3 ALTERNATIVES

As required by NEPA, we evaluated alternatives to the proposed Project to determine whether they would be feasible and environmentally preferable to the proposed action. Our alternatives analysis includes the No Action or Postponed Action Alternative, alternative energy sources, the effects of energy conservation, system alternatives, route alternatives, route variations, and aboveground facility site alternatives.

The evaluation criteria for selecting potentially environmentally preferable alternatives were:

- technical and economic feasibility and practicality;
- significant environmental advantage over the proposed Project; and
- ability to meet the proposed Project objectives.

3.1 NO ACTION OR POSTPONED ACTION

The FERC has three alternative courses of action in processing an application for a Certificate: (1) grant the Certificate with or without conditions, (2) deny the Certificate, or (3) postpone action pending further study.

Implementation of the No Action Alternative would require the Commission to deny CIG a Certificate to construct, own, operate, and maintain the proposed Project. Without the issuance of a Certificate, CIG would not be able to construct the proposed Project and, therefore, the environmental impacts identified in this EIS would be eliminated. However, the objectives of the proposed Project would not be met and the lack of natural gas transportation capacity in the Project area could increase the cost of natural gas and lead to marketplace shortages. In addition, it is likely that customers would seek alternative projects and/or sources of energy that may result in greater or less impacts than those described in this EIS. If other new natural gas pipeline facilities are approved and constructed, each project would result in specific environmental impacts that could be less than, similar to, or greater than those associated with the current proposal. Since the objectives of the proposed Project would not be met by implementing the No Action Alternative and the effects of other customer-driven projects are unknown, we believe that this alternative is not preferable to the proposed action.

Implementation of the Postponed Action Alternative would require the Commission to delay its determination on whether or not to grant CIG a Certificate. Postponing the Commission's action on this application could allow for further study of the environmental impacts resulting from construction and operation of the proposed Project; however, postponement would, at a minimum, delay the proposed Project, and could also change the environmental impacts described in this EIS. Based on the information provided in CIG's application, its subsequent filings, responses to environmental information requests, and our analysis of this information and consultations with other responsible federal and state resource agencies, we believe that use of the Postponed Action Alternative to allow for further study of the proposed Project is not necessary at this time. CIG's primary customer for the service that would be provided by the Project, PSC, has commented that it needs the 874,000 Dth/d of natural gas the proposed facilities would provide by the proposed October 2008 in-service date. PSC states this service is required to meet the needs of its gas-fired electric generation and other customer requirements along the fast-growing Colorado Front Range. Further, it considers its gas-fired electric generation crucial to backstop the wind-powered projects that are being installed and whose output PSC has agreed to purchase to serve its customers. We believe that delaying the effects described in this EIS would not significantly change

these effects and would delay meeting the purpose and need of the Project. Therefore, we believe that the no-action or postponed action alternative is not preferable to the proposed action.

3.2 ALTERNATIVE ENERGY SOURCES

Several alternative energy sources to natural gas currently exist, such as petroleum and coal-based energy, nuclear power, hydropower, and other energy sources, including renewable energy technologies. Petroleum and coal-based energy are commonly used and found throughout the United States; however, relative to natural gas, the use of petroleum or coal-based energy would result in greatly increased emissions of pollutants. Table 3.2-1 provides a comparison of the amount of pollutants emitted from burning natural gas, oil, and coal.

Table 3.2-1 – Pounds of Air Pollutants Produced per Billion British Thermal Unit (Btu) of Energy

Pollutant	Natural Gas	Oil	Coal
Carbon Dioxide	117,000	164,000	208,000
Carbon Monoxide	40	33	208
Nitrogen Oxides	92	448	457
Sulfur Dioxides	0.6	1,122	2,591
Particulates	7	84	2,744
Formaldehyde	0.750	0.220	0.221
Mercury	0.0	0.007	0.016

Notes: No post-combustion removal of pollutants. Bituminous coal burned in a spreader stoker is compared with No. 6 fuel oil burned in an oil-fired utility boiler and natural gas burned in uncontrolled residential gas burners. Conversion factors are: bituminous coal at 12,027 Btu per pound and 1.64 percent sulfur content; and No. 6 fuel oil at 6.287 million Btu per barrel and 1.03 percent sulfur content—derived from Energy Information Administration, Cost and Quality of Fuels for Electric Utility Plants (1996).

Sources: Energy Information Administration (EIA), Office of Oil and Gas. Carbon Monoxide: derived from EIA, Emissions of Greenhouse Gases in the United States 1997, Table B1, p. 106. Other Pollutants: derived from USEPA, Compilation of Air Pollutant Emission Factors, Vol. 1 (1998).

Compared to other fossil fuels, natural gas is a relatively clean and efficient fuel that can reduce many pollutants. In addition, the use of petroleum and coal-based energy would result in numerous secondary impacts associated with their mining, extraction, transportation, and refinement. The use of this alternative would not meet the proposed Project's objectives and would not likely result in a significant reduction of environmental impacts; therefore we believe that the use of these energy sources is not preferable to the proposed action.

Although there recently has been renewed interest in nuclear power production, growth in nuclear generating capacity will account for only about 10 percent of total U.S. generating capacity by 2019, and it is expected to remain at that level through 2030 (EIA 2006a). Additionally, regulatory requirements, cost considerations, and public concerns make it unlikely that new nuclear power plants would be sited and developed to serve the markets targeted by the proposed Project within a timeframe that would meet the objectives of the proposed Project. Therefore, we believe use of this energy source is not preferable to the proposed action.

Efficiency upgrades at existing hydropower facilities are expected to produce incremental additions of power production in the coming years. While this energy source is clean and renewable, with no emissions, hydroelectric dams do have substantial impacts on river ecosystems. The large concrete dam structures block the natural flow of the water, preventing seasonal flooding and inhibiting plant and animal life that depends on those annual cycles. Fish that depend on unimpeded access to upper reaches of waterways for reproduction are blocked from spawning in their traditional areas. Although

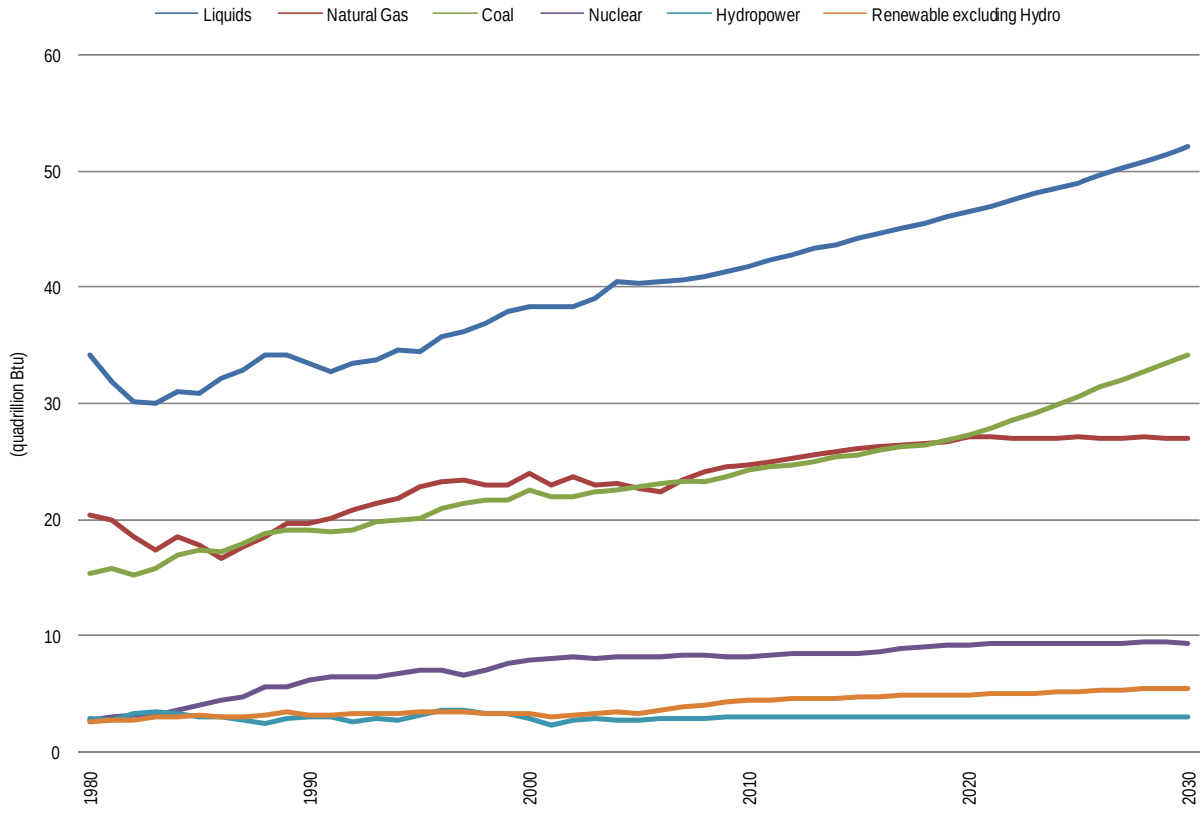
incremental additions of hydroelectric power production are expected in the coming years, it is unlikely that new and/or significant sources of hydropower would be permitted and brought online as reliable energy source alternatives to the proposed Project.

Federal, state, and local initiatives will likely contribute to an increase in the availability and cost effectiveness of non-hydropower renewable energy sources such as wind, solar, tidal, geothermal, and biomass. For example, state and local initiatives have increased the availability of wind power-derived energy to local consumers in Colorado. For example, Colorado Governor Bill Ritter signed a bill on March 27, 2007 that doubles the state's renewable energy requirement to 20 percent by 2020. Nevertheless, these energy sources are not physically or commercial available in the market region to the extent that they would provide a timely, viable substitute to the proposed Project. Therefore, we believe that these other energy sources would not be able to meet the overall objectives of the proposed Project, and as a result are not preferable to the proposed action.

3.3 ENERGY CONSERVATION ALTERNATIVES

Energy conservation and increased efficiency in energy production have been a component of the national energy agenda since the Arab Oil Embargo in the mid-1970s. Energy demand in the United States has been increasing steadily, with total energy consumption in the United States growing from 78.2 quadrillion British thermal units (Btu) per year in 1980 to an estimated 131.1 quadrillion Btu per year in 2030 (see figure 3.3-1). Natural gas usage presently represents about 22 percent of all energy consumption in the United States, and is anticipated to remain as a fairly steady percentage in the foreseeable future. The continued demand for natural gas is being driven primarily by use of natural gas for electricity generation and industrial applications (EIA 2007).

Figure 3.3-1 - Energy Consumption by Fuel, 1980-2030



While energy conservation can play a critical role in the future of the United States energy sector, growth projections suggest that the demand for energy, including natural gas, will outstrip cost-effective programs designed to stimulate energy conservation. We believe that existing energy conservation programs cannot fully offset the projected growth in demand for energy, and a corresponding demand for natural gas, in the proposed Project area. Continued economic growth, particularly growth of electricity demand, throughout the United States will lead to increased natural gas use, despite programs to encourage energy conservation. Thus, energy conservation alone would not preclude the need for the proposed Project.

3.4 SYSTEM ALTERNATIVES

System alternatives are alternatives to the proposed action that would make use of existing, modified, or proposed transmission systems to meet the stated objectives of the proposed Project. A system alternative would make it unnecessary to construct all or part of the proposed Project, although some modifications or additions to another pipeline system may be required, or another entirely new system may need to be constructed. Such modifications or additions would result in environmental impacts that could be less than, similar to, or greater than that associated with construction of the proposed Project. The purpose of identifying and evaluating system alternatives is to determine whether or not the environmental impacts associated with the construction and operation of the proposed Project would be avoided or reduced by using existing, modified, or proposed pipeline systems.

In order to be a viable system alternative to the proposed Project, potential system alternatives would have to meet two criteria: 1) they would need to provide transportation of up to 899,000 Dth/d of natural gas to the three market delivery points proposed for this proposed Project; and 2) the system alternative would need to be able to transport the required volumes within the same general timeframe as the proposed Project. The planned in-service date for the proposed Project is on or before October 2008.

3.4.1 Other Company System Alternatives

Kinder Morgan Interstate Gas Transmission LLC (Kinder Morgan) and Southern Star Central Gas Pipeline, Inc. (Southern Star) both operate pipeline systems that transport natural gas in the proposed Project vicinity. However, these pipeline systems currently do not have capacity to transport gas to the market delivery points. For example, recent capacity reports from both Kinder Morgan and Southern Star showed that scheduled volumes equaled or exceeded the design capacities of the systems in the proposed Project area. As such, both existing pipeline systems likely would require the construction of a project similar to the proposed Project. Because a similar amount of land disturbance would be required to construct a different project, and the timeframe required to provide natural gas to its customers would not be met if another project were constructed, we do not consider a different pipeline system alternative to be environmentally preferable to the proposed Project and eliminated it from further consideration.

3.4.2 CIG System Alternatives

CIG already owns and operates high-pressure natural gas pipelines in the proposed Project vicinity including three pipelines in the vicinity of the Line 250A route and two pipelines in the vicinity of the Line 251A, 252A, and 253A routes. CIG considered increasing compression on its existing pipelines to achieve the required capacity, thereby eliminating the need to build new pipelines. However, all of CIG's existing pipelines are operating at MAOP and are fully or almost fully subscribed, with the exception of the pipelines along the Line 250A route. For the pipelines along the Line 250A route, CIG conducted engineering studies and determined that, although they could add compression and increase existing pipeline capacity, they would be able to achieve an approximate transportation increase of only

225,000 Dth/d. This incremental capacity would not be enough to meet the needs of the customer. Thus, increasing compression is not a viable alternative.

CIG also considered upgrading its existing pipelines in the proposed Project vicinity to accommodate the additional capacity necessary for its customers. This alternative would involve replacing one or more of its existing pipelines with new pipelines capable of handling larger volumes of natural gas. However, CIG is under existing contractual obligations with its customers to provide uninterrupted natural gas transportation service via its existing pipeline system. As such, CIG stated that it would be infeasible to take one or more of its existing lines out of service, even temporarily, for replacement by a larger capacity pipeline. Therefore, we eliminated this alternative from further consideration.

3.5 MAJOR ROUTE ALTERNATIVES

Route alternatives represent potential routes that the proposed Project could follow that vary significantly from the proposed route. A route alternative would deviate from the proposed route for its entire length or at least a large portion of its total length. Route alternatives are identified to determine if environmental impacts could be avoided or reduced. Route alternatives are also identified in an attempt to reduce the creation of new right-of-way by routing the pipeline adjacent to existing utility rights-of-way. Collocation of facilities is generally preferred by land management agencies, land use planners, and other regulatory agencies and has several inherent engineering and environmental advantages. While the origin and delivery points of route alternatives are generally the same as for the corresponding segment of a proposed pipeline, the route alternatives could follow significantly different alignments.

Frequently, we receive comments from the public requesting that the shortest route (*i.e.*, a straight line between two points) be evaluated. We do not believe analyzing a straight line between two points to be a realistic route because it does not take into consideration engineering issues, such as constructability, or environmental issues, such as sensitive features. Based on input provided to us by the general public, federal and state resource agencies, and our review of the proposed Project, we identified and evaluated three major route alternatives: the 5ABC Route Alternative, the Burroughs Route Alternative, and the County Road Alternative. We evaluated all three alternatives to determine if they would avoid or significantly reduce environmental effects associated with the proposed Project.

3.5.1 5ABC Route Alternative

CIG currently owns and operates three high-pressure natural gas pipelines in the vicinity of the proposed Line 250A route. These lines, which are known as lines 5A, 5B, and 5C, transport natural gas between CIG's Cheyenne Compressor Station and Watkins Compressor Station and serve the same beginning and end points as the proposed Line 250A. The 5ABC Route Alternative would follow these existing lines between the compressor stations (see figure 3.5.1-1).

The benefit of the 5ABC Route Alternative is that it would parallel existing utilities for its entire length, as compared to 15 percent of the proposed Line 250A pipeline segment of the Project. However, this alternative route would be about 5 miles longer than the proposed route. It would follow one of CIG's oldest pipeline corridors, traversing the rapidly growing Front Range of Colorado, including the suburbs of Greeley, Fort Lupton, Brighton, and Denver/Aurora. Much of the route is congested with residential and commercial subdivisions (*e.g.*, Hunter's Cove, Country Club West, Highland Hills, T-bone Ranch, Arrowhead, and Dos Rios). There is minimal space in or immediately adjacent to the existing pipeline right-of-way for construction of another pipeline, and reroutes away from the existing pipeline right-of-way likely would be required in many areas to avoid various structures that have been

built up to the edge of the existing right-of-way. Because of its increased length and heavy development along the route, we eliminated this route alternative from further consideration.

3.5.2 Burroughs Route Alternative

In his December 5, 2006 comment letter, Robert C. Burroughs identified several concerns with the proposed Line 250A route, including the potential impact on irrigated lands and the number of property owners affected by the proposed route. Mr. Burroughs provided an alternative route that he believed would reduce potential impacts on irrigated lands and the number of property owners affected by the proposed Project. In a comment letter filed June 4, 2007, 10 other landowners endorsed his alternative.

The alternative route proposed by Mr. Burroughs (Burroughs Route Alternative) would begin on Line 250A at MP 4.3, and would proceed to the southeast for about 28.7 miles, where it would rejoin the proposed route at MP 31.8 (see figure 3.5.2-1). A table comparing the environmental impacts of the proposed route with the Burroughs Route Alternative is provided in table 3.5.2-1.

Table 3.5.2-1 – Burroughs Route Alternative Comparison of Environmental Impacts

Factor / Resource	Proposed Route	Burroughs Route Alternative
Length	27.5 miles	28.7 miles
Parallel Utilities	6.6 miles	-
Agricultural Land	9.9 miles	0.5 miles
Pasture Land	3.9 miles	-
CRP land and Mixed and Short-Grass Prairie	13.7 miles	28.2 miles
Residential/Commercial Land	-	-
Forested Land	-	-
Wetlands	5	10[a]
Perennial Waterbodies Crossed	-	2
Intermittent Waterbodies Crossed	8	21
Irrigation Canals and Ditches Crossed	4	-
Pawnee National Grassland	-	23.6 miles
Central Plains Experimental Range	-	5.7 miles

[a] Extrapolated based on known ratio of wetlands to perennial and intermittent waterbodies along the entire proposed Project route (42:99).

The Burroughs Route Alternative would be about 1.2 miles longer than the proposed route and would affect almost twice as many wetlands and three times as many waterbodies. The Burroughs Alternative would reduce the amount agricultural and pasture land affected, but would increase the amount of grasslands (*i.e.*, Conservation Reserve Program (CRP) land and mixed and short-grass prairie) affected. In avoiding agricultural land, the Burroughs Alternative would cross 27.3 miles of land within the Pawnee National Grassland (PNG), of which 6.0 miles is designated as the Central Plains Experimental Range (CPER).

Grasslands are considered to be one of the most imperiled habitat types in North America and worldwide (Nature Conservancy 2007). Although statistics vary, the Colorado Department of Natural Resources, Division of Wildlife (CDOW), estimates that only about 60 percent of Eastern Plains grasslands remain. The rest have been lost to agriculture, grazing, urban development, *etc*. (CDOW 2004). The PNG, which would be crossed by the Burroughs Alternative, covers 193,000 acres of private,

state, and federal lands. The PNG is one of 20 National Grasslands administered by the Forest Service, U.S. Department of Agriculture. The Forest Service is dedicated to multiple-use management of National Forests and Grasslands for sustained yields of renewable resources such as water, forage, wildlife, and recreation. The PNG contains three campgrounds and several hiking trails, including one that allows foot access to the Pawnee Buttes, the most notable geologic feature of the PNG. One of the main recreation uses on the PNG is bird watching. The PNG supports many bird species, especially during migration. It is known internationally as an area to see birds of prey, and has good breeding populations of unique high plains species, such as the mountain plover, burrowing owl, and McCown's and chestnut collared longspur.

Federal lands on the PNG administered by the Forest Service are managed under a Land and Resource Management Plan (LRMP) and other laws and regulations. The LRMP guides all natural resource management activities and establishes management standards and guidelines for the PNG. The LRMP also defines geographic and management areas within the PNG, and provides guidelines for special uses, include utilizing current utility corridors fully, providing utility corridors in the future in areas that meet the needs of society while protecting the integrity of the environment, and consolidating the occupancy of utility corridors wherever possible. According to the Forest Service, the Burroughs Route Alternative would be in conflict with LRMP guidelines because it would not utilize or consolidate the occupancy of current utility corridors.

Within the PNG, the Burroughs Route Alternative would cross the CPER, which is administered by the Agricultural Research Service (ARS), U.S. Department of Agriculture. The ARS manages a number of scientific studies on the CPER that are conducted by researchers from ARS, the Steppe Long-Term Ecological Research Team, Colorado State University, and universities from around the world. Currently, there are over 70 on-going experiments investigating the ecology (*e.g.*, nutrient cycling, global climate change, land-atmosphere interactions, paleoecology, fauna genetics and ecology) of the shortgrass steppe and management options (*e.g.*, stocking rates and systems). According to the ARS, constructing a pipeline across the CPER would not be consistent with ARS goals and could jeopardize on-going research.

The Burroughs Route Alternative would mainly transfer impacts from agricultural land to grasslands within the PNG. Route alternatives are generally not adopted if they merely transfer impacts from one or more property owners or resources to another without conferring an obvious environmental advantage. Also, the Burroughs Route Alternative would conflict with PNG's LRMP guidelines and could jeopardize research within the CPER. For these reasons, we eliminated The Burroughs Route Alternative from further consideration.

3.5.3 County Road Route Alternative

The County Road Route Alternative was suggested by the signatories of the comment letter filed June 4, 2007 that also supported the Burroughs Route Alternative. They suggest following county roads for much of the Line 250A route and comment that placing the pipeline along existing road rights-of-way would be the least environmentally damaging.

The County Road Route Alternative would begin on Line 250A near MP 6.5 and would follow County Road 122 east to County Road 49 and then south toward Hudson, Colorado where it would rejoin the proposed route on Line 250A near MP 31.8 (see figure 3.5.3-1). A table 3.5.3-1 compares the environmental impacts of the proposed route with the County Road Route Alternative.

Table 3.5.3-1 – County Road Route Alternative Comparison of Environmental Impacts

Factor / Resource	Proposed Route	County Road Route Alternative
Length	25.5 miles	32.5 miles
Parallel Utilities or Roads	4.1 miles	31.5 miles
Agricultural Land	8.9 miles	-
Pasture Land	2.5 miles	-
CRP and Mixed and Short-Grass Prairie	14.1 miles	32.5 miles
Residential/Commercial Land	-	3
Forested Land	-	-
Wetlands	4	9[a]
Perennial Waterbodies Crossed	-	2
Intermittent Waterbodies Crossed	6	22
Irrigation Canals and Ditches Crossed	4	3
Pawnee National Grassland	-	27.9 miles
Central Plains Experimental Range	-	-

[a] Extrapolated based on known ratio of wetlands to perennial and intermittent waterbodies along the entire proposed Project route (42:99).

The County Road Route Alternative would reduce agricultural and pasture land impacts by about 8.9 miles and 2.5 miles, respectively. Also, the route alternative would parallel existing rights-of-way (roads) for about 97 percent of its route, as opposed to 16 percent for the proposed route. However, the County Road Route Alternative would be about 7 miles longer than the proposed route, and would affect almost twice as many wetlands and more than three times as many waterbodies. The route alternative would increase grassland (*i.e.*, CRP land and mixed and short-grass prairie) impacts by 18.4 miles. The route alternative would also cross about 27.9 miles of land within the PNG (see section 3.5.2 for additional information about impacts on the PNG due to construction of an alternative pipeline route).

Although the County Road Route Alternative would parallel existing roads for almost the entire route, temporary disturbance to adjacent land would still be required during construction. The typical county road right-of-way is 66 feet wide with a 22-foot-wide roadway in the center. Placement of CIG's 30-inch-diameter within the 22-foot-wide easement, or shoulder area, next to the paved road may not be possible. These areas are used for electric, telephone, cable, and water lines in many locations. So, any pipeline installed along the county roads would have to be offset from existing utilities within the road right-of-way. At best, the permanent pipeline right-of-way would begin at the edge of the road right-of-way and would extend 50 feet away with the new pipeline placed at the center of the 50-foot-wide right-of-way. CIG would require at least a 100-foot-wide construction right-of-way. It might be possible to use the existing road right-of-way as temporary workspace for pipeline construction; both the paved road and the shoulder area might be used. Any overlap of the road right-of-way by construction workspaces would most likely impact travelers, residents, and business owners along the county roads. For safety of both construction workers and motorists, at least one lane of the roads would probably be closed temporarily during pipeline construction; and it's possible that the road would be closed completely to facilitate pipeline construction. Since the County Road Route Alternative would affect about 31.5 miles of county roads, this temporary impact could last for several months.

The construction workspaces for the County Road Alternative might be within 50 feet of three residences. However, the construction workspaces might be shifted or reduced in width to increase the separation distance. The proposed route would not be within 50 feet of any residences.

The County Road Route Alternative would impact less agricultural and pasture land. Construction of the pipeline, and restoration and monitoring after construction are addressed in sections 2.3 and 4.2, and in CIG's Reclamation Plan. The EIS describes the measures CIG would use to restore soils, repair and damage to irrigation systems, and to monitor the success of its efforts following construction. It has used these measures successfully on other pipeline construction projects in Colorado. We believe these measures are adequate to protect agricultural resources. Further, the County Road Alternative would be 7 miles longer; would impact more grassland, wetlands, and waterbodies; and would cross 27.9 miles of land within the PNG. Therefore, we eliminated this alternative from further consideration.

3.6 ROUTE VARIATIONS

3.6.1 CIG Route Variations Adopted During the Pre-filing Process

Route variations differ from system or route alternatives in that they are identified to resolve or reduce construction impacts to localized, specific resources such as cultural resources sites, wetlands, recreational lands, residences, landowner requests, and terrain conditions. Because route variations are identified in response to specific local concerns, they are often the result of landowner comments. While route variations may be a few miles in length, most are relatively short and in proximity to the proposed route. We have considered a variety of factors in identifying and evaluating route variations, including length, land requirements, the number of landowners affected, and potential for reducing or minimizing impacts to natural resources.

Several landowners inquired during CIG's open house about whether CIG could make minor adjustments to its route to accommodate specific conflicts or concerns. During the pre-filing process, CIG refined its proposed route to accommodate several of the landowners' requests where feasible. CIG also refined it proposed route based on input from resource specialists and project engineers to avoid or minimize impacts to natural or cultural resources, reduce or eliminate engineering and constructability concerns, and/or avoid or minimize conflicts with existing land uses. These adopted minor route variations are described in table 3.6.1-1. CIG incorporated them as part of the proposed Project that we evaluated in section 4.0.

Table 3.6.1-1 – CIG Adopted Route Variations

Line / MPs	Length (miles)	County	Reason for Incorporation
LINE 250A			
15.8 – 19.6	3.8	Weld	Landowner request
29.5 – 29.8	0.3	Weld	Landowner request, minimize impacts on planned residential development
33.7 – 35.2	1.5	Weld	Landowner request
40.7 – 41.6	0.9	Weld	Avoid Cache La Poudre River, minimize impacts on South Platte River
45.0 – 46.1	1.1	Weld	Landowner request, minimize impacts on agricultural land
46.8 – 48.9	2.1	Weld	Landowner request, minimize impacts on sod farm
59.0 – 60.0	1.0	Weld	Landowner request, avoid impacts on Klug Lake (dry) and intermediate stream
60.0 – 61.5	1.5	Weld	Landowner request
64.8 – 67.6	2.8	Weld	Landowner request

Table 3.6.1-1 (cont.) – CIG Adopted Route Variations

Line / MPs	Length (miles)	County	Reason for Incorporation
LINE 252A			
6.0 – 6.8	0.8	Weld	Landowner request
9.2 – 11.2	2.0	Weld	Landowner request, minimize impacts on agricultural land
12.3 – 13.4	1.1	Weld	Landowner request, minimize impacts on agricultural land
LINE 253A			
2.6 – 3.2	0.6	Adams	Colorado Department of Transportation request, avoid future expansion of I-70 overpass

3.6.2 Other Route Variations

Based on our analysis of the proposed Project and comments provided by the public, we have identified and evaluated three additional route variations. Table 3.6.2-1 lists these route variations, the segments of the proposed Project route that they would replace, and the reason for the proposed variation. Each route variation considered was compared to the corresponding segment of the proposed Project route to determine whether potential environmental benefits would be afforded. Our evaluation of route variations was based on information provided by CIG, comments filed with the FERC, review of available aerial photography and U.S. Geological Survey (USGS) topographic maps, and our site visits.

Table 3.6.2-1 – Other Route Variations

Line / MPs	Length (miles)	County	Name	Reason for Variation	Status
LINE 250A					
29.5 – 31.0	1.5	Weld	Owl Creek	Planned future residential development	Recommended
31.8 – 62.0	30.2	Weld	Ranchette	Route pipeline adjacent to road	Eliminated from further consideration
58.6 – 61.6	3.0	Weld	Pioneer	Avoid residential development	Recommended

Owl Creek Route Variation

The Owl Creek Route Variation was developed in response to comments from two adjoining landowners about potential impacts on planned future development of their land. C&H Investment, Inc. (C&H) owns one parcel that would be affected by the proposed route. C&H is in the preliminary stages of planning residential development on its property, and has filed a preliminary plan with the Weld County Zoning and Planning Department. We note that CIG has already incorporated into its proposed route a pipeline alignment to accommodate C&H's development plans as identified in table 3.6.1-1. Another landowner, Robert Burroughs, owns the second affected property. Mr. Burroughs indicated at an open house meeting that he intends to develop this property. No requests or plans for development of this property have been filed with the Weld County Zoning and Planning Department at this time. CIG has not adopted a pipeline alignment on Mr. Burroughs' property to accommodate his development plans since his specific development plans are unknown.

We developed the Owl Creek Route Variation to attempt to minimize impacts on future development of these two properties. Since development typically occurs using section lines as parcel boundaries, routing the pipeline along or near the section lines would be expected to alleviate, at least partially, future development concerns raised by the landowners. The Owl Creek Route Variation would diverge from the proposed Line 250A at MP 29.5 and would rejoin it at MP 30.9 (figure 3.6.2-1). The

route variation would run near the western and southern edges of Section 14, Township 7 North, Range 65 West, as opposed to cutting diagonally across the section. Environmental effects of the proposed route and Owl Creek Route Variation are provided in table 3.6.2-2.

Table 3.6.2-2 – Owl Creek Route Variation Comparison of Environmental Impacts

Factor / Resource	Proposed Route	Owl Creek Route Variation
Length	1.53 miles	2.05 miles
Agricultural Land	0.04 miles	0.15 miles
Pasture Land	0.67 miles	1.0 miles
Mixed and Short-Grass Prairie	0.36 miles	0.83 miles
CRP Land	0.4 miles	0.03 miles
Road Crossing Length	0.06 miles	0.04 miles
Wetlands	3	Possibly 1
Owl Creek Crossings	3	1
Eaton Ditch Crossings	1	1

Although the Owl Creek Route Variation is slightly longer than the proposed route, it would affect fewer wetlands and would have fewer waterbody crossings. Also, the route variation is expected to partially alleviate concerns raised by the landowners. Therefore, **we recommend that:**

- **CIG incorporate the Owl Creek Route Variation (MPs 29.5 to 30.0) into the Line 250A pipeline route. Prior to construction, CIG should file revised alignment sheets showing the modified route for review and written approval of the Director of the OEP.**

Ranchette Route Variation

The Ranchette Route Variation was developed the FERC staff during a site reconnaissance of the proposed pipeline routes. This route variation would diverge from the proposed route on Line 250A at MP 31.8 and rejoin the proposed route on Line 250A at MP 62.0 (figure 3.6.2-2). The route variation would run along the western edge of County Road 49 and would affect properties along their road frontage as opposed to cutting through the middle of them and through the middle of sections. Since development typically occurs using section lines as parcel boundaries, routing the pipeline along the section lines would be expected to alleviate, at least partially, future development concerns raised by the landowners.

We evaluated the route variation corridor and identified several construction constraints. About 55 homes/ranchettes and about 20 oil field storage tanks are located along County Road 49. These were built near the road frontage easing access to County Road 49. Typically, CIG would require a 100-foot-wide construction right-of-way plus additional workspaces for staging the crossings of roads, wetlands, and waterbodies. The locations of many of these structures are along and near the road which would prohibit a more proximate location for an alternative pipeline right-of-way along the road right-of-way. There may be some areas where a route variation could be placed next to County Road 49, but it would need to deviate away from the road at many of these homes and storage tanks. In some instances, the homes and storage tanks may be set back far enough from County Road 49 so that the pipeline construction right-of-way could pass between the road and the structure, but construction would temporarily disrupt access to the structures. The primary difference between the impacts of the proposed route to the Ranchette Route Variation would be that the variation would affect the road frontage portions of 55 existing residential properties and the proposed route would affect about 6 residential properties.

Because the Ranchette Route Variation would affect more residential properties compared to the proposed route it holds no inherent advantage over the proposed route, we eliminated it from further consideration.

Pioneer Route Variation

The Pioneer Route Variation was developed by CIG in response to a planned residential development in the vicinity of the proposed Project. J.F. Companies is in the first phase of its Pioneer Development, which it plans to implement in several phases over the next 15 to 20 years. In a July 2, 2007 filing with the FERC, CIG proposed to adopt the Pioneer Route Variation to accommodate the developer's plans.

The Pioneer Route Variation would diverge from proposed Line 250A at MP 58.5 and rejoin it at MP 61.5 (figure 3.6.2-3). A table comparing the environmental impacts of the proposed route with the Pioneer Route Variation is provided in table 3.6.2-3.

Table 3.6.2-3 – Pioneer Route Variation Comparison of Environmental Impacts

Factor / Resource	Proposed Route	Pioneer Route Variation
Length	16,018 feet	16,071 feet
Collocated Utilities	5,104 feet	0 feet
Agricultural Land	1.8 miles	2.2 miles
Pasture Land	0.0 miles	0.2 miles
CRP Land	0.0 miles	0.0 miles
Mixed and Short-Grass Prairie	1.2 miles	0.6 miles
Residential/Commercial Land	0.0 miles	0.0 miles
Forested Land	0.0 miles	0.0 miles
Wetlands	0	1
Perennial Waterbodies Crossed	0	0
Intermittent Waterbodies Crossed	Klug Lake/Box Elder Creek	Box Elder Creek
Irrigation Canals Crossed	0	0
Prairie Dog Towns	2 Towns (3.4 acres)	1 Town (3.1 acres)

The proposed route and the route variation are nearly identical in length. However, the Pioneer Route Variation would impact an additional 0.4 mile of agricultural land, 0.2 mile of pasture, and one additional wetland. On the other hand, it would impact about 0.6 fewer acres of mixed and short-grass prairie and one fewer prairie dog town. Because the route variation would minimize impacts on the proposed residential development and would not result in significant environmental impacts, **we recommend that:**

- **CIG incorporate the Pioneer Route Variation (MPs 58.3 to 61.5) into the Line 250A pipeline route. Prior to construction, CIG should file revised alignment sheets showing the modified route for review and written approval of the Director of OEP.**

3.7 ABOVEGROUND FACILITY SITE ALTERNATIVES

We evaluated the proposed locations of the new aboveground facilities to determine whether environmental impacts would be reduced or mitigated by use of alternative facility sites. Our evaluation

involved inspection of aerial photography and mapping, as well as site visits along the proposed Project corridor. The aboveground facilities for the proposed Project include 10 new metering facilities, 12 new pig launchers/receivers, and 19 MLVs as described below.

Because the locations of meter stations are linked to the locations of the associated natural gas interconnect points, the search for alternatives was constrained to sites near the intersection of the proposed Project route and the planned and existing pipeline facility locations. Similarly, the locations of pig launchers/receivers and MLVs are linked to the location of the proposed Project pipeline. All proposed pig launchers/receivers would be constructed within existing CIG facilities or would be collocated with meter stations or MLV sites proposed as part of this Project. Further, the proposed locations of MLVs along the Project route are based on USDOT safety regulations that specify the maximum distance between sectionalizing MLVs. These regulations also require that MLVs be located in readily accessible areas. Although the specific location of any one MLV may be adjusted slightly, it cannot be eliminated or moved significantly. We received no comments concerning the locations of any aboveground facilities. We did not identify any alternative sites for the proposed meter stations, pig launchers/receivers, or MLVs that offered an apparent environmental advantage over the proposed locations.

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Figure 3.5.1-1 – 5ABC Route Alternative
Page 3-14

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Figure 3.5.2-1 – Burroughs Route Alternative
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Figure 3.5.3-1 – County Road Route Alternative
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Figure 3.6.2-1 – Owl Creek Route Variation
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Figure 3.6.2-2 – Ranchette Route Variation
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Figure 3.6.2-3 – Pioneer Route Variation
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