

16.0 ENERGY USE

16.1 Affected Environment

The purpose of this chapter is to quantify energy expenditures for construction of the Preferred Alternative and operation of the regional transportation system. Within the regional transportation system there would be differences in energy consumption, based on total Vehicle Miles Traveled (VMT), between the No-Build, TSM and Preferred Alternative. Energy consumption is expressed as the number of British Thermal Units (BTUs) per vehicle mile expended for a range of vehicle classifications. The types of vehicles operating within the study area in the No-Build, TSM, and Preferred Alternative include: passenger vehicles (both light duty vehicles and light duty trucks), heavy duty vehicles, diesel buses, compressed natural gas (CNG) buses, electric buses, and light rail transit. Regional annual VMT within the Hampton Roads area is as follows:

16-1
Year 2026 Annual Vehicle Miles of Travel

	No-Build	TSM	Preferred
Regional VMT	13,996,920,000	13,985,776,500	13,983,240,000
Change from No-Build	-	- 11,143,500	- 13,680,000
Change from TSM	-	-	- 2,536,500

Source: AECOM Consult, Compiled by URS October 2004

Notes: Average Weekday VMT escalated to Annual VMT using 285 annualization factor

16.2 Regional Transportation System Energy Use

Energy consumption in the Year 2026 for all types of vehicles was calculated based on the following factors.

- Hampton Roads Planning District Commission regional traffic forecasts.
- The anticipated mix of light- and heavy-duty gasoline engine vehicles.
- The anticipated mix of bus diesel, compressed natural gas, and electric engine vehicles.
- The anticipated use of light rail vehicles within the region.

Table 16-2 shows changes in regional energy consumption for the No-Build, TSM, and Preferred Alternative. Implementation of the Preferred Alternative will result in a decrease of the number of BTUs expended per year of 46,722,662,000 in the Year 2026, over the No-Build Alternative. The Preferred Alternative would result in an increase of the number of BTUs expended per year of 5,697,287,800 in the Year 2026, over the TSM Alternative.

Construction energy use will be offset in less than a year by savings on operations energy consumption.

**Table 16–2
Change in Regional Energy Consumption**

Vehicle Class	Regional VMT per Year			Change in VMT per Year		Energy Consumption (BTU per vehicle mile)	Change in BTU per Year	
	No-Build	TSM	Preferred Alternative	Preferred vs. No-Build	Preferred vs. TSM		Preferred vs. No-Build	Preferred vs. TSM
Passenger Vehicle	13,297,074,000	13,286,488,000	13,284,078,000	-12,996,000	-2,410,000	6,233	-81,004,068,000	-15,021,530,000
Heavy-duty Vehicle	699,846,000	699,288,000	699,162,000	-558,000	-126,000	22,046	-12,301,668,000	-2,777,796,000
Bus/Diesel	7,463,800	7,952,400	7,898,900	435,100	-53,500	41,655	18,124,090,500	-2,228,542,500
Bus/Electric	118,400	185,000	55,700	-62,700	-129,300	41,655	-2,611,768,500	-5,385,991,500
LRT	NA	NA	400,200	400,200	400,200	77,739	31,111,147,800	31,111,147,800
Total	13,996,920,000	13,985,776,500	13,983,240,000				-46,722,662,000	5,697,287,800

Source: URS Corp, July 2005

Data Source: Passenger and Heavy Duty Vehicle Miles of Travel (VMT) from HRPDC regional travel demand model.

Bus and Rail VMT from the Norfolk LRT FEIS system operating plans.

Energy consumption statistics are in British Thermal Units (BTU) and are reported from the Transportation Energy Data Book, Edition 16.

Note: * Preferred Alternative annual VMT includes the additional VMT for the LRT project.