Unsolicited Application for a Section 238 Research Lease
by the Virginia Department of Mines, Minerals and Energy

Research Lease Number 2 for Turbine Testing near the Virginia Call Area

This is the second unsolicited lease application submitted by the Department of Mines, Minerals and Energy (DMME), a state government agency of the Commonwealth of Virginia, to the Bureau of Ocean Energy Management (BOEM) of the United States Department of Interior, for a research lease in Federal waters off Virginia, as allowed by 30 CFR, Part 285, Section 238. The information provided below conforms to the general requirements for unsolicited lease applications as specified by 30 CFR, Part 285, Section 230, with the exception that there is no acquisition fee for a *research* lease, as indicated by 30 CFR, Part 285, Section 238, paragraph (g).

This is the newer of two applications that supersede the DMME application of 06 September 2011, which has been divided into two applications. The first is for Research Lease Number 1, for two metocean platforms in the Virginia Call Area. The second (this application) is for Research Lease Number 2, primarily for turbine testing, but also for metocean monitoring equipment. As described herein, the Commonwealth of Virginia has an interest in expediting the research lease process for this application in order to ensure that the Virginia Offshore Wind Technology Advancement Project (VOWTAP) is successful in competing for future Department of Energy (DOE) funding awards under the Advanced Technology Demonstration Program (ATDP).

The objective of the Virginia research leases is to advance both the national offshore wind development program and to accelerate commercial leasing and development of the Virginia Wind Energy Area (WEA) and the associated offshore energy industry supply chain. The path to achieve the objective is to conduct research activities that will reduce private development and project costs and lower risk.

The Virginia government's efforts and application of public resources are intended to facilitate private development of offshore wind energy. The goals and objectives of state-directed data acquisition efforts, such as the regional ocean geological survey and research leases, are shaped by the private sector stakeholders who ultimately will make much larger private investments in the offshore wind industry. Activities to take place in the research lease areas could substantially reduce uncertainties associated with installing and operating an offshore wind project, enabling our offshore wind resources, and the jobs associated with the offshore wind industry, to develop more quickly.

(a) Area Requested for Lease

The DMME is requesting a Section 238 research lease for six sub-blocks listed in Table 1. These six sub-blocks would be used for siting up to two six-megawatt (MW) turbines, as well as metocean monitoring equipment. As shown in Figure 1, this research lease falls within the geographic scope of the BOEM Mid-Atlantic Final Environmental Assessment Alternative A, for which BOEM had a Finding of No Significant Impact for lease issuance and site characterization activities.

Table 1. List of Sub-Blocks Constituting Virginia's Proposed Research Lease Number 2

Protraction Diagram Name	Protraction Diagram Number	Research Purpose	Block Number	Sub-Block Letter
Currituck Sound	NJ18-11	Turbine Testing	6061	H,L,P
Currituck Sound	NJ18-11	Turbine Testing	6111	D,H,L

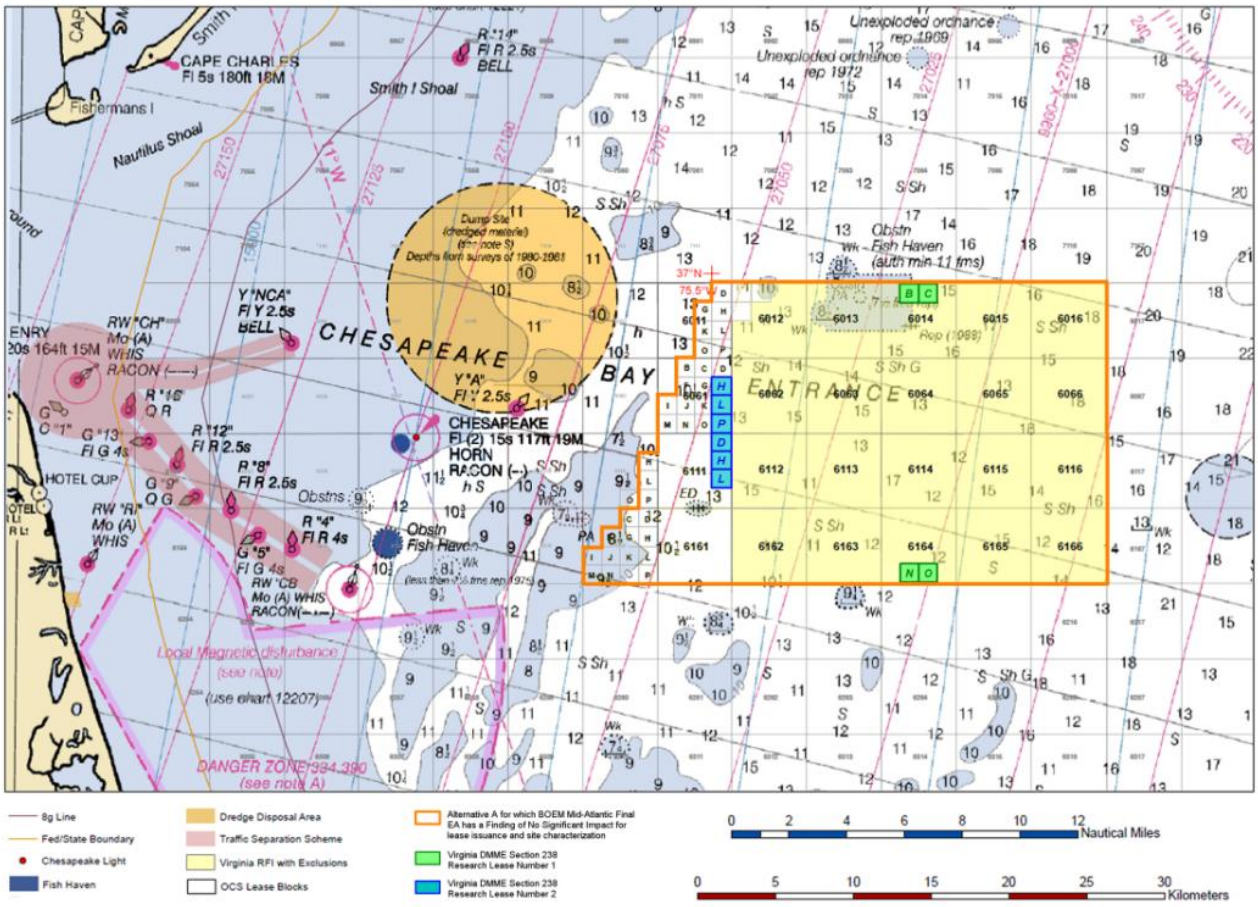

Figure 1: Research Lease #2 request (blue sub-blocks). Orange outline represents geographic scope of BOEM Environmental Assessment Alternative A. Green sub-blocks represent Research Lease #1.

The Research Lease Number 2 site was identified by consensus after a series of meetings and conference calls among members of the BOEM Virginia Intergovernmental Task Force and maritime industry stakeholders that took place between November 2010 and January 2013, concurrent with the leasing process for the commercial Virginia Wind Energy Area, for which BOEM issued a Call for Information and Nominations on 21 February 2012 and a Proposed Sale Notice on 3 December 2012. In January 2013, the Commonwealth arranged a series of meetings to reach consensus on the research lease site. Minutes from those meetings are included as Appendix C.

(b) General Description of Objectives and Facilities

In December 2012, the VOWTAP was among seven projects selected by the DOE for a $4 million award for initial engineering, design, and permitting under Budget Period I of the ATDP. Budget Period I is a one-year competitive effort that will start for all seven projects on February 15, 2013. At the end of that period, in mid-February 2014, the DOE will down-select up to three projects from the initial seven for follow-on phases that focus on detailed design, construction, installation, and data collection. The final three projects selected could receive up to $47 million in federal funding over four years, with a goal to have the projects in operation by the end of 2017.

This Section 238 research lease application proposes six sub-blocks to be leased for the siting of the two VOWTAP turbines, an artist rendering of which is shown in Figure 2. In order to be responsive to the ATDP Funding Opportunity Announcement (FOA), the VOWTAP turbines had to be multi-megawatt, grid connected, and incorporate advanced technologies that can achieve significant cost reduction in the commercial projects that will be developed in the first round of commercial leases in the Mid-Atlantic and other U.S. offshore wind development regions.

Additional requirements and schedule expectations of the ATDP FOA are included as Appendix D, which clearly shows that for the Topic Area 2 under which VOWTAP applied, DOE is focused on "bringing technological innovation to market" in order to achieve the cost reductions necessary to enable commercial development to be cost-competitive with the local hurdle price of electricity. Although involving commercial-scale turbines, Topic Area 2 projects are not and cannot be commercially viable themselves, but are necessary to demonstrate technology advancements that will enable such viability for commercial projects in the future.

Specific to Virginia's application, the National Renewable Energy Laboratory estimates the cost of the VOWTAP is nearly twice the cost on a kilowatt-hour basis of a commercial scale project built in Europe today. The budget for the two VOWTAP test turbines captures significant costs associated with one-time mobilization and project management, which a commercial project would amortize over a much larger number of turbines. Consistent with DOE's national ATDP goals, the purpose of Virginia's project is to identify ways that advanced technology can be implemented to lower the cost of offshore wind energy in future commercial development of the Virginia Wind Energy Area.

Figure 2: Artist's rendition of VOWTAP turbines. Relative location depicted is conceptual; actual distance between turbines is likely to be between 6 and 12 rotor diameters, with tower centers between 600 and 1,200 meters apart. By comparison, an OCS sub-block is 1,200 m on a side.

The Virginia DMME as the research lease applicant is a key part of the VOWTAP team, which is led by Virginia Electric and Power Company, a wholly-owned subsidiary of Dominion Resources, Inc. (dba Dominion). Several partners are collaborating on the project, including Alstom; the National Renewable Energy Laboratory; Virginia Tech, representing the Virginia Coastal Energy Research Consortium; KBR; and Newport News Shipbuilding.

The team selected exemplifies the essential roles necessary to deliver to DOE a world-class offshore wind demonstration facility. The team mimics successful offshore wind project consortia in Europe through the inclusion of a utility, a turbine original equipment manufacturer (OEM), and engineering, procurement, and construction (EPC) firm. Alstom, as the turbine OEM, brings unparalleled experience in advanced offshore wind turbine technology research, development, and deployment. KBR, an EPC company, will serve as the owner's engineer for VOWTAP. KBR will apply its considerable knowledge of offshore wind EPC services to ensure the 50% and 100% FEED studies are comprehensive. NREL brings world-class offshore wind research, testing, and economic analysis capabilities to the team. VCERC, through Virginia Tech as the lead university, will leverage its knowledge base to provide site characterization support and targeted research. As a major division of one of the largest global shipbuilding companies, NNS provides both a breadth of marine experience and specific local knowledge of local port facilities.

The objective of the VOWTAP is to design, develop, and demonstrate a grid-connected 12 megawatt (MW) offshore wind test facility off the coast of Virginia. The team proposed deploying two Alstom HALIADE™ 6MW turbines (Figure 3), combined with other significant innovations, such as integrated substructures, installation techniques, and advanced wind farm controls, to make this a world-class research and demonstration facility. Alstom's 6MW, direct-drive offshore wind turbine combines proven technology and innovation. The new LM 73.5-m GloBlade is one of the largest wind turbine blades in the world Net capacity factors at the VOWTAP project site are estimated to exceed 40%. The hub height of the Alstom turbine is expected to be approximately 100-m (site dependent), with a 150-m rotor diameter.

Figure 3. First HALIADE™ 150 Prototype Fully Assembled on 18 March 2012 – Le Carnet, France

The electricity will be brought to shore via a 34.5 kV or 69 kV subsea export cable that will be trenched under the seabed. No offshore substation is required. The project team is considering a number of onshore interconnection options, including several military installations. Subject to necessary approvals, the 34.5 kV or 69 kV underground cable would be directionally drilled from shore and tied into the existing circuit to minimize environmental impacts.

One of the research objectives that will be explored includes testing the wake effects from turbine-to-turbine interactions. In order to test wake effects, at least two turbines must be included in this project. While a pair of 6 MW turbines is comparatively large in scale and cost to activities typically associated with research, they are minuscule when compared to a commercial project. For the Virginia WEA, these two turbines would represent less than one percent of the commercial development in terms of total generation capacity. The distance between the turbines will be informed by the research objective to test wake effects and will likely be between 600-m to 1,200-m apart; the two turbines will be sited on no more than two BOEM aliquots. Detailed site surveys must be performed to determine the specific locations for

turbine placement. A floating remote sensing buoy or a bottom fixed meteorological platform will be deployed at the demonstration site to measure wind speed, along with a benthic node to measure waves and currents, and environmental monitoring instrumentation will be embarked on this platform as well.

VOWTAP's instrumentation and data collection plan will provide the necessary data—including metocean, turbine, structure and integrated wind plant system engineering, system performance, environmental monitoring, and operations and cost data—to validate design and operations in a field environment. The data obtained from the test will be directly applicable to commercial development, as the test project will utilize the next generation in turbine technology, will be grid connected, and will be sited in a similar depth and metocean environment as a large scale project in the commercial wind energy area. Testing the full-size 6 MW turbine in the Mid-Atlantic will also provide valuable data on installation, operations and maintenance, and hurricane survivability. The project team will disseminate data collected to DOE and BOEM for the public's benefit in order to inform and accelerate future commercial offshore wind efforts.

The project team performed an analysis to evaluate the potential impact of siting these two turbines on annual energy production (AEP) from a commercial project in the adjacent wind energy area. The analysis found that the demonstration project would decrease AEP by less than 0.1%.

(c) General Schedule of Proposed Activities

We anticipate that the schedule of activities to plan, design, construct, and operate test turbines on Research Lease Number 2 will be similar to the schedule of activities in the DOE Funding Opportunity Announcement (FOA) for ATDPs as outlined in detail below. The Commonwealth would like BOEM to move forward with the research lease process, specifically the Request for Competitive Interest, as expeditiously as possible to ensure the VOWTAP project can meet the DOE's timeline. During Phase I, the VOWTAP team is planning to begin site survey work, including geophysical surveys, and would like to have certainty regarding the lease prior to investing significant dollars in the site. By the end of Phase I, the project team will need to have selected a final site in order to be ready to begin detailed micro-siting and final design work if it is selected by DOE to move into Phase II.

Phase I (est. February 2013 – May 2014): Phase I activities will be directed towards the following outcomes:

- A 50% front-end engineering design (FEED) up to and including preliminary vendor quotes
- Identification of preliminary installation methods and identification of operating and maintenance systems suited to the site
- Initiation of all permitting or approval studies and illustration of a clear and realistic path to regulatory compliance and project completion including support for NEPA review
- Initiation of all necessary grid interconnection requirements, as well as any needed power off-take agreements. These include any applicable FERC interconnection requirements as well as any utility-specific requirements
- Succeeding in the DOE down-select at the end of Phase I

Phase II (est. June 2014 – June 2015): Up to three projects will be selected for Phase II, which also has a performance period of approximately one year. Phase II activities will be directed towards the following outcomes:

- A 100% front-end engineering design (FEED) up to and including full vendor quotes from all suppliers and independent verification of all capital, O&M and regulatory costs and proposed schedule from a DOE-approved and applicant-financed third party
- Selection of detailed installation methods and selection of operating and maintenance systems suited to the site

- Completion of Federal agency NEPA process(es) and approval of a Construction and Operations Plan (COP) or equivalent in State Waters
- Completion of all necessary grid interconnection requirements, as well as any needed power off-take agreements. These include any applicable FERC interconnection requirements as well as any utility-specific requirements
- A successful project review at the end of Phase II

Phases III through V (est. July 2015 – December 2017): Includes fabrication, installation and commissioning stages of the project and validation of operating performance, reliability and O&M costs. At the end of Phase V, the project will be generating power and delivering it to an electric power grid, the operational life of the facility is 25 years The Phase III – V performance period will not exceed three years, and the project will be fully operational by year-end 2017.

(e) Renewable Energy Resource and Environmental Conditions in Area of Interest

As mapped by the most recent numerical modeling of this area by the National Renewable Energy Laboratory, the mean wind speed in the six sub-blocks of this proposed Research Lease Number 2 ranges from 8.0 to 8.5 m/s at an elevation of 90 m. A metocean extreme event analysis is now underway, but pending those results, the event that has produced the highest measured wind speed at the Chesapeake Light Tower during the 28-year period since measurements began there in 1984 is Hurricane Gloria, which passed offshore Virginia Beach on 26 September 1985, having a peak 10-minute average wind speed of 37.1 m/s (83 mph or 72 knots) at an elevation of 43.3 m (142 ft) above sea level, and a peak significant wave height of 6.2 m (20 ft). In 2003, Hurricane Isabel had a slightly lesser peak wind speed of 33.0 m/s (74 mph or 64 knots), but a slightly higher significant wave height of 6.34 m (21 ft).

Benthic habitat types, fish communities and other marine living resources have been mapped by the Nature Conservancy (TNC), as has commercial fishing effort based National Marine Fisheries Service (NMFS) vessel trip report data. Our proposed Section 238 lease does not coincide with any priority benthic habitat areas identified by TNC. Further, the NMFS data do not indicate that there would be major fisheries conflicts in this area. More study and stakeholder engagement, which are additional site characterization activities envisioned under this lease application, are needed to characterize the ecological resources in the local area encompassed within the proposed research lease.

(f) Conformance with State and Local Energy Planning Initiatives

A letter from the Governor of the Commonwealth of Virginia, Robert F. McDonnell, supporting the original 06 September 2011 unsolicited application for a DMME Research Lease is resubmitted with this application as Appendix A. The second paragraph of this letter is printed below, with italicized, bracketed comments indicating references to activities now delineated in separate revised DMME research lease applications:

> Activities to take place in the research lease areas, such as installation of data towers, along the edges of Virginia's commercial lease area [*referring to Lease Number 1*], could substantially reduce uncertainties in energy production estimates through earlier and more accurate wind measurements, and environmental data gathering, enabling our offshore wind resources, and the jobs associated with the offshore wind industry, to develop more quickly. Wind turbine test pads exposed to oceanic winds and waves installed (*sic*) would be used to demonstrate advanced offshore wind technologies [*referring to Lease Number 2*] that can lower the costs and reduce the risks associated with wind generation development.

This application also conforms to local energy assurance initiatives by the City of Virginia Beach, where having a source of power to the east, unconstrained by west-to-east bottlenecks in the transmission grid provides a more secure energy supply. This same energy reliability benefit also applies to regional Navy facilities, including four within the City limits of Virginia Beach. Moreover, Navy shore installations have been charged with an order from the Secretary of the Navy to obtain 50% of their electric power from new renewable energy sources by 2020.

Finally, the 2010 legislative session of the Virginia General Assembly passed a joint resolution that supports a goal of the development of 3,000 megawatts of offshore wind power by 2025.[1]

(g) Documentation of Lessee Qualifications

In response to states' comments on the draft rule, which qualified only the U.S. Department of Energy (DOE) to establish and manage renewable energy research areas on the Outer Continental Shelf, the then-named Minerals Management Service broadened this provision to apply to States and other Federal agencies in addition to DOE. Therefore, this application is being submitted by the Virginia Department of Mines, Minerals and Energy, as a state government agency of the Commonwealth of Virginia.

This section demonstrates that the Virginia DMME is legally eligible, and has the technical and financial capabilities to conduct the activities to be authorized by a Section 238 renewable energy research lease on the Outer Continental Shelf (OCS) according to the provisions of 30 CFR 285.106 and 285.107.

Legal Eligibility

The DMME is one of 13 executive agencies under the Office of the Virginia Secretary of Commerce and Trade, a Cabinet-level office that oversees the economic, community and workforce development of the Commonwealth. The DMME serves a large and varied group of people, organizations and agencies throughout the Commonwealth. Through its six divisions, the agency regulates the mineral industry, provides mineral research and offers advice on wise use of energy and mineral resources. Its programs directly serve the citizens who live near mining operations, mining labor groups, other regulatory agencies, the educational community, the energy and mineral industries, and environmental, consumer and industry special-interest groups. The Department's mission is to enhance the development and conservation of energy and mineral resources in a safe and environmentally sound manner in order to support a more productive economy in Virginia.

The Commonwealth already has successfully demonstrated its legal eligibility to hold a lease as defined in 30 CFR 285.112 and further explained in 30 CFR 285.106 and 107. Submitted as Appendix B of this application is a letter dated 14 Feb 2011, which states that BOEM recognizes DMME as legally qualified to acquire and hold a renewable energy lease or grant on the OCS, and indicates that the DMME legal qualification documents are contained in a file identified as AEAU Company Number 15014.

Technical Capability

The DMME will be directly involved in management of activities to be undertaken on the proposed research lease. Cathie France, the DMME Deputy Director for Energy Policy will be the lead person responsible for managing VOWTAP activities on the research lease site. In addition, as the Designated Operator of the VOWTAP, Dominion will bring its technical expertise in developing, owning, and operating large electric generation projects to ensure the project's success.

[1] http://lis.virginia.gov/cgi-bin/legp604.exe?111+ful+HJ605ER

Cathie France
DMME Deputy Director for Energy Policy

Ms. France managed the permitting process for the construction of a 24-inch steel natural gas pipeline that was built underneath the Hampton Roads Harbor. The project required permits from the Army Corps of Engineers, the Virginia Marine Resources Commission, easements through Baylor Grounds controlled by the Virginia General Assembly, and local land use permits from the onshore localities on either side of the waterways. As part of the permitting process, Ms. France managed stakeholder outreach and the accommodation of many of other interests in the harbor, including discussions with the Virginia Maritime Association, the Virginia Port Authority and the Virginia Pilots' Association.

Ms. France also was DMME's technical manager of two DMME-funded contracts for test planning and site pre-development activities on Virginia's advanced technology demonstration project sites in state waters. This experience well qualifies DMME for managing similar activities on our proposed research lease in Federal waters.

The first DMME-funded project, led by the Virginia Tech Advanced Research Institute (VT-ARI) included two tasks directly relevant to the design and installation of metocean measurement and environmental monitoring platforms. The first of these has identified three new designs for rapidly relocatable meteorological mast substructures and foundations. The second relevant task has produced a series of Meteorological Tower Placement Reports for VOWDA, the first in December 2010 [2] and an update in October 2011.[3] These reports describe the types of metocean data needed to inform and accelerate commercial offshore wind project development in the Virginia Wind Energy Area, catalogue the various metocean data sources that are now available on Virginia's outer continental shelf, and provide an overview of the state-of-the-art in offshore wind resource assessment, including LIDAR measurement systems.

The second DMME-funded project, led by James Madison University (JMU), was scoped to characterize foundation conditions at the wind turbine test pad sites; to characterize the wind resource and metocean design environment at these sites, to engage regulatory stakeholders and perform due diligence on environmental and community acceptability, and to prepare the documentation that would be needed to proceed with permitting of the proposed test pad sites. The JMU project included three Virginia-based companies as subcontractors, all with considerable marine project experience: Fugro Atlantic, WeatherFlow, and Timmons Group.

George Hagerman
Senior Research Associate, Virginia Tech Advanced Research Institute
Director of Research, Virginia Coastal Energy Research Consortium (VCERC)
BOEM Virginia Task Force member

George Hagerman has over 30 years experience researching renewable ocean energy systems, including offshore wind power, wave power, tidal current energy, and ocean thermal energy conversion. Hagerman currently is principal investigator for the DMME contract with the Virginia Tech Advanced Research Institute, described above. The DMME has a long history of collaborating and financially supporting wind energy research by Mr. Hagerman and others at Virginia universities. As VCERC Director of Research, he coordinated the work at five universities to support a feasibility-level reference baseline design and cost estimate for a hypothetical offshore wind project off Virginia. He also was principal author of *Virginia Offshore Wind Studies, July 2007 to March 2010, Final Report*.

[2] ww.dmme.virginia.gov/DE/VOWDA/MeteorologicalTowerPlacementReport.pdf

[3] www.dmme.virginia.gov/DE/VOWDA/MetTowerUpdateReport.pdf

Mr. Hagerman has been invited to brief Federal and state regulatory agencies, and to testify before legislative committees of the U.S. Congress and the Virginia General Assembly. In 2009, the Minerals Management Service recognized his service with an Offshore Leadership Award.

Guy Chapman
Director – Alternative Energy Generation Technologies
Dominion Virginia Power

Mr. Chapman has 14 years of experience in the electric utility industry. Mr. Chapman is currently responsible for leading Dominion's renewable energy generation technology research and development activities, including developing the company's offshore wind development strategy. As part of this strategy, he is involved in all aspects of offshore wind technology evaluation, analysis, and due diligence. Mr. Chapman is principal investigator on two Department of Energy awards focused on offshore wind development, including the VOWTAP. Prior to joining the Alternative Energy Solutions group at Dominion, Mr. Chapman dispatched, optimized and maximized the economics of power generation facilities. He has designed and programmed comprehensive cost and revenue models using real option valuations techniques for power generation technologies.

As the designated operator of the project, Dominion has a proven successful track record in (1) operating major electric generation and transmission facilities, (2) developing, permitting and constructing large scale generation projects on time and on budget, and (3) expanding its renewable generation portfolio. Virginia Electric and Power Company includes approximately 19,500 MW of electric generation, 6,300 miles of electric transmission lines and 56,900 miles of electric distribution lines and serves 2.4 million customer accounts, while also selling wholesale power to municipal utilities and electric cooperatives.

Renewable energy is an important part of Dominion's overall electricity portfolio that includes over 1,600 MW under development, in construction or in operation. Of this total, over 800 MW are wind energy facilities. Dominion's operating wind facilities include the Mount Storm Wind Farm and the Fowler Ridge Wind Farm. Dominion is a 50% partner with Shell WindEnergy in the 264 MW Mount Storm Wind Farm located in Grant County, West Virginia. This wind farm is operational and is connected to the PJM grid. Dominion is also a 50 percent partner with BP Alternative Energy North America Inc. in the 300 MW Phase I Fowler Ridge Wind Farm in operation in Benton County, Indiana. This wind farm is operational and connected to the PJM grid. On both of these completed projects, Dominion was a major contributor to the management of the construction of the facilities, and remains heavily involved in the day-to-day operations of the facilities. Virginia Electric and Power Company will leverage Dominion's experience in the construction and operations of the two wind farms as the Company moves into wind energy offshore. In addition to the operating projects, the 300 MW Prairie Fork Wind Farm in Central Illinois is in early stages of development and is expected to be connected to the PJM grid. Dominion is also developing three wind projects in the mountains of Virginia that could total up to 248 MW. Other renewable energy projects in the Company's portfolio are as follows:

- Pittsylvania Power Station, Hurt, Virginia: This 83 MW facility is one of the largest biomass-fueled generators on the East Coast.
- Virginia City Hybrid Energy Center (VCHEC), Wise, Virginia: This 585 MW hybrid facility in southwest Virginia has the potential to burn 117 MW of biomass energy. The facility burns coal, waste coal, and biomass, utilizing the most advanced environmental controls to limit mercury, sulfur dioxide and nitrogen oxides. The $1.8 billion project began operations in summer 2012 – on time and on budget.
- Altavista, Hopewell, and Southampton County Biomass Conversions: In March 2012, the Virginia State Corporation Commission (SCC) approved plans to convert three Virginia power stations from coal to biomass. The three power stations are nearly identical and

originally came on-line in 1992. Once converted, each facility will have a capacity of 51 MW. The power stations could begin burning biomass by the end of 2013.

- Community Solar Program: In November 2012, the Company received approval from the Virginia SCC to construct and operate Company-owned solar generation facilities at various commercial, industrial, and public government locations. The Company will seek volunteers throughout its service area willing to lease suitable rooftop sites for installation of solar panels in order to assess the benefits solar-distributed generation may have on the electric distribution system. The capacity of each such installation will range from 500 kilowatts to 2 megawatts, and each site typically requires roof areas of 75,000 square feet or more.

In February 2012, the Company received approval from the SCC to build the Warren County Power Station, a natural gas-fired plant. This $1.1 billion facility will have an installed capacity of 1,329 MW. The Company anticipates commencing operation in late 2014 or early 2015. In May 2011, the Company completed construction and commenced commercial operations of the Bear Garden Power Station, a 590 MW combined cycle, natural gas-fired facility, at a total cost of approximately $620 million.

Finally, further demonstrating its technical ability to construct, operate and own highly environmentally sensitive and capital-intensive generation, the Company has four licensed, operating nuclear reactors at Surry and North Anna in Virginia and is considering an additional nuclear unit.

Virginia Electric and Power Company's technical qualifications also include its responsibility to maintain the reliability of its 6,300 mile transmission grid, including transmission construction, such as the 500-kilovolt Meadow Brook to Loudoun transmission line in Northern Virginia in April 2011 and another 500-kilovolt line, Carson to Suffolk, in Southeastern Virginia in May 2011. These recently completed transmission lines will ease congestion on the electric grid and help supply power to several state and federal government facilities and energy-intensive data centers. In addition, the Company completed a 230 kV transmission line in 2012 that extends from Dominion's Yorktown Power Station under the York River for approximately 3.5 miles to Gaines Point, where the Company has constructed an underground-to-overhead transition station.

Financial Capability

Financing plan for lease acquisition and initial site characterization activities: As stated in 30 CFR, Part 285, Section 238, paragraph (g), there is no acquisition cost for a research lease, but the lease holder does need to finance the cost of obtaining all required Federal authorizations, including BOEM approval of a General Activities Plan (GAP) and the cost of performing site characterization activities.

BOEM will require that the lease holder provide the results of a number of surveys with its GAP, including a shallow hazards survey (30 CFR 285.626 (a) (1)), a geological survey (30 CFR 285.616(a)(2)), a geotechnical survey (30 CFR 285.626(a)(4)), an archaeological resource survey (30 CFR 285.626(a)(5)), and biological surveys (30 CFR 285.626(a)(3)). The project will also require additional federal approvals or permits from a number of federal agencies, including the National Oceanic and Atmospheric Administration, the United States Coast Guard, the United States Army Corps of Engineers, the United States Fish and Wildlife Service, and relevant state agencies. Acoustic emissions during geophysical surveys and any pile driving activities for the metocean data platforms will require Incidental Harassment Authorization (IHA) from the National Marine Fisheries Service under the Marine Mammals Protection Act as amended in 1994. Since that time, the IHA program has been increasingly used for short-term activities that might inadvertently harass marine mammals. This program allows authorizations to be issued in 120 days.

The total cost for the above-described surveys and authorizations is estimated by industry sources familiar with BOEM's geological, geophysical, and archeological survey guidance to be $5 million. As previously stated, the VOWTAP project received a $4 million award for initial site assessment and engineering design work under a DOE cooperative agreement. Alstom and the Virginia DMME have also committed to provide cost share to the project. Dominion is committed to cover any of the remaining costs associated with site characterization that will take place in the first phase of the project. Should VOWTAP be selected by DOE to continue into the next phase of the ATDP, Dominion would then commit to completing site-related survey and permitting work during the 100% FEED study. Virginia Electric and Power Company and its Dominion affiliates have a long history of undertaking, and obtaining, the necessary financing for large, innovative projects in a responsible manner, balancing the interests of shareholders, customers and the environment; offshore wind follows that tradition. Revenue provided by electric generation and distribution operations is based primarily on rates established by state regulatory authorities. Revenue provided by electric transmission operations is based primarily on rates approved by the FERC. A full listing of current generation projects and detailed financial statements can be found in the Annual Report on Form 10-K included as Appendix E.

DMME and VOWDA have access to several mechanisms for financing the cost of these initial activities and subsequent phases of research lease development.

Financing mechanisms for initial site characterization and subsequent phases: DMME has the authority to make and enter into all contracts and agreements necessary or incidental to the performance of its duties and the execution of its powers, including, but not limited to, contracts with the private sector, the United States, other state agencies and governmental subdivisions of the Commonwealth. The department also is authorized, consistent with Federal funding rules, to distribute energy-related Federal funds as grants or as loans to other state or non-state agencies for use in financing energy-related projects.

To support late-phase development and wind energy supply chain growth, the Commonwealth of Virginia has created financial incentives for manufacturing companies that create new jobs and renewable sources of energy generation. The Clean Energy Manufacturers Incentive Grant, for instance, can provide grants up to $36 million to manufacturers that invest at least $50 million and create 200 jobs. Wind energy suppliers can qualify if they invest $10 million and create 30 jobs.

VOWDA was created specifically to accelerate offshore wind development off of Virginia's coast and granted powers to provide and facilitate financing to support that mission. The Authority may establish public-private partnerships and share costs with developers for the following activities: the installation and operation of wind resource and other metocean equipment, including light detection and ranging equipment, meteorological measurement towers, data collection platforms, the collection of avian and marine environmental data, the upgrade of port facilities and other logistical equipment sites to accommodate the manufacturing and assembly of offshore wind energy project components and vessels that will support the construction and operations of offshore wind energy projects.

The Virginia Resources Authority (VRA) has the authority to lend to local governments and to state-created authorities, such as VOWDA. Since its inception, VRA has funded more than 875 projects across the Commonwealth exceeding $4.2 billion of investment, an average of $4.8 million per project. Financing solutions include revolving fund loans at below-market interest rates and bonds backed by the moral obligation of the Commonwealth.

The Virginia Public Building Authority (VPBA) also provides financing for State projects, facilities and obligations that have been approved by the Governor and General Assembly. The VPBA is a political subdivision of the Commonwealth, authorized to issue bonds under the Virginia Public Building Authority Act of 1981 (the "Act"). The Authority was created by the Act for the purpose of financing, refinancing, constructing, improving, furnishing, maintaining, acquiring and operating public buildings for the use of the Commonwealth; and financing or refinancing capital projects that benefit the Commonwealth and any of its agencies, instrumentalities and political subdivisions. VPBA financed about $16 million in infrastructure improvements to the Virginia Commercial Space Flight Authority and Mid-Atlantic Regional Spaceport at Wallops Island.

Impeccable credit: Virginia has held its AAA bond rating for 70 years, longer than any other state. A state's bond rating serves as a measure of a state's financial and administrative status. Virginia's AAA bond rating, the best rating possible, is a reflection of the confidence placed in the Commonwealth's fiscal health. Virginia has earned the highest possible rating with three organizations. The Commonwealth's credit worthiness is rated as AAA by Standard and Poor's, Aaa by Moody's Investors Service, and AAA by Fitch Ratings.

The Pew Center on the States awarded Virginia the top overall grade for government performance in 2005 (along with Utah) and again in 2008 (along with Utah and Washington) based on their assessment of how well the state managed its people, money, infrastructure, and information. Virginia has long been recognized as one of the best-managed states in the nation according to these and similar criteria.

There have been no significant, relevant and adverse legal or regulatory actions taken against DMME in the last five years.

DMME has not filed for bankruptcy or been a target in other adverse financial proceedings with the last five years.

(h) Regulation and Oversight of Activities

As required by CFR 30, Part 285, Section 238, Paragraph (d), the BOEM Director and the Governor of Virginia, or their authorized representatives, will negotiate the terms and conditions of any renewable energy lease, right-of-use (RUE), or right-of-way (ROW) grant that may be issued in response to this unsolicited application.

The framework for such negotiations, and standard terms and conditions of such leases, RUEs, or ROW grants may be set forth in a memorandum of agreement (MOA) or other agreement between BOEM and the Commonwealth of Virginia. The MOA will include the agreement of Virginia to assure that all of the Commonwealth's contractors and subcontractors will comply with these regulations, other applicable Federal laws, and all terms and conditions of such leases or grants.

CERTIFICATION

THAT I, Conrad T. Spangler, III, am authorized to bind the Commonwealth of Virginia Department of Mines, Minerals and Energy (DMME) in any matter related to the acquisition and operation of leases, right-of-way grants, or right-of-use and easement grants for activities that produce or support production, transportation, or transmission of energy from sources other than oil and gas on the OCS, to agree upon the terms of and to execute and deliver any instrument or agreement, including any application, bid, lease, plan, rights-of-way grant, rights-of-use and easement grant, bond or other financial assurance instrument, assignment, designation of operator, relinquishment, amendment, abandonment, power of attorney (including the revocation thereof), and any other paper related to such a lease, right-of- way, right-of-use, and easement.

[signature] Conrad T. Spangler, III, Director
Commonwealth of Virginia Department of Mines, Minerals and Energy

February 8, 2013

[date]

List of Appendices:

Appendix A – Governor McDonnell Sec238 lease support letter 20-Jan-2011

Appendix B – BOEMRE letter Virginia legal qualification 14-Feb-2011

Appendix C – Maritime stakeholder and federal agency meeting notes Jan-2013

C1 – Maritime Stakeholder Meeting Notes 11-Jan-2013

C2 – BOEM Research Lease Meeting Notes 16-Jan-201

C3 – Slides for meetings of 11-Jan-2013 and 16-Jan-2013

Appendix D – DOE-FOA-410 excerpts include budget & schedule 12-Mar-2012

Appendix E – Dominion Virginia Power Form 10-K report to SEC 28-Feb-2012