

# Freight Economic Analysis Tool (FEAT)

## Capacity Investment Model

Incorporating economic analysis into the transportation planning process provides critical information for the transportation investment decision making process. The ITTS states commissioned the development of FEAT to assist in providing this critical information.

The FEAT Capacity Investment Model features a systematic framework that uses output from a travel demand model (hence, it is also referred to as the “on-model” tool) for conducting customized economic analysis of changes in transportation network capacity including:

- » New facilities
- » Widening of existing facilities
- » Closure of existing facilities



FEAT combines proven data and processes for conducting benefit cost and economic impact analysis that provides a multi-layer approach to addressing a full spectrum of projects and needs

Key features of FEAT are that the tool is:

- » Flexible
- » Transparent
- » Comprehensive
- » Efficient

**Table C: Benefit-Cost Results**

Benefit-Cost Results	TOTAL
<b>Benefits (undiscounted)</b>	
Safety	\$389,099,640
Emissions	\$286,845,735
Fuel	-\$656,105,784
Vehicle Operating Costs	-\$1,971,558,381
Time Savings	\$19,008,949,245
Freight Logistics Cost Savings	\$646,214,180
<b>Total</b>	<b>\$16,925,245,355</b>
<b>Costs (undiscounted)</b>	
Capital Costs	\$2,594,327,520
O&M Costs	\$1,436,927,740
<b>Total</b>	<b>\$4,081,255,260</b>
<b>Discounted results</b>	
Total Discounted Costs	\$3,479,137,000
Total Discounted Benefits	\$11,591,588,653
Net Present Value (NPV)	\$12,843,990,995
Internal Rate of Return (IRR)	\$8,112,451,653
Benefit-Cost Ratio (BCR)	3.3

FEAT works with the state’s existing travel demand models and economic models to allow users to conduct benefit cost and economic impact analysis of a single project or a program of projects in a matter of minutes. The tool automatically generates tables and reports of the findings for use in reports, presentations or grant applications.

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## Overview of The FEAT Capacity Investment Model

### Step 1: Parameters

- Review standard parameters and ensure values are appropriate
- Enter project name, select study region and simulation options and enter input file path names for saved results.

### Step 2a or Step 2b: Enter results of travel demand modeling

- Collect and input Travel Demand Model (TDM) values in daily format if using a average daily model or by time of day (AM, MD, PM, and NT) if using a time of day model.

### Step 2c: Annualized TD

- Annualizes the Travel Demand Model inputs using data from Step 1 and either Regional or Peak TD inputs. All estimates reflect total annual amounts (e.g. no longer daily).

### Step 3a: Safety

- Total crashes and the value of those crashes are estimated in this tab, by region.

### Step 3b: Emissions

- This tab calculates the change in emissions for autos and trucks in tons and then monetizes the change in emissions by region.

### Step 3c: User Costs

- Estimates User Costs for business, commuter, leisure, and truck trips by region.
- User Costs include fuel, vehicle operating costs (VOC), time savings, and delay. -

### Benefit Cost Analysis (BCA)

- Users must enter in the annual capital and operations and maintenance costs for the project or group of projects, as well as select the discount rate.
- This tab produces the Net Present Value and Benefit-Cost Ratio for the entire project or group of projects.

### Step 4: Auto Inputs

- This tab compiles all of the monetized auto inputs in preparation for the economic impact model runs.

### Step 5: Truck Inputs

- This tab compiles all of the monetized truck inputs in preparation for the economic impact model runs.

### Step 6a: Economic Impact Model Inputs

- Combined direct economic impact model inputs for auto and truck and allows users to run self-generating input file for the economic impact model.

### Step 6b: Economic Impact Result

- Users must copy and paste the exported REMI or IMPLAN Results into this tab.