

Texas Transit Needs Assessment
Identifies Underserved Areas of
the Lone Star State

Helping Rural Communities
Create a Multimodal
Transportation Investment Plan

Two Decades of Super 2 Research
and Implementation for TxDOT
Continues to Produce Benefits

TEXAS TRANSPORTATION Researcher

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CONNECTING COMMUNITIES

Texas' Rural Transportation Network

 Texas A&M
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ON THE COVER: The Lone Star State's rural transportation network connects communities across the state's 268,597 square miles, providing access to services, jobs and recreation for Texans and a seamless network of multimodal transportation options vital to the U.S. and world economies.



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DOLLARS AND SENSE

The Texas Rural Transportation Network

AT A GLANCE

See related story on page 12.

5.4M THE NUMBER OF
trips provided by rural
transit districts in 2017

60% THE
PERCENTAGE OF
Texas' **single-lane**
departure crash
fatalities that
happen in rural areas

43 THE NUMBER OF **rural rail**
transportation districts
created since 1981 in **95** **Texas**
counties to preserve rural rail
service and promote rail-based
economic development

16 AND 95

THE NUMBER OF
national and
state parks,
respectively,
that rural roadways
provide access to

~\$20B annual statewide
agricultural industry supported
by Texas' farm-to-market road system,
railroad network, and general aviation
airports/private landing strips

57,000 miles

THE NUMBER OF
two-lane rural
highways in Texas



Texas Airports Mean **BUSINESS**



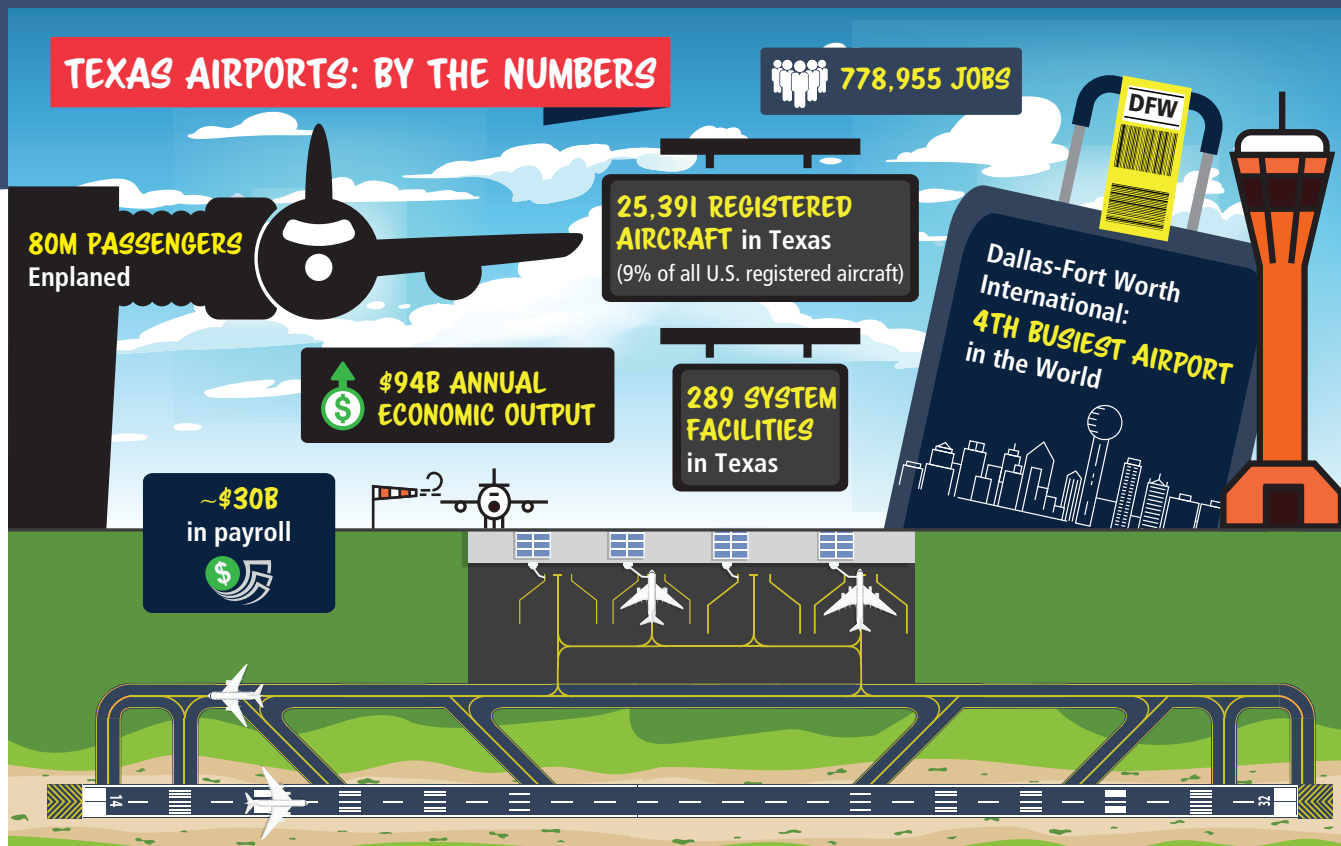
Local government officials often refer to their general aviation airport as “the most valuable mile of pavement in the county.”

The *Texas Aviation Economic Impact Study*, released in 2018, proved just how true that perception is. The study was prepared for the Texas Department of Transportation’s (TxDOT’s) Aviation Division by CDM Smith, with assistance from KSA Engineers and the Texas A&M Transportation Institute (TTI).

Texas has one of the largest state airport systems in the country. The Lone Star State’s 289 airports provide a myriad of aviation and economic benefits. With its expansive open spaces, large metropolitan areas, welcoming attractions and flourishing business environment, Texas has more registered aircraft than any other state — nearly 25,400, or 9 percent of all U.S. registered aircraft. For many communities, air transportation is essential for attracting and retaining commerce, and the local airport is a valued asset, providing a link to the

national air transportation system and the world economy.

“TxDOT’s Aviation Division commissioned the study to measure the economic benefits provided by the state’s airport system,” says TTI Research Scientist Jeff Borowiec. “The statewide economic impact study shows how Texas airports serve as important economic engines. While the focus of this study is general aviation airports, we also calculated the impact from commercial service airports to present a complete picture



“This study demonstrates the value that airports have in large, small and rural communities. The numbers clearly show the positive economic impact they have, along with providing critical services such as air ambulance and rapid response to wildfires.”

*Jeff Borowiec
TTI Research Scientist*

of the tremendous benefit created by Texas’ airport system.”

The economic impacts of these airports take into account a wide variety of aviation services. At commercial airports, airlines move large volumes of people and cargo through the system with a remarkable safety record. The general aviation airports offer unmatched accessibility

across Texas while providing a multitude of services. These include time-critical functions such as air medical and firefighting activities as well as avionics installation, flight training, environmental surveys, aerial application, charter flights and aircraft maintenance.

All these activities support jobs in local communities and bolster each region’s economy.

“A commitment to invest over \$70 million annually by the Aviation Division has fostered airport development and resulted in benefits for all Texans,” says TxDOT Aviation Division Director of Planning and Programming Greg Miller. “This means more than simply convenient transportation options via general aviation aircraft. The network of airports across the state provides many economic and qualitative benefits.”

Texas’ general aviation airports are also critical to the state’s tourism industry. Visitors to the

state make frequent use of general aviation airports to enjoy the varied recreational activities — from national and state parks, to major league sporting events, to hunting and fishing opportunities, to world-class resort destinations. During these trips, visitors spend money locally on food, lodging, events and other items.

“The study found aviation benefits have grown significantly since the last study in 2012,” says Borowiec. “This study demonstrates the value that airports have in large, small and rural communities. The numbers clearly show the positive economic impact they have, along with providing critical services such as air ambulance and rapid response to wildfires.” ■



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Texas Transit Needs Assessment Identifies Underserved Areas of the Lone Star State



Many Texans rely on public transit to go to work or school, keep medical appointments, shop and run errands, and travel to recreational activities.

In fact, in 2016, more than 30 million trips were made on Texas' 67 transit systems (sometimes called districts) that receive state funding. Going to work was the most common trip purpose for those using urban transit, while medical appointments topped the list in rural transit districts.

A 2016 assessment performed for the Texas Department of Transportation (TxDOT) by the Texas A&M Transportation Institute (TTI) identified areas of Texas (outside of transit authorities) with limited or no public transit services. TTI researchers recently updated that assessment to better understand the gaps in public transit services statewide, noting not only where but also when service is not available.

The team, led by TTI Research Scientist Michael Walk, inventoried transit service areas that receive dedicated state funding, routes and time-of-day spans, identifying areas with no public transit or areas lacking service during

certain hours. They found that the coverage gap (defined as places without any transit service open to the general public) encompasses 13,378 square miles or 5 percent of the state (and 13 times the size of Travis County). The gap affects more than 3.5 million people, roughly 12 percent of all Texans, a number surpassing the populations of Dallas, Fort Worth and Austin combined.

The assessment demonstrated that many people in Texas don't have access to transit. It also showed that many people with access don't have daily service that would meet a majority of trip purposes, including work, health care and personal errands.

"When service is too limited — eight hours per day, for instance — the service only works for a small proportion of the population whose current schedule fits into that window," Walk explains.

Researchers stacked transit agencies' service levels up against four different hours-of-service models to show what it would take to meet the hours of service in each model.

“We believe the new Texas Transit Needs Assessment offers a clear and straightforward assessment of where transit needs are and the resources it will take to meet those needs.”

*Michael Walk
TTI Research Scientist*

Bringing all agencies up to those thresholds would require the following changes:

- 5 percent increase in operating hours for the 12-hour weekday service,
- 13 percent increase in hours for the 14-hour weekday service,
- 9 percent increase in hours for the 12-hour weekday/8-hour Saturday service, and
- 17 percent increase in hours for the 14-hour weekday/8-hour Saturday service.

The study also determined that the costs of reaching the higher service level thresholds would range from \$46 million to \$108 million per biennium. Research findings suggest significant economic benefits to the state from increased service levels.

“This research project informed and sharpened the focus of TxDOT’s request for additional state funding to improve access to public transportation in rural and smaller urban areas of Texas. TxDOT’s priorities include connectivity to jobs, shopping, education, medical care and other important destinations,” said Kelly Kirkland, business operations project manager in TxDOT’s Public Transportation Division.

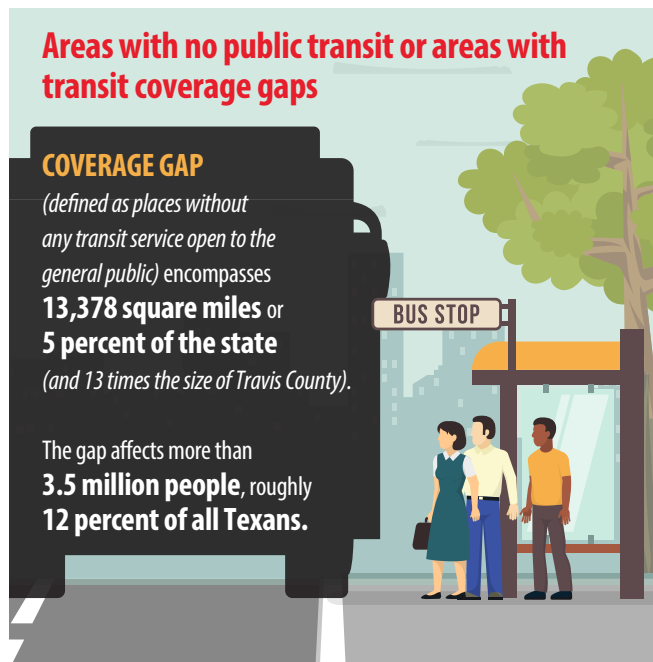


Areas with no public transit or areas with transit coverage gaps

COVERAGE GAP

(defined as places without any transit service open to the general public) encompasses **13,378 square miles** or **5 percent of the state** (and 13 times the size of Travis County).

The gap affects more than **3.5 million people**, roughly **12 percent of all Texans**.



Like most things, however, the cost of operating transit services is subject to inflation. While it would be simple to apply an existing measure like the Consumer Price Index (CPI) to peg those higher annual costs, the CPI doesn’t account for the complexities of public transit.

TTI researchers created a Transit Cost Index (TCI) to help agencies and departments of transportation forecast future increased operating costs. The TCI suggests that operating costs per revenue mile will increase for Texas transit agencies by up to 13 percent, depending on the type of service, by 2021 (compared to the base year of 2016).

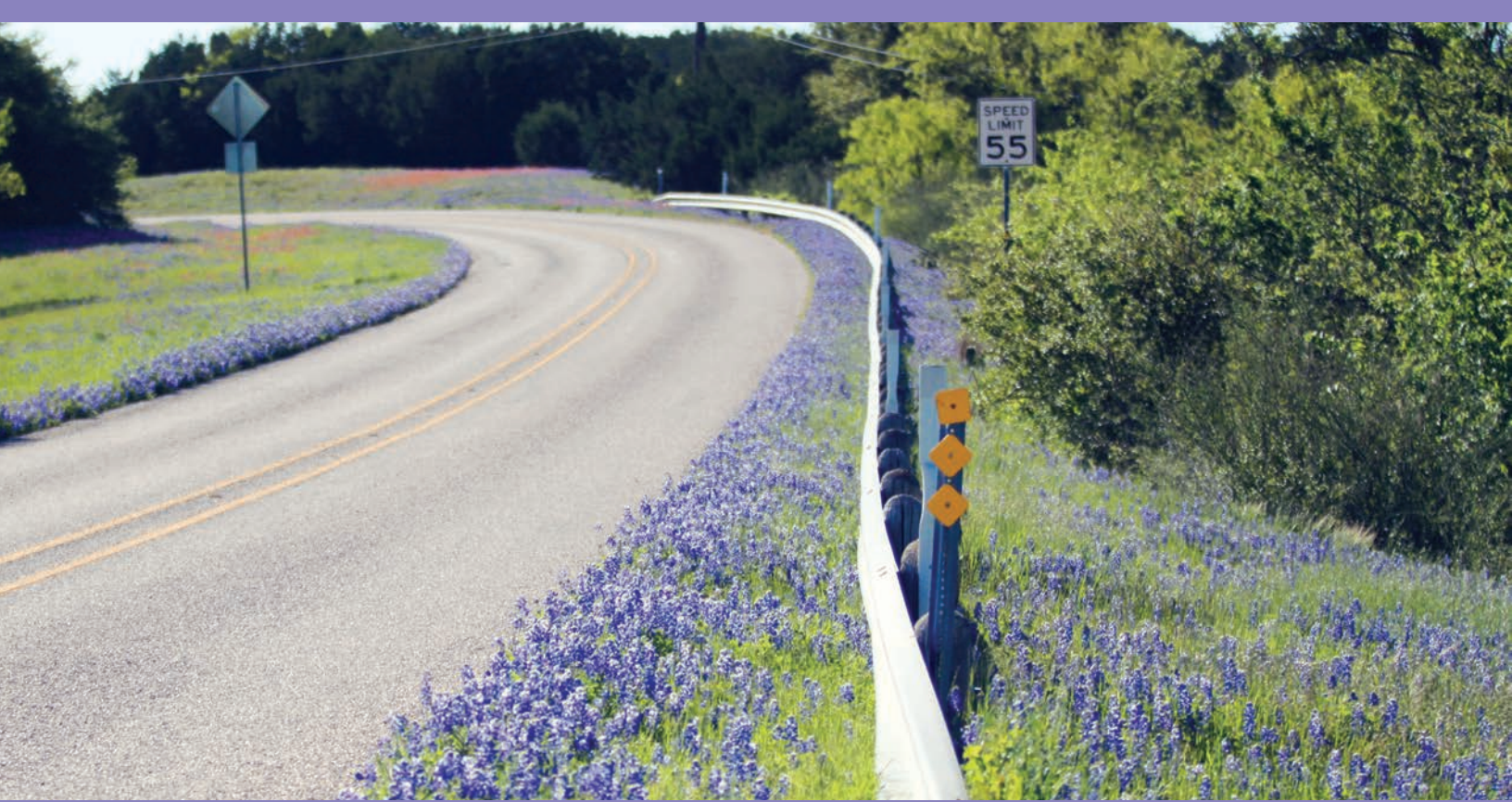
“For transit systems to be useful, they must operate when and where service is needed, and must be funded to meet changing demands and costs,” Walk says. “That’s simple enough in theory but easier said than done. We believe the new Texas Transit Needs Assessment offers a clear and straightforward assessment of where transit needs are and the resources it will take to meet those needs.”

If additional funding can be secured, researchers can help TxDOT develop an implementation plan to assign dollars most effectively and realize widespread benefits as quickly as possible.

“Extended service would benefit current and potential riders, providing better mobility and independence,” Walk says. “Enhanced mobility benefits everyone — riders and non-riders, the community, businesses, and the state alike.” ■



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Helping Rural Communities Create a Multimodal Transportation Investment Plan

The peace and quiet rural Texas is known for can sometimes contribute to the notion that a quiet life in the country means that no problems exist. Yet many Texans who enjoy country living still have mobility needs, and that tranquil image can make it difficult for rural transportation providers to secure funding to meet residents' needs.

"The challenge for rural transportation districts is that they often don't have the traffic congestion issues so common to urban areas with metropolitan planning organizations, and that's where most of the funding is concentrated," points out Darcie Schipull, strategic initiative liaison for the Texas Department of Transportation (TxDOT). "That's why rural areas need to have a plan in place to prioritize various projects that are important in their communities."

A starting point for those rural areas could very well be the examination of the work done by Research Scientist John Overman at the Texas A&M Transportation Institute (TTI) as part of a TxDOT project. Published in 2017, the *Rural Performance Based Planning Guidebook* is a key product of that initiative.

"We began working on the project and writing the guidebook in anticipation of the Moving Ahead for Progress in the 21st Century Act [MAP-21], the federal

transportation funding and authorization bill," Overman says. "MAP-21 placed a major emphasis on performance-based transportation planning, even for rural areas."



The guidebook provides a step-by-step framework to help non-urban counties develop a 10-year regional multimodal transportation investment plan. The resulting plan includes a four-year program of projects that can be monitored over time.



Taking the guidebook a step further, rural entities can get additional guidance in establishing transportation project priorities by looking at the award-winning work completed in the TxDOT project: Alamo Regional Rural Planning Organization (ARRPO) Planning Process Summary. The National Association of Development Organizations gave an Excellence in Regional Transportation Award for 2016 to the project for “helping meet regional needs in innovative ways, through cooperation with partners.”

“It’s clear that this project enhanced the relationships between county officials, TxDOT and TTI, and will certainly make future collaboration and cooperation easier.”

*Ben Ettelman
TTI Assistant Research Scientist*






“We worked alongside TxDOT, the Alamo Area Council of Governments [AACOG] and ARRPO to conduct workshops in the 10 counties that make up the region,” explains TTI Assistant Research Scientist Ben Ettelman. “It’s clear that this project enhanced the relationships between county officials, TxDOT and TTI, and will certainly make future collaboration and cooperation easier.”

Workshop participants identified transportation project needs, including concerns related to mobility and connectivity, safety and maintenance, and bicycle, pedestrian, and transit facilities and services. Using those results, a web-based, online survey was developed and conducted of residents in the ARRPO counties. Respondents were asked to rank their top three priorities in each category.

With the help of a TxDOT-developed rural performance-based planning tool that calculates a technical score for

proposed projects in the region, the results were presented to the ARRPO board. The final result was an ARRPO-approved list of project priorities for the rural planning organization for the next 10 to 20 years.

This table shows the top five projects from the region’s 10- to 20-year plan developed in the summer of 2016, and where those projects stand today.

LOCATION		PROJECT	SCHEDULE
	Atascosa County	Bridge Widening	May 2018
	Bandera County	Highway Expansion	January 2021
	Frio County	Frontage Road Connection Feasibility Study	July 2019
	Karnes County	Lane Expansion	Not Scheduled
	Kendall County	Operation Improvement	In Design Stage

Schipull headed up the initiative for TxDOT and says the agency is considering another round of ARRPO workshops to pinpoint other needed transportation improvements.

“Now that we have a format and a partnership with TTI and AACOG, we can bring all the right people to the table,” Schipull says. ■



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Two Decades of Super 2 Research and Implementation for TxDOT Continues to Produce Benefits

With more than 57,000 miles of two-lane rural highways in Texas — where it's estimated that 68 percent of rural travel occurs — Texas drivers are known to pull onto the shoulder to let a vehicle pass, sometimes creating an unsafe situation. Developing and increasing use of low-cost roadway safety and capacity improvements are key to stretching available funding for rural highways, while also promoting a safer rural driving experience. One such improvement heavily used in Texas, known as the Super 2 design, is a periodic, short-term passing lane — either alternating or side by side — at regular intervals along a rural, two-lane highway corridor.

Since 2001 and following research from Texas A&M Transportation Institute (TTI) projects, the Texas Department of Transportation's (TxDOT's) use of Super 2s has steadily increased, with other states following Texas' lead. From the start, continued TTI research and assistance with implementation of Super 2s have helped Texans, providing operational and safety benefits at much lower costs than traditional approaches.

Design Guidelines for Super 2s

The initial 2001 TxDOT project (0-4064) developed reliable, defensible guidelines and criteria for TxDOT's *Roadway Design Manual* on use of Super 2s. Researchers

confirmed that the Super 2 concept added little additional cost to rehabilitation projects, with little or no right-of-way adjustment. The guidelines addressed optimum passing lane length and spacing, shoulder width requirements, and signage and pavement marking strategies. Benefit/cost analyses done within TxDOT at the time, along with implementation predictions at the close of the project, indicated the improved design criteria and guidelines would save the state millions of dollars — even with a conservative estimate of one additional Super 2 section every three years.

Super 2 Design for Higher Traffic Volumes

A 2011 effort (TxDOT Project 0-6135) expanded on findings from 2001 to describe operational and safety benefits of Super 2s for two-lane roads with traffic volumes between 5,000 and 15,000 vehicles per day. Results showed reductions in delay and percent time following for a variety of combinations of volume, terrain and up to 20 percent heavy vehicles. Analysis of crash data revealed a 35 percent reduction in expected non-intersection injury crashes and a 42 percent reduction for segments with intersections.

"We used the results from this project to produce revisions to TxDOT's *Roadway Design Manual* that allow for use of Super 2s with these higher volumes in certain instances," says TTI Research Engineer Marcus Brewer, principal

investigator on the project. “But it’s also important that we keep analyzing how long these lanes should and shouldn’t be, and when adding capacity is no longer effective.”

Researchers confirmed that the Super 2 concept added little additional cost to rehabilitation projects, with little or no right-of-way adjustment.

Developing Capacity and Cost Benefits of Super 2 Corridors

TTI recently began the latest project in this series of Super 2–related research efforts for TxDOT (Project 0-6997). “Due to their history of proven success in reducing delay and crashes on two-lane roads, there continues to be increased interest in Super 2s as a solution,” says Mark Wooldridge, director of maintenance in the TxDOT Houston District. Wooldridge also served on the previous studies as a researcher and a project director.

In fact, use of the Super 2 design is one option for dealing with the energy-sector traffic congestion increasing from heavy-truck traffic in those affected parts of the state, such as the Permian Basin. (In related efforts, for example, TTI Agency Deputy Director Bill Stockton and other researchers are supporting recent Institute research into the effects of heavy-truck traffic on rural highways as a result of increased oil development in West Texas.) But specific benefits in

improving capacity related to reductions in percent time following are still not known. In addition, as more passing lane length is added to a Super 2 corridor, the more it may resemble a traditional four-lane alignment, reducing the unique benefits of a Super 2 treatment.

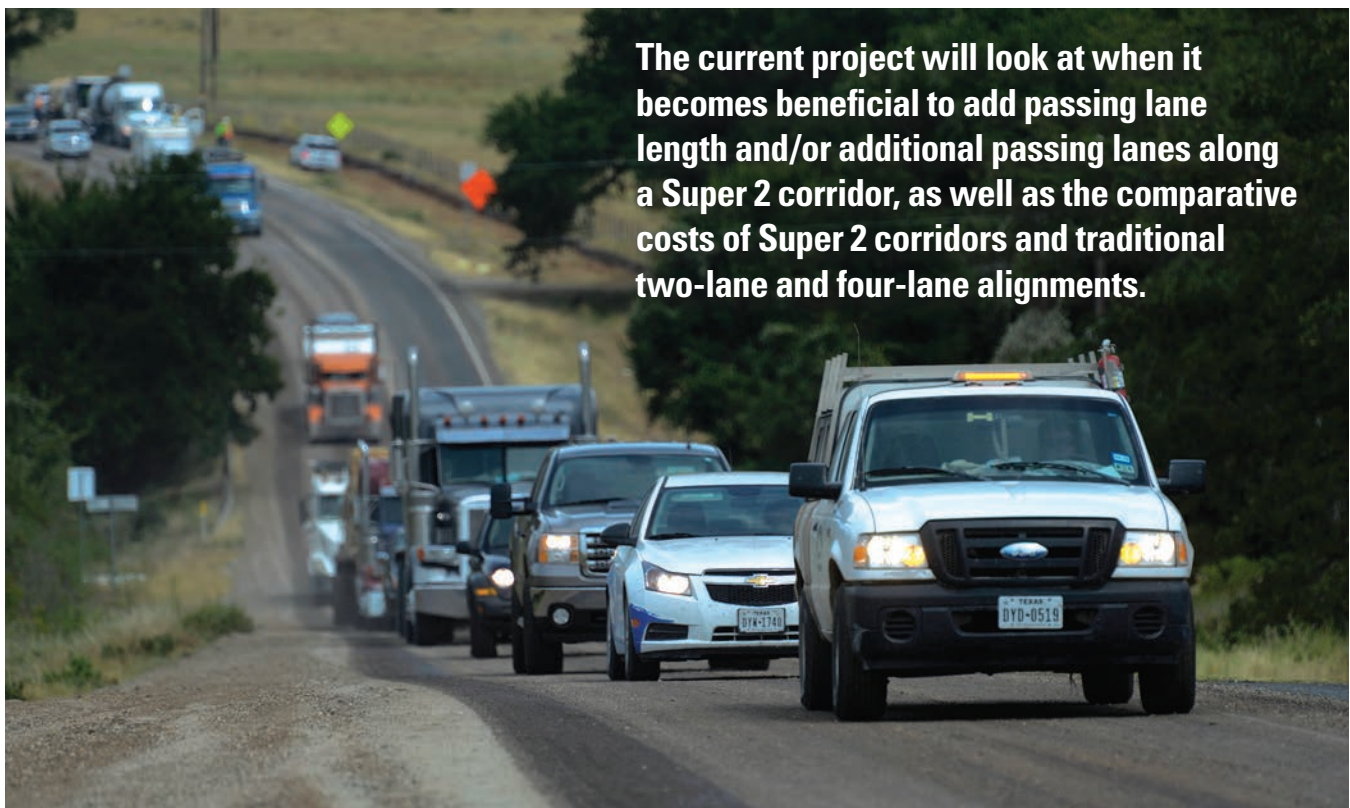
The current project will look at when it becomes beneficial to add passing lane length and/or additional passing lanes along a Super 2 corridor, as well as the comparative costs of Super 2 corridors and traditional two-lane and four-lane alignments. Researchers will then develop a tool that will help TxDOT determine the most appropriate locations to build or extend Super 2 corridors and to prioritize upcoming projects.

According to Wooldridge, TxDOT wants to ensure that Super 2s continue to be the right solution in the right places — often on roads where no other options exist for higher-cost safety and operational improvements.

“Continued research to develop design and planning tools that assist in those decisions is an important piece in the puzzle of figuring out which improvement is best for which road,” Wooldridge says. ■



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The current project will look at when it becomes beneficial to add passing lane length and/or additional passing lanes along a Super 2 corridor, as well as the comparative costs of Super 2 corridors and traditional two-lane and four-lane alignments.



Why Maintaining a Lone Desert Highway MATTERS TO US ALL

★ ★ ★ VISITORS WELCOME

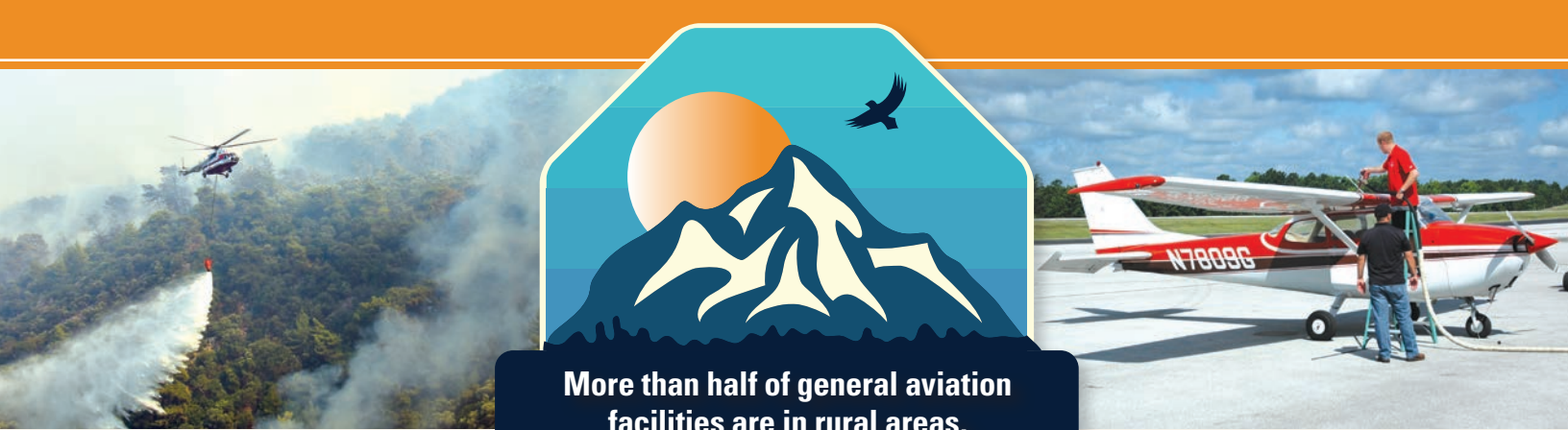
Transportation is critical to the close to \$70 billion travel and tourism industry in the state, much of which supports the economic well-being of rural areas.

For all the contrasts that distinguish urban and rural Texans, one thing that unites us all is the need for reliable transportation.

Exactly what that reliable transportation looks like depends on where we choose to live. Regardless of that choice, certain interests and challenges are commonly shared.

Safety and mobility are at the top of that list.

Of the state's traffic fatalities, nearly half — 45 percent — result from single-vehicle lane departure crashes, with cars and trucks simply running off the road. Some 60 percent of those crashes happen in wide-open spaces where only about 12 percent of Texans live. When crashes occur in remote areas, the travel distances to the nearest hospital often result in longer emergency response times that compromise survival chances. Maintaining rural highways and access points helps improve those chances.



More than half of general aviation facilities are in rural areas, providing access for air medical services, agricultural operations, oil and gas production, and recreational activities.

The term *mass transit* for most people brings to mind visions of high-capacity buses and sleek commuter trains in major cities. Thanks to the 37 rural transit districts, 29 urban transit districts and 9 metropolitan systems, residents in all but two of the state's 254 counties have access to some type of public transit service.

The rural transit systems face increasing demands from a growing population of older and disabled residents impeded by long travel distances to medical care and social services. Texas Department of Transportation data show that rural transit districts statewide saw an increase in ridership from 2016 to 2017, providing about 5.4 million trips.

Say "airport," and the first image for most of us is probably the 737 we took on our last vacation. Most people would be surprised to know that Texas has more general aviation airports than it has counties — 264, as well as numerous private landing strips.

More than half of general aviation facilities are in rural areas, providing access for air medical services, agricultural operations, oil and gas production, and recreational activities. These small airports support more than 48,000 jobs statewide, 54 percent more jobs than in 2011. For example, aerial applicators in Texas help produce and protect billions of dollars' worth of crops each year, including cotton and wheat. About 90 percent of the state's rice crop is planted by air. Most of these airports rely on state and local funds for improvements and maintenance.

And then there's the issue of traffic congestion, which can have different meanings depending on where you call home. In vast, energy-rich regions of the state, far more and far heavier vehicles routinely travel along narrow two-lane roadways, exceeding normal wear and tear on stretches originally intended for far lighter and less voluminous traffic. At some remote road intersections, it's not uncommon for vehicles to be backed up 50 or more at a time, replicating big city-style gridlock in the middle of nowhere.

The impact of these challenges falls mostly upon the people who live in the affected areas, but we should remember that the value of the rural transportation system extends far beyond farm and ranch country.

For example, the distinction of a farm-to-market (FM) road still has literal meaning, facilitating the transport of many agricultural products to those of us who buy them and fueling a \$20 billion annual statewide industry. The condition and operation of FM roads therefore can affect delivery efficiency, influencing the price of those products for all of us.

Remote highways that serve the energy industry support roughly 200,000 jobs and help to ensure we all have reliable sources of gas for our cars throughout the state.

Small non-commercial airports enable 5.7 million takeoffs and landings annually, serving vital needs that include support for law enforcement and aerial firefighting.

Rural transit districts ensure every day that non-urban citizens have access to preventive medical services, which helps to contain the overall health care costs borne by the broader population.

All of these modes, along with railroads, motorboats, sailboats, canoes, kayaks, hike and bike trails, and other facilities, provide access to national and state parks, recreation areas, hunting and fishing locations, and cultural sites for residents and visitors alike. Transportation is critical to the close to \$70 billion travel and tourism industry in the state, much of which supports the economic well-being of rural areas.

These are but a few of the benefits we all draw from a mobility network we may rarely see or directly use. And like some other things in life, we wouldn't know how much we need that network unless we suddenly lost it.

Barely one in ten citizens can be counted as a rural Texan, but ensuring the safety and vitality of the rural transportation system is a quality-of-life imperative for all of us. ■



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TTI Research Supports El Paso County's Efforts to Coordinate, Enhance Regional Transit Service

El Paso, Texas, holds a number of distinctions: the state's only major city in a separate time zone, the only city that borders both a foreign country and another U.S. state, and perennial bragging rights as one of the nation's safest cities.

But when it comes to public transportation, the El Paso region is pretty much like anywhere else. The county's transit agency faces increasing demands from a rapidly growing population, including older and disabled residents impeded by long travel distances to medical care and social services.



Slightly more than half of El Paso County's rural population has access to transit, including a vanpool service and intercity service between El Paso and Las Cruces, N.M.

County officials have explored the feasibility of a seamless countywide transit system and assessed the potential to improve service for access to jobs, health care, education and other personal needs. Texas A&M Transportation Institute (TTI) researchers supported the county by looking at service, funding and governance options.

El Paso County Transit bus routes link the many communities across the region, and all routes connect with transfer centers for Sun Metro, which serves the city of El Paso. In 2017, service on six county bus routes provided about 135,000 rides

"Benefits of improving regional transit service extend beyond those who actually use the service. Local businesses, employment centers and health care providers stand to benefit as well."

*Michael Walk
TTI Research Scientist*

annually. A vanpool service is also available, along with intercity service between El Paso and Las Cruces, N.M. Slightly more than half of the county's rural population currently has access to transit.

"The County of El Paso has advocated for regional transit service for over 15 years," says Vince Perez, El Paso County commissioner for Precinct 3. "However, the lack of research data often prevented the region from having a dialogue to discuss partnerships related to such a critical service. Since the findings were presented to the county, we have been meeting with all of our region's municipalities to take significant steps to establish a formal partnership for regional transit service by fiscal year 2020."

Unincorporated areas of El Paso County are growing at a rate far faster than the rest of the region, so the demand for transit and other services is growing quickly as well, according to TTI Research Scientist Michael Walk.

Walk and the research team employed a robust public involvement process, using a series of open houses to collect input on transit connectivity and opportunities to help inform policy recommendations. Participants completed surveys, wrote comments on wall posters, and offered opinions on current service levels and areas of the county that needed additional service. TTI researchers also visited local transit transfer centers and universities to collect additional feedback.

Common themes emerging from public feedback included needing more dedicated bus stops, concerns about fares and transfers, access to schedules, needs of elderly riders, and preference for a single, consolidated



Common themes emerging from public feedback included needing more dedicated bus stops, concerns about fares and transfers, access to schedules, needs of elderly riders, and preference for a single, consolidated transit agency rather than two.

transit agency rather than two. Researchers also collected feedback on how future open houses could be more productive, convenient and accessible.

“Benefits of improving regional transit service extend beyond those who actually use the service,” Walk says. “Local businesses, employment centers and health care providers stand to benefit as well.”

Researchers determined a transit need index based on four demographic factors: population over age 65, population below the poverty level, households with a disabled person, and households with no vehicle available. A transit supply index was based on the percentage of geographic areas with transit coverage, average

bus trips per stop, days of service, and hours of operation. Researchers also established transit service guidelines to address routing, frequency, transfers and other priority considerations.

“The need is there,” Walk says. “So it’s important for the service to work better for the residents of the county.”

Researchers developed six countywide service scenarios and presented potential funding options that could draw from federal and state sources, fare revenues, or other local government funds. Walk says that county officials and other local leaders are now collaborating to determine the service scenario funding and

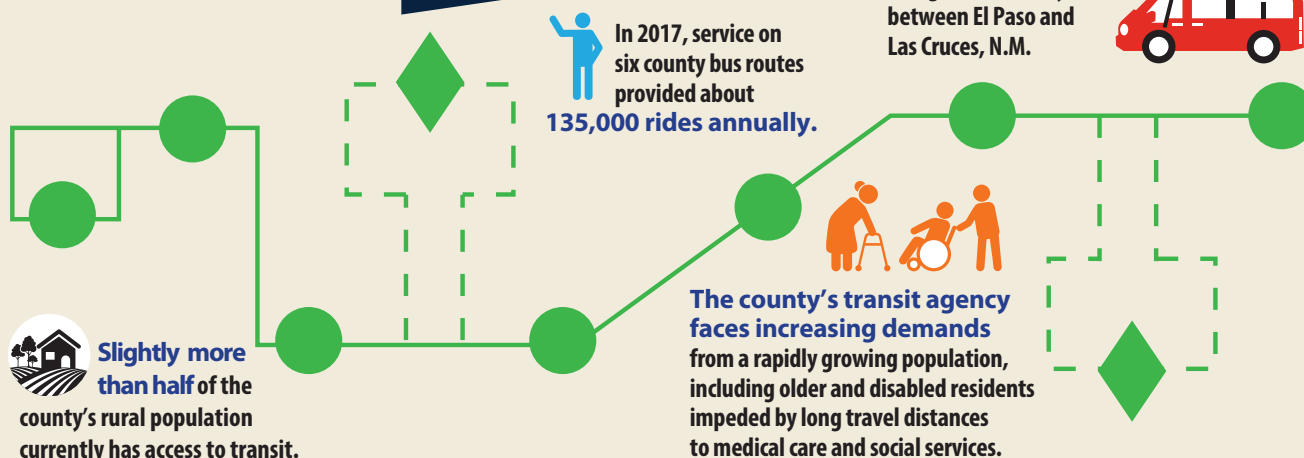
governance framework that best fits the region’s requirements.

“The partnership with the Texas A&M Transportation Institute has proved invaluable to the County of El Paso,” says Jose M. Landeros, the county’s director of planning and development. “The findings in the report provide an example of the high-quality product multiple agencies, including the county, have come to rely on for a variety of transportation needs. The county now has a significant opportunity to create discourse on the importance of regional transit.” ■



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FAST FACTS: El Paso County transit





New TCRP Handbook Helps Coordinate Non-emergency Medical Transportation with Public Transportation in Rural Areas

Consider this scenario: Dan lives in a small rural town and suffers from several health issues. He's a very-low-income senior, making him eligible for Medicaid health care. Three times a month he must travel an hour away to the nearest city for medical care.

Since he doesn't own a vehicle or drive, Dan arranges to get a ride through the Medicaid non-emergency medical transportation (NEMT) program. He would also like to shop for groceries and visit relatives while in the city. This involves multiple phone calls to arrange transportation with different providers for trips to his doctors and to the grocery store and visits with family. Sometimes he gets stressed and nervous about making his transportation arrangements. Since Dan is in such a remote area, the process of securing transportation for his medical trips, essential shopping and personal visits is both challenging and time consuming.

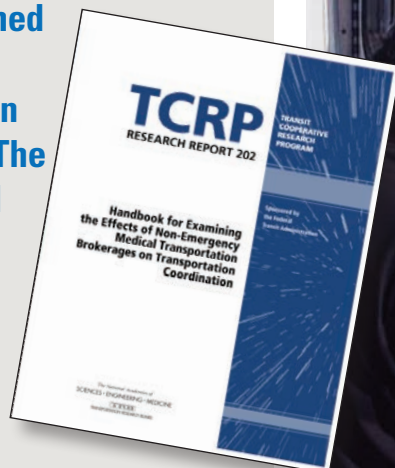
Medicaid is a joint federal and state program that provides health coverage for millions of individuals and families with limited income. Ensuring access to necessary medical care is an important feature that sets Medicaid apart from traditional health insurance. Medicaid NEMT is an important benefit for Medicaid beneficiaries who need to get to and from medical services and have no other means of transportation. Similarly, rural public transportation services provide mobility to individuals living in rural areas. Coordination between NEMT and public transportation can be an issue.

In recent years, numerous state Medicaid agencies have separated NEMT transportation services from local or regionally coordinated transportation systems in order to create a statewide or regional brokerage service for all NEMT trips. This means that qualified Medicaid recipients

call a broker to request transportation, and the broker then follows multiple steps to verify recipient eligibility, obtain approval for the trips, and arrange for the most efficient and economical ride, which may be a privately owned transportation provider, rather than the public rural transit system. Public transportation and mobility management professionals are concerned about this trend, citing less coordination, more service duplication and loss of local revenue for public transportation providers.

“This research project confirmed for us that coordinating NEMT with rural public transportation offers numerous advantages. The handbook is a great tool for all involved to identify strategies to achieve common desired outcomes.”

*Gail Bauhs
Industry Solutions Consultant,
TripSpark Medical*



A Transit Cooperative Research Program (TCRP) project led by the Texas A&M Transportation Institute (TTI) examined these issues. TTI Research Scientist Linda Cherrington, principal investigator on the project, developed a handbook providing strategies to encourage coordination between NEMT brokers and rural public transportation agencies. The handbook is supported by seven in-depth state case studies based on interviews with personnel from state Medicaid agencies, brokers, public transit agencies, and human services transportation providers, as well as advocates for Medicaid beneficiaries.

Researchers identified that both NEMT and public transportation stakeholders share common desired outcomes for providing NEMT services, including:

- improving health outcomes,
- providing better quality of service, and
- lowering the cost of transportation services.

“We found that state Medicaid agencies use the NEMT broker approach to save costs, ensure compliance with Medicaid guidelines, and reduce the administrative burden to the state,” Cherrington says. “Brokers have a responsibility to arrange the lowest-cost transportation available.” In very remote rural areas, it can be difficult to find any providers at all, so if a rural public transportation option is possible — and a reasonable price can be negotiated — a partnership can be a win-win for everyone.



Since rural public transportation providers are already serving rural areas, these agencies have the ideal opportunity to coordinate with NEMT to reduce costs and also benefit the rural population, who could schedule transportation with one call/one click.

“This research project confirmed for us that coordinating NEMT with rural public transportation offers numerous advantages,” says Gail Bauhs of TripSpark Medical, who served as the panel chair for the project. “The handbook is a great tool for all involved to identify strategies to achieve common desired outcomes.” ■



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TTI Wins Multiple Awards, Ascends to Committee Leadership at TRB

An estimated 13,000 people from around the world attended this year's annual meeting of the Transportation Research Board (TRB) in Washington, D.C., Jan. 13–17.

As usual, the Texas A&M Transportation Institute (TTI) was well represented at the meeting. TTI Executive Associate Director Jon Epps presented the Thomas B. Deen Distinguished Lecture on Jan. 14. His talk, *Innovative Asphalt Pavement Technology: Paving the Way for the World's Roadways*, summarized the history of asphalt pavements and discussed where the technology is headed.

"Much of the future, I believe, involves the need to develop accelerated construction techniques so we can reduce construction times by as much as 70 percent," Epps says. "In order to achieve those goals, we must have a workforce skilled in several disciplines, including contracting methods, traffic management, work zone safety, materials, construction operations, economics and construction equipment."



TTI Executive Associate Director Jon Epps presented the Thomas B. Deen Distinguished Lecture on Jan. 14 on *Innovative Asphalt Pavement Technology: Paving the Way for the World's Roadways*, summarizing the history of asphalt pavements and discussing where the technology is headed.

Best Paper and Poster Awards

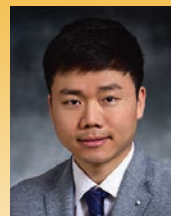
TTI Senior Research Scientist Eun Sug Park, Graduate Assistant Jinuk Hwang and Associate Transportation Researcher Shuman Tan received the 2018 Best Paper Award from the Paratransit Committee for their paper, "The Impact of Fare Policy Changes on Paratransit Travel Options: METROLift Case Study."

"As a public good, the pursuit of humanity attaches more importance to a paratransit program's service affordability and therefore often brings criticism to the program for fare changes," Tan explains. "The paper is based on a project TTI conducted for Houtson's Metropolitan Transportation Authority of Harris County (METRO) evaluating the impact of METROLift's new fare policies on travel patterns and frequency of its riders. Researchers found that optimizing all existing resources can help paratransit programs sustain their services."

TTI Associate Transportation Researcher Bahar Dadashova, Senior Research Engineer Karen Dixon and Associate Research Engineer Raul Avelar received the 2018 Best Paper Award from the Safety Data, Analysis and Evaluation Committee. The team's paper, "Exploring the Effects of Important Predictors of Ramp Speeding Behavior," was selected as the top paper from approximately 200 entries.



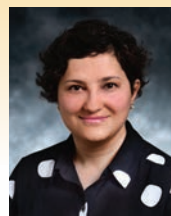
Park



Hwang



Tan



Dadashova



Dixon



Avelar

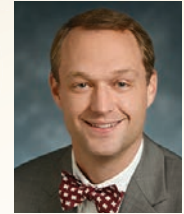
"Our paper looked at driver speed choice on freeway ramps, which is one of the most conflicting roadway network facilities," explains Dadashova, who was also appointed the co-chair of the Bicycle Research Subcommittee (Bicycle Transportation Committee ANF20). "The results of this paper could be used to provide guidance to roadway traffic engineers and human factors specialists on how to address the speed-related crash risk on the freeway network system and reduce potential conflicts in the future."

TRB's Next Generation

Subcommittee of TRB's Design and Construction Group selected Graduate Assistant Fawaz Kaseer and Assistant Transportation Researcher Haydar Al-Khayat, both in TTI's Materials and Pavements Division, to present papers at the TRB session Young Practitioner Research in Design and Asphalt Materials.



Associate Research Engineer Charles Gurganus of TTI's Materials and Pavements Division won the best poster award in the TRB AFD90 poster session for his poster titled "Evaluating Hydroplaning Potential Using Mobile LiDAR Measurements." Gurganus developed a way to evaluate roadside ditches to ensure proper rainwater drainage using light detection and ranging technology.



Gurganus

TTI Graduate Assistant Fawaz Kaseer (left) and Assistant Transportation Researcher Haydar Al-Khayat (right) both presented papers at the TRB session Young Practitioner Research in Design and Asphalt Materials.

Turnbull Completes Term as TRB Executive Committee Chair

Katie Turnbull, Texas A&M Transportation Institute (TTI) executive associate director, served as chair of the Transportation Research Board (TRB) Executive Committee during 2018. She completed her term by chairing the day-and-a-half Executive Committee Meeting and presiding at the Chair's Luncheon at the 2019 TRB Annual Meeting in Washington, D.C., held Jan. 13–17, 2019.

"It has been an honor and privilege, and honestly a lot of fun, to serve as Executive Committee chair," Turnbull notes. "The opportunity to work with the outstanding TRB staff and Executive Committee members developing the *2019 Critical Issues in Transportation* report, initiating updates to the TRB strategic plan, and advancing other key initiatives has been extremely rewarding."

Turnbull is the second person from TTI to chair the TRB Executive Committee, following longtime TTI Agency Director Charley Wootan, who served as chair in 1980. In addition, Herb Richardson, who became TTI agency director in 1993, was chair in 1988 when he was The Texas A&M University System's deputy chancellor for engineering.

Turnbull has been reappointed to a second term on the Executive Committee. She has also been appointed chair of the Executive Committee's Subcommittee on Planning and Policy Review (SPPR).

"Katie was a terrific chair of the Executive Committee during the past year, and we are pleased to have her continued leadership on the SPPR," says Neil Pedersen, TRB Executive Director. "The SPPR, which acts on behalf of the Executive Committee between its twice-yearly meetings, will be leading the finalization and implementation of the updated TRB strategic plan, as well as advancing activities addressing topics outlined in the *2019 Critical Issues in Transportation* report." ■



Outgoing TRB Executive Committee Chair Katie Turnbull (right) hands over the gavel to the 2019 Executive Committee Chair Vicky Arroyo, executive director of the Georgetown Climate Center at Georgetown Law.



Left to right: TRB Executive Director Neil Pedersen; TTI Executive Associate Director Katie Turnbull; TTI Executive Associate Director Jon Epps; and TTI Agency Director Greg Winfree. Dr. Epps received TRB's Thomas B. Deen Distinguished Lectureship for 2019 and presented his lecture, Innovative Asphalt Pavement Technology: Paving the Way for the World's Roadways, on Jan. 14 during the 98th TRB Annual Meeting. The award recognizes the career contributions and achievements of an individual in areas covered by TRB's Technical Activities Division.

Photo credit: TRB

Group, Section and Committee Chairs

Chairmanship duties for TRB committees began for TTI Senior Research Engineer and head of TTI's Systems Reliability Division Beverly Kuhn (Standing Committee on Freeway Operations) and Dixon (Highway Safety Performance Committee). Both rotated into these chair positions last spring.

Bill Eisele, head of TTI's Mobility Division, chairs the TRB Urban Freight Transportation Committee, which received an Honorable Mention Blue Ribbon Award in Leadership for engaging a passionate global membership and disseminating urban freight innovations to stakeholders.

A TRB Blue Ribbon Committee Award was also presented to the Roadside Safety Design Committee, chaired by Roger Bligh, for identifying and advancing ideas for research.

Other TTI staff who serve as chairs of TRB sections, groups or committees include Sue Chrysler, chair of the Users Performance Section; Shawn Turner, chair of the Pedestrians and Cycles Section; Jim Kruse, chair of the Marine Group; Jeff Borowiec, chair of the Aviation Systems Planning Committee; Cesar Quiroga, chair of the Utilities Committee; and Juan Villa, chair of the International Trade and Transportation Committee.

TTI Senior Research Engineer Kay Fitzpatrick received a certificate of recognition for her years of service as a member of TRB's Standing Committee on Operational Effects of Geometrics. ■



Kuhn



Dixon



Eisele



Bligh



Chrysler



Turner



Kruse



Borowiec



Quiroga



Villa



Fitzpatrick



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Judy Hawley Inducted into the Texas Transportation Hall of Honor

Judy Hawley was inducted into the Texas Transportation Hall of Honor on Feb. 7. Hawley has worked tirelessly to promote transportation infrastructure investments to benefit Texas, spearheaded the Corpus Christi Harbor Bridge project, and served on the Port of Corpus Christi Commission for more than a decade. She retired in 2016 as commission chair. Under her leadership at the port, significant rail and ship channel expansion accommodated energy-related and military deployment transportation needs. As chair of the I-69 Advisory Committee, Hawley played a critical role in guiding future development of this essential trade corridor linking ports, waterways, rail, airports and highways throughout Texas.



Left to right: The Honorable Todd Hunter, Texas state representative for District 32; Charles W. Zahn, Jr., chairman of the Port of Corpus Christi Commission; Honoree Judy Hawley; Hope Andrade, chair of the VIA Metropolitan Transit Board of Trustees and former Texas secretary of state; Marc D. Williams, deputy executive director of the Texas Department of Transportation; and Greg Winfree, TTI agency director.

Hawley served four terms in the Texas House of Representatives (1995–2003), serving as vice chair of the Transportation and Energy Resources Committees and chair of the Rural Caucus. She also represented Texas as vice chair of the Southern States Energy Board and as a member of the National Energy Council. In her post-legislative career, Hawley has continued to devote her energies to transportation issues, including serving on the Texas 2030 Committee, which assessed the state's transportation funding needs; the Border Trade Advisory Committee; and the Texas Transportation Commission Corridor Advisory Board. ■

Ellis Receives Regents Fellow Service Award

TTI Senior Research Scientist David R. Ellis was honored with a Regents Fellow Service Award by The Texas A&M University System Board of Regents Jan. 16. The Board of Regents established this award in 1998 to recognize employees who have made exemplary contributions to their university or agency and to the people of Texas.



Left to right: Texas A&M Board of Regents Chairman Charles Schwartz, David Ellis, and Board of Regents Vice Chairman Elaine Mendoza.

"I am truly honored and humbled to receive this award. I have been blessed to work with so many incredibly talented people during my career at TTI — all of them a lot smarter than me," says Ellis.

Ellis' 38 years of public service experience include 32 years in leadership positions at TTI, Texas A&M University's Center for Housing and Urban Development in the College of Architecture, the Texas State Data Center, the Texas Department of Commerce, and the private sector. He's made significant contributions to the state in the area of transportation finance and tax policy, as well as the economic impact of transportation investment, while sharing his knowledge and expertise with Texas A&M University students as a member of the graduate faculty of the Department of Landscape Architecture and Urban Planning in the College of Architecture.

"Everyone in transportation in Texas is aware of David's impact on major state policy decisions, but few have witnessed his incomparable mentoring of dozens of professionals, whose impacts will be felt long into the future," says TTI Agency Deputy Director Bill Stockton. "That is David's legacy." ■

Crawford Appointed Chair of ITE Coordinating Council



Crawford

TTI Research Engineer Jason Crawford has been appointed chair of the Institute of Transportation Engineers (ITE) Coordinating Council.

Crawford's two-year appointment began Jan. 1. The ITE Coordinating Council provides leadership and coordination across the technical and employer councils' activities. The ITE councils "enhance professional collaboration and advance the technical body of knowledge through communities of common interests, providing value to the ITE membership at large," according to ITE's website.

"Being appointed chair of the coordinating council is a true honor," Crawford says. "I view the councils as the heartbeat of ITE, providing the most value to members." ■

Youth Transportation Safety Program Awarded Grant from Union Pacific Railroad

TTI's Youth Transportation Safety (YTS) Program has been awarded a three-year grant from Union Pacific Railroad to deliver safety messages to Texas' youth. Union Pacific is one of America's leading railroad franchises with operations in 23 states. Through the Texas A&M Foundation, YTS secured \$340,000 to help advance multiple safety initiatives within the program.

"One of our priorities is encouraging safe behaviors and preventing accidents through education and awareness," notes Richard Zientek, director of public affairs at Union Pacific. "We believe TTI's Youth Transportation Safety Program and its many initiatives are a great way to spread this important safety message."

Young drivers experience the highest rate of transportation-related fatalities. This partnership with Union Pacific will help YTS expand current activities promoting safe driving behaviors among younger drivers, as well as develop new educational campaigns.

"We are very excited about this new partnership with Union Pacific," says Russell Henk, YTS program manager. "This multi-year support is important to the sustainability of our program and ultimately will help save lives of America's teen drivers, pedestrians and cyclists." ■



Geiselbrecht Receives Public Participation Certification



Geiselbrecht

TTI Research Scientist Tina Geiselbrecht has become one of the first people in the United States to become a Certified Public Participation Professional (CP3) as designated by the International Association for Public Participation, which promotes and improves the "practice of public

participation in relation to individuals, governments, institutions, and other entities that affect the public interest in nations throughout the world." An individual receives the CP3 designation after successfully completing a three-step assessment process based on five core competencies across 29 distinct criteria.

"Achieving this professional certification is a validation that I have the knowledge, skills and abilities to effectively plan and execute meaningful public participation," Geiselbrecht says. ■

For more information about TTI News, contact **Rick Davenport** at (979) 317-2408 or r-davenport@tti.tamu.edu.

TTI, FPIInnovations Sign MOU to Work Together on Transportation Research

TTI and FPIInnovations (FPI) signed a memorandum of understanding (MOU) Jan. 13 at the Transportation Research Board annual meeting in Washington, D.C. The MOU supports creating a framework for information exchange and collaboration to advance research opportunities, and will encourage collaborations on transportation research and testing projects in the areas of emissions and fuel consumption reduction, freight performance measurement and fleet efficiency, roadway safety and infrastructure, transportation data analysis, and development and testing of electric, automated, and autonomous vehicle technologies. Greg Winfree, TTI agency director, and Glen Légère, FPIInnovations senior manager for roads and infrastructure, signed the agreement.

"We are looking forward to enhancing our partnership with FPI to address critical transportation needs," notes TTI Executive Associate Director Katie Turnbull. "There are numerous opportunities to collaborate on research projects building on the strengths and facilities of TTI and FPI." ■

THE LAST STOP

with Greg Winfree, Agency Director



Convenience. Accessibility. Equity.

Smart Dirt Roads Can Take Us to Texas' Future

Ever looked at a NASA photo of Texas at night?

The state is a starry spider's web of lights, with the biggest clusters where you'd expect to find them — across the Texas Triangle of Dallas, Houston and San Antonio. Look at that same view across a few decades, and you'll see those cities growing toward one another and becoming one big megaregion.

Between those dense population centers are many smaller, rural communities, sparsely populated in some places but wielding significant political power. The influence of rural Texans is evidenced by the network of farm-to-market (FM) and ranch-to-market (RM) roads built to help them sell their agricultural products and livestock. Yet it's not just farmers and ranchers who benefit from those roads; just ask any driver who's ever taken a shortcut to get somewhere not easily accessed by interstate or state highway.

The FM and RM road networks solved a problem of geography. Today, we face another geographical challenge: connecting urban and rural areas through a seamless system of intelligent transportation infrastructure. As with the FM/RM roads, all Texans stand to benefit.

You can see it in those NASA photos: the traditional urban/rural divide is breaking down, replaced by megaregions connected by multilane roadways, the Internet and political interests. Showing how advanced transportation technologies can help Texans — especially those outside the beltways — is vital to a coordinated, statewide legislative effort to implement them. In some ways, tomorrow's rural Texans will rely more heavily on (and can better benefit from) connected transportation than city folks. For example, retirees are leaving big cities to enjoy the quieter country life, and they're going to need access to doctors, shopping and other services. Advanced

technologies and infrastructure can address those needs while improving rural mobility, enhancing safety, and improving quality of life.

But first we must build the state's intelligent infrastructure. Not simply from the major cities outward, but from both directions — from major urban and smaller rural areas simultaneously. I call the rural effort building "smart dirt roads." The universities of The Texas A&M System and the Texas A&M Transportation Institute are uniquely qualified to help usher in that future. Besides Texas A&M's unparalleled expertise in agriculture and engineering and TTI's worldwide reputation for excellence in transportation research, our home is smack dab in the center of the Texas Triangle. We're perfectly positioned to work with stakeholders on all sides to get the job done.

In 50 years, Texas can be a model of seamless accessibility, connecting the country home to the grocery store to the doctor's office. Mobility on demand will be the new utility running in the background of our lives, so ubiquitous it could be taken for granted if we're not careful. But first, we have to build those smart dirt roads. And to do that, we need to show all Texans how advanced transportation technologies can benefit them — wherever they live. ■

Besides Texas A&M's unparalleled expertise in agriculture and engineering and TTI's worldwide reputation for excellence in transportation research, our home is smack dab in the center of the Texas Triangle. We're perfectly positioned to work with stakeholders on all sides to get the job done.

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Join us for the 2019 Traffic Safety Conference

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