Traffic Model Development

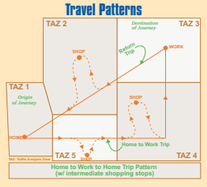
- Trying to predict the future is a risky proposition for anyone, but DelDOT's planners have to do just that to assess when and what type of improvements will be required to address the US 113 corridor's future transportation needs. Fortunately, with the aid of computer modeling, the job becomes a little easier and more scientific.
- DelDOT's planners have developed a new model that will allow them to predict the travel patterns that occur throughout the year and during the peak summer travel season. It's called the Peninsula Model because it covers the entire state of Delaware and Maryland's eastern shore, two thirds of the Delmarva Peninsula. The model has several key components:

Transportation Network and Analysis Zones

Socioeconomic Information

Trip Type	Code	Description
Home-Based Work	HBW	Home and work
Home-Based Recreation	HBR	Home and recreational/social destination
Home-Based Shopping	HBSH	Home and store or restaurant
Home-Based Regional Shopping	HBRSH	Home and Regional Shopping Centers
Home-Based Other	HBO	Home and any location not listed above (includes school trips).
Non-Home-Based Non-Work	NHBNW	Neither end at home or work
Journey to Work	JTW	Work and non-home

Travel Patterns



- Once all the information was entered, the model was then 'run' for present conditions and adjusted until it reasonably predicted current traffic patterns, including those from the Origin-Destination survey conducted in summer of 2003. An old modeling adage is that "you need to be able to accurately predict the present before you can reasonably predict the future." Now that the model is ready, it is being used to predict the amount of traffic that will use the transportation network (i.e. travel demand) as far as 25 years into the future.

Preliminary Traffic Projections

- One of the first uses of the Peninsula Model has been to estimate how much traffic will use US 113 in the year 2030. DelDOT has looked at two situations:
  - What will happen if no improvements are made in the US 113 corridor? (This is known as the "no-build" condition)
  - What will happen if improvements are made, either along existing US 113 (the "on-alignment" alternatives) or in the form of a bypass?
- The traffic projections presented below are preliminary. This means that they can be used to make comparisons among off-alignment alternatives, determining which best meet anticipated traffic needs, and to determine approximate benefits along existing US 113. They are not yet sufficient to compare off-alignment to on-alignment alternatives or to determine specific interchange or intersection configurations.
- More detailed forecasts will be developed as the project progresses to allow us to perform more detailed analyses.

Conclusions

- *If we do nothing*, traffic along US 113 will increase by more than 50 percent over the next 25 years.
- *The on-alignment alternative* (Alternative A) carries more traffic than no-build. This is because a limited-access US 113 will be more attractive to through traffic, diverting some through traffic from other routes such as SR 1 and US 13.
- *Most of the bypass alternatives* in the Milford Area will result in substantial reductions in traffic along US 113.
- *Eastern bypass alternatives C through F* divert about one-third of the traffic from existing US 113, resulting in slightly more traffic on US 113 than exists today.
- *Eastern bypass alternative B* is generally ineffective, carrying substantially less traffic than Alternatives C through F.
- Among the western bypass alternatives, *Alternatives G and H* are most effective, diverting about two-thirds of the traffic from existing US 113, resulting in much less traffic on US 113 than exists today.
- *Alternative I* diverts about one-quarter of the traffic from existing US 113, resulting in slightly more traffic on US 113 than exists today.
- *Alternative J* diverts 80 to 90 percent of the traffic from existing US 113 in Kent County, but relies on on-alignment improvements south of Haven Lake.

Alternative	US 113 Volumes (at County Line)	Bypass Volumes	Volumes Beyond Limits of Alternatives		Comments
			North	South	
Base Year	30,000	N/A	58,000	24,000	2003 volumes
No Build	48,000	N/A	102,000	40,000	
A (on-alignment)	62,000	N/A	102,000	50,000	Additional traffic due to diversion from SR 1
Eastern Bypass Alternatives					
B	46,000	4,000-8,000	102,000	40,000	
C, D, E, F	36,000	12,000-18,000	104,000	40,000	
Western Bypass Alternatives					
G	18,000	36,000-42,000	105,000	46,000-48,000	
H	16,000-18,000	26,000-34,000	102,000-104,000	36,000-40,000	
I	34,000-38,000	4,000-14,000	102,000-104,000	33,000-34,000	
J	N/A	40,000	104,000	50,000	

Cost Estimates

- In the early stages of a study like this one, we use what is called a "major quantity approach" to estimate costs. Rather than calculating the amount and cost of every element of the new roadway, we use only items that typically make up the bulk of the cost of any highway project. They include:
  - Grading/earthwork
  - Paving
  - Bridges and culverts
- Percentages are then used to account for other construction items, such as:
  - Drainage
  - Stormwater Management
  - Utilities
  - Traffic

At this point, no alternative is being considered for elimination based on cost.

- Major non-construction-related costs, including right of way, planning/design, construction inspection, and environmental considerations, are also added into the mix.
- When these estimates are complete, they will be compared to the actual per-mile cost of SR 1 between Dover and I-95, escalated to 2005 dollars.

Economic Impact Analysis

- Every alternative under consideration will have an impact, whether positive or negative, on the economy of the area. As stakeholders (working groups, agencies, and the public), you need an understanding of those economic impacts to make informed decisions. At this early stage in the process, no alternative is being considered for elimination based on economic impact.
- As DelDOT undertakes detailed study of the shortlisted alternatives, an economic impact analysis will be conducted in two major steps.

Step 1. Information Gathering

- The Project Team will gather publicly-available information about the corridor's economy and about Sussex County as a whole.
- In cooperation with local Chambers of Commerce, a business survey will be distributed throughout the project area. This will give business owners an opportunity to voice their opinions about the highway and its importance to their operations.

Step 2. Analysis

- The assessment of economic impacts will include the following types of information:
- Number and types of businesses directly impacted, typically by the on-alignment alternatives
- Vacant/under-used parcels that will have enhanced accessibility as the result of a new or improved US 113
- Locations that will have improved travel times to customer/supplier markets as the result of a new or improved US 113
- Increases in pass-through traffic along specific links in the corridor that would support a mix of services to travelers
- Potential for development in the vicinity of a new or improved highway corridor