



## 5.27 Energy Impacts

### 5.27.1 Introduction

The energy impacts of the various I-69 alternatives will be assessed in this section. First, a brief description of the methodology used to calculate energy consumption is provided. Second, the comparative energy consumption data are summarized and discussed. Finally, the conclusions of the analysis are given.

Since the publication of the DEIS, the following changes have been made to this section:

- Impact calculations have been updated to reflect the selection of variations, route shifts and other changes, as described in Section 5.1.3.

### 5.27.2 Methodology

As a part of the transportation and economic analysis of the I-69 alternatives, a “post-processing” program was written that analyzes data produced by the Indiana Statewide Traffic Demand Model (ISTDM). The travel demand model simulates overall traffic conditions throughout the highway network, which encompasses all of Indiana and large parts of the four abutting states. This model was run for each alternative and option for the study’s forecast-year, 2025. Data that were output by the model included auto and truck volumes-per-day, vehicle-miles of traffic, and typical daily speeds on each link in the highway system. The post-processor used all of these outputs to compute the gallons of gasoline and diesel fuel that are forecasted to be consumed in the year 2025 under each scenario. Factors were then used to convert from gallons of fuel to BTUs. One million BTUs is approximately equivalent to 8.007 gallons of gasoline or 7.201 gallons of diesel fuel. For the purposes of this analysis, it is assumed that passenger vehicles and single-unit trucks use gasoline and heavy-duty trucks use diesel fuel.

It should be noted that the analysis includes all elements of induced travel resulting from: (1) longer average trip lengths; (2) more trips based on the assumption that I-69 will be completed nationally; and (3) more trips generated regionally as a result of new economic and residential development stimulated by I-69.

### 5.27.3 Energy Impacts

Table 5.27-1 summarizes the results of the energy analysis. Additional energy consumed by the alternatives range from a low of approximately 27,000 gallons of combined gasoline and diesel fuel-per-day for Alternative 3B to approximately 66,000 gallons-per-day for Alternative 5A. As a percentage of total forecasted daily fuel consumption in the modeled area, this represents 0.12% and 0.30% for Alternatives 3B and 5A, respectively.

In descending order from the largest energy consumption to the least, the top energy-consuming alternatives are: 5A, 5B, 2C, 3C, and 1. These routes make heavy use of SR 37 and/or US 41, where the attendant speed increases provided by I-69

Table 5.27-1: Gallons of Fuel Consumed in Excess of the No Build Alternative in 2025 by Build Alternatives

| Alternative | Additional Energy Consumed |                      |
|-------------|----------------------------|----------------------|
|             | Gallons                    | BTU's (in thousands) |
| 1           | 50,779                     | 6,243,333            |
| 2A          | 43,074                     | 5,169,213            |
| 2B          | 50,622                     | 6,119,934            |
| 2C          | 51,999                     | 6,176,838            |
| 3A          | 33,499                     | 3,951,209            |
| 3B          | 27,201                     | 3,064,270            |
| 3C          | 51,165                     | 6,088,739            |
| 4A          | 33,050                     | 3,942,650            |
| 4B          | 37,829                     | 4,552,671            |
| 4C          | 47,205                     | 5,634,370            |
| 5A          | 66,178                     | 8,099,156            |
| 5B          | 65,723                     | 7,975,942            |

Source: Bernardin, Lochmueller & Associates, Inc.



would affect relatively large volumes of traffic, resulting in high fuel consumption. Even Alternative 5A - which deviates off of SR 37 near Martinsville - would divert enough traffic away from SR 37 to produce the same effect.

At the opposite end of the spectrum, the lowest energy-consuming alternatives (in descending order from largest to least) are: 4B, 3A, 4A, and 3B. With the exception of 3B, these are routes that approach Indianapolis on I-70 and affect lower volumes of traffic than the SR 37 alternatives. The No Build Alternative will have no impacts on energy resources.

#### **5.27.4 Summary**

Energy impacts are a function of several variables including: average running speed, vehicle-miles of travel, and the mix of vehicle types in the system (i.e., autos versus heavy trucks). Generally, those alternatives that make intensive use of the SR 37 corridor would consume more energy than those that would not. These routes also tend to cause more induced travel (longer trips), which also results in added energy consumption. The No Build Alternative will have no impact on energy resources. Preferred Alternative 3C is in the middle range of the alternatives in terms of its impact on energy consumption.