10. ENERGY RESOURCES

Under the Council on Environmental Quality's (CEQ's) National Environmental Policy Act of 1969 (NEPA) regulations (40 Code of Federal Regulations [CFR] 1502.16 (e)), the Surface Transportation Board (STB or the Board) Section of Environmental Analysis (SEA) must consider the energy requirements and conservation potential of various alternatives of a proposed project. STB environmental regulations (49 CFR 1105.7) require that environmental impact analyses describe the effect of the proposed action on transportation of energy resources, the effect of the proposed action on recyclable commodities, and whether the proposed action would result in an increase or decrease in overall energy efficiency and explain why.

This chapter examines energy resources potentially affected by the proposed Northern Rail Extension (NRE) project. Energy resources include fuel consumption as a result of the proposed action, as well as utility and pipeline corridors potentially affected by the construction of the proposed rail line extension.

10.1 Affected Environment

The proposed rail line roughly follows the Tanana and Big Delta river valleys and extends south of Fairbanks to Delta Junction. Along much of the proposed rights-of-way, the rail line would generally follow the Richardson or Alaska highways. These highways serve as important transportation links between isolated communities in the rugged and chiefly undeveloped region of interior Alaska. Energy and utility rights-of-way occur in proximity to these highways because of the landscape and the convenience of access for construction and maintenance activities these highways provide.

Existing pipeline and utility rights-of-way are primarily located east of the Tanana and Big Delta rivers in the project area. Lands west of these rivers are primarily undeveloped and no energy or public utility rights-of-way have been identified.

Utility corridors in the project area, including phone and electrical transmission lines, generally run parallel or in proximity to Richardson Highway (Alaska Department of Natural Resources [ADNR], 2006a; Alaska Railroad Corporation [ARRC], 2006a). The existence of these and additional rights-of-way near the highway were confirmed by SEA via aerial photography. Utility lines running from the main transmission lines to individual residences also exist in numerous locations in the project area.

Two pipeline rights-of-way are located in the project area (ADNR, 2006b). The Trans-Alaska Oil Pipeline is a 48-inch diameter crude oil pipeline running 800 miles from Prudhoe Bay to the Port of Valdez. In the project area, the pipeline route runs from just north of Fairbanks to east of North Pole, near the current terminus of the Alaska Railroad. It then heads east out of the project area but re-enters the Tanana River valley just north of the confluence of the Big Delta and Tanana rivers. After returning to the valley, the pipeline runs south through Delta Junction and surrounding agricultural areas, roughly paralleling Richardson and Alaska highways at a distance of 300 to 5,000 feet.

The Haines to Fairbanks pipeline is an 8-inch diameter, 626-mile long military fuel transport pipeline from Haines, Alaska to Fairbanks, Alaska (U.S. Army Corps of Engineers, 2004). In the project area, the pipeline runs just east of Richardson Highway from Delta Junction to its terminus in Fairbanks (ADNR, 2006b). The Haines to Fairbanks pipeline has been inactive since

1974. State and Federal investigations into historic petroleum and herbicide contamination in the right-or-way are ongoing.

10.2 Environmental Consequences

10.2.1 Methodology

SEA investigated the effects on energy resources that would result from the construction and operation of the proposed NRE rail line. SEA examined the location of pipeline and electrical distribution line infrastructure in relation to each segment. Effects from potential fuel usage by trains were also examined. Part of this assessment was a qualitative comparison of truck to rail transport on the overall energy efficiency resulting from the movement of freight (both commercial and Department of Defense).

10.2.2 Common Impacts

Electrical Transmission Lines

In several locations, in particular near Eielson Air Force Base and Delta Junction, the proposed rail line would cross or run alongside existing electrical transmission lines. Where an alternative segment would cross an existing electrical transmission line, the line might need to be raised or a pylon—the tower supporting the line—might need to be relocated. ARRC would need to coordinate with Golden Valley Electric Association, Inc., and other line owners and users to ensure any service disruptions that might be necessary were minimized. In addition, ARRC would need to ensure that any alterations to transmission lines or pylons meet industry standards. The overall potential effects to electrical transmission lines are considered to be negligible.

Energy Consumption

SEA based its conservative fuel usage estimate for NRE operations on the longest potential rail line configuration of 82 miles. Fuel usage estimates were based on the assumption that one round trip freight train and eight one-way passenger trains per day would operate on the rail line. SEA's analysis also conservatively assumed that freight trains would consist of one locomotive and 35 railcars of mixed freight with a weight of 100 tons per car loaded (outbound leg of the round trip) and 50 tons per car unloaded (return leg of the round trip). SEA estimated fuel usage for the eight one-way passenger trains per day by assuming the use of a single locomotive and two 70-ton passenger cars with a total ridership of 185 passengers per train. SEA used the fuel efficiency standard of 710.6 ton-miles per gallon for mixed freight cargo identified in a Sierra Research, Inc. study of rail routes operating over similar grades (Sierra Research Inc., 2004). Using these conservative assumptions, total diesel fuel usage per week would be approximately 7,400 gallons for freight trains and 2,800 gallons for passenger trains. Emissions resulting from this fuel usage are analyzed in Chapter 8, Climate and Air Quality.

In terms of overall fuel usage, SEA expects that construction and operation of the proposed NRE would result in no change or a slight decrease in fuel usage. Any change in energy consumption would result from the substantial fuel efficiency advantage of rail versus truck transport (more than four times as efficient [Abacus Technology Corporation, 1991]) in the movement of mixed freight, as well as the assumption that the proposed commercial and military freight that would be shipped via the NRE would have otherwise been shipped by truck (commercial freight) or driven (military vehicles) over existing roads. ARRC has not estimated the shift of passenger

traffic from road-to-rail, however, so SEA has conservatively assumed that operation of the rail passenger service would represent an increase in fuel usage. Depending on the amount of passenger car and truck traffic shifted to more fuel efficient passenger rail, overall fuel consumption could decrease.

Transportation of Energy Resources and Recyclable Commodities

The transportation of energy resources and recyclable commodities make up part of the anticipated cargo of the proposed rail line. Because the rail line is not expected to generate new demand for these commodities, but instead shift them from existing truck transportation, SEA has concluded that the proposed action would have no effect on these resources.

Overall Energy Efficiency

The proposed project is expected to result in the truck-to-rail diversion of freight. SEA has conservatively assumed that operation of the rail passenger service would represent a decrease in energy efficiency because the Applicant has not estimated the shift of passenger traffic from road-to-rail. However, given the increased efficiency resulting from truck-to-rail diversions of freight, SEA estimates rail operations would not decrease overall energy efficiency.

10.2.3 Impacts by Alternative Segment

Delta Alternative Segments 1 and 2 would both cross the Trans-Alaska Oil Pipeline near Delta Junction. ARRC would have to closely coordinate all construction activities with the Alyeska Pipeline Service Company and would adhere to all industry standards to ensure safety and minimal disruption to pipeline operations. ARRC's frequency of train accidents, such as derailments, is lower than the national average (see Chapter 11, Transportation Safety and Delay, and Appendix K). In the unlikely event of a derailment, no impact on this pipeline is expected to occur because of the grade separated design of the pipeline crossings. Overall, SEA does not anticipate any distribution disruption to this pipeline or long- or short-term effects on pipeline safety as a result of proposed rail line construction or operation.

Delta Alternative Segment 2 would, at certain points, run directly adjacent to an existing electrical transmission line northeast of Delta Junction. This proximity within the alternative segment's right-of-way is not considered a safety hazard due to the low frequency of train accidents, such as derailments (see Chapter 11, Transportation Safety and Delay, and Appendix K). In the unlikely event of an accident, electrical service along this line could be disrupted. This risk is considered negligible due to the low frequency of train accidents and the fact that a derailed train would likely need to impact a pylon to cause a service disruption.

10.2.4 No-Action Alternative

The No-Action Alternative would result in no change to the existing conditions for energy resources in the project area because the Applicant would take no action to extend the line. There would be no change in the use of fuel in the area since freight and personal transport would continue to be by road.