10 EXPERIENCES FROM THE DFW REGION TO ASSIST THE STUDY OF THE FUTURE INTERSTATE HIGHWAY SYSTEM

TRANSPORTATION RESEARCH BOARD

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DFW WITHOUT INTERSTATE HIGHWAYS?

Population
- 2017: 7.2 Million
- 2040: 10.7 Million
- 4th Largest Metropolitan Area by Population
- 1 Million People Added Per Decade Since 1960

Area
- 12 Counties
- 9,441 Square Miles
- 2nd Largest Metropolitan Planning Area by Land Area

Lane Miles
- Freeways: 4,665 in 2013 / 5,253 by 2035
- Priced Facilities: 672 in 2013 / 2,000 by 2035

Economy
- Home to 22 Fortune 500 Firms
- Projected to be ranked 11th globally in metro GDP
- Represents 32% of State’s Economy
SPEEDS AT I-35E, SB, DALLAS CBD

Speeds, mph, by time of day (15-minute interval) . May 2017

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<th>Morning Peak</th>
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Legend speed, mph

- 10
- 20
- 30
- 40
- 50
- 60
- 70

RELIABILITY

- MEAN
- STANDARD DEVIATION
- COEFFICIENT OF VARIATION

National Performance Management Research Dataset
EVOLUTION OF “MANAGED” LANES

- HOV
- Tolled Managed
- Dynamically Priced
- Guaranteed Transit
- Early Deployment Vehicle Technology
- Driverless Trucks
Characteristics of Premium Transit Services that Affect Choice of Mode: TCRP Report 166
Regional Transportation Council funded $13M pilot on IH 30
LEVERAGING/INNOVATIVE FUNDING

Private Funding: $2.13 B + $0.5 B (maint.)
Public Funding: $0.55 B

Private Funding: $2.56 B + $0.8 B (maint.)
Public Funding: $0.83 B
TOLLED MANAGED LANE EQUITY

• Over 6 million Vehicles have Used in 3 years (DFW Population – 7 mil)
• 33% of the Users each Month are New
• Only 15% of Vehicles are Luxury Brands
• 98% of the Users are Casual Users with the Average Bill of Approximately $10/Month
• Average Speeds in Managed Lane Corridors up 10-15%, Including Non-Toll Lanes
• Congestion in Non-Toll Lanes Significantly Reduced (Guaranteed Speeds)
SH 161 SHOULDER LANE

- Peak Hour:
  - SB peak hour travel lane begins;
  - NB peak hour travel lane ends

- Off-Peak Hour:
  - NB peak hour travel lane begins;
  - SB peak hour travel lane ends

- Peak Hour Lane:
  - Monday - Friday
  - 6:00AM - 10:00AM

- Shoulder Lanes:
  - 11' Shoulder Lanes (2)

- General Purpose Lanes:
  - 12' General Purpose Lanes (2)
TRANSPORTATION ASSET MANAGEMENT CAP/MAIN – DELIVERING DATA-DRIVEN CORRIDOR SOLUTIONS

• Applies asset management business principles and performance-based data analysis tools (TransFACTS) to develop holistic transportation planning and investment strategies

• Corridor deficiencies or performance gaps can be addressed using low/moderate-cost techniques with faster implementation

• Examples of TransFACTS data:
  – Traffic Volumes/Congestion Levels
  – Crash Rates/Types
  – Facility Geometric/Condition Issues
  – TDM/TSM Operation & Applications
  – Access/Circulation Preferences
  – Socioeconomic & Environmental Issues
  – Urban Design/Sustainability Efforts
TECHNOLOGY UPGRADES

- Flexible Pavement Configurations
- Wireless Infrastructure/Fiber
- Resiliency
- IoT Sensors
- Edge Data Sharing
- Induction Loops
INTERSTATE HIGHWAY RESILIENCY

• Interstates are Built for 50+ Years of Service
• Most Regions of the Country are Currently Planning/Design Major Interstate Reconstruction Projects
• Elements Most Vulnerable to Extreme Weather and Climate Change:
  – Pavement
  – Bridges
  – Slopes
  – Retaining Walls
  – Direction of Lanes
• Risk-based Decision Making
• Are new Design Standards and Approaches Needed to Enhance Resiliency of the Interstate System?
Federal Interests in Transportation Infrastructure

• **Commerce Clause, U.S. Constitution.**
  The Commerce Clause (Article 1, Section 8, Clause 3) provides Congress the power “to regulate commerce with foreign nations, and among the several states, and with the Indian tribes.” The federal government’s interests in interstate commerce, in part, led to creation of the Interstate Highway System.

• **General Welfare Clause, U.S. Constitution.**
  The General Welfare Clause (Article 1, Section 8, Clause 1) provides Congress the power to collect and spend money for the certain items, including the “general welfare” of the United States.

• **Title 23, United States Code.**
  Title 23 – Highways sets forth the regulations pertaining to the federal government’s participation in transportation infrastructure, which Congress declares necessary to ensure “the needs of local and interstate commerce for the national and civil defense” are met.

Policy Question: To what extent can or should state governments frustrate federal interests in promoting a national system based on the foundation above?