Texas Technology Task Force: Overview

**PEOPLE**
- MEMBERS
- SUBJECT MATTER EXPERTS
- PARTICIPANTS

**PORTFOLIO**
- GOALS
- BARRIERS
- MATURITY

**PLANS**
- WHITEPAPERS
- COMMUNICATIONS
- TECH UTILIZATION PLAN

- Information
- Awareness
- Action Items

Strategic Guidance
Priority Technologies & Use Cases
Socioeconomic, Technical, & Policy Recommendations
Texas Technology Task Force: People

Subject Matter Experts

Verizon  Inrix  FedEx  Toyota  Honda  Qualcomm  Uber  Nokia  GM
Maven  ChargePoint  FAA  Embark  WalMart  ESRI  HLDI
Populus  Udelv  Amazon  Siemens  Continental
Texas Technology Task Force: People

- **Public Agencies**
  - DPS
  - DMV
  - TDI
  - TxDOT
  - Freight
  - TxDOT IMD
  - TxDOT Gov’t Affairs
  - TxDOT TPP
  - TxDOT Commission
  - Industry
  - Local Agencies
  - Research

- **Subject Matter Experts**
  - Verizon
  - Inrix
  - FedEx
  - Toyota
  - Honda
  - QualComm
  - Uber
  - Nokia
  - GM
  - Maven
  - ChargePoint
  - FAA
  - Embark
  - WalMart
  - ESRI
  - HLDI
  - Populus
  - Udelv
  - Amazon
  - Siemens
  - Continental

- **Participants**
  - TxDOT
  - Texas Technology Task Force
  - USDOT
Texas Technology Task Force: Portfolio

- Next Generation Vehicles & Energy
- Information & Communications
- Service-Based Platforms
- Other Technologies
- Materials & Additive Manufacturing
- Infrastructure & Construction
- Interconnected Applications
Texas Technology Task Force: Portfolio

**Next Generation Vehicles & Energy**
- Automated Vehicles
- Connected Vehicles
- Electric Vehicles
- Unmanned Aerial Vehicles

**Infrastructure & Construction**
- Infrastructure Enhancements
- Construction Techniques
- Solar Powered Highways

**Materials & Additive Manufacturing**
- Self-Healing Pavements
- Nanotechnologies
- 3D Printing

**Other Technologies**
- Robotics
- Virtual/Augmented Reality
- Hyperloop

**Information & Communications**
- Cloud Computing
- Crowdsourcing
- Blockchain
- Big Data & Open Data
- Cybersecurity
- RFID
- Cloud & Edge Computing
- Data Standards & Interoperability
- Machine Learning & AI
- Telecommunications

**Service-Based Platforms**
- Mobility on Demand
- Micromobility
- Transportation Subscription Services
- Freight Brokerage
- Uber Elevate
- Last Mile Delivery
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Texas Technology Task Force: Plans

White Papers
- Scenario Planning
- Data Sharing
- MaaS
- Connected Vehicle Applications

Communications Plans
- Stakeholder Map & Collaboration Strategy
- Project Website

Technology Utilization Plan
- Evaluation
- Best Practices and Lessons Learned
- Utilization and Recommendations
Technology Utilization Plan

>> A strategic document to guide the anticipation and inclusion of advanced technologies for the Texas transportation system and within TxDOT

Emerging Technology Evaluation
Spring 2019

Best Practices & Lessons Learned
Fall 2019

Recommendations & Utilization Roadmap
Spring 2020
August 2020
## Priority Technologies (Goal Assessment)

<table>
<thead>
<tr>
<th>Goal</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>• reduction in crashes • reduction in severity of incidents • improved pedestrian and bicyclist safety</td>
</tr>
<tr>
<td>Congestion</td>
<td>• reduce delay • reduce travel time • improve travel time reliability • increase availability of real-time travel information • improve speed</td>
</tr>
<tr>
<td>Sustainability</td>
<td>• reduction in emissions • reduction in gasoline consumption • reduction of environmental impact from built environment</td>
</tr>
<tr>
<td>Accessibility</td>
<td>• provide increased opportunity for travel on alternative modes • reduce cost of travel • expand availability of services to all areas</td>
</tr>
<tr>
<td>Maintenance</td>
<td>• preserve existing assets • enhance ability to inspect and monitor infrastructure • optimally utilize existing capacity</td>
</tr>
</tbody>
</table>

- **Negative Impact**
- **Somewhat Negative Impact**
- **No Impact**
- **Somewhat Positive Impact**
- **Positive Impact**
<table>
<thead>
<tr>
<th>Barrier</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional &amp; Regulatory</td>
<td>• legislation is prohibitive • public agency workforce knowledge gaps • leadership support • political will • lack of uniformity in regulations across jurisdictions</td>
</tr>
<tr>
<td>Public Concern &amp; Cultural Acceptance</td>
<td>• lack of awareness, education, and familiarity • public distrust • comfortable with status quo</td>
</tr>
<tr>
<td>Infrastructure &amp; Public Investment</td>
<td>• requires significant public investment in enabling infrastructure • limited funding streams available for technology implementation</td>
</tr>
<tr>
<td>Industry Readiness &amp; Tech Maturity</td>
<td>• research and development status of technology not market ready • technology is not reliable and consistent</td>
</tr>
<tr>
<td>Cost to Consumer</td>
<td>• cost of technology or service is prohibitive to users • cost. is not competitive with alternatives</td>
</tr>
<tr>
<td>Privacy &amp; Security</td>
<td>• concerns about consumer privacy • concerns about cybersecurity • concerns about ethical use of technology</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No Barrier</th>
<th>Minimal Barrier</th>
<th>Moderate Barrier</th>
<th>Significant Barrier</th>
<th>Major Barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
Table of contents

1. Overview
2. Recent Activities
3. Today’s Agenda
Recent Activities

- Conferences
  - Houston AV Conference
  - Texas Tribune Fest

- Grant Applications
  - ADS Update

- Other Efforts
  - Governor’s CAV Task Force | October 23rd
  - Texas Mobility Summit | November 17-19th | San Antonio
<table>
<thead>
<tr>
<th></th>
<th>Table of contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Overview</td>
</tr>
<tr>
<td>2</td>
<td>Recent Activities</td>
</tr>
<tr>
<td>3</td>
<td>Today’s Agenda</td>
</tr>
</tbody>
</table>
Todays Objectives

- Identify the trends and technologies driving innovation in unmanned aerial vehicles as well as early use cases and opportunities for future activities
- Discover outcomes and successes of past Task Force activities and how they have shaped TxDOT’s internal initiatives
- Plan future activities of the Task Force including opportunities to collaborate with other TxDOT innovation initiatives
Todays Agenda

- 9:00 | Welcome and Opening Remarks
- 9:15 | Progress Update
- 9:30 | Roundtable Discussion: Unmanned Aerial Systems (UAS)
  - 9:35 | Topic 1: Baseline and Scan of UAS Initiatives
  - 9:45 | Topic 2: Use Cases and Applications
  - 10:30 | Break
  - 10:35 | Overview of National Policies and Activities
  - 10:45 | Topic 3: Enabling Technologies and Policies
- 11:30 | Facilitate Discussion on Opportunities and Roadmap for the Future
- 12:00 | Concluding Remarks on UAS
- 12:10 | Lunch
- 1:00 | TxDOT Innovation Programs
- 1:30 | Task Force Planning and Strategy Discussion
- 2:30 | Closing Remarks and Next Steps
- 3:00 | Adjourn
Planning Session

- How does information from Task Force meetings & deliverables inform TxDOT activities?
- How can the Task Force continue to provide value & guidance to TxDOT?
- How can Task Force activities coordinate & support other technology & innovation activities (internal & external to TxDOT)?
- What are future priority activities & topics?
UAS Roundtable

- What can state regulators use to promote innovation throughout the state?
- How can TxDOT and its partners champion UAS adoption and implementation?
- What are the possible challenges or barriers to progress and how can we prepare for them?
UAS Use Cases & Applications

- Imaging structures
- Rescue
- Marketing
- Film making
- Fire Fighting
- Site surveying
- Recreation
- Parcel Deliveries
- Precision agriculture

- Lighting Concert Shows
- Search and rescue
- Inventories
- Insurance
- Policing
- Sports
- Conservation
- Weather monitoring
- Environmental monitoring
What does the UAS ecosystem look like?
UAS Roundtable

- Provide guidance and recommendations for what Texas should anticipate and plan for regarding UAS deployment
- Provide guidance and recommendations for the roles and responsibilities for TxDOT in safely enabling UAS (technologies, infrastructure, policies, programs, etc.)
- Determine priority short- and long-term opportunities
Lone Star UAS Center of Excellence & Innovation

Texas Technology Task Force
22 October 2019
Texas: A UAS Opportunity-Rich Environment

Part 107 is a Key Enabler

<table>
<thead>
<tr>
<th>UAS Market</th>
<th>State Ranking *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Inspection</td>
<td>1</td>
</tr>
<tr>
<td>Precision agriculture</td>
<td>1</td>
</tr>
<tr>
<td>Oil production monitoring</td>
<td>1</td>
</tr>
<tr>
<td>Power line inspection</td>
<td>1</td>
</tr>
<tr>
<td>Railroad track inspection</td>
<td>1</td>
</tr>
<tr>
<td>Wind turbine inspection</td>
<td>1</td>
</tr>
<tr>
<td>Border inspection</td>
<td>2</td>
</tr>
<tr>
<td>Coastline monitoring</td>
<td>7</td>
</tr>
</tbody>
</table>

* 2014 Data
Bringing UAS to America’s Skies

“This is complex stuff…”

Technology Enablers:
• Sense and Avoid
• Command and Control
• Communications Assurance
• UAS Traffic Management
• Human Machine Interface
• Mobile Apps-Training et al

LEGEND:
- NAS Elements
- Enabling Capability
- DAA Technologies
- Air Traffic Services
- CNPC Network
- Legacy C2 Links

*Some data provided by NASA
LSUASC On-Going and Emerging Partnerships

• Part 107: NASA Urban Environment Multi-Drone Testing (TCL4)
• BVLOS: NASA Urban Air Mobility Grand Challenge Planning Support
• BVLOS: Fixed Linear Asset Pipeline Patrol & Inspection
• BVLOS: Off-Shore Cargo & Package Delivery
• BVLOS: Urban Air Mobility (UAM) Ecosystem R&D and Testing Support
• Multi-Drone (Autonomous) DHS & Other HLS Container Inspection
• HB 2340 Support

BVLOS: Beyond Visual Line-of-Sight
The LSUASC is actively working with our Energy Sector Partners to develop more cost effective and safer UAS enabled work flow tools and procedures.

“Its about the data...”
Total Miles of Pipeline (US and Texas)

US Regulated Pipelines
1.7M miles
2.6M total
(US DOT PHMSA)

Texas Regulated Pipelines
466,623 miles
1/6 the US Total
(RRC)

US Active Pipeline Companies
3,000
(US DOT PHMSA)
US DOT PHMSA Pipeline Monitoring Requirements

**US DOT PHMSA CFR Part 192 (gas) Regulations**

<table>
<thead>
<tr>
<th>Facilities</th>
<th>3 weeks</th>
<th>Quarterly</th>
<th>6 Mo.</th>
<th>Annually</th>
<th>3 Yr</th>
<th>Acceptable Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas transmission lines, gathering lines and/or line segments (exposed or buried)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aerial and/or ground</td>
</tr>
<tr>
<td>Atmospheric corrosion inspection of exposed portions of transmission lines, gathering lines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>Onshore</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>Offshore</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>Distribution lines in where anticipated movement or external loading can cause failure or leakage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aerial and/or ground</td>
</tr>
<tr>
<td>In business districts</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aerial and/or ground</td>
</tr>
<tr>
<td>Outside business districts</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aerial and/or ground</td>
</tr>
<tr>
<td>Exposed portions of distribution lines</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Ground</td>
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</table>

**US DOT PHMSA CFR Part 195 (hazardous liquids) Regulations**

<table>
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<tr>
<th>Facilities</th>
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<th>3 Yr</th>
<th>Acceptable Methods</th>
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<tr>
<td>Hazardous liquid transport by pipelines</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>Right-of-ways and crossings under navigable waters</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Aerial and/or ground</td>
</tr>
<tr>
<td>Underwater inspection and reburial of pipeline in the GOM</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>Ground</td>
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Lone Star UAS Center of Excellence & Innovation

NASA UAS Traffic Management TCL4 Overview
Mission Background
LSUASC conducted a series of UAS flight demonstrations, collectively called the Technical Capability Level 4 (TCL4) Demonstration, to provide data on complex UAS operations occurring in an urban environment. All data supports NASA’s continued UAS Traffic Management (UTM) project.

Dates: July-August 2019
Location: Corpus Christi, TX

Partners

Mission Background
- Current state of UTM hazard risk assessed as medium-high
- Significant control measures required to mitigate risk to non-participants and on-lookers
- Public service/controlling agency identification capabilities limited

Concept of Operations

Data Management & Reporting
- Understand safety aspect of BVLOS ops in urban environment
- Evaluate feasibility of current UAS technology and UTM services
- Identify gaps in capabilities

Planning and Coordination
- Five mission scenarios
- Three “runs” per scenario
- Regressive C2 to tax non-radio communications

Scope of Work
- LSUASC developed test plans to fulfill scenario objectives
- City, tech, and OEM partners selected to create test environment
- NASA prescribed 5 scenarios to test various objectives of the UTM construct

Results/Lesson Learned

Trends & Observations
- Proven need to standardize all aspects of UAS operations from common terminology to USS programming
- Disconnect between reference factors such as map datums and altitude references
- Requirement for signals redundancy and non-GPS navigation to counter structural and electromagnetic interference
- Operating systems must be hardened for extreme environmental factors
- Community engagement and involvement is a critical enabler

Bringing UAS to America’s Skies

Flight Data

Sampling of Flight Characteristics:
12 Groupings of 39 Unique Characteristics

Bringing UAS to America’s Skies
LSUASC Proprietary
Scenario 4 CONOP – Urban Canyon

Fire 8 Flight Route
- ALT: 400’ AGL
- USS: AirXos
- All timings per Test Card
Scenario 4 CONOP – SEA District

SEA District Flight Routes
- Simultaneous Operations with multiple aircraft
- Tarot 1 – 250’ AGL
- Tarot 2 – 300’ AGL
- Tarot 3 – 400’ AGL
- Tarot 5 – 350’ AGL
- Tarot 6 – 200’ AGL
- Robot 9 – 150’ AGL
- All timings per Test Card
sUAS Disaster Response

• Exercises conducted in March/April 2019 with Texas Task Force 1
  • HAZMAT focused Operational Readiness Exercise in March
  • Wide-area focused Search Skills Set Training/Exercise in April
  • LSUASC and TX-TF1 continue to build partnership for utilizing sUAS for Search-and-Rescue and disaster response for the State of Texas.

• Mass evacuation exercise conducted in June 2019 with Nueces County
  • Coordination with new County Judge and how to assist LSUASC’s home County
  • Inter-local Agreement signed with Nueces County in October 2019 to provide Disaster Response capabilities to the County
  • Two more counties currently in the process of putting ILA’s in place with LSUASC & TAMUCC
Based on a 2014 Study by the Association for Unmanned Vehicle Systems International (AUVSI)

10 Year cumulative impact in Texas over 8,000 jobs and $6.5 Billion!
The Urban Air Mobility Vision

Bringing UAS to America’s Skies
LSUASC Proprietary
Texas Technology Task Force: Overview of National Policies and Activities

Tom McMahon
SVP, Advocacy and Government Relations
Association for Unmanned Vehicle Systems International
Building the Regulatory Framework

Integrated NAS Operations
- Interaction with ATC
- Safety achieved via compliance to conventional aircraft operating principles

Expanded Operations
- Expand part 107 to facilitate low altitude operations through Airworthiness certification
- Enables Pathfinder 2 and 3 operations

UAS Over People
- Expand part 107 to incorporate standards for flight over non-participating people
- Enables Pathfinder 1 operations
- Remote Identification*

Part 107
- Regulatory framework for small UAS operations
- Safety achieved through VLOS and operating limitations

Section 333
- Case-by-case exemptions granted to existing regulations
- Enables non-recreational UAS operations before final part 107 rulemaking
- Safety achieved with operating conditions and limitations

Source: FAA
U.S. Regulations: Part 107

• Mandated by 2012 FAA Reauthorization Act
• Took effect on Aug. 29, 2016
• First clear regulatory framework on civil and commercial UAS operations
• Established a flexible, risk-based approach to regulating UAS
• Requires knowledge test, background check
• Approved operations include:
  – Only during daylight hours
  – One aircraft, one pilot
  – Within visual line of sight, <400 feet
• Certain operations allowed by waivers
• UAS Registrations (as of June 2019)
  – Total Registrations: 1.4M
  – Total Non-Hobbyist UAS: 400,000
  – Total Remote Pilot Certifications: 121,000
Recent Proposed Rulemaking

• **Operations of sUAS Over People NPRM**
  - Three proposed categories of flights over people:
    - <0.55 lbs subject only to existing Part 107 requirements
    - >0.55 lbs subject to “performance standards” to limit damage in event of collision with a person
    - UAS with potential to cause more damage in event of collision than in Category 2 subject to performance standards and strict “operational limits”
  - Requirements on manufacturers to submit Declarations of Compliance
    - Must be accepted by FAA
  - Operations at night would be permissible so long as:
    - RPIC has completed all training requirements; and
    - UAS has an anti-collision light visible for three miles

• **sUAS Safe and Secure Operations ANPRM**
  - Sought comments for future UAS rulemakings on:
    - Stand-off distances
    - Payload restrictions
    - Critical system design requirements
    - Performance limitations
    - Unmanned traffic management operations
Anticipated Rulemaking

• **Remote ID NPRM**
  • FAA explicitly stated that it will not finalize any rules that allow commercial operations over people and at night without before finalizing its remote ID policy
  • Aviation Rulemaking Committee (ARC) provided recommendations in 2017 on how to implement an ID and tracking system for UAS
  • NPRM scheduled for December 2019

• **Critical Infrastructure NPRM (Section 2209)**
  • Named for the section in the 2016 law
  • Restrict airspace over fixed-site facilities, such as critical infrastructure
  • Establish process for property owners to petition the FAA
  • NPRM scheduled for September 2020
UAS State Legislation in 2019

Status Breakdown

- Enacted (39)
- Introduced (30)
- Passed First Chamber (7)
- Passed Second Chamber (4)
- Vetoed (4)
- Failed (31)
- Sine Die - Failed (84)
• Time remains in the 2019 sessions for bills to be enacted.

• The number of bills enacted in 2019 is 75% of the total number in 2018.
## UAS State Legislation – 2019

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unlawful Acts</strong></td>
<td>Use of drones to commit existing criminal acts (harassment, trespassing, etc.)</td>
</tr>
<tr>
<td><strong>Law Enforcement</strong></td>
<td>Use of drones by law enforcement and military (procurement, warrant requirements, etc.)</td>
</tr>
<tr>
<td><strong>Surveillance</strong></td>
<td>Use of drones for filming and photography without prior consent</td>
</tr>
<tr>
<td><strong>Security Concerns</strong></td>
<td>Use of drones over critical infrastructure, prisons, hospitals, schools, sports stadiums, and during wildfires</td>
</tr>
<tr>
<td><strong>Hunting/Fishing</strong></td>
<td>Use of drones for hunting/fishing, or to prevent hunting/fishing</td>
</tr>
<tr>
<td><strong>Study Committees/Education</strong></td>
<td>Legislative tasks forces studying drone technology and impact</td>
</tr>
<tr>
<td><strong>Preemption</strong></td>
<td>Preempting local UAV laws with state laws</td>
</tr>
<tr>
<td><strong>Liability</strong></td>
<td>Regulates UAV liability insurance, establishes liability for UAV usage</td>
</tr>
<tr>
<td><strong>Funding</strong></td>
<td>Grants and appropriations for drone procurement, education, and test sites</td>
</tr>
<tr>
<td><strong>Miscellaneous</strong></td>
<td>Registration/insurance requirements, agricultural uses, etc.</td>
</tr>
</tbody>
</table>
Texas Technology Task Force:
Overview of National Policies and Activities

Tom McMahon
SVP, Advocacy and Government Relations
Association for Unmanned Vehicle Systems International
UAS SAFETY AND INTEGRATION INITIATIVE

North Central Texas UAS Task Force

Safety

Integration

Education
- Know Before You Fly Workshops
- Airport/Military Facility Risks

Legislation
- Regional Ordinance
- Statewide Legislation
- National Legislation
- Notice for Proposed Rule Making
- Permitting

Training
- Training Standards
- PSURT/Enforcement
- Promote UAS Training

Testing
- Metropolitan Testing Corridors
- Package Delivery
- Air Taxi
- Regional UAM Charter

Public Awareness
- UAS Applications
- UAS Careers
- Public Outreach Strategy
- Bring Your Drone to the Park Day

PRE-EXISTING COMMITTEES
- Regional Coordination Committee
- Surface Transportation Technical Committee
- Air Transportation Advisory Committee
- PSURT Committee and Team Workforce Development
- Lone Star UAS Center of Excellence UAS Werx
- Cumulus Technologies Hillwood Group
- ALVISI Lone Star Chapter Regional Freight Committee
Ways that Texas can utilize UAS Technology now (“Know Before You Fly Workshops”)

- Disaster Response
- Search and Rescue
- Bridge and road inspections
- Accident Reconstruction
- Mapping and Surveying
- Building Safety Inspections
Future Uses

- Urban Air Mobility
- High Speed Package Delivery
- Ambulance Drones
- Rapid Response Police Drones
November 7, 2000
Texas Technology Task Force

- Identify emerging technologies
- Analyze economic, engineering, and policy impacts
- Develop key strategies to integrate critical technologies
- Tech Utilization Plan
Goals

- To focus on taking research from its completed stage to actual use on the system
- Regular meetings to discuss recent research either done within TxDOT, other states, or at the federal level that is ready for implementation
- Builds another way to collaborate and share strategies for safety and mobility
 CAV Internal Workgroup:
  – Provide TxDOT leadership and staff with a singular place of contact to guide what CAV tasks the department is actively undertaking, and
  – Set the department’s long term strategy for CAV
 TxDOT is also leading a statewide CAV Taskforce comprised of other state agencies, universities, and private stakeholders.
  – First meeting is tomorrow!
Other TxDOT Activities

- **Freight**
  - Texas Freight Network Technology and Operations Plan
  - Texas Connected Freight Corridors
  - I-10 Corridor Coalition

- **TSMO/ITS**

- **Unmanned Aircraft Systems**
  - UAS Flight Operations and User’s Manual
Other TxDOT Activities

- Mobility Data Sharing Efforts
  - DriveTexas
  - Video Sharing pilot
  - Houston ConnectSmart
  - Lidar data sharing pilot
  - WAZE Connected Citizen Partner
TxDOT Strategic Initiatives

Emerging Transportation Technology Plan (ETTP)

Connected Network Strategy

Executors
Emerging Transportation Technology Plan

- TxDOT is creating the state’s first Emerging Transportation Technology Plan (ETTP).
- The ETTP aims to develop implementation strategies to integrate emerging transportation technology into state planning practices.
- Implementation strategies included in the ETTP will cover:
  - Data Management
  - Scenario Planning
  - Program and Project Development
  - Business Processes & Update Cycles
TTTF – 2020 and beyond

- Topics we have not addressed
- Topics to revisit
- Partnerships?
- Workshops/Strategy Meetings
- Variety of Meeting Types – webinars, future forums, etc.
Thank You!

Yvette Flores, AICP
Strategic Planning Division
Yvette.e.Flores@txdot.gov
512-463-0713