

**ADELPHIA GATEWAY PROJECT**

**RESOURCE REPORT NO. 10**

**Alternatives**

**ADELPHIA GATEWAY PROJECT**

**January 2018**

<b>SUMMARY OF FILING INFORMATION</b>			
<b>INFORMATION</b>	<b>Data Sources<sup>a</sup></b>	<b>Found in Section</b>	<b>To be Filed</b>
<b>Minimum Requirements to Avoid Rejection:</b>			
1. Address the “no action” alternative - 18 CFR § 380.12(l)(1)	D	10.1	N/A
2. For large projects, address the effect of energy conservation or energy alternatives to the Project - 18 CFR § 380.12(l)(1)	D	10.2	N/A
3. Identify system alternatives considered during the identification of the Project and provide the rationale for rejecting each alternative - 18 CFR § 380.12(l)(1)	D	10.3	N/A
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 - 18 CFR § 380.12(l)(2)(ii)	A, D	10.3	N/A
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 - 18 CFR § 380.12(l)(2)(ii)	A, D	10.3.3	N/A
Notes:      CFR              Code of Federal Regulations N/A              Not applicable <sup>a</sup> A                  Aerial photographs D                  Applicant Source:      FERC, 2017			

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## ACRONYMS AND ABBREVIATIONS

18-inch Mainline	existing 18-inch-diameter pipeline
Adelphia	Adelphia Gateway, LLC
dthd	dekatherms per day
FERC	Federal Energy Regulatory Commission
M&R	meter and regulator
MAOP	maximum allowable operating pressure
mscfd	million standard cubic feet per day
MP	milepost
NWI	National Wetland Inventory
Preferred Alternative Project	Adelphia Gateway Project
Quakertown CS	Quakertown Compressor Station
RR	Resource Report
Southern Segment	existing pipeline segment from the Quakertown Compressor Station to the Marcus Hook Compressor Station
USGS	U.S. Geological Survey

## 10 ALTERNATIVES

Resource Report 10 discusses the environmental, economic, technological, and procedural viability of alternatives to the proposed project including the No-Action Alternative, energy conservation alternatives, system alternatives, and project-specific alternatives. In addition, several facility iterations and flow modelling scenarios were evaluated to develop the best cost effective solution with the least environmental impact that accomplish Project objectives. This resource report describes how the proposed Adelphia Gateway Project (Project) would be designed, constructed, operated, and maintained in order to provide reliable service and maintain public safety. The alternatives presented are evaluated and considered relative to the proposed Project, in accordance with 18 Code of Federal Regulation Section 380.12(l). Adelphia Gateway LLC (Adelphia) used the results of the alternatives evaluation process to develop and refine the scope of the Project.

### 10.1 INTRODUCTION

As stated in Resource Report 1 (*General Project Description*), the Project includes assets currently owned by Interstate Energy Company (IEC). Of the existing 84 miles of 18-inch-diameter pipeline extending from Marcus Hook to its termination at the Martins Creek Power Plant (Existing System), the southern 50 miles (Southern Segment) is an idled fuel oil pipeline subject to the jurisdiction of the Pennsylvania Public Utility Commission. The Project (also known as the Preferred Alternative for the purposes of Resource Report 10), would, among other acquisitions and proposed services, repurpose the Southern Segment of the pipeline to flow natural gas and provide customers in the greater Philadelphia region with a needed, new source of clean, safe, low-cost natural gas supply. Upon purchase of the IEC assets, Adelphia would repurpose the entire pipeline to provide interstate natural gas transportation services. Current gas supplies are available on the 18-inch Mainline from TETCO at approximately milepost (MP) 50 and Columbia Gas Transmission, LLC, at approximately MP 66.

The Project would include the following primary components: the approximately 4.4-mile 20-inch Mainline; the approximately 84-mile 18-inch Mainline consisting of the Southern Segment and the Northern Segment that will both transport solely natural gas; two new compressor stations (the Marcus Hook CS and the Quakertown CS); two laterals, including an approximately 0.25-mile 16-inch pipeline lateral (the Parkway Lateral) and an approximately 4.5-mile 16-inch pipeline lateral (the Tilghman Lateral); four existing meter and regulator (M&R) facilities that do not require any modifications and accordingly do not have any alternatives for review in this resource report;

eight new M&R facilities at receipt and delivery interconnects located along the 18-inch Mainline and the laterals; eight new blowdown assemblies located at existing mainline valves; one new mainline valve; and use of an existing disturbed site as a wareyard. Adelphia sited the proposed Project along existing, previously developed infrastructure to the greatest extent practicable to avoid and minimize impacts to the human and natural environment. Several alternatives have been evaluated for modifying the Existing System to extend transportation services along the entire existing 84-mile pipeline.

## **10.2 NO-ACTION ALTERNATIVE**

Under the No-Action Alternative, Adelphia would not construct the proposed Project or acquire the asset being discussed. If the proposed facilities were not constructed, both the potential beneficial and adverse impacts identified in resource reports included in Adelphia's application for a Federal Energy Regulatory Commission (FERC) Certificate of Public Convenience and Necessity would not occur. In addition, under the No-Action Alternative, the Project's purpose and need, as set forth in Resource Report 1 (*General Project Description*) would not be met.

In its current state (i.e., without the proposed Project facilities), the existing IEC pipeline system (Existing System, encompassing both the Northern and Southern Segments) does not include the horsepower or the bidirectional flow capabilities required to provide the proposed 250,000 dekatherms per day (dthd) of transportation capacity into the greater Philadelphia area that would be provided by the Project. Alternate project(s) would be necessary to meet the Project's purpose and need under the No-Action Alternative as the incremental gas supplies available for customers in the area would not be available through existing infrastructure. In order to provide the same benefit as the proposed Project, other transporters would need to replace or upsize their system and facilities to provide comparable service as evidenced by Texas Eastern Transmission, LP's (TETCO's) proposed Greater Philadelphia Expansion, which called for replacing existing pipeline with a larger diameter and adding new pipeline looping. These activities would likely result in greater environmental impacts than the proposed Project. For these reasons, the No-Action Alternative was rejected from further consideration.

## **10.3 ENERGY CONSERVATION AND ALTERNATIVE ENERGY SOURCES**

Energy conservation reduces the need for natural gas and other energy sources. It is possible that the development and implementation of additional conservation measures would have an effect on energy demand. However, with the growing demand for clean, low-cost natural

gas in the greater Philadelphia market, the Project's purpose is to increase access to natural gas transportation capacity, not to decrease the demand for natural gas or other energy sources. Therefore, energy conservation would not meet the purpose and need of the Project and thus was removed from further consideration.

Similarly, alternative forms of energy could be used to meet increased energy demand. However, meeting increased demand for energy through use of coal, oil, electric, and nuclear energy as well as renewable sources such as solar, wind, and geothermal energy does not result in the construction of the transportation infrastructure that is necessary to transport natural gas supplies. Thus, alternative forms of energy would not meet the purpose of the Project in providing transportation service to bring 250,000 dthd into the greater Philadelphia area, or the need of the Project's customers in accessing additional natural gas supplies.

## **10.4 SYSTEM ALTERNATIVES**

System alternatives are those that would meet the objectives of the Project, but would use a different (and often existing) natural gas facility/pipeline system or a different configuration of facilities that would eliminate the need to construct all or part of the project (FERC, 2017). A system alternative could be preferable if it reduces adverse effects associated with the Project. To be a viable system alternative to the Project as proposed, the alternative must meet the following criteria:

- Capable of transporting incremental quantities up to 250,000 dthd of natural gas to the greater Philadelphia market;
- Capable of being constructed and placed in-service within the same schedule as the Project; and
- Reduce environmental impacts when compared to the Project.

Adelphia evaluated two systems alternatives to the proposed modifications to the Existing System (not including the new proposed delivery laterals): the Pipeline Replacement Alternative; and the Looping Alternative, which are discussed in the subsections below and compared in table 10.4-1.

### **10.4.1 PIPELINE REPLACEMENT ALTERNATIVE**

The existing 84-mile pipeline currently has a maximum operating pressure of 1,083 psig. Using this maximum operating pressure, pipeline capacities were calculated from the existing receipt points to proposed delivery points. In order to increase the volumes and move them

southward, additional pressure (delivery pressure) or additional pipe (looping) would be required.

The Pipeline Replacement Alternative involves replacing the Existing System in-place with a new pipeline with either a larger diameter pipeline or a pipeline designed to operate at higher pressures, or both. While this Alternative can increase throughput capability and make use of the existing pipeline right-of-way, additional temporary workspace would be required during construction. The Pipeline Replacement Alternative was eliminated from consideration because it would require new workspace resulting in greater environmental impacts than the Preferred Alternative, as shown in table 10.4-1.

Evaluation Criteria	Units	Alternative		
		Preferred	Pipeline Replacement <sup>b</sup>	Looping <sup>b</sup>
New Pipeline Length	mi	0	49.4	49.4
Total Compressor Stations	no.	2	0	0
Upgraded	no.	N/A	N/A	N/A
New	no.	1	N/A	N/A
Total Compression	HP	11,250	N/A	N/A
Upgraded	HP	N/A	N/A	N/A
New	HP	11,250	N/A	N/A
Environmental Factors				
New Construction ROW <sup>c</sup>	ac	5.8	185.5	455.1
New Permanent ROW <sup>d</sup>	ac	2.6	2.6	302.0
Length adjacent to existing ROW or corridor	%	100.0	100.0	100.0
Total wetlands affected <sup>e</sup>	ac	0.0	15.5	17.4
PFO	ac	0.0	6.7	11.5
PEM and/or PSS	ac	0.0	8.8	5.9
Total waterbodies crossed <sup>f</sup>	no.	0	80	82
Major waterbody crossings (>100 feet)	no.	0	3	3
Natural and scenic rivers	no.	0	1	1
Known cultural resources <sup>g</sup>	no.	0	0	0
Federal land crossed	mi	0.0	0.0	0.0
State land crossed	mi	0.0	0.0	0.0
Other recreation/designated land use areas crossed	mi	0.0	0.0	0.0

<b>Table 10.4-1</b>				
<b>Comparison of System Alternatives and the Preferred Alternative for the Proposed Adelphia Gateway Project<sup>a</sup></b>				
<b>Evaluation Criteria</b>	<b>Units</b>	<b>Alternative</b>		
		<b>Preferred</b>	<b>Pipeline Replacement<sup>b</sup></b>	<b>Looping<sup>b</sup></b>
Existing residences within ≤ 50 feet of construction work area <sup>h</sup>	no.	0	517	560
<p>HP = horsepower ROW = right(s)-of-way</p> <p><sup>a</sup> This table only considers alternatives along the Existing System and does not address proposed customer delivery laterals.</p> <p><sup>b</sup> Compression would not be installed for the Pipeline Looping or Replacement Alternatives.</p> <p><sup>c</sup> Assumes no new construction ROW would be required for pipeline installation for the proposed Project. For the Pipeline Replacement Alternative, any new ROW required for these alternatives would be for aboveground facilities. Assumes a new 75-foot-wide construction ROW located adjacent to the eastern edge of the Existing System's pipeline ROW (with an additional 15 feet that would be located within the Existing System's construction ROW) would be required for pipeline installation for the Looping Alternative. Totals also include permanent ROWs associated with aboveground facilities. A new 30-foot-wide construction ROW would be required for the pipeline installation for the Pipeline Replacement Alternative.</p> <p><sup>d</sup> Assumes no new permanent pipeline ROW for the proposed Project or the Pipeline Replacement Alternatives. Assumes 15 feet of new permanent ROW for the Looping Alternative, which would be located adjacent to the eastern edge of the Existing System's pipeline ROW. Totals also include permanent ROWs associated with aboveground facilities.</p> <p><sup>e</sup> All wetland information is based on National Wetlands Inventory mapping. Includes wetlands within the construction ROW. To be conservative, mixed-type wetlands that were partially classified as PFO wetlands (e.g., PFO/PSS) were included in PFO acreages only.</p> <p><sup>f</sup> All non-wetland waterbody information is based on Google Earth aerial imagery and the Pennsylvania Department of Environmental Protection eMap database. Includes waterbodies within the construction ROW.</p> <p><sup>g</sup> All cultural information is based on National Register of Historic Places mapping. Includes sites within the construction ROW.</p> <p><sup>h</sup> Counts determined based on Google Earth imagery. Includes several multi-unit apartment buildings, which are counted as one residence due to the inability to discern between units on aerial imagery.</p> <p>Sources: PADEP 2017; NPS, 2014; Google Earth, 2017; USFWS, 2017</p>				

## 10.4.2 PIPELINE LOOPING ALTERNATIVE

The Pipeline Looping Alternative consists of the installation of a new pipeline, adjacent to and often in the same right-of-way easement parallel to the Existing System. The new pipeline would typically be of the same diameter and length as the existing pipeline that it would parallel - in this case, the Southern Segment's 50 miles of 18-inch-diameter pipeline. No looping would be necessary for the Northern Segment. Based on the current right-of-way easement width and the development around the pipeline in the area of the Southern Segment over the years, some new right-of-way and additional temporary workspace would be required during construction. The Looping Alternative was eliminated from consideration, because it would require at least some new pipeline right-of-way and workspace, resulting in greater environmental impacts than the Preferred Alternative, as shown in table 10.4-1.

## **10.5 COMPRESSOR STATION ALTERNATIVES**

Adelphia considered alternative sites for the two proposed compressor stations. Adelphia evaluated installing compression at supply receipt points, as well as at market delivery points. In order to take full advantage of Adelphia's potential capacity, pressure provided by suppliers needs to be at or near the pipeline maximum allowable operating pressure (MAOP) of 1083 psig. Based on available data current deliveries from existing interconnects are well below the MAOP of the 18-inch mainline. Based on preliminary design discussions potential customer(s) of the pipeline have requested a delivery pressure of 800 psig in the Marcus Hook area.

Free flowing volumes at current receipt pressures to Marcus Hook while maintaining a delivery pressure of 800 psig provides insufficient capacity to meet the Project objectives. The addition of receipt compression at the current Quakertown interconnect designed for a discharge pressure of the MAOP of the line could facilitate the transportation of approximately 250 mmcf/d at a delivery pressure of up to 700 psig. To meet the desired delivery pressure of 800 psig, delivery compression is required at the terminus of the mainline designed for a discharge pressure of approximately 840 psig.

### **10.5.1 RECEIPT POINT COMPRESSION ALTERNATIVES**

The Quakertown CS Site Alternative (Preferred Alternative) is located along the Existing System near MP 49.4 on land within an existing M&R station with TETCO (Quakertown M&R Station) located in Quakertown, Bucks County, Pennsylvania (see Resource Report 1).

As part of the Preferred Alternative, Adelphia proposes a second interconnect with TETCO, which is projected to be a major source of supply for Adelphia, as its strategic location along the pipeline allows volumes to flow north and/or south independently. Installing new compression facilities allows incremental receipts of up to 250 mmcf/d deliveries from TETCO and takes advantage of the optimal (maximum) discharge pressure (MAOP -1083 psig) required to achieve the necessary delivery pressure at the Marcus Hook CS (700 psig). Adding compression at Quakertown CS allows for 250 mmcf/d of incremental gas supplies to be delivered to the market at Marcus Hook CS without additional mainline pipeline facilities.

Adelphia reviewed several alternative receipt compressor sites in order to optimize the flow characteristic objectives and minimize environmental impacts including:

- installing compression at an existing Adelphia disturbed site used for oil re-heating, known as Salford;

- reviewing various new, previously un-disturbed areas for greenfield compression; and
- acquiring additional land adjacent to the existing Quakertown meter station site (north, east, and west).

Alternate locations for the receipt compression did not have any additional environmental impacts due to construction, but because some sites would require more horsepower to meet the same goals, those sites would therefore have an increased impact to the environment during operation. Alternate sites for compression were also considered based on the hydraulically optimum location of compression to maximize capacity. Development of the undisturbed parcels would require additional horsepower and result in disturbance within previously undisturbed areas, making these sites the most environmentally impactful alternatives. Consequently, these sites were not chosen and were not evaluated further. The Preferred Alternative has been selected and contemplates expanding the existing Quakertown CS location to accommodate new facilities.

Upon selection of the Quakertown location for the receipt compression, several layout alternatives were evaluated to again minimize impacts. Adelphia chose not to advance an alternative for development immediately north of the existing facility to avoid wetland impacts. Adelphia similarly rejected developing to the east of the existing facility, which would have disturbed an agricultural field and caused the greatest overall disturbance when including access roads and new security measures. Adelphia analyzed an isolated piece of property to the west currently bound by the existing access road, the existing right of way and an existing TETCO right of way. However, this parcel was not advanced for additional consideration because it is wooded, would require extensive clearing of forest, and is in close proximity to a residential dwelling.

A quantitative comparison of the proposed site layout and each of the alternative site layouts is presented in table 10.5-1 and supports the selection of the Preferred Alternative. Location maps of considered alternatives are provided in appendix 10A.

<b>Table 10.5-1 Comparison of Receipt Point Compressor Station Layout Alternatives for the Proposed Adelpia Gateway Project</b>				
<b>Category</b>	<b>Quakertown Site (Preferred)</b>	<b>Quakertown East</b>	<b>Quakertown North</b>	<b>Quakertown West</b>
<b>Total Land Disturbance (acres)</b>	1.8 <sup>a</sup>	2.7	4.1	2.6
<b>Residences within 100 feet</b>	1 <sup>b</sup>	1 <sup>b</sup>	1 <sup>b</sup>	1 <sup>b</sup>
<b>Federal Lands Crossed (acres)</b>	0.0	0.0	0.0	0.0
<b>Federal Lands within 0.25 mile (acres)</b>	0.0	0.0	0.0	0.0
<b>Land Use</b> Acreage (Percent)				
<b>Agriculture</b>	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	(0.0)
<b>Forest <sup>c</sup></b>	0.0 (0.0)	0.9 (33.3)	2.3 (56.3)	0.8 (31.6)
<b>Open Land <sup>d</sup></b>	1.8 (100.0)	1.8 (66.6)	1.8 (43.7)	1.8 (68.4)
<b>Residential</b>	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
<b>Industrial</b>	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
<b>Water</b>	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
<sup>a</sup> This is an existing industrial site. No new land disturbance would occur other than temporary workspace <sup>b</sup> All alternatives are located within 100 feet of a residence near the Quakertown Meter Station, but the Quakertown West Alternative would exacerbate existing effects to the residence. Temporary workspace for the Preferred Alternative would occur within 100 feet of the residence. <sup>c</sup> Forest includes forested wetlands. <sup>d</sup> Open land in includes vegetated uplands that are not dominated by trees (except agricultural lands), herbaceous and scrub-shrub wetlands, and maintained utility right-of-way.				

## 10.5.2 DELIVERY POINT COMPRESSION ALTERNATIVES

The Marcus Hook Site Alternative (Preferred Alternative) is located within the property boundary of the existing Adelpia-owned Marcus Hook Pump Station in Marcus Hook, Delaware County, Pennsylvania. Adelpia proposes to install 5,625 horsepower at Marcus Hook in order to receive mainline volumes and increase the pressure accordingly to provide requested delivery pressure by customers in the area. Because the Marcus Hook site is currently an industrial site, environmental impact from construction, operation, and maintenance would be minimal. No modifications to the footprint or layout are necessary to address or ameliorate any potential environmental impacts.

Alternate locations for delivery compression were evaluated at Project MP 7.0, Delmarva Station, and at two of the proposed meter stations that would be sited along the Tilghman Lateral (see Resource Report 1). Potential alternative locations were not selected because each was previously undisturbed, and each would require substantially more greenfield disturbance than the Preferred Alternative, increasing the overall environmental impact. Table 10.5-2 provides a comparison of the Preferred Alternative with the other evaluated delivery compression alternatives.

<b>Table 10.5-2 Comparison of Delivery Point Compression Siting Alternatives for the Adelpia Gateway Project</b>			
<b>Category</b>	<b>Marcus Hook Site (Preferred)</b>	<b>Compression @ MP 7<sup>d</sup></b>	<b>Compression @ Delivery Sites<sup>e</sup></b>
<b>Total Land Disturbance (acres)</b>	0.0 <sup>a</sup>	2.8	1.2
<b>Residences within 100 feet</b>	0	0	0
<b>Federal Lands Crossed (acres)</b>	0.0	0.0	0.0
<b>Federal Lands within 0.25 mile (acres)</b>	0.0	0.0	0.0
<b>Land Use</b>			
Acreage (Percent)			
<b>Agriculture</b>	0.0 (100.0)	0.0 (100.0)	0.0 (100.0)
<b>Forest<sup>b</sup></b>	0.0 (100.0)	1.5 (52.5)	0.
<b>Open Land<sup>c</sup></b>	0.0 (100.0)	1.3 (47.5)	0.4 (30.3)
<b>Residential</b>	0.0 (100.0)	0.0 (100.0)	0.0 (100.0)
<b>Industrial</b>	0.0 (100.0)	0.0 (100.0)	0.8 (69.7)
<b>Water</b>	0.0 (100.0)	0.0 (100.0)	0.0 (100.0)
<sup>a</sup> This is an existing industrial site. No new land disturbance would occur. <sup>b</sup> Forest includes forested wetlands. <sup>c</sup> Open land includes vegetated uplands that are not dominated by trees (except agricultural lands), herbaceous and scrub-shrub wetlands, and maintained utility right-of-way. <sup>d</sup> This alternative includes the installation of compressors near MP 7 to increase delivery pressures at Marcus Hook. <sup>e</sup> This alternative includes the installation of smaller compressors at each of the three delivery sites along the Tilghman Lateral.			

## 10.6 CUSTOMER DELIVERY LATERAL ALTERNATIVES

The Project includes the installation of two delivery laterals, which both originate at the Marcus Hook CS and terminate at existing M&R stations (see Resource Report 1).

One route alternative was evaluated for the Parkway Lateral. The alternate route extended up Parkway Road and followed the eastern boundary (outside the fence) of the Delmarva Station

site. This route was eliminated due to a cultural resource located along the fence and the additional impact from clearing trees and vegetation.

The Tilghman Lateral had four additional alternatives evaluated before finalizing the proposed route.

- Variation 1 – evaluated route along the northern edge of railroad right-of-way and an existing powerline corridor. However, this route would require a crossing of Marcus Hook Creek, which is avoided in the Preferred Alternative by implementing an HDD crossing method and having the route maintain a direction along Ridge Road.
- Variation 2 – evaluated an alternate route that turned south on Blueball Street to Highway 13 where it turned east to connect to the proposed route. While this route avoids Ridge Road, it is ultimately approximately 850 linear feet longer.
- Variation 3 – evaluated use of an HDD from approximate M.P. 2.3 southward across the existing railroad corridor. The exit point is located near an EPA superfund site. The HDD in the Preferred Alternative is westward of this area to avoid this obstacle.
- Variation 4 – evaluated a variation minimizing the route along Highway 291 (W 2<sup>nd</sup> St.) while minimizing impact to W 2<sup>nd</sup> St. and following a southerly route to and along Seaport Drive. While this route would parallel a railroad spur for approximately 2,500 feet a it is approximately 1150 feet longer than the Preferred Alternative.

All the pipeline routes are constrained to following the existing streets and roads, avoiding as many obstacles (underground utilities, buildings, bridges, and structures) as possible. Several potential routes have been reviewed and the final selection of the Preferred Alternative was based in part upon constructability issues such as utility congestion, traffic control, and stovepipe construction. In addition, in order to make use of existing infrastructure (i.e., the Marcus Hook CS and existing meter stations) and thereby avoid additional environmental impacts, the lateral routes are limited due to their necessary start and end points. Therefore, the only feasible alternatives to the selected routes would be minor route adjustments made between the Marcus Hook CS and the applicable M&R station. For each proposed pipeline lateral, Adelphia considered multiple route variations and selected the Preferred Alternative because it required the least disturbance to the human and natural environment.

## **10.7 ABOVEGROUND FACILITIES – ALTERNATIVES SITES**

The Project would require a number of additional facilities in addition to the compressor stations discussed above. These additional facilities include the meter stations, the new Mainline Valve and various ancillary facilities (e.g. pig launchers and receivers, filter separators, liquid disposal tanks, and chromatography and communication equipment). Each of these additional facilities would be sited within the pipeline right-of-way. The Project currently proposes two (2) alternatives for the new Mainline Valve. Both sites are equally suited for the installation and meet all regulatory requirements for spacing. Final site selection for the new Mainline Valve will be dependent on final environmental findings and negotiations with landowners.

## **10.8 CONCLUSION**

If the Project is not constructed, Adelphia would not have the ability to meet its obligations to its customers to increase the capacity of its existing pipeline system to provide natural gas transportation and compression services. Adelphia conducted an alternatives analysis for the purpose of identifying the most environmentally sound, technically feasible, and cost-effective route. Alternatives were evaluated using information obtained from engineering and design criteria and a desktop analysis of the surrounding environment, which employed aerial photography, NWI maps, and USGS 7.5-minute topographic quadrangle maps. For the previously discussed reasons, the Preferred Alternative is considered to be the most appropriate to accomplish the Project's objectives.

## 10.9 REFERENCES

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