Our troubled major highways

- Chronic congestion on the freeways
- Ongoing problem of deferred maintenance
- Large backlog of unfunded major projects
- Project costs exceeding benefits
- Declining and unpopular fuel taxes
What are the underlying causes?

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestion</td>
<td>Lack of pricing</td>
</tr>
<tr>
<td>Deferred maint.</td>
<td>Cheap design, low political priority</td>
</tr>
<tr>
<td>priority</td>
<td></td>
</tr>
<tr>
<td>Backlog</td>
<td>Little long-term financing</td>
</tr>
<tr>
<td>Boondoggles</td>
<td>Politics vs. economics</td>
</tr>
<tr>
<td>Funding battles</td>
<td>Fuel tax seen as just a <em>tax</em></td>
</tr>
</tbody>
</table>
A better system would:

1. Use pricing to manage traffic.
2. Charge customers for what they use.
3. Select projects with B>C, positive ROI.
4. Minimize *life-cycle* costs, not initial cost.
5. Finance major projects via revenue bonds.
What has just been described?

Public utilities such as:

- Electricity
- Telephones
- Natural gas
- Cable/satellite
- Water supply
How are highways different from the other utilities?

All the others are *businesses*.
- Customers pay the business *directly*, based on how much they use.
- Pricing depends on services chosen.
- Major projects financed, based on customer revenue streams.
- Projects show positive ROI, or won’t get financed.
- Proper maintenance essential, or customers complain, go elsewhere, etc.
Major highways as businesses?

Could be companies, toll agencies, or nonprofit user co-ops.  
Charge per mile driven.  
Add capacity when/where needed.  
Decide projects based on ROI, not politics.  
Treat people as customers, not “users”.
This is not a pipedream:

- Private turnpikes were common in 18th century Britain and 19th century USA.
- Investor-owned toll highways common today in France, Italy, Spain, Portugal.
- Investor-owned expressways in Brisbane, Melbourne, & Sydney—and Santiago, Sao Paulo, Mexico City
- Investor-owned toll bridges in Canada, U.K.
U.S. is a late-mover, but has begun using long-term toll concessions

- Beltway and I-95 express lanes near DC
- LBJ (I-635) express lanes in Dallas
- Indiana Toll Road & Chicago Skyway
- PR 22 in San Juan
- I-595 express lanes in Ft. Lauderdale and I-4 under way in Orlando
- $36 billion worth of projects financed thus far.
These are public-private partnerships (P3s), not “privatization”

- Single team to design, build, finance, operate, and maintain: 35 to 70 years.
- Similar to electric utility franchises.
- Financed by debt and equity.
- Long-term agreement details performance requirements, penalties.
- Guaranteed long-term maintenance.
- Good fit for mega-projects.
Economic vs. political incentives

- Weeds out projects with B<C, poor ROI.
- As long-term “owner,” company designs project to minimize life-cycle cost.
- Customer/provider relationship makes design customer-friendly.
- Tolling/charging policy negotiated in advance.
- Termination and handback provisions protect the state and customers.
P3 megaprojects shield taxpayers from significant risks

- Cost overruns & change orders
- Late completion
- Inadequate traffic & revenue
- Deferred maintenance
- No bailouts in event of bankruptcy
Where does the money come from for highway P3 mega-projects?

- U.S. and global infrastructure investment funds
- U.S. and overseas pension funds (incl. Texas ERS)
- U.S. and global debt markets
- Tolls as the revenue stream

The problem is not enough good projects, not a shortage of funds!
How to begin the transition

- Build on need to change from per-gallon to per-mile funding.
- Make the new MBUFs true user fees, paid to the highway provider.
- Start per-mile charging with Interstates, as easiest to transition.
- Introduce charging based on need to finance Interstate reconstruction.
Trump infrastructure proposal could help

- Incentives for states to use long-term P3s.
- Remove federal ban on Interstate tolling.
- End federal ban on commercial rest areas on Interstates.
- Expanded tax-exempt financing for P3s.
- Environmental streamlining for major projects.
Why highway utilities may happen (1)

Three major problems:
- Looming insolvency of federal government
- Dire fiscal problems of state governments, especially unfunded pension systems
- Fading of per-gallon fuel taxes as main highway funding source.

Stein’s Law: “If something cannot go on forever, it will stop.”
Why highway utilities may happen (2)

Three new factors:

- The growing worldwide and US track of long-term P3 highway projects
- The growth of global infrastructure equity investment funds
- The need and desire of US pension funds to add infrastructure to their portfolios.
But maybe not in Texas

- Moratorium on new P3 highway projects
- Ban on state funds in new tolled projects
- Planned express toll lane networks may not be possible.
- Billions in private capital would go elsewhere.
Texas populists’ self-contradiction

- Claim to speak for the grass roots.
- But push for top-down ban on local decision-making.
- Ideally: repeal bans on tolling and P3s.
- 2nd best: let MPOs use tolls and P3s if demonstrated local support.
Conclusions

- Major highways are failing, due to constraints of politicized decision-making.
- Major highways should be reconfigured as network utilities, paid directly by customers.
- Key ingredients are there:
  - Per-mile, all-electronic tolling
  - The long-term P3 model
  - Companies with impressive track records
  - Willing investors
- What’s needed is to put the ingredients together and gain political support.
Questions?

Contact information:
http://reason.org/transportation
Bob.poole@reason.org
Appendix

Coming technology challenges:

• Electric vehicles
• Connected vehicles
• Autonomous vehicles
• Shared mobility (MaaS)

How will these affect highways?
Electric vehicles

- Large numbers are far off, unless continued subsidies.
- Will further decrease fuel-tax revenues.
- Will hasten the transition from per-gallon taxes to per-mile charges.
- Zero-emissions may reduce environmental opposition to highway investment.
Connected vehicles

- CACC increases vehicle throughput if large numbers equipped.
- This could reduce widening need for urban expressways, *ceteris paribus*.
- Does not reduce need for express toll lanes, if congestion remains.
- Increases case for dedicated truck lanes on long-distance Interstates (platooning).
Autonomous vehicles

- Level 5 unlikely until 2035; majority of fleet by 2050.
- Total VMT projected at 5 trillion by 2050 (from 3T today) due to elderly, youth, disabled becoming mobile. (KPMG)
- Growing AV consensus is more VMT due to AVs, not less.
**Shared mobility (MaaS)**

- OECD Lisbon studies assume ban on personal vehicles and “equivalent personal mobility” in shared, on-demand vehicles.
- Americans likely unwilling to give up personal vehicles.
- Numerous trip purposes difficult with shared rides, e.g.:
  - Trip chaining during commute
  - Taking sick child to doctor
  - Shopping trips
Auto Occupancy Detection Technology and HOV Rewards Program

Regional Transportation Council
October 11, 2018

Natalie Bettger
Project History

2012 – NCTCOG: Regional Transportation Council instructed staff to replace manual enforcement with more advanced technology verification equipment

2012 – NCTCOG: Technology Approaches to HOV Occupancy Declaration and Verification, Texas A&M Transportation Institute (TTI) Request for Information (RFI) for IH 30 Managed Lane Technology Occupancy detection and verification - Dynamic tracking of vehicles

2013 – NCTCOG: Reissue RFI with demonstration component

2014 – NCTCOG: TTI Update to White Paper and Proof of Concept Testing of In-Vehicle Technology

2014 – TxDOT/P3: Drive on TEXPRESS application

2015 – TxDOT Lead/NCTCOG Partner: Request for Offer - Automated Vehicle Occupancy Detection Solution

2016 – NCTCOG Lead/TxDOT Partner: TxDOT Requested NCTCOG to Take the Lead Request for Proposals - Auto Occupancy Detection and Verification Technology
Activities Implementing New Technology

July 2017
Issued Notice to Proceed with Carma Technology Corporation

August – December 2017
Pilot Test on DFW Connector Corridor
  • 98.4% exact match in reported occupancy
  • 1.6% indicates an “over count”

January – March 2018
Shared pilot results and worked with partners on back office integration

March – June 2018
Developed draft violation process and continued to work with partners on back office integration

July 2018
Met with TxDOT management on statewide interest

August 2018
Discussed rewards approach with partners

September 2018
RTC Workshop: Approach endorsed by Bill Hale, TxDOT Chief Engineer and several RTC members
HOV Rewards Program

Register

Occupancy Declaration
Sent to Field

Pre - Declare
Every Trip

HOV Rewards Program

NTTA Back
Office System
for Billing

Carma Active Tags/Plates API
Select Carma User Transactions
Carma Occupancy API
Send Differential File(s)

Officers Watch
for Red Light

Violation:
Legal Process

Toll Collected
## Direct Cost Comparison

<table>
<thead>
<tr>
<th>Estimated Direct Costs with Existing System (10 Years)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Enforcement</td>
<td>$15,245,452</td>
</tr>
<tr>
<td>Enhancement to TEXPress Application</td>
<td>$5,927,285</td>
</tr>
<tr>
<td>Marketing and Education</td>
<td>$2,000,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$23,172,737</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expected Total Cost for New System (10 years)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New Technology Operating and Marketing Cost</td>
<td><strong>$20,000,000</strong></td>
</tr>
</tbody>
</table>

*Does not include indirect benefits such as safety, traffic flow, and legal savings.*
Indirect Benefits
Automated Vehicle Occupancy Verification

Safety

Privacy Protection

Reliability/Compliance

Expandability

Easy to Use

Return on Investment

Air Quality/Congestion Benefits

Legal/Court
Continue Monitoring through Implementation Process

- Technology Pilot
- Data
- US 75 Implementation
- Rewards Program / Accounting System
- TxDOT Funding
- Communications Plan
- Institutional / Legislative
- Existing Enforcement
CARMA Agreement – Data Provisions

Three Documents Govern Data Collection, Use, Storage, and Security

Software as a Service Agreement (NCTCOG/CARMA)
  Turnkey System provided by CARMA (includes maintenance and support)
  NCTCOG has non-exclusive license
  CARMA owns End-User Data (with NCTCOG restrictions)
  CARMA may not provide data to third party without express NCTCOG approval

App Terms of Service (CARMA)
  Details collection, use, storage, security, and disclosure of information

Data Protection and Access Policy (CARMA)
  Details data security procedures
1. RTC approval to pursue occupancy verification technology and pilot testing.

2. RTC approval of $5,000,000 to fill the funding gap for three (3) years of implementation cost (FY19, 20, and 21). Bring back future year requests for FY22 and beyond.

3. Evaluate feasibility and cost savings of another incentive-based program that considers:
   - Data Security
   - US 75 Implementation
   - Rewards Program/Accounting System
   - Communications Plan
   - Institutional/Legislative Items
   - Existing Enforcement
   - Technology Pilot
   - TxDOT Funding in Non-Concession Corridors

   There are no completion schedules for these activities.

4. Direct staff to administratively amend the TIP and other funding, planning, and administrative documents to reflect this action.
Contacts

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Senior Program Manager  
nbettger@nctcog.org  
817-695-9280

Dan Lamers  
Senior Program Manager  
dlamers@nctcog.org  
817-695-9263
IMPLEMENTATION OF REGIONAL VELOWEB TRAIL CORRIDORS
Last-Mile Connections to Transit

Karla Weaver, AICP
Highlighted Regional Trail Corridors

<table>
<thead>
<tr>
<th>Fort Worth to Dallas Regional Trail Corridor</th>
<th>Existing/Funded</th>
<th>Planned</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>52 miles</td>
<td>12 miles</td>
<td>64 miles</td>
</tr>
<tr>
<td>Cotton Belt Regional Trail Corridor</td>
<td>16.5 miles</td>
<td>28.5 miles</td>
<td>45 miles</td>
</tr>
<tr>
<td>Dallas to McKinney Regional Trail Corridor</td>
<td>67 miles</td>
<td>15 miles</td>
<td>82 miles</td>
</tr>
<tr>
<td>Denton to Dallas Regional Trail Corridor</td>
<td>41 miles</td>
<td>13 miles</td>
<td>54 miles</td>
</tr>
</tbody>
</table>
Background

Fort Worth to Dallas Regional Trail

- Five Mayors meet in 2013 and commit to implement the 64-mile Regional Veloweb alignment (24.5 miles need funding)
- 18.5 miles of trail with funding commitments (variety of sources have been identified)
- Funding request today of RTC for final 3.1 miles to complete a continuous 53-mile southern alignment connecting the five cities
  - 1.4 miles from CentrePort TRE Station to Grand Prairie city limits
  - 1.7 miles from Fort Worth city limits to Mike Lewis Trail

Cotton Belt Regional Trail

- Cotton Belt rail corridor will environmentally clear the trail
- Funding requested of RTC for trail:
  - Design (26-mile corridor) and
  - Construction (8.5 miles of “critical” trail sections)
## Fort Worth To Dallas Regional Veloweb Trail

<table>
<thead>
<tr>
<th>Existing and Funded</th>
<th>21.9 miles</th>
<th>7.4 miles</th>
<th>6.4 miles</th>
<th>11.9 miles</th>
<th>10.4 miles</th>
<th>58 miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned and Unfunded</td>
<td>1.4 miles</td>
<td>0</td>
<td>3.3 miles</td>
<td>1.3</td>
<td>0</td>
<td>6 miles</td>
</tr>
</tbody>
</table>

### Legend
- **Existing**
- **Funded**
- **Planned**

### Regional Trail Corridor Facility Status

- **Downtown Fort Worth**
- **Arlington**
- **Grand Prairie**
- **Irving**
- **Downtown Dallas**
Summary of Proposed Funding for Regional Trail Implementation

<table>
<thead>
<tr>
<th>Regional Trail Corridor</th>
<th>Total</th>
<th>Federal</th>
<th>Local</th>
<th>TDCs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fort Worth To Dallas Regional Trail</strong></td>
<td>$10.0M</td>
<td>$9.08M</td>
<td>0.92M</td>
<td>1.08M</td>
</tr>
<tr>
<td>(Fort Worth and Grand Prairie Sections)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cotton Belt Regional Trail</strong></td>
<td>$8.20M</td>
<td>$8.20M</td>
<td>-</td>
<td>1.64M</td>
</tr>
<tr>
<td>(design for entire 26 mi. corridor)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cotton Belt Regional Trail</strong></td>
<td>$21.27M</td>
<td>$19.46M</td>
<td>$1.81M</td>
<td>2.44M</td>
</tr>
<tr>
<td>(construction of “critical” sections)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cotton Belt Trail Total</strong></td>
<td>$29.47M</td>
<td>$27.66M</td>
<td>$1.81M</td>
<td>4.08M</td>
</tr>
<tr>
<td><strong>Combined Total Both Corridors</strong></td>
<td>$39.47M</td>
<td>$36.74M</td>
<td>$2.73M</td>
<td>5.16M</td>
</tr>
</tbody>
</table>
## Schedule for Funding Request

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPAC Briefing</td>
<td>8/15/18</td>
</tr>
<tr>
<td>STTC Information Item</td>
<td>8/24/18</td>
</tr>
<tr>
<td>Public Meetings</td>
<td>Early September</td>
</tr>
<tr>
<td>RTC Information Item</td>
<td>9/13/18</td>
</tr>
<tr>
<td>STTC Action</td>
<td>9/28/18</td>
</tr>
<tr>
<td>RTC Action</td>
<td>10/11/18</td>
</tr>
<tr>
<td>All Local and State Funding Commitments in Place</td>
<td>December 2018</td>
</tr>
</tbody>
</table>
Action Requested:

- RTC Approval of the $36.74M and the use of 5.16M TDCs as outlined in slide 6 and Electronic Item 5.1.

- Direct staff to administratively amend the TIP and other funding, planning, administrative documents to reflect this action.
Contact Information

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Patricia Rohmer, PE
Project Engineer
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Kevin Kokes, AICP
Principal Transportation Planner
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Gabriel Ortiz
Transportation Planner II
(817) 695-9259 / gortiz@nctcog.org

Regional Trail Web Pages

Cotton Belt Regional Trail:  nctcog.org/CottonBeltTrail
Fort Worth to Dallas Regional Trail:  nctcog.org/FWtoDALtrail
Automated Vehicle Program 2.0

Regional Transportation Council

Thomas Bamonte
October 11, 2018
Program Rationale: Preparing for Change

5th Avenue, New York City

1900

1913
Project #1: AV Planning

NCTCOG procures planner(s) to assist public entities attracting or facing AV deployments

Planner(s) on retainer

Grant size tied to metric(s)—e.g., population/deployment scale

Total: **Up to $1.5M**, plus NCTCOG administration ($200K approx.)

Funding source: Anticipate federal
Project #2: AV Deployment Cost Coverage

Cover costs associated with public entity hosting an AV deployment

Grants payable upon actual AV deployment

Total: **Up to $10M**, plus NCTCOG administration ($600K approx.)

Funding source: TBD
Project #3: Regional Priority AV Planning Deployments

Fund AV deployments for use cases not served by AV developers

Competitive project selection

Total: **Up to $20M**, plus NCTCOG administration ($900K approx.)

Funding source: Anticipate federal
Voluntary Program: Process

1. Public entities express interest in hosting AV deployments.

2. Respondents eligible for grants.

3. Advance paperwork done to help ensure greatest possible cost coverage.

4. Public entities can join AV 2.0 Program at any time.
Associated Policies: P18-01

1. North Texas will build on its history of transportation innovation to be a leader in the deployment of automated vehicles (AVs) to help achieve the region’s mobility goals.

2. All North Texas communities should have the resources necessary to plan for AV deployments and to build effective partnerships with AV developers when they deploy AVs in a community.

3. The region will make strategic investments in AV services to explore use cases and AV deployments in communities overlooked by AV developers.

4. The AV 2.0 Program will be administered to advance these policies.
<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>STTC Briefing</td>
<td>August 2018</td>
</tr>
<tr>
<td>Public Meetings</td>
<td>September 2018</td>
</tr>
<tr>
<td>RTC Briefing</td>
<td>September 2018</td>
</tr>
<tr>
<td>STTC Action</td>
<td>September 2018</td>
</tr>
<tr>
<td>RTC Action</td>
<td>October 2018</td>
</tr>
<tr>
<td>TIP Process Complete</td>
<td>April 2019</td>
</tr>
<tr>
<td>Funding Available</td>
<td>Late 2019</td>
</tr>
</tbody>
</table>
Requested Actions

1. Approve Automated Vehicle Program 2.0 and associated policies (P18-10).

2. Authorize staff to administratively amend the TIP and other funding, planning, and administrative documents to reflect this action.
Thomas J. Bamonte
@TomBamonte
tbamonte@nctcog.org
469-600-0524
Positive Train Control (PTC): complex communications technology designed to make rail safer by preventing collisions and other incidents by automatically detecting and controlling the movement of trains.

October 16, 2008: Congress passed the Rail Safety Improvement Act of 2008 requiring the installation of PTC technology on a majority of the US Railroad network, including all commuter rail, by December 31, 2018, or apply for an Alternative Schedule by that date.

Fiscal Year 2014: Regional Transportation Council Provided $25 Million for PTC
- $12.5 Million to Dallas Area Rapid Transit (DART) for the Trinity Railway Express (TRE)
- $12.5 to Denton County Transportation Authority (DCTA) for the A-Train

Limited Contractors: Delays in installation resulting from a limited number of contractors with the expertise to install PTC.
## Implementation Status of Commuter Rail in North Central Texas*

<table>
<thead>
<tr>
<th>Commuter Line</th>
<th>Total Hardware Installed</th>
<th>Onboard (Trains) Hardware Installed</th>
<th>Wayside (Signals) Hardware Installed</th>
<th>All Spectrum Acquired?</th>
<th>Sufficient RSD Initiated?</th>
<th>Employees Trained</th>
<th>On Track to Meet Deadline**?</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCTA’s A-train</td>
<td>100%</td>
<td>11/11</td>
<td>121/121</td>
<td>N/A</td>
<td>No</td>
<td>20/50</td>
<td>RSD Request Submitted</td>
<td>✓</td>
</tr>
<tr>
<td>TRE(^1)</td>
<td>52%-100%</td>
<td>6/34-17/17</td>
<td>30/35</td>
<td>Yes</td>
<td>No</td>
<td>0/80 6/80(^2)</td>
<td>No request Submitted Yet Substitute Criteria Request Submitted</td>
<td>?✓</td>
</tr>
</tbody>
</table>

### Coming Soon

<table>
<thead>
<tr>
<th>TXRail</th>
<th>Expected to be Operational 2019 Will Meet Criteria for Alternative Schedule</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton Belt</td>
<td>Expected to be Operational 2022 All Required Technology to be included in RFP</td>
<td>✓</td>
</tr>
</tbody>
</table>

*Source: Federal Railroad Administration as of June 30, 2018

**Deadline to Meet Criteria for Alternative Schedule

RSD – Revenue Service Demonstration

\(^1\) TRE data is current as of October 5, 2018

\(^2\) Adequate staff will be trained to support RSD by October 30, 2018
Implementation Status of Commuter Rail in North Central Texas (TRE Update)

- FRA Deadline - December 31, 2018
- Alternate Schedule
  - Installation of All Hardware Components (100% Completed)
  - Installation of All Communication (October 31, 2018)
  - Installation of Back Office System (October 31, 2018)
  - Adequate staff trained to support Revenue Service Demonstration (RSD) (October 31, 2018)
  - In RSD on at least one segment OR met any other criteria established by the FRA, “Substitute Criteria”
Implementation Status of Commuter Rail in North Central Texas (TRE Update)

- Activities to be Completed to Comply with Substitute Criteria
  - Critical Feature Validation & Verification: Aug 30, 2018 - Sep 2, 2018
  - Brake Testing: Sep 03, 2018 - Sep 30, 2018
  - Lab Integration Nearest Neighbor: Oct 01, 2018 - Oct 30, 2018
  - WIU Validation & Verification: Sep 14, 2018 - Nov 13, 2018
  - Lab Integration End to End (Cycle 1): Oct 11, 2018 - Nov 15, 2018
  - Commencement of Field Integration Testing: Nov 15, 2018
Implementation Status of Commuter Rail in North Central Texas (TRE Update)

- Obtain Alternate Schedule
  - Meeting with FRA: Oct 15, 2018 - Oct 19, 2018
  - Develop Alternate Schedule Application: Oct 22, 2018 - Oct 29, 2018
  - Formal Submission of Alternate Schedule: Nov 15, 2018
  - FRA Review of Alternate Schedule: Nov 16, 2018 - Dec 21, 2018
  - FRA Approval of Alternate Schedule: Dec 26, 2018 - Dec 28, 2018
Contact Information

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Timothy H. McKay  
Executive Vice President, Growth/Regional Development, DART  
tmckay@dart.org  
214.749.2926
Performance Measures
Target Setting

Regional Transportation Council
October 11, 2018
Regional Performance Planning

Incorporate Required Federal Performance Measures

Support TxDOT Targets as Appropriate

Identify Additional Performance Measures to Support Mobility 2045 and 2019-2022 Transportation Improvement Plan
<table>
<thead>
<tr>
<th>Complete</th>
<th>Rulemaking</th>
<th>Number of Measures</th>
<th>MPO Target Setting Deadline</th>
<th>Reporting Period</th>
<th>Reporting Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>Transit Asset Management</td>
<td>4</td>
<td>12/27/2017</td>
<td>Annually</td>
<td>Annually</td>
</tr>
<tr>
<td>✔</td>
<td>Safety Performance</td>
<td>5</td>
<td>2/27/2018</td>
<td>Annually</td>
<td>Annually</td>
</tr>
<tr>
<td></td>
<td>Pavement and Bridge</td>
<td>6</td>
<td>11/15/2018</td>
<td>Four-Year Performance Periods</td>
<td>Biennially</td>
</tr>
<tr>
<td></td>
<td>System Performance</td>
<td>6</td>
<td>11/15/2018</td>
<td>Four-Year Performance Periods</td>
<td>Biennially</td>
</tr>
</tbody>
</table>
Federal Performance Measures

**Pavement and Bridge**
- Interstate Pavement – Good
- Interstate Pavement – Poor
- Non-Interstate Pavement – Good
- Non-Interstate Pavement – Poor
- Bridge Condition – Good
- Bridge Condition – Poor

**System Performance**
- Interstate Reliability
- Non-Interstate NHS Reliability
- Truck Travel Time Reliability Index
- Peak Hour Excessive Delay
- Percent Non-SOV Mode Share
- On-Road Mobile Source Emissions Reduction
  - Nitrogen Oxide (NOx)
  - Volatile Organic Compound (VOC)
National Highway System Within MPA
Proposed RTC Position on Pavement Condition Targets

Good
NCTCOG Supports TxDOT Statewide 2022 “Good Pavement Condition” Targets for National Highway System Facilities

Poor
NCTCOG Supports TxDOT Statewide 2022 “Poor Pavement Condition” Targets for National Highway System Facilities

Collaboration with TxDOT to Plan and Program Projects Contributing Toward Accomplishment of Pavement Goals will also Include the Following Action: NCTCOG will Work with Local Governments to Focus on Improvement of National Highway System Off-System Arterials in Poor Condition
## Roadway Pavement Condition Targets

### Roadway Categories

<table>
<thead>
<tr>
<th>Roadway Categories</th>
<th>Total Network</th>
<th>2018 Baseline</th>
<th>2022 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATE of TEXAS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Good Pavement Condition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interstate National Highway System (NHS)</td>
<td>19.19%</td>
<td>66.80%</td>
<td>66.40%</td>
</tr>
<tr>
<td>Non-Interstate National Highway System (NHS)</td>
<td>80.81%</td>
<td>54.40%</td>
<td>52.30%</td>
</tr>
<tr>
<td><strong>Poor Pavement Condition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interstate National Highway System (NHS)</td>
<td>19.19%</td>
<td>0.30%</td>
<td>0.30%</td>
</tr>
<tr>
<td>Non-Interstate National Highway System (NHS)</td>
<td>80.81%</td>
<td>13.80%</td>
<td>14.30%</td>
</tr>
<tr>
<td><strong>North Central Texas Region</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interstates (on-system)¹</td>
<td>25.90%²</td>
<td>5.81%³</td>
<td>7.99%³</td>
</tr>
<tr>
<td>Non-Interstate Freeway (on-system)¹</td>
<td>13.40%²</td>
<td>6.76%³</td>
<td>8.93%³</td>
</tr>
<tr>
<td>Toll Roads (off-system)</td>
<td>6.70%²</td>
<td>8.43%³</td>
<td>9.32%³</td>
</tr>
<tr>
<td>Arterials (on-system)¹</td>
<td>30.30%²</td>
<td>18.52%³</td>
<td>18.39%³</td>
</tr>
<tr>
<td>Arterials (off-system)</td>
<td>23.80%²</td>
<td>73.66%³</td>
<td>69.82%³</td>
</tr>
</tbody>
</table>

¹ On-system refers to the TxDOT System
² Mobility 2045 Plan – 2018 Baseline Network Lane-Miles
³ Based on 5-year moving average
Proposed RTC Bridge Condition Targets

NCTCOG Supports TxDOT Statewide 2022 “Good/Poor Condition” Targets for National Highway System Bridges

Collaboration with TxDOT to Plan and Program Projects Contributing Toward Accomplishment of Bridge Goals will also Include the Following Action: NCTCOG will Focus on Expedited Programming to Improve National Highway System Bridges in Poor Condition

<table>
<thead>
<tr>
<th>State of Texas</th>
<th>2018 Baseline</th>
<th>2022 Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridges*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good Bridge Condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All National Highway System Facilities</td>
<td>50.63%</td>
<td>50.42%</td>
</tr>
<tr>
<td>Poor Bridge Condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All National Highway System Facilities</td>
<td>0.88%</td>
<td>0.80%</td>
</tr>
</tbody>
</table>

*Based on total deck area
<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Historical Trend</th>
<th>Baseline (2016/2017)</th>
<th>2020 Target</th>
<th>2022 Target</th>
<th>Target Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate Reliability (% Person Miles Travelled)</td>
<td>Improving</td>
<td>77.3%</td>
<td>78.6%</td>
<td>79.5%</td>
<td></td>
</tr>
<tr>
<td>Non-Interstate NHS Reliability (% Person Miles Travelled)</td>
<td>Worsening</td>
<td>71.1%</td>
<td>N/A</td>
<td>71.1%</td>
<td></td>
</tr>
<tr>
<td>Truck Travel Time Reliability Index</td>
<td>Improving</td>
<td>1.74</td>
<td>1.71</td>
<td>1.66</td>
<td></td>
</tr>
<tr>
<td>Peak Hour Excessive Delay (Hours per Capita) *</td>
<td>Worsening</td>
<td>15.5</td>
<td>N/A</td>
<td>16.0</td>
<td></td>
</tr>
<tr>
<td>Percent Non-SOV Mode Share (% Commuter Trips) *</td>
<td>Improving</td>
<td>19.5%</td>
<td>19.9%</td>
<td>20.2%</td>
<td></td>
</tr>
<tr>
<td>On-Road Mobile Source Emissions Reductions (Cumulative)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOx (kg/day)</td>
<td>Improving</td>
<td>2,410.80</td>
<td>2,892.96</td>
<td>5,062.68</td>
<td></td>
</tr>
<tr>
<td>VOC (kg/day)</td>
<td>Improving</td>
<td>499.72</td>
<td>599.67</td>
<td>1,079.40</td>
<td></td>
</tr>
</tbody>
</table>

*Regional Transportation Council and TxDOT Must Agree on a Single Regional Target
Proposed Regional Transportation Council

Future Action

Agree to Support TxDOT Statewide Targets for National Highway System Pavement and Bridge Conditions with Focus on:

- The Improvement of Regional National Highway System Off-System Arterial Pavements
- National Highway System Bridges in Poor Condition

Adopt Regional Targets For:

- Interstate Reliability
- Non-Interstate Reliability
- Truck Travel Time Reliability Index
- Peak Hour Excessive Delay
- Percent Non-SOV Mode Share
- Emissions Reductions
## Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 27</td>
<td>STTC Information Item – Performance Measures and Targets</td>
</tr>
<tr>
<td>August 9</td>
<td>RTC Information Item – Performance Measures and Targets</td>
</tr>
<tr>
<td>August 24</td>
<td>STTC Workshop – Performance Measures and Targets</td>
</tr>
<tr>
<td>September 13</td>
<td>RTC Information Item</td>
</tr>
<tr>
<td>September 28</td>
<td>STTC Information Item – Draft Targets</td>
</tr>
<tr>
<td>October 8, 15, 18</td>
<td>Public Meetings</td>
</tr>
<tr>
<td>October 11</td>
<td>RTC Information Item – Draft Targets</td>
</tr>
<tr>
<td>October 26</td>
<td>STTC Action Item - Recommend Approval of Final Targets</td>
</tr>
<tr>
<td>November 8</td>
<td>RTC Action Item – Approval of Final Targets</td>
</tr>
<tr>
<td>November 15</td>
<td>Target Adoption Deadline</td>
</tr>
</tbody>
</table>
Questions

Dan Lamers
Senior Program Manager
dlamers@nctcog.org
(817) 695-9263
On-Road Mobile Source Emissions Reductions (NOx)

Higher Emissions Reductions are Better

Baseline (2018) 2,410.8 kg/day

2022 Target 5,062.68 kg/day

2020 Target 2,892.96 kg/day

Observed Annual New Reductions 4,230.22 3,720.74 1,998.06 2,420.93

Predicted Annual New Reductions 2,410.8 1,446.48 1,446.48 1,084.86 1,084.86

MPO may adopt its own targets that differ from State DOT targets, but NCTCOG worked closely with TxDOT and other MPOs on this measure.

Applies to DFW Urbanized Area
On-Road Mobile Source Emissions Reductions (VOC)

MPO may adopt its own targets that differ from State DOT targets, but NCTCOG worked closely with TxDOT and other MPOs on this measure. Applies to DFW Urbanized Area.

- Baseline (2018): 499.72 kg/day
- 2020 Target: 599.67 kg/day
- 2022 Target: 1,079.40 kg/day

<table>
<thead>
<tr>
<th>Year</th>
<th>Observed Annual New Reductions</th>
<th>Predicted Annual New Reductions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>883.10</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>687.64</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>455.44</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>642.22</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>499.72</td>
<td>499.72</td>
</tr>
<tr>
<td>2019</td>
<td>299.83</td>
<td>299.83</td>
</tr>
<tr>
<td>2020</td>
<td>299.83</td>
<td>599.67</td>
</tr>
<tr>
<td>2021</td>
<td>239.87</td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>239.87</td>
<td></td>
</tr>
</tbody>
</table>
Public Participation Plan

Fulfills basic public involvement requirements established by federal law

Defines public involvement procedures and comment periods

Outlines communications and outreach strategies for informing the public

Describes measures for diversity and inclusiveness

Provides basis for evaluating outreach efforts
Ways We Involve People

Public meetings, online comment opportunities
Website, email and social media
Publications, newsletters
Community events
Speaking opportunities
Media relations
Advertising

@NCTCOGtrans
Proposed Revisions

Revised stakeholder list to reflect new federal requirements
More efficient public input opportunities
Increased emphasis on livestreaming
Updated Language Assistance Plan
Increased weight given to local comments
Refined evaluation measures and reporting
More appealing design and formatting
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 9, 2018</td>
<td>RTC Information</td>
</tr>
<tr>
<td>August 24, 2018</td>
<td>STTC Information</td>
</tr>
<tr>
<td>September 10, 11, 19, 2018</td>
<td>Public meetings</td>
</tr>
<tr>
<td>September 10, 2018</td>
<td>Public comment period begins</td>
</tr>
<tr>
<td>October 11, 2018</td>
<td>RTC Information</td>
</tr>
<tr>
<td>October 24, 2018</td>
<td>Public comment period ends</td>
</tr>
<tr>
<td>October 26, 2018</td>
<td>STTC Action</td>
</tr>
<tr>
<td>November 8, 2018</td>
<td>RTC Action</td>
</tr>
</tbody>
</table>
Contacts

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