Dominion Cove Point LNG, LP
Cove Point Liquefaction Project
Docket No. PF12-16

Resource Report 10
Alternatives

DRAFT
November 2012

Summary of Required FERC Report Information		
Topic	**FERC Reference**	**Report Reference or Not Applicable**
1. Address the "no-action" alternative. • Discuss the costs and benefits associated with the alternative.	§ 380.12(1)(1)	Section 10.2
2. For large projects, address the effect of energy conservation or energy alternatives to the project.	§ 380.12(1)(1)	Section 10.5
3. Identify system alternatives considered during the identification of the project and provide the rationale for rejecting each alternative. • Discuss the costs and benefits associated with each alternative.	§ 380.12(1)(1)	Section 10.3
4. Identify major and minor route alternatives considered to avoid impact on sensitive environmental areas (*e.g.* wetlands, parks, or residences) and provide sufficient comparative data to justify the selection of the proposed route. • For onshore projects near to offshore areas, be sure to address alternatives using offshore routings.	§ 380.12(1)(2)(ii)	Section 10.4
5. Identify alternative sites considered for the location of major new aboveground facilities and provide sufficient comparative data to justify the selection of the proposed site.	§ 380.12(1)(2)(ii)	Sections 10.6 and 10.7

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Acronym List

Bcf/d	Billion cubic feet per day
CNG	compressed natural gas
DCP	Dominion Cove Point LNG, LP
DTI	Dominion Transmission, Inc.
FERC	Federal Energy Regulatory Commission
hp	horsepower
GTL	gas-to-liquid
LNG	liquefied natural gas
LNG Terminal	Cove Point LNG Terminal
MMscf/d	million standard cubic feet per day
NGH	natural gas hydrates
Pleasant Valley M&R site	Pleasant Valley metering and regulating site
Project	Cove Point Liquefaction Project
ROW	right-of-way

DRAFT RESOURCE REPORT 10 - ALTERNATIVES
DOMINION COVE POINT LNG, LP
COVE POINT LIQUEFACTION PROJECT

Dominion Cove Point LNG, LP (DCP) is seeking authorization from the Federal Energy Regulatory Commission (the FERC or Commission) to construct, install, own, operate, and maintain the Cove Point Liquefaction Project (Project), which will involve construction of new facilities and expansion of existing DCP facilities to provide gas liquefaction and liquefied natural gas (LNG) export services to customers that will provide their own gas supply. The proposed liquefaction facilities, combined with existing facilities, will provide a bi-directional service of import and export of LNG at the Cove Point LNG Terminal (LNG Terminal).

The Project will consist of the following facilities in Calvert County, Maryland:

- Cove Point Liquefaction Facility
    - LNG Terminal
        - The Cove Point Liquefaction Facility will be constructed on 40 to 60 acres within the fenced area (Figure 1-3 in Resource Report 1).
        - One LNG train capable of processing an average total of 750 million standard cubic feet per day (MMscf/d) of natural gas for nominal LNG train capacity of approximately 4.5 to 5.0 million tons per annum.
        - New natural gas fired turbines to drive the main refrigerant compressors.
        - Generation of additional power on site to meet power demands of the liquefaction plant.
        - Equipment to remove impurities from the gas stream which have no heating value, have corrosive potential, or will crystallize during the liquefaction process.
    - Offsite Areas
        - Temporary construction laydown/parking area (Offsite Area A).
        - Temporary construction staging area (Offsite Area B).

Additional compression on the Cove Point Pipeline is required to deliver the inlet gas to the LNG Terminal. DCP proposes to install additional compression, totaling up to approximately 34,000 horsepower (hp), at its existing Loudoun Compressor Station and/or Pleasant Valley Compressor Station located in Loudoun and Fairfax Counties, Virginia, respectively. DCP is considering design alternatives that may provide some flexibility in the siting of the additional compression. To gain this potential flexibility, DCP may need to increase the total hp to be installed for this Project.

The Project will consist of the following facilities in Loudoun and/or Fairfax Counties, Virginia:

- Cove Point Compressor Stations
    - Loudoun Compressor Station
        - Loudoun Compressor Station
            - Additional compression at an existing station (Loudoun Compressor Station) with up to 34,000 hp of compression.

        - Dominion Transmission, Inc.'s (DTI)[1] Leesburg Compressor Station Contractor Staging Area
            - Temporary construction laydown, parking and staging at an existing station (DTI Leesburg Compressor Station Contractor Staging Area) for construction activities at the adjacent DCP Loudoun Compressor Station.
    - Pleasant Valley Compressor Station
        - Pleasant Valley Compressor Station
            - Additional compression at an existing station (Pleasant Valley Compressor Station) with up to 34,000 hp of compression.
        - Pleasant Valley Suction/Discharge Pipelines
            - Install 0.42 mile of 36-inch-diameter suction/discharge pipelines (Pleasant Valley Suction/Discharge Pipelines) extending from the Pleasant Valley Compressor Station to an existing Pleasant Valley metering and regulating site (Pleasant Valley M&R site).

This Resource Report is required for all applications and describes alternatives which were considered during the identification of the Project and includes a comparison of the potential environmental impacts of such alternatives to those of the Project. The alternatives considered include no-action or postponed action, alternative systems, and conservation or alternative energy sources. This Report describes DCP's analysis of siting and design alternatives for the Project. This Report also addresses comments received from the public during the FERC scoping period as well as comments received directly from the FERC and other federal and state agencies.

10.1 Range of Alternatives

To accommodate its customers and provide an outlet for growing domestic gas supplies, DCP is planning this Project to liquefy and export domestically produced natural gas delivered from the interstate pipeline grid and sourced from both conventional and non-conventional production. The purpose of this Project is to develop a liquefaction facility at the existing LNG Terminal to allow export of LNG. The site currently is used for the import of LNG and the ability to export LNG will make it a bi-directional facility. Four main alternatives were evaluated based on the Project purpose. The first alternative would be to take no action or to postpone action on the Project (Section 10.2). The second alternative would be to make use of other existing or proposed LNG facilities to meet the purpose of the proposed Project (Section 10.3). The third alternative would be to meet the purpose of the proposed Project using an alternate pipeline route (Section 10.4). The fourth alternative would be to meet the objective of the Project through conservation or other energy sources (Section 10.5).

[1] DTI, an affiliate of DCP and a subsidiary of Dominion Resources, Inc., is primarily a provider of interstate natural gas transportation and storage services. It owns and operates one of the nation's largest underground natural gas storage systems, and has approximately 8,000 miles of pipeline in six states including Ohio, West Virginia, Pennsylvania, New York, Maryland, and Virginia.

In addition to alternative projects, specific site and design alternatives were also evaluated. Site alternatives for the Liquefaction Facility are discussed in Section 10.6 and alternatives for the additional compression are discussed in Section 10.7.

10.2 No-Action or Postponed Action Alternative

The no-action or postponed action alternative would consist of not constructing, or delaying, the Project and to continue with the status quo. Although no action or postponed action would eliminate or delay any potential environmental impacts of the Project, the objectives of the Project would not be met. The Project is necessary to enable DCP to facilitate export of LNG from the LNG Terminal for DCP's customers. No action or postponed action would limit use of the LNG Terminal to import of LNG only.

The Project will allow DCP to provide gas liquefaction and LNG export services to customers that will provide their own gas supply. The no-action or proposed action alternative would not allow the Project benefits to be realized. The regional and local socioeconomic benefits of the Project are included in Resource Report 5. Other benefits include:

- Improvement in the U.S. Balance of Trade: LNG exports, along with associated production of natural gas liquids, will help realign the U.S. balance of trade by a range of $2.8 billion to nearly $7.1 billion per year. The value of the exports is estimated to reduce the total U.S. trade deficit (compared to the 2010 deficit) by between 0.6 and 1.4 percent.

- Environmental Benefits: As the cleanest-burning fossil fuel, natural gas significantly reduces total greenhouse gas emissions when used as a substitute for coal or fuel oil. To the extent that the LNG exported from the LNG Terminal is used as substitute for coal and fuel oil in other countries, it will reduce global greenhouse gas emissions significantly over the 25-year export term.

The no-action alternative would avoid potential environmental impacts associated with the proposed action. However, the unsatisfied demand for energy supply will eventually need to be met through energy conservation or some other energy alternative. As described below (Section 10.5), the use of alternative energy strategies will not fully satisfy the market needs.

10.3 System Alternatives

The purpose of identifying and evaluating system alternatives is to determine whether the environmental impacts associated with the construction and operation of the proposed Project could be avoided or reduced by using existing, modified, or proposed export facilities rather than constructing new facilities. System alternatives are alternatives that are able to meet the objectives of the Project, but use a different facility (existing or proposed), or are able to otherwise use existing infrastructure to eliminate the need for the proposed facility. A system alternative could make it unnecessary to construct all or part of the Project, although modifications or additions to the alternative systems may be required to increase their capacity or provide the requisite receipt and delivery capability. These modifications or additions could

result in environmental impacts that may be less than, comparable to, or greater than those associated with construction of the Project. Some system alternatives could result in significantly less environmental impacts than the proposed Project facilities. However, a viable system alternative must be technically and economically feasible and practicable, and must satisfy interconnect requirements and the anticipated in-service date to fulfill commitments made to the Project customers.

For the purpose of evaluating alternatives, DCP presumed that customers selected Cove Point as their location for exports because of its geographic proximity to their natural gas supply sources. This presumption should not be interpreted as a requirement since the LNG Terminal is ideally located to provide access to a wide range of domestic supply sources. The Cove Point Pipeline interconnects with three major pipelines, and these pipelines are, in turn, interconnect with the interstate grid, allowing gas to be sourced from a wide variety of regions. This was the basis used to identify and evaluate alternatives.

This section analyzes system alternatives that were considered during the identification of the Project and provides the rationale for selecting the preferred alternative. In the planning phase of the Project, DCP evaluated several system alternatives for meeting the Project's purpose and need. System alternatives would require constructing a new LNG terminal to export LNG or exporting LNG from a different, existing LNG terminal.

10.3.1 LNG Terminal

10.3.1.1 Existing Facilities

Kenai LNG Plant – The Kenai LNG Plant is the only existing operational LNG export facility in the United States (FERC, 2012a). It is located in Alaska in the Cook Inlet Basin area. This facility began operation in 1967. Because the Project seeks to export domestically produced natural gas, use of the Kenai LNG Plant may not be efficient or practical. Also, the Kenai LNG Plant is currently preparing to close and is only authorized to export LNG through March 2013. This facility will not be operational during the period when the Cove Point facility will be exporting LNG.

10.3.1.2 Approved Facilities

Sabine Pass LNG Project – This project has been authorized by the FERC, under Docket No. CP11-72, and is currently under construction. The facility is located in Cameron Parish, Louisiana, and will have capacity to process 2.6 billion cubic feet per day (Bcf/d) of natural gas (FERC, 2012b and FERC, 2012c). This facility will serve domestic natural gas sources from the Mid-Continent/Gulf Coast Corridor. However, the distance between the Gulf Coast of Louisiana and the presumed supply source would make the transportation of natural gas to this facility for export cost prohibitive for DCP's customers. In addition, the planned capacity for the Sabine Pass LNG Project is fully contracted. The Sabine Pass LNG Project is not a reasonable system alternative.

10.3.1.3 Proposed Facilities

Freeport LNG – This export project has been proposed to the FERC, but has not yet been approved. If it is approved, it would be located in Brazoria County, Texas, at an existing LNG facility. This export facility is designed to process 1.8 Bcf/d of natural gas (FERC, 2012d). Like the Sabine Pass LNG Project, the large distance between the Gulf Coast of Texas and the presumed supply source would make the transportation of natural gas to this facility for export less cost-effective for DCP's customers. The Freeport LNG Project is not a reasonable system alternative.

Corpus Christi LNG – This project has been proposed to the FERC but has not yet been approved. If it is approved, it would be located in San Patricio and Nueces Counties, Texas at a proposed LNG facility. The export facility is designed to process 1.8 Bcf/d (FERC, 2012d). However, like the Sabine Pass and Freeport Projects, the large distance between the Gulf Coast of Texas and the presumed supply source would make the transportation of natural gas cost prohibitive for DCP's customers. The Corpus Christi LNG Project is not a reasonable system alternative.

Jordan Cove LNG – This project has been proposed to the FERC but has not yet been approved. If it is approved, it would be located in Coos Bay, Oregon at a proposed LNG facility. The facility is designed to process 0.9 Bcf/d (FERC, 2012d). Because of its location on the west coast of the United States, it would not be economically feasible to customers for DCP to transport natural gas from their supply source to this terminal for export. Therefore, this is not a reasonable system alternative.

Trunkline LNG – This project has been proposed to the FERC, but has not yet been approved. If it is approved, it would be located in Lake Charles, Louisiana, at an existing LNG facility. The facility would have an export capacity of 2.4 Bcf/d (FERC, 2012d). Like the Sabine Pass, Freeport, and Corpus Christi Projects, the large distance between the Gulf Coast of Louisiana and the presumed supply source would make the transportation of natural gas to this facility for export less cost-effective for DCP's customers. The Trunkline LNG Project is not a reasonable system alternative.

Cameron LNG – This project has been proposed to the FERC, but has not yet been approved. If it is approved, it would be located in Hackberry, Louisiana, at an existing LNG facility. The facility would have an export capacity of 1.7 Bcf/d (FERC, 2012d). This facility would ship source gas from unconventional shale fields in Texas and Louisiana. However, like the Sabine Pass, Freeport, Corpus Christi, and Trunkline Projects, the large distance between the Gulf Coast of Louisiana and the presumed supply source would make the transportation of natural gas to this facility for export less cost-effective for DCP's customers. The Cameron LNG Project is not a reasonable system alternative.

Oregon LNG – This project has been proposed to the FERC, but has not yet been approved. If it is approved, it would be located in Astoria, Oregon, at a pending LNG import terminal. The facility would have an export capacity of 1.3 Bcf/d (FERC, 2012d). Because of its location on the west coast of the United States, it would not be economically feasible to customers for DCP

to transport natural gas from their supply source to this terminal for export. Therefore, this is not a reasonable system alternative.

Kitimat LNG Project – This is an LNG export terminal that has been proposed in British Columbia, Canada (FERC, 2012d). This facility would have an export capacity of 0.7 Bcf/d (FERC, 2012d). This facility would export gas from Western Canada. Similar to the Kenai LNG Plant, it would not be economically feasible to transport natural gas across the country, prior to export. Therefore, this would not be able to serve as a system alternative.

Douglas Channel LNG –This is a proposed facility that would be located near Douglas Island, British Columbia. This facility would be located in Western Canada and would export to areas along the Pacific Rim. The facility would have an export capacity of 0.25 Bcf/d (FERC, 2012d). Similar to the Kenai LNG Plant, it would not be economically feasible to transport natural gas across the country, prior to export. Therefore, this facility would not be able to serve as a system alternative.

Lavaca Bay LNG – This is a proposed facility that would be located in Calhoun County, Texas. The facility would have an export capacity of 1.4 Bcf/d. However, like the Sabine Pass, Freeport, Corpus Christi, Cameron, and Trunkline Projects, the large distance between the Gulf Coast of Texas and the presumed supply source would make the transportation of natural gas to this facility for export less cost-effective for DCP's customers. The Lavaca Bay LNG Project is not a reasonable system alternative.

10.3.1.4 Export of Natural Gas via Pipeline

Capabilities to export natural gas via pipeline do exist if exporting to Canada or Mexico. However, this export method is only feasible for export within North America and does not allow for export to other continents or the Caribbean Islands. The amount of pipeline required would be cost-prohibitive; furthermore, the technology and installation methodology for a trans-ocean pipeline does not currently exist. Because the export of natural gas would be limited geographically, this alternative would not meet the needs of DCP's customers and is therefore not a reasonable alternative.

10.3.1.5 Other Natural Gas Transport Methods

Three other technologies for transporting natural gas are gas-to-liquids (GTL), compressed natural gas (CNG), and natural gas hydrates (NGH). Each of these technologies was evaluated by DCP, but was not considered to be a feasible alternative.

GTL technology takes natural gas and converts it into a hydrocarbon that is a heavier liquid (e.g., diesel). This technology is typically implemented where large isolated gas reserves exist. Initial development of this type of a GTL facility has a high capital cost. The continued operation and maintenance of these facilities requires high energy input. In addition, output hydrocarbons, such as low sulfur diesel, do not have the same environmental benefits as natural gas. GTL is a less environmentally desirable alternative. It is also not economically feasible.

CNG technology takes natural gas at normal atmospheric pressure and compresses it at high pressure. The natural gas then takes up less than one percent (1%) of its initial volume. After compression, the gas can then be transported in pressurized containers. There are currently no ships available to transport bulk CNG and such vessels would need to be custom designed and built for this purpose. Bulk receiving facilities for CNG also do not exist at this time. Because the infrastructure to support CNG does not exist, while there are LNG transport vessels available, this option is not considered feasible.

NGH are solid structures, similar to ice, that form when methane is trapped within water. Each cubic meter of NGH contains approximately one-quarter the amount of natural gas as a cubic meter of LNG. Deposits of NGH are found in the deep ocean, but there is no method available to economically mine this resource and a market does not yet exist to use this gas. There is no technology available at this time to store, load and unload, transport, and process large quantities of NGH. This option is not considered to be an alternative to the Project at this time. This may be a viable option in future, if the technology and markets to support its use are developed.

10.3.2 Other Pipeline Systems

The purpose of the Project is to provide natural gas liquefaction and LNG export services to customers that will provide their own gas supply (i.e., DCP would provide liquefaction service for others to export the LNG). The existing Cove Point Pipeline, which extends approximately 90 miles from the LNG Terminal in Maryland and interconnects with three interstate natural gas pipeline companies in Virginia, will be used to transport the natural gas supplies to the LNG Terminal for liquefaction. While there are other pipeline systems in the Project area, none connect to the LNG Terminal. Therefore, the use of other existing pipeline systems is not considered a viable system alternative for the Project.

10.3.3 Compressor Stations

Similar to current operations, the pressure of the incremental volumes of natural gas delivered by Project customers must be increased for the gas to be transported in the Cove Point Pipeline. The higher operating pressure on the Cove Point Pipeline is needed to meet existing contractual obligations. Looping the Cove Point Pipeline would not resolve the pressure differential due to the fact that the pipelines delivering gas to DCP do not have sufficient pressures to enter the Cove Point Pipeline. Therefore, looping is not a feasible alternative. To raise the pressure, compression must be added. DCP could either add compression at a new greenfield station or at an existing station. The Loudoun Compressor Station is located at one end of the Cove Point Pipeline with the Pleasant Valley Compressor Station located roughly 13 miles to the southeast (Figure 10-1). Each compressor station is located at an interconnection with a pipeline(s) delivering gas to DCP. A new greenfield compressor station located in between Loudoun and Pleasant Valley or between Pleasant Valley and the LNG Terminal would not resolve the pressure differential between the interconnecting pipeline and the Cove Point Pipeline. In addition, this option would require construction of a pipeline interconnect and would result in additional environmental impacts. Therefore, a new compressor station site is not a viable option.

The only feasible alternative is locating the additional compression at an existing station – the Loudoun Compressor Station and/or Pleasant Valley Compressor Station. The geographic location of the customers' natural gas supply for this Project is the primary consideration in determining where the additional compression will be needed. DCP is considering design alternatives that may provide some flexibility in the siting of the additional compression. To gain this potential flexibility, DCP may need to increase the total hp to be installed for this Project.

The current compression scenarios that may be implemented are described in Section 10.7. Other than the two Compressor Stations currently being evaluated, any system alternative involving transportation by a pipeline and/or facility other than the facilities proposed for this Project will likely involve increased pipeline construction and associated increased environmental impact, will not meet the Project purpose and need, or both.

10.4 Route Alternatives

Route alternatives are analyzed for their potential to avoid or significantly reduce impacts on environmentally sensitive resources, landowners, and populated areas. Alternatives generally have the same origin and termination points of the route, but follow a significantly different route.

The only new pipelines associated with the project are 0.42 mile suction/discharge pipelines (Pleasant Valley Suction/Discharge Pipelines) that will connect the additional compressor units at the Pleasant Valley Compressor Station with the existing Pleasant Valley M&R site. These pipelines will follow the shortest and most direct route to the Pleasant Valley M&R site and will be adjacent to the existing suction/discharge pipelines. In addition, the right-of-way (ROW) for the new suction/discharge pipelines will overlap with the existing pipeline ROW. Because the Pleasant Valley Compressor Station and the Pleasant Valley M&R site are so close together, there are no other reasonable route alternatives. All other alternatives would have a longer pipeline and greater environmental impacts. Because the proposed route minimizes impacts to natural resources, cultural resources, and landowners, pipeline route alternatives were not evaluated for this Project.

10.5 Conservation or Alternative Energy Sources

10.5.1 Energy Conservation

Although energy conservation measures will be important elements in addressing future energy demands, they will offset a small fraction of anticipated demand in the foreseeable future. Even if energy conservation measures proved to be more effective than anticipated, the growing relative importance of natural gas production from unconventional sources would require substantial infrastructure development to exploit these resources. Thus, energy conservation does not preclude the need for natural gas infrastructure projects like that proposed by DCP. In addition, conservation in importing countries is beyond DCP's control, and although it may reduce demand for energy sources, it is not reasonable as a total replacement for natural gas or other fossil fuels.

10.5.2 Alternative Energy Sources

Natural gas has many attributes that make its use more attractive than other fossil fuel sources. Overall, natural gas is the most readily available, dependable, economically viable, and environmentally acceptable fuel for residential, commercial, and industrial markets. Natural gas is a much cleaner burning fuel than other fossil fuels, such as coal or oil, and emits lesser amounts of particulate matter, greenhouse gases, and other pollutants. Because energy demand is projected to increase (EIA, 2011), it is unlikely that the use of natural gas could be easily or cost-effectively replaced by other energy sources in the near term. In addition, the LNG to be exported by the Project will be used in other countries in lieu of coal and oil, which have greater environmental impacts. Replacement of coal or oil burning power plants with natural gas is one large scale option for reducing environmental impacts associated with fossil fuels.

Alternate energy sources could include fossil fuels (i.e., fuel oil and coal), nuclear, hydropower, renewable sources, municipal solid wastes, wood and other biomass.

Nuclear power is not a feasible replacement for fossil fuels in most countries because of the large costs and long lead times necessary to develop such facilities. While existing nuclear power plants are expected to continue operating through 2035, the EIA predicts that the total share of generation from nuclear plants would fall from twenty percent (20%) in 2009 to seventeen percent (17%) in 2035 (EIA, 2011). Because of the costs and long lead times for design and permitting, it is unlikely that new nuclear power plants would be sited and developed to serve the targeted markets within a timeframe that would meet Project objectives.

Hydropower is also not considered to be viable as an alternative energy source to natural gas in the near term. Although there may be undeveloped hydropower potential, development of hydropower sites has its own set of environmental impacts that are associated with creation of the dam and reservoir, and alteration of the river and surrounding ecosystem. Therefore, it is unlikely that new and/or significant sources of hydropower would be a reliable alternative to the proposed Project.

The use of renewable energy sources such as wind or solar is limited by its intermittent and somewhat unpredictable nature. These sources are unable to provide a steady amount of energy to the grid. In addition, despite the growing support for renewable energy, significant long-term investment, as well as advances in technology and development, is necessary before these sources could potentially offset a substantial portion of the projected energy demand. Development of infrastructure to support renewable power sources may not be feasible in some areas where natural gas is used. Wind and solar require large land areas to become substantial energy sources. Therefore, renewable energy sources will not provide sufficient energy supplies in the near future to eliminate the need for the Project.

10.6 Liquefaction Facility Site Alternatives

The existing LNG Terminal has a large undeveloped area on property owned by DCP surrounding the existing fenced area (i.e., developed area). The fenced area contains the

operating industrial area at Cove Point. DCP first considered developing the Project outside the fenced area, but within the property boundary of the overall DCP Cove Point site (Figure 1-3). The area outside the fenced area includes streams, wetlands, and forested land with high habitat value. DCP has refined the Project footprint and now intends to keep the new Cove Point Liquefaction Facility within the fenced area, which avoids impacts to resources in other areas of the Cove Point property. Because of the limited space available within the fenced area, there are limited configurations available for use. All available land within the fenced area may be developed, which will include minor impacts to streams, wetlands, and forested areas. However, because DCP has opted not to construct the Cove Point Liquefaction Facility outside the fenced area, most environmental effects that would have occurred with a larger footprint will be avoided. This makes siting the Cove Point Liquefaction Facility only within the fenced area the environmentally preferred alternative.

10.6.1 Offsite Area Alternatives

To minimize disturbance of the natural areas at the LNG Terminal, offsite areas will be used for temporary construction laydown and construction worker parking. One laydown area, Offsite Area A, will be used as a staging area for equipment and supplies, pre-assembly, and construction worker parking. This 179.1-acre site is located approximately 1.5 miles west of the LNG Terminal, along Route 2/4. A second laydown area, Offsite Area B, will be used as a barge offloading area to receive major equipment and supplies that are best transported by water. The equipment and supplies will then be transported to the other laydown area or directly to the LNG Terminal site. These two properties are located within the vicinity of the LNG Terminal, were available for purchase or lease, and could accommodate the temporary construction activities for the Project. In addition, the impacts to this land will be limited and temporary. There were no other properties without significant environmental features (predominantly wetlands and streams) and associated potential impacts, and restrictive land use easements. Therefore, the proposed Offsite Areas are the only practicable options.

10.7 Compression Alternatives

Additional compression on the Cove Point Pipeline is required to deliver the inlet gas to the LNG Terminal. DCP proposes to install up to an additional approximately 34,000 hp at its existing Loudoun Compressor Station and/or Pleasant Valley Compressor Station located in Loudoun and Fairfax Counties, Virginia, respectively. DCP is considering design alternatives that may provide some flexibility in the siting of the additional compression. To gain this potential flexibility, DCP may need to increase the total hp to be installed for this Project. The locations of the compressor stations are shown in Figure 1-4. DCP is evaluating three scenarios for the location of the required additional compression:

1. All the new hp, consisting of up to four units, located at DCP's existing Loudoun Compressor Station.
2. All the new hp, consisting of up to four units, located at DCP's existing Pleasant Valley Compressor Station.

3. Some of the new hp, consisting of up to two units, located at DCP's existing Loudoun Compressor Station, and some of the new hp, consisting of up to two units, located at DCP's existing Pleasant Valley Compressor Station.

Once the Project customers have identified the location of their gas supply, then the additional compression design will be finalized. The compressor(s) could be potentially driven by electric or gas motor(s). If additional electric units are installed at the Loudoun Compressor Station, a new electric service line and a new electrical substation would be required. If additional electric units are installed at the Pleasant Valley Compressor Station, the existing electrical substation, located adjacent to the compressor station, would need to be expanded.

To support operation of additional units at the Pleasant Valley Compressor Station, 0.42-mile, 36-inch-diameter suction/discharge pipelines would be required. These pipelines would extend from the additional compressor units at the Pleasant Valley Compressor Station to the existing Pleasant Valley M&R site, and would require an additional 2.8 acres of ROW.

Construction at the Loudoun Compressor Station would be supported by use of an existing mowed and maintained area at the nearby DTI Leesburg Compressor Station as a contractor staging area (Figure 1-4). Additional areas of the Pleasant Valley Compressor Station property would be used as construction and laydown areas, so no offsite property would be required.

Comments were received on the consideration of using electric motors at the Compressor Stations. DCP is evaluating the potential to install electric compression at Loudoun Compressor Station. An analysis of this option will be provided in the Resource Reports to be filed with the FERC Application in early 2013.

10.7.1 Existing Sites

For the reasons discussed in Section 10.3.3, the proposed additional compressor units will be located at existing DCP facilities. Development of new sites for the Loudoun and Pleasant Valley Compressor Stations would require land acquisition and the conversion of existing agricultural, forest, or open land to industrial use. Assuming approximately 15 to 25 acres for a new greenfield station site and parking, and 20 acres for temporary construction activities, a minimum of approximately 35 acres of land would be required to construct and operate a new greenfield station site. As proposed, construction and operation of the additional compression at the Loudoun and/or Pleasant Valley Compressor Stations will be within DCP's property boundaries and existing ROW on land that has been previously converted to industrial use (i.e., within existing station fence lines or permanent ROW) or adjacent lands that have been converted to open maintained areas, with the exception of the Pleasant Valley Suction/Discharge Pipelines. For these reasons, the development of new sites for these facilities was not analyzed.

Provided below is a discussion of alternatives considered for the additional compression at the Loudoun and/or Pleasant Valley Compressor Stations.

The geographic location of the customers' natural gas supply for this Project is the primary consideration in determining where the additional compression will be needed. DCP is

considering design alternatives that may provide some flexibility in the siting of the additional compression. To gain this potential flexibility, the total hp may need to be increased. If the customers bring in their natural gas supply from an area that connects to the interstate natural gas companies that feed into the Loudoun Compressor Station, then the additional compression will have to be located at the Loudoun Compressor Station for this Project. If the customers bring in their natural gas supply from an area that connects to the interstate natural gas company that feeds into the Pleasant Valley Compressor Station, then the additional compression will be sited at the Pleasant Valley Compressor Station. It is also possible for the customers to bring in some of their supply through the interstate natural gas companies that connect to both stations.

A comment was received requesting additional information on DCP's customers. DCP is in negotiations with multiple potential customers for the Project. The potential customer that has been publically announced is Sumitomo Corporation and Tokyo Gas. DCP will most likely have only two customers for the Project.

10.7.2 Loudoun Compressor Station Alternative

The alternative to building additional compression units at the existing Loudoun Compressor Station would be to install a new compressor station in an undeveloped area along the same transmission corridor. A new compressor station would require construction of pipelines to connect the station to the existing pipeline network. This alternative would generate additional environmental impacts associated with the Project. No pipelines are required with the construction of additional units at the Loudoun Compressor Station.

Multiple public comments have been received requesting that additional compression be added at the Pleasant Valley Compressor Station rather than at Loudoun Compressor Station. The Pleasant Valley Compressor Station cannot easily be used as an alternative to the Loudoun Compressor Station. The Pleasant Valley Compressor Station is only directly connected to the interstate pipeline grid through an interconnection with Transcontinental Gas Pipe Line Company, LLC. Both the Loudoun and Pleasant Valley Compressor Stations, which are approximately 13 miles apart, are connected with Cove Point Pipeline. Gas received at the Loudoun and/or Pleasant Valley must be compressed before being discharged into the Cove Point Pipeline which operates as a higher pressure than the interconnecting interstate pipelines. Although all three of the pipelines feeding into the Cove Point system have multiple interconnections with each other at other locations, this does not mean that gas can be deliverted to the Cove Point Pipeline at the Pleasant Valley Compressor Station without installing additional facilities.

The geographic location of the customers' natural gas supply for this Project is the primary consideration in determining where the additional compression will be needed. DCP is considering design alternatives that may provide some flexibility in the siting of the additional compression. To gain this potential flexibility, the total hp may need to be increased. The proposed design and location for the compression will be included in the Resource Reports to be filed with the FERC Application in early 2013.

10.7.3 Pleasant Valley Compressor Station Alternative

The alternative to building additional compression unit at the existing Pleasant Valley Compressor Station would be to install a new compressor station in an undeveloped area along the same transmission corridor. A new compressor station would require development of pipelines to connect the station to the existing pipeline network. These pipelines would likely be longer than the 0.42-mile suction/discharge pipelines that would be constructed as part of the modifications to the existing Pleasant Valley Compressor Station. This alternative would generate additional environmental impacts associated with the Project. As a result, this is not a preferred alternative.

10.8 References

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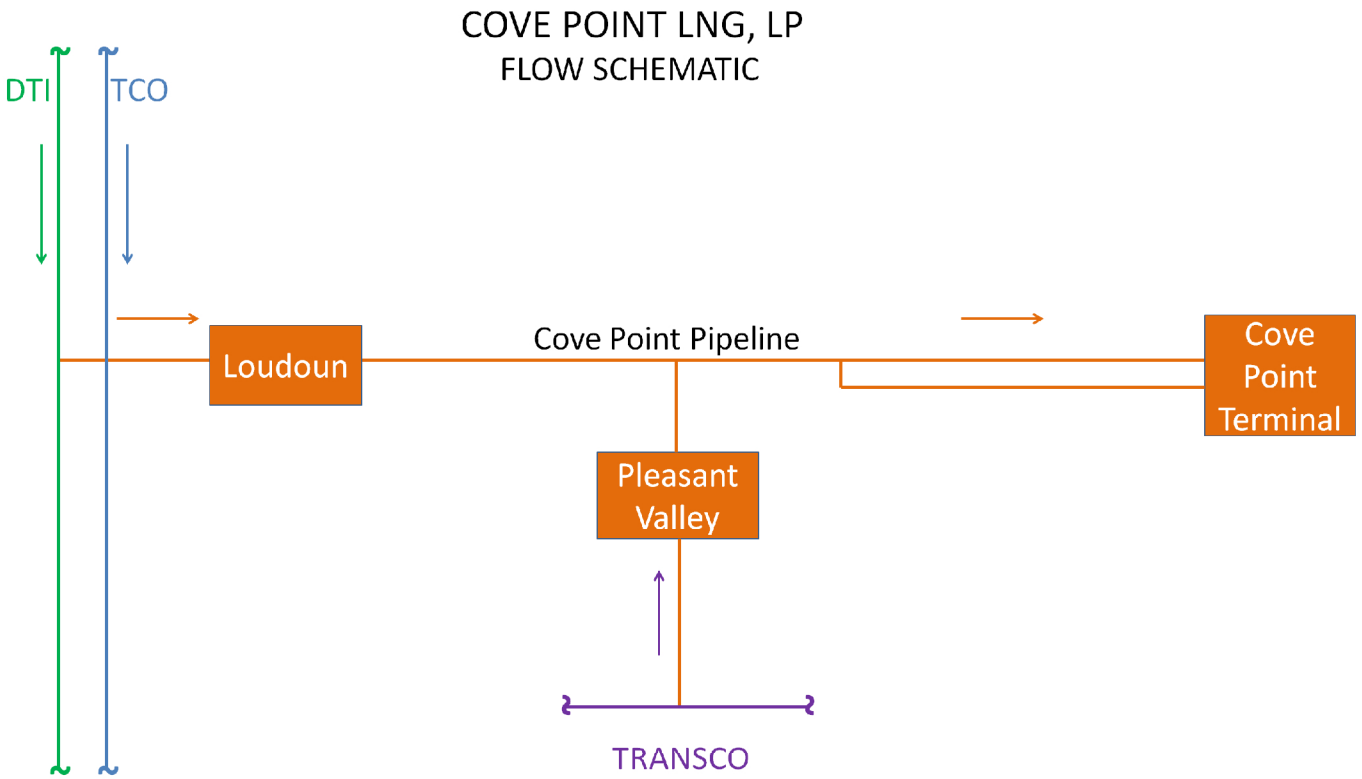
FERC. 2012b. North *American LNG Import /Export Terminals – Approved*. Online. http://www.ferc.gov/industries/gas/indus-act/lng/LNG-approved.pdf. 17 July.

FERC. 2012c. North *American LNG Import /Export Terminals – Existing*. Online. http://www.ferc.gov/industries/gas/indus-act/lng/LNG-existing.pdf. 17 July.

FERC. 2012d. North *American LNG Import /Export Terminals – Proposed/Potential*. Online. http://www.ferc.gov/industries/gas/indus-act/lng/LNG-proposed-potential.pdf. 17 July.

U.S. Energy Information Administration. April 2011. *Annual Energy Outlook 2011 with Projections to 2035*. Reference Case AEO2011. http://www.eia.gov/forecasts/aeo/index.cfm



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Date: November 2012

Cove Point Liquefaction Project
Dominion Cove Point LNG, LP

FERC Prefiling Number: PF12-16

Figure 10-1
Flow Schematic