

3.8 Energy

This section describes the energy use for activities associated with the Proposed Action in the Chicago metropolitan area. For this discussion, the Study Area is defined as Lake, Cook, DuPage, Will, McHenry, Kane, Kendall, and Grundy counties in Illinois, and Lake and Porter counties in Indiana. The entire 10-county area is used because changes in energy use associated with the Proposed Action could occur throughout this area.

Energy is used during the operation and construction of railroads. Operational energy consumption refers to the fuel used to power locomotives. Energy consumed for construction of new connections and double-tracking refers to the fuel used to power the equipment needed to complete such activities. Other energy uses directly affected by railroad traffic include the fuel used to power on-road motor vehicles that are delayed by trains traveling through highway/rail at-grade crossings.

CN's energy use in the Study Area under existing conditions is affected in part by factors outside its control, such as the nature of the infrastructure (rail lines) it uses or trackage rights over other carriers' rail lines. Although the rail lines that are part of the Proposed Action are longer (in track-miles) than more direct routes through the Chicago metropolitan area, the continuous route around Chicago would increase efficiency relative to the amount of freight hauled per distance traveled and would allow for greater flexibility of operations (Applicants 2008b).

What are trackage rights?
The right (or combination of rights) of one railroad to operate over the designated trackage of another railroad.

The Proposed Action is not expected to affect the amount or route of energy-producing and recyclable commodities transported through the Study Area. Therefore, no quantification of these items is provided.

CN calculated, and SEA reviewed, its current energy use. As shown in Table 3.8-1, below, CN estimates that it currently uses 15,613 U.S. gallons of diesel fuel per day, including fuel for CN trains traveling on the EJ&E rail line and on CN and other rail lines. (The EJ&E rail line includes a number of spurs and offshoot rail lines from the main rail line which are included in the Proposed Action.) Assuming 365 days of activity per year, CN's annual fuel use on current routes is approximately 5.7 million U.S. gallons. Additionally, EJ&E trains operating on the existing EJ&E rail line currently use 3,422 U.S. gallons of diesel fuel per day (1.25 million U.S. gallons annually), and all other rail carriers operating on the existing EJ&E rail line currently use approximately 3,687 U.S. gallons of diesel fuel per day (1.35 million gallons annually) (Applicants 2008j and 2008g).

Table 3.8-1. CN Energy Use for Existing Conditions in the Chicago Metropolitan Area		
	Daily (U.S. gallons of diesel fuel)	Annual (million U.S. gallons)
CN trains on the EJ&E rail line	440	0.16
CN trains on CN and other rail lines	13,592	4.96
Idling CN trains on CN and other lines	1,582	0.58
Total	15,613	5.70

Sources: Applicants (2008k), letter from Paul A. Cunningham, Counsel for Canadian National Railway Company and Grand Trunk Corporation, Harkins Cunningham LLP, to Victoria J. Rutson, Chief, Section of Environmental Analysis, Surface Transportation Board, in response to the Board's Data and Information Request #2, Exhibit F, March 26, 2008.

Applicants (2008l), letter from Paul A. Cunningham, Counsel for Canadian National Railway Company and Grand Trunk Corporation, Harkins Cunningham LLP, to Victoria J. Rutson, Chief, Section of Environmental Analysis, Surface Transportation Board, in response to the SEA's Data and Information Request #4, May 23, 2008.

SEA calculated gasoline and diesel fuel use from vehicle delays at highway/rail at-grade crossings on CN and EJ&E rail lines within the Study Area by multiplying the total vehicle delay hours (D_{an}) by the percentage of gasoline and diesel vehicles in the national fleet using the average mix default setting in MOBILE6.2, an EPA-approved motor vehicle emission factor model (EPA 2007b). For 2007, the mix is 91.3 percent gasoline engines and 8.7 percent diesel engines. SEA multiplied total annual delay hours by these ratios and fuel consumption rates (0.5 gallon per hour of idling) to estimate an annual fuel usage, shown in Table 3.8-2, below, due to all vehicles idling while delayed at public at-grade intersections (Gaines et al. 2006; Clark et al. 2005).

Scenario	Hours of Vehicle Idling on EJ&E Rail Lines	Hours of Vehicle Idling on CN Rail Lines	Total Hours of Vehicle Idling on All Rail Lines	Vehicles by Fuel Type		Annual Fuel Usage (million U.S. gallons)	
				Gasoline ^a	Diesel ^a	Gasoline	Diesel
No-Action 2007	86,610	491,597	578,207	91.3%	8.7%	0.26	0.025

Sources: EPA (2007b), "MOBILE6 Vehicle Emission Modeling Software," *Modeling and Inventories*, retrieved on May 8, 2008, <http://epa.gov/oms/m6.htm>, July 23, 2007.
 Gaines et al., *Paper No. 06-2567, Estimation of Fuel Use by Idling Commercial Trucks*, Center for Transportation Research, Argonne National Laboratory, University of Chicago, retrieved on May 8, 2008, <http://www.transportation.anl.gov/pdfs/TA/373.pdf>, 2006.
 Clark et al., *Idle Emissions from Heavy-Duty Diesel Vehicles*, Center for Alternative Fuels, Engines, and Emissions, Department of Mechanical and Aerospace Engineering, West Virginia University, retrieved on May 8, 2008, http://www1.eere.energy.gov/vehiclesandfuels/pdfs/deer_2005/poster1/2005_deer_clark.pdf, 2005.

Note:

^a Taken from MOBILE6.2 as default national fleet-mix value for 2007.