.
- *Mars Hill Wind Farm, Mars Hill, Maine - 28 Turbines, 42 MW*
  Predictive and as-built sound models, Acoustic Study report, ambient sound testing, quarterly operations sound testing, collaborative diagnostic testing with GE Energy, and test protocol refinements in conjunction with Maine DEP and EnRad Consulting. Calculation of annual sound levels from turbine operating data and comparison to relevant noise standards.
- *Stetson II Wind, Washington County, Maine - 17 Turbines, 25.5 MW*
  Predictive and as-built sound model, operations testing protocol, detailed calculation protocol for tonal and SDR sounds, advanced sound testing of wind turbine operations; compliance evaluation. Results provided key testimony in support of Maine BEP rulemaking process. Post-construction operations test protocol and advanced operations sound testing, compliance evaluation with analysis of SDR sounds.
- *Stetson Wind, Washington County, Maine - 38 Turbines, 57 MW*
  Predictive modeling, ambient sound testing, Acoustic Study report, direct testimony at Maine Land Use Regulation Commission hearings, and quarterly operations sound testing.
- *Longfellow Wind, Oxford County, Maine - 20 Turbines, 40 MW*
  Predictive modeling, compliance evaluation, local review board and selectmen meetings.
- *Record Hill Wind, Oxford County, Maine - 22 Turbines, 51 MW*
  Predictive sound model, Acoustic Study report, direct testimony at Maine BEP appeal hearing.
- *University of Maine Presque Isle, Aroostook County, Maine - 1 Turbine, 600 kW*
  Predictive sound model, turbine relocation and Acoustic Study report.
- *Fox Islands Wind, Vinalhaven, Maine - 3 Turbines, 4.5 MW*
  Initial predictive sound model and recommendations for resolution of noise issues.
- *Sheffield Wind Project, Sheffield, Vermont – 16 Turbines, 40 MW*
  Review Acoustic Study report, operations test plan and findings by Vermont Public Service Board. Prepare evaluation for submittal to State of Vermont.
- *Minuteman Wind, Savoy, Massachusetts – 5 Turbines, 12.5 MW*
  Review Sound Level Impact Assessment Report and conduct technical due diligence.
- *Cascade Wind, Wasco County, Oregon – 40 Turbines, 60 MW*
  Predictive sound model and evaluate compliance with Oregon noise standards.
- *Cohocton Wind, Steuben County, New York – 50 Turbines, 125 MW*
  Review acoustic reports, complaint response and testing protocols, and provide recommendations.
- *Kaheawa Wind, Maui, Hawaii – 34 Turbines, 51 MW*
  Review acoustic reports and provide technical due diligence.
- *Massachusetts Department of Environmental Protection – Wind Turbine Health Impact Study*
  Review health impact study and provide comments for public meetings.

VIEWSHED

TERRENCE DEWAN

Terry DeWan, FASLA, has over five decades of professional experience in landscape architecture, visual resource assessment, site planning, design guidelines, and community development. He founded Terrence J. DeWan and Associates (TJD&A) in 1988, now known as Viewshed, and grew the firm to become one of the largest landscape architectural firms in Maine.

Terry's experience includes work with communities, state agencies, private developers, utility companies, and the forest products industry throughout New England. He is known both regionally and nationally for his pioneering work in visual impact assessment, and has worked closely with members of the National Parks Service and the Bureau of Ocean Energy Management (BOEM). Terry was the first landscape architect in the State of Maine to be awarded Fellowship to the American Society of Landscape Architects.

SELECT EXPERIENCE

Kitty Hawk South Wind SLVIA
Offshore North Carolina

Kitty Hawk North Wind SLVIA
Offshore North Carolina & Virginia

Ocean Wind SLVIA
Offshore New Jersey

New England Aqua Ventus VIA
Offshore Maine

New England Clean Energy Connect VIA
Maine

Northern Pass Transmission Line VIA & SEC Expert Witness Testimony
New Hampshire

Western Maine Renewable Energy Wind VIA
Maine

Bull Hill Wind VIA
Maine

Maine Power Reliability Program VIA
Maine

Pinnacle Wind Farm at Newpage VIA
West Virginia

Downeast LNG VIA
Maine

Bangor Hydro-Electric VIA
Maine

Scenic Inventories: Penobscot Bay, Islesboro, Vinalhaven, North Haven
Maine

Route 27 Scenic Inventory & Management Plan
Maine

PROFESSIONAL AFFILIATION

Maine State Board for Licensure of Architects, Landscape Architects and Interior Designers

The American Society of Landscape Architects (ASLA)

American Planning Association (APA)

Council of Landscape Architects Registration Boards (CLARB)

Maine Association of Planners

Royal River Conservation Trust, Board of Directors

EDUCATION

State University of New York
Environmental Sciences and Forestry, Cum Laude

EMPLOYMENT

Viewshed (Formerly TJD&A)
Principal / Owner (1988 - 2019)
Principal Emeritus (2019 - present)
Yarmouth, ME

SELECT PRESENTATIONS

LANDscape Architecture Takes to the Seas: The role of the Landscape Architect in Offshore Wind Development presentation at ASLA Annual Conference (2022)

The Maine Wind Energy Act in a Time of Change. Visual Resource Stewardship Conference, Argonne National Laboratory, Lemont, IL (2017)

REGULATORY DEVELOPMENT

Study Group: OEIS Assessment of Cumulative Visual Effects From Wind Energy Development

Maine Governor's Task Force on Wind Power Development

VIEWSHED

STEVE THOMPSON

Steve Thompson, PLA, is a landscape architect with nearly a decade of practice in visual impact assessment. Steve's work in visual impact assessment and scenic recource inventory includes remote fieldwork, photography and drone imagery collection, 3D modeling, mapping, written assessment, public engagement, and presentations before regulatory boards.

Steve's project experience includes assessment of multiple onshore and offshore wind projects, solar installations, transmission lines, mining, and aquaculture. He endeavors to find new cutting-edge methods of visualization and has a passion for telling an accurate visual story, allowing regulators and communities to make informed decisions about impacts to their landscapes and seascapes.

SELECT EXPERIENCE

Kitty Hawk South Wind SLVIA
Offshore North Carolina

Kitty Hawk North Wind SLVIA
Offshore North Carolina & Virginia

Ocean Wind SLVIA
Offshore New Jersey

New England Aqua Ventus VIA
Offshore Maine

Downeast Wind VIA
Maine

Weaver Wind VIA
Maine

Roxwind VIA
Maine

New York Transco VIA
New York

Western Maine Renewable Energy Wind VIA
Maine

Maine Power Reliability Program VIA
Maine

New England Clean Energy Connect VIA
Maine

Northern Pass Transmission VIA
New Hampshire

Argonaut Talc Mine VIA
Vermont

Maine LNG Storage Facility Visualizations
Maine

Canton Solar VIA
Maine

PROFESSIONAL AFFILIATIONS

Maine Licensed Landscape Architect
The American Society of Landscape Architecture (ASLA)
Remote Pilot's License

EDUCATION

University of Rhode Island
Bachelor of Landscape Architecture, Summa Cum Laude

EMPLOYMENT

Viewshed
Landscape Architect
Yarmouth, ME (2013 - present)

Parterre Garden Services
Fine Gardening
Cambridge, MA (2013)

AWARDS

Award for Outstanding Student Project, American Planning Association (2013)

PRESENTATIONS

Urban to Rural Renewal, University of Rhode Island Guest Lecturer (2021)

VIEWSHED

JUDY COLBY-GEORGE

Judy Colby-George, GISP, is the owner and principal of Viewshed. She has over 30 years of experience helping clients to implement GIS and engage in complex spatial issues. Judy has extensive experience with public participation GIS and working with clients to understand the spatial relationships of various policies and programs. Her work ranges from creating and updating GIS data sets, development of online mapping applications, cartography, visualizations, viewshed analyses, and providing detailed analysis to solve client problems.

Judy believes that GIS is a tool that can help engage the public in the messy problems that face our world today, and work with clients to tell their stories, represent data in an understandable format, and invite a variety of people to the decision-making process.

SELECT EXPERIENCE

Kitty Hawk South Wind SLVIA
Offshore North Carolina

Kitty Hawk North Wind SLVIA
Offshore North Carolina & Virginia

Ocean Wind SLVIA
Offshore New Jersey

New England Aqua Ventus VIA
Offshore Maine

New England Clean Energy Connect VIA
Maine

Northern Pass Transmission VIA
New Hampshire

Maine Power Reliability Program VIA
Maine

New York Transco VIA
New York

Bull Hill Wind VIA
Maine

Weaver Wind VIA
Maine

Western Maine Renewable Energy Wind VIA
Maine

Walden Renewables Solar Viewshed Analysis
New England

Monhegan Broadband Cell Phone Tower VIA
Maine

Maine LNG Storage Facility VIA
Maine

Downeast Wind VIA
Maine

PROFESSIONAL AFFILIATIONS

URISA Board of Directors, Secretary
Maine GIS Users Group
Maine Association of Planners
New England URISA
American Association of Geographers

EDUCATION

University of Maine
Master of Ecology and Environmental Science

University of Wisconsin-Madison
Master of Land Resources with focus on GIS & Coastal Planning

University of Wisconsin-Madison
Bachelor of Science in Geography & Certificate of Environmental Studies

EMPLOYMENT

Viewshed (Formerly Spatial Alternatives)
Principal / Owner (2001 - present)
Yarmouth, ME

Geo-Systems
GIS Specialist
Yarmouth, ME (1992 - 2001)

SELECT PRESENTATIONS

Building Community Using Geospatial Tools Workshop, GIS Pro, Boise, ID, 2022
Equity, Social Justice, and GIS, Maine Municipal Assoc. Tech Conference, 2019
Introduction to Public Participation GIS, Workshop presented at GIS Pro 2016
Municipal GIS Process and Policy, Panel Discussion NEARC 2017
What does GIS have to do with Resilient Communities? - Presentation Maine EPSCoR Conference, 2015

Public Archaeology Laboratory

STEPHEN A. OLAUSEN

EXECUTIVE DIRECTOR/SENIOR ARCHITECTURAL HISTORIAN

EDUCATION

MA, University of South Carolina, Applied History and Historic Preservation, 1988

BA, Roanoke College, History, 1984

EXPERIENCE

Years with PAL: 24
Years Experience: 34

CERTIFICATIONS

Basic First Aid/BBP - American Heart Association

Adult CPR/AED - American Heart Association

OSHA 29 CFR 1910.120(e) 40-Hour Hazardous Waste/Emergency Response

OSHA 29 CFR 1910.120(e) 8-Hour Hazardous Waste/Emergency Response Supervisor

PROFESSIONAL DEVELOPMENT

Section 106: Working with the Revised Regulations

Workshop on the New 36 CFR Part 800: Highlights of Changes

Federal Energy Regulatory Commission Section 106 Compliance Seminar

MEMBERSHIPS

Society of Architectural Historians

National Council on Public History

National Trust for Historic Preservation

Old Slater Mill Association Board of Trustees

Olausen is the Executive Director of PAL and serves as a Senior Architectural Historian and Project Manager for cultural resource management (CRM) projects that require the identification, evaluation, and registration of historic architectural and landscape properties. Most of his projects are conducted to assist clients in complying with federal historic preservation laws, including the National Historic Preservation Act, National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act, as well as the various state historic preservation laws in which PAL works. Olausen has completed hundreds of historic property identification and evaluation surveys, more than 200 successful National Register of Historic Places nominations, and a large number of HABS/HAER and state-level documentation projects. He specializes in assisting clients navigate the Section 106 consultation process fully meets the Secretary of Interior's Professional Qualification Standards for history and architectural history (36 CFR Part 61).

Olausen has conducted projects for numerous public agencies and private organizations and individuals. Federal agency clients have included the Army Corps of Engineers, Department of Agriculture, Department of the Army, Department of the Navy, Environmental Protection Agency, Federal Emergency Management Agency, Federal Highway Administration, Federal Railroad Administration, General Services Administration, National Oceanic and Atmospheric Administration, National Park Service, National Railroad Passenger Corporation (Amtrak), US Coast Guard, US Fish and Wildlife Service, and US Forest Service. He has managed historic architectural survey projects on on-call service contracts for the departments of transportation in Connecticut, Rhode Island, Massachusetts, and Maine. He has also conducted extensive work for prominent private energy clients, including National Grid, Eversource Energy, TransCanada, First Wind, and Spectra Energy.

Examples of some of the projects on which Olausen has served as project manager and senior architectural historian are Amtrak's Northeast Corridor - New Haven to Boston Electrification; New Bedford/Fall River Rail Restoration in Massachusetts; Stetson Wind I and II projects in Maine; I-95 Ramp Improvements and Providence Viaduct Replacement projects in Providence, Rhode Island; and Manchester Airport Expansion and the Northern Pass projects in New Hampshire. He has conducted hundreds of projects for cell towers, electrical transmission lines, and other developments that involve the assessment of indirect effects on historic properties. Since 1998, Olausen has served as the lead CRM consultant for Great River Hydro's Deerfield and Connecticut River Hydroelectric Projects in Vermont, New Hampshire, and Massachusetts.

Olausen is an acknowledged expert in documenting and evaluating nationally significant historic properties. He has conducted more than 70 National Register projects for the National Park Service at historic and natural parks within the National Park System. This work has included the preparation of National Register and National Historic Landmark nominations, Multiple Property Documentation Forms, and Determination of Eligibility reports for some of the nation's most important historic places, including Statue of Liberty National Monument, Appalachian National Scenic Trail, Women's Rights National Historic Park, Sagamore Hill National Historic Site, Minuteman National Historical Park, Saratoga National Historical Park, Fredericksburg and Spotsylvania National Military Park, Great Smoky Mountains National Park, Acadia National Park, and Gateway National Recreation Area.

Public Archaeology Laboratory

MELISSA J. ANDRADE
ARCHITECTURAL HISTORIAN

EDUCATION

MDes, Historic Preservation, Boston Architectural College, 2017
- Recipient of the HP Certificate of Academic Merit

BA/BA, Cultural and Historic Preservation/American Studies, Salve Regina University, 2014
- Recipient of the Noreen Stonor Drexel Civic Engagement Award and American Studies Outstanding Achievement Award

EXPERIENCE

Years with PAL: 7.5
Years Experience: 8

PROFESSIONAL DEVELOPMENT

Olmsted: Landscape and Legacies, Poster Presenter, 2022

Rhode Island State Preservation Conference, Presenter, 2021

Boston Architectural College, Research and Documentation Class, Presenter, 2020, 2021

CERTIFICATIONS

OSHA 29 CFR 1910. 120(e) 40-Hour Hazardous Waste/Emergency Response

Asbestos Awareness Certification (OSHA 2 Hour)

Mastering Your Digital SLR Camera – Community College of Rhode Island

Project Management Fundamentals – Community College of Rhode Island

Basic First Aid and CPR – American Red Cross/Heart Association

MEMBERSHIPS

National Trust for Historic Preservation

Ms. Andrade has been involved in historic preservation for 8 years, working in both professional and volunteer capacities. Ms. Andrade specializes in field survey, photography, National Register evaluations and documentation, state level documentations, and cultural resource management (CRM) projects that require the identification, evaluation, and registration of historic architectural and landscape properties. Most of these CRM projects assist clients in complying with federal historic preservation laws, including the National Historic Preservation Act, National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act, as well as the various state historic preservation laws.

Ms. Andrade has worked throughout New England for a variety of public agencies and private organizations and individuals, including the National Park Service, US Army Corps of Engineers, departments of transportation in most New England states, state historic preservation offices and other state agencies in MA, RI and NH, and various municipalities in MA and RI. She has also conducted work for prominent private energy clients, including National Grid, Eversource Energy, Great River Hydro, and regional hydro, wind, and solar energy companies. She has worked on many projects for cell towers, electric transmission lines, solar fields, hydroelectricity, wind projects, road and railroad transportation projects, and other developments that involve the assessment of indirect effects on historic properties.

She has served as a lead architectural historian for the survey, research, and writing of numerous National Register documentations for a wide variety of property types, such as 11 state segments of the Appalachian Trail National Scenic Trail, L'Union Saint Jean-Baptiste Amérique building, Woonsocket, RI; Alexander Van Rensselaer House, Middletown, RI; Old Settlers Burying Ground and Middle Cemetery, Lancaster, MA; and Portsmouth Downtown Historic District, Portsmouth, NH. Ms. Andrade has also contributed to national and state historic tax credit applications in MA and RI for residential and commercial use buildings.

She was the lead architectural historian for the Town of Orleans Community-wide Resources Survey and the Towns of Hanover, Whitman, Yarmouth, Barnstable, Falmouth, Oak Bluffs and Chilmark Survey and Planning Grant Projects in MA, documenting nearly 1,500 properties on state-level inventory forms. She has written state-level historical and photographic archival documentations in MA and RI, including various dams and bridges throughout MA, the Gay Head Lighthouse, Aquinnah, MA, the Coonamessett Bogs, Falmouth, MA, and the Forestdale Manufacturing Co. Office, North Smithfield, RI.

Ms. Andrade's previous experience includes working at PAL as an Assistant Architectural Historian (August 2014–April 2017). She previously interned as the Archives Assistant in the Cultural Resources Division of the Boston National Historical Park, in addition to previously interning with the City Preservation Planner and Newport Historical Society in Newport, RI. She is an adjunct faculty member of the Master of Design Studies degree program in Historic Preservation at the Boston Architectural College, serving as an instructor for the 2022 spring semester. Ms. Andrade fully meets the Secretary of Interior's Professional Qualification Standards for history and architectural history (36 CFR Part 61).

PETER B. FITZGERALD, P.E.
Senior Electrical Engineer

Academic Background

B.S., Electrical Engineering Technology
University of Maine

A.A.S., Electrical and Automation Technology,
Eastern Maine Community College

Professional Registrations

Professional Engineer, Oklahoma

Professional Engineer, Nevada

Professional Engineer, Arizona

Professional Engineer, California

Professional Engineer, Maine

Professional Affiliations

IEEE Member

NSPE Member

INTRODUCTION

Mr. Fitzgerald is a Senior Electrical Engineer at SGC Engineering LLC. He is a licensed Professional Engineer and has 12 years of experience in Electrical Engineering with two main focuses: utility protection and controls engineering and renewable energy grid interconnections. Mr. Fitzgerald has developed substations with voltages up to 500kV and generators with sizes up to and over 1 GW. He has experience in the following general areas: conceptual design; detailed relay and protection design; wiring and cable design; equipment specifications and other technical documents; design checking including cross-discipline reviews; grid interconnections; and project management.

REPRESENTATIVE PROJECTS

- New England Renewable Energy Interconnection Projects:
  Currently a Senior Electrical Engineer leading many projects in various stages of the Independent System Operator – New England (ISO-NE) Schedule 22 (Large) and Schedule 23 (Small) Generator Interconnection Procedures process. Projects sizes are from 1 MW to over 1 GW with most falling in the 15 MW to 100 MW range. Technologies used include solar, onshore wind, offshore wind, hydro, battery storage, and hybrid systems with multiple technologies. Each project requires a variety of the following tasks:
  - Grid interconnection feasibility reviews
  - ISO-NE interconnection applications including conceptual drawings, impedance tables, power factor studies, loss studies, and project management.
  - Coordination of PSSE and PSCAD model creation, benchmarking, and issue resolution
  - Support throughout the ISO-NE system impact studies (SIS)
  - Mitigation of SIS result impacts, including cost-saving options
  - Transmission-level DG cluster study support
  - Interconnection agreements and proposed plan applications

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REPRESENTATIVE PROJECTS (continued)

- Distributed Generation Renewable Energy Interconnection Projects:
  Currently a Senior Electrical Engineer leading many projects in various stages of the Maine Public Utilities Commission (MPUC) Chapter 324 Small Generator Interconnection Procedures process. Projects sizes are from 500 kW to 5 MW and involve a variety of the following tasks:
  - Grid interconnection feasibility reviews
  - Utility interconnection applications
  - Support throughout the utility SIS
  - Mitigation of SIS result impacts, including cost-saving options
  - Transmission-level DG cluster study support
  - Interconnection agreements

- San Diego Gas and Electric (SDG&E), Quality Control Services – San Diego, California:
  Served as the lead Senior Electrical Engineer for this quality control program for over a year. Based on the size of each project, his team consisted of three to eight people to complete quality control checks on many substation designs for SDG&E. Checked various aspects of the designs with an emphasis on current and potential circuits. Design checks completed included protection and control equipment for the following: 230kV, 138kV and 69kV circuit breakers; 12kV switchgear and capacitors and transformers of various combinations of the preceding voltages.

- Salt River Project, IPAC 2.5 Relay Upgrades – Phoenix, Arizona:
  Served as a Senior Electrical Engineer for this project upgrading the relaying and control systems for 12kV switchgear bays and 69/12kV transformers at three substations. Complexities of the design included working with existing SCADA and communications drawings that were incomplete and maintaining constructability by reusing wiring that was not accessible for replacement. Coordinated the design team and acted as the lead quality control checker for most of the design. Served as the engineer of record for all three projects.

- Eversource, Transformer Replacement, Scobie Pond S/S – Londonderry, New Hampshire:
  Served as a Senior Electrical Engineer for this project for the emergency replacement of a failed 345/115/13.8kV, 450MVA transformer, which involved the removal of the transformer's two 13.8kV, 40MVAR shunt reactors (the lost VAR support was to be replaced in another part of the system). A large portion of the design was done in the field using hand markups. The physical removal of the old equipment began the same day as the engineering. A high level of collaboration was required between the engineers and those performing the construction work. The engineering for this design, which impacted over 250 drawings, was completed in under five weeks. This included coordinating all the required drafting of hand-marks, design checks, PE stamping and issuing the drawings to the field. Additional engineering support was given during the five-week construction phase.

- Eversource, Chester S/S Re-Automation – Chester, New Hampshire:
  Served as a Senior Electrical Engineer for this project replacing a SCADA system comprised of GE Fanuc PLC's and D20 RTU's with a new SEL RTAC and Axion distributed I/O system for the entire 115/34.5kV substation. Collaborated with Eversource's Lead Engineer to develop new design standards for this I/O equipment as they had not used it before.

REPRESENTATIVE PROJECTS (continued)

- Eversource, Scobie Pond S/S – Londonderry, New Hampshire:
  Served as an Electrical Engineer or Senior Electrical Engineer for multiple projects at this substation. The existing substation consisted of three 345/115kV transformers, 11 345kV circuit breakers, and two 13.8kV reactor banks (on a transformer tertiary). The projects included designing for the installation of two new 345kV circuit breakers to support a new breaker-and-a-half line terminal, expanding the control house, upgrading obsolete protection systems, replacing the entire primary protection system to create separation from the secondary system and meet BPS requirements, updating a complex special protection system that could trip a large volume of remote generation and coordinating the phases of construction and outage windows.

- American Electric Power, Pekin Station – Ohio:
  Served as an Electrical Engineer for this project removing one 69/23kV transformer and one 23kV breaker and installing one 69kV breaker. Responsibilities included the development of the P&C wiring and interconnection diagrams.

- Central Maine Power Company, Lakewood S/S Expansion – Madison, Maine:
  Served as an Electrical Engineer for this project replacing an existing 115/34.5kV substation utilizing DNP over IP/IEC 61850 ready standards. Project scope involved installing four 115kV and eight 34.5kV SF6 breakers and two 115/34.5kV transformers. Responsibilities included the development of the P&C elementary, wiring and interconnection diagrams.

- Rochester Gas & Electric, Station 205 S/S Rebuild – New York:
  Served as an Electrical Engineer for this project replacing an existing 34.5/12/4kV substation for the Modernization Project. The substation was designed utilizing DNP over IP/IEC 61850 ready standards. Primary responsibilities included the development of the P&C elementary and wiring diagrams.

- Iberdrola USA, IUSA P&C Standards Documentation and Development – Maine and New York:
  Served as an Electrical Engineer where he created technical manuals and drawings for 12kV to 345kV transformer, capacitor, reactor, breaker, line, bus protection and control cabinet specifications. Each standard was developed to include multiple manufacturers including GE, SEL and ZIV. The standards were then further developed with the relays utilizing DNP over IP protocols capable of being upgraded to IEC 61850 protocol design.

- Central Maine Power Company, Guilford S/S Rebuild Replacement 115/34.kV Substation – Maine:
  Served as an Electrical Engineer utilizing DNP over IP/IEC 61850 ready standards. This involved installing one 115kV and seven 34.5kV SF6 breakers, three 12kV reclosers, one 115/34.5kV transformer, and one 34.5/12kV transformer. His responsibilities included the design of a temporary substation.

- Central Maine Power Company, MPRP Belfast 115/34.5kV S/S – Belfast, Maine:
  Served as an Electrical Engineer for this project installing two 115kV breakers, one 34.5kV IPO breaker, one 34.5kV capacitor bank and new SCADA equipment. Responsibilities included the P&C conceptual design, elementary, wiring and interconnection diagrams.

- Central Maine Power Company, MPRP Surowiec 345/115kV S/S – Pownal, Maine:
  Served as an Electrical Engineer for this project upgrading an existing 345/115kV substation utilizing the IEC 61850 standard. Responsibilities included designing wiring and interconnection diagrams.

SGC Engineering, LLC

DANA L. HALE
Senior Transmission Engineer

Academic Background

Bachelor of Science
Mechanical Engineering Technology
University of Maine

INTRODUCTION

Mr. Hale is a Transmission Engineer at SGC. He has 25 years of experience in providing engineering solutions for electric utilities and industrial facilities under the supervision of a Professional Engineer. Mr. Hale has been directly responsible for numerous projects in the planning, design and construction phases in the areas of transmission design, distribution design, substation design, material procurement, permit acquisition and cost estimating.

He has specific experience in the areas of: Transmission Design Engineering, which includes route selection, Right-of-Way acquisition, line design and contract and construction management; Substation Design Engineering, which includes bus design, structure design, grounding systems and contract and construction management and Distribution Design Engineering, which includes overhead and underground design, utility standards development, line design and construction management.

REPRESENTATIVE PROJECTS

- Line 6903 Rebuild – Maine:
  69kV Transmission Line for Emera Maine. Project involved the design of 4 miles of new line to replace an aging and undersized line. Included DOT permitting and 12kV distribution underbuild.

- Line 6930 Rebuild – Maine:
  69kV Transmission Line for Emera Maine. Project involved the design of 2 miles of new line to replace an aging and undersized line. Included DOT permitting and 12kV distribution underbuild.

- Ohio Wind Farm:
  Lead Engineer for permit and construction design of 2.9 miles of 138kV generator lead. Line consisted entirely of single, self-supported steel poles on foundations.

- Line 6913 Rebuild – Maine:
  69kV Transmission Line for Emera Maine. Project involved the design of 2 miles of new line to replace an aging and undersized line. Included FAA permitting and a section of 12kV distribution underbuild.

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REPRESENTATIVE PROJECTS (continued)

- Iowa Wind Farm:
  Lead Engineer for permit and construction design of 15 miles of 345kV generator lead. Line consisted entirely of single, self-supported steel poles (up to 170' in height) on foundations.

- Transmission Consulting – New York:
  Supported NYSEG internal utility engineers with right of way requirements, routing, cost estimating and preliminary design for a 65-mile, 345kV transmission line. Final product to be a NY Article VII permit.

- Line 6910 Rebuild and Upgrade – Maine:
  69kV Transmission Line for Emera Maine. Project involved the design of 19.4 miles of new line to replace an aging and undersized line. Used 138kV spacing for future growth possibilities.

- Line 50 Rebuild and Upgrade – Maine:
  46kV Transmission Line for Emera Maine. Project involved the design of 15.3 miles of new line to replace an aging and undersized line.

- Maine Wind Farm:
  Lead Engineer for permit and construction design of 60 miles of 345kV generator lead. Compact H-frame design with sections of triple and double bundled conductors.

- Ohio Wind Farm:
  Lead Engineer for permit and construction design of eight miles of 138kV generator lead. Line consisted entirely of single, self-supported steel poles on foundations and direct embed.

- Oakfield Wind Farm – Maine:
  Lead Engineer for permit and construction design of 60 miles of 115kV generator lead. Line consisted of a combination of single pole and H-frame structures. Assisted the owner with constructability and cost analysis of various line configurations and voltage levels.

- Colorado Wind Farm:
  Lead Engineer for planning and permit level design of 30 miles of 345kV H-frame, bundled conductor generator lead line.

- Bingham Wind Farm – Maine:
  Project involved permit level and construction design utilizing PLS-CADD for 17 miles of 115kV single pole, bundled conductor generator lead line. Section of this line designed utilizing single, self-supported laminated poles because it is in the road Right-of-Way with no guying available.

- Garvins 115kV Bus Upgrade – Bow, New Hampshire:
  Lead Engineer to upgrade the 115kV bus to 3,000 amps to meet proposed PSNH minimum design ratings. Lead engineer for the bus upgrade and dead-end structure design. Provided design reviews and approvals.

- Thailand Root Cause Analysis:
  Root cause analysis on nine miles 115kV dual circuit transmission line that experienced a cascading type failure during a typhoon. Tasks included overturning and crossarm analysis, loading checks, and recommendations for rebuild/repair.

REPRESENTATIVE PROJECTS (continued)

- Record Hill Wind Farm – Maine:
  Completed substation design for 34.5kV to 115kV, 50MW step-up collector substation. Project involved foundation design, structure design, bus design, equipment specifications, and construction oversight.

- Island Falls Substation – Island Falls, Maine:
  Completed substation design for 44kV to 12.47kV distribution substation. Project involved design of foundation and structures, ground grid, conduit system and bus design, as well as material specifications and procurement and construction oversight.

- Fish River Substation – Fort Kent, Maine:
  Project involved the design of a three-bay substation, with two bays of 69kV to 34.5kV and one bay of 69kV to 12.47kV. Substation included one incoming 69kV line and four outgoing circuits, two at 34.5kV and two at 12.47kV. Project scope included cost estimating, site selection, civil and structural design, electrical design, material specification and procurement and construction oversight.

- Ashland Substation – Close Ring Bus – Ashland, Maine:
  Project involved the installation of a 69kV breaker to complete a ring bus. Project involved upgrades to the existing station equipment from 600 to 1200 amps.

- Mars Hill Wind Farm – Maine:
  For Maine's first large wind farm project, completed 69kV Transmission Line design using PLS-CADD. Completed substation design for 34.5kV to 69kV, 50MW step-up collector substations. Prepared substation design for a three-breaker ring-bus switching station for the interconnection with the utility, Maine Public Service Company (MPS). Design of a dual circuit 34.5kV sub-transmission circuit from collector station to mountain top.

- Line 6912 Rebuild – Maine:
  69kV Transmission Line for MPS. Project involved the rebuild of five miles of single pole structures with a new line to replace an aging and undersized line. Tasks associated with the project included: cost estimating, line design (using PLS-CADD), construction package development, material procurement and construction management.

- Line 3875 – Maine:
  138V Transmission Line for MPS. Project initiated by the Maine Public Utilities Commission to address concerns over the reliability of the Northern Maine Transmission Grid. Project involved design of 11 miles of new line to create a new interconnection with NB Power. Aspects of Transmission line design that were utilized: cost estimating, line design (using PLS-CADD), Environmental permitting, route selection an Right-of-Way acquisition.

- McCain Foods Inc. Plant Expansion – Easton, Maine:
  Led the project which involved a short 69kV transmission line, 69kV to 4kV, 5MVA substation and 4kV distribution system upgrades.

- Ashland 69kV to 34.5kV Substation Expansion – Ashland, Maine:
  Responsible for civil/site engineering, steel design, material specification and procurement as well as construction monitoring for adding a 34.5kV bay to an existing substation.

WESLEY D. GERRISH, P.E.
Principal Electrical Engineer

Academic Background

Bachelor of Science
Electrical Engineering Tech.
University of Maine

Master of Business
Administration
University of Maine

Professional Registrations

Professional Engineer
Maine
Vermont
Connecticut
New York
Pennsylvania
North Carolina
Wisconsin
New Hampshire

INTRODUCTION

Mr. Gerrish is a Principal Electrical Engineer at SGC Engineering, LLC. He is a Licensed Engineer and has 28 years of experience providing engineering solutions for industrial power and controls systems, independent power producers in the hydroelectric industry, wind farm collector stations, utility substations and related projects. Mr. Gerrish has been directly responsible for numerous projects in the planning, design, and construction phases in the areas of hardwired and automated process control systems, local and remote hydro turbine-generator control systems, power distribution systems, protective relaying, short circuit and arc flash studies, equipment and performance specifications, testing and commissioning, and interconnections agreements with utilities.

Projects completed with his participation and under his direct technical supervision balance the requirements for new or rehabilitated facilities and associated site improvements with the goal of long-term sustainable development.

REPRESENTATIVE PROJECTS

- Brookfield Renewable – Battery Storage Projects:
  Project Manager and Senior Electrical Engineer responsible for preliminary power system design and owner's engineer support. Engineering efforts included one-lines and three-lines, detailed engineering for system tie-ins, equipment specification development, and vendor submittal technical reviews. The projects included the installation of one (1) 14MW and two (2) 8MW battery systems in New Hampshire and Maine.

- Reed & Reed – Roxwind Wind Farm & Roxbury Substation Upgrade:
  Project Manager and Senior Electrical Engineer responsible for overall design and coordination of the project. Design efforts included equipment specification development, relay protection and controls design, various electrical design drawing packages, and vendor submittal technical reviews. The project included four (4) new GE 3.8MW turbines (15.2MW toral), 34.5kV collector system, 34.5kV Recloser, 34.5kV utility line section, and 34.5kV substation breaker installation.

REPRESENTATIVE PROJECTS (continued)

- EDPR Renewables – Rosewater Wind Farm:
  Senior Electrical Engineer responsible for equipment specification development, relay protection and controls design, various electrical drawing packages and vendor submittal technical reviews. The project included a new 34.5kV/138kV substation, servicing 20 new 4.2MW wind turbines and five new 3.6MW wind turbines (102MW total) with three collector feeder circuits.

- Avangrid – NYSEG (New York State Electric & Gas):
  Senior Electrical Engineer responsible for electrical design packages for in-ground and above-ground work as well as coordination of civil/structural and protection & control design. The project included the addition of two new 115kV breakers to reconfigure a straight bus arrangement to a ring bus as well as reconfiguring a 46kV line. Project tasks included a complete electrical drawing package, ground grid analysis and design, relay protection and controls design, TOV study and lightning and lighting drawing packages.

- Avangrid – CMP (Central Maine Power):
  Senior Electrical Engineer responsible for coordination of civil/structural and electrical design packages, as well as equipment specification development, relay protection and controls design and ground grid analysis and design for a new 12.47kV bay expansion to integrate a new 9.9MW solar farm. Construction support was provided as well as commissioning and testing support.

- EDP Renewables – Timber Road III Wind Farm:
  Senior Electrical Engineer responsible for equipment specification development, relay protection and controls design, various electrical drawing packages, vendor submittal technical reviews and on-site construction support. The project included a new 34.5kV/135kV substation, servicing fifty new 2.1MW wind turbines (105 MW total) with four collector feeder circuits.

- Various Short Circuit and Arc Flash Hazard Studies:
  Senior Electrical Engineer responsible for gathering field information and developing a power system model using EasyPower ™ software. Using data from the model, a short circuit and arc flash report was created identifying various levels of hazards for medium and low voltage equipment. Hazard warning labels were created and applied to each piece of equipment. Projects included:
  - Ellsworth Hydro Arc Flash Study – Ellsworth, Maine
  - Stillwater 'B' Hydro Arc Flash Study – Orono, Maine
  - Milford Hydro Arc Flash Study – Milford, Maine
  - Holtwood Hydroelectric Redevelopment Project – Holtwood, Pennsylvania
  - Worumbo Hydro Arc Flash Study – Lisbon Falls, Maine

- Central Vermont Public Service – Proctor Hydro Redevelopment Project – Proctor, Vermont:
  Senior Electrical Engineer responsible for conceptual design, equipment specifications, contractor and design specifications, construction support and submittal reviews of a major hydro power house redevelopment. The project included the replacement of four new turbine-generators, and the integration of an existing unit, into a new power distribution system. Unit, plant and RTU controls were all new and integrated into the systems.

REPRESENTATIVE PROJECTS (continued)

- PPL Generation – Holtwood Hydroelectric Redevelopment Project – Holtwood, Pennsylvania:
  Senior Electrical Engineer responsible for the coordination of electrical and power distribution engineering, utility interconnection and SCADA and controls design activities for 128MW expansion and upgrade project. Responsible for all electrical and controls design for balance-of-plant equipment and systems.

- City of Albany – Mill Street Hydro – Albany, New York:
  Senior Electrical Engineer responsible for design and specification of new small hydro turbine-generator for a local municipality. The project design included a new power distribution system and utility interconnection, as well as the installation and integration of a vendor supplied control system.

- Mt. Equinox – Hydro Redevelopment – Manchester, Vermont:
  Senior Electrical Engineer responsible for the design and integration of a new small hydro turbine-generator into an existing power distribution systems that required a new utility tie-in and optical fiber connection for direct transfer tripping.

- Brookfield Power – Inflatable Flashboard Integrations, Various location in Maine:
  Senior Electrical Engineer responsible for power feeder and remote network designs, as well as controls integration of several inflatable flashboard systems, including:
  - Shawmut Hydro Station
  - Bonny Eagle Hydro Station
  - Deer Rips Hydro Station
  - Monty Hydro Station
  - West Buxton Hydro Station
  - Hiram Hydro Station

- City of Ellsworth Marine Dock Expansion – Ellsworth, Maine:
  Senior Electrical Engineer responsible for design and specification of new utility service drop and power distribution system. The float expansion included an underwater service supplying power and communication pedestals for guest yacht connections.

- Pittsfield Public Library Expansion – Pittsfield, Maine:
  Senior Electrical Engineer responsible for design and specification of electrical systems for building expansion, including lighting, HVAC, elevator power and controls and fire protection systems.

- Myllykoski – Madison Paper Industries – Hydro Unit & Plant Control Systems – Madison, Maine:
  Senior Electrical Engineer responsible for the design of the power distribution and unit control system, relay protection and equipment interconnections for a new 3,333kVA hydro turbine-generator. Supported Client with specifications, vendor submittal reviews, contractor management and start-up support.

- Brookfield Power – Hydro Unit & Plant Control Systems, School Street – Liverpool, New York:
  Senior Electrical Engineer responsible for the design of upgraded station service power and integration of vendor supplied pneumatic flashboard system. Supported Client with specifications and vendor submittal reviews.

REPRESENTATIVE PROJECTS (continued)

- New England Infrastructure – Pontoosuc Pond Level Control – Massachusetts:
  Senior Electrical Engineer responsible for design, installation, start-up and commissioning of an automated gate-valve and pond level control system. Client had trouble sourcing control panel, so we worked with local panel builders to build and furnish turn-key package.

- Green Mountain Power – Essex 19 Min-Flow and Diesel Upgrade – Vermont:
  Installation of one 945kVA hydro unit and four-2500kVA diesel units: Senior Electrical Engineer, responsible for the design of the power distribution system, generator step-up transformer, relay protection, equipment interconnections and controls integration oversight. Supported Client with specifications and vendor submittal reviews.

- London Economics – Sebec Lake Hydro Project – Maine:
  Senior Electrical Engineer responsible for site inspection to identify assets in service and level of operability. Developed a report of the findings, which included a list of safety concerns and a list of opportunities for improvements and automations.

- Oswego Falls East Brookfield Power Project – (2) 550kVA Hydro Unit Installations – New York:
  Senior Electrical Engineer responsible for design of the power distribution system, relay protection and equipment interconnections. Supported Client with specifications and vendor submittal reviews.

- Brookfield Power – Sherman Island Unit 6 – 1,388 kVA Hydro Unit Installation – New York:
  Senior Electrical Engineer responsible for the design of the power distribution system, generator step-up transformer installation, utility interconnection, relay protection and equipment interconnections. Supported Client with specifications, vendor submittal reviews and contractor management.

- Brookfield Power – Sherman Island Unit 1 – 8,000kVA Hydro Unit Installation – New York:
  Senior Electrical Engineer responsible for the design of the power distribution system, relay protection and equipment interconnections. Supported Client with specifications, vendor submittal reviews and contractor management.

- Verso Paper – Bucksport Mill Coal Handling System Recommissioning – Maine:
  Senior Electrical Engineer responsible for conducting a full review of in-place assets associated with the coal handling system. Identified maintenance, safety and code issues requiring action prior to start-up.

- Benton Falls Associates – Benton Fish Passage – Maine:
  Senior Electrical & Controls Engineer responsible for PLC program development, HMI screen development and construction supervision. Completed start-up and commissioning services.

- Ridgewood Maine Hydro Partners, L.P. – Burnham Fish Passage – Maine:
  Senior Electrical & Controls Engineer responsible for PLC program development, HMI screen development and construction supervision. Completed start-up and commissioning services.

- Florida Light & Power – Lockwood Fish Passage – Maine:
  Senior Electrical & Controls Engineer responsible for PLC program development, HMI screen development and construction supervision. Completed start-up and commissioning services.

SGC Engineering, LLC

NATHAN TOBEY, P.E.
Senior Electrical Engineer

Academic Background

Bachelor of Science
Mechanical Engineering
University of Maine

Minor of Business
Administration
University of Maine

Professional Registrations

Professional Engineer
Maine

INTRODUCTION

Mr. Tobey is a Senior Electrical Engineer at SGC. He is a Licensed Engineer and has fifteen years of experience in electrical design and manufacturing. Mr. Tobey has experience with all levels of electrical work from 4-20mA to 345kV. He has experience in consulting engineering. Mr. Tobey has worked on high voltage substations (S/S) and low voltage distribution systems. He is proficient in various design programs, such as AutoCAD, MicroStation, WIN IGS, RISA 3D, CYMCAP and Visual Lighting Software.

REPRESENTATIVE PROJECTS

- Central Maine Power Company – Owner's Engineer, Augusta, Maine:
  Provides Owner's Engineering Support for Central Maine Power Company projects. Represented CMP as a trusted technical resource and authority for the entire above grade design, grounding design and conduit designs. Reviewed and approved all aspects of the above grade design, conduit plans and details, material lists and grounding plan and details for each project. Successful projects include Ludden tap site Spring Street Substation, Dunstan Substation & E. Wilton Substation.

- New York State Electric and Gas Company – Owner's Engineer:
  Provides Owner's Engineering Support for New York State Electric and Gas Company projects. Represented NYSEG as a trusted technical resource and authority for the entire above grade design, grounding design and conduit design. Reviewed and approved all aspects of the above grade design, conduit plans and details, material lists and grounding plan and details for each project. Successful projects include Dover Plains Substation, Amenia Substation, Dingle Ridge Substation and Pawling Substation.

- EDPR Renewable's – Redbed Plains Substation and Timber Road II Substations:
  Responsible for the above grade physical design which included steel, general arrangement drawings, yard and control house material lists, conduit plan and details, electrical details, lightning protection studies, yard lighting design, equipment specifications. AC/DC station service design. Developed battery and battery charger specifications. Performed exterior and interior lighting design. Drafting using AutoCAD.

211 Water Street
Augusta, Maine 04330
207.624.0000

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REPRESENTATIVE PROJECTS (continued)

- Central Maine Power Company – Bridgton S/S, Searsport S/S, Bishop St. S/S, Brunswick S/S, Bigelow S/S, Carrabassett Valley, Maine; Surowiec S/S, Pownel, Maine; Buxton S/S, Kennebunk, Maine; Wyman Hydro S/S, Bingham, Maine; Louden S/S, Saco, Maine:
  Responsible for the above grade physical design, which included steel and general arrangement drawings, yard and control house material lists, conduit plan and details, electrical details, lightning protection studies, yard lighting design and equipment specifications. AC/DC station service design. Designed control house cable tray systems and S/S cable trenches for primary and backup systems. Developed battery and battery charger specifications. Performed exterior and interior lighting design. Drafting using MicroStation and AutoCAD. Automation and integration design and relay settings, SCADA in a box design, testing and commissioning and provided field support.

- Central Maine Power Company – Crowleys, Hotel Rd and Surowiec S/S:
  Design engineer for breaker replacement jobs at Crowley's, Hotel Rd & Surowiec S/S. The design work included: Updating general arrangement drawings, bill of materials, conduit plan, conduit fill calculations, switch specifications, above grade conduit details and the grounding plan. The Surowiec design included work near large reactor banks that required specials designs to avoid interference with magnetic waves from the reactors.

- Central Maine Power Company – Sewall Street:
  Bus design calculations for new bus system at Sewall Street substation. Modeled the new bus design is RISA 3D to find deflection of bus and loading on existing structures per customer load combinations.

- Central Maine Power Company – Brunswick S/S:
  Lead engineer for Brunswick transformer replacement project at Brunswick S/S. Performed design, which included above grade package and SP&C 1-7. Updated general arrangement drawings, material lists, conduit plan, electrical details, AC and DC elementary, wiring diagrams, settings for the RTAC, 2411, Qualitrol and Beckwith relays. Incorporated all settings into the relays on site and commissioned all communications from the transformer to EMS with CMP.

- Central Maine Power Company – Bishop St. S/S:
  Bay and Cap bank addition to Bishop St substation. Above grade package design which included steel, general arrangements, electrical details and conduit plan. Updated the settings to the SMP-16 station RTU.

- Central Maine Power Company – Searsport S/S:
  Complete above grade package re-design for Greenfield Searsport 34.5kV to 12.4kV substation. This included steel design, general arrangements, lightning protection, electrical details, control house design, yard and control house material lists, switch specifications, yard lighting and conduit plan.

- Central Maine Power Company – Bridgton S/S:
  Designed the above grade package for the Bridgton expansion in 2017. This included all general arrangements for the addition of a new 2-bay 34.5kV structure, material list, steel details, electrical details and conduit plan updates.

REPRESENTATIVE PROJECTS (continued)

- Central Maine Power Company – Wyman Hydro S/S, Mason S/S, Great Falls S/S, Weston S/S, Long Creek S/S, Riley S/S and Quaker Hill S/S:
  Lead engineer on battery replacement project for the above substations. Project responsibilities included: system designs, battery studies, project management, writing test procedures, commissioning of battery chargers, field support, document control and AC/DC load calculations. The project included updating physical drawings, elementary diagrams and wiring diagrams. Project included automation and integration of battery charger with Wyman Hydro Station RTU using DNP3 protocol. Modified RTU settings in both the SMP16 and SEL 2411 for incoming battery charger alarms.

- Central Maine Power Company – Roxbury 115kV/ 34.5kV S/S:
  Performed the physical detailed design to interconnect a new wind farm to one of the 34.5kV bays at Roxbury Substation. Tasks included: Updating general arrangement drawings, above and below grade bill of materials, assisted in steel design, above grade conduit and grounding design, below grade conduit, assisted in medium voltage cable sizing using CYMCAP software, construction support, switch and steel specifications and major equipment vendor drawing reviews.

- Emera Maine Graham 115kV S/S:
  Designed new control house for the Graham 115kV substation. The work included: Building elevations and specifications, 120/240VAC station AC service design and specifications, 125VDC DC station service design and specifications, battery and charger sizing and specifications, cable tray design, voltage drop calculations, updating the conduit plan, conduit fill calculations, backup heating system design, hydrogen sensor vent fan control with fire shutdown design, fire alarm system design, control house normal and emergency lighting design, control house grounding design and construction support.

- Emera Maine Orrington 345kV/115kV S/S:
  Designed new control house for the Orrington substation. The work included: Building elevations and specifications, 120/208VAC 3 phase station service design and specifications, 125VDC DC station service design and specifications, cable tray design, voltage drop calculations (including trip & close circuits), updating the conduit plan, conduit fill calculations, cable trench design, backup heating system design, hydrogen sensor vent fan control with fire shutdown design, fire alarm system design, control house normal and emergency lighting design, helped design the cable pit cover support system, control house grounding design and construction support.

- Proenergy – H.O. Clarke 138kV S/S:
  Performed the physical detailed design of the HV (138kV) side of H.O. Clarke substation. Tasks included: General arrangement drawings, HV bill of materials, bus calculations using Risa 3D, helped with steel design, above grade conduit and grounding design and major equipment vendor drawing reviews.

- Proenergy – Topaz 138kV S/S:
  Performed the physical detailed design of the HV (138kV) side of topaz substation. Tasks included: General arrangement drawings, HV bill of materials, bus calculations using Risa 3D, assisted with steel design, above grade conduit and grounding design and major equipment vendor drawing reviews.

REPRESENTATIVE PROJECTS (continued)

- Brookfield – Powersville 34.5kV S/S:
  Performed the physical detailed design for the battery storage addition for Powersville substation. Tasks included: General arrangement drawings, above & below grade bill of materials, bus calculations, assisted with steel design, above grade conduit and grounding design, below grade conduit & grounding design, construction support, switch and steel specifications and major equipment vendor drawing reviews.

- New York State Gas and Electric Company Carmel Substation:
  Helped in the above grade design for the Carmel 115kV to 46kV substation breaker replacement project. Project duties included: updating the general arrangement drawings, Bill of materials, bus calculations, lighting protection study, insulation coordination study and helping with the steel design.

  First Wind Bingham Substation 115/34.5kV Substation:
  Responsible for the physical substation layout design which included General Arrangement drawings, substation material list, bus calculations and equipment mounting details. Developed major equipment specifications and reviewed vendor drawings and quotes. Responsible for Yard lighting design.
  Provided design for AC and DC services, including circuit breaker coordination, cable sizing and voltage drop calculations and service equipment specifications.

- Public Service of New Hampshire – Garvins 115kV Substation:
  Provided engineering design and support for the 115kV bus replacement at Garvins Substation. Upgraded to dual conductor bus based on calculations performed. Provided general arrangement drawings, plan views and elevation views and details. Provided detailed substation material list and construction support.

- Public Service of New Hampshire – White Lake S/S, Saco Valley S/S and Beebe River S/S:
  Responsible for S/S design from preliminary and conceptual to detailed engineering. Provided design for AC and DC services including: circuit breaker and fuse coordination, transformer specifications, cable sizing and voltage drop calculations. Performed short circuit analysis and coordination studies and service equipment specifications. Designed control house cable tray systems and S/S cable trenches for primary and backup systems. Developed battery and battery charger specification. Performed exterior and interior lighting design and provided construction support.

- DDG1000 Destroyer and LCS Class Design Team:
  Developed interconnection diagrams for complex electrical systems 450VAC and 4160VAC on new destroyer with electric propulsion system and electrical distribution system. Developed engineering solutions for various low voltage distribution and control upgrades and repairs on the ship. Wrote test procedures for low voltage switchboards and reviewed equipment specs. Maintained Design Build Specifications and Naval Vessel Regulations. Provided production and design support and facilitated vendor equipment testing and installation.

- The University of Maine Advanced Engineered Wood Composites Center, Orono, Maine:
  Designed and built carbon fiber and fiber glass arches used for light-weight bridges in military applications. Developed new technologies for faster infusions and stronger arches.

REPRESENTATIVE PROJECTS (continued)

- First Wind Keene Rd 115/345kV Substation, Penobscot County, Maine:
  Responsible for the AC/DC station service design including: circuit breaker coordination, transformer specifications, cable sizing and voltage drop calculations and service equipment specifications. Designed control house cable tray systems for primary and backup systems. Performed interior and exterior lighting design. Created conduit and cable schedules. Performed insulation coordination study and provided support in the P&C and telecommunication design, including Onelines, AC and DC elementary, wiring and interconnection diagrams.

- Bangor Hydro- Rebel Hill S/S, Otis, Maine:
  Responsible for the AC/DC station service design including: circuit breaker coordination, transformer specifications, cable sizing and voltage drop calculations and service equipment specifications. Performed Short circuit analysis and Coordination studies. Designed control house cable tray systems for primary and backup systems. Performed interior lighting design and created cabinet wiring diagrams, cable and conduit schedules.

- Public Service of New Hampshire – Scobie Pond S/S – 345kV SPS and DTT P&C Design:
  345kV Line Special Protection System and transfer trip scheme replacement/upgrade at three substation locations. Provided support in the P&C and telecommunication design, including Onelines, AC & DC elementary, wiring and interconnection diagrams, SCADA tab sheets, relay settings and associated material lists. NERC CIP and NPCC BPS system requirements were adhered to and implemented successfully.

- NYPA 345kV Station Upgrade:
  Provided engineering design for the addition of a 345kV line trap. Provided equipment specifications and general arrangement drawings, plan views, elevation views and details. Updated conduit plan, cable and conduit schedule and provided substation material list.

ERIC SCHMIDT
Electromechanical Engineer

Academic Background

Bachelor of Science
Electrical Engineering
Technologies
University of Maine, Orono

Bachelor of Science
Mechanical Engineering
University of Maine, Orono

Master of Business
Administration
Husson College, Bangor

Lean Six Sigma Certificate
University of Southern Maine

Professional Registrations

Engineer in Training
Maine

INTRODUCTION

Eric Schmidt is an Electromechanical Engineer at SGC. He has 22 years of experience in manufacturing equipment, automation control systems, large equipment installations, factory designs, contractor supervision, and project management. He has experience in electrical panel design, VFD installation and programming, electrical motors, process controls, programmable logic controllers (PLCs), HMI interfaces programing, pneumatics, plastic processing equipment, mechanical equipment design and fabrication.

REPRESENTATIVE PROJECTS

- Bigrock Ski Area, Quad chairlift and Snowguns
  Work with Versant Power and Aviest Engineering to provide additional power and controls for a new 3000' quad chairlift, primary and secondary water supply pump houses, and twin 500 HP VFD controlled snowgun pressure pumps. Additional snowgun receptacle requirements for expanded snow making capabilities.

- Rockland Marine – Miss Marjorie Hydrolicer:
  Refitting an oil platform tending ship to become a sea lice removal vessel for ocean farmed salmon. Integrated existing and new equipment with emergency stop system controls. Developed VFD controls and wiring diagrams for updated fuel system controls and crane hydraulic pump. Assisted with diesel generator setup, switch gear, power panels, motor circuit breakers, and conductor sizing.

- Old Town Canoe – Rotational Molding Machine Installation:
  Project lead and design engineer for factory layout and custom built multi-million-dollar plastics molding machine for manufacturing kayaks. Designed floor plan, utility feeds for gas and electrical, designed custom controls for heat recovery system, managed contractors for construction and utility upgrades. Worked with the State of Maine for rebates through job creation grants.

- Old Town Canoe – Solar Power:
  Project lead working with the City of Old Town and a private developer to install a 6 MW PV site. Worked with legal counseling to contract Old Town Canoe to be an off taker for their electrical demands from the completed project.

- Old Town Canoe – Air Compressor System:
  Designed air compressor room layout, sized compressor, air dryers, storage tanks, heat exchangers, and electronic pressure regulators. Worked with Efficiency Maine for rebates through energy efficiency improvements.

- Old Town Canoe – R&D Facility:
  Project lead and engineer for a fifteen thousand square foot facility design including plumbing, lighting, HVAC, specialized ventilation system, office space, labs, compressed air system, and electrical system.

- Old Town Canoe – Manufacturing Facility Relocation:
  Designed new greenfield site for construction of a new manufacturing facility. Designed factory layout, utility sizes for electrical, natural gas, compressed air, lighting, HVAC requirements. Directed contractors for removal of equipment from the old site to new site including instructions for disassembly, rigging, and installation into new building. Redesigned four kayak ovens with new PLC controls, natural gas burners, HMI controls during re-installation. Designed two new canoe ovens and managed internal maintenance crews for the fabrication in house. Worked with CES Consultants and the DEP for environmental compliance of the old site and transfer of ownership to the City of Old Town at completion of project.

- Lendal Paddles – Acquisition and Relocation:
  Project lead and engineer to travel to Lendal Paddles in Scottland, document Scottland's production methods and equipment then relocate production to Maine. Redesigned and built new automated equipment utilizing CNC equipment, and custom designed production machines, into the Johnson Outdoors – Old Town location. Designed manufacturing layouts, renovated part of existing factory for new production. Worked on composite material designs and construction methods for high end carbon fiber kayak paddles. Worked with the University of Maine to design material testing equipment to meet quality standards.

- Old Town Canoe – PLC Upgrades:
  Designed and retrofitted eight canoe production ovens from a mechanical control system to automated PLC controls and computer HMI interface controls.

SGC Engineering, LLC

CHRISTOPHER L. RODERICK, P.E.
Substation Engineer

Academic Background

Bachelor of Science
Mechanical Engineering
University of Maine

Professional Registrations

Professional Engineer

North Carolina

INTRODUCTION

Mr. Roderick is a Substation Engineer at SGC Engineering, LLC. He is a Licensed Engineer and has five years of experience in electrical substation design. Mr. Roderick's primary experience is in physical substation design at voltages ranging from 12.47kV to 345kV, along with control house and steel structure design. His experience includes CYME and CYMCAP software packages for the purpose of modeling substation/collection systems to size equipment and underground cables. Mr. Roderick has experience in ground grid design and protection and controls engineering.

REPRESENTATIVE PROJECTS

- Central Maine Power Company – Maine Yankee FAA Lighting – Wiscasset, Maine:
  Developed the above grade and below grade design for installing and powering a new FAA lighting system on five 345kV transmission towers. Design included in ground and above ground conduit routing and installation details, AC system design, and voltage drop calculations.

- EDP Renewables – Indiana Crossroads I – White County, Indiana:
  Responsible for the physical design and drafting for the new 345MW, 34.5/345kV Wind Farm Collector substation. This included all above grade physical design documentation and some in ground including, but not limited to, General Arrangements, Conduit Plan, Grounding Plan/Study, along with AC and DC load studies, Lightning and Lighting studies, and Bus calculations. Efforts included performing the reactive power and short circuit system studies.

- Central Maine Power Company – Owner's Engineer, Augusta, Maine:
  Provided Owner's Engineering Support for CMP projects. Represented CMP as a trusted technical resource for the review of above grade, conduit, and grounding designs. Reviewed and approved all aspects of the above grade details and material lists.

- EDP Renewables – Rosewater I – White County, Indiana:
  Lead the physical design and drafting for the new 115MW, 34.5/138kV Wind Farm Collector substation. This included all above grade physical design documentation and some in ground including, but not limited to, General Arrangements, Conduit Plan, along with AC and DC load studies, Lighting and Lightning studies and Bus calculations. Design responsibilities included AC/DC schematics and equipment wiring diagrams.

REPRESENTATIVE PROJECTS (continued)

- EDP Renewables – Crossing Trails I – Kit Carson County, Colorado:
  Lead the physical design and drafting for the new 115MW, 34.5/230kV Wind Farm Collector substation. This included all above grade physical design documentation and some in ground including, but not limited to, General Arrangements, Conduit Plan, Grounding Plan, AC and DC load studies and Bus calculations. Design responsibilities include AC/DC schematics and equipment wiring diagrams.

- EDP Renewables – Paulding IV – Paulding, Ohio:
  Lead the physical and P&C design and drafting for the new 75.9MW, 34.5/138kV Wind Farm Collector substation. This included all above grade physical design documentation and some in ground including, but not limited to, General Arrangements, Conduit Plan, AC and DC load studies and Bus calculations.

- New York State Electric and Gas Company – Langner Road S/S – Lancaster New York
  Responsible for the above, below grade and SP&C 1-2 design work. Project scope included the replacement of eight 12.47kV breakers and upgrading the sites SCADA system. Responsibilities included but were not limited to, steel modifications, conduit plan, grounding plan, electrical details, AC/DC schematics, single line and three-line diagrams and wiring.

- Reed & Reed – Antrim Wind Farm – Antrim, New Hampshire:
  Lead the physical design and drafting for the new 34.5/115kV Wind Farm Collector substation. This included all above grade physical design documentation and some in ground including, but not limited to, General Arrangements, Conduit Plan, AC and DC load studies and Bus calculations.

- Central Maine Power Company – Searsport S/S – Searsport, Maine:
  Assisted with the design and drafting of the Searsport Substation redesign project. Was responsible for design and QA/QC of physical substation layout, control house layout, electrical details, and steel drawings. Collaborated on AC Load Calculations and Direct Stroke protection report/calculations.

CURRICULUM VITAE

Ben Warren

Team Lead

Current position

Ben Warren, Team Lead, Mr. Warren has over 13 years of wind industry experience. He leads a team of engineers and project managers offering turn-key measurement services for both wind and solar projects; including met towers, lidars, IEC power curve testing, and solar measurement stations.

During his tenure he has contributed to a wide range of wind and solar energy services in both technical support and project management roles. He has created detailed instrumentation drawings and wiring schematics for a variety of sensor configurations, as well as the design, construction, and bench test of customer-specific DAS. He has successfully managed numerous multi discipline projects across North America. He also has over 5 years of experience analyzing and quality checking met mast and remote sensing data. He works closely with colleagues to ensure consistent application of the industry's best practices. Mr. Warren has field experience working directly with customers and subcontractors to ensure the tower is constructed and operating to the desired specifications. After earning a Bachelor's degree from Seattle Pacific University, he acquired his Tower Climbing and Rescue Certification, Wilderness First Aid and CPR Certificates, and is a Level A Qualified Electrical Worker.

Languages

Language	Native	Speaking	Reading	Writing
English	✓			

Education

Field of expertise	University/School	Year
Bachelor, Psychology	Seattle Pacific Univ	Jun 2006

Training

Year	Description
Dec 2018	Hazard Communications/WHMIS
Mar 2018	Information Security Training – Part 1
Aug 2017	NFPA 70 E Standard for Electrical Safety in the Workplace Training
Aug 2017	NFPA 70E: Standard for Electrical Safety in the Workplace
Dec 2015	DNV GL Code of Conduct – An introduction to expected conduct and behavior in daily business
Dec 2015	2010w DNV GL's approach to Anti-Corruption and Anti-Trust – An Introduction
Dec 2012	ISO14001/OHSAS18001 and DNV GL HSE Mgt. System
Jan 2012	Back Safety

Training

Year	Description
Dec 2010	Personal Protective Equipment
Dec 2010	Confined-space Entry
Dec 2010	Basic Health, Safety and Environment, web
Oct 2010	Hazard Communications/WHMIS
Oct 2010	Violence in the Workplace
Oct 2010	Walking and Working Surfaces - Fall Protection
Feb 2009	Risk Management Intro, web

James Warren has not chosen to make his/her CV available for sharing. If you would like to generate a CV for this employee, please ask him/her to accept the Information Statement so that the CV can be generated in the future.

CURRICULUM VITAE

Emily Ling

Project Manager, Wind Energy Assessment

Current position

Develop business and lead assessment of wind resource and expected energy output of proposed and operational utility-scale projects across North America.

Languages

Language	Native	Speaking	Reading	Writing
English	✓			
German		Medium	High	High

Education

Field of expertise	University/School	Year
M.Sc., Environmental Engineering	Technical University of Munich	Oct 2015 - Sep 2017
B.Sc., Civil Engineering	University of Louisville	Aug 2011 - May 2015

Summary of professional experience

Emily Ling provides consultation for renewable energy developers and tax equity providers in her role with DNV. She primarily develops opportunities with customers and leads assessment of wind resource and energy output of proposed and operational projects across North America to support project financing in the US and Canada. While pursuing her M.Sc. at the Technical University of Munich in Germany and B.Sc. at the University of Louisville in Kentucky, she both supported and led projects of various sizes with multiple diverse stakeholders at both an energy consultancy and electric utility. Ms. Ling holds degrees in Environmental Engineering with distinction and in Civil Engineering with high honors. Emily has a background in engineering, with evolving focus on business development, project management, technical analysis and modeling, energy policy and market trend research, and environmental compliance from the US to EU and back over the past 10 years. She is energized by leveraging this knowledge and is poised to continue fueling a more sustainable future.

Memberships

Women of Renewable Industries and Sustainable Energy (WRISE)	Jan 2018 - Present
Role: Member	
Description:	
American Society of Civil Engineers (ASCE)	Jan 2014 - Present
Role: Member	
Description:	
US Department of Energy (DoE) Solar Decathlon	Jan 2013 - Present
Role: Alumni	

Memberships

Description:	Built and presented Team Kentuckiana's Phoenix House, a cost-effective, energy-efficient, solar-powered island system as a permanent solution for disaster relief, with engineering and architecture students and professors from the University of Louisville in Kentucky and Ball State University in Indiana

Employment

DNV **Jan 2021 - Present**

Position: Lead, Business Development & Project Management

Description:
- Generating leads, pursuing opportunities for the Wind Energy Assessment Section of DNV's Renewables & Power Grids Service Area
- Ensuring constructive relations and interfaces with customers and stakeholders, external and internal, including negotiation environments and complex collaboration

DNV GL **Apr 2020 - Jan 2021**

Position: Project Manager, Energy Assessments

Description:
- Employed technical acuity to communicate scope, project success factors, and risks, assuring quality control and readiness for delivery
- Coordinated high-quality execution to deliver projects within planned timeline and budgetary constraints

Schneider Electric **Apr 2017 - Sep 2017**

Position: Solutions Consultancy Researcher

Description:
- Assessed the evolving role of support schemes for renewable energy promotion in Europe
- Analyzed historical and current energy policy and market trends in key Member States
- Applied results to emerging markets worldwide, presenting to a multinational consulting group

University of Louisville **May 2013 - Dec 2014**

Position: Undergraduate Teaching Assistant

Description: Contributed to Mechanics I: Statics and Field Measurements Laboratory sessions through the Partnership for Retention Improvement in Mathematics, Engineering, and Science (PRIMES) Project
- Prepared lessons, taught critical topics, graded student quizzes and examinations
- Taught hands-on techniques, assessed progress through field quizzes and presentation evaluations

Training

Year	Description
Jul 2019	Dealing with difficult client conversations, web
Jul 2019	Consultative conversations, web
Sep 2018	Heat and Cold Stress
Apr 2018	Compliance Module 2: 2010w DNV GL's approach to Anti-Corruption and Anti-Trust – An Introduction
Apr 2018	ISO14001/OHSAS18001 and DNV GL HSE Mgt. System
Apr 2018	Compliance Module 1: DNV GL Code of Conduct – An introduction to expected conduct and behavior in daily business

Training

Year	Description
Apr 2018	"Basic Health, Safety and Environment"

Papers and publications

- Emily Ling, Far-distant Offshore Wakes: How Far Is Too Far And Are We Getting It Right?, American Clean Power (ACP) Offshore WINDPOWER Conference, Oct 2021
- Emily Ling, Cory Jog, Rounak Kharait, Great Expectations: Underperformance in U.S. solar market, North American Clean Energy, Oct 2019
- Emily Ling, Evolution of support schemes for promotion of renewable energy sources in Europe, Technical University of Munich (internal), Jan 2017
- Emily Ling, Close-range remote sensing to track autumn senescence of deciduous trees, Technical University of Munich (internal), Jan 2016
- Emily Ling, etc., Hydro Power & Energy Storage Design, Technical University of Munich (internal), Jan 2016

Other Information

Engineer-in-Training

Technical Skills - MATLAB, AutoCAD

Verrill

Juliet T. Browne

Partner

jbrowne@verrill-law.com

Juliet excels in creative problem-solving and partnering with clients to develop and implement solutions to environmental challenges. Her holistic approach to energy and environmental law ensures that her clients not only have the legal answers to their questions, but are positioned to succeed in their overall business objectives.

Juliet's practice focuses on all aspects of environmental law, including public hearings, project permitting, and compliance under federal, state, and local laws. Juliet is especially known for her ability to manage large-scale, complex permitting and development matters involving areas with high natural resource values, a field that is becoming increasingly contentious with well-funded and organized opponents, with creative problem-solving. Juliet's approach to environmental permitting often involves connecting diverse interest groups to minimize opposition to projects, resulting in a smoother, more efficient process.

For companies requiring strategic and effective project management, Juliet manages large and midsize energy infrastructure projects, making sure that all regulatory and policy options are explored and pursued where appropriate. Her clients rely on her responsiveness, candor, and willingness to give honest advice.

Her representative matters include:

- The successful permitting of several of the largest wind power projects in the northeastern United States, often facing a number of complex contentious issues
- Supporting the expansion of interstate natural gas pipeline facilities
- The revolutionary proposal by a team of conservation groups and the Penobscot Indian Nation to remove several dams located on the Penobscot River in Maine
- Working with a leading provider of comprehensive waste and environmental services in North America on landfill permitting and compliance with state and federal regulations

Services/Industries

- Environmental & Land Use
- Energy
- Judicial Appeals—Energy
- Mergers & Acquisitions—Energy
- Natural Gas
- Solar
- Wind
- Coastal & Shoreland

- Successfully defending permits that are appealed to the Board of Environmental Protection, including a recent one by a broad group of opponents, including the town where the project was located

Juliet's years of experience have honed her judgment and deep understanding of the regulatory and political landscape. She joined Verrill in 1996 after practicing law at Skadden, Arps, Slate, Meagher & Flom in San Francisco and serving as Assistant Attorney General for the Republic of Palau, a former U.S. Trust Territory located in the Western Pacific. She has been called upon by regulators and stakeholder groups to develop, revise, and update environmental laws and regulations, and she served on the groundbreaking Governor's Wind Power Task Force in Maine.

Juliet serves as the Chapter Chair for the Maine Chapter of the Women Presidents' Organization, an organization that helps women entrepreneurs tackle strategic issues and grow their businesses through monthly business roundtables.

When not solving her clients' legal problems and working with successful entrepreneurs, Juliet enjoys hiking, skiing, and all forms of outdoor activities with her husband, daughter, and, if willing, her dog.

Education

- University of California, Boalt Hall School of Law (J.D.)
    - Articles Editor, California Law Review, 1989-1990
- University of Michigan (B.A.)

Public Service

- Chapter Chair, Women Presidents Organization
- Former Chair, Board of Trustees, Maine Chapter of The Nature Conservancy

Bar Admissions

- Maine

Memberships

- Maine State Bar Association
- Member, E2tech Program Committee

Honors

- Named the *Best Lawyers*® 2024 Administrative / Regulatory Law "Lawyer of the Year" in Portland, Maine
- Named the *Best Lawyers*© 2024 Environmental Law “Lawyer of the Year” in Portland, Maine

- Named the *Best Lawyers*© 2023 Energy Law “Lawyer of the Year” in Portland, Maine
- Named the *Best Lawyers*® 2022 Administrative / Regulatory Law "Lawyer of the Year" in Portland, Maine
- Recognized in *Chambers USA: America's Leading Lawyers for Business* under Environment (2005-Present)
- Named the *Best Lawyers*® 2020 Land Use and Zoning Law "Lawyer of the Year" in Portland, Maine
- Named the *Best Lawyers*® 2016 Environmental Law "Lawyer of the Year" in Portland, Maine
- Named the *Best Lawyers*® 2015 Litigation - Environmental "Lawyer of the Year" in Portland, Maine
- Listed in *The Best Lawyers in America*© for Administrative / Regulatory Law, Energy Law, Energy Regulatory Law, Environmental Law, Land Use and Zoning Law, Litigation – Environmental, Natural Resources Law in Portland, Maine
- Selected as one of the "Top 50 Women" by New England Super Lawyers©
- Selected by peers for inclusion in *New England Super Lawyers*© under Environmental, Energy & Natural Resources and Land Use/Zoning

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