

3.14 CUMULATIVE IMPACTS

3.14.1 Methods

As defined in 40 CFR 1508.7, cumulative impacts are the incremental impacts on the environment resulting from adding the proposed action to other past, present, and reasonably foreseeable future actions. Cumulative impacts were assessed by combining the potential environmental impacts of the proposed action with the impacts of projects that have occurred in the past, are currently occurring, or are proposed in the future within the pipeline corridor or in the vicinity of the pipeline ROW.

3.14.2 Past, Present, and Reasonably Foreseeable Projects

3.14.2.1 Past and Present Linear Projects

Several existing pipelines transport natural gas liquids and compressed natural gas across North Dakota, South Dakota, and Nebraska from hubs in Montana to the west or Illinois to the east. For example, the Williston Basin Pipeline carries compressed natural gas and crosses through the southern part of North Dakota (<http://www.wbip.com/wbip/contributed_images/WBI-Map.gif>). A natural gas liquid pipeline owned by Enterprise Product, LP, crosses the southeast corner of Nebraska and continues in a southwest direction through Kansas (<http://www.epplp.com/cp_sm.html>). Portions of this pipeline may parallel the Keystone Project but are likely to be well outside of the Keystone Project ROW. In Oklahoma, Northern Natural Pipeline, NGLP of America, Williams Natural, Duke Energy, Oklahoma Natural Gas, and the Lone Star Gas Company all have lines that may parallel or intersect the Keystone Project but are not necessarily collocated (Oil Week Magazine 2005).

The Express pipeline is an existing 24-inch-diameter pipeline that interconnects with the Platte Pipeline, an existing 20-inch-diameter pipe, at Casper, Wyoming. This 1,700-mile pipeline system transports crude oil from Alberta's oil sands in Hardisty, Alberta to refineries in the U.S. Rocky Mountain and Midwest regions. In the United States, the pipeline crosses Montana, Wyoming, Nebraska, Kansas, and Missouri, and terminates in Wood River, Illinois. The section known as the Platte pipeline was built in 1952; the proposed Keystone Project would be collocated with the existing Platte pipeline from the Nebraska/Kansas border to the Wood River, Illinois terminal. Additional information on the existing Express and Platte pipelines and their applicability as System Alternatives for the Keystone Project is provided in Section 4.2.1.2.

Along the proposed Keystone Project corridor, multiple existing utility corridors serve local and regional needs. For example, the WEB Water Development Association provides high-quality water service to 7,728 rural hookups, 100 towns and bulk users, and 5 ethanol plants in a 17-county service area, which includes 14 counties in South Dakota and 3 counties in North Dakota. The Keystone Project would cross WEB-owned PVC water pipelines at eight locations in Day and Clark Counties South Dakota. The Keystone Project ROW would cross a 12-inch-diameter PVC mainline near Andover, South Dakota that delivers treated water to 1,022 rural hookups and eight towns in Day County and six rural hookups in southeast Marshall County. Other utility corridors have been set aside for high power and other electrical transmission lines.

Numerous existing transportation projects, such as interstate and state highways and railroads, parallel or intersect the proposed Keystone Project ROW. Section 3.10.7.1 describes these transportation facilities and the locations where they coincide with the Keystone Project.

Reasonably Foreseeable Future Projects

The staff of the FERC has prepared a draft EIS for the natural gas pipeline facilities proposed by Rockies Express Pipeline LLC (Rockies Express), TransColorado Gas Transmission Company (TransColorado), and Questar Overthrust Pipeline Company (Overthrust) (FERC 2006). As currently proposed, the Rockies Express Western Phase Project (REX) would include construction and operation of approximately 795.7 miles of natural gas pipeline that would transport natural gas from the Cheyenne Hub in Colorado to its terminus at the Panhandle Eastern Pipe Line Company interconnect in Audrain County, Missouri. A portion of the proposed REX pipeline would be collocated with the Keystone Project from the Nebraska/Kansas border to Troy, Missouri (approximately 280 miles).

REX proposes to construct the Turney Compressor Station, a large aboveground facility near Plattsburg in Clinton County, Missouri several miles east of the proposed location for Keystone's Pump Station 31, and a compressor station near Steele City Gage County, Nebraska that is along the Keystone Mainline Project ROW.

Enbridge is proposing three expansion projects to help address current and future increases in refinery demand as supply from the WCSB increases. These include the:

- Southern Access, an expansion and extension of Enbridge's existing pipeline system, including new pipeline in Wisconsin and Illinois;
- Southern Lights LsR is a 20 inch crude oil pipeline from the U.S. – Canada border at Cavalier County, North Dakota, to Clearbrook, Minnesota, to increase delivery capacity for existing crude oil sources.
- Alberta Clipper, a proposed new crude oil pipeline from Alberta to Superior, Wisconsin. As presently planned, these pipelines would cross Minnesota and Iowa. The sections supplying Cushing, Oklahoma and Wood River, Illinois do not appear to be collocated with the proposed Keystone Project ROW. Additional information on the proposed Enbridge pipeline expansions and their applicability as System Alternatives for the Keystone Project is provided in Section 4.2.1.2.

Proposed projects collocated with or in a reasonable vicinity of the Keystone Project and for which cumulative impacts were assessed include:

- Rockies Express Western Phase Project (REX),
- An ethanol plant in Audrain County (unknown completion date), and
- A coal-fired power plant in Carroll County (anticipated completion in 2013) (FERC 2006).

3.14.3 Cumulative Impacts by Resource

3.14.3.1 Geology

Construction of the REX pipeline and the Keystone Project would require the commitment of granular borrow resources from areas along the pipeline corridors and areas near appurtenant facilities for the lifetime of the pipelines and related facilities. Construction of these pipelines would prohibit removal of mineral resources along the installed pipeline ROWs following construction. In addition, these projects and the proposed ethanol plant could result in a cumulative impact on clay pits in Audrain County, Missouri. Although gravel and other mineral resources within the permanent ROWs of the proposed pipelines could not be extracted, oil and gas production could still occur by using well pad offsets and

directional drilling methods. Where it is collocated with the REX pipeline, the Keystone Project pipeline would be located adjacent to existing utility corridors that preclude mining in the permanent ROWS of the utility corridors. Given the limited areal extent of the Keystone Project in comparison to the potential mineral extraction areas along the corridor, construction of the Keystone Project is not likely to result in cumulative impacts that would affect future exploitation of mineral resources.

Pleistocene-age mammal fossils may be discovered during construction of the Keystone Project and other reasonably foreseeable projects. These fossils are generally found in areas of glacial and glacially-derived surface deposits which occur along the entire length of the proposed Mainline Project except for areas of bedrock outcrop. Along with construction of pipelines, roads, and other surface-disturbing activities, construction of the Keystone Project could contribute to the cumulative exposure and potential loss of scientifically valuable fossils in the project area.

3.14.3.2 Soils and Sediments

Potential cumulative erosion effects could occur where construction disturbance areas overlap, or are located near each other, particularly along the sections of the Keystone Project that are collocated with REX. However, the existing pipelines, utility, and roadway projects have been installed for a number of years and the construction ROWs have been partially or completely restored to pre-existing conditions. Both REX and the Keystone Project would apply best management practices (BMPs) for soil management and protection along the pipelines and at appurtenant facilities. Revegetation mixtures that are appropriate to soil conditions and expected future uses (such as grazing and wildlife habitat) would be applied to the disturbed areas. Consequently, the potential for cumulative erosion effects caused by one or more of these projects is low because consistent erosion control practices would be applied, and structural erosion control measures would be integrated between and among adjacent projects.

3.14.3.3 Water Resources

Groundwater

Groundwater resources may be used for the Keystone Project and REX, and other collocated or nearby construction projects, to control dust generated during construction. Any impacts from the use of groundwater during construction are expected to be localized and short term. Groundwater sources are not expected to be used by the Keystone Project as a source for hydrostatic test water. Inadvertent contaminant spills during construction or operation could also occur from any project in the cumulative impact study area. Each project would be required to implement spill containment and control plans as required by federal and state agencies. No additional cumulative impacts on groundwater volume or quality from the Keystone Project are expected.

Surface Water

Impacts from crossing of surface waters by linear projects, such as highways and pipelines, are generally localized and short term. Cumulative effects would occur only if more than one project was being constructed at the same location at the same time. If construction activities of the Keystone Project and the collocated portion of REX pipeline follow a similar schedule, there could be a short-term cumulative contribution to incremental sedimentation in adjacent surface waters. At present, the project schedules show construction of the two projects separated by at least a year. Each project would be required to follow permit conditions and BMPs to protect water quality during construction and operation.

Hydrostatic Testing

Because Keystone does not propose to use groundwater for hydrostatic testing, no cumulative impacts to groundwater resources are expected as a result of construction or operation of the Keystone Project.

Both the Keystone Project and portions of REX plan to use surface water for hydrostatic testing. REX proposes to withdraw hydrostatic test water from surface water bodies during fall and early winter 2007, which is a different time timeframe from Keystone's planned hydrostatic testing. No cumulative effects on surface water or groundwater due to hydrostatic test water withdrawals are expected to occur.

3.14.3.4 Wetlands

Cumulative impacts on wetlands would occur at locations where any of the Keystone Project, REX pipelines, or other collocated projects cross wetlands. A portion of the REX pipeline would be collocated with the Keystone pipeline for about 280 miles. Within the collocated route, a total of 77.5 acres of wetlands would be disturbed for the REX pipeline (55.0 acres of forested wetland, 1.3 acres of scrub-shrub wetlands, and 21.2 acres of wet meadow and marsh) (FERC 2006). Total acres of wetlands impacted by both projects within the collocation area would increase to 156.0 acres.

Both projects would follow mitigation measures to protect wetlands, and federal agency permits are required whenever a project affects jurisdictional wetlands. Other construction projects, such as town expansions, new roads and highways, and other industrial facilities—both along the section of the Keystone Project collocated with REX and in other areas along the Mainline Project and Cushing Extension—could affect additional wetlands. However, applicants for any projects that would place fill in wetlands classified as waters of the United States would be subject to conditions in the COE's Section 404 permits and to state and local water quality permits. While the proposed Keystone Project route crosses a number of wetlands, none would be permanently filled or drained. Thus the contribution of the Keystone Project to cumulative effects to wetlands in the Project area would be minor.

3.14.3.5 Terrestrial Vegetation

The total amount of vegetation affected by all of the reasonably foreseeable projects, including the Keystone Project, is relatively small compared to the abundance of similar habitat in the Project area. In nonagricultural areas, construction of pipelines and other linear and non-linear projects would result in the long-term and permanent loss of non-herbaceous vegetation and would cause a small incremental increase in fragmentation of forested areas. However, the effects would generally be small relative to the total amount of available habitat in the region. In agricultural areas, impacts would be temporary; agricultural production would be restored following construction. All projects would implement mitigation measures designed to minimize the potential for erosion, revegetate disturbed areas, increase the stabilization of site conditions, and control the spread of noxious weeds—thereby minimizing the degree and duration of the cumulative impact on vegetation from these projects. In Missouri, permanent impacts on vegetation would result from the proposed construction of an ethanol plant and a coal-fired power plant in counties that also would be crossed by the Keystone Project and REX.

Construction and operation of aboveground facilities, including pumping stations for Keystone and compressor stations for REX, would permanently remove vegetation. Keystone would require approximately 61 acres of land along the Mainline Project (for aboveground facilities, including pump stations, delivery facilities, densitometer sites, and mainline valves) and approximately 13 acres for similar facilities along the Cushing Extension. Each of the two compressor stations for the portion of REX that is collocated with the Keystone Project (the Steele City, Nebraska and the Turney, Missouri sites) would affect about 13 acres (FERC 2006). Removal of this amount of terrestrial vegetation, most

of which is currently in agricultural production, is not expected to cause a significant cumulative impact to terrestrial vegetation.

3.14.3.6 Wildlife

Construction and operation of the Keystone Project, along with the other reasonably foreseeable projects described in Section 3.14.2, could result in short-term disturbance to wildlife and would result in long-term wildlife habitat modification. Disturbance and removal of vegetation during project construction would incrementally add to the total area of habitat disrupted within the Project region. It may also disturb resident and migrating species and cause associated impacts on these species as they adjust to the changes brought about by the proposed projects. Increased movement or displacement of species dependent on the disturbed habitats could reduce carrying capacities, reproductive effort, or survival. This potential is greater for species for which suitable habitat is limited in the Project area or that are otherwise sensitive to disturbance.

Removal of woodlands and shrublands during construction would result in a long-term reduction of wildlife habitat because of the slow rate at which woody species regenerate. However, only a small portion of the Keystone Project (most of the Project area consists of relatively open fields and is presently used for agricultural purposes) would affect undisturbed habitat areas. Thus, the contribution of the Project to cumulative impacts on wildlife would be minor. Habitat types potentially crossed or affected are widely available for wildlife use outside of the immediate area of disturbance. In addition, each proposed project would be required to follow appropriate mitigation measures, including restoration of habitat, to minimize impacts on wildlife.

3.14.3.7 Fisheries

Stream channel disturbance and withdrawal of hydrostatic test water from surface water sources that may affect fisheries would occur throughout the Project area during construction. These impacts would be short term and would be minimized by implementation of mitigation measures required by individual state and federal permits. In areas where the proposed Project is collocated with other pipelines (for example, REX), the construction schedules are not concurrent and therefore, simultaneous impacts from more than one project on surface waters and fisheries would not occur. If future changes to construction schedules occur, such that more than one project is constructing across a water body at the same time, short-term cumulative impacts to fisheries could occur from increased sedimentation, and additional mitigation measures may be required.

No cumulative impacts to fisheries in surface waters are expected to occur during operations.

3.14.3.8 Threatened and Endangered Species

The range and habitat of a number of threatened and endangered species occur in the Project region. Construction of the Keystone Project and other projects in the region, including pipeline projects collocated with the Keystone, would affect species habitat. Construction impacts would largely be short term; 81 percent of the total area disturbed for construction of the proposed Project is currently rangeland, grassland, or cropland that would be restored following construction to its previous condition. Less than 10 percent of the area disturbed is currently forested or scrub lands, which would require a longer period to return to present habitat condition or would remain cleared for pipeline maintenance and inspection. Habitat converted for pump stations and other aboveground facilities is an even smaller proportion of the overall affected Project area. The total area subjected to short-term impacts by the proposed Project, approximately 22,000 acres over a 1,371-mile route, represents less than 1.3 percent of all area within 1 mile of the pipeline route. The amount of area permanently modified represents a much smaller

percentage. Most threatened and endangered species found within the Project area range over much larger areas; therefore, the short-term loss of habitat is not likely to cumulatively affect habitat or cause displacement of species. Longer term habitat loss would affect a very small area and also is not expected to be significant when considered in the context of the total Project area.

To the extent that the Keystone Project would be collocated with the REX pipeline, total habitat area affected would increase. This amount still would represent a small area in the context of available habitat in the ecoregion. In addition, each project is required to consult with federal, state, and local agencies to determine which species may occur within each individual project area; evaluate potential impacts on those species as a result of construction and operation; and implement measures to avoid, minimize, or mitigate impacts on special-status species and their habitats.

3.14.3.9 Land Use, Recreation and Special Interest Areas, and Visual Resources

Land Use

Aboveground facilities for Keystone and other reasonably foreseeable projects located on active agricultural lands would permanently displace agricultural production within the footprint of the facility. Approximately 127 acres of land would be required for construction and operation of aboveground facilities for the Keystone Project (109 acres for the Mainline Project and 18 acres for the Cushing Extension). Construction of aboveground facilities associated with the REX pipeline would affect about 29.9 acres of prime farmland soils and 13.5 acres of farmlands of statewide importance; however, much of this land is located west of the area where the REX pipeline would be collocated with Keystone (FERC 2006). Land required along the collocated portion of the REX pipeline would cumulatively add to the acreage of aboveground facilities in the Project area, as would land required for the refinery expansion projects that were identified in Section 3.14.2. Although it is not known to what extent the projects identified in Section 3.14.2 would affect prime farmland soils, farmlands of statewide importance, active agricultural lands, or rangeland, all projects would be required to implement measures to avoid, minimize, or mitigate impacts on agricultural lands and rangeland—in consultation with state and local officials.

Overall, the proposed Keystone Project would contribute to cumulative impacts on agricultural land use and farming practices along the extent of the proposed ROW. While construction of new pipelines parallel to existing corridors would incrementally reduce the area available for future development, use of established utility corridors would concentrate the cumulative land use impacts into a less extensive area.

Recreation and Special Interest Areas

Recreation and special interest areas west of Troy, Missouri would be potentially affected by both the Keystone Project (see Table 3.9.3-8) and REX, including a number of conservation areas that are privately or publicly owned. The Keystone Project would additionally impact private duck clubs in St. Charles County, Missouri that are situated on high-quality wetlands. Hunting access to publicly and privately owned WMAs would be temporarily affected by both the REX and Keystone Project construction schedules. Waterfowl and hunters using these areas could be temporarily displaced during construction of the pipelines. During operations, pipeline maintenance activities occur intermittently and possibly simultaneously for collocated pipeline sections. However, because the disturbances would be temporary and the ROWs would be restored as closely as possible to pre-existing conditions, significant long-term cumulative impacts to recreational hunting are not expected. Implementation of mitigation measures to protect the conservation area and parks would minimize the contribution of the proposed Keystone Project to recreational impacts.

The Jones-Confluence Point State Park, located east of the section of the Keystone Project that would be collocated with the REX pipeline, is not expected to experience cumulative impacts from the combined projects.

Visual Resources

The temporary presence of construction equipment and cleared linear ROW are the primary visual impacts expected from the Keystone Project and other pipeline projects that may occur in the Project area. Both types of impacts would be localized and would not be cumulative except where the Keystone Project is collocated with other pipelines. Because the construction schedule of the collocated portions of the projects is expected to be staggered, cumulative visual impacts from the presence of construction equipment is not expected to occur. However, the duration of the impact would increase. Cumulative impacts would occur along collocated routes from the linear visual feature created by the permanently cleared ROW.

Aboveground facilities for the Keystone Project are small and would be spaced at substantial distances from each other and from the facilities of other collocated pipelines. Because visual impacts would be localized, the spacing of aboveground facilities precludes cumulative visual impacts. To the extent that aboveground pipeline facilities would be located in proximity to the refineries or other industrial facilities identified in Section 3.14.2, the refinery facilities would dominate the landscape and pipeline facilities would contribute a small increment to visual impacts in the viewshed.

Mitigation measures, such as screening with vegetation and use of non-reflective paints that are similar in color to the surrounding terrain, would be implemented to minimize any visual impacts.

3.14.3.10 Socioeconomics

The presence of construction workers and their need for housing and other services are the primary socioeconomic impacts of the proposed Keystone Project. Construction workers are expected to utilize the closest available local rental, motel/hotel, RV and camping facilities during the construction of each spread. The pace of construction and movement of workers along the pipeline route will limit the duration of such impacts to a brief period. To the extent that other activities, including construction of other major projects, occur in a local area at the same time as the Keystone Project, cumulative impacts—including housing shortages—may occur; these potential impacts would be short term.

Pipeline construction activities, which would mainly occur in rural areas, would use local highways and roads for delivery of materials and equipment and for worker access during construction. Existing traffic volumes on rural roads along the pipeline ROW are generally light. Increased traffic volume related to pipeline construction and construction of other pipelines is not expected to cause significant cumulative impacts such as congestion, road closure, or degradation of road surfaces. Traffic management procedures would be implemented during construction to minimize congestion, and damage to roads from construction vehicles would be repaired following construction.

Construction of the collocated portions of the Keystone and REX pipelines currently are scheduled to occur at different times. This offset schedule would increase the duration, but not the intensity, of impacts to housing, services, and traffic flow. If the construction schedules change and the projects are constructed at the same time along the collocated spreads, significant cumulative impacts could occur.

During operations, the number of workers required to maintain pipeline facilities would be minimal, resulting in no additive impact on traffic levels.

During construction of the Keystone Project, the Applicant's expenditures for payroll, local purchases, and related tax revenues would provide a short-term beneficial impact to the affected counties. Similar benefits are likely to be associated with REX and any other non-linear or industrial projects. The increased tax revenue paid to the state and local governments over the life of the projects also may result in a beneficial long-term cumulative impact.

Operation of the proposed facilities would require relatively few permanent employees; thus, there would be no long-term cumulative or additive impacts on population, housing, or municipal services in the Project area.

3.14.3.11 Cultural Resources

The cumulative impact of past, present, and reasonably foreseeable future projects related to the proposed Project include increased soil disturbance from construction of oil distribution and supply facilities and the attendant service roads, construction staging areas, pumping plants, powerplants, and/or refineries. The impacts of these projects would be similar to the proposed Project in that additional soil disturbance could cause adverse effects upon known and undiscovered historic properties. The Keystone pipeline would share ROW with the REX pipeline, and the combined impacts of these projects were considered in the overall impacts analysis. As with the REX and Keystone Projects, many of the past, present, and reasonably foreseeable projects feature a level of federal government involvement that requires compliance with 36 CFR 800, the ACHP's regulations for implementing Section 106 of the NHPA. The lead federal agencies for those projects would be required to consult with the appropriate SHPOs, Indian tribes, and other applicable consulting parties; identify and evaluate cultural resources; and avoid, minimize, or mitigate any effects upon historic properties. For non-federal actions in the Project area, project proponents would be required to comply with any identification and evaluation procedures and mitigation measures required by the state where the action is proposed. Such laws could include inadvertent discoveries of cultural resources, the disposition of discovered human remains, and other resource protection laws. Keystone has mitigated possible effects on potentially eligible cultural and historical properties through avoidance wherever possible. As a result of collocation with existing disturbed alignments for substantial distances along the proposed ROW and avoidance of potentially eligible properties wherever possible, the incremental impact of the Keystone Project to cultural resources is minor.

3.14.3.12 Air and Noise

Air Quality

The primary impact of the proposed Keystone Project to regional and local air quality would occur during construction and would result from dust generated by excavation and materials handling, and emissions from fueling and operation of construction equipment. These impacts would be localized to each construction spread and would occur during the short duration of the construction period for each spread. To the extent that other nearby construction activities are simultaneously underway in a specific locality, cumulative impacts to air quality may occur; but potential impacts would be short term and temporary. If the construction schedule for the collocated portions of the Keystone and REX pipelines are changed so that simultaneous construction of both projects in a collocated portion of the route occurs, such cumulative impacts could occur. Mitigation measures implemented during construction would limit dust and VOC emissions from fuel handling to minimize any localized impacts.

During operations, Project emissions would be limited to the operation of inspection vehicles and annual testing of backup internal combustion engine-generators located at each pump station. All Keystone project pump stations would utilize electric pumps for pipeline operation. Therefore, operation of the

pump stations would not cause a cumulative air quality impact in the Project region. Electrical energy for pump operation would be provided by the regional electrical grid, and the specific source of energy (and its related emissions) cannot be identified. In most regions, fossil fuels are the predominant source of electrical energy.

Operation of vehicles for inspection and periodic testing of backup generators are both low-emission, temporary activities and are not expected to cause cumulative impacts on air quality.

Noise

Operation of construction equipment and pump stations would cause the primary noise impacts of the Keystone Project. Construction noise impacts would be localized, temporary, and short term along each construction spread. Cumulative effects on ambient noise levels would occur only if construction on a congruent section of each pipeline occurred simultaneously. This is unlikely, given the proposed construction schedules, but could occur if construction of the REX pipeline was delayed.

No new major sources of noise are expected during operation of the Keystone facilities that would be near or collocated with REX facilities or the other industrial facilities discussed in Section 3.14.2. Noise levels resulting from operation of the pump stations for Keystone and the meter and regulator facilities for REX would be minimal or not noticeable, as the proposed facilities would be located in areas of low population density. Consequently, no cumulative noise impacts are expected. Based on available information, Keystone's Pump Station 31 could be located up to several miles west of REX's proposed Turney Compressor Station in Clinton County, Missouri. Taking into account the geographical locations of the two stations, the noise data available, and preliminary calculations, Keystone's contribution to cumulative noise impacts during operations would not be significant.

3.14.3.13 Reliability and Safety

Landowners have expressed concerns about the safety of collocating multiple pipelines in a common corridor across their property. As described in Section 3.13, Keystone is required to comply with DOT and state and local regulations regarding pipeline safety, leak detection, and spill response. Because REX would transport natural gas rather than any type of liquid material, cumulative effects caused by spills and leaks of crude oil are not expected from the two collocated pipelines. The Platte pipeline (which is collocated with both the REX and Keystone pipelines from the Nebraska/Kansas border to Troy, Missouri and collocated with Keystone to Wood River, Illinois) could contribute to cumulative effects should an incident occur in the same time frame as a similar incident in the same area along the Keystone Project. Large release events are rare however and therefore the likelihood of an event occurring in the same general area within two separate pipeline systems is remote.

3.14.3.14 Greenhouse Gases and Global Warming

At the current time, no rules or regulations have been promulgated by any federal or state agency to define as "significant" any source of greenhouse gas emissions. There are also no currently applicable facility-specific emission limitations or caps for greenhouse gas emissions. Thus, there is no regulatory or guidance mechanism for determining standards of significance for greenhouse gas impacts, including General Conformity Thresholds.

According to the Association of Environmental Professionals, there are currently no published thresholds or recommended methodologies for determining the significance of a project's potential cumulative contribution to global climate change (Hendrix et al. 2007). Even very large individual projects do not generate sufficient greenhouse gas emissions to individually influence global climate change.

Nevertheless, the cumulative effects of greenhouse gases have been determined to have led to climate change on a global scale, which is considered to be a significant cumulative effect. A project contributes to this impact by its incremental contribution, combined with the cumulative increase of all other sources of greenhouse gases.

As discussed in Section 1.2, U.S. consumption of liquid fuels (crude oil and refined products) is projected to total 26.9 million bpd in 2030, an increase of 6.2 million bpd over the 2005 input (EIA 2007). The import share of this domestic consumption is expected to climb to 61 percent in 2030. The proposed Keystone Project would represent a key component in meeting the demand for imported crude oil from a reliable international source. The Keystone Project would not create the market demand for the crude oil. Rather, its construction and operation assists in meeting that demand as it is currently projected. The proposed Keystone Project and other potential crude oil delivery projects provide necessary support to the existing infrastructure of the U.S. economy while concerted national efforts to reduce greenhouse gas emissions continue.

The principal greenhouse gas of concern related to crude oil pipeline construction and operation is carbon dioxide (CO₂), which enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, and trees and wood products, and as a result of other chemical reactions (e.g., manufacture of cement). CO₂ is removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle. Other greenhouse gases include methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

As stated in a recent report by McKinsey & Company (McKinsey 2007):

The United States could reduce greenhouse gas emissions in 2030 by 3.0 to 4.5 gigatons of CO₂ using tested approaches and high-potential emerging technologies. These reductions would involve pursuing a wide array of abatement options available at marginal costs less than \$50 per ton, with the average net cost to the economy being far lower if the nation can capture sizable gains from energy efficiency. Achieving these reductions at the lowest cost to the economy, however, will require strong, coordinated, economy-wide action that begins in the near future.

As energy prices, a desire to contribute to a national effort to reduce greenhouse gas emissions, and other factors influence consumer behavior and fossil fuel demand, reliable supply that allows the economy time to adjust would be provided by the proposed Keystone Project and other similar projects. Thus, the proposed Keystone Project would help provide the “bridging” necessary to allow a national program addressing greenhouse gas emission reductions to be instituted and implemented.

In attempting to meet the purpose and need for the Keystone Project, construction and operation of the proposed Project would incrementally increase the cumulative impact of greenhouse gas emissions. The carbon emissions associated with construction and operation would occur irrespective of the routing of the pipeline. However, the ultimate construction and operation of the pipeline would offset potential emissions associated with other methodologies for meeting the demand for imported crude oil, such as delivery of crude oil by tanker from alternative international sources. Keystone has committed to restoration and replanting of vegetative cover along the proposed pipeline corridor to the extent compatible with safety and operational requirements. This commitment would allow any advantages associated with carbon sinks along the proposed corridor to be reestablished after temporary disruption during the construction phase. Therefore, the incremental contribution to greenhouse gas emissions associated with construction and operation of the proposed Keystone is likely to be relatively small compared to the nationwide production of greenhouse gases on an annual basis.

3.14.4 Summary of Cumulative Impacts

The majority of cumulative impacts associated with construction and operation of the Keystone Project would be localized, temporary, and minor. Long-term cumulative impacts on vegetation and land uses could occur if other reasonably foreseeable future projects (see Section 3.14.2) are constructed, particularly construction of the portion of the REX pipeline that is collocated with the Keystone Project. Long-term cumulative benefits would be realized along the pipeline route from the tax base increment to local tax revenues. Short-term cumulative benefits also would be realized through jobs and wages and purchases of goods and materials during construction.

3.14.5 References

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