### PennDOT Web Application Suite

**Corridor Analysis Procedure**

- **Corridor Selection**
  - Alphabatical selection: Corridors are listed alphabetically (a) for Travel Time and Travel Delay Monitor. A county selection (b) is used for Arterial Ranking.

**Analysis Date Selection**

- **Time Selection**
  - Before and after selection: Before (red) and after (green) dates are selected on a calendar.

**Activity Date**

1. Selection of the activity date
2. Selection of the travel activity (before or after)
3. Selection of the corridor
4. Selection of the travel type

**Velocity Selection**

1. Selection of the travel activity (before or after)
2. Selection of the corridor
3. Selection of the travel type

**Output Selection**

1. Selection of the travel activity (before or after)
2. Selection of the corridor
3. Selection of the travel type

**Results**

1. Travel delay monitor displays travel times and travel speeds for the selected activity, travel activity, and corridor.
2. The output is displayed for the selected corridor and travel activity, with the option to view the output for the before or after period.

### Arterial Ranking Tool

**Travel Time Comparison Tool**

- **Travel Time**
  - The travel time monitor displays the travel time from the selected corridor to the destination.

- **Travel Speed**
  - The travel speed monitor displays the average speed of travel for the selected corridor.

**Travel Delay Monitor**

- **Delay**
  - The travel delay monitor displays the cumulative travel delay for the selected corridor.

### Equation and Calculation Analysis

#### User Cost Benefit

The hourly volumes were estimated by the following equation:

\[
\text{vol}_i = \text{AADT}_i \times a \times d
\]

where:

- \( \text{vol}_i \) = estimated volume for hour \( i \)
- \( \text{AADT}_i \) = annual average daily traffic
- \( a \) = hourly traffic as a percentage of \( \text{AADT}_i \)
- \( d \) = directional distribution (assumed to be 0.5)

The difference in travel time for each hour, before and after the adaptive signal deployment, was calculated using the following equation:

\[
\Delta T = T_{\text{after}} - T_{\text{before}}
\]

where:

- \( T_{\text{after}} \) = median travel time during the period after hour \( i \)
- \( T_{\text{before}} \) = median travel time during the period before hour \( i \)

The user benefit for travel during each hour was then calculated:

\[
\text{User Benefit}_i = \text{vol}_i \times \Delta T \times \text{CC} \times \text{PPV} \times \text{VOT}
\]

where:

- \( \text{CC} \) = number of commercial vehicles
- \( \text{PPV} \) = hourly value of time for passenger cars
- \( \text{VOT} \) = hourly value of time for commercial vehicles

The net user benefit from the five corridors was determined to be $32 million. In addition, carbon dioxide emissions were reduced by over 10,000 tons—an equivalent savings of nearly $273 million.

### Arterial Ranking Tool

Arterial Ranking displays arterial performance as Reliability vs. Central Tendency in the graph in the lower left hand corner of the figure above.

#### Arterial Ranking also outputs this one-dimensional graph, displaying the reliability of the corridor using the difference of the 75th and 25th percentiles and the ideal travel time.

#### Arterial Ranking also outputs this one-dimensional graph, displaying the variance of the corridor travel time from the ideal travel time.

### $32M Net User Cost Benefit

#### $275,000 CO2 savings

#### 10,000 tons CO2 reduced