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July 17, 2013

VIA ELECTRONIC FILING AND OVERNIGHT DELIVERY

Maryland Public Service Commission
David J. Collins
Executive Secretary
6 St. Paul Street, 16th Floor
Baltimore, MD 21202

Re: Case No. 9318 – Direct Testimony – Application of Dominion Cove Point LNG, LP for a Certificate of Public Convenience and Necessity

Dear Executive Secretary Collins,

Enclosed for filing, please find an original and seventeen (17) copies of the pre-filed Direct Testimony of Robert B. McKinley, Robert M. Bisha, and Richard B. Gangle on behalf of Dominion Cove Point LNG, LP in the above-captioned proceeding.

I have enclosed an extra copy of the filing, and request that it be date-stamped and returned in the enclosed self-addressed envelope. If you have any questions, please contact me at (202) 298-1874.

Respectfully submitted,

Janna R. Chesno

Enclosures

cc: Service List
Susan T. Gray, MDNR
William Paul, MDE
Lisa S. Booth
William H. Baxter II
Amanda B. Tornabene
Rick R. Linker
Amanda K. Prestage

DCP Exhibit No _____ ( )

BEFORE THE
PUBLIC SERVICE COMMISSION OF MARYLAND

IN THE MATTER OF:	)	
	)	
THE APPLICATION OF DOMINION COVE POINT LNG, LP FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A GENERATING STATION WITH A NAME-PLATE CAPACITY OF 130 MW AT THE DOMINION COVE POINT LIQUEFIED NATURAL GAS TERMINAL IN CALVERT COUNTY, MARYLAND	)	**Case No. 9318**

DIRECT TESTIMONY OF
ROBERT B. MCKINLEY ON BEHALF OF
DOMINION COVE POINT LNG, LP

Q. Please state your name, occupation, and current position.

A. My name is Robert B. McKinley, and I am Vice President, Generation Construction for Dominion Resources Services, Inc. In that capacity, I am responsible for engineering, procurement and construction on behalf of Dominion Cove Point LNG, LP ("Dominion Cove Point") for the Maryland segment of the proposed Dominion Cove Point Liquefaction Project ("Liquefaction Project") currently under review by the Federal Energy Regulatory Commission ("FERC") in Docket No. CP13-113, including the proposed on-site generating facilities that are the subject of Dominion Cove Point's April 1, 2013 application and subsequent supplements (collectively, "Application") submitted in this proceeding. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia, 23060. A statement of my background and qualifications is attached as Appendix A.

Q. What is the purpose of your testimony in this case?

A. I will describe the proposed on-site electric generating station with a name-plate capacity of 130 megawatts ("MW") to be located at Dominion Cove Point's existing liquefied natural gas ("LNG") terminal in Lusby (Calvert County), Maryland as part of the Liquefaction Project.

My testimony also will address several of the factors required by Sections 7-207 and 7-208 of the Public Utility Companies Article ("PUC Article") and Title 20, Subtitle 79 of the Code of Maryland Regulations ("COMAR") for the Maryland Public Service Commission ("Commission") to issue a Certificate of Public Convenience and Necessity ("CPCN") to authorize the construction of the electric generating station proposed by Dominion Cove Point in this proceeding. Specifically, I will address the effect of the proposed generating station on the stability and reliability of the electric system and on the economy of the state. Dominion Cove Point Witness Robert M. Bisha will give an overview of the environmental impacts, including air quality and water resources, and other factors bearing on the public convenience and necessity, and will specifically discuss water quality impacts, including Dominion Cove Point's applications to appropriate and use waters of the State of Maryland ("Water Appropriation Permit Application") attached as Appendix A-4 to the Application in this proceeding. Dominion Cove Point Witness Richard B. Gangle will specifically discuss air quality impacts, including the emissions modeling and impact analysis in the *PSD/NA NSR Air Permit Application Report* ("Air Report") attached as Appendix A-2 to the Dominion Cove Point Application in this proceeding.

In addition, I will discuss Dominion Cove Point's request to the Commission to expeditiously process this Application and to grant a waiver of Section 7-208(b)(1) of the

PUC Article. As I discuss later in my testimony, this will enable Dominion Cove Point to start construction of the generation facilities contemporaneously with other components of the proposed Liquefaction Project currently under review by the FERC. The timely commencement of construction is essential in order to meet the projected in-service date of June 2017 for the Liquefaction Project.

Project Description

Q. Please describe the proposed electric generating facilities in this proceeding.

A. Dominion Cove Point is requesting authorization to construct and install two steam turbine generators with a name plate capacity of 65 MW each, for a combined total of 130 MW, on the existing LNG terminal (Application at pp. 7-8). The generating station is comprised of two heat recovery steam generators ("HRSGs") and two auxiliary boilers that will supply steam to the two steam turbines (Application at pp. 8-9). The HRSGs will recover heat from the exhaust of two GE Frame 7 natural gas-fired turbines, which drive the two refrigeration compressor strings along with helper motors (Application at pp. 6-7). Both the auxiliary boilers and the HRSGs will have Selective Catalytic Reduction ("SCR") systems and carbon monoxide ("CO") catalyst with Continuous Emissions Monitoring ("CEM") (Application at p. 9). A more detailed description of the proposed electric generating station, its design, and operating features are provided in the Application (pp. 6-11 and Appendices). The proposed generating station will exclusively support the LNG terminal's electric load consistent with the proposed Dominion Cove Point Liquefaction Project filed with the FERC, which I will discuss below. All of the power produced will be consumed at the LNG terminal; no

power will be exported (Application at p. 12), and so approval of the generating station will not impact the stability and reliability of the electric system in Maryland.

Q. Please briefly describe the Dominion Cove Point Liquefaction Project currently before the FERC.

A. Dominion Cove Point is seeking authorization from FERC to construct, modify, install, own, operate, and maintain the Liquefaction Project. The FERC proceeding will involve construction of new facilities in Maryland and Virginia, and expansion of existing Dominion Cove Point LNG terminal facilities to provide gas liquefaction services for the export of LNG to customers that will provide their own gas supply (Application at p. 2). The FERC application was filed on April 1, 2013 in Docket No. CP-13-113 contemporaneously with this Application. The liquefaction facilities proposed in the FERC application, combined with existing facilities, will allow for the bi-directional service of receiving and gasifying imported LNG from LNG vessels, and liquefaction of natural gas for loading onto LNG vessels for export from the Dominion Cove Point LNG terminal. The permanent facilities that comprise the Liquefaction Project, including the generating station that is the subject of this Application, will be constructed within the fenced area of the 131-acre operating industrial area at the existing LNG terminal in Calvert County, Maryland (Application at p. 6). The liquefaction facilities will consist of one LNG train expected to have a nameplate capacity (based on 100 percent run-time) of up to 5.75 million metric tons per annum ("mtpa") of LNG; new natural gas-fired turbines to mechanically drive the main refrigerant compressors; the generation of additional power on-site to meet the power demands of the Liquefaction Project; and equipment to process the gas stream to remove any impurities that would damage the liquefaction equipment (Application at pp. 6-7). The Liquefaction Project

utilizes state-of-the-art waste heat recovery technology to generate electricity, reflects efficient land use practices, limits its permanent footprint to the existing site, and institutes a zero-discharge system for all process water use (Application at pp. 11, 13; Appendix A-3 at Sections 1, 2.1.1, 8.1.1). It also employs sophisticated pollution control technology and will minimize environmental impacts of the proposed facilities on the surrounding area (Appendix A-3 at Section 9.1).

Q. Please describe the existing electrical system at the LNG terminal.

A. Dominion Cove Point owns and operates the existing LNG import terminal in Lusby, Maryland (Application at p. 2). The construction and operation of these facilities have been authorized by FERC under the Natural Gas Act, including the existing electric generating capacity at the LNG terminal, and the Commission has either previously approved and/or exempted the construction of generating stations at the LNG terminal (Application at pp. 2 and 5-6). All of the power produced at the LNG terminal is used to meet the needs of the terminal (Application at p. 15). Dominion Cove Point maintains protection equipment on the LNG terminal's service connection with the local electric company, Southern Maryland Electric Cooperative ("SMECO"), which prevents electricity from the terminal to flow to SMECO (Application at pp. 8-12).

Q. How is the existing SMECO service connection utilized?

A. As described above, the existing SMECO service connection is not utilized for normal operation. In the unlikely circumstance that all on-site generation is non-operational or scheduled maintenance requires use of the connection, then protective circuit breakers could be manually switched to allow power to flow from SMECO. Any such emergency or maintenance service provides only enough power to operate the Administration and Main Control Building loads at the LNG terminal.

Q. How will the existing SMECO service connection be utilized during construction of the Liquefaction Project?

A. During construction of the Liquefaction Project, this electric distribution connection will be used to provide limited service to the construction contractor. The LNG Terminal's contract with SMECO for this connection is for 2 MVA at 13.8 kV. The construction contractor may contract with SMECO for temporary increased capacity (approximately 5 MVA) at the same voltage, depending on their final electric requirements. After construction, the SMECO service connection will be restored to its current status (Application at pp. 8-9 and 12).

Q. How will the proposed electric generating facilities be used at the LNG terminal?

A. As more fully described in the Application (pp. 7-12), in order to provide additional power needed for the Liquefaction Project, Dominion Cove Point is requesting authorization to construct and operate a highly efficient generating station with a 130 MW name-plate capacity comprised of two 65 MW steam turbine generating units and two auxiliary boilers that will supply steam to the two steam turbines. These generating units will operate in combined cycle mode with steam generated from the waste heat from gas turbines used to mechanically drive the compressors used for the liquefaction process, and represent a proven and efficient technology. These steam turbines will be located at the LNG terminal and used to provide the additional power needed for the Liquefaction Project. All of the power from these units will be consumed on-site. The selected manner of power production is designed to be very efficient, with waste heat recovery, as noted, and state-of-the-art pollution control systems. The addition of these facilities at the LNG terminal will bring the total on-site name-plate generating capacity

to 210.9 MW, which will allow the facility to serve existing and new LNG customers, and will allow for sufficient backup to provide for the facility's necessary reliability. Only those generating units needed to meet the LNG terminal's electric requirements would be operated at any one time. The additional generation proposed here will be used exclusively to produce on-site generated electricity.

Q. Has Dominion Cove Point also requested FERC authority to construct and operate the proposed 130 MW electric generating station?

A. Yes. As described above, Dominion Cove Point requested FERC authorization to construct and operate the Liquefaction Project, including the proposed electric generating station which is the subject of this proceeding.

CPCN Factors

Q. Will the proposed generating station have an impact on the stability and reliability of the state electric system?

A. No. The proposed generating station will be used exclusively to provide additional on-site generated electricity for the LNG terminal and all of the power produced will be consumed at the LNG terminal (Application at p. 7). No power will be exported and no new transmission lines will be required (Application at p. 12). Under these circumstances, the construction of the proposed generating system will have no adverse impact on the stability and reliability of the utility electric system in Maryland.

Q. What impact will the proposed generating station have on the economics of the state?

A. Since the electricity produced by the proposed additional generation will be used exclusively to meet the power requirements of the LNG terminal, the proposed generating station will have no direct impact on the economics of the State because the

electricity will not be exported onto the grid, and Maryland residents will not pay for the electricity through rates (Application at p. 11). However, as discussed in the Application and Appendices, construction and operation of the increased generation, which is necessary to power the Liquefaction Project, will provide substantial economic development benefits in the form of increased jobs, property tax collections, and additional business sales in Calvert County and throughout the State of Maryland (see Application at pp. 11-12; Appendix A-3 at Sections 5.2.1.1, 5.2.4.1, and 5.2.2.1).

Q. What CPCN conclusions can be drawn from your testimony?

A. The construction of the proposed generating station is required by the public convenience and necessity because:

(1) the generating station will be used exclusively to provide on-site generated electricity to meet the LNG terminal's electric load, and will have no adverse impact upon the stability and reliability of the state electric system;

(2) all of the power produced will be consumed at the LNG terminal and no new transmission lines will be required; and

(3) construction and operation of the proposed generating station will provide positive cumulative economic benefits to the State of Maryland.

Request for Waiver and Expedited Review

Q. Has Dominion Cove Point requested FERC and the Commission to expeditiously process the applications for the Liquefaction Project?

A. Yes. Dominion Cove Point has requested federal approval from FERC by February 1, 2014, so that construction of the liquefaction facilities can begin in the first quarter of 2014 (Application at p. 10). This approval date is critical to ensure that commercial operations will meet the targeted in-service date of June 2017 (Application at

p. 11). In anticipation of that date, and to coordinate the timely completion of the permitting process, Dominion Cove Point has also requested this Commission to process this Application as expeditiously as possible.

Q. Has Dominion Cove Point requested the Commission to grant waivers necessary to expeditiously process this Application?

A. Yes. Dominion Cove Point is requesting a waiver of Section 7-208(b)(1) of the PUC Article, which requires an application to construct an electric generating station to be filed at least two years prior to the time that construction is to commence (Application at pp. 3, 16-18). The electric generating station proposed in this proceeding is an integral component of the Liquefaction Project, which is pending approval at FERC (Application at p. 14). As noted, Dominion Cove Point has requested FERC authorization by February 1, 2014, so that construction can commence by the first quarter of 2014. Without a waiver of the two-year notice period, Dominion Cove Point will not be able to start construction of the electric generating facilities contemporaneously with other components of the Liquefaction Project.

Q. Does this conclude your direct testimony?

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS OF ROBERT B. MCKINLEY

As Vice President – Generation Construction for Dominion Resources Services, Inc., Robert B. McKinley is responsible for the engineering and construction of existing and planned power station capital projects for Virginia Electric and Power Company (the "Company") and its affiliates. A native of Holmes, Pennsylvania, Mr. McKinley is a 1981 graduate of Drexel University with a B.S. degree in electrical engineering. He is a member of the Institute of Electrical and Electronics Engineers.

Mr. McKinley joined the Company in 1981 as an assistant cost engineer in Power Station Engineering & Construction. Over the next several years, he held numerous positions in Engineering & Construction and Fossil & Hydro, including as a senior engineer and product specialist. Mr. McKinley became Director – Fossil & Hydro Engineering in 2001; Director – Fossil & Hydro Projects in 2004; and Station Director at Possum Point Power Station in 2005. He was named to his current position effective October 2007.

Mr. McKinley has previously presented testimony before the State Corporation Commission of Virginia.

DCP Exhibit No _____ ( )

BEFORE THE
PUBLIC SERVICE COMMISSION OF MARYLAND

IN THE MATTER OF:	)	
	)	
THE APPLICATION OF DOMINION COVE POINT LNG, LP FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A GENERATING STATION WITH A NAME-PLATE CAPACITY OF 130 MW AT THE DOMINION COVE POINT LIQUEFIED NATURAL GAS TERMINAL IN CALVERT COUNTY, MARYLAND	)	**Case No. 9318**

DIRECT TESTIMONY OF
ROBERT M. BISHA ON BEHALF OF
DOMINION COVE POINT LNG, LP

Q. Please state your name, occupation, and current position.

A. My name is Robert M. Bisha. I am Director, Environmental Business Support for Dominion Resources Services, Inc. In that capacity, I am responsible for corporate support in environmental studies, permitting and compliance on behalf of Dominion Cove Point LNG, LP ("Dominion Cove Point") for the Maryland segment of the proposed Dominion Cove Point Liquefaction Project ("Liquefaction Project") currently under review by the Federal Energy Regulatory Commission ("FERC") in Docket No. CP13-113, including the proposed on-site generating facilities that are the subject of Dominion Cove Point's April 1, 2013 application and subsequent supplements (collectively, "Application") submitted in this proceeding. My business address is 5000 Dominion Boulevard, Glen Allen, Virginia, 23060. A statement of my background and qualifications is attached as Appendix A.

Q. What is the purpose of your testimony in this case?

A. My testimony will address several of the factors required by Sections 7-207 and 7-208 of the Public Utility Companies Article ("PUC Article") and Title 20, Subtitle 79 of the Code of Maryland Regulations ("COMAR") for the Maryland Public Service Commission ("Commission") to issue a Certificate of Public Convenience and Necessity ("CPCN") to authorize the construction of the electric generating station proposed by Dominion Cove Point in this proceeding. Specifically, I will address the effect of the proposed generating station on aesthetics, historic sites, aviation safety, and the environment, particularly air and water pollution. Dominion Cove Point Witness Robert B. McKinley will address the effect of the proposed generating station on the stability and reliability of the electric system and on the economy of the state.

My testimony will provide an overview of the potential environmental impacts, including air quality and water resources, associated with the Liquefaction Project and construction of the proposed generating station. My testimony also supports Dominion Cove Point's *Applications to Appropriate and Use Waters of the State* ("Water Appropriation Permit Application") contained in Appendix A-4 of the Application. Dominion Cove Point Witness Richard B. Gangle will support the *PSD/NA NSR Air Permit Report* ("Air Report") provided in Appendix A-2 of the Application, and more fully describe the specific air emission sources to be constructed as part of the Liquefaction Project, the selection of control technology, the development of proposed emissions limitations for the equipment being added, and ambient air quality modeling and other analyses which are more fully described in Air Report.

CPCN Factors

Q. Will the construction of the proposed generating station have any adverse impacts on aesthetics, historic sites or aviation?

A. No. With the exception of the need to use two temporary construction lay-down areas to bring materials and workers to the LNG terminal site ("Offsite Areas A and B"), all of the construction activities associated with the proposed generating station will take place at the existing LNG terminal site (Application at p. 6) on land that has been previously disturbed (Application at p. 14; Appendix A-3 at Sections 4.1 and 8.4.1). Further, construction at the LNG terminal site should not affect aviation safety and should have minimal effects on the aesthetics of the terminal site and surrounding areas. Construction will be conducted in accordance with Federal Aviation Administration ("FAA") guidelines and the facilities to be constructed will not exceed the height of the existing structures at the LNG terminal. Further, Dominion Cove Point has consulted with the Patuxuent Naval Air Station located nearby and was not informed of any concerns regarding aviation safety. Finally, although it is not anticipated that the construction of the proposed generating station has the potential to impact any known historic and/or archaeological sites, Dominion Cove Point has begun consultations with the Maryland Historical Trust (Appendix A-3 at Section 4.3). The Maryland Historical Trust has advised that construction at the LNG terminal "has very little archeological potential and requires no further investigation" (Appendix A-3 at Resource Report 4, Appendix 4-B).

Q. Are there any other environmental impact considerations associated with the construction of the proposed generating facilities?

A. The construction of the proposed generating station has been designed to minimize the environmental impact of the proposed facilities (Application at p. 13). Dominion Cove Point has attached to its Application in this proceeding the Air Report, the *Federal Energy Regulatory Commission Environmental Report* ("FERC Environmental Report"), and the Water Appropriation Permit Application in Appendices A-2, A-3, and A-4, respectively. These reports demonstrate that the environmental impacts are minimal and will be mitigated to the maximum extent practicable through mitigation measures proposed by Dominion Cove Point.

I will discuss separately in my testimony the impacts on Air Quality and Water Resources. However, the Environmental Report, which was filed contemporaneously with the FERC for the Liquefaction Project, summarizes and provides the results of the environmental analyses for the Liquefaction Project and contains all of the environmental information required by the provisions of COMAR. Specifically, the Environmental Report includes information regarding the general site conditions, the effect on air quality and noise, the effect on water quality and appropriation, groundwater resources, water quality, wetlands, fish, wildlife and vegetation, aquatic and terrestrial resources, and cultural resources. We note that PPRP is a cooperating agency for purposes of the environmental review in the FERC proceeding, pursuant to regulations implementing the National Environmental Policy Act of 1968.

Q. What general CPCN conclusions can be drawn from your testimony and the Application?

A. The construction of the proposed generating station is required by the public convenience and necessity because it can be constructed and operated with

minimal environmental impacts, and will comply with all applicable federal and state air quality regulations, as more fully described by Dominion Cove Point Witness Gangle.

Water Resource Impacts

Q. Please describe the Liquefaction Project's groundwater use.

A. Dominion Cove Point will draw from three existing wells located at the LNG terminal to support the proposed Liquefaction Project, and no additional water supply wells will be drilled to support the project. One well (Well No. 229J) withdraws water from the Lower Patapsco aquifer and is the main well for the LNG terminal, as well as the source of water for drinking, cooling, fire protection, and testing. Water for the Liquefaction Project construction and operation will be primarily provided by Well No. 229J (including water for hydrostatic testing of equipment at the LNG terminal) (Application; Appendix A-4 at p. 2). Water for hydrostatic testing at Offsite Area A will be obtained from Well No. 229J. The other two existing wells at the LNG terminal (Well Nos. 128J and 230J) withdraw water from the Aquia aquifer and will be primarily used for backup or in the case of emergency (Application; Appendix A-4 at p. 2). As part of the Liquefaction Project, Well No. 230J will be abandoned (Application; Appendix A-4 at p. 2). Dominion Cove Point is not proposing to use water from Lake Levy or Osborne Pond.

Currently, Dominion Cove Point has a 40,000 gallons per day ("gpd") water appropriation from the Lower Patapsco aquifer. During the construction period, an additional 40,000 gpd (average annual total) and 60,000 gpd (maximum annual total) will be needed from the Lower Patapsco. For operations, an additional 210,000 gpd (average annual total) and 315,000 gpd (maximum annual total) will be needed from the Lower

Patapsco. As demonstrated by Appendix A-4 of the Application, Dominion Cove Point does not anticipate that any of these groundwater withdrawals will adversely affect local groundwater levels.

Q. Will the Liquefaction Project consume any surface water?

A. No. There will be no surface water used by the construction and operation of the Liquefaction Project.

Q. Please describe any surface water impacts associated with the Liquefaction Project.

A. With regard to the LNG terminal, the main surface water resources are the Chesapeake Bay and the Patuxent River. Stream channels located on and adjacent to the LNG terminal ultimately drain to the Chesapeake Bay and are not considered sensitive surface waters. There will be no in-water construction within the Chesapeake Bay. The surface water impacts at temporary Offsite Areas A and B are described in more detail in the Application at Appendix A-1 (Environmental Summary at pp. iii-v) and Appendix A-3 (at Section 2.2.1.1.2).

Q. Please describe the Liquefaction Project's impacts on water quality.

A. Construction activities including grading, clearing, and excavation will be managed in accordance with an approved erosion and sediment control plan to minimize potential adverse impacts to water quality, and in accordance with an approved stormwater management plan to prevent adverse effects to water quality from stormwater runoff.

Q. Is Dominion Cove Point requesting authorization to use Maryland state water resources as part of the Liquefaction Project?

A. Yes. On April 1, 2013, Dominion Cove Point filed with the Maryland Department of the Environment ("MDE") two related water applications. The first application is for a new permit for the appropriation and use of a 40,000 gpd (average annual total) and 60,000 gpd (average maximum total) withdrawal of groundwater during construction of the Liquefaction Project. The second application is for a change to Dominion Cove Point's existing Permit to Appropriate and Use Waters of the State of Maryland, and requests an additional 210,000 gpd (average annual total) and 315,000 gpd (average maximum total) withdrawal for use during operations.

Q. Why is Dominion Cove Point requesting a new water appropriation and use permit in addition to a modification of an existing permit?

A. A new water appropriation and use permit and a modification of a water and use permit have been requested to meet the needs of the proposed Liquefaction Project. The two permit approach was requested by the MDE. The new water appropriation and use permit seeks approval for water use only during construction of the Liquefaction Project, while the modification seeks approval for permanent increased water use at the LNG terminal going forward.

Q. What are the planned uses for the additional water resources by the Liquefaction Project?

A. A variety of construction and industrial uses are planned. For construction, the additional groundwater will be used for hydrostatic testing at the LNG terminal and/or Offsite Area A for pre-commissioning, commissioning, start-up, and performance testing. For operations, the greatest quantities are needed for the planned steam turbine system, followed by the maintenance of the fire suppression system. A

significant volume is also required to fill water tanks used for gas vaporization. The proposed groundwater withdrawals and water resource uses are discussed in detail in the Water Appropriation Permit Application (Appendix A-4, Table 2).

Q. Has Dominion Cove Point evaluated the potential impacts to the Lower Patapsco aquifer based on the additional proposed groundwater appropriation permits required for the Liquefaction Project?

A. Yes. An analysis was done using the results of the 2008 pumping test on the Lower Patapsco production well at the LNG terminal. The results of the analysis are discussed in detail in the Water Appropriation Permit Application (Appendix A-4, Table 3).

Q. Did Dominion Cove Point consider alternative sources of obtaining the water needed for the Liquefaction Project?

A. Yes. Dominion Cove Point considered a variety of alternatives to using groundwater. Options considered were pumping water from the Chesapeake Bay, pumping water from on-site Lake Levy and/or Osborne Pond, and utilizing the Calvert County municipal water supply. All alternatives were found to be unsuitable. The Chesapeake Bay alternative was found undesirable because Dominion Cove Point does not have an existing water intake, and environmental covenants would preclude the installation of a water line from the Bay to the Project area. In addition, the water of the Bay is brackish and would require treatment before it could be used by the equipment. While such treatment could be done at additional cost, it would also create a large volume of wastewater that would need to be properly managed. In addition, it was determined that pumping water from Lake Levy or Osborne Pond was also not viable due to

environmental covenants on the land outside the facility's fenced area. The Calvert County water supply was also considered, but after discussions with County representatives, it was determined that the current County water supply does not have adequate capacity to provide and guarantee the required amount of water needed for the Liquefaction Project.

Q. How will Dominion Cove Point provide for the timely disposal of wastes produced by the proposed generating station?

A. The disposal of wastes produced by the proposed generating station will be managed with a waste disposal management plan that complies with all applicable federal, state, and local requirements (Appendix A-3, FERC Resource Reports 3 and 11).

Q. Does this conclude your direct testimony?

A. Yes, it does.

APPENDIX A

BACKGROUND AND QUALIFICATIONS OF ROBERT M. BISHA

Robert M. Bisha graduated from the State University of New York at Oswego in 1977 with a Bachelor of Science degree in Meteorology. In 2000, he joined Virginia Electric and Power Company (the "Company") as an Environmental Consultant for Electric Environmental Services in Richmond, Virginia. Mr. Bisha was promoted to Manager-Electric Environmental Services in 2002, and in 2007, he was promoted to Director, Environmental Business Support. Before joining the Company, he worked for 20 years in the Environmental Department at Central Illinois Light Company in Peoria, Illinois, starting as an Air Pollution Control Engineer and departing as Environmental Director.

Mr. Bisha has previously presented testimony before the State Corporation Commission of Virginia and the Virginia Department of Environmental Quality, as well as the Illinois Commerce Commission, the U.S. Environmental Protection Agency, and the Illinois Environmental Protection Agency.

DCP Exhibit No. _____ ( )

BEFORE THE
PUBLIC SERVICE COMMISSION OF MARYLAND

IN THE MATTER OF:	)	
	)	
THE APPLICATION OF DOMINION COVE POINT LNG, LP FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT A GENERATING STATION WITH A NAME-PLATE CAPACITY OF 130 MW AT THE DOMINION COVE POINT LIQUEFIED NATURAL GAS TERMINAL IN CALVERT COUNTY, MARYLAND	)	**Case No. _____**

DIRECT TESTIMONY OF
RICHARD B. GANGLE ON BEHALF OF
DOMINION COVE POINT LNG, LP

Q. Please state your name, occupation and current position.

A. My name is Richard B. Gangle, and I am an Environmental Consultant with the Environmental Business Support Group at Dominion Resources Services, Inc. In that capacity, I am responsible for supporting environmental permitting on behalf of Dominion Cove Point LNG, LP ("Dominion Cove Point") for the Maryland segment of the proposed Dominion Cove Point Liquefaction Project ("Liquefaction Project") currently under review by the Federal Energy Regulatory Commission ("FERC") in Docket No. CP13-113, including the proposed on-site generating facilities that are the subject of Dominion Cove Point's April 1, 2013 application and subsequent supplements (collectively, "Application") submitted in this proceeding. My business address is 500 Davisson Run Road, Clarksburg, WV 26301. A statement of my background and qualifications is attached as Appendix A.

Q. What is the purpose of your testimony in this case?

A. I describe the results of the control technology review, air quality modeling, and other air emission-related analysis for the electric generating facilities, LNG liquefaction process and support facilities proposed by Dominion Cove Point in this proceeding as part of the Liquefaction Project, to be located at Dominion Cove Point's existing liquefied natural gas ("LNG") terminal in Lusby (Calvert County), Maryland. These results are contained in the *PSD/NA NSR Air Permit Application Report* ("Air Report") found in Appendix A-2 of the Dominion Cove Point Application in this proceeding. I was directly involved in the development of the Air Report. The Air Report and associated supporting documentation were developed to demonstrate that the Liquefaction Project complies with applicable major stationary source permitting requirements under the Federal Clean Air Act and the Code of Maryland Regulations ("COMAR"), Title 26 (Department of the Environment), Subtitle 11 (Air Quality). Further, these materials demonstrate that the proposed facilities comply with all of the requirements necessary to obtain a preconstruction air permit in the form of a certificate of public convenience and necessity ("CPCN") authorization from the Maryland Public Service Commission ("Commission").

Q. Please describe the Dominion Cove Point Liquefaction Project at the FERC.

A. As explained in more detail in Section 2 of the Air Report, the Liquefaction Project consists of the installation of additional turbines, refrigerant compressors, auxiliary boilers, and related support equipment at the existing Dominion Cove Point LNG terminal.

Q. What are the existing equipment and operations?

A. As explained in more detail in Section 2.1 of the Air Report, the existing terminal contains equipment to unload imported LNG from tankers, store the LNG, and vaporize the LNG

for delivery as natural gas. This includes turbines to produce electricity, boilers to provide heat for vaporization, tanks to store LNG, and related ancillary support equipment. In the import mode, ships dock at the offshore terminal in the Chesapeake Bay and unload LNG to the terminal for storage. When requested by customers, the LNG is vaporized and directed though the pipeline connection at the terminal to destinations on the interstate pipeline network.

Q. What is the purpose of the Liquefaction Project?

A. As explained in more detail in Section 2 of the Air Report, the Liquefaction Project will provide facilities for the liquefaction of natural gas from the interstate pipeline network for export through the offshore terminal. The export operations are essentially the reverse of the import operations.

Q. What new air emission units will be installed?

A. As explained in more detail in Section 2 of the Air Report, the Liquefaction Project has been carefully designed to minimize air emissions and increase efficiency such that adverse environmental and energy impacts are minimized. The Liquefaction Project employs sophisticated process design features, which Dominion Cove Point believes meet standards for air pollution control and exceed energy efficient performance at other LNG export facilities currently being developed.

More specifically, Dominion Cove Point will install two high efficiency GE Frame 7 natural gas turbines with name-plate ratings of 1062 MMBTU/hr to directly drive the refrigerant compressors used for the liquefaction process. In addition, each of the two combustion turbines will be equipped with a heat recovery steam generator ("HRSG") that will produce steam using the waste heat of the turbine. That steam, augmented by additional steam from the auxiliary boilers, will flow to the steam turbine to produce electricity. Both the auxiliary boilers and the

turbine/HRSGs will have Selective Catalytic Reduction ("SCR") systems and carbon monoxide ("CO") catalysts with Continuous Emissions Monitoring ("CEM"). Each SCR system will use ammonia injection and a reaction catalyst to effectively reduce nitrogen oxide ("NO_x") emissions by 90 percent from the equipment which it serves. The oxidation catalyst system will operate to reduce CO and volatile organic compound ("VOC") emissions. The planned NO_x and CO CEM systems will monitor emissions levels and ensure that each SCR system is performing as designed.

The other emission units are three liquid storage tanks, an additional back-up diesel electric generator, five diesel fire pumps, a spray dryer, two flares, and a thermal oxidizer.

Q. What are the emissions from each of the new units?

A. As explained in detail in Section 3 of the Air Report, for each of the emissions sources included in the proposed Liquefaction Project, potential emissions were calculated using vendor data, engineering estimates, published emissions factors, and other available data. Potential to emit ("PTE") for all sources was calculated using the worst-case emissions operating scenario (*e.g.*, maximum throughput, hours of operation, *etc.*) except where noted in the detailed calculations provided in Appendix B of the Air Report.

Q. What regulatory programs apply to the emission units at the Liquefaction Project?

A. As explained more fully in Section 5 of the Air Report, each emission unit is subject to regulation under at least one program under the Clean Air Act and Maryland regulations. Some units are subject to multiple overlapping programs and must comply with the most stringent of those applicable requirements. These programs include the New Source Performance Standards ("NSPS") and Maximum Achievable Control Technology ("MACT")

Standards for Hazardous Air Pollutants ("HAPs"), which impose emission limits for certain pollutants on specified types of equipment; air quality modeling for compliance with National Ambient Air Quality Standards ("NAAQS"); evaluation of visibility and impacts to vegetation and growth; Chemical Accident Prevention for ammonia; Maryland Toxics Air Pollutant Modeling, which requires modeling for protection of public health; and the Federal New Source Review ("NSR") program. The NSR program has two components: Non-Attainment New Source Review ("NA NSR"), which imposes Lowest Achievable Emission Rate ("LAER") control technology, emissions offset requirements for ozone precursors (NO_x and VOCs), and alternative analysis requirements; and Prevention of Significant Deterioration ("PSD"), which imposes Best Available Control Technology ("BACT") requirements on greenhouse gases ("GHGs"), particulate matter ("PM"), NO_x, CO, and sulfur dioxide ("SO_2"). The applicability of the PSD and NA NSR programs must be assessed upfront to determine the scope of required air quality analysis for a project. The applicability assessment is based on the level of air pollutant emission of the existing facility and the proposed project, as well as the attainment status of the Cove Point area with ambient air quality standard for each pollutant.

Q. What are national ambient air quality standards?

A. There are two types of NAAQS, primary and secondary. Primary NAAQS are ambient concentrations of a substance that the U.S. Environmental Protection Agency ("EPA") has determined are protective of public health with an adequate margin of safety. Secondary NAAQS are designed to protect public welfare.

Q. What is the attainment status of Calvert County where Dominion Cove Point is located?

A. Calvert County is in attainment for all NAAQS except for the 8-hour ozone standard. It is part of the Washington D.C. Metropolitan Non-Attainment Area, which is classified as moderate non-attainment for the 8-hour ozone standard.

Q. What does it mean to be in attainment for the NAAQS other than ozone?

A. The ambient air in Calvert County has concentrations of pollutants below the NAAQS for all criteria pollutants except ozone. To protect that air quality, Dominion Cove Point is subject to PSD permitting requirements for projects that have emissions of PSD-regulated pollutants above certain thresholds.

Q. What does it mean to be in non-attainment for the 8-hour ozone standard?

A. The ambient air concentrations for ozone have been measured above the NAAQS. Generally, sources do not emit ozone directly, but rather emit NO_x and VOCs, which are precursors to ozone formation in the ambient air. Because Calvert County is non-attainment for ozone, emissions of NO_x and VOCs from projects are subject to NA NSR if they exceed certain thresholds. The NA NSR program imposes additional requirements aimed at bringing the region to attainment status.

Q. Let's start with PSD permitting. Would you describe the PSD applicability methodology?

A. PSD applies to new major sources or major modifications to existing sources located in attainment areas. A major source is one that has the PTE either 100 or 250 tons per year ("tpy") of a regulated pollutant, other than carbon dioxide ("CO_2"), and other regulated GHG pollutants expressed as carbon dioxide equivalent ("CO_2e"), depending on the type of source. The major source threshold for GHG is 100,000 tpy CO_2e.

As a LNG terminal, which is not one of the 28 specified categories of facility in the regulations, Dominion Cove Point is subject to the 250 tpy major source threshold for non-GHG pollutants. That is, if the PTE of any regulated non-GHG pollutant exceeds 250 tpy or emissions of CO_2e exceeds 100,000 tpy, then Dominion Cove Point is subject to PSD permitting for each regulated pollutant that exceeds its significant emission rate ("SER").

Q. What is potential to emit?

A. PTE is defined in 40 C.F.R. 52.21(b)(4) as "the maximum capacity of a stationary source to emit a pollutant under its physical and operational design."

Q. What are significant emission rates?

A. PSD is conducted on a pollutant-by-pollutant basis. SERs are thresholds established to determine if the PSD requirements apply to individual pollutants as discussed in Section 4.3.2 of the Air Report. Just because a project is "major" does not mean that a PSD analysis will be required for every pollutant emitted. If the PTE for a pollutant is greater than the SER, then a full PSD review is required for that pollutant, including BACT and air quality analyses. Conversely, if the PTE for a pollutant is below the SER, then PSD is not triggered for that pollutant.

Q. What pollutants were identified as triggering PSD for Dominion Cove Point?

A. Dominion Cove Point is a major source of emissions of nitrogen dioxide ("NO_2") and CO_2e and is subject to the applicable PSD requirements for those pollutants. In addition to NO_2 and CO_2e, Dominion Cove Point also triggered PSD for the following pollutants which exceeded their SERs: CO, PM, particulate matter with an aerodynamic diameter less than 10 microns ("PM_{10}"), and particulate matter with an aerodynamic diameter less than 2.5 microns ("$PM_{2.5}$").

Q. Which pollutants did not trigger PSD?

A. The regulated PSD pollutants from Dominion Cove Point identified as being below the SERs include: SO_2, Total Reduced Sulfur ("TRS"), Reduced Sulfur Compounds ("RDS"), Hydrogen Sulfide ("H_2S"), Lead ("Pb"), Sulfuric Acid Mist ("H_2SO_4"), and Fluorides. Consequently, PSD requirements such as BACT and air quality analysis are not required for these pollutants.

Q. What are the PSD permitting requirements for the pollutants that trigger PSD?

A. The PSD permitting requirements include: (1) a determination of BACT for the pollutants; (2) a modeled demonstration of compliance with the NAAQS and the PSD ambient air increments; and (3) an additional impact analysis evaluating growth, visibility impacts, and effects on soils and vegetation.

Q. Switching to non-attainment new source review, would you describe the NA NSR applicability methodology?

A. NA NSR applies to major new sources or major modifications to existing sources located in non-attainment areas. A major source is one that has a PTE in excess of thresholds for the pollutants for which the area is designated as non-attainment. As previously mentioned, Calvert County is non-attainment for ozone, and NO_x and VOC are precursors to its formation. Calvert County has established a major source threshold of 25 tpy of NO_x or VOC. Dominion Cove Point will exceed that threshold for each pollutant and so is subject to NA NSR for NO_x and VOC emissions.

Q. What are the NA NSR permitting requirements for NO_x and VOC?

A. The NA NSR permitting requirements are more stringent than the PSD

requirements. Instead of BACT, the source must meet the LAER and must obtain emission reduction credits ("ERCs") to offset the emissions increases associated with the Liquefaction Project.

Q. Let's turn to the control technology selection process and results for the proposed Liquefaction Project. What methodology did Dominion Cove Point use to determine BACT and LAER?

A. The methodology Dominion Cove Point used for both BACT and LAER is described in Section 6.1 of the Air Report. Basically, Dominion Cove Point followed EPA's 5-step top-down BACT analysis with modifications as necessary for LAER. The primary difference is that BACT allows consideration of energy, economic, and environmental impacts, while LAER does not. LAER requires that the limit be the most stringent limit achievable by a comparable emission unit.

Q. What emission units were subject to a BACT or LAER analysis?

A. To achieve the bidirectional operational capabilities (export as well as import), Dominion Cove Point will need to add the following new emissions units: 2 combustion turbines, 2 auxiliary boilers, a thermal oxidizer, 2 flares, 6 emergency engines (1 emergency generator and 5 fire pump engines) and a spray dryer. In addition to the new emissions units, there will be new fugitive emissions of VOC associated with components such as connectors and flanges.

Q. Let's now address the specific BACT and LAER review for the turbines. Starting with PM, would you please describe the BACT evaluation for PM, PM_{10} and $PM_{2.5}$ for the turbines?

A. As described in the Air Report at Section 6.4.1, Dominion Cove Point identified

six potential add-on control devices to control particulate emissions – four to control filterable particulate emissions (fabric filters ("FF"), electrostatic precipitators ("ESP"), Venturi scrubbers, and cyclones) – and two to control condensable particulate emissions (catalytic oxidation and thermal oxidation). Dominion Cove Point also identified two other methods to reduce particulate emissions from the turbine – low sulfur fuels and good combustion. Of the add-on control devices, all but catalytic oxidation were eliminated as technically infeasible.

Catalytic oxidation can reduce particulate matter emissions anywhere from 25 to 99.9 percent. Dominion Cove Point could identify no natural gas combustion project where catalytic oxidation was being used to control particulate emissions. Given the lack of data on removal efficiencies for catalytic oxidation on natural gas fired turbines, Dominion Cove Point is not proposing catalytic oxidation as part of the BACT determination for particulate emissions. Regardless, Dominion Cove Point is installing catalytic oxidation on the turbines as LAER for VOC emissions. It is anticipated that this VOC control will also reduce condensable particulate emissions by reducing any uncombusted organics.

Low sulfur fuels and good combustion were both determined to be feasible with good combustion being base case and the available natural gas being inherently low sulfur. Based on the use of good combustion and low sulfur fuels, Dominion Cove Point identified BACT as an emission rate of 7 lb/hr for filterable PM, PM_{10} and $PM_{2.5}$.

Q. For NO_x, you previously mentioned that both a LAER and a BACT analysis was required. Please explain how this was done.

A. A BACT evaluation is required for NO_2, which is a criteria pollutant subject to PSD. Calvert County is non-attainment for ozone; therefore, the project is subject to LAER for NO_x, an ozone precursor. Dominion Cove Point's choice of high efficiency GE Frame 7 natural

gas turbine technology is explained in its discovery response to PPRP Set 1-9. The LAER and BACT evaluation for NO_x and NO_2 emissions from the GE turbines is described in the Air Report in Section 6.4.2. To reduce NO_x and NO_2 emissions from the turbines, Dominion Cove Point identified three combustion control options (dry low-NOx ("DLN")) combustors, catalytic combustion (XONON™), and water/steam injection) and three add-on controls (SCR), selective non-catalytic reduction ("SNCR"), and EM_x™/$SCONO_x$™). XONON™ and EM_x™/$SCONO_x$™ were eliminated as technically infeasible. Of the remaining combustion and add-on control technologies, Dominion Cove Point selected the most effective of both types, DLN and SCR.

Based on DLN and SCR technology, Dominion Cove Point determined that a NO_x emission rate of 2.5 ppmvd at 15% oxygen ("O_2") is both LAER and BACT.

Q. VOC emissions were also subject to LAER. Would you please describe the turbine VOC LAER analysis?

A. VOC is the other ozone precursor. Dominion Cove Point's LAER analysis for VOC emissions from the turbines is described in the Air Report in Section 6.4.3. For the VOC LAER analysis, Dominion Cove Point identified three technologies to reduce VOC emissions: catalytic oxidation, thermal oxidation, and good combustion. Thermal oxidation was eliminated as technically infeasible. As with the particulate BACT analysis, good combustion is considered base case for the turbines. Catalytic oxidation can reduce VOC emissions by 90% for natural gas exhaust streams.

Based on good combustion and catalytic oxidation, Dominion Cove Point determined LAER for VOC emissions to be 0.7 ppmvd at 15% O_2 (as methane). This is the lowest of any potentially comparable turbine.

Q. Moving on to CO, please describe the CO BACT analysis.

A. As described in the Air Report in Section 6.4.4, the same technologies used to control VOC emissions also control CO emissions – catalytic oxidation, thermal oxidation and good combustion. As with VOC, thermal oxidation is technically infeasible for CO. Good combustion and catalytic oxidation will be used to control CO emissions from the turbines.

Based on good combustion and catalytic oxidation, Dominion Cove Point determined BACT for CO to be 1.5 ppmvd at 15% O_2. This is the lowest of any potentially comparable turbine.

Q. Finally, please describe the turbine GHG BACT analysis for the turbines.

A. The BACT analysis for GHG emissions from the turbines is described in the Air Report in Section 6.4.5. Briefly, Dominion Cove Point identified two technologies to control GHG emissions from the turbines: carbon capture and sequestration ("CCS") and efficient power generation. Dominion Cove Point determined CCS to be technically infeasible and to have unreasonable costs and impacts. More specifically, the estimated cost of using CCS to control emissions from the turbines is $148 million ($135.97 per ton of CO2e removed). With CCS eliminated, Dominion Cove Point selected efficient power generation to reduce GHG emissions from the turbines.

Based on efficient power generation, Dominion Cove Point determined GHG BACT for the turbines to be 117 lb CO_2e/MMBTU for each turbine.

Q. Were there any other BACT evaluations for the turbines?

A. Yes, Dominion Cove Point conducted a BACT evaluation for startup and shutdown of the turbines, as described in the Air Report at Section 6.4.6.

Q. Why were startup and shutdown operations evaluated separately?

A. As explained in the Air Report, there are limitations on the operation of the SCR,

DLN, and catalytic oxidation controls during startup and shutdown. Because of these limitations, the standard BACT/LAER limits for CO, NO_x, and VOC are not achievable. To address these limitations and to meet the requirement to establish emission limits for startup and shutdown, Dominion Cove Point proposed to meet annual emissions limits for CO, NO_x, and VOC that include both normal operation and startup and shutdown operation.

Q. Let's turn to the BACT and LAER review for the auxiliary boilers. Starting with PM, please describe the BACT evaluation for PM, PM_{10} and $PM_{2.5}$ for the boilers.

A. As discussed in Section 6.5.1 of the Air Report, the technologies reviewed for the auxiliary boilers to control particulate matter were the same as reviewed for the turbines. As with the turbines, catalytic oxidation will be installed on the auxiliary boilers for VOC control, but Dominion Cove Point is not taking credit for any particulate matter control from that device in determining BACT. Dominion Cove Point determined that BACT for the auxiliary boilers is an emission rate of 0.011 lb/hr for PM, PM_{10}, and $PM_{2.5}$ using good combustion and low sulfur fuel.

Q. Please describe the NO_x/NO_2 BACT and LAER analysis for the auxiliary boilers.

A. As described in Section 6.5.2 of the Air Report, Dominion Cove Point evaluated the three combustion controls (low-NO_x burners ("LNB"), ultra-low-NO_x burners ("ULNB"), and good combustion control) and two add-on controls (SCR and SNCR) to control NO_x and NO_2 emissions from the auxiliary boilers. LNB and ULNB were eliminated as technically infeasible. Of the remaining three technologies, SCR is the most efficient and was selected to reduce NO_x and NO_2 emissions from the auxiliary boilers.

Based on installation of SCR, Dominion Cove Point determined that a NO_x emission rate of 0.0099 lb/MMBTU is both BACT and LAER.

Q. VOC emissions were also subject to LAER. Would you please describe the auxiliary boiler VOC LAER analysis?

A. Dominion Cove Point's LAER analysis for VOC emissions from the auxiliary boilers is described in Section 6.5.3 of the Air Report. Consistent with the turbine VOC LAER analysis, Dominion Cove Point identified three technologies to reduce VOC emissions from the auxiliary boilers – catalytic oxidation, thermal oxidation, and good combustion. Thermal oxidation was eliminated as technically infeasible. Good combustion is considered base case, with catalytic oxidation being able to reduce VOC emissions by 90% for natural gas exhaust streams.

Based on good combustion and catalytic oxidation, Dominion Cove Point determined LAER for VOC emissions to be 0.0005 lb/MMBTU. This is the lowest of any potentially comparable unit.

Q. Moving on to CO, please describe the CO BACT analysis for the auxiliary boilers.

A. As described in Section 6.5.4 of the Air Report, the same technologies used to control VOC emissions also control CO emissions, catalytic oxidation, thermal oxidation, and good combustion. As with VOC, thermal oxidation is technically infeasible for CO. Good combustion and catalytic oxidation will be used to control CO emissions from the auxiliary boilers.

Based on good combustion and catalytic oxidation, Dominion Cove Point determined BACT for CO to be 0.0088 lb/MMBTU.

Q. Finally, please describe the turbine GHG BACT analysis for the auxiliary boilers.

A. The BACT analysis for GHG emissions from the auxiliary boilers is described in the Air Report in Section 6.5.5. Briefly, consistent with the turbine GHG BACT analysis, Dominion Cove Point identified two technologies to control GHG emissions from the auxiliary boilers: CCS and efficient power generation. Dominion Cove Point determined CCS to be technically infeasible and to have unreasonable costs and impacts. With CCS eliminated, Dominion Cove Point selected efficient power generation to reduce GHG emissions from the auxiliary boilers.

Based on efficient power generation, Dominion Cove Point determined GHG BACT for the auxiliary boilers to be 117 lb CO_2e/MMBTU for each boiler.

Q. Were there any other BACT evaluations for the auxiliary boilers?

A. Yes, Dominion Cove Point conducted a BACT evaluation for startup and shutdown of the auxiliary boilers, just like for the turbines.

Q. Please describe the startup and shutdown BACT evaluation for the auxiliary boilers.

A. As explained in Section 6.5.6 of the Air Report, there are limitations on the operation of the DLN and catalytic oxidation controls during startup and shutdown. Because of these limitations, the standard BACT/LAER limits for CO, NO_x, and VOC are not achievable. To address these limitations and to meet the requirement to establish emission limits for startup and shutdown, Dominion Cove Point proposed to meet annual emissions limits for CO, NO_x, and VOC that include both normal operation and startup and shutdown operation.

Q. Moving on, please describe the BACT analysis for the thermal oxidizer.

A. The BACT analysis for the thermal oxidizer is described in Section 6.6 of the Air Report. Dominion Cove Point is proposing the same add-on controls for the thermal oxidizer as on the auxiliary boilers - SCR to control NO_x, and catalytic oxidation to control VOC and CO. As for the turbines and auxiliary boilers, CCS was determined not to be BACT for GHG emissions from the thermal oxidizer. Based on the controls selected, Dominion Cove Point determined the BACT and LAER emission rates from the thermal oxidizer to be the following: PM, PM_{10}, and $PM_{2.5}$ – 0.9 lb/hr; NO_x – 2.5 ppmvd at 15% O_2; VOC – 0.03 lb/hr; CO – 1.5 ppmvd at 15% O^2; and CO_2e – 1,543 lb/MMBTU.

Q. Please describe the BACT and LAER analysis for the flares.

A. The analysis for the flares is provided in Section 6.7 of the Air Report. Unlike for the other units we have been discussing, the flares themselves are control devices for the venting of VOC and GHG. Thus, additional controls on the flares are not practical. Emissions from the flares will be minimized by maintaining a flame at all times at the flare tips, which Dominion Cove Point determined to be BACT and LAER for the flares. Dominion Cove Point will also follow good operating practices including maintaining proper combustion efficiency.

Q. Please describe the BACT and LAER analysis for the emergency engines.

A. For the emergency engines, emissions are controlled by limiting the hours of operation and using ultra low sulfur diesel fuel as explained in the Air Report in Section 6.8. Use of a lower carbon fuel was eliminated as an option because the very nature of emergency operations mandates a diesel engine. As described in Sections 5.1.1.8 and 5.1.2.6 of the Air Report, the engines will meet the latest applicable requirements under NSPS or MACT.

Q. Please describe the BACT and LAER analysis for the spray dryer.

A. As discussed in Section 6.9 of the Air Report, BACT for the PM, PM_{10}, and $PM_{2.5}$ emissions from the spray dryer is the use of a cartridge filter capable of meeting 0.02 gr/dscf. For other combustion products resulting from the operation of the spray dryer, Dominion Cove Point determined that it is neither technically nor economically feasible to use add-on controls to reduce those emissions. Consequently, Dominion Cove Point determined BACT and LAER for those emissions to be good combustion practices as designated by the spray dryer manufacturer.

Q. Finally, please describe the BACT and LAER analysis for equipment leaks.

A. As discussed in Section 6.10 of the Air Report, Dominion Cove Point evaluated and eliminated as technically and economically infeasible add-on controls to address fugitive emissions resulting from equipment leaks in the liquefaction process. Dominion Cove Point, however, is proposing to implement a leak detection and repair ("LDAR") program based on industry guidance to minimize VOC and GHG emissions. Such a program is typically employed at similar facilities as BACT or LAER for fugitive emissions. Since Maryland does not have regulations specifying the contents of a LDAR program, Dominion Cove Point's consultant developed one based on the LDAR regulations in Texas for this type of facility. As such, Dominion Cove Point determined the LDAR program to be BACT for GHG and LAER for VOC fugitive emissions.

Q. Let's switch gears and discuss air modeling and analysis. What air quality analysis was performed as part of the permit application?

A. Quantitative air quality computer modeling analyses were performed to comply with the PSD requirements to demonstrate compliance with the applicable NAAQS and PSD increment for each pollutant. In each case, Dominion Cove Point's consultant prepared a modeling protocol setting out the model to be used, any refinements, and the model inputs that

was submitted to the PPRP/MDE staff for approval. We amended the protocols to address any comments and obtained PPRP/MDE's approval of the protocols, which were included as Appendix C to the Air Report. Our consultant then followed that protocol in performing the modeling. This modeling and the results are provided in Section 7.1 and Appendix D of the Air Report. The modeling demonstrates that the facility will not cause or contribute to an exceedance of the NAAQS or increment.

The Air Report also provides an analysis of growth, near-term visibility, impacts to soil and vegetation as additional impact analysis under the PSD requirements. These are described in more detail in Section 7.2 of the Air Report. Dominion Cove Point performed a qualitative analysis of alternatives to the Liquefaction Project as required by the NA NSR requirements. This is provided in Section 7.3 of the Air Report. That analysis demonstrates that the benefits of the proposed Liquefaction Project and its minimal impacts are far preferable to any alternatives, including the no action alternative.

We also provided quantitative analysis of the emissions offsets required for compliance with the NA NSR requirements for ozone. This is provided in Section 7.4 of the Air Report. Dominion Cove Point has already obtained options on all offsets required for the Liquefaction Project.

Finally, we performed computer modeling to demonstrate protection of public health under the Maryland TAPs (total allowable emissions from the premises) requirements. As discussed in more detail in Section 7.5 of the Air Report, that analysis quantifies emissions of each TAP, identifies and commits Dominion Cove Point to install and operate BACT for Toxics on new and reconstructed sources of TAP emissions and demonstrates that emissions of TAPs will not adversely impact public health beyond the property line.

400 **Q. Does this conclude your direct testimony?**

401 A. Yes, it does.

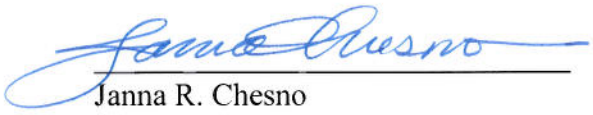
APPENDIX A

BACKGROUND AND QUALIFICATIONS OF RICHARD B. GANGLE

Richard B. Gangle graduated from the Pennsylvania State University in 2001 with a Bachelor of Science degree in Environmental Resource Management. In 2001, he joined Dominion Resource Services, Inc. as an Environmental Specialist for Gas Environmental Services in Pittsburgh, Pennsylvania. Mr. Gangle was promoted to Environmental Specialist II in 2005, Environmental Specialist III in 2010, and Environmental Consultant in 2011. In his positions with the Company, Mr. Gangle has been responsible for regulatory and air permit compliance for over 150 natural gas compression facilities throughout seven states, including the existing Dominion Cove Point LNG terminal. Mr. Gangle has worked as the lead environmental air permitting resource on over 200 permitting actions in his positions, including the Dominion Cove Point Liquefaction Project which is pending at the FERC, and the Maryland segments that are the subject of this CPCN proceeding.

CERTIFICATE OF SERVICE

I hereby certify that this 17th day of July, 2013, a copy of the foregoing filing was served upon all parties and interested persons included on the service list in this proceeding.



Janna R. Chesno

An Attorney for Dominion Cove Point LNG, LP

July 17, 2013