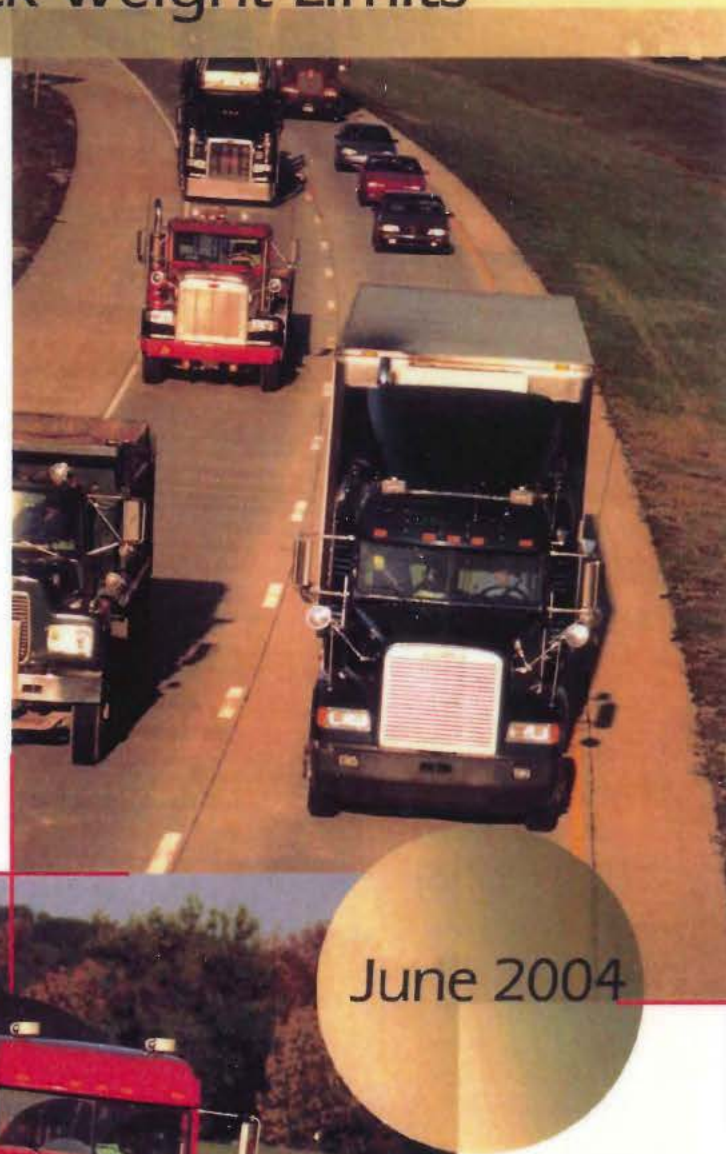
Study of Impacts Caused by Exempting Currently Non-exempt Maine Interstate Highways From Federal Truck Weight Limits



Final Report

June 2004

Study of Impacts Caused by Exempting Currently Non-exempt Maine Interstate Highways from Federal Truck Weight Limits

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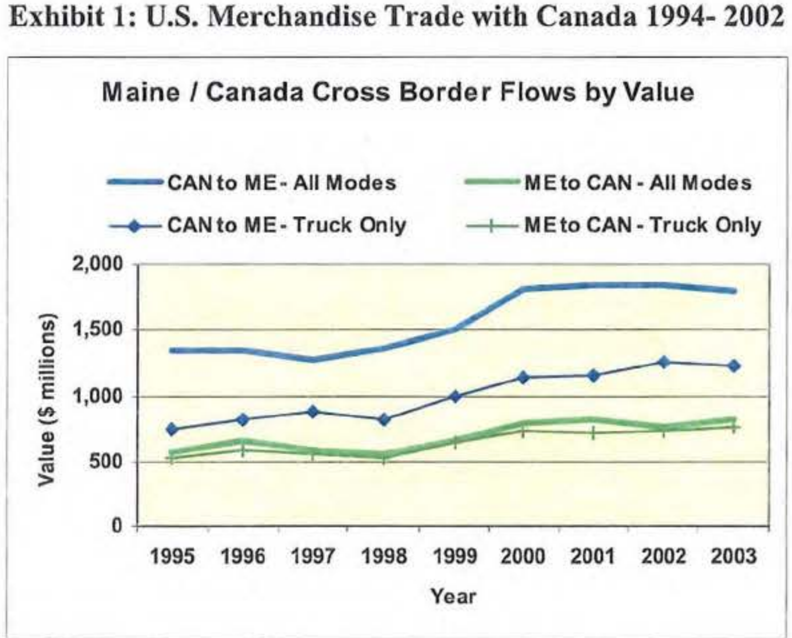
Table of Contents

Introduction

The United States (U.S.) economy has become increasingly reliant on international trade and for regional economies to excel in this trade environment U.S. companies must remain competitive with their international counterparts. To participate in the international marketplace, local and regional economies must be supportive of modern supply-chain logistics and competitive transportation options. Integrated transportation systems that support efficient goods movement and roadway policies that maximize the safety, and efficiency of freight transportation and international commerce are keys to competing.

Since the implementation of the North America Free Trade Agreement (NAFTA), Canada has assumed the role as the primary trading partner with the United States. The chart in **Exhibit 1** displays the growth in trade moving across the border between Maine and Canada. Based on figures for the first eleven months of 2003, imports from Canada to Maine will remain just under $2 billion, with about one-half of these goods moving by truck. Exports from Maine in to Canada are worth just over $800 million, with nearly all of this trade moving by truck.

Exhibit 1: U.S. Merchandise Trade with Canada 1994- 2002



In 1998, 92 percent of all freight (by weight) originating in Maine was transported by truck 75 percent of all originating truck flows moved 250 miles or less. While intermodal rail and water facilities offer some alternatives, the nature of the Maine's economy requires heavy reliance on truck transport. The Heavy Haul Truck Network Study[1] found that truck traffic is anticipated to grow by nearly 80 % on average across the state by 2015. Growth rates for individual counties were as high as 176% on some roadway classes. In addition, a recent forecast completed by the Federal Highway Administration anticipates truck traffic due to trade with Canada to grow by 3.1% annually through 2020.

Currently, U.S. federal limits on truck weight are among the lowest among industrialized nations of the world. Following is a sample of weight limits for regular truck operations in other countries:

- Canada
  - 6-axle TST – 43,500 kg (95,900 lbs.)
  - 8-axle B-train double – 62,500 kg (137,785 lbs.)
- Mexico
  - 6-axle TST – 48,500 kg (106,920 lbs.)
  - 8-axle B-train double – 60,500 kg (133,375 lbs.)
- European Commission – six axle TST - 44,000 kg (97,000 lbs.)
- Australia – B-train doubles – 62,500 kg (137,785 lbs.)

Maine's freight transport system is vital to regional mobility and productivity, and ultimately economic development. Hence, an efficient and cost effective transport system is vital to the competitive position of businesses and industries competing with international trading partners. Federal regulations govern the weight and size of trucks on the Interstate Highway System in the U.S. Regulations placed on truck size and weight carry implications for highway safety, infrastructure preservation and the competitive position trucks against other modes, primarily railroads. Federal regulation of truck size and weight is of particular importance to U.S. border-states under the North American Free Trade Agreement. Both Canada and Mexico allow significantly higher gross weights for trucks operating in their counties. As a result, U.S. companies competing against cross-border rivals in traditional resourced based industries, where margins are often low, find it difficult to compete against foreign companies that are afforded more efficient truck transport.

Background

In 1913 Maine became one of the first states to place limits on truck weight to protect highway pavements and bridges. The federal government first began regulating truck size and weight (TS&W) limits on the Interstate Highway System in 1956, establishing a maximum gross weight limit on Interstate Highways of 73,280 lbs.. Those state's with higher weight limits prior to July 1, 1956, were allowed to retain those higher weight limits as "grandfathered" rights. In 1975 Congress increased the allowable gross vehicle weight on the Interstate System to 80,000 lbs.. Since 1982, there have been no changes in federal weight limit laws. Title 23 USC, 127 provides the following weight limits on the Interstate Highway System:

- Single axle weight limit: 20,000 pounds (lbs.)
- Tandem axle weight limit: 34,000 lbs.
- Gross vehicle weight limit: 80,000 lbs.
- All vehicle combinations must comply with the federal bridge formula

Truck Weight Limits in Maine

In 1998, The Transportation Equity Act for the 21st Century (TEA-21) provided an exemption from the federal gross vehicle weight (GVW) limit on the Maine Turnpike and a portion of Interstate – 95 in Kittery. The remaining Interstate routes in Maine, I-295, I -395 and large portions of I-95 remain subject to the federal GVW limit of 80,000 lbs. The exempt portion of I-95 and all other state highways allow a GVW of 100,000 lbs. on a six-axle tractor semi-trailer (TST) with sufficient spread between axles. As a result, heavy combination trucks that would otherwise be through traffic on the Interstate system divert to state highways upon reaching the non-exempt portion of I-95.

Exhibit 2: Maine Weight Limits

	Maine	
Axle Configuration	**Special**	**All Other**
Single axle limit	24,200 lbs.	22,400 lbs.
Tandem axle limit		
5 axle combination	44,000 lbs.	38,000 lbs.
6 axle combination	44,000 lbs.	41,000 lbs.
Tri-axle weight limit		
5 axle combination	54,000 lbs.	48,000 lbs.
6 axle combination	54,000 lbs.	50,000 lbs.
GVW limit		
5 axle combination	88,000 lbs.	80,000 lbs.
6 axle combination%	100,000 lbs.	100,000 lbs.

In 2002, the Maine Department of Transportation (MDOT) contracted with Wilbur Smith Associates to examine the impact a federal weight exemption on currently non-exempt portions of Maine's Interstate System would have on safety, pavement and bridges.

Study Approach and Report Organization

The primary objective for this study is to determine the safety consequences, infrastructure costs and related social and economic impacts that would result from an exemption to all non-exempt Interstate Highways in Maine. To conduct the analysis the current condition of allowing trucks in excess of 80,000 lbs. only on the Maine Turnpike and state highways is compared to an Interstate exempt scenario. The analysis concentrates on the projected fiscal and safety impacts to the non-exempt portions of Maine's Interstate Highways that would assume heavy truck traffic if the current federal weight limit is lifted. In presenting the results of this analysis, the report is organized as follows:

1. **Network Development:** Because the infrastructure and safety impacts analysis were based on the comparison of the base condition network and the study condition network (all Maine Interstate System exempt), an understanding of the data used in modeling the networks is crucial to understanding the subsequent analyses. While some details about the network development are included as appendices to this report, additional documentation about the modeling process steps can be found in two Technical Memorandums prepared as interim reports during the course of this study.

2. **Safety Analysis:** The existence of a detailed, geo-coded crash database in Maine allowed the Study Team to examine the crash experience of five and six-axle vehicles across highway classes in Maine. Summary crash data for Maine is also presented within the context of the national crash experience for these vehicle types.

3. **Pavement Analysis:** Using TRANSEARCH data about heavy commodity flows, estimates of ton-miles and equivalent standard axel loads (ESALS) are modeled across the base condition network and the study network, to estimate the pavement costs associated with the weight exemption policy.

4. **Bridge Analysis:** The study analyzed a sample of representative bridges for Maine and then examined the cost impacts across all bridges on the study networks.

5. **Other Economic and Social Impacts**: This section of the report presents the results of carrier and shipper interviews, interviews with city officials in Maine and the findings of other prominent TS&W studies.

6. **Study Conclusions:** Summarizes the study findings. This section also presents several recommendations for TS&W policy on the Maine Interstate System.

Data Sources

Three principal data sources were used to understand existing truck traffic and estimate changes in truck flows due to a change in weight policy on Maine highways:

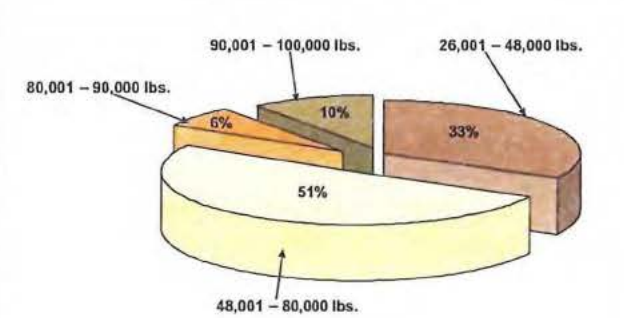
- Weigh-in-motion (WIM) sites
- Vehicle classification counts
- TRANSEARCH commodity data

These data were also supplemented with information from motor vehicle registrations, interviews with trucking firms, and discussions with weight enforcement officials.

Maine Registered Vehicle Weight

In 2002 there were 138,709 registered commercial vehicles in Maine. Nearly 90% of all registrations are single unit vehicles. More than half (57%) were registered for less than 26,000 lbs. Of the vehicles of 26,000 lbs. or more, only 3,262 (16%) were registered to exceed 80,000 lbs. These statistics reinforce that the vehicle population examined in this study represent only a fraction of the total truck population.

Commercial Vehicles Registered in the State of Maine for GVW of More than 26,000 pounds.



Source: Maine Bureau of Motor Vehicles

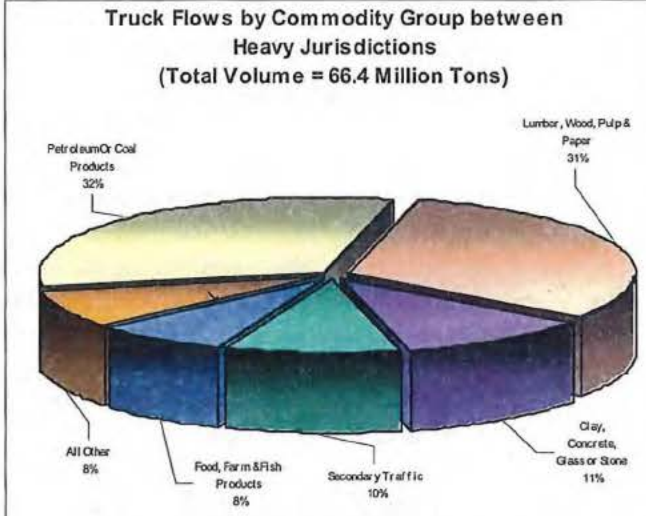
TRANSEARCH Commodity Data

TRANSEARCH is proprietary data, assembled and marketed by Reebie Associates since 1980, providing county level freight flows by mode and commodity. Considered the premier source for intercity and intra-city commodity flows, TRANSEARCH provides volumes and values by individual commodity and mode of transport throughout the U.S. Truck data are focused on the manufacturing industries, and are drawn from a sample of truck shipments by a number of major truckload and LTL carriers. TRANSEARCH is used by railroads, motor carriers, container ship lines and air cargo carriers throughout the U.S. It is also used by state and federal planning agencies, port authorities, equipment suppliers, investment banks and regulatory bodies. The dataset for this study reflects year 2000 flows. The data covered all modes and commodities. Truck movements for non-manufactured commodities, typically a weakness of the TRANSEARCH data were enhanced for this study to capture flows of raw timber products.

A first step of the analysis was to better understand existing heavy commodity origin/destination (O/D) flows using the TRANSEARCH data. The analysis focused on "heavy commodity" flows to and from jurisdictions allowing GVW in excess of 80,000 lbs. in normal operations on state or provincial networks. The analysis also focused on "Special Commodities" as defined in Maine law.

The total volume of truck flows reflected in the TRANSEARCH dataset equaled 87.4 million tons. Extracting only those truck flows to and from jurisdictions allowing a GVW in excess of 80,000, (i.e., flows to and from Canada, New Hampshire, Massachusetts, New York and within Maine), resulted in 66.4 million tons, or roughly three-quarters of all truck flows by weight*.

Exhibit 3: Commodity Shares (tons)



Source: TRANSEARCH 2000, Reebie Associates

Exhibit 3 shows the resulting flows by commodity group. Five commodity groups comprise 92% of the "high weight jurisdiction" flows by truck:

- STCC 29 Petroleum Products
- STCC 24 & 26 Lumber, Wood & Paper Products
- STCC 32 Clay, Concrete & Stone
- STCC 50 Secondary Traffic
- STCC 1, 9 & 20 Food, Fish and Farm Products

Exhibit 4: Top Flows between Jurisdictions Allowing Higher Gross Vehicle Weights

Commodity	Truck Tons
Petroleum Or Coal Products	21,051,444
Lumber, Wood, Pulp & Paper	20,656,432
Clay, Concrete, Glass or Stone	7,233,870
Secondary Traffic	6,768,652
Food, Farm & Fish Products	5,013,010
All Other	5,629,889

More than 95% of the "Secondary Traffic" in Maine is mixed commodities moving between warehouse facilities. Typically, mixed commodities "cube-out" (use available volume capacity) before "weighing-out" (use available payload) and for that reason STCC 50 traffic was not included among the heavy commodity groups. For additional simplification, several related commodity groups were combined and analyzed together.

The remaining combined commodity groups: 1) Petroleum; 2) Wood & Paper; 3) Concrete and Stone, and; 4) Food, Farm and Fish Products, became the focus of heavy truck flows. Together, these groups comprise more than 80% of the tonnages moving within Maine, or between and through Maine from other heavy truck jurisdictions. The top commodities resulting from the "gross weight highway jurisdiction" filter are shown in the table of **Exhibit 5**, at a 2-digit STCC level.

* Not all jurisdictions used in the initial routing allow vehicles in excess of 80,000 lbs. on all facilities, but all have some facilities such as the Massachusetts Turnpike and New York Thruway that allow higher weight vehicles.

Special Commodities

As discussed earlier, the State of Maine allows a 10% weight allowance on 5-axle TST combinations. Special commodities are defined as:

- Materials or unset concrete intended for highway construction and carried in dump or transit-mix trucks;
- Manufacturer's concrete products;
- Raw ore from mine or quarry to place of processing;
- Unprocessed milk;
- Refrigerated products constituting the majority of products carried in a sealed vehicle;
- Building materials that absorb moisture during delivery with O/Ds within the State;
- Incinerator ash;
- Unconsolidated rock materials, including limestone, bark, bolts, sawed lumber, farm produce, road salt, soils, solid waste, sawdust, wood chips, dimension lumber, recyclable, materials, pulpwood/ firewood/logs.

Flows at a detailed commodity level were examined and filtered to determine those commodities that would likely qualify for the five axle GVW bonus. The commodity list in **Exhibit 5** is used in helping select heavy weight commodities for traffic modeling:

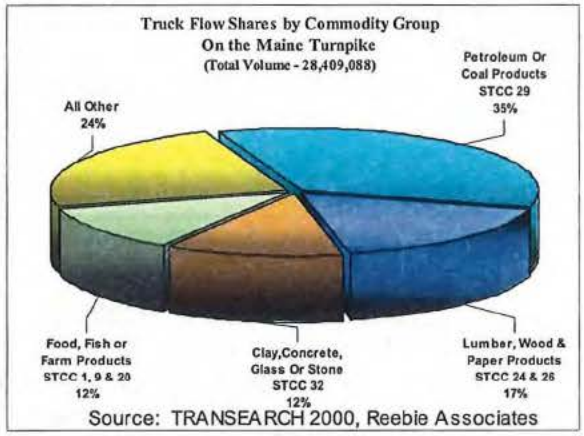
Exhibit 5: "Special Commodities" Extracted from TRANSEARCH

o Concrete products	o Maine Products
o Portland Cement	o Fresh Fish or Whale Products
o Broken stone or riprap	o Frozen Fruit, Vegetables or Juice
o Gravel or sand	o Frozen Specialties
o Dimension Stone, Quarry	o Ice, Natural or Manufactured
o Clay, Ceramic Minerals	o Forest Products
o Fertilizer Minerals – Crude	o Primary Forest Materials
o Misc. Non-metallic Minerals	o Lumber or Dimension Stock
o Clay, Brick or Tile	o Misc. Sawmill
o Ceramic Floor or Wall Tile	o Millwork
o Meat, Fresh or Chilled	o Plywood or Veneer
o Meat, Fresh Frozen	o Structural Wood Products
o Meat Products	o Treated Wood Products
o Dressed Poultry, Fresh	o MIsc. Wood Products
o Dressed Poultry, Frozen	o Pulp or Pulp Mill Products
o Processed Poultry or Eggs	o Fiber, Paper or Pulp board
o Creamery Butter	o Pressed or Molded Pulp Products
o Ice Cream or Frozen Desserts	o Paper or Building Board
o Cheese or Special Dairy Products	o Ashes
o Processed Milk	o Metal Scrap or Tailings
o Processed Fish	o Paper Waste or Scrap

After filtering the data by high weight jurisdiction O/Ds and commodity type, the dataset was used to distribute heavy truck trips on non-exemption portions of I-95 in Maine. A least travel time algorithm was applied to the data, and all truck flows were assigned to two sections of the Maine Interstate System: 1) the Maine Turnpike, and 2) non-exempt Maine Interstates.

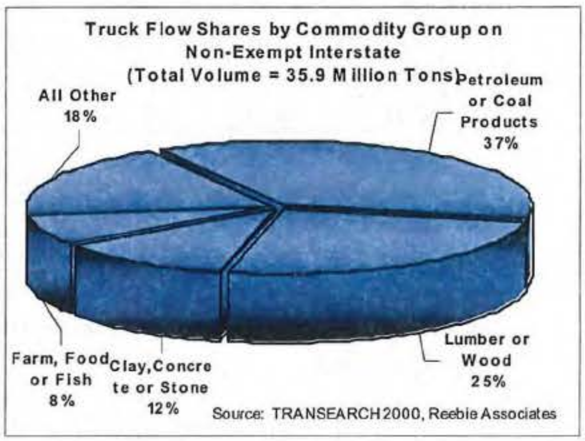
In developing the study scenario, the network assignment algorithm was used to load all truck flows to the Maine Interstate System, parallel routes were "turned-off." As a result, for any O/D pair requiring a north/south routing through Maine, I-95 and associated sections of Maine Interstates are treated as the only available routes.

Exhibit 6: Maine Turnpike Flows



The chart in **Exhibit 6** displays the relative weight shares by commodity groups for flow that were routed to the Maine Turnpike. The total volume of commodities routed to the Maine Turnpike from the TRANSEARCH database was 28.4 million tons.

Exhibit 7: Non-exempt Interstate Flows



The chart in **Exhibit 7** displays the relative weight shares by commodity group for flows routed to non-exemption portions of the Maine Interstate System. The total volume of flows routed from the TRANSEARCH database was 35.9 million tons. Combined routings to and from heavy weight jurisdictions by commodity group produced 1302 records for traffic assigned to the non-exempt Maine Interstate System. A final filter removed *most* intra-county movements. The filter is based on the expectation that most movements contained wholly within a single county would not be greatly impacted by a policy change the Interstate System. A summary of the TRANSEARCH tonnages applied to the *study network* are shown in **Exhibit 8.**

Exhibit 8: Summary of TRANSEARCH
(2002 Maine dataset only)

TRANSEARCH Scenario	Records	Total All Tons	Total all HWT Tons
All Maine traffic	96,400	87,355,609	21,860,386
W/O intra-county	96,295	81,818,116	17,425,592
Non-exempt Interstate	78,313	76,016,723	15,581,946

Exhibit 9 provides a sample of the STCC exempt-load commodity classifications used in the filtering and the associated tonnages for all flows to, from, and within Maine (the column "ALL tons"). And, the flow tonnages modeled as using or potentially using a route that includes non-exempt portions of the Interstate Highway System in Maine (the column "HWT tons on Maine I-95). Tonnages from a total of 48 commodity classes were used in the final modeling process.

Exhibit 9: Top Heavy Commodities and Tonnages

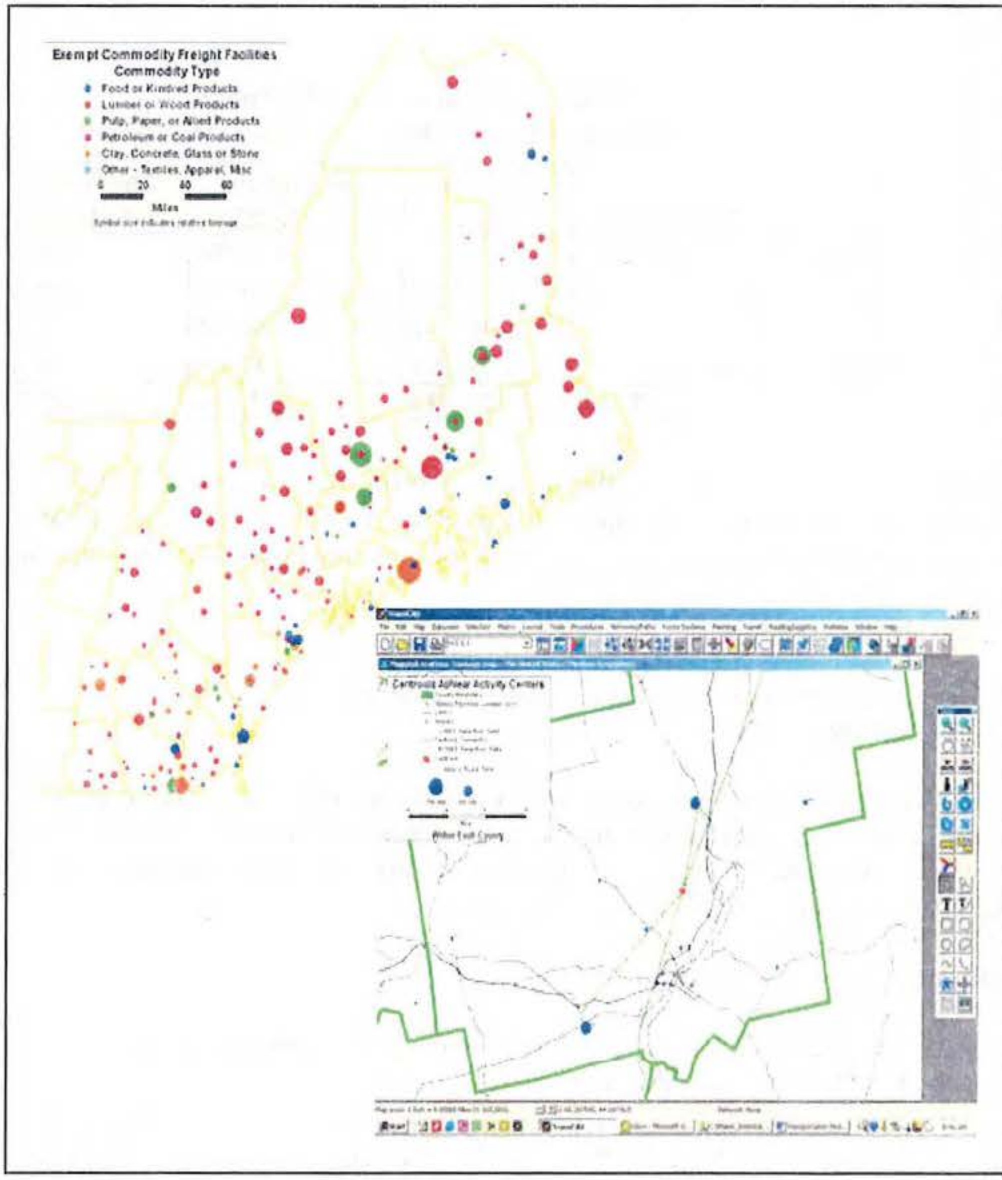
Standard Transportation Commodity Classification (STCC) 4-digit Level		ALL Maine flows		HWT flows on Maine I-95		
		ALL Lanes	ALL tons	HWT Lanes	HWT Tons	HWT Rank
2411	Primary Forest Materials	1175	15,390,074	415	5,501,511	1
3271	Concrete Products	668	1,127,162	338	830,851	2
2421	Lumber or Dimension Stock	2667	1,759,785	456	774,135	3
2611	Pulp or Pulp Mill Products	712	1,110,785	316	689,791	4
2026	Processed Milk	520	667,635	289	516,621	5
2661	Paper or Building Board	783	2,372,544	195	403,514	6
2499	Misc. Wood Products	2046	668,479	524	365,491	7
2097	Ice, Natural or Manufacture	354	308,251	187	233,310	8
2498	Wood Products	385	255,131	185	178,181	9
3241	Portland Cement	352	327,979	143	143,996	10

TRANSEARCH Freight Facility Information

An element of the commodity data purchased by the State of Maine included a data set containing the location of major industrial facilities. The *Freight Locator Database* included facilities in Maine that could be matched against the types of commodities they produce or receive. Facilities potentially receiving or producing products in exempt commodity groups were then identified.

The map in **Exhibit 10** illustrates facilities handling exempt weight commodities with an influence on traffic using the ME/NH Turnpike. The map markers for these facilities are scaled by their approximate annual truck freight tonnage for the exempt commodities. These facilities were added to the TransCAD model as freight generators. The facility locations were used to refine the freight flows in the analysis of the diversion network, where the county-level flows reported by TRANSEARCH do not provide sufficient detail (i.e. where there are many possible route options within the county). To assign traffic flows from one county to another, the counties (i.e. zones) were connected to the network. To replicate vehicle travel, "centroids" near county activity centers were assigned to each zone. The activity centers were based on the actual locations of these freight facilities, including intermodal facilities and other commodity depots identified in the Freight Locator data. **Exhibit 10** also shows the TransCAD screen used in linking centroids to the network.

Exhibit 10: Freight Facility Locations and Centroid Assignment



Converting Commodity Volumes to Truck Counts

Theoretically, with a GVW limit of 88,000 lbs. a fully loaded 5-axle TST can carry a payload of approximately 57,000 lbs. With a GVW of 100,000 lbs, a six-axle TST combination can carry a payload of approximately 68,000 lbs.[†] The payloads for 5 and 6-axle TST combination trucks

[†] A weighing sample of empty 6-axle TST vehicles by the Maine State Police found a wide range of tare weights. The theoretical tare weight used here is based on figures used in the USDOT Comprehensive Size and Weight

were applied to determine the theoretical 5 and 6-axle truck counts, and are shown in the table of **Exhibit 11.** These truck counts were later distributed across the study network in the modeling process.

Exhibit 11: Truck Count Estimates: Non-exempt Interstate Weigh-in-Motion (WIM) data

Commodity Group	Total Truck Tons	Theoretical 5-Axle TST	Theoretical 5-Axle TST
Petroleum or Coal	13,135,524	460,896	386,339
Lumber, Wood & Paper	7,117,718	249,744	209,345
Food & Fish Products	1,087,548	38,160	31,987
Stone & Concrete Prod.	1,179,226	41,376	34,683
Total	**22,520,016**	**790,176**	**662,354**

Network development also entailed analyzing WIM data from Maine. Data was extracted from eight WIM stations in Maine that were used for network calibration. WIM stations record a variety of statistics for each vehicle passing over sensors imbedded in the pavement, including:

- Number of axles;
- Gross vehicle weight (GVW);
- A calculation of *equivalent standard axle load* (ESAL);
- Vehicle speed.

The WIM stations in Maine were installed early in 2001. Records for every vehicle with 5 or more axles were extracted, with the total number of records analyzed exceeding 8 million. Average annual daily values were then derived from the annual data sets. **Appendix A** presents detailed data summaries for each WIM station.

Observations from the WIM Data:

1. The detailed data indicate that significant proportions of the vehicles weighing over 80,000 GVW are 5 axle trucks.
2. Assessing the infrastructure or safety impacts resulting from illegally loaded (overweight) vehicles were beyond the scope of this study. However, the WIM data summaries suggest that vehicles in excess of legal limits account for a high proportion of the total ESAL loadings, and therefore pavement wear at some locations.
3. The direction and volumes of flows at specific points (the WIM stations) can only be interpolated to impacts at other points in the network by matching these flows to overall commodity flows and their ultimate origins and destinations.

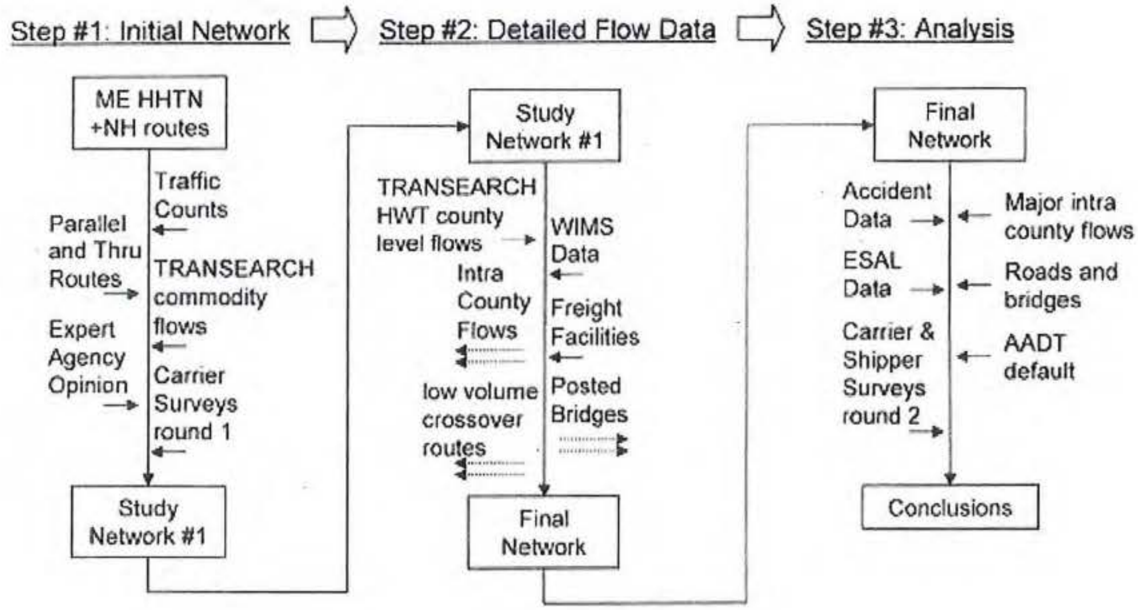
Study, and phone calls to semi-trailer manufacturers. The tare weights used also fell within the average empty vehicle weights for 5 and 6-axle trucks detected at Maine WIM stations.

Study Network Modeling Process

If the current Maine weight exemptions, in effect on State roads and the Maine Turnpike, were extended to the entire Maine Interstate System there would be an *increase* in 5 and 6 axle combination trucks, hauling loads between 80,000 and 100,000 lbs. GVW (exempt weights), on non-exempt elements of I-95. This would mean a *net decrease* in traffic on other routes. These other routes will be primarily State roads, but also the Maine Turnpike, particularly where it parallels I-95 between August and Portland.

The set of roads on which truck traffic is expected to change, as a result of the change in policy, is defined as the ***Study Network***. The study network was developed through truck count and commodity flow data, expert opinion, carrier interviews and a modeling process employing TransCAD software. The study network describes the roads on which traffic is expected to change as a result of allowing vehicles with a gross weight exceeding 80,000 lbs. on the non-exempt Maine Interstate System. Some roadways included in the study network serve primarily as connectors to I-95; these connector routes could see increases in traffic. The network was developed using the road geography from the TIDE database maintained by MDOT. All data were imported into a road network using TransCAD GIS modeling software. The modeling process allows specific groups of roadway links to be "enabled" or "disabled" and thus allowing the weight policy under consideration to be evaluated. The traffic flows being assigned to the network are derived from the TRANSEARCH tonnages previously discussed. These assignments were later calibrated against data from vehicle classification stations. The flow diagram in **Exhibit 12** shows the iterative process used in modeling and defining the *Study Network.*

Exhibit 12: Flow Diagram of the Study Network Development Process‡



‡ Diagram Abbreviations: HHTN = Heavy Haul Truck Network, AADT = Average Annual Daily Traffic

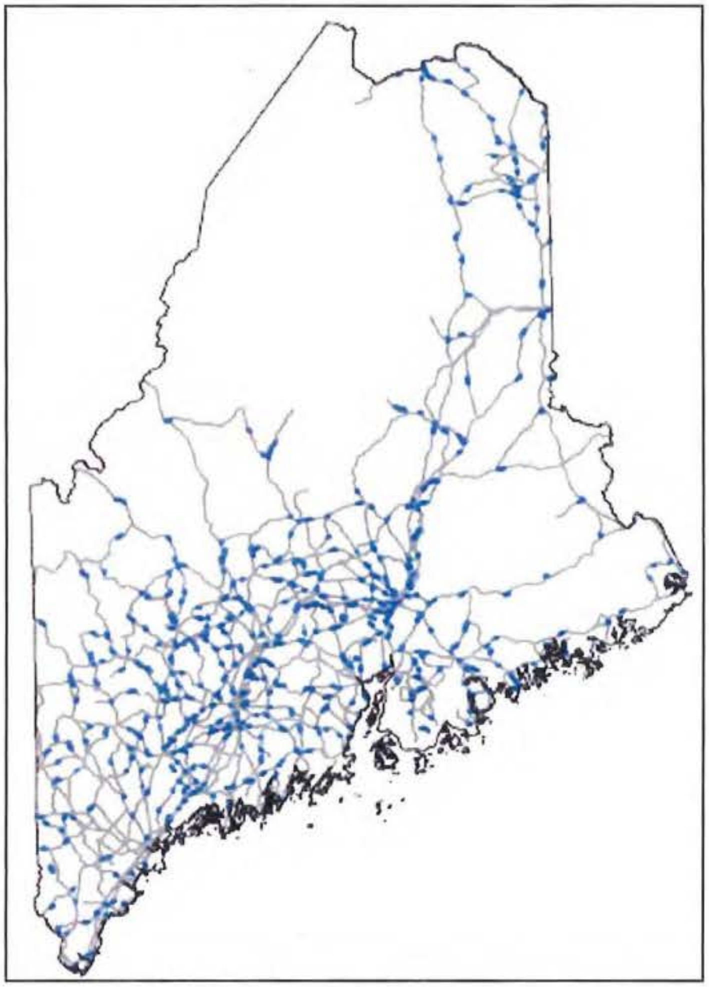
Routing Assumptions

The network assignment process started with three key routing assumptions. These assumptions were applied to a set of Maine roads defined by the Maine Heavy Haul Truck Network (HHTN).[2] The HHTN Study:

- Identified a network of Maine roadways where truck traffic is most intensive;
- Identified physical deficiencies along these roadways; and
- Determined the type and cost of improvements that best address these deficiencies.

The HHTN was developed using truck count data take from 842 vehicle classification stations maintained by MDOT (**Exhibit 13**). Since many of the same data sources were used in developing the *study network*, a brief description of HHTN process is provided as a starting point for discussing the development of the *study network*:

Exhibit 13: MDOT- Vehicle Classification Stations



Assumption 1: Heavy Haul Truck Routes: The *study network* would be a subset of the Maine Heavy Haul Truck Network (HHTN). *Principal Arterials* were included in the HHTN by default, as were NHS *Intermodal Connectors*. Other facilities were included using the following criteria:

- A threshold ESAL value;
- System continuity and rationality.
- Input from the HHTN Study Committee, Regional Advisory Councils and Division Engineers;
- Connectivity with intermodal terminals, water ports, airports and major border crossings

Assumption 2: Parallel Routes: Truck drivers will choose the most time efficient route between origin and destination. As available routes change due to a change in regulatory policy, freight will switch to *the next most time efficient routes, which will broadly parallel the original routes.*

Assumption 3: Long-Distance Through Routes: The overall network must be able to carry through-traffic between distant points such as between New England States and Canada.

For the HHTN Study commercial vehicle counts were prorated across the entire Maine highway network wherever the truck percentage values were unknown. Unknown values were calculated by weighting the percent average annual daily traffic (AADT) for a given truck class from each of the classification station links, by the distance of the "unknown" link. For this study, the actual number of trucks in each class, (rather than percent) adjacent to unknown links was used as the prorate method to generate ESAL estimates. The modification reduces the potential for error when calculating urban ESALs.

The table in **Exhibit 14** shows the summary mileage of the road types in the study network. The TransCAD model used during this study stores road segments with much greater detail, including many short 'connectors' (on-ramps., etc.) that are not reflected in the summary

Exhibit 14: Study Network by Highway Class

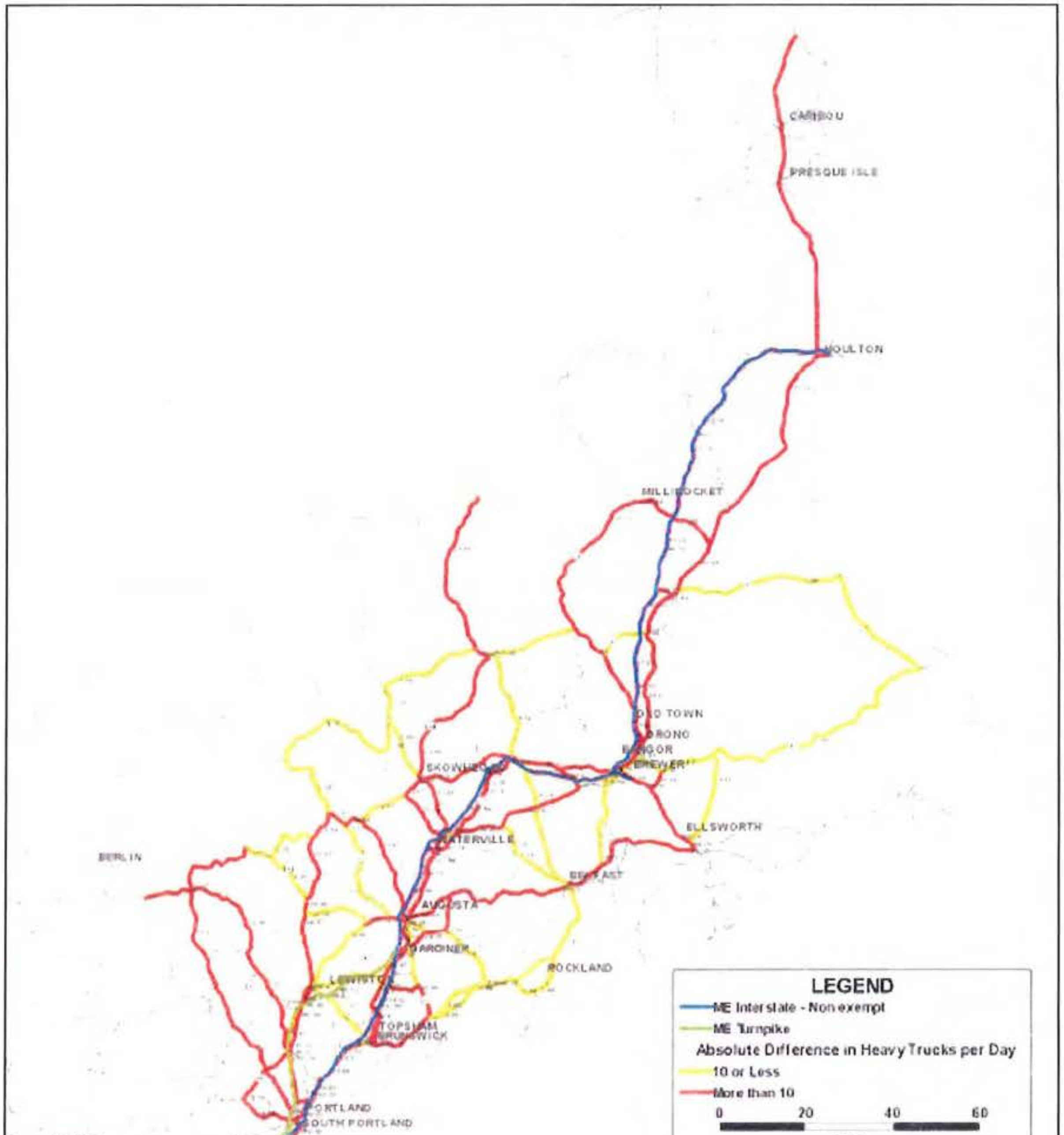
Functional Class	Total Mileage
Local and Other	18.5
Major Urban Collector	790.5
Minor Arterial	638.6
Minor Collector	16.5
Principal Arterial - Interstate	786.2
Principal Arterial - Other	807.1
Grand Total	**3,057.40**

Carrier Survey of O/D's and Primary Routes

As a reality check on the modeling process, a series of phone interviews were conducted with trucking companies to learn about their routing decisions. Details from the survey process are presented in **Appendix B.**

The map in **Exhibit 15** on the next page shows the network used in analyzing safety and infrastructure impacts.

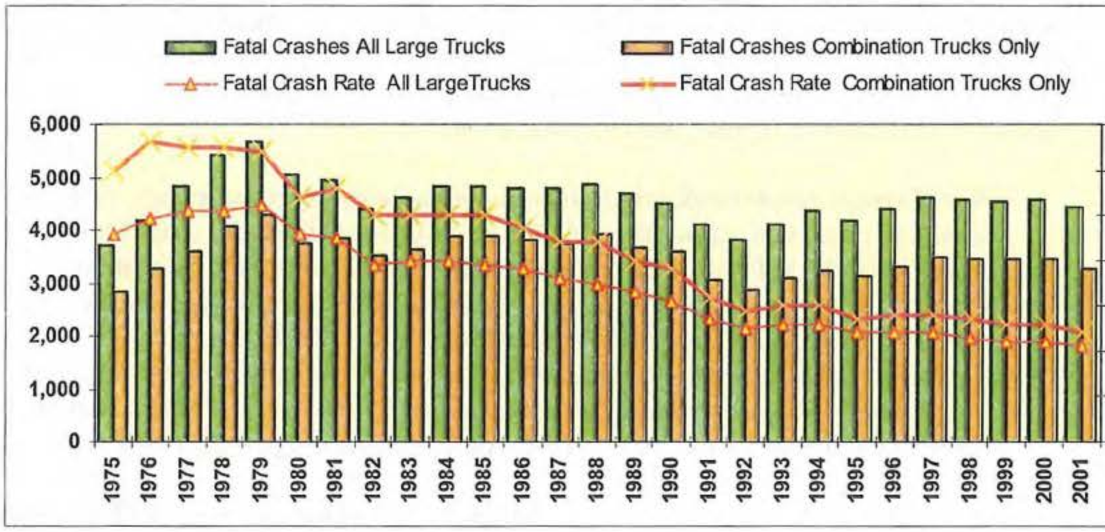
Exhibit 15: Final Study Network



Safety Analysis

Nationally, fatal crash involvements for all commercial vehicle types have held relatively steady over the past several years, but the rate of large trucks involved in a fatal crashes has shown a steady decline over two decades, declining 52% between 1981 and 2001. In 2000, large trucks (GVW rating greater than 10,000 lbs.) were involved in 456,930 traffic crashes in the United States. Of this total 4,573 were fatal crashes in which 5,282 people died.[3] In 2001, the number of fatal crashes and fatalities involving large trucks declined slightly to 4,431 and 5,082 respectively. In 2001, an additional 131,000 people were injured in crashes involving large trucks. Of all motor vehicle fatalities across the U.S. in 2001, fatalities from crashes involving a large truck represented 12 percent of the total.

Exhibit 16: National Fatal Crash Trends for Large Trucks



In **Exhibit 16,** the bar graphs show the trends in fatal crashes involving all large trucks and combination trucks over the past 25 years.[§] The line graphs depict fatal crash rates: crashes per 100 million vehicle miles of travel (VMT). Since 1981, large truck VMT has grown 91%, and as a result crash rates have shown a steady decline. The fatal crash rate for combination trucks has shown an even more dramatic decline, and in 2001 was roughly one-third what it was in 1976.

[§] Large trucks are defined as a truck with a gross vehicle weight rating (GVWR) greater than 10,000 lbs.. Combination trucks are defined as a truck tractor pulling any number of trailers (including none) or a straight truck pulling at least one trailer.

Geo-coded Truck Crash Analysis on the Maine Portion of the Study Network

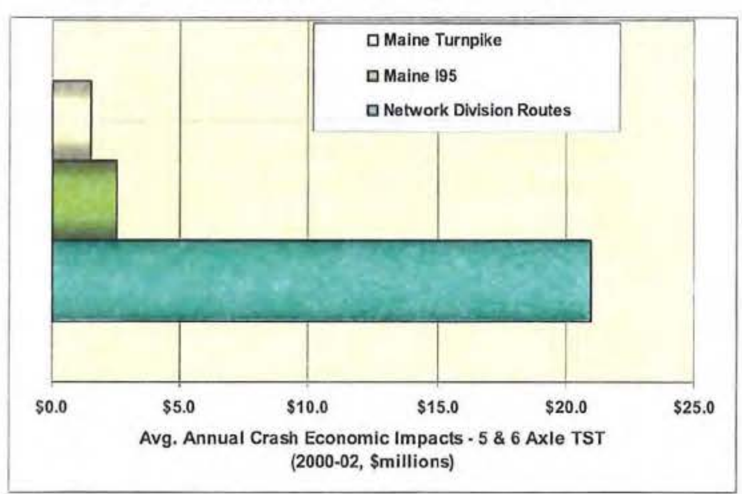
Geo-coded crash data was available from the MDOT that allow TST crash rates to be analyzed by road type. A previous study of truck size and weight noted a strong correlation between crash rates and functional highway class:

> *"Numerous analyses of crash data bases have noted that truck travel, as well as all vehicle travel, on lower standard roads (that is, undivided, higher speed limit roads with many intersections and entrances) significantly increases crash risks compared to travel on Interstate and other high quality roadways. The majority of fatal crashes involving trucks occur on highways with lower standards.... The [fatal crash] involvement rate on rural Interstate highways is 300 percent to 400 percent lower than it is on other rural roadway types and is generally the same for all vehicle types."*[4]

The purpose of this analysis was to compare TST crash rates on controlled access Interstate-level facilities to other roadway types in the diversion network. The geo-coded crash analysis divides the 14,244 road segments of the study network into *3 groups of roadway facilities* (note that *each study network segment is in one, and only one, group*):

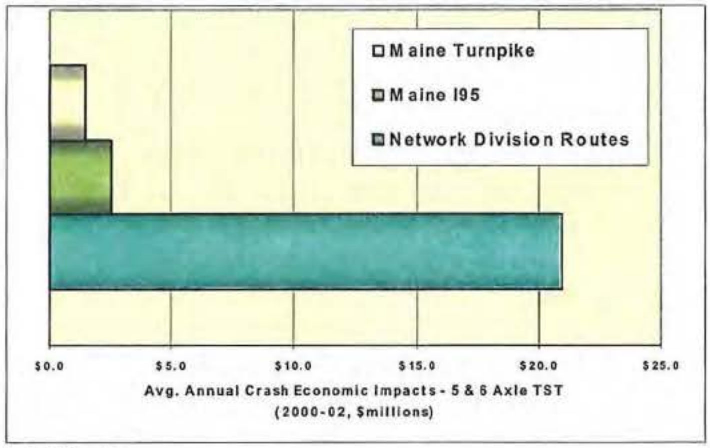
- **Non-Exempt Interstates**, controlled-access facilities expected to gain traffic in the study scenario (interstate exempt). Maine non-exempt Interstate roads consisted of 546 centerline miles (of two or more lanes, running in the same traffic direction).
- **Maine Turnpike**, controlled-access facilities expected to lose traffic in the study scenario. The Maine Turnpike roads consisted of 242 centerline miles.
- **Diversion Routes**, which constitute the rest of the *study network*, and which are expected to lose traffic, on net, in the scenario under study. "Diversion" routes consisted of 4,538 centerline miles (primarily of two lanes, each running in opposite traffic directions).

Exhibit 17: Annual Network TST Crashes



1. **Develop crash records with matching route and vehicle criteria:** Three years of geo-coded crash data were filtered by recorded vehicle type to extract only crashes involving 5 or 6-axle TST vehicles, with GVW registrations of 80,000 lbs. or more. Only crashes occurring on some portion of the *study network* were extracted. A total of 1,219 crashes from the three years of data passed both filters to constitute the crash sample. **Exhibit 17** shows the annualized number of 5 and 6-axle TST crashes on the Maine Turnpike, non-exempt Interstate, and *study network* "diversion" routes.

Exhibit 18: Annual Economic Impacts – TST Crashes



An FHWA derived "economic impact" figure associated with crash severity was also included in the MDOT crash records.[**] The calculated economic impacts were based on standard values using the number of damaged vehicles and personal injury or death. The total calculated economic impact from all 1,219 crashes was $75,032,000. The annualized economic impact attributed to the three roadway sets is show in **Exhibit 18.**

2. **Derivation of *Study Network* VMT:** Road segments in the *study network* contain estimates of 5 and 6 axle TST-AADT for many *but not all* segments. For each segment with known TST-AADT: TST counts were multiplied by length of the segment; summed; and, divided by the total of all known AADT segment lengths, to produce an average TST-AADT. The averages for known-AADT segments were 2,226 AADT for the Maine Turnpike, and 151 AADT on "diversion" roadways. The average TST-AADT counts from known segments were then multiplied by total miles (including segments with *unknown* TST AADT) to produce "*length adjusted VMT*". These steps resulted in annual VMT (expressed in 100-million miles) of 1.73 on the "Maine Turnpike, and 2.51 on the "diversion" roadways.

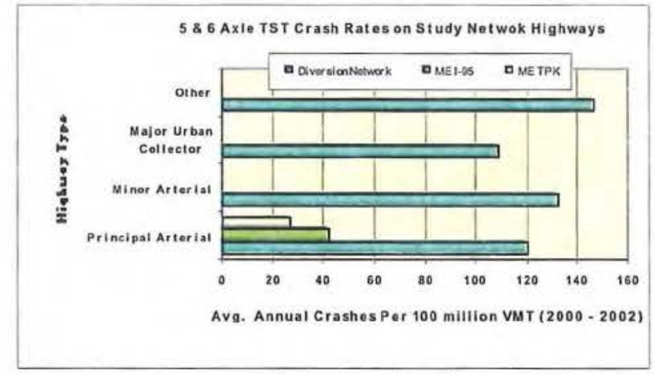
   The procedure used in deriving VMT estimates for diversion routes of the study is expected to result in *overestimated* VMT, as missing AADT counts on secondary routes are likely to be on those segments with low traffic. To some extent the opposite affect is expected on interstate level facilities: i.e., missing AADT counts on controlled-access roads are typically segments with multiple entry and exit points, such as urban areas, which often experience higher traffic levels. To the extent that this occurs, Interstate AADT may *underestimate* traffic on controlled access roads. To correct for this tendency an *attenuation procedure* was applied. For the controlled access road set, only 75% of the VMT increase (from "known" to "length-adjusted" VMT) was actually included in the final "length adjusted" VMT.

   The *net effect* of the two procedures is expected to result in crash rates relatively more conservative toward diversion routes, than would be expected if actual VMT were known for every road segment. Since the diversion roads are generally expected to have the higher crash rates, the effect is considered a conservative approach when comparing the crash rates: the error will be towards indicating smaller crash rate differences (between controlled access roads and other road types), rather than larger.

[**] USDOT, FHWA Technical Advisory T7570.2 Motor Vehicle Accident Costs, October 31, 1994.

3. **Exhibit 19** shows the crash rates for 5 and 6 axle TST combination vehicles on the Maine Turnpike and on all other study network routes.[††] Of particular note is the low crash rate of the Maine Turnpike which currently allows vehicles over 80,000 lbs.

Exhibit 19: *Study Network* TST Crash Rates



4. **Forecast net change in crashes:** As noted in the network development discussion, estimates of ton-mile flows for exempt commodities were distributed to the *study network*, using commodity volume data and the flows were converted to truck vehicle miles. The forecasted changes in VMT under the study condition were multiplied by the overall crash rates and associated economic impacts derived in the crash analysis to estimate the annual change in number of crashes and associated economic impacts.

Geo-code Crash Analysis Results: The three step analysis allowed the study team to produce comparative crash statistics for each functional highway class in the study network Graphics examining some of the factors associated with TST crashes in Maine such as: Crash type, and injury levels are shown and briefly discussed on this and the next page.

Exhibit 20: TST Crash Rates by Highway Type

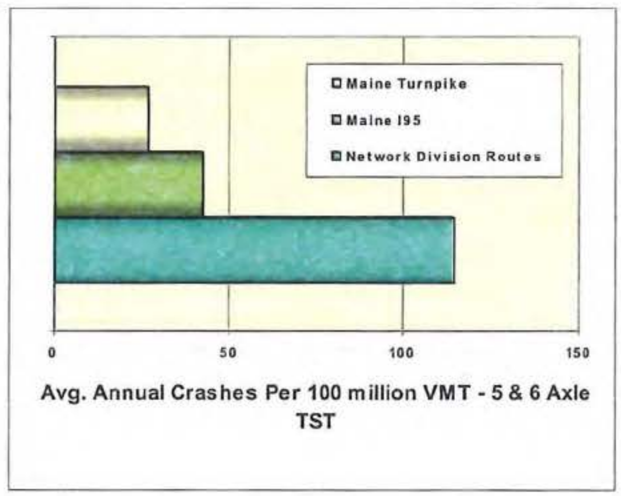


Exhibit 20 shows the crash rates derived for 5 and 6-axle TST combinations the study network by functional highway class. The crash rate per 100-million VMT (HMVMT), for the Maine Turnpike is 27 crashes/HMVMT, and is the lowest of all for all highway classes examined by the analysis. The crash rate for non-exempt portions of the Maine Interstate was 42 crashes/HMVMT. All other highway types in the study network, including other principal arterials are at least 4 times higher

[††]Crash counts and rates are based upon "vehicle involvement" where each truck was counted as one "involvement". Thus a single crash involving two trucks would count as "two involvements" for the reported crash counts and rates. Crashes involving multiple trucks were approximately 1% of the total.

than the crash rate on the Turnpike, and more than double the rate for the non-exempt Interstate System.

Exhibit 21 displays the crash rates for 5 and 6-axle TST involvements, by type of crash, for non-exempt Maine Interstate Highways and all other functional highway classes in the diversion road set. While diversion route crash rates are higher for all crash types, *intersection movement, head-on sideswipe*, and *read-end sideswipe* are all dramatically more prominent. *Rear-end sideswipe* crashes exhibit the highest crash by type rate for TST vehicles on non-exempt Interstate facilities with a rate of 18 crashes/ HMVMT. Nonetheless, the crash rate for *rear-end sideswipe* for non-interstate facilities is more than double; 42 crashes/HMVMT.

Exhibit 21: Study Network Crash Rates by Crash Type

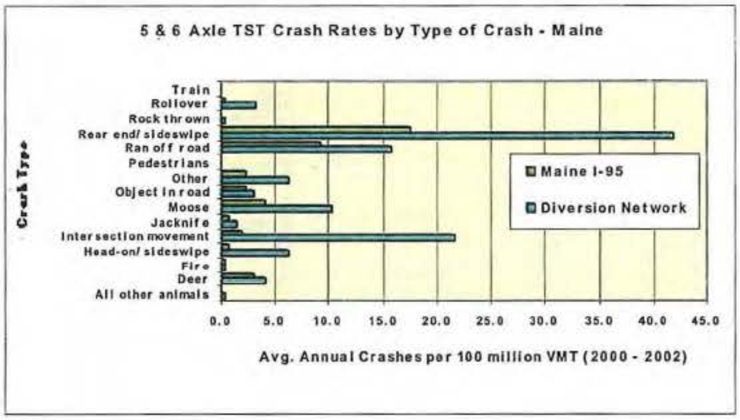
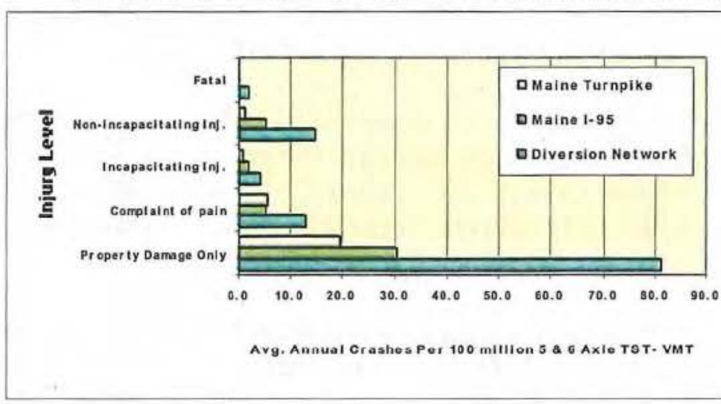


Exhibit 22 displays crash rates for the Maine Turnpike, non-exempt Interstate Highways and other functional highway classes combined for the study network by severity of the crash.

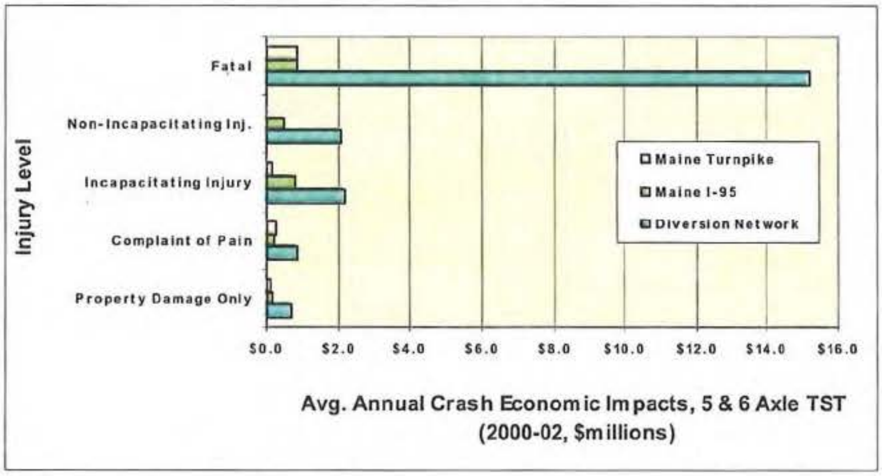
Exhibit 22: Study Network Crash Rate by Severity



The fatal crash rate of 0.2 crashes/ HMVMT for both the Maine Turnpike and non-exempt portions of the Maine Interstate is not visible on the graphic. The fatal crash rate of 1.9 crashes/HMVMT on diversion routes is nearly 10 times the fatal crash rate on Interstate facilities. Incapacitating injury crashes are nearly 7 times more prevalent on diversion roadways than on the Turnpike portions of I-95 and more than twice as prevalent as on non-exempt portions of Maine's Interstate Highways.

Exhibit 23 shows the economic costs associated with injury severity for the Maine Turnpike, non-exempt Interstate and the combination of all other highway types (diversion road set) of the study network.

Exhibit 23: Annual Economic Impacts for Crashes by Severity



Fatal crashes involving 5 and 6 axle TST combinations on non-Interstate facilities in the study network are estimated to carry an associated annual economic impact of $15 million per year. The associated economic impact on all Maine Interstate facilities (Turnpike and non-exempt combined) for TST fatal crashes is $1.8 million per year.

When modeling the impact of extending the current weight exemption on the Turnpike to all non-exempt Maine Interstate Highways, it was estimated that non-exempt Interstate Highways would experience an increase of 3.8 crashes per year, but the loss of traffic from other roadways in the study network would result in 0.7 fewer crashes per year on the Maine Turnpike, and 6.3 fewer crashes on non-Interstate facilities.

The safety analysis indicates that if Congress were to extend the current weight exemption on the Maine Turnpike to all currently non-exempt Interstate Highways in Maine, the net impact to Maine would be a <u>decrease</u> of 3.2 crashes annually. The associated FHWA defined economic impacts would save $356,000 per year.

Comparative Analysis of Truck Crashes by State

In addition to geo-coded analysis of TST vehicle crashes in Maine, the study team also examined fatal truck crashes across all states to gain an understanding of the relative safety environment for commercial vehicles in Maine as compared to other jurisdictions.

The study team used records from the University of Michigan Transportation Research Institute (UMTRI), "*Trucks Involved in Fatal Accidents*" (TIFA) files. Fatal semi-truck crashes were extracted for a 5 year period (1996 – 2000). Using only fatal crashes held an advantage of having a higher degree of consistency in reporting across states and years. **Exhibit 24** contains the table of state comparison statistics. Between 1996 and 2000, Maine averaged 11 fatal truck crashes per year.

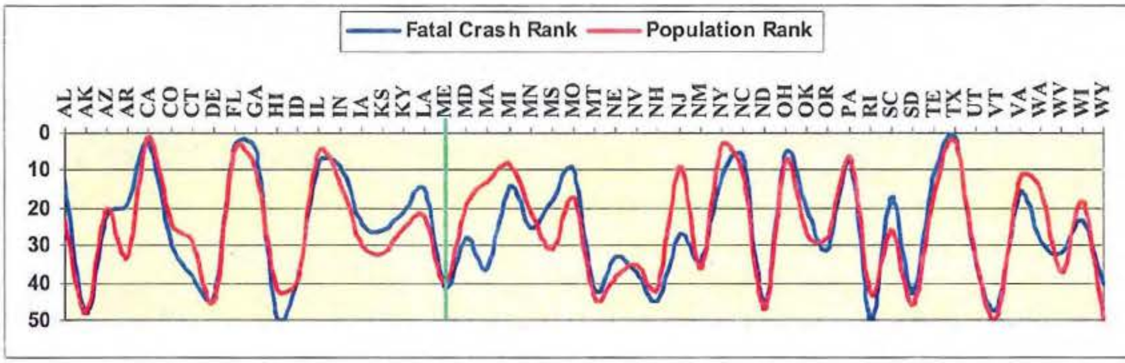
While population is far from a perfect predictor of commercial vehicle traffic, 7 of the 10 most populous states also averaged the most TST crashes (New York, Michigan and New Jersey were exceptions). The 10 least populous states also recorded the fewest fatal semi-truck crashes. Maine, 40th in state population, ranked 42 in fatal semi-truck crashes, and 43rd in truck ton-miles.

Exhibit 25 (next page) plots the rank of state population against the state rank for average annual fatal semi-truck crashes. The resulting histogram demonstrates that with a few exceptions, population shows a high correlation with total fatal semi-truck crashes.

Exhibit 24: Comparison of Fatal TST Crashes

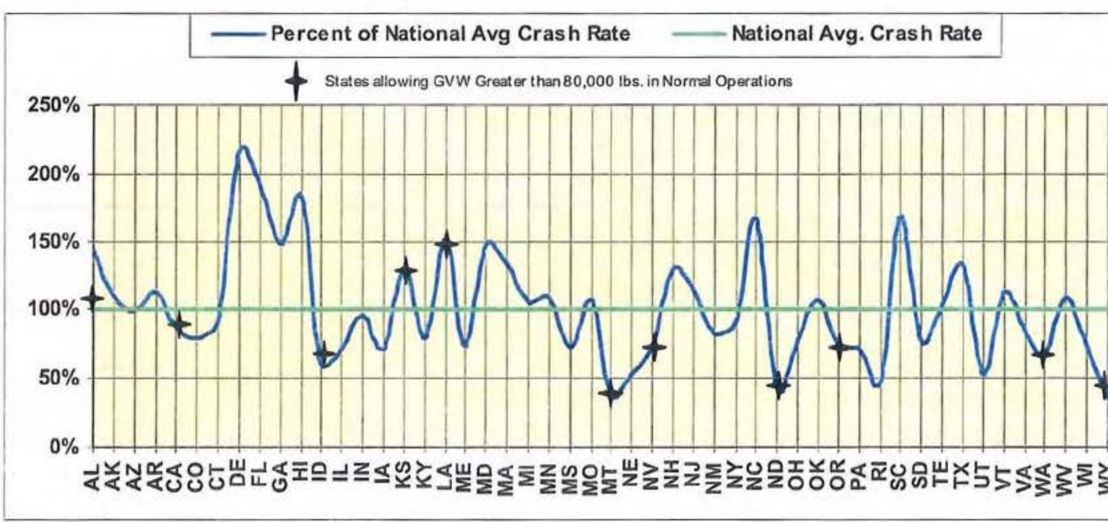
Total Fatal Truck Crashes (1996-2000)		5-yr Annual Avg. Fatal Truck	Rank	2000 Census Population	Pop. Rank
AL	534	107	10	4,447,100	23
AK	12	2	48	626,932	48
AZ	305	61	21	5,130,632	20
AR	387	77	16	2,673,400	33
CA	873	175	3	33,871,648	1
CO	192	38	28	4,301,261	24
CT	72	14	40	3,405,565	29
DE	55	11	44	783,600	45
FL	884	177	2	15,982,378	4
GA	684	137	4	8,186,453	10
HI	7	1	49	1,211,537	42
ID	73	15	39	1,293,953	39
IL	602	120	7	12,419,293	5
IN	596	119	8	6,080,485	14
IA	306	61	20	2,926,324	30
KS	279	56	24	2,688,418	32
KY	286	57	22	4,041,769	25
LA	407	81	13	4,468,976	22
ME	56	11	42	1,274,923	40
MD	206	41	26	5,296,486	19
MA	109	22	36	6,349,097	13
MI	400	80	14	9,938,444	8
MN	282	56	23	4,919,479	21
MS	164	33	32	2,844,658	31
MO	511	102	11	5,595,211	17
MT	61	12	41	902,195	44
NE	183	37	30	1,711,263	38
NV	99	20	37	1,998,257	35
NH	43	9	46	1,235,786	41
NJ	197	39	27	8,414,350	9
NM	188	38	29	1,819,046	36
NY	350	70	17	18,976,457	3
NC	636	127	6	8,049,313	11
ND	44	9	45	642,200	47
OH	666	133	5	11,353,140	7
OK	348	70	18	3,450,654	27
OR	178	36	31	3,421,399	28
PA	537	107	9	12,281,054	6
RI	4	1	50	1,048,319	43
SC	389	78	15	4,012,012	26
SD	56	11	43	754,844	46
TE	508	102	12	5,689,283	16
TX	1462	292	1	20,851,820	2
UT	119	24	35	2,233,169	34
VT	27	5	47	608,827	49
VA	348	70	19	7,078,515	12
WA	142	28	34	5,894,121	15
WV	159	32	33	1,808,344	37
WI	271	54	25	5,363,675	18
WY	78	16	38	493,782	50

Exhibit 25: Annual Fatal Truck Crash Rank Vs. State Population Rank



The ability to relate crashes to traffic exposure is often a difficult goal at a sub-national level. The most common "crash rate" is expressed as crashes per 100 million VMT. However, other measures of exposure can be used, such as crashes per number of licensed drivers, or crashes per ton-mile. A "Fatal Semi-Truck Crash Rate" was computed using the TIFA 5 year average and ton-mile estimates by state from the 1997 BTS Commodity Flow Survey (CFS). **Exhibit 26** plots the result for each state as a percentage against the national average (equal to 100%). Also highlighted on this graph are eleven states allowing gross vehicle weights in excess of 80,000 lbs. in regular operations on state highway systems.[‡‡] Among the states allowing heavier GVW in regular operation only three have crash rates above the national average. Three "heavy truck" states had crash rates less than 50% of the national average. The remaining 5 heavy truck states are below the average.

Exhibit 26: Fatal TST Crashes Per Billion Ton-miles (Shown as % of National Average)



[‡‡] Source: J.J. Keller – Vehicle Sizes and Weights, Maximum Limits table, January 1, 2003. (Note: some states, including Maine only allow GVW's exceeding 80,000 lbs. under special circumstances; and are not included here).

Regression Analysis of Tractor-Semi-trailer (TST) Crashes

The study team also conducted a regression analysis to examine the correlations between TST crashes, cargo volume and truck VMT. An additional variable was introduced for the regression analysis: tractor-semi-trailer vehicle miles of travel (TST-VMT) by state. Highway Performance Monitoring System (HPMS) base data from FHWA containing VMT by functional class and vehicle type was used for the analysis. For each state, the 5 year average of fatal crashes involving TST combinations was regressed against year 2000 TST-VMT and year 1997 truck freight ton-miles. **Exhibit 27** presents the strongest relationships found from the regression analysis using these variables.

Exhibit 27: Regression on TST Annual Fatal Involvements (TST-FI)

(R-square = 0.906)	Coefficients	Std Error	t-Stat	P-value
Intercept	35.2	7.64	4.603	0
a) TST-VMT (100 million)	32.8	2.51	13.079	0
b) ratio of truck ton-miles to all truck VMT	-43.6	8.53	-5.116	0
c) ratio of urban TST-VMT to all TST-VMT	-24.4	13.73	-1.778	0.082
d) normal GVW limit over 80,000 lbs	-7.4	6.64	-1.116	0.271

The most significant findings indicate:

- Row a) Results suggest a strong, positive relationship between TST-VMT and fatal TST crashes, indicating that fatal TST crashes are expected to <u>increase</u> as TST-VMT increases. This correlation holds across all states with greater than 99% confidence.
- Row b) Results show a strong <u>negative</u> relationship between the ratio of truck ton-miles to TST-VMT, and the number of fatal TST crashes, suggesting that fatal TST crashes are expected to <u>decrease</u> as average payload increases. The correlation holds across all states with greater than 99% confidence. This finding supports previous studies suggesting that higher payloads will likely reduce crashes, presumably by reducing TST-VMT.

Regression Results for Maine

- Maine exhibited crash rates <u>below</u> the average by both VMT and ton-mile measures. A strong explanatory factor is Maine's ratio of ton-mile/truck VMT (6.039) is higher (106.61%) than the national average – in other words, Maine has higher than average truck payloads and based on the correlations found in the data, is expected to have a lower than average TST fatal crash rate.

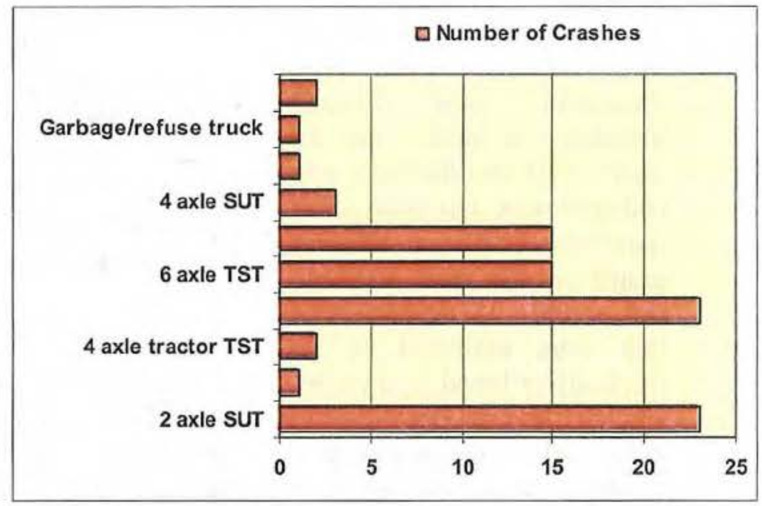
Exhibit 28, on the next page shows the resulting state and national "semi-truck fatal crash rates" using both VMT and ton-miles as denominators.

Exhibit 28: Annual TST Fatal Involvements, Freight Ton-miles, and VMT

State * = GVW over 80,000 lbs. (d)	TST Fatal Crashes 5-yr. Avg	Total Truck Ton-Mi (billions)	TST-fatal crash rate per billion ton-miles	% of Natinal Average	a) TST-VMT (x 100 million)	TST - Fatal Crash Rate per 100 million VMT	% of National Average	b) Ratio of Ton mi./VMT for All Trucks	% of National Average	c) Ratio of Urban Road/ All Road TST-VMT
Alabama	107	28.1	3.8	144.1%	3,143	3.4	146%	5.59	99%	34.0%
Alaska *	2	0.8	2.9	110.9%	59	4.1	175%	3.76	66%	36.3%
Arizona	61	23.4	2.6	98.8%	3,356	1.8	78%	4.84	86%	36.8%
Arkansas	77	25.9	3.0	113.1%	2,332	3.3	142%	8.30	147%	13.6%
California	175	75.4	2.3	87.7%	9,733	1.8	77%	4.65	82%	61.6%
Colorado *	38	18.2	2.1	80.1%	1,453	2.6	113%	6.46	114%	22.4%
Connecticut	14	6.0	2.4	91.4%	876	1.6	71%	4.38	77%	68.9%
Delaware	11	1.9	5.7	217.0%	280	3.9	169%	3.88	68%	50.7%
Florida	177	34.9	5.1	192.0%	5,069	3.5	150%	3.80	67%	50.0%
Georgia	137	35.1	3.9	147.6%	5,135	2.7	114%	4.55	80%	21.1%
Hawaii	1	0.3	4.8	182.9%	50	2.8	120%	0.95	17%	66.5%
Idaho *	15	9.1	1.6	61.0%	665	2.2	94%	8.81	156%	20.1%
Illinois	120	63.7	1.9	71.6%	7,943	1.5	65%	6.18	109%	56.1%
Indiana	119	47.1	2.5	95.9%	5,882	2.0	87%	5.65	100%	38.0%
Iowa	61	32.7	1.9	70.9%	2,973	2.1	88%	8.33	147%	14.4%
Kansas *	56	16.0	3.5	131.9%	1,390	4.0	172%	6.99	123%	13.7%
Kentucky	57	27.1	2.1	80.1%	2,357	2.4	104%	7.80	138%	22.9%
Louisiana	81	20.4	4.0	151.5%	2,558	3.2	137%	4.88	86%	33.1%
Maine	**11**	**5.7**	**2.0**	**74.7%**	**532**	**2.1**	**90%**	**6.04**	**107%**	**13.7%**
Maryland	41	10.6	3.9	146.8%	949	4.3	186%	4.43	78%	63.0%
Massachusetts	22	6.2	3.5	133.8%	1,082	2.0	86%	2.95	52%	77.8%
Michigan *	80	28.5	2.8	106.5%	3,699	2.2	93%	4.89	86%	55.0%
Minnesota	56	19.6	2.9	109.1%	1,751	3.2	138%	5.73	101%	23.9%
Mississippi	33	17.1	1.9	72.8%	2,594	1.3	54%	4.38	77%	19.2%
Missouri	102	35.8	2.9	108.2%	3,683	2.8	119%	6.43	114%	25.3%
Montana *	12	11.9	1.0	38.7%	539	2.3	97%	14.49	256%	10.9%
Nebraska	37	26.1	1.4	53.2%	1,737	2.1	90%	12.36	218%	10.1%
Nevada *	20	10.2	1.9	73.3%	780	2.5	109%	7.95	140%	25.4%
New Hampshir	**9**	**2.5**	**3.4**	**129.3%**	**252**	**3.4**	**146%**	**4.65**	**82%**	**27.9%**
New Jersey	39	13.0	3.0	115.1%	2,188	1.8	77%	3.60	64%	79.0%
New Mexico	38	17.4	2.2	82.0%	1,429	2.6	113%	7.79	138%	11.8%
New York	70	28.9	2.4	91.8%	4,503	1.6	67%	3.92	69%	48.3%
North Carolina	127	28.7	4.4	168.1%	4,850	2.6	113%	3.45	61%	34.5%
North Dakota *	9	7.7	1.1	43.2%	459	1.9	82%	10.09	178%	10.0%
Ohio	133	64.5	2.1	78.2%	8,194	1.6	70%	5.70	101%	44.4%
Oklahoma	70	24.5	2.8	107.5%	3,412	2.0	88%	4.96	88%	17.9%
Oregon *	36	18.1	2.0	74.5%	2,185	1.6	70%	5.69	101%	24.4%
Pennsylvania	107	56.9	1.9	71.5%	4,692	2.3	98%	7.31	129%	34.5%
Rhode Island	1	0.6	1.3	48.1%	153	0.5	22%	2.37	42%	76.4%
South Carolina	78	17.4	4.5	169.0%	2,190	3.6	152%	5.15	91%	20.1%
South Dakota	11	5.4	2.1	78.0%	519	2.2	93%	6.88	122%	10.5%
Tennessee	102	37.2	2.7	103.5%	3,898	2.6	112%	6.81	120%	33.3%
Texas	292	83.5	3.5	132.7%	10,065	2.9	125%	5.15	91%	37.8%
Utah	24	16.8	1.4	53.7%	930	2.6	110%	11.17	197%	34.5%
Vermont	5	1.8	3.0	113.6%	260	2.1	89%	4.10	72%	20.9%
Virginia	70	31.7	2.2	83.3%	3,286	2.1	91%	6.58	116%	29.1%
Washington *	28	16.1	1.8	66.9%	1,306	2.2	93%	5.80	102%	50.7%
West Virginia	32	11.1	2.9	108.3%	1,271	2.5	107%	6.18	109%	25.6%
Wisconsin	54	27.9	1.9	73.6%	2,479	2.2	94%	7.02	124%	29.2%
Wyoming *	16	16.1	1.0	36.8%	901	1.7	74%	14.38	254%	6.4%
National (total)	**3076**	**1165.3**	**2.6**	**100.0%**	**132,022**	**2.3**		**5.66**		**37.2%**

Fatal Truck Crashes in Maine

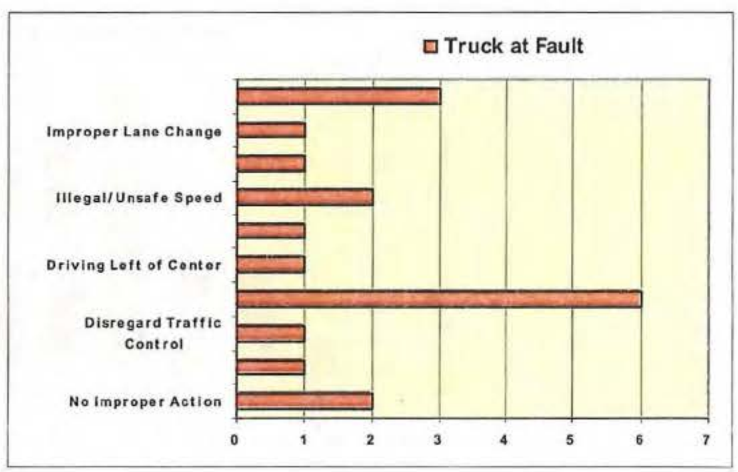
Exhibit 29: Fatal Truck Crashes by Vehicle Type (1999-01)



The State of Maine also provided three years of fatal truck crash reports (1999-2001). The crash reports indicated 78 fatal truck crashes in Maine over the three year period, 74 were multiple vehicle crashes, with 16 crashes involving more than two vehicles. **Exhibit 29** displays fatal truck crashes for Maine by vehicle type for the years 1999 – 2001. The data shows that in Maine single unit trucks (SUT) and TST combinations were nearly equally involved in fatal crashes over the period. 2-axle single unit trucks (SUT) and 5-axle TST combinations where the vehicles types most often involved in a fatal crash, each experiencing 23 crashes.

More than 80% of the fatal crashes occurred during daytime the hours of 6:00 am to 6:00 pm. Of the crashes that occurred during night-time hours, 12 occurred on unlit roadways. Only seven fatal truck crashes over the period occurred on Saturday or Sunday. The weekday distribution of fatal crashes was fairly evenly distributed between 12 and 16.

Exhibit 30: Contributing Factors for "Truck at Fault"



A review of the fatal crash reports was conducted to determine those crashes were the truck driver was found to be at fault. The bar chart in **Exhibit 30** summarizes the contributing factors from fatal truck crashes in Maine from 1999-2001, where the truck driver was determined to be at fault. The most prominent contributing factor was found to be driver inattention or distraction.

Exhibit 31: Fatal Truck Crashes by Type (1999-2001)

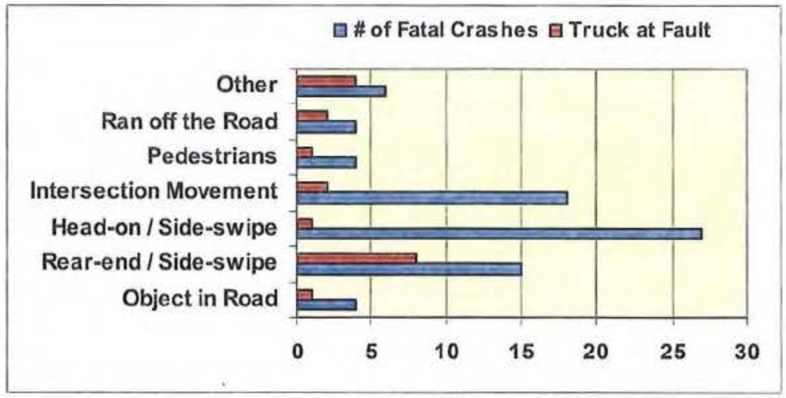


Exhibit 31 presents a histogram of crashes by the type of incident that resulted in a fatality. The most prominent fatal crashes involving commercial vehicles were: head-on/sideswipe, rear end/sideswipe and intersection movement collisions. The line graph on the chart indicates the number of these crashes that were attributed to the truck driver based on a review of crash records. Of the most prominent crash type; "head-on / side-swipe" only one crash was attributed to the commercial vehicle driver. In "truck driver-at-fault crashes, the most prominent contributing factor was driver inattention or distraction (6 fatal crashes), followed by illegal or unsafe speed (2 fatal crashes).

Exhibit 32 presents data from fatal truck crashed in Maine between 1999 and 2001 about the truck drivers' age. Truck drivers between the ages of 31 and 35, were the driver group most likely to be involved in a fatal crash. Drivers age 36 to 40 were the next most represented group, followed by drivers age 41 to 45. These three driver age groups, representing drivers age 31 to 45 were involved in 50% of all fatal crashes during the time period. As in the previous chart, the line graph represents the number of drivers by age group determined to be at fault.

Exhibit 32: Fatal Truck Crashes in Maine by Driver Age, 1999-2001

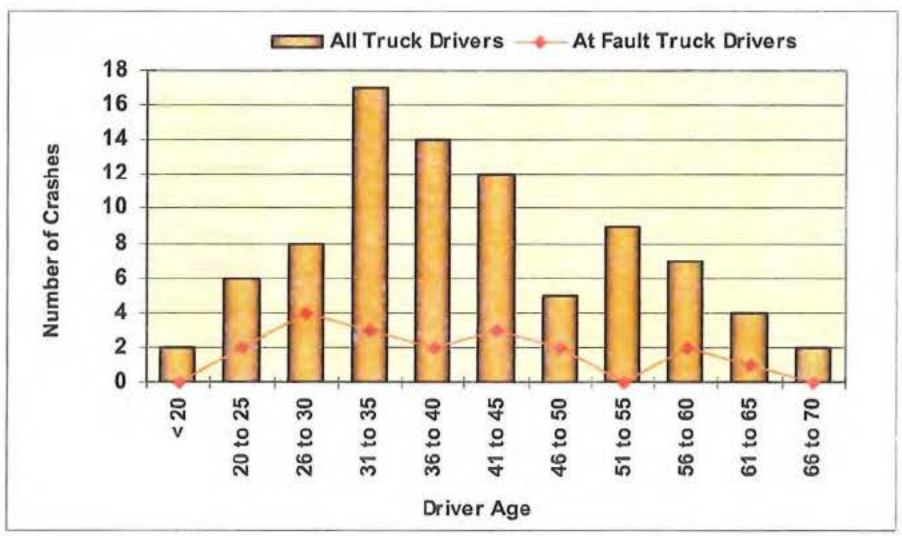
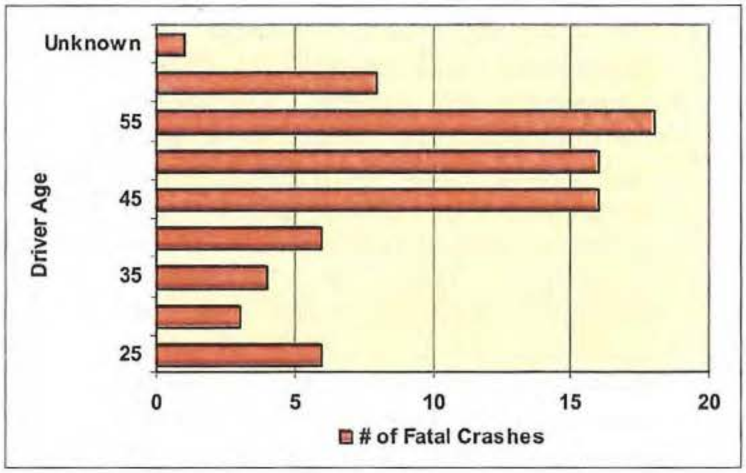


Exhibit 33 shows the posted speed limit at the location of the crash occurrence. As the majority of the fatal truck crashes in Maine occurred on non-Interstate facilities, the majority of the posted speed limits were 55 miles per hour (mph) or less.

Exhibit 33: Fatal Truck Crashes by Posted Speed Limit



Summary Conclusions About Safety & Weight Policy

The safety analysis for this study:

1) Examined national trends for fatal crashes involving large trucks,
2) Provided a detailed examination for three years of geo-coded crash records looking specifically at 5 and 6-axle TST vehicles in Maine;
3) Conducted a comparative analysis of truck crash statistics for Maine as compared to other states and national averages, and;
4) Constructed fatal truck crash profiles for three years of crash records from Maine.

The most prominent findings from this investigation are:

- ✓ The crash rate experience of 5 and 6 axle TST combination vehicles registered to carry commodities at the weights under study are 7 to 10 times higher on non-Interstate facilities in Maine, than on the Maine Turnpike. These findings are consistent with national studies that have found a strong relationship between road class and crash risk, with fatal crash rates on rural Interstate highway facilities 300 to 400 percent less than other types of rural roadways (i.e. trucks traveling on rural interstates are 3 to 4 times less likely to have a fatal crash than trucks traveling on rural state and county highways).

- ✓ If the current weight exemption on the Maine Turnpike were extended to non-exempt Maine Interstate Highways, the net impact to Maine is estimated to be a <u>decrease</u> of 3.2 crashes annually. The associated FHWA defined economic impacts would be $356,000 per year.

- ✓ Nationally, the safety of large trucks (and combination trucks in particular) has shown dramatic improvements in safety as measured by fatal crash rates.

- ✓ The state comparison analysis also found no correlation between states that allow normal GVW in excess of 80,000 lbs. on state networks and high crash rates; in fact, the regression analysis found a positive correlation between low crash rates and high load factors. And, in comparison to other states the crash rate for TST combination vehicles in Maine was slightly below the national average.

Pavement Analysis

State highway agencies design highway infrastructure based on predicted truck traffic volumes and axle weights. The majority of pavement wear (also referred to as pavement consumption) is attributed to heavy truck traffic. Currently the State of Maine spends roughly $50 million each year on pavement rehabilitation and preservation. From an operations and maintenance standpoint, vehicle axle loads and environment are the primarily determinants of pavement wear. Other factors affecting the wear-ability of pavements fall primarily to construction standards such as the type of sub-base, paving material and pavement thickness. Changes to TS&W policy can substantially impact the costs for pavement maintenance and rehabilitation. The objective of the pavement analysis conducted for this study is to relate the impact from changes in axle loadings under the policy scenarios to reflect pavement damage in terms of potential state expenditures. The approach taken in this study uses pavement consumption factors referred to as Equivalent Single Axle Loads (ESAL) to estimate changes in pavement wear.

Pavement Fatigue

"The break-up of pavements is usually caused by fatigue. Fatigue or fatigue cracking is caused by many repeated loadings and the heavier the loads the fewer the number of repetitions required to reach the same condition of cracking. It is possible, especially for a thin pavement, for one very heavy load to break up the pavement in the two wheel paths. To account for the effect of different axle weights, the relative amount of fatigue for an axle at a given weight is compared to that of a standard weight axle. Historically this standard axle has been a single-axle with dual tires and an 18,000-pound load."

- Comprehensive Truck Size and Weight Study (USDOT, Dec. 2000)

ESAL factors provide a means of readily assessing the relative damage resulting from loaded commercial vehicles on pavements. ESAL values are calculated to standardize the measurement pavement wear from a wide variety of trucks, carrying a wide range of loads. One ESAL is generally defined as one four-tired axle bearing an 18,000 lb. load.

Using an ESAL approach the damage or "consumption" of pavement from different vehicle loads are normalized by relating the damage to a standard reference axle weight (18,000 lb. single axle load). Road tests have established that the relationship between axle weight and pavement damage is a logarithmic function. For example, a 36,000 lb. single-axle load does approximately 20 times more damage than an 18,000 lb. single-axle load. So, even though the load is only twice the magnitude, the calculated ESAL factor is 21.2.[§§] (The example is based on a structural pavement number of 3 and a terminal serviceability level of 2.0). Thus, axle weight and pavement consumption exhibit a logarithmic relationship, making the analysis of many vehicles and pavement types difficult. Converting axle loads to ESALs prior to analysis allows the analysis of a straightforward, linear relationship wherein two ESALs consume twice the pavement as a single ESAL, and three ESALs consume three times as much, and so on.

[§§] Transportation Research Board (TRB), Transportation Research Record 1816: *"Cumulative Traffic Prediction Method for Long-Term Pavement Performance Models"* Christopher R. Byrum and Starr D,. Kohn, pp. 111

Pavement Cost Impacts Methodology

A methodology was developed to quantify the impact on pavement performance and cost characteristics from incremental loadings resulting from the study weight limit policy condition (i.e. allowing exempt weight 5- and 6-axle TST on currently non-exemption portions of the Maine Interstate System). The magnitude and pattern of truck traffic expected from implementation of the study policy scenario was calculated using a four step process:

- Assigning *base* (existing) truck traffic (vehicle classes 4-13) and ESAL loadings to the study network (derived from WIM stations);
- Assigning *study* truck traffic expected to divert from non-Interstate Highways given implementation of the study policy scenario;
- Calculate the *increment* in 5- and 6-axle volumes and associated ESAL loadings (positive or negative) between the base and study scenarios; and
- Calculate the cost impacts relating to the incremental ESAL loadings between the base and study scenarios.

The equation used in deriving ESAL factors for the analysis was that used at Maine's WIM stations, and is taken from the *1986 AASHTO Guide for Design of Pavement Structures*. MDOT's pavement management criteria uses a *structural pavement number* (SN) of 5 and a pavement "*terminal serviceability level*" (P_t) of 2.5. These criteria were used throughout the analysis. The follow equation was used in deriving ESAL factors from the WIM stations traffic data:

$$\beta\chi = 0.04 + \frac{0.081\times(L_x + L_2)^{3.23}}{(SN+1)^{5.19}\times L_2^{\ 3.23}}$$

Where L_x is the load on the whole axle group; L_2 is the axle group code (1 for single, 2 for tandem, 3 for tridem).

The pattern and magnitude of incremental traffic was identified through the distribution of commodity tonnage data purchased for the study, and supplemented with WIM data provided by Maine. The WIM station ESAL factors included the full range of 5 & 6 axle TST weights, including those above the exempt weight range, as recorded at the WIM stations.

Step 1: Base Scenario Vehicle / ESAL Traffic Distribution

The Base Scenario to reflect current truck traffic patterns was developed by assigning the 5- and 6-axle commodity tonnage data to the analysis network. In the base scenario, all analysis network links representing Maine non-exempt Interstate system facilities were *disabled* so that commodity tonnage data could not be assigned to those links. Thus, the only links that the commodity tonnage data could be assigned to in the base scenario were:

- State system facilities; and
- The Maine Turnpike

The conversion process described in **Appendix C** was then used to convert assigned tons to numbers of 5- and 6-axle trucks. Then, the ESAL factors described found in **Table C-1** of the appendix were used to convert truck volumes to ESALs.

Step 2: Study Scenario Vehicle / ESAL Traffic Distribution

To develop the study scenario, the links previously *disabled* in the base scenario (that is, the non-Turnpike Interstate facilities) were *enabled*. This yielded an analysis network representative of the study condition – one where *all* Maine Interstate facilities could legally bear 5 and 6-axle vehicles weighing between 80,000 and 100,000 lbs. Again, the conversion process described in **Appendix C** was used to convert assigned tons to numbers of 5- and 6-axle trucks.

Step 3: Comparison of Base and Study Scenarios

The diversion network developed for this study is composed of roadway facilities both having heavy truck traffic drawn *from* them, as well as those having heavy truck traffic drawn *to* them. A complete analysis of pavement impacts must account for both instances. In total, the analysis examined over 13,000 road segments. Comparisons of base scenario ESAL loadings on the diversion network were separated into those facilities that *lose* heavy truck traffic given implementation of the study scenario, and those that *gain* heavy truck traffic.

Step 4: Estimating Maintenance & Rehabilitation Budget Savings

It was assumed in this analysis that the percentage reduction (or gain) in ESAL loadings on facilities making up the diversion network will equate to an equal percentage in resurfacing cost savings (or increases) for that given type of roadway, based on existing MDOT expenditures. As such, it was necessary to develop a measure to describe the amount spent for each unit of pavement consumption by functional class of highway – system wide.

The table in **Exhibit 34** summarizes the incremental differences in truck volumes and associated ESAL loadings on the study network that where observed by model runs of both the base and study scenarios. As expected, if the federal weight exemption in force on the Maine Turnpike were extended currently non-exempt Maine Interstate Highways, 5 and 6 axle TST traffic on non-interstate highways types and the Turnpike would decrease, while traffic on other Interstate routes would increase.

Exhibit 34: Summary Impacts to Maine Pavements for the Study Scenario*

	Change in Daily Truck Miles from Current Condition			Change in Daily ESAL Miles from Current Condition		
Functional Highway Class	**Five Axle TST**	**Six Axle TST**	**Total 5 & 6 Axle TST**	**Five Axle TST**	**Six Axle TST**	**Total 5 & 6 Axle TST**
Major/urban collector	-899	-4,497	-5,396	-3,481	-18,799	-22,280
Minor arterial	-458	-2,292	-2,750	-1,774	-9,579	-11,353
Other principal arterial	-2,219	-11,096	-13,315	-8,588	-46,380	-54,968
Principal Arterial Interstate	4,001	20,007	24,009	15,486	83,631	99,117

Calculation of Base Pavement Use:

A prorating methodology was used to assign base scenario truck volume and ESAL estimates (vehicle classes 4-13) to the MDOT TIDE route system. Unlike in the development of the base and study scenarios, volume and ESAL calculations and assignments were made using MDOT classification volume counts and ESAL factors, not those derived from commodity tonnage data.

MDOT provided updated 2003 ESAL factors from its WIM stations allowing ESAL factors by vehicle classification for each WIM station to be developed. These ESAL factors were assigned to links on the MDOT TIDE route system based on the proximity of route links to a given WIM station. Using the previously-described distance-weighted prorate procedure, classified volumes and associated ESAL values were assigned to the Maine study network. Next, values for vehicle-miles and ESAL-miles were summarized for each functional system. Summarizing these values by functional system was used in determining cost impacts from implementation of the study scenario, as the MDOT resurfacing program budget is partitioned by functional system.

Development of Base Unit Costs:

MDOT provided historical cost details about their pavement resurfacing program, representing the *entire* mileage for each functional system. System-wide programmed pavement maintenance was used to develop a *cost per ESAL-mile* normalized for each functional system element, which were then applied to the study network. It was assumed that historically pavement budgets would be programmed to system elements based on their need and that historical maintenance needs would be linked to the number of axle loads (expressed as ESALs) traveling over those systems. The cost per ESAL-mile factor was applied to incremental ESAL loadings (positive or negative) to determine cost impacts for the study scenario. The pavement resurfacing cost calculations is summarized in the table of **Exhibit 35.**

* For purposes of this analysis, the functional system "Principal Arterial – Other Freeways & Expressways" has been grouped with "Other Principal Arterial."

Exhibit 35: MDOT Resurfacing Cost per ESAL-Mile by Functional System

Functional Highway Class	Known ESAL-Mi. Vehicle Class 4-13	Assoc Length: Known ESAL-Mi.	Total System Length (Mi)	Expanded ESAL-Miles	98-'05 MDOT Program (Low)	98-'05 MDOT Program (High)	Cost / ESAL-Mi. (Low)	Cost / ESAL-Mi. (High)
Major/Urban Collector	518,827	1,568	3,739.30	1,237,316	$14,545,380	$31,649,670	$11.76	$25.58
Minor Arterial	592,553	1,117	1,327.80	704,550	$16,832,350	$33,707,880	$23.89	$47.84
Principal Arterial - Other	870,496	892	981.3	958,148	$18,478,700	$25,929,400	$19.29	$27.06
Principal Arterial - Interstate	1,318,870	302	366.8	1,601,753	$9,558,000	$15,344,000	$5.97	$9.58

Because the Maine Turnpike and parallel non-turnpike sections of the Maine Interstate System are classified as *"Principal Arterial – Interstate"* the change in ESAL miles represents a net impact. The model suggests that if currently non-exempt Maine Interstate Highways were allowed to carry study weight vehicles, the section of the Maine Turnpike north of Portland would lose traffic to the previously non-exempt Interstate between Yarmouth and West Gardiner. The model results are presented in **Exhibit 36.**

Exhibit 36: Turnpike Interstate Diversion Summary

Facility	Length (Mi)	ESAL-Mi: Base Scenario	ESAL-Mi: Study Scenario	Change
Non-Turnpike Interstate	346	370,878	510,205	139,327
Turnpike	52	40,210	0	-40,210
Principal Arterial Interstate – Net Change				99,117

Exhibit 37 shows results from the methodology used to calculate the change in annual pavement maintenance costs. Using the historical high and low allocation provides an expected *range of cost impacts.* These values are represent the cost (or savings) that would be realized through the addition (or removal) of one ESAL-mile to a given functional system. **It is estimated that if the current Turnpike Exemption were extended to all Maine Interstate Highways the policy would save the State of Maine between $1 million and $1.65 million in pavement rehabilitation costs each year.**

Exhibit 37: Cost Impacts to MDOT Resurfacing from Interstate Weight Exemption

Functional Highway Class	Change in Daily ESAL Mi.	'98-'05 MDOT Resurfacing Cost/Daily ESAL-Mile (Low)	'98-'05 MDOT Resurfacing Cost/Daily ESAL-Mile (High)	Change in MODT Resurfacing Program (Low)	Change in MODT Resurfacing Program (High)
Major/urban collector	-22,280	$11.75	$25.58	($261,890)	($569,853)
Minor arterial	-11,353	$23.89	$47.84	($271,207)	($543,109)
Other principal arterial	-54,968	$19.29	$27.07	($1,060,331)	($1,487,862)
Principal Arterial Interstate	99,117	$5.97	$9.58	$591,542	$949,635
			Total Savings	**($1,001,886)**	**($1,651,189)**

Bridge Analysis

Bridges represent critical links and potential bottlenecks in highway transport systems for freight. The impacts of truck size and weight on bridge stress and fatigue remains one of the more controversial issues associated with truck regulatory policy, due to the complexity in analyzing a wide variety of structures and the high costs associated with bridge replacement. The current federal bridge formula (FBF) also represents the limiting factor in current gross weight policy on the Federal Interstate Highway System.

The National Bridge Inventory System (NBIS) lists 2,363 bridges in the State of Maine. The table in **Exhibit 38** provides an inventory of bridges by functional highway class in Maine. Of the more than 2,000 bridges in Maine, approximately 12% are located on the Interstate Highway System.

Exhibit 38: Maine Bridges

Functional Highway Class		No. of Bridges
Rural	Principal Arterial - Interstate	177
	Principal Arterial - Other	133
	Minor Arterial	186
	Major Collector	458
	Minor Collector	268
	Local	746
Urban	Principal Arterial - Interstate	96
	Principal Arterial - Other freeway/expressway	21
	Principal Arterial - Other	70
	Minor Arterial	77
	Collector	81
	Local	50
	Totals	**2,363**

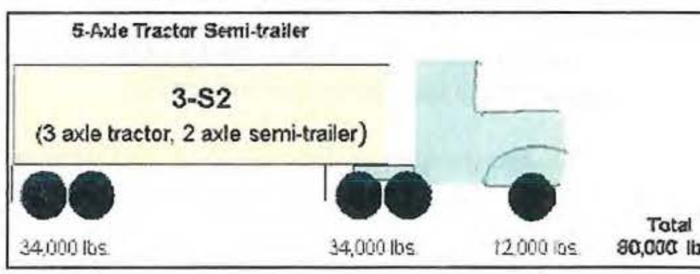
Bridge Impacts Analysis Methodology

The Three Loading Cases that were considered are as follows:

Case 1: 80,000 lb. Truck, Base Loading: corresponds to a "3-S2" (**Exhibit 39)** with the following axle load distribution:

- Steering Axle = 12,000 Lb.
- Forward Tandem Axle = 34,000 Lb.
- Rear Tandem Axle = 34,000 Lb.

Exhibit 39: Five-Axle TST Base Vehicle

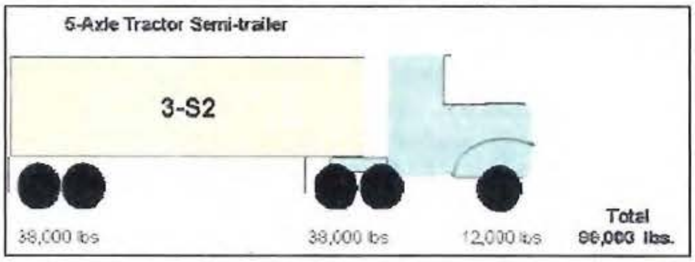


(Note: Maximum tandem axle load under Maine General Law, assumed to be spaced at 14 ft from the front steering axle to the centerline of the tandem axle. For simple spans, use shortest allowable total wheelbase of 51' as per the Federal Bridge Formula (FBF).

Case 2: 88,000 Lb. Truck, 5-Axle Loading Case: Also for a 3-S2 vehicle **(Exhibit 40)** with the following axle loading distribution:

- Steering Axle = 12,000 Lb.
- Forward Tandem = 38,000 Lb.
(Assumed to be spaced at 14 ft from the front Steering Axle to the centerline of the Tandem Axle)
- Rear Tandem = 38,000 Lb.
(With a total wheel base of 59')

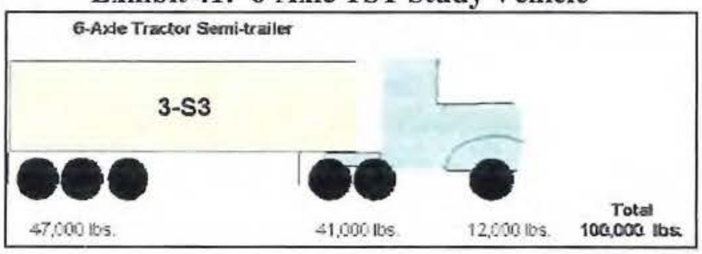
Exhibit 40: Five-axle TST Study Vehicle



Case 3: 100,000 Lb. Truck, 6 Axle Loading Case: Corresponds to a 3-S3 vehicle (**Exhibit 41)** with the following axle loading distribution:

- Steering Axle = 12,000 Lb.
- Forward Tandem = 41,000 Lb.
(Assumed to be spaced at 12 ft from the Steering Axle)
- Rear Tri-axle = 47,000 Lb.
(Spacing of 32 ft center of tandem axle to center of the tri-axle, with a total wheel base of 50')

Exhibit 41: 6-Axle TST Study Vehicle



Note: It is acknowledged that other axle configurations and axle weight distributions maybe legally allowed in Maine and that Cases 2 and 3 trucks do not meet the federal bridge formula. Cases 2 and 3 are assumed to be the most representative of the exempt weight trucks currently operating in Maine.

The cost impacts upon Maine bridges due to the GVW policy change under consideration were analyzed from two different perspectives:

1. The increase or decrease in normal wear and tear and its associated maintenance.
2. The long term effect of the loading with regards to fatigue of the bridge superstructure.

Two groups of bridges were analyzed in conducting the analysis:

Group 1) Bridges on the Maine Turnpike between Mile Points MP 3.68 and 50.96

Group 2) Bridges located on State Routes which would be impacted due to changes in truck traffic due to the Non-Exempt scenario.

For each group of bridges, the study developed truck volumes by vehicle type, which apply for the three loading cases:

The Non-Exempt Scenario for:	a.)	80,000 lb. truck - federal weight limits
The Study "Exempt" Status for:	a.)	88,000 lb. 5 axle truck, and
	b.)	100,000 lb. 6 axle truck

Available bridge inventory data was obtained and reviewed for the bridges being considered. MDOT provided Structural Inventory and Appraisal (SI&A) data for each bridge, including: year built, structure type, condition ratings, number of lanes and spans, Inventory and Operating Load Ratings, traffic data (AADT, per cent of trucks and the year AADT was taken), etc. The list of bridges analyzed for the analysis can be found in **Appendix D.** The bridges to be considered were defined by construction material, structural type and relative span length. The maintenance cost analysis, was conducted for all structures with bridge decks. Structures under fill were excluded as they do not have a deck that comes in contact with the wheels.

The longer term effects of exempt weight vehicles were studied by investigating the change in bridge fatigue life. Concrete bridges were not include in the long term impacts analysis, as they are relatively unaffected by fatigue. Steel bridges were grouped by span length, overall length and span configuration. Cost estimates were developed (in 2003 dollars) for two cost categories:

1) Periodic Maintenance - Costs are based on historic cost records and published references.

2) Major Rehabilitation - Based on accepted average costs

Because the fatigue analysis indicated that the normal life cycle of the structures would not be significantly affected, replacement costs were not estimated.

Periodic Maintenance Costs: The structure elements most affected by increasing or decreasing loadings on a bridge, are the bridge deck, deck joints, and scuppers. While the axel loads of the study vehicles are not significantly heavier than the standard "HS-20" design truck, their larger load will result in an accelerated deterioration of the deck elements.

Maintenance and rehabilitation costs are based on the length and width of the bridges. This information was supplied by the MDOT and supplemented when necessary from the National Bridge Inventory System (NBIS). *(Assumptions used in calculating maintenance costs can be found in Tech Memo 3B).* Cost impacts (increase or decrease) were calculated for each bridge depending on how the policy change under study would affect the structure. On bridges that no longer carry as much exempt weight traffic, maintenance costs decrease, on structures with more exempt weight vehicles maintenance costs increase. The maintenance costs were weighted for several ranges of truck volume change. A change of 5 or fewer trucks per day due to a change in policy was assumed to have little or no effect on the structures. For volume changes greater than 75 trucks per day, the full cost factor of 1 (-1) was used. The cost factor was reduced for volume changes between 5 and 75 in one third increments, i.e.; 5 to 35 trucks per day yielded a cost factor of 0.33 (-0.33) and 35 to 75 trucks per day yielded a cost factor of 0.67 (-0.67). The maintenance cost estimates by structure are presented in the table in **Exhibit 42**:

Exhibit 42: Maine Bridge Maintenance Cost Impacts

Primary Route	Bridge Name	Town Name	MAINTENANCE COST CATEGORY Deck Repair	Deck Joint	Scupper Repair
INT 295 NB	CNR CROSSING	Portland	$84,983	$8,498	$503
ST RTE 002	CONGRESS STREET	Portland	$0	$0	$0
INT 95 NB	FORE RIVER	Portland	$0	$0	$0
TURNPIKE	MEADER BROOK	Falmouth	$0	$0	$0
ST RTE 011	GILBERT SMALL	Windham	$0	$0	$0
TURNPIKE	COLLIER BROOK	Gray	($10,500)	($6,300)	($500)
TURNPIKE	FOREST LAKE BROOK	Gray	$0	$0	$0
TURNPIKE	PLEASANT RIVER	Gray	($10,500)	($6,300)	($500)
ST RTE 002	MIDDLE RANGE	Poland	($2,650)	($1,178)	($168)
ST RTE 012	RTE 122/OLD HOTEL RD	Auburn	$0	$0	$0
TURNPIKE	FOSTER BROOK	New Gloucester	$0	$0	$0
US 1	RT #1 UNDERPASS	Brunswick	$0	$0	$0
RD INV 101	PAUL DAVIS MEMORIAL	Bath	($26,577)	($3,457)	($503)
US 1	WEST APPROACH	Bath	($221,996)	($6,205)	($1,340)
ST RTE 014	CORBETT	Salem Twp	$0	$0	$0
US 2	WILD RIVER	Gilead	$17,107	$1,584	$330
US 2	PEABODY SCHOOL	Gilead	$1,767	$832	$83
ST RTE 003	CRYSTAL LAKE OUTLET	Harrison	$7,316	$2,251	$168
ST RTE 003	HORRS	Waterford	$9,472	$1,166	$168
US 2	PROSPECT AVE	Rumford	$3,926	$1,083	$83
ST RTE 010	MORSE	Rumford	$17,634	$495	$83
ST RTE 012	CNRR	Mechanic Falls	$0	$0	$0
ST RTE 001	MECHANIC FALLS	Mechanic Falls	$0	$0	$0
ST RTE 002	SAW MILL	Paris	$0	$0	$0
ST RTE 010	FROST	Rumford	$0	$0	$0
ST RTE 014	MILL POND	Salem Twp	$0	$0	$0
TURNPIKE	CITY FARM CULVERT	Lewiston	$0	$0	$0
US 202	JAMES B. LONGLEY MEM	Auburn	$0	$0	$0
ST RTE 001	PARSONS MILL	Auburn	$0	$0	$0
ST RTE 013	IRON	Auburn	$0	$0	$0
ST RTE 013	MAIN ST. BRIDGE	Auburn	$0	$0	$0
ST RTE 019	LOCUST ST BRIDGE	Lewiston	($8,437)	($758)	($83)
US 202	MAIN STREET	Lewiston	$0	$0	$0
US 202	JEPSON BROOK	Lewiston	$0	$0	$0
US 202	FAIRGROUNDS CROSS	Lewiston	$0	$0	$0
ST RTE 019	DILL	Lewiston	$0	$0	$0
TURNPIKE	NO NAME BROOK CULV	Lewiston	$0	$0	$0
TURNPIKE	NEWOEGIN CULVERT	Sabattus	$0	$0	$0
ST RTE 012	SABATTUS RIVER	Sabattus	$0	$0	$0
ST RTE 000	BRETTUNS POND	Livermore	$0	$0	$0
ST RTE 021	FOSS	Leeds	$11,385	$487	$83
ST RTE 0197			$0	$0	$0
TURNPIKE	POTTERS BROOK	Litchfield	$0	$0	$0
ST RTE 019	PLEASANT POND	Richmond	$0	$0	$0

Primary Route	Bridge Name	Town Name	MAINTENANCE COST Deck Repair	Deck Joint	Scupper Repair
ST RTE 019	BARKER BROOK	Richmond	$0	$0	$0
INT 95 Nort	VAUGHN STREAM	Hallowell	$0	$0	$0
ST RTE 000	NEW MILLS	Gardiner	($23,625)	($1,500)	($250)
US 201	BRIDGE STREET	Gardiner	($80,682)	($7,140)	($1,000)
US 201	WATER STREET	Hallowell	($13,950)	($900)	($250)
ST RTE 004	GRIST MILL	Mt Vernon	$0	$0	$0
ST RTE 004	VILLAGE	Vienna	$0	$0	$0
ST RTE 002	BELGRADE LAKES	Belgrade	$13,081	$1,434	$248
RD INV 102	WATER ST BR. UNDERP	Augusta	$0	$0	$0
US 201	AUGUSTA MEM BRIDGE	Augusta	($708,075)	($8,100)	($1,250)
RD INV 100	FATHER JOHN J CURRAN	Augusta	$0	$0	$0
US 2	HARDY BROOK	Farmington	$0	$0	$0
ST RTE 000	MILL POND	Farmington	$0	$0	$0
ST RTE 001	PROCTOR BROOK	New Portland	$0	$0	$0
US 2	MAIN STREET	Norridgewock	$0	$0	$0
US 201	COLLEGE AVE CROSSING	Waterville	($16,191)	($1,085)	($335)
US 201	WYMAN CROSSING UND	Fairfield	($27,884)	($1,869)	($335)
US 2 –South	MARGARET CHASE SMITH	Skowhegan	($45,179)	($2,979)	($335)
US 2 - North	MARGARET CHASE SMITH	Skowhegan	($38,737)	($2,348)	($168)
US 201	WOOLEN MILL	Skowhegan	($2,652)	($964)	($83)
US 201	MAIN ST BR.	Fairfield	($13,266)	($965)	($168)
ST RTE 001	CAIN	Clinton	($3,687)	($983)	($165)
ST RTE 015	PARKMAN RD / FERGUSON	Cambridge	($1,731)	($602)	($83)
US 2	MAIN STREET	Newport	($40,891)	($4,523)	($838)
ST RTE 000	CORINNA	Corinna	$0	$0	$0
ST RTE 000	GUILFORD MEMORIAL	Guilford	($17,325)	($1,188)	($165)
US 1	MAIN STREET	Camden	($5,977)	($2,049)	($165)
US 1	LINCOLNVILLE BEACH	Lincolnville	($1,282)	($733)	($83)
US 1	STOCKTON SPRINGS UND	Stockton Sprgs	($32,858)	($4,044)	($750)
US 202	WARD	Newburgh	$0	$0	$0
US 1A	TIN	Bangor	$0	$0	$0
INT 395 EB	MCRR/I-395	Brewer	$23,688	$1,512	$500
US 2	STATE ST.	Bangor	($17,237)	($2,132)	($165)
US 1A	JOSHUA CHAMBERLAIN	Bangor	($152,261)	($2,590)	($413)
ST RTE 000	PENOBSCOT BRIDGE	Bangor	($140,086)	($4,200)	($495)
US 2	RED	Bangor	($4,749)	($2,111)	($168)
US 1	MAIN STREET	Ellsworth	($57,710)	($7,305)	($1,000)
US 2	SMITH BROOK	Lincoln	$0	$0	$0
US 2A	JORDAN MILL	Macwahoc Plt	($9,867)	($1,548)	($168)
US 2A	MILL	Haynesville	$0	$0	$0
US 2A	HAYNESVILLE	Haynesville	($47,094)	($2,653)	($503)
US 1	STONEY BROOK	Baileyville	$0	$0	$0
US 1	B&ARR/US RTE 1 RR#208	Presque Isle	($3,695)	($374)	($83)
US 1	CLARK	Presque Isle	$0	$0	$0
RD INV 004	FARNHAM BROOK	Pittsfield	$0	$0	$0
			($1,596,988)	($69,741)	($10,260)

The maintenance costs presented in **Exhibit 42** were calculated based on a five year maintenance period. When annualized, extending the current federal weight exemption on the Maine Turnpike to all currently non-exempt Maine Interstates is expected to decrease annual maintenance expenditures $335,398 per year.

Major Rehabilitation Costs: The cost for major rehabilitation was based on the total square feet of the bridges analyzed. The type of treatments considered under the major rehabilitation costs would include deck replacement; including deck joint and drainage system replacement, approach slab replacement, repainting, structural repair of corrosion and deterioration, and safety improvements. A major rehabilitation project as described above would be necessary every 25 years on average. Increased wear and tear on the structures could reduce this interval by as much as 5 years. With a five year reduction in the rehabilitation interval, it may be necessary to perform major rehabilitation more than once in the structure's life. This would most likely be economically sound for longer structures that would have higher replacement costs. For purposes of this study, it is assumed that increasing truck weights would result in a second major rehabilitation project being performed on structures over 200 feet in total length. Only two structures, both in Maine fell into this category.

Route #	Town	Bridge Name	Rehabilitation Cost
U.S. 2	Gilead	Wild River	$228,096.00
Route 108	Rumford	Morse	$235,125.00
25 – Year Rehabilitation Cost Total			**$463,221.00**

The total estimated rehabilitation cost for these two structures was $463,221.00. Since the major rehabilitation costs were based on a 25 year horizon, the annualized cost for major rehabilitation on the two structures would be $18,528.84 per year.

The bridge analysis found that extending the federal weight exemption currently in place on the Maine Turnpike would result in annual bridge maintenance and rehabilitation savings of $316,869.00 per year.

Other Economic and Social Impacts

Impacts to Shippers and Carriers of Heavy Commodities

The consultant team also interviewed 15 companies in Maine that ship or haul heavy commodities, primarily timber, bulk liquids, stone and aggregates, garbage and heavy equipment. Phone interviews with these companies were conducted over two different periods during the course of the study. In addition to gaining information about preferred routes under various weight policy scenarios, the survey questionnaire also asked companies how they felt about the current federal weight policy on the Interstate System in Maine. The second round of interviews included some additional questions regarding truck equipment, driver pay and self-policing of loaded weight. These questions were added at the request of the study review panel.

Nearly all respondents (88%) indicated that the current weight limit exemption on the Maine Turnpike was either "essential" or "very important" to their businesses. Respondents believed that Interstate facilities are the safest roadways; these highways are away from population concentrations, the roads are multi-lane, well maintained, and enable overall less time on the roadway for the transportation of heavy or dangerous commodities. Sample comments from the interview process are listed below:

- *"The exemption is important for the cost effectiveness of the fleet as well as for the raw materials coming into our facility. Being able to carry 20,000 lbs more per load is critical for the business."* (Note: 20,000 lbs. of additional weight would apply only to 6 axle configurations).
- *"Safety is our biggest concern. The interstate, including the Maine and New Hampshire Turnpikes are the safest roads for heavy vehicle operations and petroleum transport."*

On the whole there was considerable consternation regarding the inability to legally use the non-exempt portions of I-95 in Maine. The primary reasoning from the respondents was that the interstates were built to carry heavier loads. Several mentioned that the system was originally designed as the national military network and therefore was also equipped to carry their heavy loads. A number of others interviewed could not understand the reasoning of forcing heavy vehicles onto state routes where they were required to go through population centers, deal with congestion and tourists, and in general, create increased opportunity for a major catastrophe whether it would be loss of life or contamination of a waterway/seashore. One respondent was convinced that it would take such a major event to begin the process of change.

Companies generally responded that the exemption on the Maine Turnpike saves time and money, observing that Interstate Highways are "built better." The general comment was that everyone wins; Interstates are better able to handle heavy loads and easier to maintain. Respondent believed that weight enforcement is easier as well, noting that weigh-in-motion stations can be used more effectively on exempt Interstate routes because they would be the routing of choice for all heavy haulers.

A smaller population of carriers was questioned about equipment. About 40 percent of the TST combinations operated by the companies had 5 axles. The remaining 60 percent were 6-axle combinations. About 90 percent of the 5-axle vehicles were eligible to haul 88,000 lbs. All of the six-axle TST combinations were eligible to haul up to 98,000 to 100,000 lbs. All but one of these trailers had a tridem axle. In addition, respondents reported that all but a very few of the tridem axle trailers were original equipment with the remaining few being retrofitted to the trailer at some point after the initial purchase. The companies reported having a range of suspension systems including; springs, air-ride and a combination of both.

When asked about six-axle TST equipment respondents were not aware of any complaints with the performance or operation of six-axle vehicles greater than 80,000 lbs GVW. In fact a number of the respondents said the six-axle vehicles had better braking capabilities, more stability, and generally had greater power for keeping up to speed in the traffic flow.

Nearly every company interviewed had some strategy to assure that their vehicle loads did not exceed legal weight limits. Petroleum product haulers all reported that they knew the weight of the product and the capacity (volume) of each of their vehicle configurations, which assures a legal limit. Like the petroleum product haulers, the cement and asphalt haulers interviewed also knew the amount of product their vehicles could carry and the associated weight. Stone and aggregate haulers reported that they had yard scales which they use to check loads. One dispatcher responsible for checking vehicle weights, said: *"The vehicles do not go out of the yard prior to weighing and assuring a legal load."* Some vehicles operated by a forest product hauler were equipped with on-board scales. (This was the only company with such equipment.) This company also paid drivers by the hour, so there is no advantage to overload. A petroleum products hauler noted that if a driver gets fined for carrying an overweight load, the driver must pay the fine. One company stated that they relied on driver experience, noting that there were a lot of available scales.

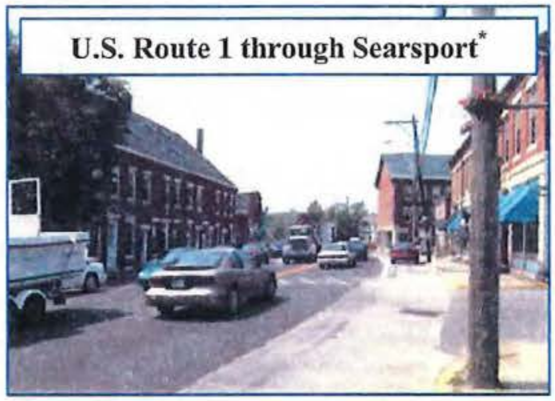
Driver wages varied depending on several factors: the type of vehicle, the experience of the driver, and the hours/days worked per week. Sample responses included the following:

- \$12 - \$20 per hour depending on the type of vehicle
- \$15 - \$20 per hour
- \$650 - \$850 per week for a good driver with either a 56 or 60 hour work week
- \$40,000 - \$50,000 per year with either a 56 or 60 hour work week
- \$27,000 - \$30,000 per year, 5 days per week – home every night
- \$14 per hour

Including all the responses produces an average wage of \$15 per hour wage.

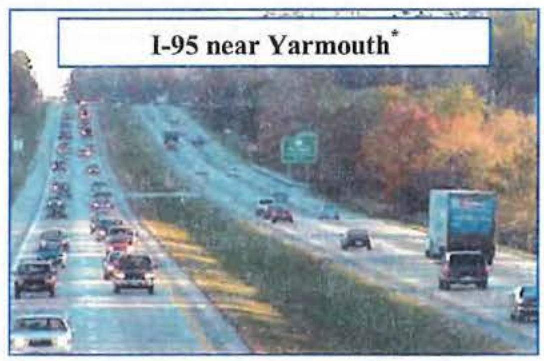
Impacts to Communities

Thirteen city officials from seven towns in Maine were also contacted for their opinions about the federal weight policy on the Interstate Highway System in Maine. Questions focused on three areas, impacts of large trucks in the community, complaints to the town or city about large trucks, and anecdotal information about truck crashes in the community.


U.S. Route 1 through Searsport*

The interviewee's concepts of impacts of the large trucks traveling on the town or city streets mirrored the complaints received from community members. The issues centered on safety, traffic congestion, air and noise pollution, road maintenance, economic consequence to business and disturbance of the pleasant village center ambience.

Overall, impacts of large trucks in these communities are considered very significant. In fact, without exception, every local official interviewed expressed strong personal and community support for allowing large, heavy trucks on the interstate system in Maine. One city manager said, "I don't know a single local official [in Maine] who wouldn't want big trucks on the interstate." Another said, "It is a poor policy to not have the big trucks on I-95."


I-95 near Yarmouth*

The police chiefs contacted indicated that bringing large trucks through downtowns created unnecessary safety hazards, especially if these trucks were transporting hazardous materials. Alternate routes like U.S. 1 are heavily used by tourists and often bring traffic through historic city centers.

Without exception, every local official interviewed expressed strong personal and community support for allowing large, heavy trucks on the Interstate System in Maine. A summary of the interviews conducted can be found in **Appendix B.**

* Photos courtesy of PACTS

Related Studies
There have been a number of recent studies, examining the implications of changing truck size and weight policy at a state or national level, including the TEA-21 mandated studies in Colorado and Louisiana. Two prominent examinations of U.S. truck size and weight policy were also conducted, one by the U.S. Department of Transportation (USDOT), and the other by the Transportation Research Board (TRB). Here is a brief summary of these study findings.

Regulation of Weights, Lengths, and Widths of Commercial Motor Vehicles – TRB Special Report 267, (2002):[***] Also requested by Congress in TEA-21. This committee report is based primarily on the review of previous studies and the opinions of an expert panel:

- The study's first recommendation concludes: "***Opportunities exist for improving the efficiency of the highway system through reform of federal truck size and weight regulations.*** *Such reform may entail allowing larger trucks to operate. Present federal standards are for the most part the outcome of a series of historical accidents instead of a clear definition of objectives and analysis of alternatives. The regulations are poorly suited to the demands of international commerce....The greatest deficiency of the present environment may be that it discourages private- and public-sector innovation aimed at improving highway efficiency and reducing the costs of truck traffic...*"
- On the topic of size and weight as it relates to safety: "*The committee found that previous studies tend to correlate increases with truck size and weight to reductions in vehicle miles of travel (VMT), lowering the inherent risk due to exposure and hence reduce the overall potential for truck crashes.*
- On pavement wear related to TS&W, the panel concluded: "*If axle weights are not altered, pavement cost per ton-mile of freight will be little affected by a change in the gross vehicle weight limits.*
- On bridges: "*Bridge cost estimates derived by the method of past studies assume replacement of bridges regardless of whether the cost of replacement is justified by the gain in safety and do not fully take into account the capabilities of highway agencies to maintain bridge safety by more cost-effective means than replacing all suspect bridges...*"

The Comprehensive Truck Size and Weight Study (CTSWS)**,** FHWA (2000)[†††] was undertaken to develop a policy architecture that would allow state and regional practitioners to analyze changes in truck size and weight at a sub-national level. Among the key findings of that study:

- "There are…several key trends that are evident relative to truck safety in general and size and weight policy choices in particular. First, numerous analyses of crash data bases have noted that truck travel, as well as all vehicle travel, on lower standard roads (that is, undivided, higher speed limit roads with many intersections and entrances) significantly increases crash risks compared to travel on Interstate and other high quality roadways. **The majority of fatal crashes involving trucks occur on highways with lower standards…. The [fatal crash] involvement rate on rural Interstate highways is 300 percent to 400 percent lower than it is on other rural roadway types and is generally the same for all vehicle types.**"
- The pavement Load Equivalency Factors presented in the report indicated that while a single six-axle TST vehicle operating at 97,000 lbs. is slightly more damaging to flexible pavements, when the

[***] Transportation Research Board, National Research Council; *Regulation of Weights, Lengths, and Widths of Commercial Motor Vehicles;* Special Report 267, National Academy Press, Washington D.C. 2002. pp. 2-39 to 2-45.
[†††] available online at www.fhwa.dot.gov/policy/otps/truck/

reduction in trips to move a given quantity of freight is factored in, the heavier vehicle actually produces less damage for both rigid and flexible pavements. The report concluded that the use of a 97,000 lb. six-axle TST in favor of five-axle, 80,000 lb. TST would result in nationwide VMT reduction of approximately 10% and pavement cost savings. The study indicated that heavier trucks would increase highway agency and user costs associated with bridge replacement and maintenance.

EFFECT OF TRUCK WEIGHT ON BRIDGE NETWORK COSTS: The National Cooperative Highway Research Program (Project 12-51) – TRB (Draft Final Report, December 2002):

- *The current AASHTO fatigue truck model developed over a decade ago is found still valid for current truck traffic, based on the current WIM data used.*
- *The current AASHTO fatigue truck model may still be valid for a scenario of legalizing higher truck weights if thereby introduced new dominant truck configurations are not significantly different from the currently dominant 3S2 configurations.*
- *Truck wheel loads are important to RC deck fatigue. More research efforts are needed to understand and model their magnitude and effects in the field. One of the factors needing investigation is the interactive effect of steel reinforcement corrosion and wheel load induced concrete fatigue.*

State weight exemption studies mandated by TEA-21:

Preliminary Assessment of Pavement Damage Due to Heavier Loads on Louisiana Highways, LTRC, May 1999. Ref. No. FHWA/LA-98/321.:

- ***"Comparisons of NPW between the weight scenarios showed that increases in GVW have more effect on Louisiana state and US highways than on Interstate highways.*** *Any elevation in GVW over current limits increases the cost of overlays and decreases the length of time before an overlay is required. The cost increase due to raising the GVW is substantial. Fee structures need to be modified by the state legislature to pay for these costs through the current registration and overweight permit fee structure or some new tax such as a ton-mile tax."*[5]

Non-divisible Load Study, Colorado DOT, June 2001:

- *"The law change has been beneficial to the Colorado taxpayers. There is an increase in property, sales and income taxes from this industry. However, the highway trust fund suffers a negative impact due to less fuel taxes. Jobs are created in Colorado, and other businesses benefit form lower costs due to increase competition in building choices."*

- *"Negative impacts are minor. There is an increase in load on bridge structures. However due to axle load limitations still in place on the permits, and the fact that the loads are generally carried on major routes, there are no significant problems. There are negative impacts to the pavements of Colorado highways due to the increased weights of the loads. There is anywhere from a 5% to 20% increase in pavement damage due to increased loads. However, since the bulk of the routes traveled are designed to carry heavy loads, the VMT are small, for this industry only, the impacts are not significant."*[6]

Public Comments to the Draft Report

During February 2004, MDOT placed the draft report and executive summary on its web site. MDOT issued a press release announcing the availability of the draft study report, and to provide notice that a public meeting to hear comments on the draft would be held on March 5th.

Public Meeting Response

Twenty-two people representing Maine towns and cities, industry and the general public signed in at the public meeting held at MDOT headquarters in Augusta on March 5th. After a 45 minute presentation summarizing the study results, attendees were invited to comment. All comments were recorded for the public record, and a more extensive summary of all public comments are presented in **Appendix E.** Of the eleven people commenting for the record at the public meeting, all spoke in support of the study findings, and further expressed support for extending the weight exemption on the Maine Turnpike to all Interstate highways in Maine. Comments were provided by city officials from Augusta, Bangor, Brewer, Freeport and Houlton. The primary points made by public officials included:

- City engineers commented that pavement costs for secondary roads may be understated. They pointed out that the study did not include local investments and that overall the level of public investments in secondary roads has been inadequate over the past decade or more. As a result secondary roads have continued to deteriorate over time. Using required investment as opposed to historical investment would likely produce greater benefits from an Interstate exempt policy
- While heavy truck transport is important to Maine's ability to support NAFTA trade, tourism is also very important. Many towns on the secondary road system are tourist destinations and public officials indicated having heavy trucks traveling through downtown areas is unnecessary.
- Several city officials indicated that they would have preferred to have the study address emissions, especially the impact of trucking idling in downtown areas.

Industry comments were provided by P.R. Russell Inc., Superior Carriers Inc. and Maine Motor Transport Association. Among the points made by industry members:

- Industry representatives reiterated the safety hazards of having to travel through downtown centers on the secondary road system.
- Comments also indicated that higher gross weight limits would reduce overall truck traffic, indicating that a 100,000 lb. truck can haul the same amount in three trips, as an 80,000 lb. truck hauls in four trips.

Sue Gilbert a homeowner along U.S. Highway 3, and parent of a school age child expressed her concerns about safety, and in particular the hazards presented to school buses:

- Ms. Gilbert indicated that she would like to see the study expanded to use additional crash data.
- She indicated that on a recent morning while waiting for the bus with her child, a truck came over the crest of a hill on U.S. 3 while the bus was stopped and loading. The truck driver applied his brakes, but was unable to stop in time and had to swerve around the bus on the shoulder. During the next two hours she counted 32 trucks pass by her house on U.S. Highway 3.

Written Comments from the Public

In addition to the comments about the study received during the public meeting, MDOT also received 39 written comments by mail or email. Of these comments, 24 opposed increasing weight limits on the Interstate system in Maine, 14 favored increasing the weight limit on Maine Interstates, and one expressed no opinion about the weight policy, but posed several questions about the study conclusions.

Letters supporting the Interstate weight exemption policy nearly all cited safety and noise concerns resulting from heavy trucks using the secondary road system.

Several comments opposing the Interstate exemption believed that all highways in Maine should be restricted to 80,000 lbs. One respondent suggested lowering the weight limit on state highways if an exemption were extended to Interstate highways. Several other respondents opposed raising the Interstate weight limit arguing that the exemption would increase diesel fuel consumption and harmful emissions. Of the 24 respondents opposing the policy to increase weight limits on the Interstate system in Maine, 16 provided comments through the use of a form letter containing the following language:

"I have just been made aware of the Maine DOT's study on truck traffic on I-95. This report recommends increasing truck weights to 100,000 pounds on the balance of I-95. I oppose this for the following reasons:

- *100,000 pound trucks are more dangerous.*
- *100,000 pound trucks will still be operating on state highways, this is not going to solve Maine's problems of truck traffic on local roads.*
- *This is just another attempt to slowly ratchet up the truck weights to the even more dangerous Canadian weights of 110,000 pounds to support the NAFTA trade agreement.*

I am opposed to efforts to expand the number of roads that allow more dangerous heavier trucks."

In response to some of the comments received, MDOT posted a letter on its web site. A portion of that letter appears below. The full text of the letter is include in Appendix E.

> *"Some commenters suggested reduction of Maine State truck-weight limits as a proposed solution. This would aggravate rather than reduce the safety problem with heavier trucks. It would require up to 25% more vehicles to carry the same payload, resulting in more heavy vehicle exposure on our highways and intersections, thereby increasing the risk of truck-involved crashes. These extra vehicles will increase air pollutants and their adverse health affects. Economically, weight limit reductions would increase Maine transportation costs, a cost which would ultimately be paid by Maine consumers. Maine's economy would also be disadvantaged relative to other states, which allow higher truck weights."*[7]

Issues for Future Consideration

During the conduct of this study, several issues were discovered related to truck size and weight policy in Maine that merit additional investigation:

- The detailed analysis of WIM data indicate that some roadways experience significant populations of 5 and 6-axle vehicles exceeding legal weight limits. This study did not contemplate the infrastructure costs associated with illegal loads. However, the relationship between axle loads and pavement wear suggest that excessive axle weight contributes significantly to public infrastructure costs. As a result, future considerations of GVW policy in Maine should examine enforcement and permitting practices that discourage illegal loads.

- While the population of carriers interviewed was small, some companies reported using retrofitted trailers and walking-spring suspensions. Research on the interaction of commercial vehicles and pavements suggest that truck properties, such as number and location of axles, suspension type, and tire type, are important factors that influence the degree and magnitude of pavement wear. In addition, the US DOT's Comprehensive Truck Size and Weight Study found the performance of 6-axle TST combinations superior to the 5-axle TST in terms of stability and braking capacity.[‡‡‡] While these factors were beyond the scope of the current study, extending Maine's current weight limits should consider quid pro quo options that would sunset outdated equipment and provide greater control over the types of equipment used for high weight loads. One option that might be considered is a permit system that would provide incrementally higher weight limits to equipment that has proven to provide better handling and incur less damage to road infrastructure. Examples of equipment options that could be considered under such a permit system are:
  - 6 axle TST combinations, with fixed axles (no lift axles) and air-ride suspension
  - On board scales capable of providing individual or axle group loadings
  - Load axles equipped with dual tires (no super singles)
  - Permit issuance could be made conditional upon receiving (and maintaining) a satisfactory" safety rating from a Compliance Review within the past year.
  - Other advanced vehicle technologies such as collision avoidance sensors or on-board recorders for hours of service could also be contemplated.

[‡‡‡] *Comprehensive Truck Size and Weight Study: Vol. III Scenario Analysis*, USDOT, August 2000., pp. VIII-12.

Study Conclusions

The analysis assumes that extending the current federal truck weight exemption on the Maine Turnpike to currently non-exempt Interstate Highways in Maine would divert five and six axle TST combinations over 80,000 lbs. from the Turnpike and non-Interstate highways. **Exhibit 43** summarizes the economic impacts that would result from extending the current federal weight exemption on the Maine Turnpike to currently non-exemption portions of the Maine Interstate System.

Exhibit 43: Impacts of Exempting Currently Non-Exempt Maine Interstate Highways

Safety Economic Impacts	$356,000
Pavement (Low)	$1,001,866
Pavement (High)	$1,651,189
Bridge	$316,869
Annual Savings - Low	**$1,674,735**
Annual Savings - High	**$2,324,058**

The economic impact in Maine that would result from extending an exemption from federal GVW limits to currently non-exempt Interstate Highways in Maine is estimated to be annual cost savings of between $1.7 and $2.3 million. Extending a federal weight exemption to currently non-exempt Maine Instate Highways is projected to increase highway safety, reduce pavement and bridge maintenance, increase private sector transportation efficiency and produce societal benefits. The societal benefits for towns and cities in Maine will come largely in the form of reduced traffic congestion, as well as less noise and air pollution.

End Notes:

[1] *A Heavy Haul Network for the State of Maine – HHTN Identification and Needs Assessment* – Final Report. Wilbur Smith Associates, November 26, 2001

[2] *A Heavy Haul Network for the State of Maine – HHTN Identification and Needs Assessment* – Final Report. Wilbur Smith Associates, November 26, 2001

[3] Federal Motor Carrier Safety Administration (FMCSA); Analysis Division: *Large Truck Crash Facts 2001*, January 2003.

[4] *Comprehensive Truck Size and Weight Study: Vol. III Scenario Analysis*, USDOT, August 2000. pp. VIII-3.

[5] Roberts, Freddy L., and Djakfar, Ludfi:. " Preliminary Assessment of Pavement Damage Due to Heavier Loads on Louisiana Highways" Louisiana Transportation Research Center, May 1999. pp. iii.

[6] TMS Consultants, LLC; LONCO INC.; Hook Engineering; Dr. George Hearn: Non-Divisible Load Study, Colorado DOT, May 2001. Executive Summary, online at: http://www.tmsconsultants.com/NondivLoadStudy.htm

[7] MaineDOT Response to Comments on Draft "Study of Impacts caused by Exempting Currently Non-Exempt Maine Interstate Highways from Federal Truck weight Limits." http://www.maine.gov/mdot/freight/

Study of Impacts Caused by Exempting Currently Non-exempt Maine Interstate Highways from Federal Truck Weight Limits

Appendix A: Weigh-in-Motion (WIM) Station Data Details

Weigh-in-Motion Station (WIMS) data

For this study, data was extracted from ten Weigh-in–Motion stations (WIMS) in Maine. WIM stations record a variety of statistics for each vehicle passing over sensors imbedded in the pavement, including:

- Number of axles
- Gross vehicle weight (GVW)
- A calculation of equivalent standard axle load (ESAL P2.5, SN5)
- Vehicle speed

The WIM stations in Maine were first installed early in 2001. For this analysis records for every vehicle with 5 or more axles were extracted. The time period of the records is from the beginning of station operation through the end of October 2002. The total number of records exceeds 8 million.

All WIM station records for vehicles with 5 or more axles were imported into an ACCESS database and the most recent complete year of data was extracted for each station. A full year of representative data was available for each station, with the exception of one Maine non-turnpike station, where the dataset fell only a few days short of a full year. This data was then 'filtered' to capture only 5 axle and 6 axle 'combination' tractor-semi-trailer (TST) trucks (class 9 for 5 axle, class 10 for 6 axle). Average annual daily values were then derived from the annual data sets.

The Exhibits on the following pages contain:

- A summary of Average Daily Traffic (ADT) at the WIM stations (**Exhibit A-1 and A-2**).
- Graphics (**Exhibits A-3** through **A-14**) showing vehicle counts and resulting ESALs for the turnpike WIM stations; first by total counts for all 5 and 6 axle combination trucks passing the station, then by direction, then by number of axles.
- Detailed statistics for each station (**Exhibits A-15** through **A-24**); the introduction to this detail section contains explanations of the data organization, which also applies to the graphs and summary table.

In all cases, the primary organization of the data is by loaded GVW category:

- *below exempt wt* – loaded GVW below exempt weights;
- *exempt weights* – 5 axle with loaded GVW between 80,000 and 88,001 lbs., or 6 axle with loaded GVW between 80,000 and 100,001 lbs.;
- *above exempt wt* – loaded GVW above exempt weights.

To assist visual comparison, the graphics show the proportion of vehicles **at exempt weights** at the bottom of the bars, then vehicles **over exempt weights**, and finally vehicles **under exempt weights** at the top of the bars. All tables list weight categories in their natural order: first vehicles under exempt weights, then exempt, then over exempt.

The stations have been broken into three regional groups to assist comparison:

1. Stations on the Turnpike or I-95

Two of the four stations included in this discussion are on Turnpike segments of I-95 where federal weight limits apply (South ME Turnpike and Central ME Turnpike). And one station is located on I-95 The vehicle weights have been broken into the same weight categories as all other stations, even though at these two stations the weights categorized as 'exempt' would be overweight by federal weight limits, if not specially permitted as an overweight non-divisible load.

The WIM stations located on Turnpike segments of I-95 have the highest traffic volumes (**see Exhibit A-3**) and the ESAL estimates for trucks falling in the federal weight exempt category account for about one-half of the total ESAL estimate.

2. North and East Maine Stations

These three WIM stations are located on US Highways located to the north or east of I-95. All three stations record high ESAL estimates with strong directional flow, however the direction or primarily flow varies by station.

3. West and South Maine Stations

These three stations are located on state highways that connect to I-95 or the Turnpike. A high percentage of ESAL estimates at these stations result from commercial vehicle passes exceeding 80,000 pounds GVW. Two of these stations recorded highly directional flows from vehicles migrating toward the I-95 or the Turnpike. .

On the following pages, Groups 1 graphs and tables are entitled "Turnpike & I-95 WIM Stations". Groups 2 and 3 are amalgamated into a single set of graphs and tables, entitled "Non-Turnpike/I-95 WIM Stations."

Observations and Assumptions from WIM Data:

1. The detailed data shown in the table exhibits indicate that significant proportions of the vehicles weighing over 80,000 GVW are 5 axle trucks.

2. It is assumed that vehicles recording GVW in excess of 100,000 are traveling on special permits and would continue on these same routes even if general weight laws changed.

3. In all cases, the direction and volumes of flows at specific points (the WIMS stations) can only be interpolated to impacts at other points in the network by matching these flows to overall commodity flows and their ultimate origins and destinations. This will be the next step for this analysis.

Exhibit A-1: Summary of Turnpike & I-95 WIM Station Average Daily Traffic

Average Annual Daily Traffic - by Direction

	STATION	direction	VEHICLE AADT below exempt	VEHICLE AADT EXEMPT	VEHICLE AADT over exempt	VEHICLE AADT total	ESAL AADT below exempt	ESAL AADT EXEMPT	ESAL AADT over exempt	ESAL AADT total	MILLION LBS AADT below exempt	MILLION LBS AADT EXEMPT	MILLION LBS AADT over exempt	MILLION LBS AADT total
Turnpike	Central ME Turnpike	north	627	**145**	135	**907**	322	**454**	732	**1,509**	28.4	**12.8**	14.1	**55.4**
Turnpike	Central ME Turnpike	south	729	**192**	73	**994**	631	**562**	352	**1,545**	38.6	**16.8**	7.5	**62.8**
Turnpike	South ME Turnpike	north	1,696	**101**	24	**1,820**	1,005	**296**	129	**1,430**	81.0	**8.9**	2.4	**92.4**
Turnpike	South ME Turnpike	south	1,365	**465**	143	**1,974**	1,061	**1,414**	735	**3,211**	71.9	**39.2**	14.5	**125.6**
I-95	Central ME Interstate	north	704	**82**	49	**836**	427	**253**	252	**932**	34.6	**6.9**	4.7	**46.2**
I-95	Central ME Interstate	south	566	**132**	69	**766**	421	**413**	346	**1,180**	29.2	**11.1**	6.5	**46.8**
I-95	North ME Interstate	north	330	**27**	11	**368**	232	**73**	48	**354**	16.7	**2.2**	1.0	**19.9**
I-95	North ME Interstate	south	355	**24**	44	**424**	373	**74**	239	**686**	20.8	**2.1**	4.2	**27.1**

Average Annual Daily Traffic - ALL Directions

	STATION	direction	VEHICLE AADT below exempt	VEHICLE AADT EXEMPT	VEHICLE AADT over exempt	VEHICLE AADT total	ESAL AADT below exempt	ESAL AADT EXEMPT	ESAL AADT over exempt	ESAL AADT total	MILLION LBS AADT below exempt	MILLION LBS AADT EXEMPT	MILLION LBS AADT over exempt	MILLION LBS AADT total
Tpk	Central ME Turnpike	ALL	1,356	**337**	208	**1,901**	953	**1,016**	1,084	**3,053**	67.0	**29.6**	21.6	**118.3**
Tpk	South ME Turnpike	ALL	3,061	**566**	167	**3,794**	2,066	**1,711**	864	**4,641**	152.9	**48.1**	17.0	**218.0**
I-95	Central ME Interstate	ALL	1,270	**214**	118	**1,602**	848	**666**	598	**2,111**	63.8	**18.0**	11.2	**93.0**
I-95	North ME Interstate	ALL	686	**51**	55	**791**	605	**147**	287	**1,039**	37.4	**4.3**	5.2	**47.0**

percent of station total (ALL directions)

	STATION	direction	VEHICLE AADT below exempt	VEHICLE AADT EXEMPT	VEHICLE AADT over exempt	ESAL AADT below exempt	ESAL AADT EXEMPT	ESAL AADT over exempt	MILLION LBS AADT below exempt	MILLION LBS AADT EXEMPT	MILLION LBS AADT over exempt
Tpk	Central ME Turnpike	ALL	71.3%	**17.7%**	10.9%	31.2%	**33.3%**	35.5%	56.7%	**25.1%**	18.3%
Tpk	South ME Turnpike	ALL	80.7%	**14.9%**	4.4%	44.5%	**36.9%**	18.6%	70.1%	**22.1%**	7.8%
I-95	Central ME Interstate	ALL	79.3%	**13.3%**	7.4%	40.2%	**31.5%**	28.3%	68.5%	**19.4%**	12.1%
I-95	North ME Interstate	ALL	86.7%	**6.4%**	6.9%	58.3%	**14.2%**	27.6%	79.6%	**9.2%**	11.2%

Exhibit A-2: Summary of Non-Turnpike/I-95 WIM Station Average Daily Traffic

Average Annual Daily Traffic - by Direction

	STATION	direction	VEHICLE AADT below exempt	VEHICLE AADT EXEMPT	VEHICLE AADT over exempt	VEHICLE AADT total	ESAL AADT below exempt	ESAL AADT EXEMPT	ESAL AADT over exempt	ESAL AADT total	MILLION LBS AADT below exempt	MILLION LBS AADT EXEMPT	MILLION LBS AADT over exempt	MILLION LBS AADT total
north & east	North ME State	north	71	**27**	44	**142**	15	**86**	271	**371**	2.6	**2.5**	4.8	**10.0**
north & east	North ME State	south	94	**22**	18	**133**	42	**67**	92	**201**	4.2	**2.0**	1.9	**8.1**
north & east	North ME US Rte.	north	179	**21**	10	**209**	72	**65**	51	**189**	7.6	**1.9**	1.0	**10.5**
north & east	North ME US Rte.	south	128	**40**	35	**203**	117	**126**	188	**430**	6.8	**3.5**	3.5	**13.8**
north & east	Eastern ME State	east	136	**24**	18	**177**	76	**70**	103	**249**	6.3	**2.1**	1.9	**10.3**
north & east	Eastern ME State	west	161	**57**	18	**236**	192	**165**	91	**449**	9.8	**5.0**	1.9	**16.7**
central & west	West ME US Rte.	east	72	**65**	45	**182**	46	**192**	262	**500**	3.6	**6.0**	4.9	**14.5**
central & west	West ME US Rte.	west	159	**13**	7	**178**	51	**37**	37	**125**	6.7	**1.1**	0.7	**8.5**
central & west	NW ME US Rte	north	133	**17**	8	**159**	41	**54**	44	**139**	5.2	**1.6**	0.9	**7.6**
central & west	NW ME US Rte	south	43	**59**	60	**162**	42	**179**	314	**535**	2.3	**5.5**	6.4	**14.2**
central & west	Central ME State	east	69	**21**	19	**110**	30	**67**	129	**226**	3.0	**1.9**	2.1	**7.0**
central & west	Central ME State	west	67	**42**	18	**127**	40	**115**	112	**267**	3.2	**3.8**	2.0	**8.9**

Average Annual Daily Traffic - ALL Directions

	STATION	direction	VEHICLE AADT below exempt	VEHICLE AADT EXEMPT	VEHICLE AADT over exempt	VEHICLE AADT total	ESAL AADT below exempt	ESAL AADT EXEMPT	ESAL AADT over exempt	ESAL AADT total	MILLION LBS AADT below exempt	MILLION LBS AADT EXEMPT	MILLION LBS AADT over exempt	MILLION LBS AADT total
N & E	North ME State	ALL	165	**49**	62	**275**	57	**152**	363	**572**	6.8	**4.5**	6.7	**18.1**
N & E	North ME US Rte.	ALL	307	**61**	45	**413**	189	**191**	239	**619**	14.4	**5.3**	4.5	**24.2**
N & E	Eastern ME State	ALL	297	**80**	36	**414**	268	**236**	195	**698**	16.1	**7.1**	3.8	**27.0**
C & W	West ME US Rte.	ALL	231	**78**	52	**360**	97	**229**	299	**625**	10.3	**7.1**	5.6	**22.9**
C & W	NW ME US Rte	ALL	176	**76**	69	**320**	83	**232**	359	**674**	7.5	**7.0**	7.3	**21.8**
C & W	Central ME State	ALL	136	**63**	38	**237**	70	**182**	241	**493**	6.1	**5.7**	4.1	**15.9**

percent of station total (ALL directions)

	STATION	direction	VEHICLE AADT below exempt	VEHICLE AADT EXEMPT	VEHICLE AADT over exempt	ESAL AADT below exempt	ESAL AADT EXEMPT	ESAL AADT over exempt	MILLION LBS AADT below exempt	MILLION LBS AADT EXEMPT	MILLION LBS AADT over exempt
N & E	North ME State	ALL	60.0%	**17.6%**	22.4%	10.0%	**26.6%**	63.4%	37.8%	**25.0%**	37.2%
N & E	North ME US Rte.	ALL	74.3%	**14.9%**	10.8%	30.5%	**30.8%**	38.6%	59.4%	**22.1%**	18.6%
N & E	Eastern ME State	ALL	71.8%	**19.4%**	8.7%	38.3%	**33.8%**	27.9%	59.7%	**26.3%**	14.0%
C & W	West ME US Rte.	ALL	64.0%	**21.6%**	14.3%	15.5%	**36.6%**	47.9%	44.8%	**30.9%**	24.3%
C & W	NW ME US Rte	ALL	54.8%	**23.8%**	21.4%	12.3%	**34.5%**	53.2%	34.3%	**32.2%**	33.4%
C & W	Central ME State	ALL	57.4%	**26.7%**	15.9%	14.3%	**36.9%**	48.8%	38.4%	**36.0%**	25.6%

Exhibit A-3: Turnpike/I-95 WIM Stations – Total ADTT

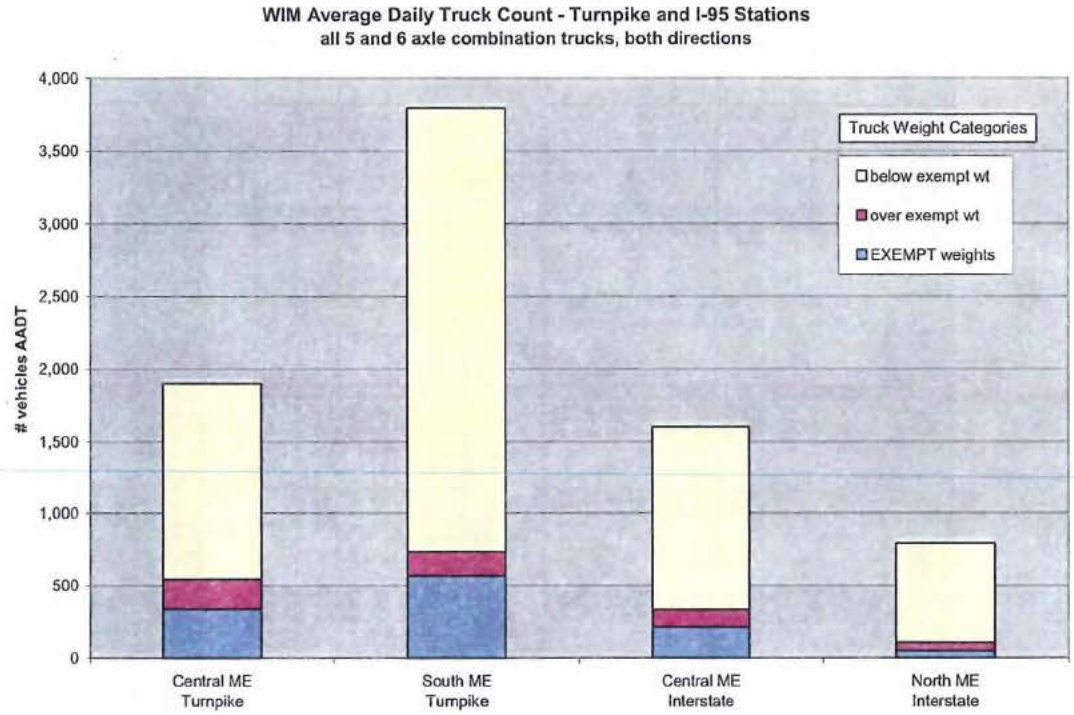


Exhibit A-4: Turnpike/I-95 WIM Stations – Total Avg. Daily ESALs

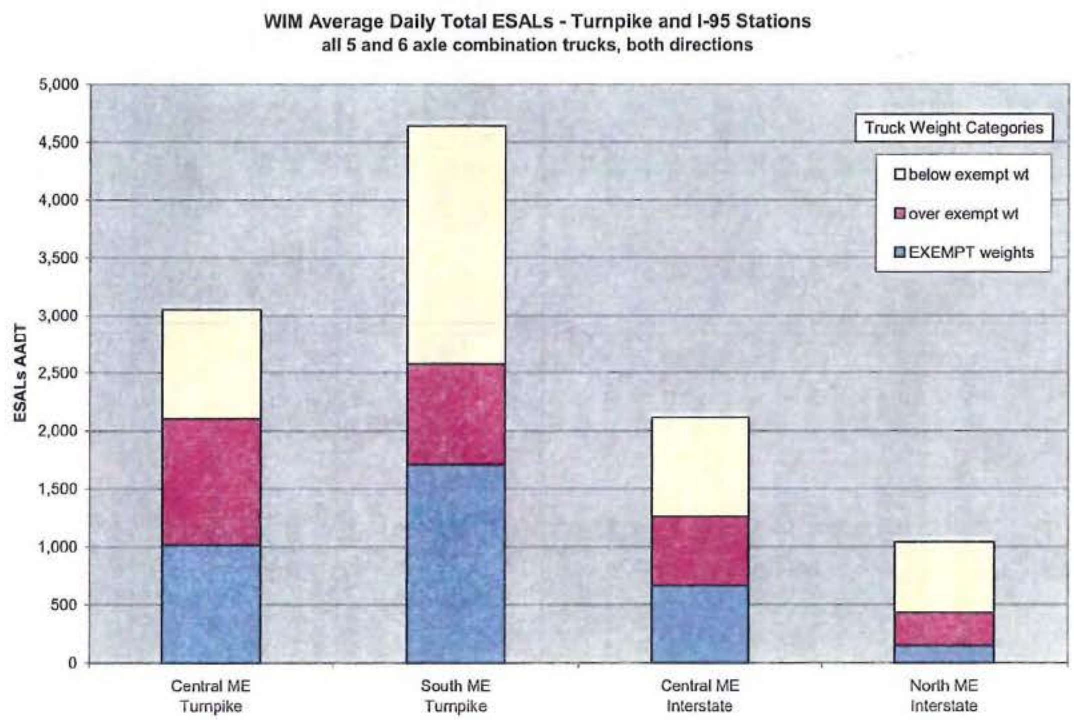
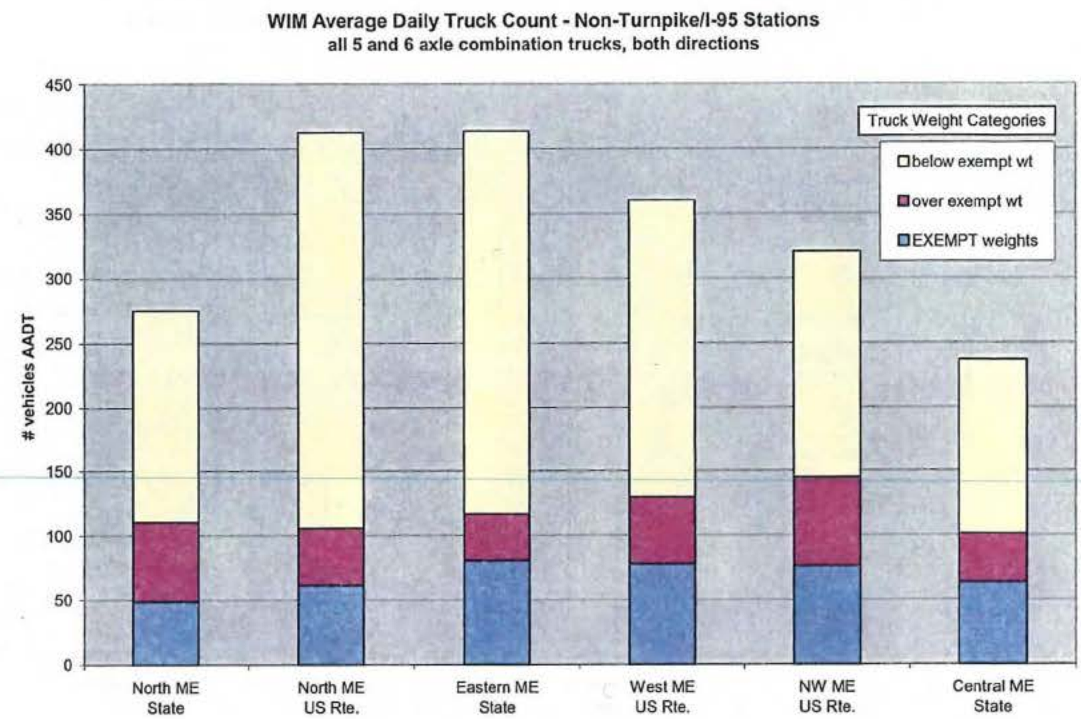


Exhibit A-5: Non-Turnpike/I-95 WIM Stations – Total ADTT



Note: Scale differs from previous page

Exhibit A-6: Non-Turnpike/I-95 WIM Stations – Total Avg. Daily ESALs

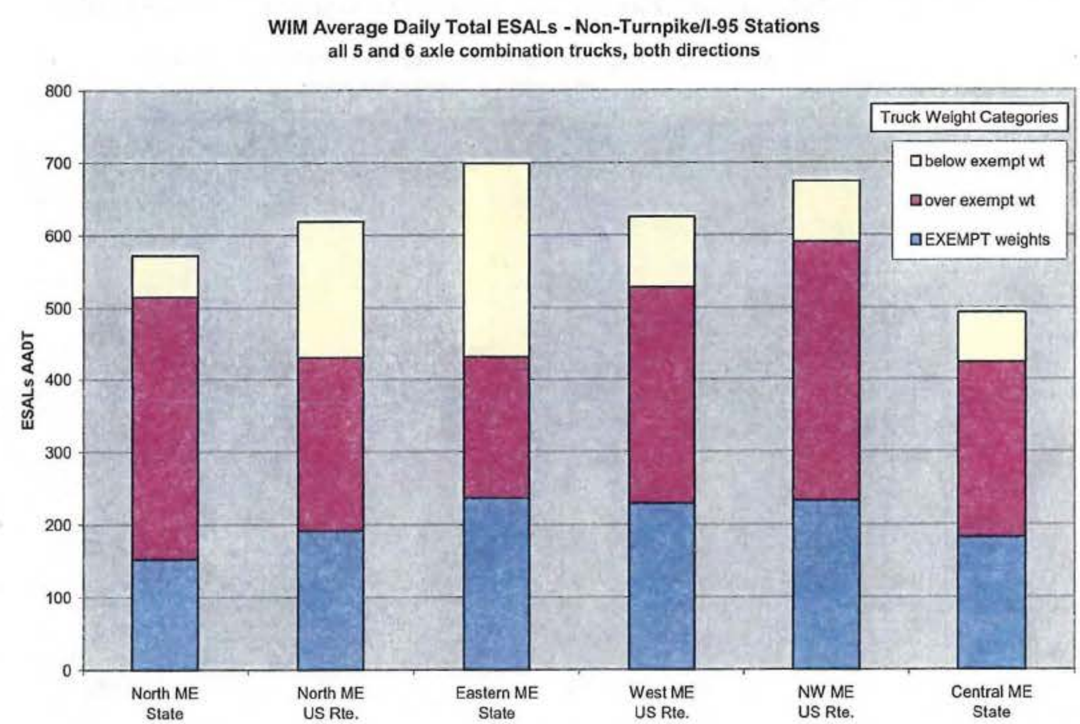


Exhibit A-7: Turnpike & I-95 WIM Stations – ADTT by direction

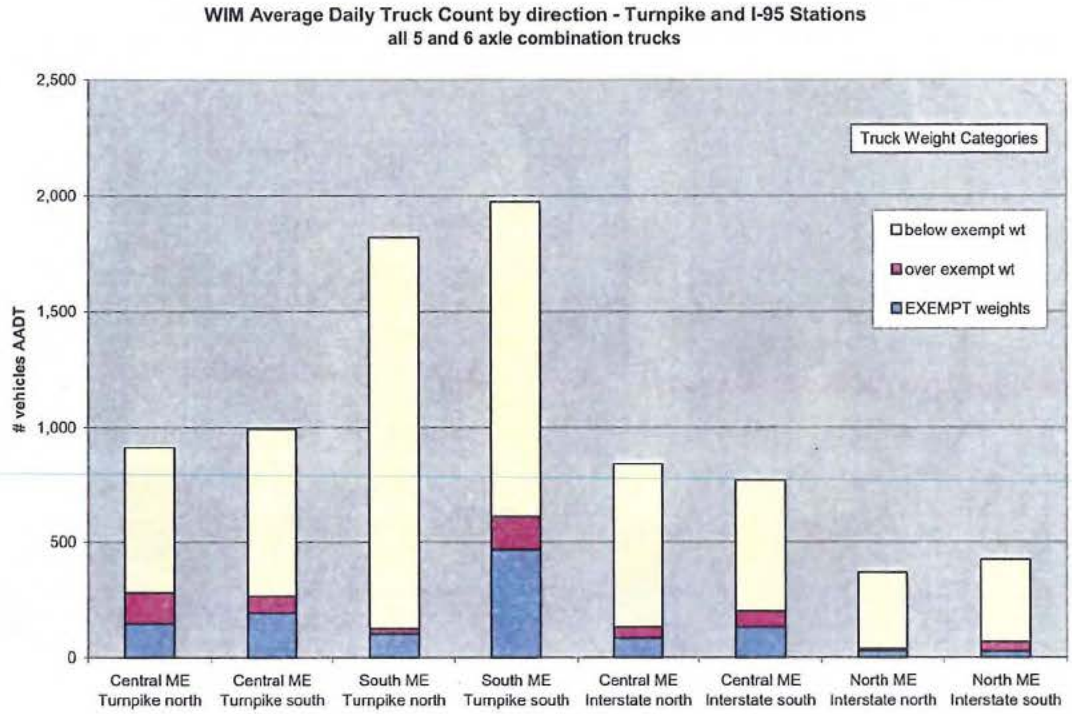


Exhibit A-8: Turnpike & I-95 WIM Stations - ESALs by direction

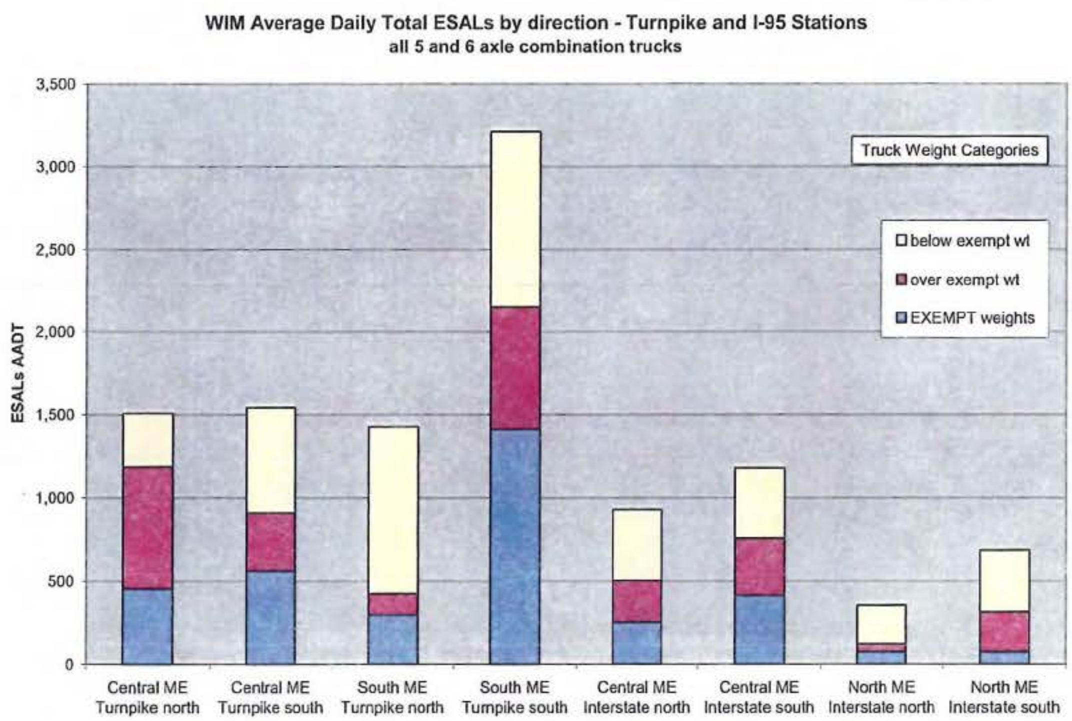
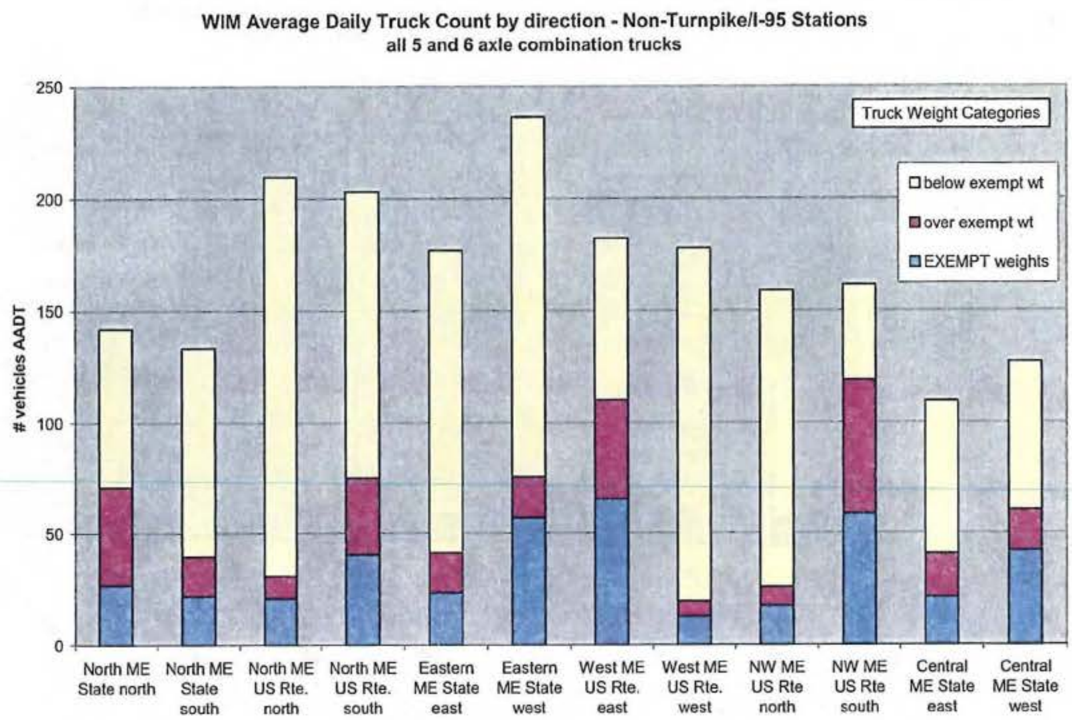


Exhibit A-9: Non-Turnpike/I-95 WIM Stations – ADTT by direction



Note: Scale differs from previous page

Exhibit A-10: Non-Turnpike/I-95 WIM Stations – ESALs by direction

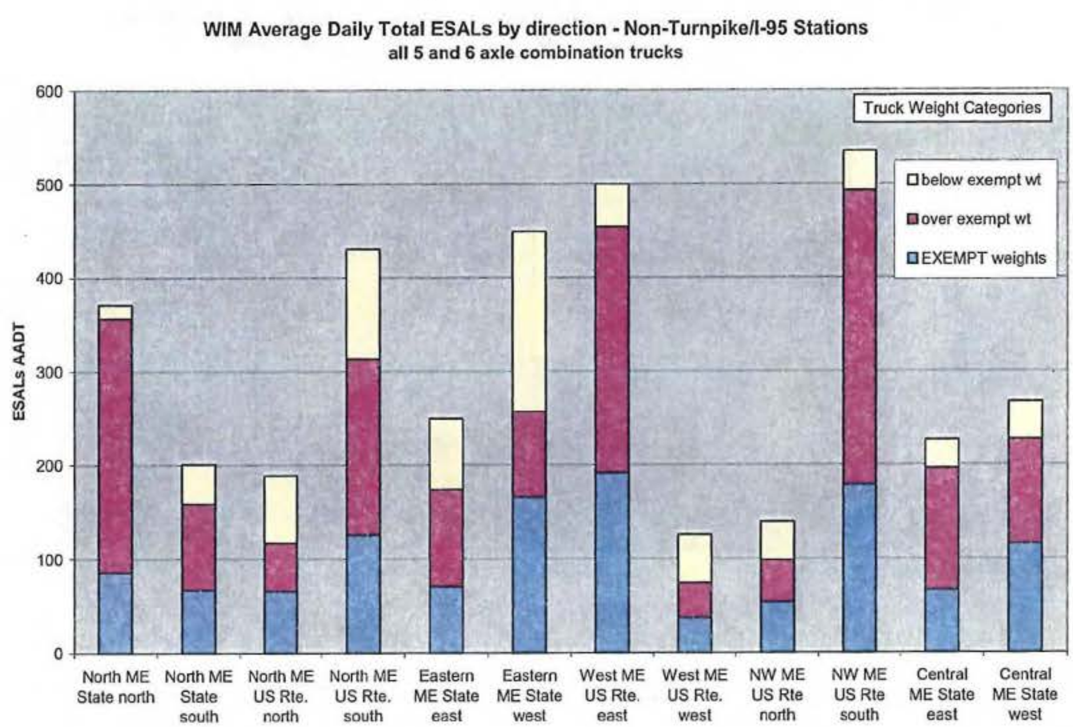


Exhibit A-11: Turnpike/I-95 WIM Stations – AADT by # of Axles

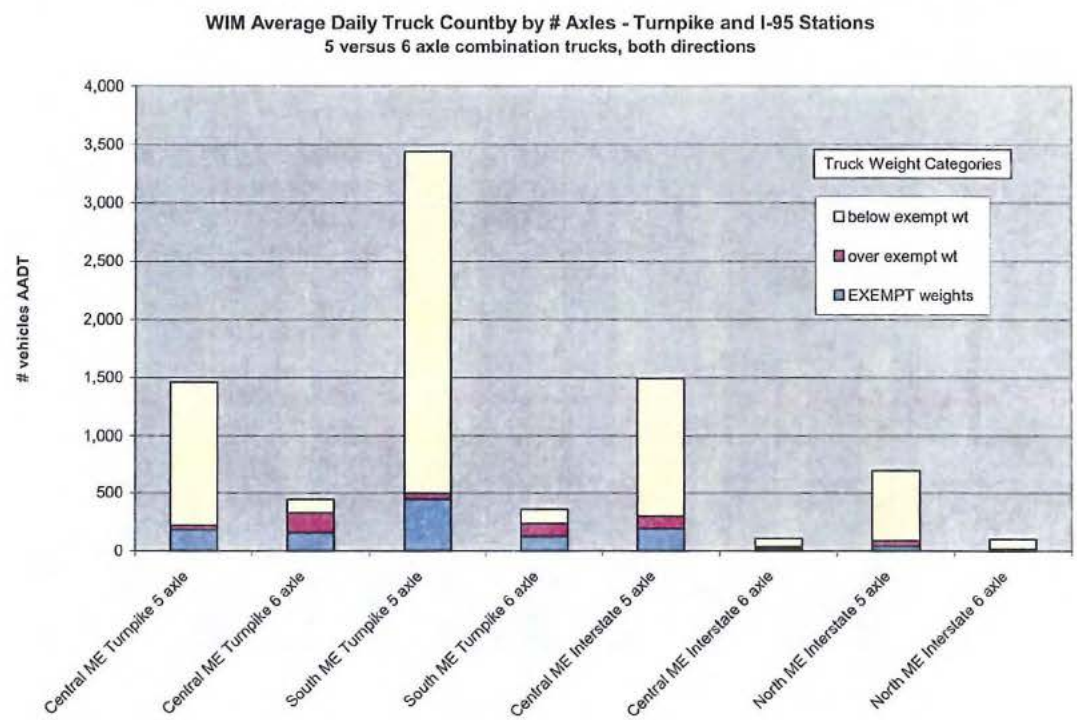
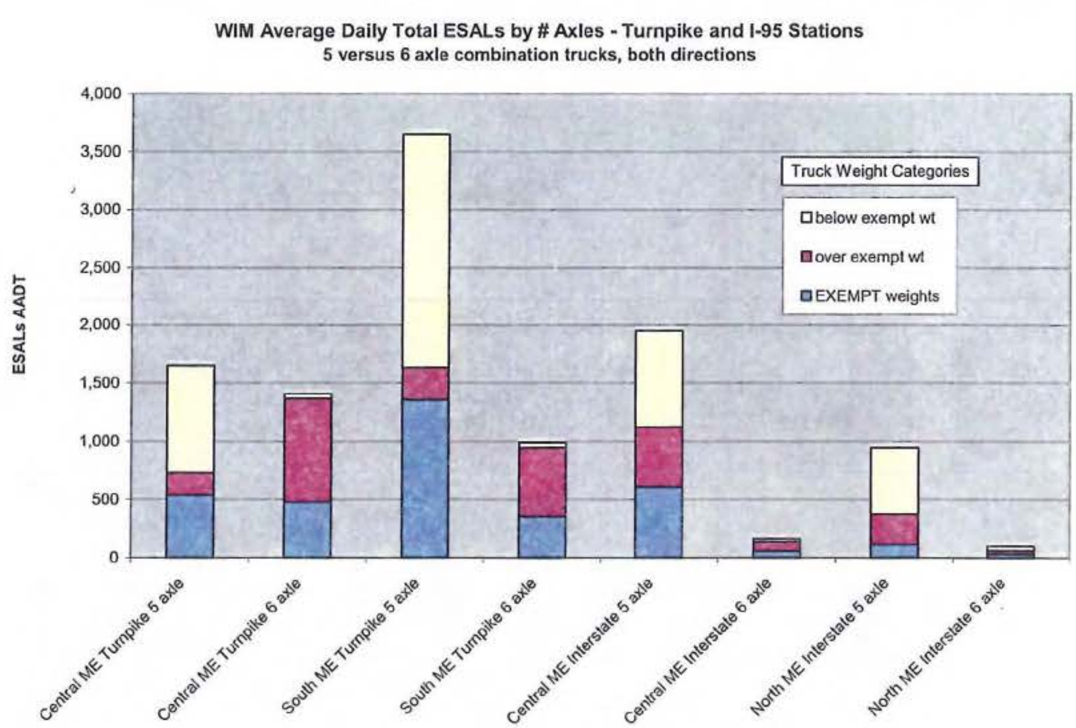


Exhibit A-12: Turnpike/I-95 WIM Stations – ESALS by # of Axles



Note: Scale differs from previous page

Exhibit A-13: Non-Turnpike/I-95 WIM Stations – AADT by # of Axles

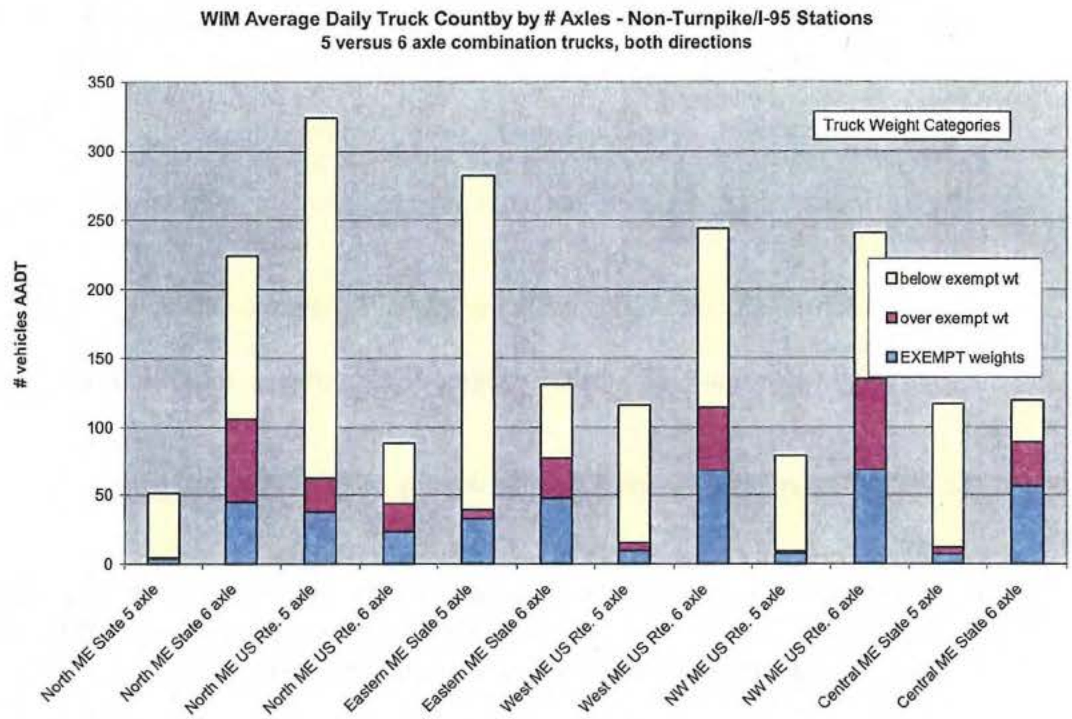
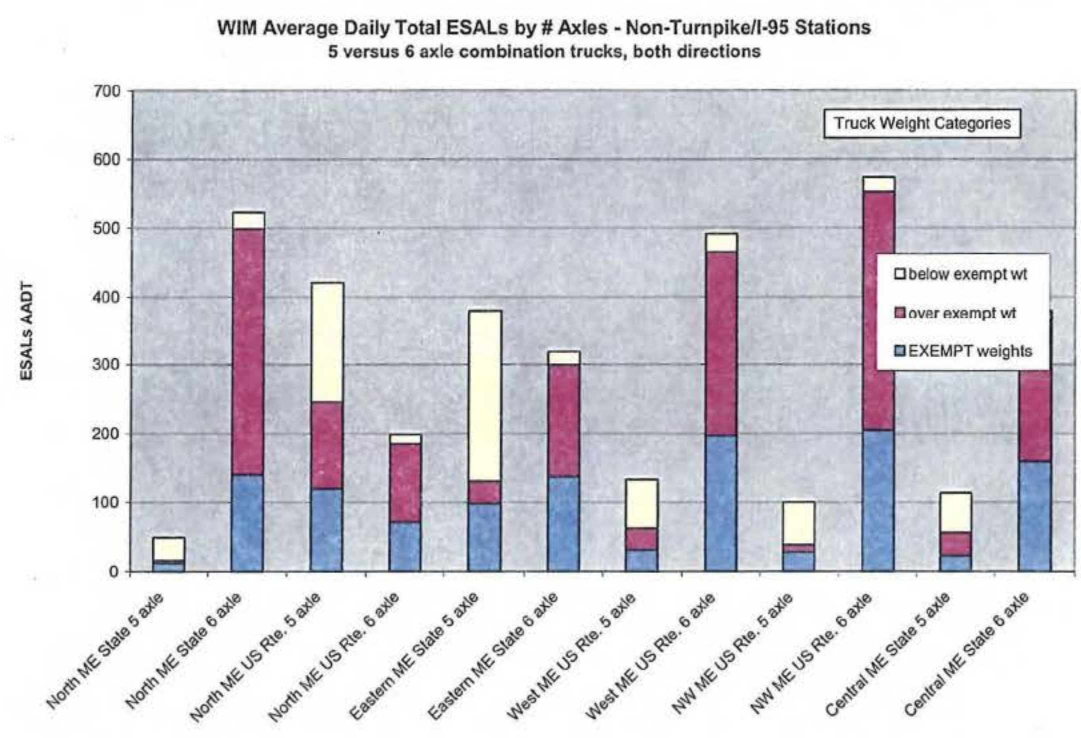


Exhibit A-14: Non-Turnpike/I-95 WIM Stations – ESALs by # of Axles



Detailed Average Annual Traffic by Station

On the following pages, detailed directional statistics are presented for WIM stations in Maine. The statistics are broken down by number of axles: either 5 or 6 axle.

The tables represent **average annual daily values** for all figures. Within each direction/axle grouping, rows of data are presented for all vehicles in the axle/weight category indicated by the row and column, consisting of *total average annual daily values for*:

1. vehicle count (i.e. average daily number of 5 axle or 6 axle combination trucks);
2. ESALs;
3. weight (the sum of the loaded weights of the vehicles, in **millions of pounds**).

The **weight category** columns divide the data by loaded GVW category:

- *below exempt wt* – loaded GVW below exempt weights;
- *exempt weights* – 5 axle with loaded GVW between 80,000 and 88,001 lbs., or 6 axle with loaded GVW between 80,000 and 100,001 lbs.;
- *above exempt wt* – loaded GVW above exempt weights.

NOTE that **zero values** in the vehicle count rows are often a result of rounding daily values that are less than one vehicle, on average, per day in that weight/axle category.

Turnpike & I-95 Stations

Exhibit A-15: Central ME Turnpike WIM Station Avg. Daily Traffic

Central ME Turnpike		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	1,241	180	38	1,460
	ESALs	917	538	194	1,649
	million lbs	62	15	4	81
6 axle	AADT	115	157	170	442
	ESALs	36	478	890	1,405
	million lbs	5	15	18	38
station TOTAL	**AADT**	1,356	**337**	208	**1,901**
	ESALs	953	**1,016**	1,084	**3,053**
	million lbs	67	**30**	22	**118**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Exhibit A-16: South ME Turnpike WIM Station Avg. Daily Traffic

South ME Turnpike		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	2,939	441	56	3,436
	ESALs	2,019	1,356	274	3,650
	million lbs	147	37	5	189
6 axle	AADT	122	125	111	358
	ESALs	47	354	590	991
	million lbs	6	11	12	29
station TOTAL	**AADT**	3,061	**566**	167	**3,794**
	ESALs	2,066	**1,711**	864	**4,641**
	million lbs	153	**48**	17	**218**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Exhibit A-17: Central ME Interstate WIM Station Avg. Daily Traffic

Central ME Interstate		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	1,198	192	105	1,494
	ESALs	823	609	515	1,947
	million lbs	60	16	10	86
6 axle	AADT	73	22	14	108
	ESALs	25	57	83	164
	million lbs	3	2	1	7
station TOTAL	**AADT**	1,270	**214**	118	**1,602**
	ESALs	848	**666**	598	**2,111**
	million lbs	64	**18**	11	**93**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Exhibit A-18: North ME Interstate WIM Station Avg. Daily Traffic

North ME Interstate		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	600	38	50	689
	ESALs	569	115	259	943
	million lbs	33	3	5	41
6 axle	AADT	85	13	5	103
	ESALs	36	32	28	96
	million lbs	4	1	1	6
station TOTAL	**AADT**	686	**51**	55	**791**
	ESALs	605	**147**	287	**1,039**
	million lbs	37	**4**	5	**47**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Non-Turnpike/I-95 Stations

Exhibit A-19: North ME State Road WIM Station Avg. Daily Traffic

North ME State		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	47	3	1	51
	ESALs	33	12	5	49
	million lbs	2	0	0	3
6 axle	AADT	118	45	61	224
	ESALs	24	140	358	523
	million lbs	5	4	7	16
station TOTAL	**AADT**	165	**49**	62	**275**
	ESALs	57	**152**	363	**572**
	million lbs	7	**5**	7	**18**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Exhibit A-20: North ME US Route WIM Station Avg. Daily Traffic

North ME US Rte.		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	262	38	24	324
	ESALs	176	119	126	421
	million lbs	12	3	2	18
6 axle	AADT	45	24	20	88
	ESALs	13	71	114	198
	million lbs	2	2	2	6
station TOTAL	**AADT**	307	**61**	45	**413**
	ESALs	189	**191**	239	**619**
	million lbs	14	**5**	4	**24**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Exhibit A-21: Eastern ME State Road WIM Station Avg. Daily Traffic

Eastern ME State		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	243	33	6	282
	ESALs	249	98	33	380
	million lbs	14	3	1	17
6 axle	AADT	54	48	30	131
	ESALs	19	138	162	319
	million lbs	2	4	3	10
station TOTAL	**AADT**	297	**80**	36	**414**
	ESALs	268	**236**	195	**698**
	million lbs	16	**7**	4	**27**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Exhibit A-22: West ME US Route WIM Station Avg. Daily Traffic

West ME US Rte.		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	101	10	6	116
	ESALs	71	32	31	133
	million lbs	5	1	1	6
6 axle	AADT	130	68	46	244
	ESALs	27	197	268	492
	million lbs	5	6	5	17
station TOTAL	**AADT**	231	**78**	52	**360**
	ESALs	97	**229**	299	**625**
	million lbs	10	**7**	6	**23**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Exhibit A-23: NW ME US Route WIM Station Avg. Daily Traffic

NW ME US Rte		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	70	8	2	79
	ESALs	62	28	11	100
	million lbs	3	1	0	4
6 axle	AADT	106	68	67	241
	ESALs	21	205	348	574
	million lbs	4	6	7	18
station TOTAL	**AADT**	176	**76**	69	**320**
	ESALs	83	**232**	359	**674**
	million lbs	7	**7**	7	**22**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Exhibit A-24: Central ME State Road WIM Station Avg. Daily Traffic

Central ME State		weight category			
number of axles		below exempt wt	exempt	over exempt wt	Total
5 axle	AADT	105	7	5	117
	ESALs	57	23	34	114
	million lbs	5	1	0	6
6 axle	AADT	31	56	33	120
	ESALs	14	159	207	380
	million lbs	1	5	4	10
station TOTAL	**AADT**	136	**63**	38	**237**
	ESALs	70	**182**	241	**493**
	million lbs	6	**6**	4	**16**
PERCENT of total	**AADT**	64%	**22%**	14%	
	ESALs	16%	**37%**	48%	
	million lbs	45%	**31%**	24%	

Study of Impacts Caused by Exempting Currently Non-exempt Maine Interstate Highways from Federal Truck Weight Limits

Appendix B: Summary of Carrier/ Shipper Telephone Interviews

Interview Population

The names of companies to be interviewed came from several sources. The Maine Motor Transport Association (MMTA) provided a contact list of heavy haul companies. Approximately 20 MMTA member companies were contacted, yielding 15 completed interviews with 15 heavy haul companies. The summary results are based on the following companies:

Having a primary terminal in Maine:

- Cianbro Corporation
- Cousineau, Inc.
- Currier Trucking Corp.
- Dead River Transport
- Dysart's Transportation, Inc.
- Genest Concrete Works, Inc.
- H. O. Bouchard, Inc.
- Irving Oil Corporation
- K-B Corp.
- N. C. Hunt, Inc.
- Orland Dwelly & Sons, Inc.
- Richard Carrier Trucking, Inc.
- Isaacson Lumber Co.
- Paulson Brothers Transportation, Inc.
- J&S Oil Co., Inc.

Interview Protocol

The interviews for this study were conducted over two time periods. The first series of interviews were conducted between October 11 and November 12, 2002. A second group of interviews were conducted between June 30 and July 11, 2003. The interview protocol was pre-tested to determine if the line of questioning produced usable data. Results from the first series of completed surveys prompted several additional questions to be added to the second round of interviews. The new questions asked for details about vehicle configuration, e.g., number of axles, whether the carriers used tridem-axle trailer configurations and whether these trailers had lift axles; if the lift axles were original equipment or retrofitted; and what type of suspension systems where used. Several other questions were added regarding the average wage of a driver and the expected cost of a new five-axle tractor-semi-trailer. A copy of the final survey instrument is included at the end of this summary.

Survey Response Summary

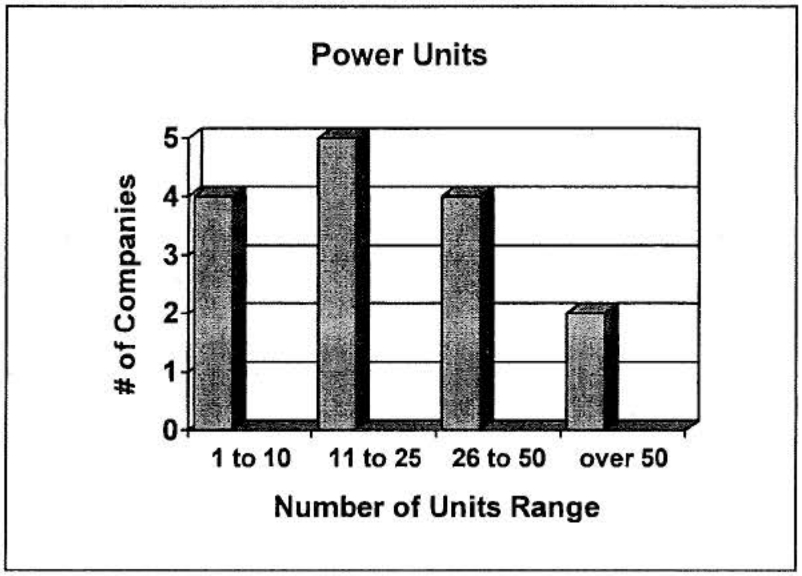
Contact at Organizations Interviewed: The individuals interviewed knew the operations and routing used by the company for its heavy load movements. Among the titles of the individuals interviewed were:

- Dispatcher – Transportation Services / Heavy Haul Division
- Traffic Manager
- Manager – Construction Division
- Fleet Manager/Transportation Division Manager
- Operations Manager
- General Manager
- Transportation Manager
- President/Owner

Location: A majority of companies interviewed in Maine were located off Route 2, near Augusta, Rockland, Hampden, Hermon, Bangor, Pittsfield, Skowhegan, and Bucksport. Two companies were located in the southern part of the state in Sandford and Jefferson. As can be expected, these companies use the Maine and New Hampshire Turnpikes extensively for movements in the southern part of Maine and to the south and west.

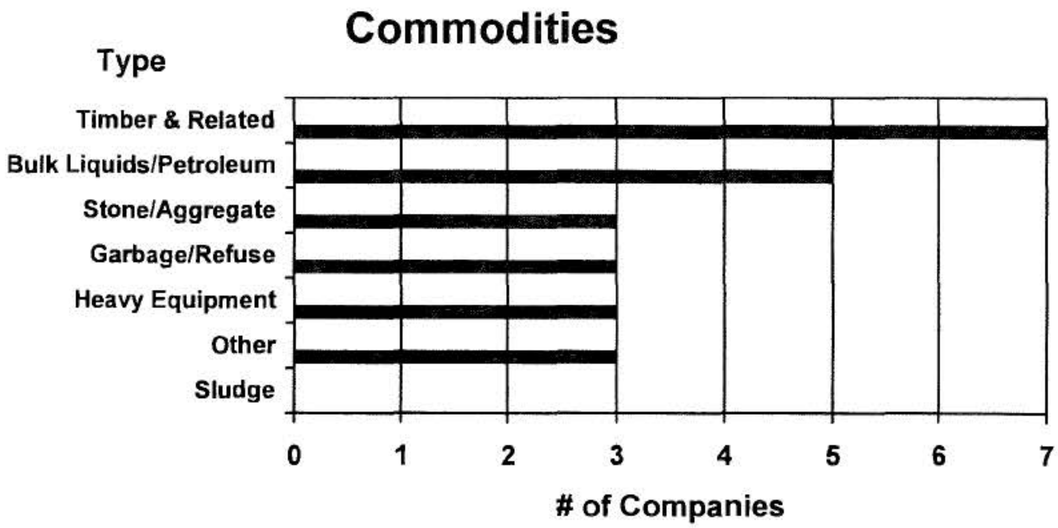
Power Units: Companies interviewed had a variety of power units. Most units were owned, however one company hired over half of its units. The companies operate five- and six-axle vehicles, used for in-state deliveries and over-the-road hauling. One company mentioned it used its six-axle vehicles for 80,000 lbs GVW loads as needed/available. The chart above provides a distribution of carrier size based on power units.

Type of Carrier: Out of 15 companies, 6 described their operation as "for hire." The remaining 9 hauled their own products and considered their transportation operations as private carriage. Twelve of the companies interviewed considered their operation a "truckload" carrier. Two carriers described themselves as providing "specialized" services, requiring moves to be permitted, which they receive for the size as well as the weight of the loads.



Competition: For companies hauling wood products (e.g., bark, logs, wood chips) competition comes from within Maine and New Hampshire, as well as other New England states and Canada. For companies hauling bulk liquids, e.g., petroleum, the competition is mainly considered as coming from within New England. Larger petroleum companies have "sister companies" in Canada, precluding competition between companies of the same parent. Companies hauling stone and aggregate or asphalt reported that their primary competition comes from within the state in which they are located. One company carrying cement saw competition from both within the state and from other New England states.

Primary Commodities: The primary commodities hauled by the companies interviewed are timber and related products e.g., unfinished – bark, logs, wood chips, and finished – lumber and other products; bulk liquids e.g., chemicals, gasoline, and fuel oils; stone and aggregate; garbage/refuse, including biomass; heavy equipment, e.g., construction equipment; and other commodities described as concrete and landscaping block, coal, salt, cement, asphalt and some mixed consumer products.



Note: Chart reflects multiple answers from respondents -- some companies haul more than one commodity.

Geographic Area: 12 of 15 companies interviewed operate within the New England region – describing their operation as regional or interstate New England. Four companies operated over-the-road divisions in the eastern U. S., which haul 80,000 lbs. None of the companies interviewed considered their operations international, however one company reported having primary destinations in Quebec. No company described itself as local.

Origins and Destinations and Primary Routes: Many of the companies interviewed were strategically located near major arterials in Maine including Turnpike and/or Interstate Highways. Primary routes for hauling petroleum products include origins at marine terminals in Searsport, Bucksport, Portland, and Portsmouth and destinations throughout Maine and New England, e.g., Houlton, Bangor, Wiscasset, Brunswick, and into New Hampshire, Vermont, and south. Timber-related movements have origins and destinations at major facilities such as Calais, Jay, Millinocket, Jackman, and Skowhegan. One company hauling biomass/refuse has a major contract for movements between East Millinocket via Rochester, NH, and Boston. Other hauling of biomass/refuse reported by respondents is between Waite and Ashland, Bath and Brunswick, and Biddeford and Augusta. Companies hauling commodities such as finished wood products, concrete block, chemicals, cement, and aggregate described primary movements, from mid-state north toward Presque Isle, mid-state Bangor or Pittsfield and west to New Hampshire, Vermont, and New York, and a coastal route east.

The Maine Turnpike is a primary route for through movements with origins/destinations south of Maine. Routes 1 and 201 are also a primary routing used between Portland and Augusta. A number of operators cited the lost time involved with continuing on the Maine Turnpike north of Portland. In addition, movements going east to Rockland and Thomaston require using Route 1 rather than the Maine Turnpike.

(Additional routing details are provided in a table at the end of this document)

A majority of the companies that were interviewed in New Hampshire operate or are located in the southern part of the state. Petroleum hauling companies interviewed are located in Concord, Henniker, and Lebanon. In addition to their terminal locations, origins in Massachusetts (Boston) had destinations in Lebanon and Concord, using I-93 and Route 3 and Route 4. Other movements identified were from Portsmouth to Henniker via the New Hampshire Turnpike, Routes 101, 3, and 4. Portsmouth to Newport follows the Turnpike, Routes 4 or 101, Route 4, 9/202, 114 and 103. Trips from Concord to Portland primarily use Route 101 and the New Hampshire and Maine Turnpikes. Additional moves are near Lake Winnipesaukee – Portsmouth to Wolfeboro, via Routes 16, 11, and 28. Other destinations near the lake require the use of Routes 9, 11, and 25.

Overall, the respondents reported significant north-south movements with relatively few routing choices. As one company representative said, "Route 3 is just about the only legal route there is for north and south movements for heavy loads." Routes 101, 4, 202, and 2 were the most commonly mentioned east-west routes. A number of respondents also reported that they hauled heavy loads on small segments of the Interstate system that conveniently connected some of these routes.

On the whole there was considerable consternation regarding the inability to legally use all segments of Interstate in Maine. The primary reasoning from the respondents was that "the interstates were built to carry 100,000 lb vehicles." Several mentioned that the system was originally designed as the national military network and therefore was also equipped to carry their heavy loads. A number of others interviewed could not understand the reasoning of forcing heavy vehicles onto state routes where they were required to go through population centers, deal with congestion and tourists, and in general, create increased opportunity for a major catastrophe whether it would be loss of life or contamination of a waterway/seashore. One respondent was convinced that it would take such a major event to begin the process of change.

The routes discussed were mentioned again and again by the various companies interviewed. While the number of companies interviewed was relatively small, the convergence of the routing decisions shows that even a small representation of haulers may be providing a picture of the routes upon which a high percentage of heavy loads are being transported. Additional information on the origins and destinations and routing decisions are included at the end of this summary.

Shortest Distance vs. Circuitous Routing: All of the respondents said they route their movements to obtain the shortest distance between pick-up and delivery. Yet each one had major exceptions to this rule, which always made the routing less than the shortest distance. The common refrain from the companies was the shortest distance was often the interstate system. However their movements took longer routes because of the inability to use the interstate system other than the Maine Turnpike and a small length of I-95 near Kittery. One respondent couldn't understand why the political process enabled that stretch of I-95 to be allowed to carry 100,000 lbs GVW. Yet, it was his belief that when petitions for use by heavy hauling companies on other parts of the interstate were presented, they were turned down flat because "such exemptions are not allowed by the federal government." In addition, several respondents were puzzled over the DOT's actions to build a third bridge in Augusta. The bridge is to mitigate congestion, yet the trucking operators thought there could be a great deal of congestion relief (perhaps eliminating the need for a third bridge) if the heavy trucks could use the interstate through Augusta.

The weight restrictions were an underlying reason for more circuitous routes, but nearly every company specifically mentioned safety issues as the number one reason for less than shortest distance routing. Other frequently mentioned situations causing routing changes are winter weather, highway construction, and traffic congestion, particularly in the tourist season.

The heavy equipment hauler noted that they could not haul over-dimension vehicles on the Interstate System (permitted vehicles) from Friday noon until Monday morning. This respondent thought it made no sense to force the large over-dimension traffic on small roads going through towns and population centers. This same respondent noted that overweight vehicles (greater than 80,000 lbs GVW) could not use the bridge at Brattleboro until the construction is complete.

Every one of the respondents at some point during the interview mentioned that they could not travel on the Interstates, except the Maine Turnpike.

Driver Challenges: The most often cited challenges for drivers were the requirement for movements of 100,000 lbs GVW vehicles on narrow two-lane, two-way roads and through small towns and population centers. Rotaries and stop-and-go traffic, e.g., congestion, school busses, were particularly troublesome for drivers. High crowned roads present further challenges for drivers, as the vehicles tend to rock back and forth, e.g., Route 11, Brownsville to Millinocket.

Augusta was cited as a particularly difficult area for drivers. After exiting from the Maine Turnpike, the various rotaries that the heavy vehicles must negotiate were seen as very dangerous and unnecessary considering that the interstate continues north and the heavy loads could be using these highways.

Companies that operate vehicles on Route 1 in Maine cited the Freeport, Rockland, and Camden areas as major problem spots due to tourists and the resulting congestion. One respondent said, "The Route 1 corridor is a nightmare." Petroleum haulers were particularly concerned about the frequent trips of these hazardous materials through such congested areas (automobile traffic as well as commercial establishments.)

Route 201 from Augusta to Fairfield is seen as a problem stretch of roadway – it takes longer and is considered dangerous. This stretch of Route 201 directly parallels the interstate. Many of the drivers compare this roadway to the well-maintained, free-from-population-centers interstate and know the road they must travel poses additional safety hazards.

Drivers find the Bangor area a challenge, considering that the vehicles must travel through the city to follow Route 2.

Route 69 in winter is a problem and routing is modified to bypass this stretch of roadway.

Route 2A is particularly difficult for drivers in the spring due to potholes and deteriorating pavement. One respondent said his company reroutes traffic in the spring to Route 1 to avoid 20 mile per hour travel over rough pavement.

Performance of Six-axle Vehicles: None of the respondents were aware of any complaints with the performance or operation of six-axle vehicles greater than 80,000 lbs GVW. The general comment was that overall there are no more complaints about six-axle vehicles than five-axle vehicles. A number of the respondents said the six-axle vehicles had better braking capabilities, more stability, and generally had greater power for keeping up to speed in the traffic flow. One responder said, "We love them; you can never have too much brakes." Another said his drivers prefer the six-axle combinations because they "hold up better" and "are safer." Another respondent said they are no different; if you have a good driver who handles the vehicle well, both are the same.

The following issues were included during the second round of interviews and are based on a smaller sample.

Record-Keeping Exemption – 100 Air-miles: Companies varied on their use of CFR 391, which exempts a carrier for operations within 100 air-miles from hours of service, driver qualification files, and other vehicle maintenance record keeping.

Equipment: Companies located in Maine operated on average about 9 TST combinations (all TSTs, not only those located in the company's primary terminal.)

About 40 percent of the TST combinations operated by the companies have 5 axles. The remaining approximately 60 percent are 6-axle combinations. A few respondents (for example the heavy equipment hauler) reported that their companies also have a few 4-axle trailers.

About 90 percent of the 5-axle vehicles are registered to haul 88,000 lbs. All of the six-axle TST combinations are registered to haul up to 98,000 to 100,000 lbs. All but one of these trailers had a tridem axle. In addition, respondents reported that all but a very few of the tridem axle trailers were original equipment with the remaining few being retrofitted to the trailer at some point after the initial purchase.

Respondents in Maine reported that one company had tridem axle trailers with spring suspension, one company had trailers with air ride suspension, and one company had a combination of both spring and air ride suspension on its tridem axle trailers. Respondents from companies in New Hampshire reported: 4 air ride, 3 having both air ride and spring, and 2 did not know the type of suspension on their tridem axle trailers. The following table summarizes the fleet size of all carriers interviewed

Respondents estimated the cost of a new 5-axle tractor-semi-trailer combination would average about $160,000. Estimates ranged from about $105,000 to $190,000.

Assuring Vehicle Loads Do Not Exceed Legal Limits: For the most part every company interviewed has some strategy to assure that their vehicle loads do not exceed the legal limit. The petroleum product haulers all reported that they know the weight of the product and the capacity (volume) of each of their vehicle configurations, which assures a legal limit. Like the petroleum product haulers, the cement and asphalt haulers interviewed also know the amount of product their vehicles carry and its weight. The stone and aggregate haulers reported that they have scales in their yards.

One dispatcher that was interviewed had the responsibility for checking the vehicle weights. The vehicles do not go out of the yard prior to weighing and assuring a legal load. Some of the vehicles operated by one of the forest product haulers vehicles have on-board scales. (This was the only company with such equipment.) This company also pays the drivers by the hour, so there is no advantage to overload. A petroleum products hauler noted that if a driver gets fined for carrying an overweight load, the driver must pay the fine. The heavy equipment hauler stated that they know the weight of the equipment and determine their gross vehicle weight based on these facts. Only one of the companies interviewed stated that they rely on the experience of the driver and that there are a lot of available scales.

Average Driver Wage: Driver wages varied depending on several factors: the type of vehicle, the experience of the driver, and the hours/days worked per week. Sample responses included the following:

- $12 - $20 per hour depending on the type of vehicle
- $15 - $20 per hour
- $650 - $850 per week for a good driver with either a 56 or 60 hour work week
- $40,000 - $50,000 per year with either a 56 or 60 hour work week
- $27,000 - $30,000 per year, 5 days per week – home every night
- $14 per hour

Including all the responses produces an average wage of $15 per hour wage.

The average wage of a driver for the three companies interviewed in Maine is $14 per hour. As information, these three companies hauled forest products, cement and stone/aggregate, and petroleum products. There was little variation in the reported estimated wages from each of these three companies.

For the companies interviewed in New Hampshire, the wage calculated from averaging all 8 responses is $15.30 per hour. The three petroleum products haulers and the heavy equipment hauler estimated from $1 to $2.50 higher per hour than the average wage paid, e.g., $16 - $17.50 per hour average. Several of the asphalt and stone/aggregate and forest product haulers paid $1 - $2 dollars less than the average for all companies interviewed in New Hampshire, e.g. $13 - $14 per hour.

Summary of Interviews with Maine Local Officials

Interviews were conducted between July 29 and August 6, 2003. The local officials contacted or interviewed are as follows:

- Edward Barrett, City Manager, Bangor, ME
- Jim Ring, City Engineer, Director of Infrastructure & Development, Bangor, ME
- Stephen Bost, City Manager, Brewer, ME
- John Douglas Harris (Doug), Town Manager, Falmouth, ME
- Ed Tolan, Chief of Police, Falmouth, ME
- Dale Olmstead, Town Manager, Freeport, ME
- Darrell Fournier, Fire Chief, Freeport, ME
- Margaret Daigle (Peggy), Town Manager, Houlton, ME
- Dan Soucy, Chief of Police, Houlton, ME
- Glenn Aho, Town Manger, Lincoln, ME
- Jim Libby, Town Councilor, Lincoln, ME
- Nathaniel Tupper (Nat), City Manager, Yarmouth, ME
- Michael E. Morrill, Police Chief, Yarmouth, ME

Questions focused on three areas, impacts of large trucks in the community, complaints to the town or city about large trucks, and anecdotal information about truck crashes in the community.
The interviewee's concepts of impacts of the large trucks traveling on the town or city streets mirrored the complaints received from community members. The issues centered on safety, traffic congestion, air and noise pollution, road maintenance, economic consequence to business and disturbance of the pleasant village center ambience.

Overall, impacts of large trucks in these communities are considered very significant. In fact, without exception, every local official interviewed expressed strong personal and community support for allowing large, heavy trucks on the interstate system in Maine. One official said, "I don't know a single local official [in Maine] who wouldn't want big trucks on the interstate." Another said, "It is a poor policy to not have the big trucks on I-95." Furthermore, one town manager stated that there were many fewer complaints about a major arterial that parallels a section of the Maine Turnpike, now that the heavy trucks are traveling on the Turnpike instead of through his town.

The primary concern to the town government and residents alike is safety. The most often mentioned safety concern is the increased risk of injury and property damage due to crashes in town centers and residential areas. Frequently mentioned as being at risk were pedestrians, including children and children on bicycles, school buses, and sightseers/tourists. A town manager said, "We are never free from accommodating trucks." Community activities take place in the center of town. There are blind spots due to the rise and fall of the roadway, a truck comes over the crest of a hill and suddenly may find itself in a high pedestrian event.

Further concern was expressed about hazardous materials, e.g., fuel oil and gasoline, being transported through major population centers. The greater the number of tanker trucks, the greater potential for a catastrophic crash and loss of life as well as the problems associated with hazardous materials cleanup.

Truck speed is a problem in many of the towns. One Chief of Police personally stopped a truck that refused to stop at a traffic light in the center of town. The driver just "blew through" the light. The driver's comments to the officer were that until the laws were changed to allow him to drive his heavy truck on I-95, this same driving behavior will continue to occur. Another town manager reported that in the spring there is greater malfunction of traffic lights causing the lights to blink. The large and heavy through trucks take these blinking lights as a right-of-way and "barrel through" the center of the town. One city manager reported that, "We spend an inordinate amount on enforcement, which is not always successful."

Several local officials reported that the town center businesses were affected by the heavy truck traffic. With large trucks on the main street, it is difficult for locals to patronize businesses -- whether they are pedestrians or trying to park their cars. Other issues such as exhaust fumes from trucks idling at stoplights made it unattractive for shopping.

Congestion is a critical issue within most of the towns and cities. Due to small town centers and the effort to make these areas "shopping-friendly villages," large trucks substantially increase the lack of maneuverability for residents as well as tourists. Several towns have their emergency services located on the main street, which is the state route thoroughfare. With multiple tractor-semi-trailers lined up, it is very difficult to respond to emergency situations, or it is much more difficult for these emergency vehicles to emerge into the roadway with the large trucks. A number of the towns report there is continual summer stop and go traffic.

Noise and air pollution are major quality of life issues in residential areas through which large trucks travel. Jake brakes and exhaust fumes are especially disruptive and intrusive to the community residents. Several towns that have state routes through residential neighborhoods have bans on jake brakes, yet the interviewees report the ordinances are often not obeyed. Additionally, Maine residents have lots of open windows in the summer. The exhaust fumes are annoying and can create respiratory problems

Every local official interviewed made some reference to the increase in cost of road maintenance due to the damage from heavy trucks. One town manager reported that the town builds its main arterial, a state route used by heavy trucks, to a higher standard than if only local traffic used the roadway. This town manager reported it costs "lots more" to maintain this roadway, perhaps more than twice as much as other town roads. Another manager reported that his town's maintenance costs for Route 1 would drop by 40 percent if there were no heavy trucks on it. Additionally, "Pothole damage is unbelievable in the spring, and trucks make that situation worse." One local official commented that since Maine is turning back sections of Route 1 to the towns and cities, there is now more cost for road replacement as well as repair. With current budgets there is little room for high cost road maintenance.

The general opinion of the local officials was that the interstate was built to handle the heavy loads that are traveling through their towns. A number of the officials stated that the interstate was designed to carry 100,000 lb gross vehicle weight vehicles (GVW). One official noted that the Maine needs were not the same as needs addressed by the federal laws, which kept the 100,000 lb GVW vehicles off the interstate.

The local officials also made comments about the interstate being a more efficient manner of transport for the trucking companies. A number of the interviewees expressed concern that the current laws were not only having negative impact on the communities, but also creating higher costs for the transportation companies.

Accidents are a common occurrence in a number of communities. Several town managers or other officials reported the following:

- We do have crashes on occasion. Often these are not notable but we do have them. There was a high-profile accident three years ago -- a collision between a tractor-semi-trailer and a motorcycle -- resulting in a fatality.

- We have numerous crashes; most occur on the ramps from the Turnpike spur and I-295. The ramps were designed a long time ago. Requests to the state for more visible warning signs have not been heeded. One ramp in particular continues to experience rollovers, puts traffic to Route 1

- Impact of these crashes on the community is large. They create extended time for fire fighters, city police, and state police – uses huge amount of resources each time there is a crash, and there is a very large backup on Route 1 impacting motorists as well.

- There was a very high profile rollover, truckload of 20 million bees; we got advice from an expert on how to manage the bees, fog/mist spray of water, no one hurt, roadway closed for extended time -- a big resource commitment for the community.

- Had a tanker that was parked in a rest area at exit 19 of I-95, ruptured, was a bad situation for contamination, yet even with three hotels near, it was substantially less of a problem and less difficult to clean up, than if it had happened in the town center area where the risk of exposure is so great.

- People were not paying attention to traffic, gawking at a yard sale, truck rear-ended car. In these cases, the truck driver gets blamed for the crash, yet the residential/local conditions are contributory.

In summary, heavy trucks produced substantial negative impact in all of the seven communities participating in this interviewing effort. In fact there were no reported benefits of 5 and 6 axle tractor semi-trailers traveling on these communities' roadways. Complaints about large and heavy trucks from the residents and the local officials descriptions of the impacts showed that safety, noise and air pollution, congestion, road damage, and crashes were the major concerns. Without exception, the local officials expressed support for allowing heavy trucks up to 100,000 lb GVW on the interstate system in Maine.

Interview Protocol
Maine Local Officials

Hello, my name is Barbara Harder. I'm a transportation consultant who is part of the Wilber Smith team conducting a study for the Maine Department of Transportation. I believe last week you might have gotten a fax from Tim Bolton, Office of Freight Transportation, Maine DOT. The study we are working on is to determine the safety and infrastructure impacts of extending the state truck weight limits to the interstate highway system. Presently except on the Maine Turnpike, truck weight limits on the interstate are under federal law which allows significantly lower weight limits than the State of Maine, resulting in the diversion of trucks over 80,000 lbs gross vehicle weight to adjacent state highways. The reason I am contacting you is to hear your thoughts and get your observations on the effect of current heavy truck traffic in your city and to understand what you think might be the effect of allowing these heavy trucks to travel on the nearby interstate highways.

I have a few questions I'd like to ask you; it will take less than ten minutes.

The trucks I refer to in these questions are the 5 and 6 axle tractor semi-trailer combinations.

Think about where these trucks frequently travel in your city.

Name, title, and phone number: ____

____

1. Do you see explicit impacts for these trucks in your city?

1a. What are the most prevalent of these impacts? If they have difficulty in starting provide issues such as safety, congestion, pollution, economic…)

2. Has the city received any complaints about these heavier trucks?
Yes _______ No ________

2a. (If yes) Are you aware of the content of these complains and could you share some of the problems mentioned?

3. Are you aware of any accidents involving these trucks that particularly stand out in your mind? Yes _________ No ___________

3a. (If yes) What were the circumstances of the accidents?

4. Is there any additional comment you would like to make about heavy trucks in your city?

Wilbur Smith Associates
ENGINEERS
PLANNERS
ECONOMISTS

Date:

____/____/03

Maine Weight Exemption Study
Carrier Interview Survey

Company Name: ____

Location/Address: ____

Contact: ______________________ **Title:** ________________________

Phone: ______________________ **e-mail:** ________________________

Purpose:

1. Develop an operating profile for heavy haul industries in Maine
2. Understand operating economics for heavy haul carriers in Maine.
3. Explore routing decisions based on various weight policies that could potentially be applied to I-95 and the Maine and New Hampshire Turnpikes.

Background:

1. Are you a private or for-hire carrier?

a. ____ For-hire (skip to Q4) b. _____ Private

2. What is the primary business your company is engaged in?

____

3. Where does your primary competition come from within your industry (outside of Maine/New Hampshire)?

____

____

(Skip to Question 6)

Commodities / Services:

4. As a for-hire carrier, do you have primary commodities or lines of business that comprise the majority of your business? ________No (go to question 5),

________Yes; what are those primary commodities?

a. _____ Timber or Related Products

b. _____ Stone or aggregate

c. _____ Garbage or refuse

d. _____ Sludge

e. _____ Bulk liquids (e.g. petroleum)

f. _____ Heavy Equipment

g. _____ Agriculture products

g. _____ Other: ______________________

5. How would you describe your services (check all that apply)

a. ____ LTL

b. ____ Truckload

c. ____ Express Package

d. ____ Intermodal drayage

e. ____ Specialized

f. other__________________________

Geography and Routing:

6. Do you operate more than one truck terminal in either Maine or New Hampshire?

_____ No (go to question 7) _____ Yes,

6a. At what other locations and approximately how many trucks?

	Location	# of Trucks
a.	_____________________	___________
b.	_____________________	___________
c.	_____________________	___________

7. What type of geographic area does your trucking operation cover?

a. ______ Local

b. _____ Regional (intrastate Maine/Intrastate NH)

c. ______ Regional (interstate New England)

d. ______ Long haul domestic

c. _____ Long haul international (what provinces?)

---

8. Do you currently operate any of your fleet under the intrastate 100 air-mile exemption from federal CFR 391? (This rule exempts carriers from hours of service, driver qualification files and other vehicle maintenance record keeping).

____ No Yes _____: How many units? __________

9/10. What are the primary origins and destinations for the commodities you haul?

Origin **Destination**

a. ______________________________ ______________________________

Route ____

____

b. ______________________________ ______________________________

Route ____

____

c. ______________________________ ______________________________

Route ____

____

d. ______________________________ ______________________________

Route ____

____

(If I-95 or the Maine/New Hampshire Turnpikes are not mentioned above ask specifically.)

11. Do your drivers generally use routes that are either the shortest distance or those that require the least amount of time between the pick up and delivery?

_____ Shortest distance

_____ Least amount of time

12. Are you aware of any routes that are avoided due to bridge postings or weight restrictions or clearance restrictions? If so, what are those routes?

____

____

13. In using these routes are you aware of any specific challenges your drivers face on these routes, for instance areas where there are frequent accidents or near misses, routes through congested areas or places where it is difficult for a truck to maintain the flow of traffic.

____

____

____

Equipment:

14. How many power units do you operate out of your location?

a. ____ 1-10 b. ____ 11-25 c. ____ 26-50 d. _____ over 50

15. For the fleet at your location, how many units or roughly what percentage are 5-axle tractor-semi-trailer combinations? _______

15a. How many of these units are registered to haul 88,000 pounds? ___________

ADD : What is the typical cost of a new tractor-semi-trailer rig? _______________

16. For the fleet at your location, how many units or roughly what percentage are 6-axle tractor-semi-trailer combinations? ______ **If the respondent operates six-axle TST combinations:**

16a. How many of these units are registered to haul 99,000 or 100,000 pounds? _______

16b. Do the semi-trailers in your six axle vehicle fleet have tridem axles?

____No, if no skip to #17 ____Yes;

16c. Were the tridem axles on these semi-trailers purchased as original equipment, or was a third axle added as a retro-fit?

____ Original equipment ____ Retrofit

16d. Do any of the axles in the tridem axle set operate as lift axles?

______ No ______ Yes

16e. What is the typical type of suspension system on your tridem axle trailers?

____

17. Do you or any of your drivers that you are aware of have any complaints with the performance or operation of six axle vehicles greater than 80,000 pounds GVW?

____

____

18. What practices or step does your company undertake to ensure that vehicle loads do not exceed legal limits?

____

____

19. As you are likely very aware – Congress has granted an exemption to federal weight limits on the Maine and New Hampshire Turnpikes that allows a gross vehicle weight of 100,000 pounds on 6 axle configurations. How important is this exemption to your business?

a. ______ Essential/very important b. ______ Important

c. ______ Some what important e. ______ Not very important

Why? ____

20. If Congress decided to discontinue the weight exemption on the Turnpike, and reduce the weight limit on the Turnpike sections of I-95 back to 80,000 pounds, how would it affect your operation?

a. ______new equipment

b. ______additional drivers / additional shifts

c. ______ reroute existing equipment: What alternative routes would be used?

d. ______ Other: ____

Add 2.
What is the average wage of a truck driver in your state?

21. Has your company attempted to place a monetary value on the effect of the exemption or its loss?

______NO ______Yes, would it be able to share that impact with us

22. If Congress would decide to allow up to 100,000 GVW on the entire length of I-95 in Maine, how would that decision likely affect your business?

Routing Details gathered during the course of all interviews are provided in the table on the following pages.

Routing Details from Survey Responses

Origin	Destination	Primary Routes	Commodities	Comments
Bangor	North toward Presque Isle/Ft. Kent	Rte 2	Chemicals, fuel oils, coal, road salt, cement, aggregate	Would be nice to use I-95
Bucksport	Middle of state, Augusta, Lewiston, Waterville	Rtes 3, 139		
Portland	Lewiston	ME Turnpike		
Augusta	Fairfield	Rte 201		Major problem should use I-95
Thomaston	Massachusetts or North	Rtes 1 or 2		
Bangor	Calais	Rte 9	Bulk rolled paper	
Lincoln	Houlton	Rte 2	Petroleum products	
Portland	Bangor	ME Turnpike, North of Augusta, Rte 9	Petroleum products	
Hampden	South out of New England	ME and NH Turnpikes, interstates		80K lbs
Jackman	Poland Springs	Rte 201, ME Turnpike	Lumber, chips, bark Aggregate	Wants to use Interstate between Fairfield and Augusta
Skowhegan	Bangor	Rte 2		
Fairfield	Millinocket	Rte 2, 11		
Pittsfield	Glens Falls, NY	I-95, 495, 290, 90, 87	Construction equipment, steel, lumber forms, building materials	All are permitted, heavy and oversize
Pittsfield	Troy, NY	I-95, Rte 101, I-93, 89, Rte 4, I-87, Rte 9		
Pittsfield	Northern VT	Rte 2		
Strong	South to NH	Rte 4 to Auburn, ME Turnpike to Exit 5 Rte 11 and 202	Finished wood products Construction equipment	
Strong	North, Ashland area	Rtes 4, 2, 11		
Coastal Route Augusta	East	Rte 3		
Bangor	Lincoln	Rte2	Wood chips and logs	
Stratton	Bucksport	Rte 2		Every day run
Coming North into ME	Showhegan	NH and ME Turnpike, Rte 201 at Augusta		
Brownville	Millinocket	Rte 11		Frequent ru

Origin	Destination	Primary Routes	Commodities	Comments
Operations within 100 miles of Showhegan		Rte 2		
Stillwater	Jay, Hinckley, Millinocket	Rte 2		Would love to use interstate for heavy loads
Portland	Rockland	Coastal road doesn't follow Turnpike, Rte 1	Petroleum	
Portsmouth	Portland	ME Turnpike		
Portland	Brunswick	Rte 1 through Freeport		Would like to use 295/95
Searsport	Waterville	Rtes 3, 201		
Bangor/Brewer	Houlton	Rtes 2, 2A, 9, 178		Up to 10 loads a day
Washington County (Waite)	Aroostook County (Ashland)	Rtes 1, 2, 212, 11	Biomass, Chips	
Sanford	South into Massachusetts	Rte 109, ME Turnpike Rte 236, ME Turnpike	Concrete blocks, landscape blocks	Empty uses Interstate, return loaded on alternate routes as required
Sanford	New Hampshire	Rte 202		
Sanford	North via Biddeford	Rte 111, ME Turnpike North of Augusta, Rte 9		
Sanford	Thomaston	Rte 1		
Lubec	New Hampshire	Rte 9, ME Turnpike	Bark, logs, wood chips	
Skowhegan	Jackman and into Quebec	Rte 201 into Quebec		
Jefferson	South	Rte 126, to ME Turnpike at Auburn		
Augusta	Rockland	Rte 17		
		Rte 1 and 201 absolutely vital		
Searsport/Bucksport	Houlton	Rtes 3 or 1, 1A, 2	Petroleum products	
Searsport/Bucksport	Portland	Rte 3, ME Turnpike		
Portland	Brunswick, Wiscasset	Rte 1		
Portsmouth	Conway, NH	NH Turnpike, Rte 16		
Searsport/Bucksport	Littleton, NH or Lyndonville, VT	Rtes 1A, 69 (not in winter), 2		In winter go up to Hermon and take Rte 2
East Millinocket	Rochester, NH and Boston, MA	Rte 157 to Mattawamkeag, Rtes 2, 178, 9, I-395, Rte 202, 9, to Auburn and ME Turnpike, NH Turnpike	Refuse and biomass	Not using interstate adds an hour to the time between E. Millinocket and Augusta

Origin	Destination	Primary Routes	Commodities	Comments
Boston	Hampden via Rochester NH	Interstates to NH and ME Turnpikes and Interstate to Hampden	Waste products for land fill	Backhaul, 80,000 lbs
Bath	Brunswick	Rte 1	Refuse and biomass	
Biddeford	Augusta	ME Turnpike		
Bangor	North toward Presque Isle/Ft. Kent	Rte 2	Chemicals, fuel oils, coal, road salt, cement, aggregate	Would be nice to use I-95
Bucksport	Middle of state, Augusta, Lewiston, Waterville	Rtes 3, 139		
Portland	Lewiston	ME Turnpike		
Augusta	Fairfield	Rte 201		Major problem should use I-95
Thomaston	Massachusetts or North	Rtes 1 or 2		
Bangor	Calais	Rte 9	Bulk rolled paper	
Lincoln	Houlton	Rte 2	Petroleum products	
Portland	Bangor	ME Turnpike, North of Augusta, Rte 9	Petroleum products	
Hampden	South out of New England	ME and NH Turnpikes, interstates		80K lbs
Jackman	Poland Springs	Rte 201, ME Turnpike	Lumber, chips, bark Aggregate	Wants to use Interstate between Fairfield and Augusta
Skowhegan	Bangor	Rte 2		
Fairfield	Millinocket	Rte 2, 11		
Pittsfield	Glens Falls, NY	I-95, 495, 290, 90, 87	Construction equipment, steel, lumber forms, building materials	All are permitted, heavy and oversize
Pittsfield	Troy, NY	I-95, Rte 101, I-93, 89, Rte 4, I-87, Rte 9		
Pittsfield	Northern VT	Rte 2		
Strong	South to NH	Rte 4 to Auburn, ME Turnpike to Exit 5 Rte 11 and 202	Finished wood products Construction equipment	
Strong	North, Ashland area	Rtes 4, 2, 11		
Coastal Route Augusta	East	Rte 3		
Bangor	Lincoln	Rte2	Wood chips and logs	
Stratton	Bucksport	Rte 2		Every day run
Coming North into ME	Showhegan	NH and ME Turnpike, Rte 201 at Augusta		
Brownville	Millinocket	Rte 11		Frequent run
Operations within 100 miles of Showhegan		Rte 2		

Origin	Destination	Primary Routes	Commodities	Comments
Stillwater	Jay, Hinckley, Millinocket	Rte 2		Would love to use interstate for heavy loads
Portland	Rockland	Coastal road doesn't follow Turnpike, Rte 1	Petroleum	
Portsmouth	Portland	ME Turnpike		
Portland	Brunswick	Rte 1 through Freeport		Would like to use 295/95
Searsport	Waterville	Rtes 3, 201		
Bangor/Brewer	Houlton	Rtes 2, 2A, 9, 178		Up to 10 loads a day
Washington County (Waite)	Aroostook County (Ashland)	Rtes 1, 2, 212, 11	Biomass, Chips	
Sanford	Thomaston	Rte 1		
Lubec	New Hampshire	Rte 9, ME Turnpike	Bark, logs, wood chips	
Skowhegan	Jackman and into Quebec	Rte 201 into Quebec		
Jefferson	South	Rte 126, to ME Turnpike at Auburn		
Augusta	Rockland	Rte 17		
		Rte 1 and 201 absolutely vital		
Searsport/Bucksport	Houlton	Rtes 3 or 1, 1A, 2	Petroleum products	
Searsport/Bucksport	Portland	Rte 3, ME Turnpike		
Portland	Brunswick, Wiscasset	Rte 1		
Bath	Brunswick	Rte 1	Refuse and biomass	
Biddeford	Augusta	ME Turnpike		
Livermore Falls, ME	Massachusetts	Rte 4 to exit 12 of ME Turnpike I-95/NH Turnpike, I-495	Finished lumber products, wood pallets	
Livermore Falls, ME	Millinocket, ME	Rtes 133. 202 to Augusta, I-95, Rte 150, Rte 11	Empty	Not overweight
Millinocket, ME	Livermore Falls, ME	Rte 11, Rte 150. Rte 2, Rte 133	Logs	
Thomaston, ME	Sanford, ME	Rte 1, I-95/ME Turnpike, Rte 111	Cement	
Thomaston, ME	Houlton, ME	Rte 1, 1a, to Bangor, Rte 2/2a		
Portland, ME	Hope, ME	Rte 1 to Augusta, Rte 17	Sand and gravel	
Portland, ME	Rockland & Camden, ME	Rte 1	Petroleum products	
Portland, ME	Augusta, Winslow, Waterville, & Unity	Rte 1, Rte, 201, and Rte 139 to Unity		
Portland, ME	Augusta, ME	ME Turnpike/I-95		Uses I-95 everyday

Origin	Destination	Primary Routes	Commodities	Comments
Portland, ME	Fairfield and Jackman, ME	Rte I-95, Rte 1, Rte 201, Rte 139 into Fairfield		
Searsport/Bucksport, ME	Manchester, ME	Rte 3		Daily, day of interview had two trucks coming in on Rte 3
Many routes in New Hampshire, primary Location Hooksett, Others Lebanon, Portsmouth, Gorham	To highway projects in the state	Rte 3, Rte 16 NH Turnpike, Rte 101, Rte202, Rte 4, Rte 2, Rtes 114 & 103	Asphalt Stone and gravel	Hauls on secondary routes that parallel the I-state
Suncook, Hooksett	Nashua	Rte 3	Sand and gravel	Daily run
Suncook, Hooksett	Massachusetts	Rte 3, Rte 101, I-95	Sand and gravel	
Massachusetts	Lebanon, NH	I-95, NH Turnpike, Rte 101, Rte 3	Petroleum products	
Portland, ME	Lake Winnipesaukee area	I-95 ME/NH Turnpike, Rtes 9, 16, and near lake, Rtes 109, 11, 25	Petroleum products	Uses all the routes around the lake – at least 60 loads per day
Portland, ME	Concord, NH	I-95/NH and ME Turnpikes, Rte 101, Rte 3		

Study of Impacts Caused by Exempting Currently Non-exempt Mane Interstate Highways from Federal Truck Weight Limits

Appendix C: Pavement Cost Impacts Development Process for the Study Network

Maine Non-Exempt Interstate Derivation of ESAL and Pavement Cost Factors

A methodology was developed to quantify the impact on pavement performance and cost characteristics of the incremental load effect that would result from implementation of the subject weight limit policy condition under study (that is, subject to allowance of 5- and 6-axle trucks weighing up to 100,000 lbs. on the Maine Interstate System).

The effect of an incremental load depends very much upon the base loading to which the increment is applied, since the effects of the resulting total load upon the pavement are not linear. The effects of the total loading also vary by pavement type. However, converting heavy truck volumes to ESALs normalizes the impact that a wide variety of trucks, carrying a similar variety of loads have on the varying base loadings observed on the diversion network.

The normalized, linear nature of using ESALs to describe pavement wear allows for a direct correlation to be established between the number of ESALs borne by a given section of pavement and the monetary costs required to maintain that pavement.

The magnitude and pattern of truck traffic expected from implementation of the study policy scenario will be calculated in a four step process:

- Assigning *base* (existing) truck traffic (vehicle classes 4-13) and ESAL loadings to Maine's road network;
- Assigning *study* truck traffic expected to divert given implementation of the study policy scenario to the diversion network identified in Technical Memorandum #2;
- Calculating the *increment* in 5- and 6-axle volumes and associated ESAL loadings (positive or negative) between the base and study scenarios; and
- Calculating the cost impacts relating to the incremental ESAL loadings between the base and study scenarios.

The pattern and magnitude of base scenario truck traffic was developed using vehicle classification volumes and average daily ESAL factors (summarized by WIM station and vehicle classification) provided by MDOT and discussed in more detail in Technical Memorandum #1.

Since the original AASHO road tests, the calculation of ESALS has been refined to reflect pavement type, thickness and condition. The equation used in deriving ESAL factors at Maine's WIM stations is taken from the *1986 AASHTO Guide for Design of Pavement Structures*. The MDOT pavement management criteria uses a *structural pavement number* (SN) of 5 and a pavement "*terminal serviceability*" (P_t) of 2.5:

$$\beta\chi = 0.04 + \frac{0.081 \times (L_x + L_2)^{3.23}}{(SN+1)^{5.19} \times L_2^{\ 3.23}}$$

Where L_x is the load on the whole axle group; L_2 is the axle group code (1 for single, 2 for tandem, 3 for tridem).

The pattern and magnitude of incremental traffic was identified through modeling TRANSEARCH data tonnage data purchased for this study. Additionally, raw WIM data (provided by MDOT) describing class 9 and 10 vehicles was summarized (as presented in Tech Memo 1) so that average daily ESAL factors could be assigned to vehicle volumes.

Derivation of Incremental Traffic and Loading Values

Incremental truck traffic volumes and associated loadings have been calculated by building upon TRANSEARCH commodity flows that were converted to truck counts as follows. (Note: numbers adjusted for class 9&10 filter of WIM data).

Theoretically, with a GVW limit of 80,000 pounds a fully loaded 5-axle TST combination can carry a payload of approximately 50,000 pounds (**T5=25 tons**). With a GVW of 100,000 pounds, a six-axle TST combination can carry a payload of approximately 68,000 pounds (**T6=34 tons**).

Table C-1 shows a representative sample of vehicle count data taken from Weigh-in-motion stations in Maine. Table C-1 indicates the 5-axle vs. 6 axle vehicle type split for WIM stations off the Maine Interstate System (P5=0.20; P6=0.80).

Table C-1:

WIM STATIONS	**# Vehicles exceeding exempt weight range**	**# Vehicles exceeding exempt weight range**	**Totals**
5 axle vehicles (20%)	98	44	142
6 axle vehicles (80%)	309	257	566
Total	**408**	**300**	**708**

Calculation of number of vehicles:
known values from the scenario:
P5, P6 = percentage of 5 axle; 6 axle traffic (as a decimal); P5+P6=1
T5, T6 = payload tons of 5 axle; 6 axle vehicles
RT = Reebie TRANSEARCH total annual tons of freight traffic;

calculated values:
V5, V6 = annual number of 5 axle; 6 axle vehicles
VT = total annual number of 5 axle and 6 axle vehicles; V5+V6=VT

formula:
1: VT = RT / ((P5*T5) + (P6*T6))
2: **V5** = P5*VT or = (P5*RT) / ((P5*T5) + (P6*T6))
3: **V6** = P6*VT or = (P6*RT) / ((P5*T5) + (P6*T6))
using appropriate scenario values of RT, P5, P6, T5, T6

Commodity tonnages were converted to numbers of 5 and 6 axle trucks through the use of payload conversion factors (i.e. tons to trucks) and ratios of 5 and 6 axle trucks employed by each major industry segment.

Table C-2: Derivation of ESAL factors for Class 9 and 10 (5- and 6-axle) Vehicles Used to Identify the Impact of Incremental Traffic

			AADT			ESALs			million lbs					
STA_GRP	STATION	AX_GRP	below exempt	exempt	over exempt	below exempt	exempt	over exempt	below exempt	exempt	over exempt	below exempt	exempt	over exempt
1														
		5AX	3,043	442	57	2,127	1,364	277	153	37	5	0.70	3.08	4.89
	So. ME Interstate	6AX	137	128	111	55	356	590	8	11	12	0.40	2.84	5.33
2	Cent. ME	5AX	1,232	193	105	864	614	517	62	16	10	0.70	3.18	4.93
	Interstate	6AX	77	22	14	27	58	83	4	2	1	0.35	2.62	6.13
		5AX	612	39	50	580	117	260	34	3	5	0.95	3.02	5.20
	No. ME Interstate	6AX	87	13	5	37	32	28	4	1	1	0.43	2.54	5.89
3	No. ME State	5AX	47	3	1	33	12	6	2	0	0	0.69	3.43	6.32
		6AX	118	45	61	24	140	358	5	4	7	0.21	3.12	5.87
	No. ME US Rte.	5AX	268	38	25	182	120	127	13	3	2	0.68	3.17	5.17
		6AX	45	24	20	13	71	114	2	2	2	0.29	3.04	5.61
	Eastern ME State	5AX	243	33	6	248	98	33	14	3	1	1.02	3.01	5.10
		6AX	54	48	30	19	138	162	2	4	3	0.36	2.88	5.45
4	W. ME US Rte.	5AX	101	10	6	71	32	31	5	1	1	0.70	3.23	5.58
		6AX	130	68	46	27	197	268	5	6	5	0.21	2.90	5.82
	NW ME US Rte.	5AX	70	8	2	62	28	11	3	1	0	0.88	3.60	5.96
		6AX	106	68	67	21	205	348	4	6	7	0.20	2.99	5.21
	Cent. ME State	5AX	106	7	5	57	23	34	5	1	0	0.54	3.20	7.04
		6AX	31	56	33	14	159	207	1	5	4	0.44	2.83	6.31
1,2,3,4	TOTAL	5AX	5,721	773	255	4,223	2,407	1,295	291	64	24		3.11	5.07
1,2,3,4		6AX	783	469	386	238	1,357	2,157	34	43	42		2.89	5.59
3,4	ME_INT	5AX	834	99	44	652	312	240	42	8	4		3.17	5.47
3,4	FACTORS	6AX	483	309	257	118	911	1,456	20	29	28		2.95	5.67

Step 1: Base Scenario Vehicle / ESAL Traffic Distribution

The Base Scenario was developed by first assigning the 5- and 6-axle commodity tonnages to the analysis network. In the base scenario, all analysis network links representing Maine Interstate system facilities, *with the exception of those Interstate facilities representing Turnpike facilities,* were *disabled* so that commodity tonnage data could not be assigned to those links. Thus, the only links that the commodity tonnage data could be assigned to in the base scenario were

- State system facilities; and
- Turnpike facilities.

Applying these prohibitions to the analysis network yielded a base scenario network, representative of current conditions, to which the 5-and 6-axle commodity tonnage data could be assigned.

The 5- and 6-axle commodity tonnage data were then assigned to the base scenario network. Assignment of the data yielded a network representative of the Maine roadway system under base (existing) conditions.

The conversion process previously described was then used to convert assigned tons to numbers of 5- and 6-axle trucks. Then, the ESAL factors described in **Table C-2** were used to convert those volumes of trucks to ESALs.

Step 2: Study Scenario Vehicle / ESAL Traffic Distribution

To develop the study scenario, the links previously *disabled* in the base scenario (that is, the non-Turnpike Interstate facilities) were *enabled*. This yielded an analysis network representative of the study condition – one where all Maine Interstate facilities could legally bear 5- and 6-axle vehicles weighing over 80,000 lbs.

Next, the 5- and 6-axle Reebie tonnage data were assigned to the study network. The assignment of this data yielded a network describing the Maine roadway system under the study condition.

The conversion process previously described was then used to convert assigned tons to numbers of 5- and 6-axle trucks. Then, the ESAL factors described in **Table C-2** were used to convert those volumes of trucks to ESALs.

Step 3: Comparison of Base and Study Scenarios

The diversion network developed for this study is composed of roadway facilities both having heavy truck traffic drawn *from* them, as well as those having heavy truck traffic drawn *to* them. A complete analysis of pavement impacts must account for both instances.

For this analysis, comparisons of base scenario ESAL loadings on the diversion network have been separated into those facilities that *lose* heavy truck traffic given implementation of the study scenario, and those that *gain* heavy truck traffic. In total the analysis examined axle loading for 14,705 road segments.

Table C-3 summarizes the incremental differences in truck volumes and ESAL loadings upon the diversion network as observed between the base and study scenarios.

Table C-3: Summary Impacts to Maine Pavements for the Study Scenario*

Functional Classification	Base Scenario Daily Truck-Mi. - 5 Axle	Study Scenario Daily Truck-Mi. - 5 Axle	Change Daily Truck-Mi. - 5 Axle	Base Scenario Daily Truck-Mi. - 6 Axle	Study Scenario Daily Truck-Mi. - 6 Axle	Change in Daily Truck-Mi. - 6 Axle	Total Change in Daily Truck-Mi.
Major/urban collector	2,448.73	1,549.54	-899.19	12,243.26	7,746.75	-4,496.51	-5,395.70
Minor art	3,281.05	2,822.73	-458.32	16,406.07	14,114.27	-2,291.79	-2,750.11
Other princ arterial	10,240.34	8,021.52	-2,218.81	51,200.51	40,104.48	-11,096.03	-13,314.84
Principal Art. Interstate	6,817.53	10,818.84	4,001.31	34,086.25	54,093.57	20,007.32	24,008.63

* For purposes of this analysis, the functional system "Principal Arterial – Other Freeways & Expressways" has been grouped with "Other Principal Arterial."

Step 4: Estimating Maintenance & Rehabilitation Budget Savings

Given the linear nature of the relationship between the number of ESALs and pavement wear, it is assumed in this analysis that a certain percentage reduction (or gain) in ESAL loadings on facilities making up the diversion network will equate to an equal percentage in resurfacing cost savings (or increases) for that given type of roadway, based on existing MDOT expenditures. As such, it was necessary to develop a measure describing for each functional roadway system, the amount spent for pavement consumption.

Calculating MDOT Resurfacing Costs as a Function of Pavement Use

The prorating methodology used in the HHTN Identification Study and described in Tech Memo 2, was used to assign base scenario truck volume and ESAL estimates (vehicle classes 4-13) to the MDOT TIDE route system. Unlike in the development of the base and study scenarios, volume and ESAL calculations and assignments were made using MDOT's own classification volume counts and ESAL factors.

Maine has provided updated, 2003 ESAL factors (see **Table C-4**) by vehicle class for each WIM station that were assigned to links on the MDOT TIDE route system based on the proximity of route links to a given WIM station.

Table C-4: 2003 Avg. Daily ESAL Factors by Vehicle Class & WIM Station

Location	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Class 13
So. ME Interstate - 2002	0.5094	0.2874	1.6519	3.8599	0.5290	1.3105	3.6117	1.0500	1.0500	3.9375
NW ME US Rte. - 2002	0.5409	0.4795	1.0349	4.4685	0.6546	1.7882	3.9033	1.0500	1.0500	4.0688
Cent. ME Interstate - 2002	0.7146	0.3494	0.9182	4.0458	0.8280	1.4539	1.6308	2.0355	1.1753	3.9375
Cent. ME Turnpike - 2002	0.7476	0.3064	0.9051	5.3129	0.7970	1.2982	3.8145	1.5615	1.0500	5.5475
No. ME Interstate - 2002	0.8556	0.2001	0.6084	2.8068	0.6009	1.2795	0.7747	1.3885	1.0500	3.9375
So. ME Interstate - 2002	0.6106	0.2711	0.8361	4.6133	0.6893	1.5029	3.6301	1.3134	1.0500	4.3519
No. ME State - 2002	1.0269	0.5630	1.3988	4.5621	2.7619	1.5646	2.9148	1.0500	1.0500	3.9375
No. ME US Rte. - 2002	0.7558	0.2931	1.2238	3.6120	0.6679	2.0435	2.5313	1.0851	1.0500	3.9375
Cent. ME State - 2002	0.5603	0.3836	1.0935	4.2200	1.0203	1.0433	3.6933	1.0500	1.0500	3.9375
Eastern ME State - 2002	0.6137	0.2914	0.6041	5.6847	0.6706	1.7334	2.6056	1.0500	1.0500	7.1250

Using the previously-described distance-weighted prorate procedure, classified volumes and associated ESAL values were assigned to the MDOT TIDE route system. Next, values for vehicle-miles and ESAL-miles were summarized for each functional system.

Summarizing these values by functional system is a critical step in the determination of cost impacts from implementation of the study scenario, as the MDOT resurfacing program budget is partitioned by functional system.

For the analysis MDOT provided historical details on its resurfacing budget (**Table C-5**).

Table C-5: MDOT Resurfacing Program Budget

Maine Biennial Pavement Maintenance Costs by Functional Highway Class

Budget Year	Functional Class	Programmed	% of Biennial
1998-1999	Interstate	$ 15,344,000	24%
	Major Collector	$ 14,545,380	22%
	Minor Arterial	$ 16,832,350	26%
	Other Principal Arterial	$ 18,478,700	28%
	Total 1998-1999	**$ 65,200,430**	
2000-2001	Interstate	$ 9,558,000	13%
	Major Collector	$ 19,090,100	25%
	Minor Arterial	$ 24,966,000	33%
	Other Principal Arterial	$ 22,572,000	30%
	Total 2000-2001	**$ 76,186,100**	
2002-2003	Interstate	$ 9,661,000	11%
	Major Collector	$ 31,442,996	35%
	Minor Arterial	$ 29,159,000	32%
	Minor Collector	$ 211,000	0%
	Other Principal Arterial	$ 20,549,000	23%
	Total 2002-2003	**$ 91,022,996**	
2004-2005	Interstate	$ 11,356,000	11%
	Major Collector	$ 31,649,670	30%
	Minor Arterial	$ 33,707,880	32%
	Other Freeways/Expressways	$ 1,962,000	2%
	Other Principal Arterial	$ 25,929,400	25%
	Total 2004-2005	**$ 104,604,950**	

The amounts programmed in the MDOT resurfacing budget for each functional system are representative of the *entire* mileage for that functional system. However, this analysis is only accounting for the cost impacts on those facilities making up the diversion network identified for this study. The purpose here was to develop a *cost per ESAL-mile* to normalize the programmed amount for each functional system by the amount of truck traffic traveled on that system. The cost per ESAL-mile metric was then applied to incremental ESAL loadings (positive or negative) to determine cost impacts for the study scenario.

The distance-weighted prorate procedure used to assign ESAL values to the MDOT TIDE route system for this analysis does not yield a full assignment of values for all facilities on each MDOT functional system. In other words, there is a given portion for each functional system for which base ESAL values were unknown. Therefore, observed

ESAL values were expanded from the portion of the network for which values were known, to those segments were ESAL values were unknown. To accomplish this, for each functional system, the sum of known ESAL-miles was divided by the sum of the length of the known segments. This value was then multiplied by the sum of the length of the entire functional system to arrive at a "grown" number of ESAL-miles.

Estimated ESAL values were derived by calculating the ratio of mileage where ESAL values were known to that mileage for which ESAL values were unknown. An "expansion factor" was then calculated as follows:

Expansion Factor = 1 – [Unknown Ratio / 2]

The total daily ESAL-miles for each functional system (summarized from the distance-weighted prorate procedure) were applied to the expansion factor, yielding an expanded ESAL-mile value.

Study of Impacts Caused by Exempting Currently Non-exempt Mane Interstate Highways from Federal Truck Weight Limits

Appendix D: Bridge Inventory and Cost Detail Tables

Exhibit D-1 The Maine Non-Exempt Interstate Bridge Inventory

PRIMARY ROUTE	BRIDGE NAME	FEATURE ON	TOWN NAME
INT 295 NB	CNR CROSSING	US1 & I295	Portland
ST RTE 0022	CONGRESS STREET	CONGRESS ST	Portland
INT 95 NB	FORE RIVER	MAINE TURNPIKE	Portland
TURNPIKE NB	MEADER BROOK	MTPA	Falmouth
ST RTE 0115	GILBERT SMALL	115	Windham
TURNPIKE NB	COLLIER BROOK	MTPK	Gray
TURNPIKE NB	FOREST LAKE BROOK	MAINE TURNPIKE	Gray
TURNPIKE NB	PLEASANT RIVER	MTPK	Gray
ST RTE 0026	MIDDLE RANGE	26	Poland
ST RTE 0122	RTE 122/OLD HOTEL RD	POLAND SPRING RD	Auburn
TURNPIKE NB	FOSTER BROOK	MTPK	New Gloucester
US 1	RT #1 UNDERPASS	MCRR	Brunswick
RD INV 10186 23	PAUL DAVIS MEMORIAL	HIGH ST	Bath
US 1	WEST APPROACH	SMO RAILROAD	Bath
ST RTE 0142	CORBETT	142	Salem Twp
US 2	WILD RIVER	ROUTE 2	Gilead
US 2	PEABODY SCHOOL	ROUTE 2	Gilead
ST RTE 0035	CRYSTAL LAKE OUTLET	#117	Harrison
ST RTE 0035	HORRS	ROUTE 35	Waterford
US 2	PROSPECT AVE	ROUTE 2	Rumford
ST RTE 0108	MORSE	ROUTE 108	Rumford
ST RTE 0121	CNRR	CNRR	Mechanic Falls
ST RTE 0011	MECHANIC FALLS	ROUTES 11 & 121	Mechanic Falls
ST RTE 0026	SAW MILL	ROUTE 26	Paris
ST RTE 0108	FROST	#108	Rumford
ST RTE 0142	MILL POND	RTE 142 SA 1	Salem Twp
TURNPIKE NB	CITY FARM CULVERT	MTPK	Lewiston
US 202	JAMES B. LONGLEY MEM	MAIN ST US 202	Auburn
ST RTE 0011	PARSONS MILL	MINOT AVE RTE 11	Auburn
ST RTE 0136	IRON	S MAIN ST RTE 136	Auburn
ST RTE 0136	MAIN ST. BRIDGE	136	Auburn
ST RTE 0196S	LOCUST ST BRIDGE	LOCUST STREET	Lewiston
US 202	MAIN STREET	RTE 11-100-US202	Lewiston
US 202	JEPSON BROOK	202;RMPS A;D;MCRR	Lewiston
US 202	FAIRGROUNDS CROSSING	MAINE CENTRAL RR	Lewiston
ST RTE 0196	DILL	RTE 196 & MTA RAMP	Lewiston
TURNPIKE NB	NO NAME BROOK CULVERT	MTPK	Lewiston
TURNPIKE NB	NEWOEGIN CULVERT	MTPK	Sabattus
ST RTE 0126	SABATTUS RIVER	ROUTE 126	Sabattus
ST RTE 0004	BRETTUNS POND	#4	Livermore
ST RTE 0219	FOSS	#219	Leeds
ST RTE 0197	RTE1 197	RTE 197	Litchfield
TURNPIKE NB	POTTERS BROOK	MTPK	Litchfield
ST RTE 0197	PLEASANT POND	197	Richmond
ST RTE 0197	BARKER BROOK	197	Richmond
INT 95 North	VAUGHN STREAM	MAINE TURNPIKE	Hallowell
ST RTE 0009	NEW MILLS	RTE 9 & 126	Gardiner
US 201	BRIDGE STREET	BRUNSWICK AVE	Gardiner
US 201	WATER STREET	STATE OF MAINE RR	Hallowell

ST RTE 0041	GRIST MILL	RTE 41	Mt Vernon
ST RTE 0041	VILLAGE	41	Vienna
ST RTE 0027	BELGRADE LAKES	ROUTE 27	Belgrade
RD INV 10290 11	WATER ST BR. UNDERPASS	MAINE CENTRAL RR	Augusta
US 201	AUGUSTA MEM. BRIDGE	100;201;202	Augusta
RD INV 10051 11	FATHER JOHN J CURRAN	SH 30 (CONY STREET)	Augusta
US 2	HARDY BROOK	US 2-4	Farmington
ST RTE 0004	MILL POND	#4-27	Farmington
ST RTE 0016	PROCTOR BROOK	#16	New Portland
US 2	MAIN STREET	ROUTES 2.8&US201	Norridgewock
US 201	COLLEGE AVE CROSSING	MCRR	Waterville
US 201	WYMAN CROSSING UNDERPASS	MAINE CENTRAL RAILROAD	Fairfield
US 2	MARGARET CHASE SMITH S	US2 & US201	Skowhegan
US 2	MARGARET CHASE SMITH N	US2 & US201	Skowhegan
US 201	WOOLEN MILL	201	Skowhegan
US 201	MAIN ST BR.	MAINE CENTRAL RR	Fairfield
ST RTE 0011	CAIN	ROUTES 11 & 100	Clinton
ST RTE 0150	PARKMAN RD / FERGUSON STR	ROUTE 150 (MAIN STREET)	Cambridge
US 2	MAIN STREET	US2-100	Newport
ST RTE 0007	CORINNA	#7-11-43	Corinna
ST RTE 0006	GUILFORD MEMORIAL	6-15-16-150	Guilford
US 1	MAIN STREET	US 1	Camden
US 1	LINCOLNVILLE BEACH	US 1	Lincolnville
US 1	STOCKTON SPRINGS UNDRP	CHURCH ST	Stockton Springs
US 202	WARD	9-202	Newburgh
US 1A	TIN	MAINE CENTRAL RR	Bangor
INT 395 EB	MCRR/I-395	MCRR	Brewer
US 2	STATE ST.	US 2	Bangor
US 1A	JOSHUA CHAMBERLAIN	US 1A	Bangor
ST RTE 0001C	PENOBSCOT BRIDGE	ROUTE 15	Bangor
US 2	RED	US 2	Bangor
US 1	MAIN STREET	US 1	Ellsworth
US 2	SMITH BROOK	US #2	Lincoln
US 2A	JORDAN MILL	US 2 A	Macwahoc Plt
US 2A	MILL	US 2 A	Haynesville
US 2A	HAYNESVILLE	US 2A	Haynesville
US 1	STONEY BROOK	US 1	Baileyville
US 1	B&ARR/US RTE 1 RR#208-96	BANGOR & AROOSTOOK RR	Presque Isle
US 1	CLARK	RTE 143	Presque Isle
RD INV 00466 25	FARNHAM BROOK	SA 1	Pittsfield

Exhibit D-2: Modeled Truck Traffic Impacts for the Study Scenario

BRIDGE NAME	Base 5AX TRUCKS	Base 6AX TRUCKS	Study 5AX TRUCKS	Study 6AX TRUCKS	Change in 5AX TRUCKS	Change in 6AX TRUCKS
CNR CROSSING	0	0	11	56	11	56
CONGRESS STREET	3	14	2	11	-1	-3
FORE RIVER	21	106	7	37	-14	-69
MEADER BROOK	21	106	0	0	-21	-106
GILBERT SMALL	5	24	2	10	-3	-14
COLLIER BROOK	18	92	0	0	-18	-92
FOREST LAKE BROOK	21	106	0	0	-21	-106
PLEASANT RIVER	21	106	0	0	-21	-106
MIDDLE RANGE	12	62	0	0	-12	-62
RTE 122/OLD HOTEL RD	0	0	0	0	0	0
FOSTER BROOK	18	92	0	0	-18	-92
RT #1 UNDERPASS	3	13	3	14	0	0
PAUL DAVIS MEMORIAL	11	57	3	14	-9	-44
WEST APPROACH	11	53	4	20	-7	-33
CORBETT	3	13	2	12	0	0
WILD RIVER	14	72	16	82	2	10
PEABODY SCHOOL	14	72	16	82	2	10
CRYSTAL LAKE OUTLET	0	0	12	62	12	62
HORRS	0	0	12	62	12	62
PROSPECT AVE	23	117	25	127	2	10
MORSE	23	117	25	127	2	10
CNRR	0	1	0	1	0	0
MECHANIC FALLS	0	1	0	1	0	0
SAW MILL	12	62	0	1	-12	-62
FROST	15	73	16	81	2	8
MILL POND	3	13	2	12	0	0
CITY FARM CULVERT	9	43	0	0	-9	-43
JAMES B. LONGLEY MEM	16	82	16	82	0	0
PARSONS MILL	0	1	0	1	0	0
IRON	0	0	0	0	0	0
MAIN ST. BRIDGE	0	0	0	0	0	0
LOCUST ST BRIDGE	2	10	1	3	-1	-6
MAIN STREET	16	82	16	82	0	0
JEPSON BROOK	15	73	15	77	1	4
FAIRGROUNDS CROSSING	15	73	15	77	1	4
DILL	2	10	1	3	-1	-6
NO NAME BROOK CULVERT	9	47	0	0	-9	-47
NEWOEGIN CULVERT	9	47	0	0	-9	-47
SABATTUS RIVER	0	0	0	2	0	2
BRETTUNS POND	10	51	5	27	-5	-24
FOSS	9	46	11	55	2	9
RTE1 197	0	0	0	2	0	2
POTTERS BROOK	8	42	0	0	-8	-42
PLEASANT POND	2	10	0	2	-2	-8
BARKER BROOK	1	6	16	79	15	73
VAUGHN STREAM	0	0	14	71	14	71
NEW MILLS	15	76	1	5	-14	-71
BRIDGE STREET	21	104	1	7	-19	-97
WATER STREET	16	77	1	5	-14	-72

GRIST MILL	1	3	0	0	-1	-3
VILLAGE	1	3	0	0	-1	-3
BELGRADE LAKES	2	8	7	35	5	27
WATER ST BR. UNDERPASS	0	0	1	3	1	3
AUGUSTA MEM. BRIDGE	39	194	13	64	-26	-130
FATHER JOHN J CURRAN	0	0	1	3	1	3
HARDY BROOK	19	96	15	74	-4	-22
MILL POND	11	55	11	55	0	0
PROCTOR BROOK	3	13	2	12	0	0
MAIN STREET	5	23	5	25	0	2
COLLEGE AVE CROSSING	7	36	0	0	-7	-36
WYMAN CROSSING UNDERPASS	7	36	0	0	-7	-36
MARGARET CHASE SMITH S	11	53	4	21	-6	-32
MARGARET CHASE SMITH N	11	53	4	21	-6	-32
WOOLEN MILL	6	30	4	19	-2	-11
MAIN ST BR.	6	30	0	0	-6	-30
CAIN	5	25	0	0	-5	-25
PARKMAN ST/ FERGUSON	4	20	0	0	-4	-20
MAIN STREET	9	45	0	0	-9	-45
CORINNA	1	4	0	0	-1	-4
GUILFORD MEMORIAL	1	7	0	0	-1	-7
MAIN STREET	8	39	7	33	-1	-6
LINCOLNVILLE BEACH	8	39	7	33	-1	-6
STOCKTON SPRINGS UNDRP	22	112	8	42	-14	-70
WARD	7	36	0	2	-7	-34
TIN	0	0	0	0	0	0
MCRR/I-395	0	0	16	79	16	79
STATE ST.	4	22	0	0	-4	-22
JOSHUA CHAMBERLAIN	1	4	0	0	-1	-4
PENOBSCOT BRIDGE	5	27	3	16	-2	-11
RED	7	33	0	0	-7	-33
MAIN STREET	13	66	0	0	-13	-66
SMITH BROOK	8	42	0	0	-8	-42
JORDAN MILL	7	34	0	0	-7	-34
MILL	7	34	0	0	-7	-34
HAYNESVILLE	7	34	0	0	-7	-34
STONEY BROOK	10	50	10	49	0	-1
B&ARR/US RTE 1 RR#208-96	14	71	12	60	-2	-10
CLARK	14	71	12	60	-2	-10
FARNHAM BROOK	0	0	2	11	2	11

Exhibit C-3: Maintenance Cost Derivations by Bridge

BRIDGE NAME	Total Truck Volume Change	Cost Factor	Deck Area (SF)
CNR CROSSING	67	0.67	16912
CONGRESS STREET	-4	0	8600
FORE RIVER	-83	-1	0
MEADER BROOK	-128	-1	0
GILBERT SMALL	-17	-0.33	0
COLLIER BROOK	-110	-1	1400
FOREST LAKE BROOK	-128	-1	0
PLEASANT RIVER	-128	-1	1400
MIDDLE RANGE	-74	-0.67	527
RTE 122/OLD HOTEL RD	0	0	9910
FOSTER BROOK	-110	-1	0
RT #1 UNDERPASS	0	0	2960
PAUL DAVIS MEMORIAL	-52	-0.67	5289
WEST APPROACH	-40	-0.67	44178
CORBETT	0	0	0
WILD RIVER	12	0.33	6912
PEABODY SCHOOL	12	0.33	714
CRYSTAL LAKE OUTLET	74	0.67	1456
HORRS	74	0.67	1885
PROSPECT AVE	12	0.33	1586
MORSE	12	0.33	7125
CNRR	0	0	650
MECHANIC FALLS	0	0	7938
SAW MILL	-74	-0.67	0
FROST	10	0.33	0
MILL POND	0	0	2643
CITY FARM CULVERT	-51	-0.67	0
JAMES B. LONGLEY MEM	0	0	46980
PARSONS MILL	0	0	1697
IRON	0	0	6270
MAIN ST. BRIDGE	0	0	1985
LOCUST ST BRIDGE	-8	-0.33	3409
MAIN STREET	0	0	5669
JEPSON BROOK	5	0	0
FAIRGROUNDS CROSSING	5	0	4451
DILL	-8	-0.33	0
NO NAME BROOK CULVERT	-57	-0.67	0
NEWOEGIN CULVERT	-57	-0.67	0
SABATTUS RIVER	2	0	2139
BRETTUNS POND	-29	-0.33	0
FOSS	11	0.33	4600
RTE1 197	2	0	6968
POTTERS BROOK	-51	-0.67	0
PLEASANT POND	-10	-0.33	0
BARKER BROOK	87	1	0
VAUGHN STREAM	85	1	0
NEW MILLS	-85	-1	3150
BRIDGE STREET	-116	-1	10758
WATER STREET	-87	-1	1860

GRIST MILL	-3	0	1140
VILLAGE	-3	0	630
BELGRADE LAKES	32	0.33	5285
WATER ST BR. UNDERPASS	4	0	3944
AUGUSTA MEM. BRIDGE	-156	-1	94410
FATHER JOHN J CURRAN	4	0	22204
HARDY BROOK	-27	-0.33	0
MILL POND	0	0	812
PROCTOR BROOK	0	0	0
MAIN STREET	3	0	1700
COLLEGE AVE CROSSING	-44	-0.67	3222
WYMAN CROSSING UNDERPASS	-44	-0.67	5549
MARGARET CHASE SMITH S	-38	-0.67	8991
MARGARET CHASE SMITH N	-38	-0.67	7709
WOOLEN MILL	-13	-0.33	1071
MAIN ST BR.	-36	-0.67	2640
CAIN	-30	-0.33	1490
PARKMAN ST/ FERGUSON	-24	-0.33	699
MAIN STREET	-54	-0.67	8138
CORINNA	-4	0	3573
GUILFORD MEMORIAL	-8	-0.33	7000
MAIN STREET	-8	-0.33	2415
LINCOLNVILLE BEACH	-8	-0.33	518
STOCKTON SPRINGS UNDRP	-84	-1	4381
WARD	-41	-0.67	0
TIN	0	0	1162
MCRR/I-395	95	1	3158
STATE ST.	-26	-0.33	6965
JOSHUA CHAMBERLAIN	-5	-0.33	61520
PENOBSCOT BRIDGE	-13	-0.33	56600
RED	-40	-0.67	945
MAIN STREET	-79	-1	7695
SMITH BROOK	-51	-0.67	0
JORDAN MILL	-41	-0.67	1964
MILL	-41	-0.67	0
HAYNESVILLE	-41	-0.67	9372
STONEY BROOK	-1	0	0
B&ARR/US RTE 1 RR#208-96	-12	-0.33	1493
CLARK	-12	-0.33	0
FARNHAM BROOK	13	0.33	0

Study of Impacts Caused by Exempting Currently Non-exempt Mane Interstate Highways from Federal Truck Weight Limits

Appendix E: Public Comments

Public Comments to the Draft Report

During February 2004, MDOT placed the draft report and executive summary on its web site. MDOT issued a press release announcing the availability of the draft study report, and to provide notice that a public meeting to hear comments on the draft would be held on March 5^{th}.

Public Meeting Response

Twenty-two people representing Maine towns and cities, industry and the general public signed in at the public meeting held at MDOT headquarters in Augusta on March 5^{th}. After a 45 minute presentation summarizing the study results, attendees were invited to comment.

Maine Public Hearing Questions / Comments Summary

Mr. Frank Higgins, City Engineer – Brewer

Mr. Higgins stated that he believes there has been a dramatic increase in truck traffic over the past two decades, and questioned whether the use of historical pavement cost data fully captures the increase in pavement wear on the secondary road system. Believes that actual road maintenance costs maybe higher than historical expenditures and, in that regard the study may understate the cost impacts to the secondary road system.

Response: The key point from the study is the allocation across road systems. So even if the budget were larger, the direction of the impacts should remain the same.

Mr. Bill Bridgeo, City Manager in Augusta

Mr. Bridgeo questioned if anyone called asked for the opinions of officials in Augusta? He indicated that Augusta was hoping to see environmental impacts from idling trucks in cities as part of the study. Have a high number of truck accidents and would like the opportunity to comments.

Response: The study took a cursory look at emissions using federal emissions numbers. The model does not predict fewer miles overall, so without a more sophisticated methodology it was beyond the scope of the study.

Mr. Mark Woodbury - P.R. Russell, Inc.

Read a letter from Mr. Russell who was unable to attend the hearing. The letter states its support for allowing trucks up to 100,000 lbs. on Interstate highways in Maine. P.R. Russell manufactures landscaping mulch in a yard adjacent to 295. Each day up to 60-

TST trucks from this operation travel through Topson, Brunswick and Freeport. An equal amount of raw material travels into the yard. These towns are tourist attractions with narrow streets and cross-walks. These folks are not looking for big trucks, and these trucks shouldn't be in these towns on these roads.

Question: When will the Collins/Snowe bill be voted on?

Response: Will be considered as part of reauthorization.

Ms. Peggy Daigle – Town Manager, Houlton

Didn't recall being interviewed. $2.1 Billion dollars of trade across the Canadian border crossing. Just finished a very comprehensive economic development study with lots of good in formation about trade and truck traffic. Would offer that materials as additional input to the study.

Ms. Sue Gilbert – Homeowner on U.S. Highway 3

Mrs. Gilbert said she is a homeowner and parent of a school age child who lives along U.S. Highway 3. Ms. Gilbert said she supports the study and her primary concern safety and the interaction of buses and large trucks on secondary roads. Ms. Gilbert said she would like to see the study expanded to use additional crash data. Why is the study being done so late and if there is a bill currently in Congress, what can be done to ensure its passage? She recounted a story, while waiting for her child to board the bus, a truck came over the hill. The truck attempted to stop but couldn't and had to swerve and go around the bus. During the next several hours she counted 32 trucks go by her house.

Response: Tim Bolton responded as to the schedule of pending bills and opportunities for input to the process. Mr. Berndt also pointed that in each of the issues examined by the study infrastructure and safety took conservative approaches to the analysis, but used the best available data.

Mr. Michael Celli – Mayor City of Brewer

Suggested that folks interested seeing this past should write and/or call key Congressman. In addition he felt it was a good report, and appreciated the desire not to overstate any of the issues, but believed that additional issues could be expanded on. Safety. Many old towns in Maine are working to revitalize their downtown and beach or river front areas. Therefore tourism is a big issue and tourist don't want to deal with these trucks. Building a by-pass but

Mr. Celli stated that he had not heard one reason not to make this change. He stated that it was too bad the decision had to be made in Washington. He encouraged others attending the public meeting to get citizens to write Congressmen with their safety concerns about not allowing heavy trucks on the Interstate system in Maine.

Mr. Larry Armanson- Superior Carriers Inc.

Mr. Armanson indicated that his company hauls bulk liquids on tri-axle trailers. He said that for every 4 trips made using an 80,000 pound vehicle, the same amount of load could be carried in 3 trips with a six-axle 100,000 pound vehicle.

Mr. Armanson stated that their drivers are forced to use Route 7 and Route 11, even thought the Interstate is just a much straighter and flatter road. Their drivers were like to be on better safer freeway standard roads.

Jeanie Voller Freeport, Traffic and Parking Committee

Ms. Voller said she became active in Freeport due to the very issue of big trucks on secondary roads through her community and has been working on heavy truck issue since the early 1990's. She said Freeport enjoys a strong tourism business - 80,000 people each day, and these people as others have noted do not expect to see these large trucks in downtown areas. This issue is both a safety and economics concern to her community.

Lionel Cayer, City Engineer Augusta

Mr. Cayer commented about the impact of secondary roads in Augusta. He said the study did a good job trying to quantify impacts, but the study fails to capture the fact that secondary roads over time have deteriorated, and maintenance has not kept up. As an example, the Maine DOT did a major rehabilitation of Western Avenue four years ago. In the four years since that work was completed the road has rutted very badly.

The value of taking this truck stream off the secondary road system will provide more capacity in urban areas like Augusta. Having to make these trucks stop and start at controlled intersections slows down the whole traffic stream.

Someone else commented that federal data shows that trucks are more likely run red lights than other vehicles which adds to the concern of having trucks on the secondary road system.

Rob Kenerson, Director of BACTS – MPO: Bangor Area Comprehensive Transportation System.

Mr. Kenerson explained that BACTS represents 10 communities, and that he was also speaking on behalf of two other community organizations that were unable to have representatives attend the meeting. Each of the three organizations recently passed resolutions unanimously endorsing heavier trucks on the Interstate. He said it was both a safety and economic issue for these communities.

Many of the secondary roads were not designed to handle these heavy trucks. Environmental issues are also an important to citizens of Maine. Overall, strongly support the recommendations of the study.

Dale Hannington, Maine Motor Transport Association (MTA).

Mr. Hannington stated that safety one of the MTA's primary concerns. He said the MTA has been working for many years to get this provision passed. He strongly encourage others to write, email and fax members of Congress. He said he felt the study did an excellent job of spelling out the issues and impacts and provide good arguments for an exemption bill passed.

Written / Email Comments from the Public

In addition to the comments about the study received during the public meeting, MDOT also received 39 written comments by mail or email. Of these comments, 24 opposed increasing weight limits on the Interstate system in Maine, 14 favored increasing the weight limit on Maine Interstates, and one expressed no opinion about the weight policy, but posed several questions about the study conclusions. Following is a summary of the comments submitted, many of these comments are provide verbatim.

The weight of trucks now on the road causes extensive visable damage even on Maine Turnpike (I-95). A particularly good example is the hill approaching Burger King just prior to exit 11 in Gray. Although the road surface is relatively new, deep ruts are molded into the road surface as a result of heavy vehicles chugging up that incline. How is increasing the weight limit going to prevent lesser damage? Be beneficial to the State as it struggles to meet tight budgets?

Marcel Bilodeau
Bilodeau Consulting
64 Jennifer Dr.
Auburn, Me. 04210

I am writing in support of the "Maine Interstate Truck Weight Exemption". As a life-long citizen of Freeport, Me the impact of the large trailer trucks rolling down our main street is enormous. With the millions of retail customers flocking to our town, the potential for a serious accident/incident exists every hour in our most developed area in town by mandating these oversized and hazardous material carrying vehicles to travel through our downtown.

On December 14, 2003 (a Sunday) I was volunteering for an event that was sponsored by a local agency in Freeport and was stationed in the center of the town directly across from L.L.Bean's main store. In 2 hours time nine (9) large tractor trailer/tanker type vehicles came through the center of town, most having to stop at the crosswalk area in front of L.L.Bean to allow pedestrians to cross the street. With the added problems of children, elderly and the numerous Tour buses that load and unload it is surprising we have not yet had a serious accident.

As a town we have been working on this Exemption request for a number of years, to see it get this close is promising. As is said….."it doesn't take a rocket scientist" to figure out the positive impact this change will make to local infrastructure, personal safety, and day to day living in local towns.

Charlotte H. Bishop
145 Maquoit Drive

I will not be able to attend your hearing this Friday, I assume this Friday as the KJ says Friday and does not give a date.

Any way these hearings are a farce and the public is gullible. There is one easy way to get the trucks on I-95 and that is to reduce the weight limits to agree with the Federal Government limits. Sounds simple and it is except, the Governor, the head of the DOT and the Legislature are all in the pocket of the Maine Trucking Industry and their lobbyists. This hearing is just eyewash and nothing will come of it except someone will write a report, pass it to the trucking outfit to see if it meets with their ok and then file it. The present load limit is not being enforced and won't be as the truckers threatened to go on strike a couple of years ago if they were weighed and overweight as the logging trucks are all the time.

Russell F. Brown
1096 Riverside Drive
Vassalboro, ME 04989

To increase truck weight limits on any Maine roads - Interstate 95 included - seems highly unwise. Instead, common sense suggests we should scale back to 80,000 pound limits on all Maine highways, and secondary roads as well. This will save the state and municipalities millions of dollars in road maintenance, and quite possibly save lives as well. Forty tons hurtling down Route 1 creates than enough wear and tear, and danger, to allow on the road.

Speaking as an elected municipal official, and former two-term member of RTAC-5, I am aware of the issues here. It seems to me at least some members of the Maine Congressional Delegation are being bulldozed by the trucking industry lobbyists, and perhaps they have too strong a voice with MDOT. I hope you will hear our voices, too. Don't raise weight limits. I appreciate you including these thoughts in the record of official comment.

Sincerely,

Steve Cartwright
Selectman
Town of Waldoboro

To: tim.bolton@maine.gov
Subject: Truck Wgt Limits Study-Public Comment

I read the recently released Executive Summary of this report and wish to register my strong differences with many of the conclusions reached by the firm that did this work for MDOT.

Many of the conclusions are based on erronius assumptions that seem to have been made in order to produce a desired result that has been a goal of the last two administrations in Augusta and favored by most if not all of our congressional delegation.

One of these assumptions is that if overweight trucks were allowed on I-95, overall traffic of such trucks would decrease on state hwys. Extending the weight limit on ME hwys to the Interstate in no way forces trucks to use the interstate. In some case they would divert back to the interstate. But I believe increasing wgt limits on I-95 would actually attract more than the present amt of overweight trucks to ME based on the fact that our system would be more open to scuh trucks, and this increase in overweight traffic would actually increase overwgt trucks travelling on state hwys as well as add these trucks to the interstate system. Many of such additional trucks using the interstate would at some point need to sue the state hwy system to reach their destinations, as they now do, and if anything, this would increase the number of overwgt trucks using the state hwy system.

If this is the case, the projected financial savings and safety savings would be reversed, ie the cost to Maine in hwy reconstruction and accidents would actually increase, and the cost to the federal system would also increase due to ME's exemption. Much of this increase would be borne by other states, many of which do not even allow overwgt trucks on their state or federal hwys. Yet we will ask them to pay more to repair ME's federgal hwys if we allow overwgt trucks on them.

The report shows the aggravated rate and severity of large truck accidents on state hwys compared to interstates when both are used by large trucks. This accident rate will not go down if more overwgt trucks travel on state hwys due to more overwgt truck traffic overall in ME. In addition we will be adding the increased danger of overwgt trucks to our high speed interstate system. Clearly a recipe for more cost and danger to ME citizens.

Interstate were not built to hold 100,000 lb trucks any more than our state hwys were. The federal gov't does not allow 100,000lb trucks on the federal hwy system.

The ongoing assumption that these trucks will leave the state hwy system is one of the worst misconceptions of the push behind this exemption. If this were to become true why won't the trucking industry commit to lower or no use of state hwys as part of the demonstration? Can we not legislate lower wgt limits on state hwys if we open the interstate to those wgts? Why must we accept both? The truth is we will continue to have problems in the state hwys and bridges, and in addition we will open the Interstate to the same danger and cost we bear on our state hwys.

Local government officials are being mislead by the trucking industry and this study to believe their risks will be less under the proposed exemption. There is no basis at all to claim there will be less of these trucks on state hwys after passage of such an exemption.

If we truely want to reduce the cost and risk of these trucks on state hwys, the simplest and surest solution is to reduce the wgt limit to 80,000lb on state hwys as the federal gov't suggests and enforces on its routes. We don't need a study to tell us what will happen if we reduce wgts on state roads. There is no question there will be less accidents and road wear by overwgt trucks.

Why was this not included as a study option to reduce the problems of overwgt trucks on ME state hwys?

I believe the study as written is misleading and incomplete. I ask MDOT to re-assign this problem to be studied using a second option of reducing wgt limits on ALL ME hwys, both federal and state.

Paul Chartrand, Rockland, ME (former legislator and Trans Comm member)

Tim-

Man, is THIS overdue. We've been having monster trucks shake our house @ 85 Western for years - this great old house has been in my wife' s family for almost 90 years - has been fine until the past few. We've complained a half dozen times or so- finally they resurfaced the road in July, which helped some. This is one of the supidest laws I've heard in a long time- either make truck loads SMALLER or make 'em go on the Interstate, where evryone can share the costs of these whales beating the hell out of the roads. Seems like just another element of the greed taking over our society, where EVERYTHING is for sale, including the govt (nationally anyway) , health care, etc.

Keep them the hell off of secondary roads!

Ted Elliott

Dear Mr. Bolton,

Unfortunately, I have just found out today that you are accepting public comment regarding the Maine Interstate Truck Weight Exemption Study. Please accept my following comments. I apologize for their being somewhat rushed. I know that many other of my neighbors would like the chance to comment. If you could extend your deadline, that would be helpful.

I live at 195 Main Street in Freeport which is also Route 1. Every day, six axle tanker and cement trucks roar past my house. Five axle scrap metal trucks and other > 40 ton trucks drive by at all times of day and night. Aside from the noise and vibration, having these huge trucks drive through what is a largely residential neighborhood is clearly unsafe. Ironically, the interstate highway is only 1/2 mile away, yet these trucks cannot use it. Instead they must barrel along a stretch of Route 1 with lights, numerous crosswalks, and a constant pedestrian presence. The situation is without doubt a disaster waiting to happen.

I and my neighbors definitely support moving these trucks off local roads and on to the interstates. It is without question the sensible solution to the safety problems. The MDOT would be doing the residents of Freeport and many other communities a huge service by extending the weight exemption to all of Maine's interstates.

Thank you for your consideration of my comments.

You can contact me at (207) 865-1232

Charles Fischman
195 Main Street, Freeport, ME, 04032

Dear Mr. Bolton,

As someone who travels the interstate frequently, I am writing to request that weight limits on Maine roads and highways NOT be increased; in fact, if any changes are made, weight limits should be decreased.

At a time when we our dependence on gasoline is increasingly becoming clear as a threat to national security threat, since we depend on politically unstable regions of the world for oil supplies, the Maine Dept of Transportation should be acting in every way to encourage Mainers to get out of their SUV's and into gasoline efficient vehicles. "Personal safety" is already one of the reasons people give for purchasing heavy SUV's and other gas guzzling vehicles for personal use. Increasing weight limits for trucks is going to further discourage Mainers from getting into lighter weight, fuel efficient vehicles.

"As Maine go, so goes the Nation." Just because the trucking industry has gotten to the federal Dept. of Transportation, doesn't mean that Maine should have to live with those consequences. While I understand the niceties of consistent regulations, why don't we go the other way, and lobby for other states and the federal government to reduce the weight limits for trucks.

Very truly yours

Ann C. Goggin
232 Foreside Road
Falmouth ME 04105

Dear Mr. Bolton:

I endorse the findings of the Maine Interstate Truck Weight Exemption study and its intent.

Sincerely,
Tex Haeuser

Tim,

I'm writing in response to the news article - with personal experiences on local roads. One of the biggest reasons I took a new job closer to home was to get off the highway, where big rigs made me nervous. As it is, and as we all know, truckers tend to drive too fast, too far on too little sleep. Now picture them on a local farm road like Route 8 in Smithfield, or going through tiny Belgrade Lakes Village, where I now work. They still drive too fast and are too tired to care or pay attention. Sometimes, in the village, there is almost not enough room for a semi to pass through.

I have had many close calls with fishtailing trailers crossing over onto my side of Route 8 in Smithfield, and seen some close calls in Belgrade Lakes Village with pedestrians, not to mention how badly the road is chewed up. Last year, I had a few encouncters with a Canadian Cement transporter - tractor trailer - tailgating me down Route 8 and almost running me over when I slowed down to turn onto Route 225. I just wasn't going fast enough for them, even though they were forcing me beyond the speed limit. There was no room between our vehicles for me to safely pull off and let them go by.

If there is some way we can get things passed so those trucks stay on the interstate where they belong, from a personal level, I would be very appreciative. By the way, if they are too heavy for the interstate, then they are definitely too heavy for local roads.

Carol Homer

Mr.Bolton,

As Public Works Director for the City of Presque Isle and as Chairman of the Aroostook County Public Works Association, I would like to express my concern that trucks grossing 100,000 pounds cannot use the interstate hwy north of Augusta.

I-95 should be able to withstand the loads better than the secondary roads can. It does not make sense to send these heavy loads through small towns with school zones, playgrounds and residential areas. It greatly increases the potential for serious accidents. The increased maintenance expenses or the affected towns further stresses already slim budgets. It is time to act and change this antiquated law.

Sincerely,
Gerry M. James, Director
Presque Isle Public Works Department;
Chairman, Aroostook County Public Works Association;
Member, Maine Chapter, American Public Works Association Board of Directors

Dear Mr. Bolton:

As a consuming mill in the state that receives the vast majority of our incoming raw material (wood fiber) and ships significant product from our site, Sappi supports the increase to 100,000 lbs on the Maine Interstate system.

We receive over 400 incoming trucks per day at the Somerset mill alone. Many of these trucks travel rte # 2 from Bangor & Newport and could easily travel I - 95 if the weight limit were 100,000 lbs. Instead they travel with larger loads and increase the traffic on a road that is less well designed than the Interstate. From a public safety position alone the move makes sense to us.

Sincerely,
Carl Jordan
Wood Fiber & Fuel Procurement
Sappi Fine Paper North America
98 North Avenue Suite 30
Skowhegan, Maine 04976

Dear Governor Baldacci,

I oppose any increase in raising OTR weight limits to 100,000 pounds on I-95 or any other road in Maine. The roadway and infrastructure in our state are in deplorable condition due to be the level of heavy haul truck tonnage that is allowed under current regulation.

Increasing the weight limits will potentially increase the costs to the citizens in the following areas:

Medical costs to citizens involved in mishaps with these larger truck weights

Increased cost of road bed maintenance due to increased weights.

Higher cost of capital on future roadway programs to allow for such weight increases.

Of course, the potential cost in future lives lost or maimed due to monstrous trucks involved in collisions cannot gauged using a financial assessment.

Once again I urge you to actively work against any increase in truck weights.

Sincerely,
George W. King
PO Box 114
Monmouth, Maine 04259

Please do not increase weights above 80,000 pounds for trucks or any other transport vehicle

Elihu York, MD, MPH
96 Jordan Avenue
Brunswick ME, 04011

Subject: increasing weight limits on maine's interstate highways

Please support legislation to increase the load limit on Maine's interstate highways to 100,000lbs. This request is made in response to the proposals to route landfill waste through residential streets in Brewer and Bangor, Maine, to the proposed Old Town landfill site. These streets go through downtown areas where there are currently small businesses and residential traffic, and adjoin areas that are entirely residential. I am furious that this traffic may be allowed in an area where I live, solely to reduce the expenses anticipated by the waste operator to carry more, smaller loads on the interstate. Why should I pay for the damage/repairs that can be expected on these smaller roads, or face the possibility that my children may be hit by these trucks, which are guaranteed to exceed the speed limits that are currently posted (trucks on these roads already do this currently; why should the additional ones be any different?), as well as have to put up with the noise and traffic that will congest these areas? How many accidents between traffic turning in and out of these neighborhoods or parking lots and waste-hauling trucks will it take to convince congress that these sweeping limits are a bad idea?

So please, change these weights limits to put this kind of traffic on the roads built away from residential areas, roads that are designed to carry this kind of traffic, and keep it out of the areas in which we and our children play, walk to school and work, bike, and live.

Sincerely,
Cyndy and Jim Loftin
Brewer, ME

Subject: Trucks on Rural Roads

Hi
I just read the article in the Kennebec Journal concerning the effort to increase the weight limit on Maine's Interstates. As someone who travels Rte. 9 everyday from Unity to Bangor I have first hand experience about the dangers large trucks on small rounds entail. I cannot tell you how many near misses between passenger vehicles and trucks loaded with 100,000 pounds of cargo I have seen. And the people who live along the roads that these trucks are forced to travel have a lower quality of life, I am one of those people. Trucks throw up a massive amount of dirt and dust coating the trees and homes that lie along these routes. Children waiting for the bus or who just want to play in their yards are in great danger. Everytime I pass the spot on Route 9 in Dixmont where a house once stood I think of the person who was killed when a tractor trailer barreled through their home.

The rules need to change. It is silly that the majority of trucks I encounter on the interstate are empty, because they fall within the weight limit, and then on narrow back roads trucks loaded with 100,000 pounds are barreling through Maine's rural towns.

I hope the attempts to change the weight limits on Maine roads is successful, thousands of Maine people would again be able say "Maine the Way Life Should be."

Sincerely,
Rebecca Loveland

Mr. Bolton.

As a user of the City streets in Augusta I have been crowded on the rotaries by large trucks that are forced to use Augusta by this inconsistent rule if there is anything I can do to help promote a rational decision on this issue please let me.

Thank-you
Terence Peacock, Manchester resident

Subject: CSE opposed to MDOT study conclusions re 100,000 pound trucks on 1-95

Dear Governor Baldacci and Tim Bolton:

The Coalition for Sensible Energy several months ago took a position opposed to the raising of weight limits on Interstate 95 in any state. Here are our reasons:

(1) Increased costs of maintaining roads and bridges either in state or on the interstates if weights raised. Both my husband and I have served on the MDOT RTAC 2 since its inception. At an RTAC 2 meeting last year, we were shown a video from the University of North Dakota where they documented the damage from vehicle traffic and the heavier the truck the heavier the damage. On bridges the damage is even greater -- as we all know from the Waldo-Hancock bridge.

(2) The trucks have to get to the interstate and off the interstate to deliver their goods - therefore, there will still be "local" traffic and damage to local and state roads and bridges. Maine's roads and bridges were not built to accomodate this heavy traffic - but neither were the interstates.

(3) Safety issues: As anyone who has taken physics knows the heavier the object, the longer it takes it to stop. The 100,000 truck has more momentum than the 80,000 truck and thus subject to more potential accidents, particularly in heavy traffic areas.

(4) Increased truck traffic on highways is also contributing a great deal to the already congested roads. Building more capacity in many cases is either not possible or too expensive.

(5) Congestion leads to more and more air pollution, greater greenhouse gas emissions, more time lost in commuting from ALL the vehicles on the roadways.

(6) By raising weight limits and lowering the cost per ton for shippers, there is also a perverse disincentive to then promote better use of rail and ship for freight traffic. This very much concerns us as we want to have these less polluting forms of transportation used MORE not less.

PLEASE WITHDRAW THE MDOT STUDY.

Thank you

Pam Person, Project Director
Coalition for Sensible Energy
479 Back Ridge Road
Orland, ME 04472

Dear Mr. Bolton:

We have reviewed the February 2004 draft executive summary of "Study of Impacts Caused by Exempting Currently Non-exempt Maine Interstate Highways from Federal Truck Weight Limits."

We concur with the findings of the study. We do believe as the study suggests that increasing the weight limit from 80,000 pounds to 100,000 pounds on I-95 north of Augusta would have positive impacts on safety and infrastructure.

We manage 850,000 acres of timberland which located in the northern half of the State of Maine. We annually harvest and transport approximately 230,000 cords (575,000 tons) of wood from these lands. Virtually all of this wood is transported to market using 5-axle and 6-axle tractor-semi-trailer trucks. With current weight limits we are unable to utilize I-95 with loaded trucks. We do use I-95 for returns of empty trucks. An increased weight limit of 100,000 pounds on I-95 would be a definite benefit to us in our business and as the study suggests, we believe that the net effect would be more safety on Maine highways and that there would be significant savings regarding maintenance of State highways and bridges.

We strongly support the increased weight limit.

Sincerely,
PRENTISS & CARLISLE MANAGEMENT COMPANY INC.
Lawrence E. Philbrick, Vice President

Dear Mr. Bolton,

I am a resident of Freeport, and support permitting tri-axle trucks to travel on Interstate 295. The current practice which forces these heavy trucks to drive through our village Main Street, immediately by the front entrance to L.L. Bean makes no sense. The enhanced safety of removing these trucks from the congestion of shoppers, employees, and residents is self-evident. I urge the Maine Department of Transportation to permit this change. Thank you for your consideration.

Sincerely,

Rodney J. Regier
56 South Street
Freeport, Maine 04032
(207) 865-6687

Subject: Truck traffic

Hello Tim.
Please try to keep the large trucks on the interstate. We don't need them "barreling" through our little village of Unity.

Thank you,

Thelma Whitehouse

Mr. Bolton,

I recently heard about the Maine Interstate Truck Weight Exemption Study. I would like to suggest as a follow-up that the state seriously consider changing its policy of diverting oversize loads off the Maine Turnpike.

I currently serve as chairman of the South Berwick Transportation Committee. One of our biggest concerns in South Berwick is that mobile homes and other oversize loads are routed right through the center of our town on Rtes. 236 and 4, instead of on the Turnpike where they belong. This practice causes unsafe conditions, adds extra wear and tear to our roads and diminishes the quality of life in our town center.

Many of the issues addressed in the Maine Interstate Truck Weight Exemption Study are also raised by the diversion of oversize loads through South Berwick and other southern Maine towns. I urge the state to use the momentum generated by your recently completed study to take action on this long-standing problem faced by my community and many others.

Thank you,
John Rudolph
384-5988

Subject: FW: sample email on no heavier trucks

March 11, 2004

Dear Mr. Bolton,

I have just heard about the Maine DOT study on truck traffic on I-95. I noticed that this report recommends increasing truck weights to 100,000 pounds on the balance of I-95 I oppose this increase for the following public health and safety reasons:

100,000 pound trucks are going to use more fuel and cause our already diminished air quality to get worse. Maine has the highest adult asthma rate in the country, and thousands of Maine kids with asthma will be affected too!

100,000 trucks will still be operating on state highways this is not going to solve Maine's problems of truck traffic on local roads.

This is just another attempt to slowly ratchet up the truck weights to the even more dangerous Canadian weights of 110,000 pounds. Maine is a place where people come for a vacation to get away from big trucks. Maine does not want to become like New Jersey.

I am opposed to efforts to expand the number of roads that allow for more dangerous heavier trucks. Thank you for the attention you have given my comments and I sincerely hope you reconsider. I am looking forward to your response.

Saskia Janes, Director
Maine Public Health Association

Many of the comments were received as a form letter containing essentially the following text:

Dear Mr. Bolton,

I have just been made aware of the Maine DOT's study on truck traffic on I-95. This report recommends increasing truck weights to 100,000 pounds on the balance of I-95. I oppose this for the following reasons:

- 100,000 pound trucks are more dangerous.
- 100,000 pound trucks will still be operating on state highways, this is not going to solve Maine's problems of truck traffic on local roads.
- This is just another attempt to slowly ratchet up the truck weights to the even more dangerous Canadian weights of 110,000 pounds to support the NAFTA trade agreement.

I am opposed to efforts to expand the number of roads that allow more dangerous heavier trucks. Please reply to my message as soon as possible.

The following people submitted comments based on this text:

Laurie J. Therrien
Market Manager
St. Lawrence & Atlantic Railroad

Tracie L. Mason
St. Lawrence & Atlantic Railroad
Accounting Assistant
(207) 753-4211

George Shaler
13 Merriam St.
Portland, ME 04103

Jim MacDonald
[jmacdonald@gwrr.com]

Christina Liros, DC, CNS
Assistant Project Director
Medical Care Development, Inc.
11 Parkwood Ave.
Augusta, ME 04330

Leo P. Caron

Larry Cookson

Scott Kemmerer, MD, FACEP
Director of Emergency Services
Maine General Medical Center-Augusta Campus

Harry Grimmnitz, MD

Jacob Gerritsen MD

Thomas L. Fusco
66 Board Road
Brunswick, Maine 04011
[tfusco@gwi.net]

George T. Casey, Director
United Transportation Union New England Legislative Board
42 Oak Knoll Road
Natick, MA 01760

John P. Tracy
Maine State Legislative Director – BMWE
(Brotherhood of Maintenance of Way Employees)

Several respondents made additional comments to the standard text in the form letter:

"I'm opposed to efforts to expand the number of roads that allow for more dangerous heavier trucks. There is also the economy to look at, if this does go through it would create more unemployment with railroad workers and with truck drivers."

William E. Remington
Legislative Rep.
Division 191
24 Thompson Street
Concord, N.H. 03301-3737

"I sincerely hope that you will consider the need for safety for those driving in smaller vehicles on Maine's highways and certainly, that you would not advocate for even more dangerous 110,000 pound truck weights, approval of which may be next on the agenda."

Mrs. Ruth Gabey
880 Lewiston Road
West Gardiner, ME 04345

"I have just been made aware of the Maine DOT's study on truck traffic on I-95. This report recommends increasing truck weights to 100,000 pounds on the balance of I-95. First of all I am wondering why we need to increase the truck weights, when we are failing to keep our roads safe at this time. Just take for example, the current accidents over the past two days, such as the one yesterday in Hallowell, and the other on 202 causing the death of an 18 month old (granted it was not on I-95, however, allowing heavier trucks on I95, brings more trucks into the area). Increasing the weight, also brings into consideration of adding a third lane for safer travel, which other states have created in order to accommodate additional trucks.

Where is the data that supports the need for additional truck weight? Is supply and demand for goods that strong that we need to up the weight limit? I don't see this in the proposal and I oppose this proposal on one basic issue – safety for our Maine citizens.

Just like Maine has taken a strong stance on "No Billboards" and have stayed true to its roots by being different, thus attracting tourists to our unique state, let's keep the truck traffic to a minimum, to provide the environment where everyone can get away from it all.

I hope you take these concerns positively, in that I really care about the environment of this state and, its people and am concerned about the vision we need to instill for the future. Somehow we need to strike a balance that creates a win-win for all and one that continues the tradition of this state, as a place where people want to live without all the traffic hassles that most other states endure.

Kellie Miller
4 Lincoln Street
Halloway, ME 04347

MAINEDOT RESPONSE TO COMMENTS ON DRAFT "STUDY OF IMPACTS CAUSED BY EXEMPTING CURRENTLY NON-EXEMPT MAINE INTERSTATE HIGHWAYS FROM FEDERAL TRUCK WEIGHT LIMITS"

On behalf of the Maine Department of Transportation, I would like to thank those members of the public who forwarded comments on our study of the impacts of allowing higher State of Maine truck-weight limits for 5- and 6-axle combination trucks on currently non-exempt Maine Interstate Highways. MaineDOT undertook the study to determine how a Congressional exemption allowing this policy would affect highway safety and infrastructure.

The study predicts that a federal truck-weight exemption for 5- and 6-axle trucks on Maine's currently non-exempt Interstate highways would cause many of these truck that weigh between 80,000 and 100,000 pounds to divert from numerous secondary roads to the Interstate Highway System. This "diversion network" of secondary roads would extend from Portland to the Canadian border. The study further predicts that this policy would reduce truck-related crashes by three each year and save Maine taxpayers between $1.3 million and $2 million in pavement and bridge costs.

The study demonstrates that removal of these heavy trucks from our congested secondary roads to better engineered Interstate highways makes sense from a safety standpoint. It notes that the crash rate on Maine secondary roads is nearly three times higher than on the non-exempt Interstates and almost four times higher than on the Maine Turnpike, which currently allows the heavier trucks over 80,000 pounds. National studies also show a similar result.

Some commenters suggested reduction of Maine State truck-weight limits as a proposed solution. This would aggravate rather than reduce the safety problem with heavier trucks. It would require up to 25% more vehicles to carry the same payload, resulting in more heavy vehicle exposure on our highways and intersections, thereby increasing the risk of truck-involved crashes. These extra vehicles will increase air pollutants and their adverse health affects. Economically, weight limit reductions would increase Maine transportation costs, a cost which would ultimately be paid by Maine consumers. Maine's economy would also be disadvantaged relative to other states, which allow higher truck weights. It is highly unlikely that the Maine Legislature would enact legislation to reduce truck weights, given the consequences I have mentioned.

The proposed weight-exemption policy examined in our study would not lead to further truck-weight increases beyond current Maine truck-weight limits. Instead, it would simply redirect heavy trucks that are currently allowed on our secondary roads to a safer highway system that was designed to carry them.

Many thanks to all of you who have commented on our study.

Tim Bolton
Study Project Manager
Office of Freight Transportation
Maine Department of Transportation