II. Highway Facts and Trends

With roughly 39,000 miles of public highway mileage, West Virginia is one of only four states (Delaware, North Carolina, and Virginia are the others) in which there is no county and/or township ownership of highways. As a result, WVDOH is responsible for nearly 36,000 miles (92%) of the state’s highway network, the highest percentage in the nation. Furthermore, despite West Virginia’s relatively small size, WVDOH is responsible for the sixth-largest state-maintained highway network in the nation.

In order for WVDOH to provide the most effective service, the 36,000 miles of highway under its control are prioritized by a system, referred to as functional classification, which ranks roadways by the average trip length and the volume of traffic that utilizes the roadway daily. The intent of this system is to channel highway users to a hierarchy of facilities that provide gradually improved service based upon the distance individuals travel, with the highest level of service provided to the longest trips (i.e., long intrastate or interstate trips). Every highway in the State as well as the nation is classified as one of the following National Highway Functional Classifications (NHFCs):

- Urban/Rural Local Road (lowest priority)
- Rural Minor Collector
- Rural Major Collector/Urban Collector
- Minor Arterial
- Principal Arterial
- Freeway/Interstate (highest priority)

Local roads provide access to individual pieces of property. Arterial roads are intended to satisfy the need for mobility by providing high speed roadways over longer distances. The Freeway/Interstate class of roads, which provides the highest level of traffic service, is really a sub-class of Arterial roadways. Bridging the gap between Local Roads and Arterials are the Collector Roads, which possess elements of both. Table #1 provides both a breakdown of the mileage and the traffic-carrying characteristics of each functional class of roadway in West Virginia.
TABLE #1
BREAKDOWN OF HIGHWAY MILEAGE BY FUNCTIONAL CLASS

<table>
<thead>
<tr>
<th>FUNCTIONAL CLASSIFICATION</th>
<th>MILES</th>
<th>% OF TOTAL MILES</th>
<th>ANNUAL VMT* (000,000's)</th>
<th>% OF TOTAL VMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>RURAL/URBAN LOCAL</td>
<td>23,700</td>
<td>65.3%</td>
<td>1,192</td>
<td>6.0%</td>
</tr>
<tr>
<td>RURAL MINOR COLLECTOR</td>
<td>2,244</td>
<td>6.2%</td>
<td>370</td>
<td>1.9%</td>
</tr>
<tr>
<td>RURAL MAJOR/URBAN COLLECTOR</td>
<td>6,537</td>
<td>18.0%</td>
<td>3,556</td>
<td>18.0%</td>
</tr>
<tr>
<td>MINOR ARTERIAL</td>
<td>1,894</td>
<td>5.2%</td>
<td>3,850</td>
<td>19.5%</td>
</tr>
<tr>
<td>PRINCIPAL ARTERIAL</td>
<td>1,373</td>
<td>3.8%</td>
<td>4,667</td>
<td>23.6%</td>
</tr>
<tr>
<td>FREEWAY/INTERSTATE</td>
<td>564</td>
<td>1.6%</td>
<td>6,106</td>
<td>30.9%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>36,312</td>
<td>100.0%</td>
<td>19,741</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

* NOTE: VMT = VEHICLE MILES TRAVELED
INFORMATION BASED ON TA-1 TABLES (HWA2600A 6/18/2008)

A quick review of Table # 1 indicates that while Freeway/Interstate roads make up only 1.6% of the State’s highway mileage, they carry over 30% of all highway traffic. Conversely, Local roads account for over 65% of the State’s total highway mileage, but carry only slightly more than 6% of the highway traffic. While each class of roadway is needed to provide an efficient and effective highway network, in order to maximize the highway benefits of all users, the needs of maintaining and improving the higher-classified roadways must take priority over the lower-class facilities. In order to develop a program that charts the future direction of WVDOH, it is prudent to look at some of the past trends that affect highway construction and financing. Table #1 indicates that the highway network in West Virginia currently handles 19.7 billion vehicle miles of travel (VMT) each year. VMT, which provides an excellent measure of the wear and tear experienced by the roadway network, has increased steadily in West Virginia from 2.5 billion in 1940 to 19.0 billion in 2000, an average increase of roughly 3.5% per year. VMT is projected to continue increasing in the future but at a slower rate (roughly 1.5% per year), which corresponds to the average yearly growth in VMT that has occurred from 1990 to 2007. Even at the lower rate of growth, annual VMT in the State would reach 23.9 billion by 2020 (see Figure # 1).
As the amount of travel conducted by individuals has increased over time, so has their demand for higher-quality roadways. That demand has translated into a continuing improvement of the roadway surfaces of the highway network. Figure # 2 shows that from 1970 through 2000 dramatic changes occurred in roadway surface composition. In 1970, roughly 25% of WVDOH’s highway network had a primitive roadway surface type, which can be traversed only by four-wheel drive vehicles, while 26% possessed a high-type pavement. By 2000, the amount of roadway designated as primitive was reduced to less than 11%, while the amount of roadway with a high type pavement had increased to over 46%. The great achievements made by WVDOH in improving roadway surface type appear even more remarkable considering that the total size of the highway network grew by over 3,400 miles (11%) between 1970 and 2000. Between 2000 and 2007 the size of the highway network has remained relatively stable, growing only 2% in seven years. The public’s demand for higher quality roadways has remained strong since 2000. As a result, the 2007 Annual Inventory Tables produced by the WVDOH indicates that 51% of highway mileage has a high type “paved” surface, which is up 5% from the 2000 values.
Naturally, the dramatic improvement in roadway surface type had to come at some price to WVDOH. The agency was required to finance the initial improvement costs and the significant recurring costs that were, and continue to be, incurred as more maintenance funds are needed over time to service these roadways. As shown in Figure # 3, between FY 1970 and FY 2007 the maintenance expenditures of WVDOH increased 606% in nominal terms, growing from $36 million to $256 million over the thirty-seven year period. A review of Figure # 3 indicates that maintenance expenditures by the agency rose steadily in nominal terms until FY 2000. Since that time, maintenance expenditures have exhibited slow growth (1.4% per year) and failed to keep pace with inflation, which has averaged 7.6% per year since FY 2000. It should be noted that maintenance expenditures, in the context being used here, include renovation projects, which fall under a maintenance line item. For the remainder of this document, renovation projects are excluded from maintenance expenditures and are considered as an improvement.

By using a combination of West Virginia’s Highway Construction Price Index developed by the WVDOH in 2008 and the Federal-Aid Highway Construction Price Index produced by the Federal Highway Administration until 2007, nominal dollar expenditures can be adjusted to reflect “real” or inflation-adjusted terms. The conversion to “real” dollar expenditures allows the true purchasing power of those expenditures to be compared over time. When adjusted to “real” values, maintenance expenditures actually increased slightly by 3% from $249 million to $256 million in 2007 dollars between 1970 and 2007. Given the fact that the size of the highway network has grown 11.4%, use of the State highway network has grown by 156% and the amount of roads with a high type pavement has increased 127%, some
corresponding increase in real expenditures for maintenance would be anticipated. A review of Figure #3 indicates that real expenditures for maintenance purposes peaked at $369 million in FY 2000, which is 48% above the 1970 value. In “real” dollars the FY 2007 maintenance expenditures are $113 million (31%) below the high of FY 2000. Despite the fact that maintenance expenditures have been lower in real terms in recent years, roughness data collected on the State’s National Highway System (NHS) routes indicates that the overall condition of these routes remains good from national standards, which may indicate that the WVDOH had either been maintaining these routes in above average condition or that efficiencies have been found in conducting maintenance activities.

The increases in WVDOH’s maintenance costs over time highlight not only the long-term impact that highway improvements will have on future highway financing, but also the impact of increased wear and tear as highway travel continues to grow. Failure to increase maintenance funding to at least keep pace with inflation requires the agency to either decrease the frequency of repair and restoration work on the facilities under its control or become more efficient at delivering those services.

Obviously, the WVDOH, like all agencies and individuals, must work within a budget. As long as revenues are increasing with inflation it is much easier to keep program funding levels comparable. Figure #4 shows that like maintenance funding, State tax revenue flowing into the State Road Fund (Road Fund) has increased significantly in nominal terms over time.
Historically, the State tax revenue components of the State Road Fund increased 602% from $87 to $611 million in nominal terms and grew at a compound rate of roughly 5.4% per year between FY 1970 and FY 2006. The rate of growth has slowed substantially from 10% per year in the early 1970’s to less than 1.8% per year between FY 2000 and FY 2007. However, in real terms, based upon the WVDOH’s and the Federal-Aid Construction Price Index, revenues have increased only 2% since 1970; and like maintenance funding, is down significantly ($246 million or 29%) from its highs. Between FY 2000 and FY 2007 real revenue decreased at an average rate of 4.7% per year. When revenue growth does not match inflation, agencies like individuals are forced to look for ways to reduce spending, either by becoming more efficient or by reducing services (i.e., programs). As will be demonstrated in this report, marginal revenue growth coupled with high inflation will continue to have a significant impact on the size and scope of the State’s improvement program.