

2.8 Transportation and Utilities

2.8.1 Study Area

The cumulative effects study area for transportation and utilities includes the following six subwatersheds in portions of Sheridan, Johnson, Campbell, and Converse counties: Antelope Creek, Dry Fork Cheyenne River, Little Powder River, Upper Belle Fourche River, Upper Cheyenne River, and Upper Powder River (**Figure 1-1**). It includes portions of the area administered by the BLM Buffalo and Casper field offices and a portion of the TBNG, which is administered by the FS (**Figure 1-2**).

2.8.2 Cumulative Impacts

Generally, the amount of disturbance and the relative amount of unreclaimed disturbance associated with RFD activities are not likely to directly affect transportation systems in the cumulative effects study area. Site-specific instances of disturbance may require that segments of highways, pipelines, transmission lines, or railroads be moved to accommodate expansion of certain coal mines. Regardless, construction of alternative routing would be required prior to closing existing links so any disruptive effects on transportation systems would be minimal.

The coal mines in Subregion 1 (North Gillette) currently ship most of their coal via the east-west Burlington Northern and Santa Fe Railroad (BNSF) rail line through Gillette. The subregion produced 55 mmtpy in 2003, which was just 22 percent of the estimated 250 mmtpy capacity of the BNSF rail line (ENSR 2005c). The coal mines in Subregions 2 and 3 (South Gillette and Wright, respectively) produced approximately 308 mmtpy in 2003, which was 88 percent of the estimated 350 mmtpy capacity of the joint Union Pacific (UP)/BNSF line serving those areas.

Potential effects of RFD activities on transportation and utilities may be either short- or long-term in nature, varying with the type of development. The effects of coal production and the related demand for rail capacity could vary with market changes, although the trend in recent years has been upward, and it is expected that the trend would continue (ENSR 2005c). Similarly, the demand for pipeline capacity would vary with market conditions as well as with the rate of depletion of the oil or gas resource. In contrast, a power plant or an urban community development would be considered long-term, and the demand for transmission line capacity would be virtually permanent, lasting for the economic life of the activity.

Potential direct effects to roads and highways would include increased vehicular traffic and risk of traffic accidents on existing roadways in the cumulative effects study area from daily travel by workers and their families. Indirect effects would include increased wear and tear on existing roads, additional air emissions, fugitive dust from roads, noise, increased potential access to remote areas, and an increased risk of vehicle collisions with livestock and wildlife. Direct effects on railroads, pipelines, and transmission lines primarily would include increased demand for capacity to move coal, oil and gas, and electricity from production locations in the study area to markets outside the area.

Based on existing information, the discrete site-specific locations for non-coal RFD activities currently are unknown. Consequently, site-specific impacts are not quantifiable at this time. As a

2.0 Predicted Future Cumulative Impacts

result, they have been addressed qualitatively for this study. The potential effects of projected RFD activities on transportation and utilities in the study area under two (lower and upper) coal production scenarios are discussed below for the years 2010, 2015, and 2020.

2.8.2.1 Year 2010 – Lower Production Scenario

Transportation

Under this scenario, population is projected to increase by approximately 25 percent in Campbell County, which accounts for most of the population in the cumulative effects study area (ENSR 2005f). Based on traffic studies and estimates elsewhere, vehicle miles traveled (VMT) tend to increase at or above the rate of population growth. Consequently, highway traffic would be expected to increase by at least 25 percent by 2010. Approximately 60 percent of the population growth would occur in or near Gillette, which would indicate that the same proportion of traffic would originate in the Gillette area. The remainder of the traffic growth would be dispersed throughout the study area. Under this scenario, the greatest impact on traffic would occur in the Gillette area, where existing traffic volume to capacity ratios are highest. The increased traffic would be expected to cause delays in the Gillette area and might require widening of some streets and roads or other measures to increase traffic capacity. It is anticipated that there would be an increase in the risk of traffic accidents approximately proportional to the increase in traffic. Highway capacity on major routes away from Gillette would be expected to be sufficient to accommodate the growth without significant constraints.

Rail lines would be expected to accommodate approximately 650 mmtpy by 2010, including the existing 250 mmtpy on the BNSF northern route and 400 mmtpy on the joint UP/BNSF southern route, up from the existing 350 mmtpy on that line as a result of upgrades. Projected production under the 2010 – Lower Production Scenario would be 62 mmtpy from Subregion 1 (north) and 349 mmtpy from Subregions 2 and 3 (south). Anticipated rail capacity would be sufficient to carry the projected production. Assuming the subregional production would be shipped by the nearest rail lines, the Subregion 1 coal would use 25 percent of the northern BNSF capacity, and Subregions 2 and 3 coal would use 87 percent of the joint UP/BNSF southern line capacity.

Utilities

Current gas pipeline capacity out of the PRB is approximately 1.9 BCF per day; total conventional natural gas and CBNG production is slightly below 1.1 BCF per day (ENSR 2005c). Based on the information in Appendix D of the Task 2 Report for the PRB Coal Review, Past and Present and Reasonably Foreseeable Development Activities (ENSR 2005c), potential production of CBNG has been projected at 1.3 BCF per day by 2010. This potential is pipeline capacity limited, suggesting additional pipelines could be built. There are no specific projects under way; however, one potential additional pipeline (Bison Project) has been identified for completion by 2010 (ENSR 2005c).

An estimate 1,000 megawatts (MW) of new power production capacity is anticipated in the cumulative effects area by 2010. This level of production would require construction of additional transmission line capacity. It is assumed that new transmission lines would be constructed to connect new power plants to the grid. However, no specific projects have been identified so the location(s), capacities, and effects on the existing system cannot be determined at this time.

2.8.2.2 Year 2010 – Upper Production Scenario

Transportation

Under this scenario, population is projected to increase by approximately 31 percent in Campbell County, which accounts for most of the population in the cumulative effects study area (ENSR 2005f). The VMT would be expected to increase at or above the rate of population growth. Consequently, highway traffic would be expected to increase by at least 31 percent. Effects on traffic and highways would be similar to, but slightly greater than, the effects described under the 2010 – Lower Production Scenario.

Existing rail lines, together with upgrades currently under way on the joint UP/BNSF line, would be expected to accommodate approximately 650 mmtpy by 2010, as noted under the 2010 – Lower Production Scenario. Projected production under the 2010 – Upper Production Scenario would be 78 mmtpy from Subregion 1 (north) and 401 mmtpy from Subregions 2 and 3 (south). Assuming the subregional production would be shipped by the nearest rail lines, the Subregion 1 coal would use 31 percent of the northern BNSF capacity, and Subregions 2 and 3 coal would use slightly over 100 percent of the joint UP/BNSF south line capacity. At this time, it is uncertain how this excess demand (for the additional 1 mmtpy) would be accommodated.

Utilities

Pipeline and transmission line constraints and opportunities would be the same as described under the 2010 – Lower Production Scenario.

2.8.2.3 Year 2015 – Lower Production Scenario

Transportation

Under this scenario, population is projected to increase by approximately 33 percent in Campbell County, which accounts for most of the population in the cumulative effects study area (ENSR 2005f). The VMT would be expected to increase at or above the rate of population growth. Consequently, highway traffic would be expected to increase by at least 33 percent. Effects on traffic and highways would be similar to, but approximately one-third greater than, the effects described under the 2010 – Lower Production Scenario.

Under this scenario, approximately 1.5 miles of U.S. Highway 14/16 may be affected by expansion of the Subregion 1 mines. In accordance with the requirements of SMCRA, surface coal mining operations may not be conducted on lands within 100 feet of the outside right-of-way line of any public road unless the appropriate public road authority allows the public road to be relocated or closed. The authorization for relocation or closure only would be granted after providing public notice and opportunity for a public hearing and issuance of a written finding that the interests of the affected public and landowners would be protected.

It is projected that the proposed Dakota, Minnesota, & Eastern (DM&E) line would be built and operational by 2015 (pending completion of additional environmental analysis), adding 100 mmtpy in shipping capacity for Subregions 2 and 3 (ENSR 2005c). Existing rail lines, together with upgrades currently under way on the joint UP/BNSF line and the DM&E line, would be expected to

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accommodate approximately 750 mmtpy by 2015, including 250 mmtpy on the north BNSF line and 500 mmtpy on the two south lines. Projected production under the 2015 – Lower Production Scenario would be 74 mmtpy from Subregion 1 (north) and 393 mmtpy from Subregions 2 and 3 (south). Assuming the subregional production would be shipped by the nearest rail lines, the Subregion 1 coal would use 30 percent of the northern BNSF capacity and Subregions 2 and 3 coal would use 79 percent of the combined DM&E and joint UP/BNSF south line capacity. Rail shipment capacity would not be a constraining factor under this scenario.

Utilities

Pipeline and transmission line constraints and opportunities would be the same as described under the 2010 – Lower Production Scenario.

2.8.2.4 Year 2015 – Upper Production Scenario

Transportation

Under this scenario, population is projected to increase by approximately 41 percent in Campbell County, which accounts for most of the population in the cumulative effects study area (ENSR 2005f). The VMT would be expected to increase at or above the rate of population growth. Consequently, highway traffic would be expected to increase by at least 41 percent. Effects on traffic and highways would be similar to, but almost two-thirds greater than, the effects described under the 2010 – Lower Production Scenario. Additional street and highway improvements in the Gillette area almost certainly would be required over a period of years as the population gradually increased. (Additional information relative to projected growth rates is presented in the Task 2 Report for the PRB Coal Review, Past and Present and Reasonably Foreseeable Future Development [ENSR 2005c]).

Under this scenario, approximately 1.5 miles of U.S. Highway 14/16 may be affected by expansion of the Subregion 1 mines. In accordance with the requirements of SMCRA, surface coal mining operations may not be conducted on lands within 100 feet of the outside right-of-way line of any public road unless the appropriate public road authority allows the public road to be relocated or closed. The authorization for relocation or closure only would be granted after providing public notice and opportunity for a public hearing and issuance of a written finding that the interests of the affected public and landowners would be protected.

Existing rail lines, together with upgrades currently under way on the joint UP/BNSF line and construction of the proposed DM&E line, would be expected to accommodate approximately 750 mmtpy by 2015. Projected production under this scenario would be 104 mmtpy from Subregion 1 (north) and 439 mmtpy from Subregions 2 and 3 (south) by 2015. Assuming the subregional production would be shipped by the nearest rail lines, the Subregion 1 coal would use 42 percent of the northern BNSF capacity and Subregions 2 and 3 coal would use 88 percent of the combined DM&E and joint UP/BNSF south line capacity. Rail shipment capacity would not be a constraining factor under this scenario, although the usage factor on the south lines would suggest the need for expansion planning if continued growth should be projected.

Utilities

Pipeline and transmission line constraints and opportunities would be the same as described under the 2010 – Lower Production Scenario.

2.8.2.5 Year 2020 – Lower Production Scenario

Transportation

Under this scenario, population is projected to increase by approximately 41 percent in Campbell County, which accounts for most of the population in the cumulative effects study area (ENSR 2005f). The VMT would be expected to increase at or above the rate of population growth. Consequently, highway traffic would be expected to increase by at least 41 percent. Effects on traffic and highways would be similar to, but almost two-thirds greater than, the effects described under the 2010 – Lower Production Scenario. Additional street and highway improvements in the Gillette area almost certainly would be required over a period of years as the population gradually increased. (Additional information relative to projected growth rates is presented in the Task 2 Report for the PRB Coal Review, Past and Present and Reasonably Foreseeable Future Development [ENSR 2005c]).

In 2020, rail lines would be expected to accommodate approximately 750 mmtpy of coal. Projected production under this scenario would be 78 mmtpy from Subregion 1 (north) and 417 mmtpy from Subregions 2 and 3 (south). Assuming the subregional production would be shipped by the nearest rail lines, the Subregion 1 coal would use 31 percent of the northern BNSF capacity and Subregions 2 and 3 coal would use 83 percent of the combined DM&E and joint UP/BNSF south line capacity. Rail shipment capacity would not be a constraining factor under this scenario.

Utilities

Pipeline and transmission line constraints and opportunities would be the same as described under the 2010 – Lower Production Scenario.

2.8.2.6 Year 2020 – Upper Production Scenario

Transportation

Under the 2020 – Upper Production Scenario, population is projected to increase by approximately 48 percent in Campbell County, which accounts for most of the population in the cumulative effects study area (ENSR 2005f). The VMT would be expected to increase at or above the rate of population growth. Consequently, highway traffic would be expected to increase by at least 48 percent under the 2020 – Upper Production Scenario. Effects on traffic and highways would be similar to, but over 90 percent greater than, the effects described above for the 2010 – Lower Production Scenario. Additional street and highway improvements in the Gillette area would almost certainly be required over a period of years as the population gradually increased. (Additional information relative to projected growth rates is presented in the Task 2 Report for the PRB Coal Review, Past and Present and Reasonably Foreseeable Future Development [ENSR 2005c]).

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Under this scenario, approximately 1.5 miles of State Route 59 potentially could be affected by mining at the Subregion 2 mines, depending on future leasing. In accordance with the requirements of SMCRA, surface coal mining operations may not be conducted on lands within 100 feet of the outside right-of-way line of any public road unless the appropriate public road authority allows the public road to be relocated or closed. The authorization for relocation or closure only would be granted after providing public notice and opportunity for a public hearing and issuance of a written finding that the interests of the affected public and landowners would be protected.

In 2020, rail lines would be expected to accommodate approximately 750 mmtpy of coal. Projected production under this scenario would be 121 mmtpy from Subregion 1 (north) and 455 mmtpy from Subregions 2 and 3 (south). Assuming the subregional production would be shipped by the nearest rail lines, the Subregion 1 coal would use 48 percent of the northern BNSF capacity, and Subregions 2 and 3 coal would use 91 percent of the combined DM&E and joint UP/BNSF south line capacity. Rail shipment capacity, would not be a constraining factor under this scenario, although the usage factor on the south lines would suggest the need for expansion planning if continued growth should be projected.

Utilities

Pipeline and transmission line constraints and opportunities would be the same as described under the 2010 – Lower Production Scenario.