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

TRANSPORTATION RESEARCH BOARD

Michael Morris, P.E.
Director of Transportation
North Central Texas Council of Governments
MPO For Dallas-Fort Worth Region

September 12, 2017

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

Hour	DOW	TIME OF THE DAY: Early Morning Off-Peak												Morning Peak												Midday Off-Peak												Afternoon Peak												Night Off-Peak											
		0:00	0:15	0:30	0:45	1:00	1:15	1:30	1:45	2:00	2:15	2:30	2:45	3:00	3:15	3:30	3:45	4:00	4:15	4:30	4:45	5:00	5:15	5:30	5:45	6:00	6:15	6:30	6:45	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30	12:45	13:00	13:15	13:30	13:45	14:00	14:15	14:30	14:45	15:00	15:15	15:30	15:45	16:00	16:15	16:30	16:45	17:00	17:15	17:30	17:45	18:00	18:15	18:30	18:45	19:00	19:15	19:30	19:45	20:00	20:15	20:30	20:45	21:00	21:15	21:30	21:45	22:00	22:15	22:30	22:45	23:00	23:15	23:30	23:45
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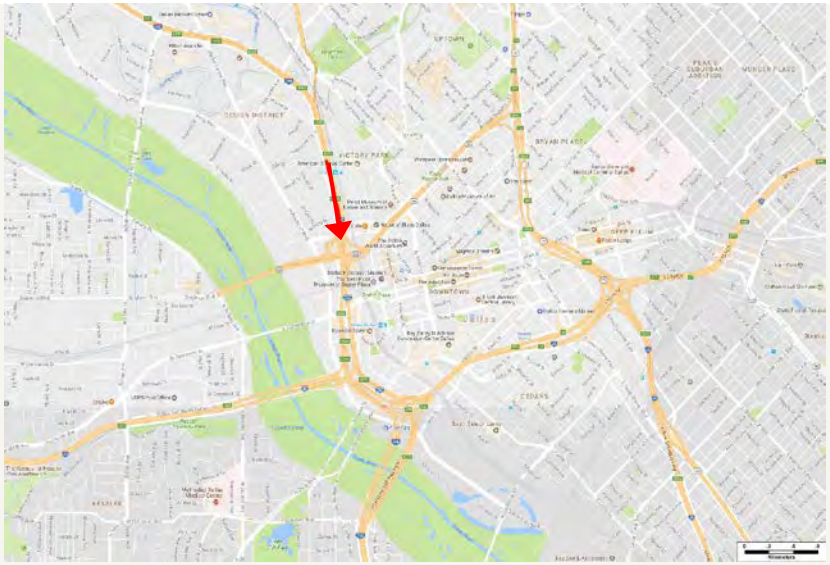
Legend

speed, mph

1	10
11	20
21	30
31	40
41	50
51	60
61	70

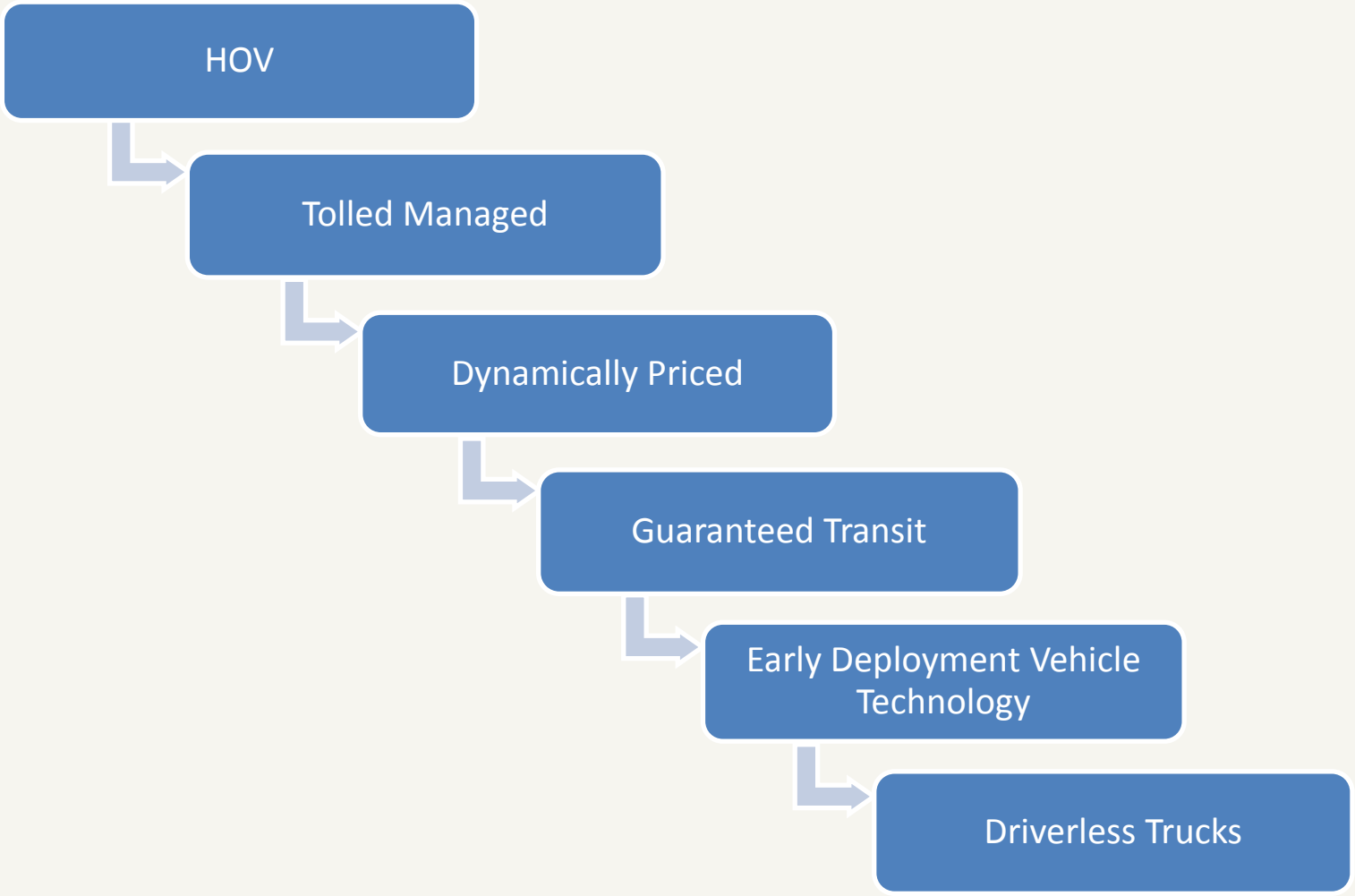


RELIABILITY

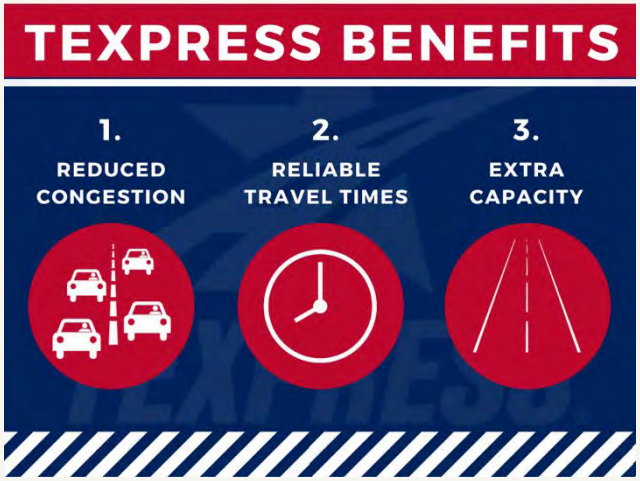
- MEAN
- STANDARD DEVIATION
- COEFFICIENT OF VARIATION

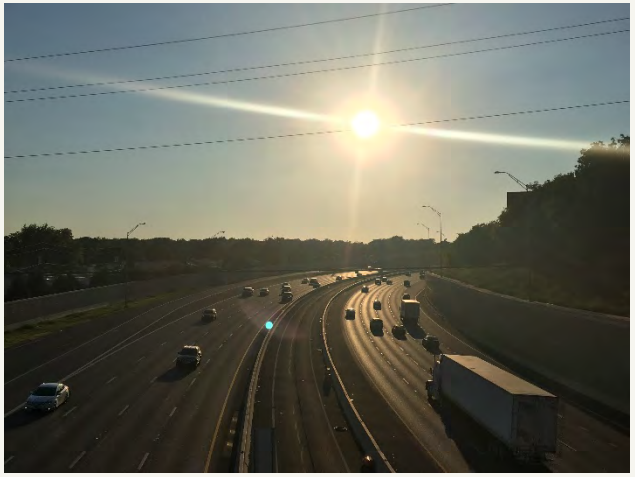
National Performance Management Research Dataset

EVOLUTION OF "MANAGED" LANES



GUARANTEED TRANSIT

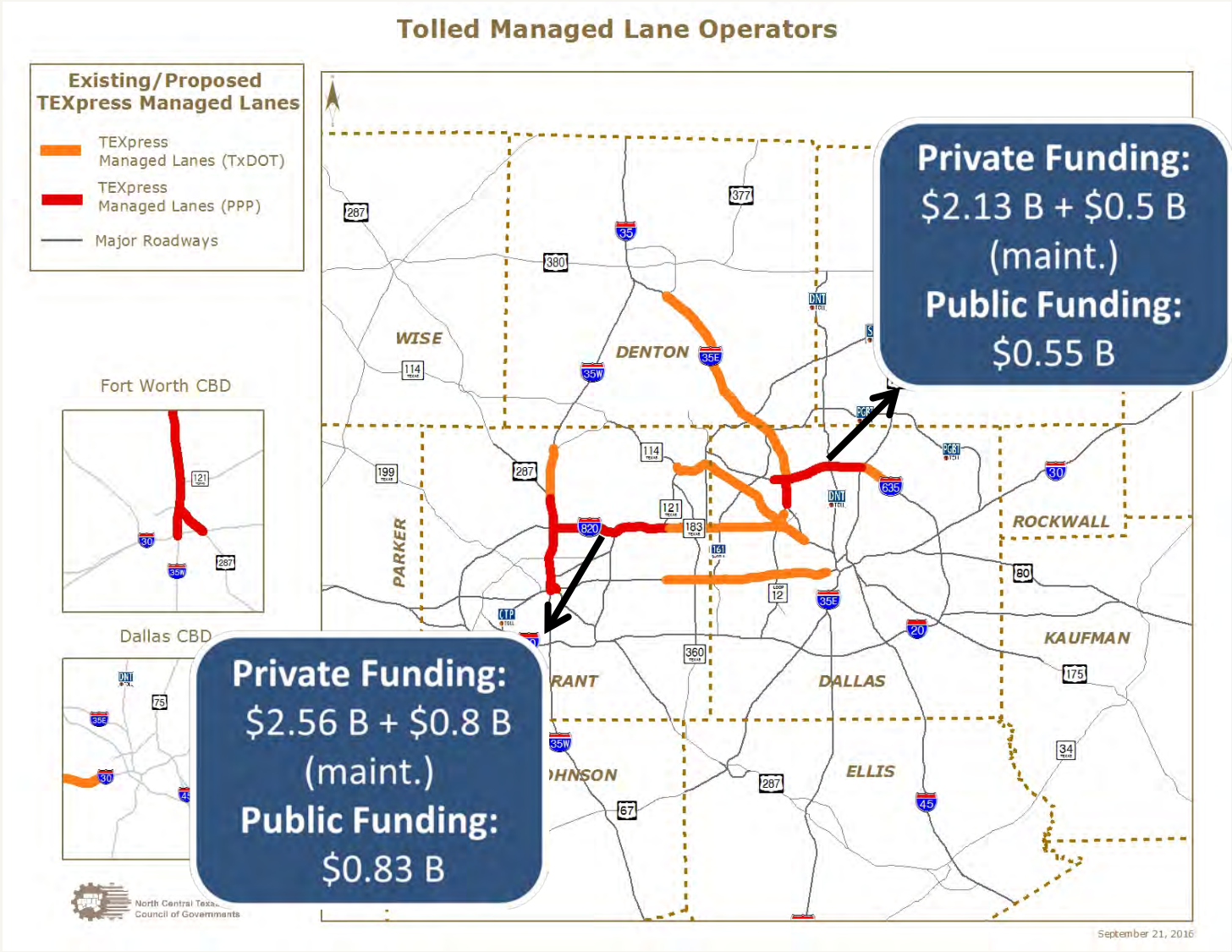




Characteristics of Premium Transit Services that Affect Choice of Mode: TCRP Report 166

Regional Transportation Council funded $13M pilot on IH 30

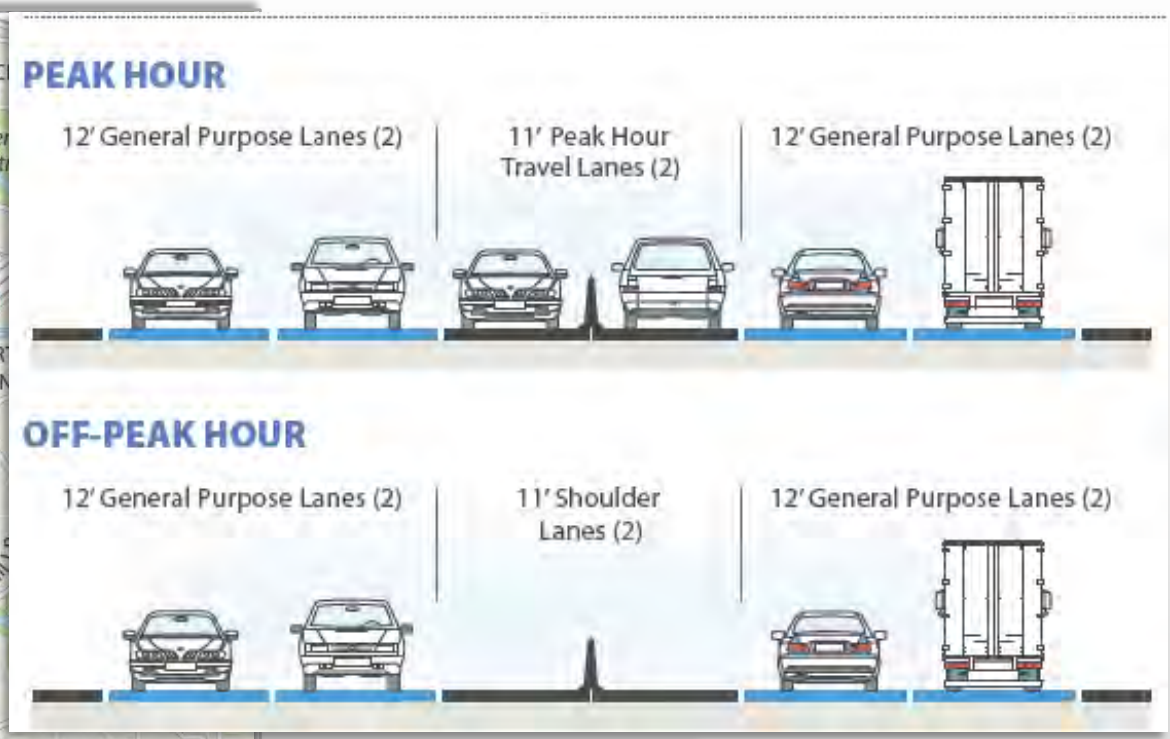
LEVERAGING/INNOVATIVE FUNDING



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)

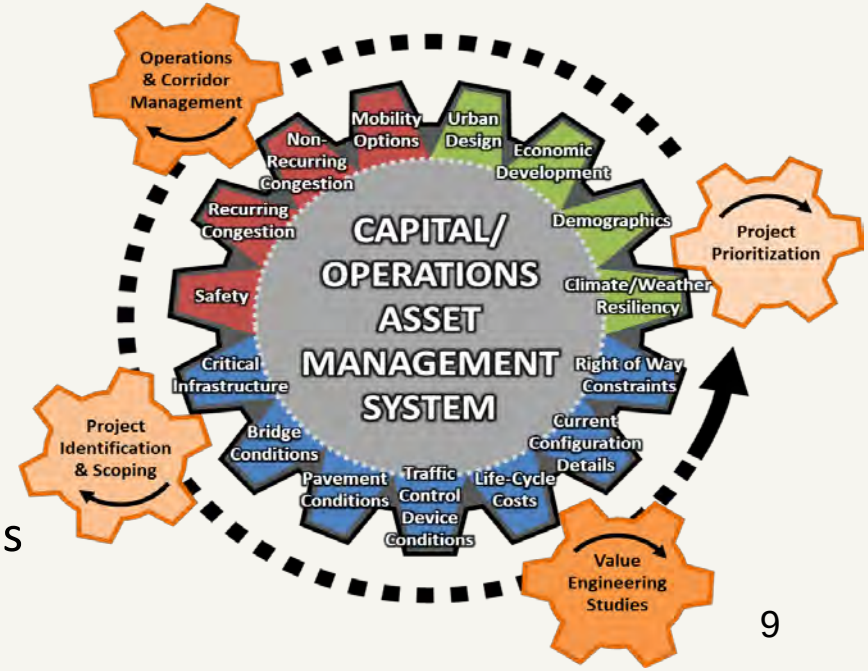
SH 161 SHOULDER LANE



TRANSPORTATION ASSET MANAGEMENT

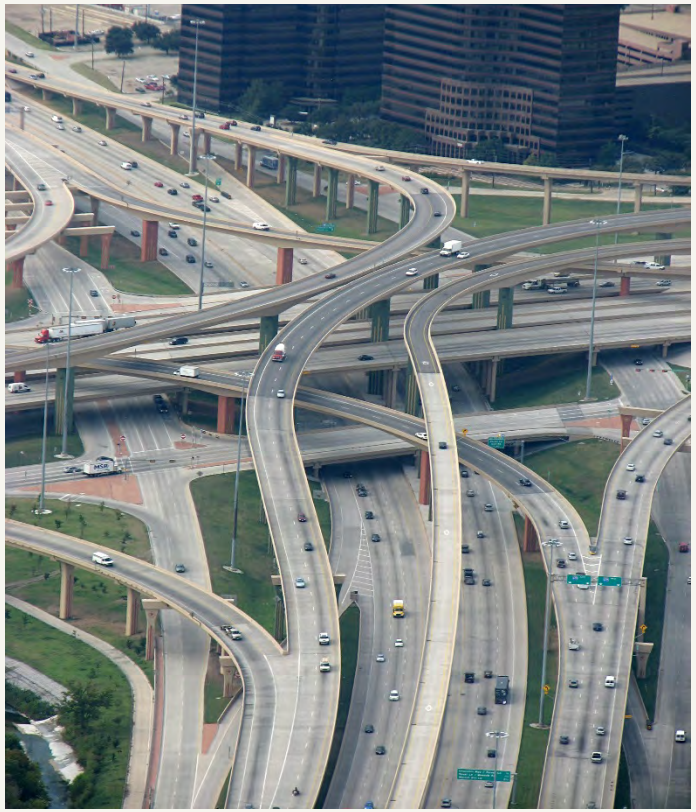
CAP/MAIN – DELIVERING DATA-DRIVEN CORRIDOR SOLUTIONS

- 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?