USDOT Comprehensive Truck Size and Weight Limits Study

MAP-21 §32801

Public Input Meeting #3

May 6, 2014

Agenda

- Overview –
  - Study Scope and Purpose;
  - Recap of Desk Scans;
  - Overview of Independent Peer Review Report #1
- Key Themes –
  - Roadway Networks and Geographic Coverage;
  - Data Coverage;
  - Freight and Travel Forecasts;
  - Truck Configurations;
  - Comparative Analysis (Baseline and Scenario Traffic)
  - Role of Contractor Team and NAS Peer Panel

Agenda - Continued

- Study Elements: Assumptions and Limitations –
  – Highway Safety and Crash Analysis
  – Pavement Comparative Analysis
  – Bridge Comparative Analysis
  – Enforcement/Compliance Analysis
  – Modal Shift Analysis
- Wrap Up and Next Steps –
  – Concluding the Study
  – Peer Review Report #2
  – Public Input Meeting #4
  – Final Report

MAP-21 Requirements

- Two Basic Questions Must be Answered:

  1. What difference is there in highway safety risks (accident severity and frequency), infrastructure damage and delivery of effective enforcement between trucks operating at and below current federal size and weight limits compared to trucks that operate above those limits?
  2. What would the impact be in these same areas if a change were to be made to current federal truck size and weight limits?

MAP-21 Requirements

- Statutory Requirements for the Analysis:
  - Seven areas of study are being addressed in the Study, including accident frequency and risk factors, pavement and bridge infrastructure impacts and the frequency of violations.
  - A "six-axle and other alternative configurations of tractor-trailers" are being assessed as part of the Study.
  - Impacts on the operation of other modes and on the national transportation system are being evaluated with regard to these "alternative configurations."

Desk Scan Recap

- Desk Scan Reports for each of the five Study Areas were completed, posted to the Project Website and reviewed by the NAS Peer Review Panel;
- Approximately 154 comments, questions, and recommendations made by Stakeholders relating to the December 2013 Public Input Meeting #2 were received and evaluated for inclusion in the technical work;
- The desk scan reports will be updated to reflect the information and reports shared by Stakeholders.

NAS Peer Review Report #1

- USDOT has engaged the National Academy of Sciences in seating a peer review panel to provide independent review of the Desk Scan Reports and Technical Report;
- The Panel is Chaired by Dr. James Winebrake, Rochester Institute of Technology, and includes fourteen other members from private and public sectors and academia;
- Desk Scan Reports for each of the five Study Areas were reviewed by the NAS Peer Review Panel, which released its Report in April 2014;
- USDOT met with the Panel on April 14 to address questions on the Study methodology, models and data.

NAS Peer Review Report #1

- The Panel's Report #1 included the following findings:
  - The Scan Reports are a logical step in conducting a Study of this nature where significant amounts of prior related work has been completed;
  - In no cases were superior models or data sets omitted;
  - A synthesis of models and data used in prior studies needs to be prepared to strengthen the case for the models and data used in this Study;
  - The linkage between Project Plans and Desk Scan Reports is not strong; it was not apparent to the Panel that information from the Desk Scan Reports was used in constructing the Project Plans.

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NAS Peer Panel Report #1

- As a result of the Panel's findings on the Desk Scans, USDOT intends to:
  - Improve the documentation showing the link between the Desk Scan Reports and the Project Plans; and,
  - Construct the synthesis of prior work for each of the Desk Scan Reports listing the technical methods, models and data used in previous research.
- More information on the peer review panel and its work can be found at: http://www8.nationalacademies.org/cp/projectview.aspx?key=49568

Key Themes Identified Through Previous Public Involvement Sessions

Roadway Networks and Geographic Coverage

- Roadway Networks –
  - The Study focuses on assessing the impacts that trucks operating above current federal truck size and weight limits have on the Interstate Highway System, the National Highway System (NHS) and the National Network (NN);
  - Impacts on non-NHS and non-NN roadway networks will be qualitatively addressed applying results developed in the Study to local roads and bridges;
  - “Reasonable access roadways” need to be included in the discussions contained in the Study.

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Roadway Networks and Geographic Coverage

- Geographic Coverage –
  - The Study is not limiting the assessments to urban areas or to rural areas, but encompasses the roadway networks previously described at a network or system-wide level;
  - The Modal Shift Analysis is cognizant of the differences in roadway geometrics between rural arterials and urban roadway networks and is applying assumptions toward the suitability of operating the "alternative configurations" on those roadway segments;
    - For example, the operation of a triple trailer combination in a densely developed urban-core area may not be practical or feasible, resulting in their mobility being limited to higher order roadway systems.

Data Coverage

- Data Used in the Study –
  - The Study is using a wide range of data sets available to the public;
  - State-submitted data through FHWA's Highway Performance Monitoring System (HPMS) and Traffic Monitoring Program are in wide use in the assessments;
  - The Modal Shift Analysis is using the data provided in the Freight Analysis Framework and rail-based data available through the Surface Transportation Board to measure the impact that "alternative configurations" have on rail operations;
  - Pavement Analysis work is using Long-Term Pavement Performance (LTPP) data where applicable and supplementing these data to satisfy the input requirements of the Mechanistic-Empirical Pavement Design Guide (M-EPDG) software;
  - Bridge Analysis work includes data models for more than 500 bridges previously constructed by State DOTs in order to operate the analysis using VIRTIS;
  - Enforcement and Compliance Analysis work has relied heavily on State-submitted data through the Annual Certifications and State Enforcement Plans submitted to FHWA.

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Data Coverage

- Data Used in the Study, cont. –
  - The Safety Analysis is using data needed to operate the TruckSims®™ software to conduct the vehicle stability and control analysis of the "alternative configurations";
  - The Violation and Inspection area of the Safety Analysis is relying heavily on information maintained by FMCSA in their Motor Carrier Management Information System (MCMIS) database;
  - State crash reports, generally, do not include vehicle weight information; additional work is required to complete this analysis:
    - Truck crash information and exposure data is being developed on a corridor basis to conduct a comparative analysis of routes that heavy/large trucks now use as compared to corridors that they do not use;
    - Highway Safety Information has been accumulated from states, where it is available, to evaluate the safety risks associated with configurations of interest to the Study;
    - Fleets currently operating triple trailer combinations allowed under the ISTEA "Freeze" have shared crash data.
  - All three tracks are being pursued simultaneously to mitigate for variations/gaps.

Freight and Travel Forecasts

- USDOT recognizes that truck travel will continue to increase in line with population growth and growth in the national economy;
- The Study will not develop new forecasts of future travel levels or increased freight beyond estimating the shift of freight between truck types, roadways and among the modes caused by the introduction of the “alternative configurations” on a national basis;
- In order to complete the required comparative assessments, changes in freight volumes or travel demand levels are being held constant to more accurately identify potential impacts of a change to current federal truck size and weight limits.

Truck Configurations

- Criteria was established for identifying the “other alternative configurations” included in the Study:
  - Currently in use in the US, Canada, or elsewhere;
  - Operationally practical for use in the US;
  - Stakeholder input was considered (US DOT solicited input as part of the May 29, 2013 Public Input Meeting #1).
  - USDOT made the final decision.

Configurations Included in Study

Configuration	# Trailers or Semi-Trailers	# Axles	Gross Vehicle Weight (pounds)
1) 5-axle vehicle [Control Vehicle]	1	5	80,000
	1	5	88,000
2) 6-axle vehicle	1	6	91,000
	1	6	97,000
3) Tractor plus two 28 or 28 ½ foot trailers [Control Vehicle]	2	5	80,000
4) Tractor plus twin 33 foot trailers	2	5	80,000
5) Tractor plus three 28 or 28 ½ foot trailers	3	7	105,500
6) Tractor plus three 28 or 28 ½ foot trailers	3	9	129,000

Truck Configurations

- The five-axle, 88,000 pound configuration was identified at the outset of the Study to understand the performance implications of trucks operating at the manufacturers' gross vehicle weight rating;
- The six-axle, 91,000 pound configuration was selected to evaluate a six-axle truck that complies with the federal bridge formula (FBF-B);
- The six-axle, 97,000 pound configuration was selected due to federal legislative interest (HR 612, 113th Congress);
- All three of these configurations are assumed to have 53-foot semi-trailers and comply with single axle and tandem axle limits currently in place.

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Truck Configurations

- The twin 33-foot trailer, 80,000 pound combination was selected considering the strong interest expressed by Less-Than-Truckload (LTL) carriers have expressed;
- Triple trailer combinations, with each trailer of 28 ½-foot in length and gross vehicle weight of not more than 105,500 pounds, was selected resulting from the high level of interest expressed by diverse Stakeholders;
- Triple trailer combinations, with each trailer of 28 ½-foot in length and gross vehicle weight of 129,000 pounds, was selected to evaluate the upper limit of gross vehicle weight that this configuration is allowed to operate at under the "ISTEA Freeze."

Truck Configurations

- Interest expressed in the “Rocky Mountain Double” and the “Turnpike Double” Configurations was not initially as high as that expressed for the triple trailer configurations included in the Study; additional input came too late to adjust the Study.
- Considering the scope of the work laid out by Congress in §32801 of MAP-21, and the timeframe for completion of the Study, USDOT chose not to compromise the quality of the assessments being performed by adding additional Longer Combination Vehicles (LCVs) to the Study.

Comparative Analysis:
Above, At and Below Current Federal Limits

- As stated at the outset of this meeting……
  - Two Basic Questions Must be Answered:

1. What difference is there in highway safety risks (accident severity and frequency), infrastructure damage and delivery of effective enforcement between trucks operating at and below current federal size and weight limits compared to trucks that operate above those limits?
2. What would the impact be in these same areas if a change were to be made to current federal truck size and weight limits?

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Comparative Analysis:
Above, At and Below Current Federal Limits

- Question 1 describes how the comparative assessments are being performed comparing the…
  - Highway safety and crash severity and frequency;
  - Pavement and bridge infrastructure impacts;
  - Level of effort and expense of enforcement actions;
  - Impacts on the operation of other modes

  between trucks operating above current federal limits to those operating at or below those limits;
- Trucks carrying divisible and non-divisible load permits or operating under exemptions to those limits provided in federal law or regulation are included with trucks operating above current federal limits.

Role of the Contractor Team and NAS Peer Panel

- The Contractor Team:
  - Contractor services were procured through the Indefinite Demand/Indefinite Quantity (IDIQ) contracting approach used widely by federal agencies and provided for in the Federal Acquisition Regulations (FAR);
  - IDIQ contracts are competed as full and open;
  - Firms selected for IDIQ awards compete for subsequent proposals in the areas in which the Government has found them to be qualified;
  - CDM Smith successfully competed for the contract to provide technical and analytical support on this project.

Role of the Contractor Team and NAS Peer Panel

- The Contractor Team:
  - As provided in the "Request for Technical Proposals," the contractor proposed a number of nationally recognized experts to undertake the work required by USDOT;
  - The contractor also presented information on work they previously completed so USDOT could determine the Team's qualifications and ability to complete the work, as well as evaluate that the Team was free of bias;
  - USDOT went on to request commitments from the prime contractor and all personnel on the Team that no work related truck size and weight be undertaken during the course of the project;
  - Each member of the contractor's team was vetted for bias through a review process established by the prime contractor.
  - A Team of nationally recognized experts that are free of bias and capable of producing high quality work was put in place.

Role of the Contractor Team and NAS Peer Panel

- The Role of the Contractor Team:
  - Conduct the technical and analytical work required to complete the Study;
  - Generate results from the completion of the technical work in each of the Study's five areas of investigation;
  - Produce a Compiled Technical Report that USDOT intends to use as a basis for the Report to Congress;
  - Support and assist in the delivery of Public Input Meetings.

Role of the Contractor Team and NAS Peer Panel

- The NAS Peer Panel:
  - USDOT executed a contract with the National Academy of Sciences to provide an independent, objective peer review of the Desk Scan Reports and the Compiled Technical Report;
  - The National Academy has long-established procedures in place to seat peer review panels designed to provide such services;
  - USDOT required that a balance of perspectives from public agencies, academia and private sector freight experts be included on the Panel with expertise in highway safety, modal shift, pavements, bridges and truck enforcement;
  - A fifteen-member Panel was seated by the Academy following their published appointment procedures;
  - Further, the Academy has procedures in place, that were applied in the appointment process, that screen for conflicts of interest.

Role of the Contractor Team and NAS Peer Panel

- The Role of the NAS Peer Panel:
  - A fifteen-member Panel has been seated led by Dr. James Winebrake from the Rochester Institute of Technology;
  - Members of the panel are from the public and private sector and from academia, a list of the Panel members and their respective backgrounds is available on the NAS website;
  - USDOT Subject Matter Experts serving as members of Project Technical Oversight Committee (TOC), accompanied by Subtask Leaders on the Project Team met with the Panel on December 5, 2013, and briefed the Panel on the Desk Scans;
  - In early April, the Panel completed their first Report, a review of the Desk Scan Reports;
  - On April 14, 2014, at the request of the Panel, the TOC and Project Subtask Leaders again met with the Panel to provide a briefing on the technical approach, methods, models and data employed to complete the Compiled Technical Report.

Role of the Contractor Team and NAS Peer Panel

- The Role of the NAS Peer Panel:
  - The Panel will receive and review the Compiled Technical Report scheduled for completion this spring;
  - A meeting between the Panel and the TOC and Project Subtask Leaders will be convened for a briefing on the Compiled Technical Report.
  - USDOT views the peer review process as an important element in developing and completing the Report and appreciates the Academy's partnership in providing this valuable service.

Scope: Focus Areas for Study

Technical approach updates for the following areas –

- Safety Analysis
- Pavement Analysis
- Bridge Analysis
- Compliance Analysis
- Modal Shift Analysis

Safety Analysis – Overview

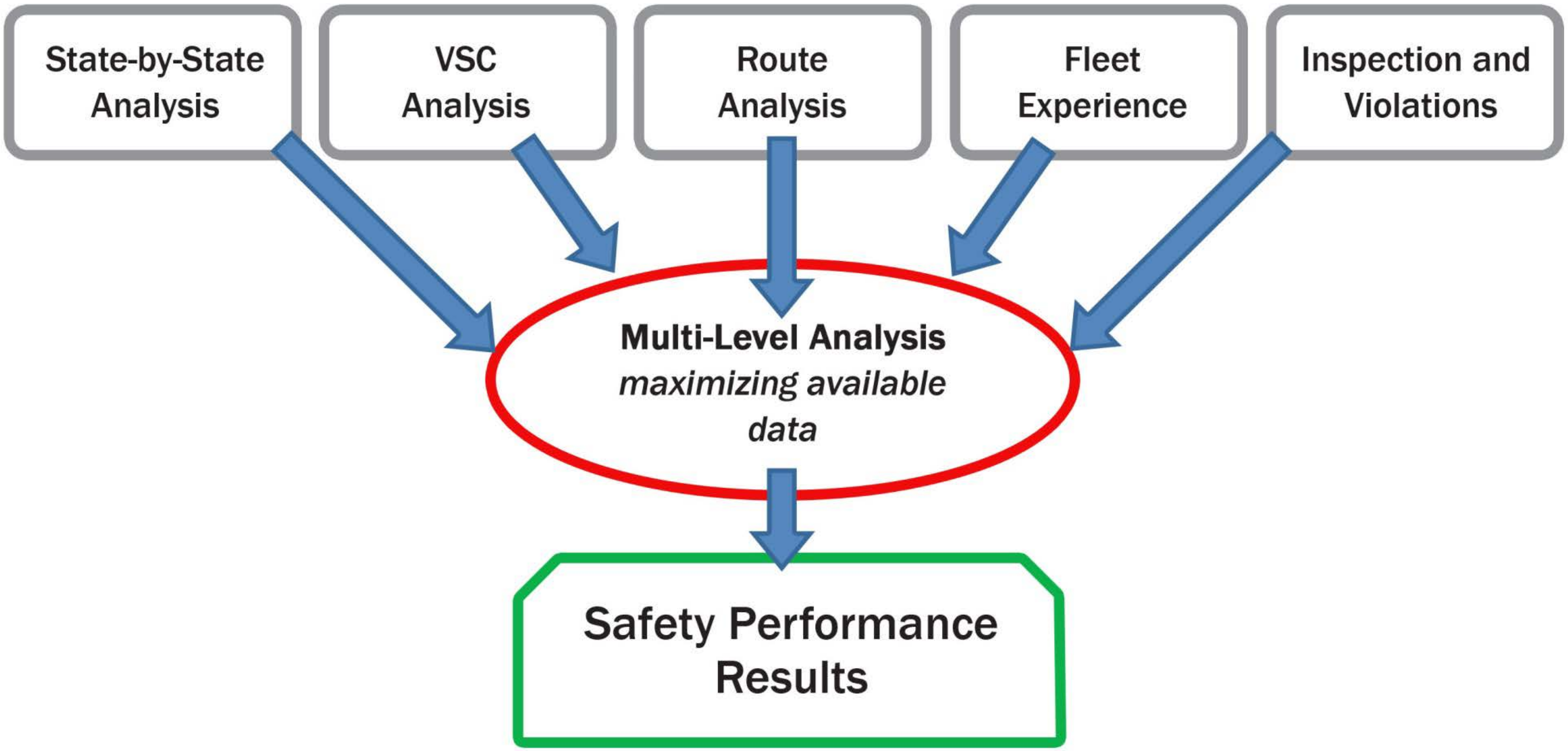
Purpose:

- Estimate safety impacts from introduction of alternative truck configurations to the fleet

Methodology Overview:

- Crash analysis using three methods (fleet, state-by-state, route)
- Vehicle stability and control analysis using existing models

Safety Analysis Multi-Level Approach



Overall Safety Analysis – Method

- (1) Determine safety performance results
- (2) Use safety inspections and violations analysis to identify Violation Patterns
- (3) Use vehicle simulation to evaluate performance measures, using 3-S2 and twin 28.5’ (80,000 pounds) as control vehicles
- (4) Prepare truck crash, truck stability and control, and safety inspection/violation findings

Crash Analysis – Limitations and Assumptions

- Assumptions
  - Driver skills in future operations match those in current operations
  - Management practices of firms operating candidate vehicles in future will be similar to current firms or evolve there from regulations
- Limitations
  - Current triples carriers limited in number
  - Vehicle weight (and often configuration) is not an element of crash data; this data gap severely limits analysis of on-road safety
  - Vehicle weight and configuration are not elements of state-collected exposure data; must rely on WIM data estimates

Vehicle Stability and Control – Model

- Vehicle Stability Simulation – to evaluate performance measures and understand practical loadings

Vehicle Stability and Control – Assumptions and Limitation

- Assumptions
  - Dry van trailers with fixed, rigid loads
  - Steer axles with two tires, all others with duals on both ends
  - Multi-trailer combinations modeled with pintle hitch
  - Air ride suspension, not leaf spring
  - Vehicle characteristics common to U.S. practice
  - Simulations on dry pavement except brake in curve
  - Three braking conditions:
    - ABS on all axle ends
    - ABS malfunctioning on one axle or both axles on tandem
    - Brake malfunctioning on one axle end or one tandem end
  - Electronic stability control not included
- Limitation
  - No exposure data to relate the results to crash rates on network

Safety Inspection and Violation Analysis–Limitations and Assumptions

- Assumptions
  - Majority of MCMIS inspection data comes from roadside inspections at both fixed and roadside facilities
  - WIM is widely used as pre-screening but no indicator in MCMIS to identify whether GCVW was captured from WIM or static scales
- Limitations
  - Insufficient Level 1 inspections to compare twin-trailers to triple-trailer in any state
    - Exploring the possibility of going to Level 1 and Level 2 inspections
  - MCMIS does not include exposure data
    - Exploring ways to obtain state-level VMT data for analysis

Safety Analysis – Highway Barriers

Purpose:

- Estimate effects from heavier vehicles when they lose control and impact barriers.

Overview:

- Highest capacity Median barriers, bridge railings, roadside guardrail only crash-tested with 80,000 pound truck maximum.
- Will seek analyses of barrier events, data permitting.

Safety Analysis – Data

- Highway Safety Information System (HSIS)
- Weigh-in-Motion Data
- Crash Data from Carriers and State DOTs
- Motor Carrier Management Information Systems (MCMIS)
- Turnpike Authorities (truck classification estimates)

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Pavement Analysis – Overview

Purpose: Estimate pavement costs related to the introduction of alternative truck configurations to the fleet.

Methodology Overview:

- Use of sample pavements sections to understand cost impacts from alternative truck configurations
- Use of latest pavement models
- Use of existing databases
- Use a seven step approach (climate zone, pilot sections, results)

Pavement Analysis – Models

- *AASHTOWare Pavement ME Design®*
- FHWA's *RealCost (Life Cycle Cost Analysis)*

Pavement Analysis – Data

- Pavement and Loading Data from Long Term Pavement Performance Program (LTPP)
- *Pavement Mechanistic-Empirical (ME) Design*® Default Data
- FHWA Highway Performance Monitoring System (HPMS) Sample Section Data
- Travel and Axle Load Spectra from CTSW Study Traffic Data Sets

Pavement Analysis – Limitations and Assumptions

- Assumptions
  - Scenario vehicle axle weights resemble base case fleet
  - Sample set of pavement sections selected to cover a range or conditions present on the NHS can be used to represent the national system
  - Distresses that can be predicted with current generation *AASHTOWare Pavement ME Design®* software are sufficient to assess the impact of different load scenarios
  - Performance impacts predicted for new pavements will be similar to those for existing pavements
- Limitations
  - Not all scenario vehicles in current use – have to assume axle load distributions for those vehicles

Bridge Analysis – Overview

Primary Study Tasks:

- The direct structural effects on the bridges.
- The overall damage related bridge costs that would accrue.

Sub-tasks:

- The Relative Structural Damage Risk Levels to Bridges in terms of the resulting quantity and cost of potential bridge strengthening or replacement.
- Bridge Posting Assessment.
- Assessment of Fatigue Related Effects.
- Bridge Deck Repair and Replacement Costs.
- Bridge Deck Preservation & Preventive Maintenance Costs.

Bridge Structural Analysis

Purpose:

- Estimate the bridge structural impacts related to the introduction of alternative truck configurations to the fleet.
- Determine the percentage of bridges that will require load posting, strengthening or replacement as a result of the new configurations.
- Estimate/Address costs associated with the predicted strengthening or replacements.

Methodology Overview:

- Use 500 representative bridges from the National Bridge Inventory to determine structural demands.
- Use AASHTOWare Bridge Rating program (ABrR).
- Use LRFR Modeled Bridges.

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Bridge Structure Analysis – Method

- (1) Use the National Bridge Inventory (NBI) database to select the 500 representative bridges, consisting of the 12 most common bridge types, for structural analysis
- (2) Compile and evaluate the resulting Load Rating Factors for the current fleet (base case trucks) and for the proposed alternative truck configurations.

Bridge Damage (Cost) Responsibility Assignment Method

Conduct an axle-load based cost allocation approach to estimate costs related to the alternative truck configurations.

Bridge Task – Assessment of Fatigue Effects

- Conduct a qualitative bridge fatigue study in two categories: load induced fatigue in steel, and concrete fatigue in reinforced concrete bridge decks.
- Conduct a study of the effects of heavier trucks and more numerous heavy axle loads on bridges.
- Analyze typical bridge types with respect to primary stress fatigue in steel bridges.

Bridge Analysis – Data

- National Bridge Inventory (NBI)
- Weigh-in-Motion (WIM) Data
- Financial Management Information System (FMIS) for bridge capital cost information
- Unit cost data & Indices

Bridge Analysis – Models/Methods

- AASHTOWare Bridge Rating Software –ABrR (VIRTIS)
- Regional Bridge Deterioration Model
- Fatigue Assessment using ‘CSI Bridge’ software to determine relative stress ranges at the fatigue critical locations on typical bridges.

Bridge Analysis – Assumptions:

- Maximum nominal axle weights by truck configuration used for structural analysis and fatigue analysis.
- Bridge capital costs based on 2011 FMIS cost summaries, including both State and Federal shares.
- Bridge Damage is equated to Repair and Replacement Costs.
- Exponential accumulation of bridge damage (costs) is reflective of cumulative axle loadings and by extension to increases in incremental loads.

Bridge Analysis – Limitations:

- Little segregated cost data available for deck preservation and preventive maintenance.
- Of necessity, limited fatigue analysis performed supports a qualitative assessment.
- LRFR capability not available for structural analysis of trusses and girder-floorbeam bridges.

Compliance Analysis Overview

Purpose:

- Estimate enforcement costs and effectiveness of enforcement related to introduction of the alternative truck configurations to the fleet
- Identify affected federal laws and regulations

Methodology Overview:

- Use of existing databases at the federal and state levels of government
- Use of existing enforcement community to understand current practices and trends

Compliance Analysis – Method

- (1) Gather and synthesize information about enforcement program methods and technologies
- (2) Determine enforcement program costs at national level and compare costs between states and for different vehicle configurations
- (3) Determine enforcement effectiveness by analyzing and comparing:
  - Enforcement program activities (*e.g.,* weighings, citations, citation rates)
  - Compliance for various vehicle types
- (4) Prepare an inventory of all federal laws and regulations that would be affected by a change in federal truck size and/or weight limits

Compliance Analysis – Data

- State Enforcement Plans (contains data about enforcement costs and resources)
- Annual Certifications of TSW Enforcement database (contains data about weighings, citations, permitting)
- Weigh-in-motion data
- Experiential data from enforcement community
  - Methods of enforcement, technologies, and permitting
  - Costs and effectiveness

Compliance Analysis – Limitations and Assumptions

- Assumptions
  – Data reported by states on costs and enforcement activities are reliable
  – WIM data used for compliance assessment are sufficiently representative
  – In-service vehicle configurations are appropriate surrogates for Alternative Configurations with similar TSW limits
- Limitations
  – Cost data reflect resources directed at enforcing TSW and safety
  – Definitions of certain data elements may be inconsistently interpreted by states submitting the data
  – Any differences arising from state-to-state comparisons cannot be solely attributed to differences in TSW limits

Modal Shift Analysis – Overview

Purpose:

- Estimate freight shifts between trucks, and between truck and other modes due to introduction of alternative truck size and weight limits
- Estimate other impacts from freight shifts including: energy, emissions, traffic operations

Methodology Overview:

- Use of existing models and databases to estimate intra-modal and inter-modal shifts

Modal Shift Analysis – Models

- Mode shifts will be estimated using the Intermodal Transportation and Inventory Cost (ITIC) model.
- ITIC model has been updated and refined since the USDOT's 2000 Comprehensive Truck Size and Weight Study

Modal Shift Analysis – Data

- The FHWA's Freight Analysis Framework (FAF) will be the primary commodity flow data base used in the modal shift analysis. The Carload Waybill Sample will be used for rail diversion analysis;
- The FAF is being disaggregated to the county level to allow impacts of restricting certain configurations to limited highway networks to be analyzed.

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Modal Shift Analysis – Assumptions

- Cargo under 70k GVW will not divert to 3-S3s
- 3-S3 will not become the workhorse semitrailer
- Twin 33-foot doubles will not become workhorse LTL vehicle
- 90% of short line carloads interline with Class 1 railroads
- All scenario vehicles except triples have same access to cargo origins and destinations as base vehicles
- Triple configurations operate in LTL line haul (terminal to terminal) operations
- Analysis year – 2011

Modal Shift Analysis – Limitations

- Precise origins and destinations of shipments are unknown – county centroid is used as a proxy
- Precise routes used to ship commodities between origin and destination are unknown
- Characteristics of specific commodities within broad commodity groups may vary
- WIM data more limited off the Interstate System

Modal Shift Analysis – Limitations

- Shipment sizes and annual usage rates for freight flows between individual origins and destinations must be estimated
- Rail carload and truck/rail intermodal origins and destinations must be estimated
- Multi-stop truck moves to accumulate and/or distribute freight from/to multiple establishments are not captured
- Model does not account for state weight exemptions for truck hauls of certain commodities in bulk to rail or water head

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Modal Shift – Energy & Emissions Method

- Build vehicle models for scenario configurations
- Calibrate for drag and rolling coefficients
- Maintain power/weight ratios, where engines are used in marketplace
- Use 3 drive cycles for study networks, using NESCCAF cycle and WHVC cycle
- Outputs in per ton-mile for each scenario configuration

Energy & Emissions – Models and Data

- Energy consumption and C02/NOx emissions will be estimated using SWRI's vehicle simulation tool developed for NHTSA. Will use NESCCAF and WHVC cycles for drive cycle analysis.
- Energy/emission analysis will use base vehicle (Kenworth T-700 tractor model used in other analyses) and various engine ratings for each scenario configuration and drive cycle.

Modal Shift – Traffic Operations Method

- Passenger car equivalents are estimated for each scenario vehicle configuration
- Delays for the base case and each scenario are estimated using the latest traffic delay tools
- Impacts on congestion costs are estimated by multiplying changes in delay by estimated values of time for each scenario vehicle
- The analysis is consistent with the 2010 Highway Capacity Manual and the FHWA Traffic Analysis Toolbox

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Wrap Up and Next Steps

Concluding the Study

- Technical work is fully engaged with interim work products being developed and refined;
- Peer Review of the Technical work to be considered;
- USDOT has begun outlining the Report to Congress.

Study Schedule:

Activity:	Description:	Date:
Complete Desk Scans and Project Plans	All five Sub-Task areas included in the Study (Safety, Pavement, Bridge, Enforcement, Modal Shift) produced Desk Scan Reports and Project Plans/Schedules	Fall, 2013
Meet with National Academy of Sciences Peer Review Panel	USDOT met with the Peer Review Panel that NAS seated to address questions on Desk Scans.	December 5, 2013
2nd Stakeholder Input Meeting	National Webinar conducted presenting Desk Scan Reports and Project Plans/Schedules.	December 18, 2013
3rd Stakeholder Input Meeting	Webinar	May 6, 2014
Draft Compiled Technical Report Completed	Technical work completed in each Sub-Task area will be compiled into a single Technical Report	Spring, 2014
4th Stakeholder Input Meeting	Site to be Determined.	Summer, 2014
Compiled Technical Report Review Completed by NAS Peer Review Panel	NAS Peer Review Panel completes their review of the Compiled Technical Report; USDOT meets with Panel to address questions.	Spring/Summer, 2014
Report Submitted to Congress	Final Report transmitted to Congress	Mid-November, 2014

- Independent Peer Review Report #2
  - The NAS Peer Panel will receive and review the Compiled Technical Report;
  - Findings from this review will be contained in the Panel's Report #2;
  - USDOT's TOC and the Project Subtask Leaders will meet with and brief the Panel on the Compiled Technical Report to assist the Panel in its review of that work product.

- Public Input Meeting #4
  - Tentatively scheduled for July, 2014, USDOT will conduct Public Input Meeting #4;
  - The meeting will focus on the presentation of the Compiled Technical Report;
  - The USDOT TOC and Project Team members will participate in the delivery of this meeting.

- Final Report –
  - The Report to Congress will be delivered by its deadline of mid-November, 2014;
  - The Report will be prepared by USDOT based on the information and results contained in the Compiled Technical Report;
  - USDOT will incorporate its findings into the Report to Congress.

Thank You for Your Interest and Support for this Important Project