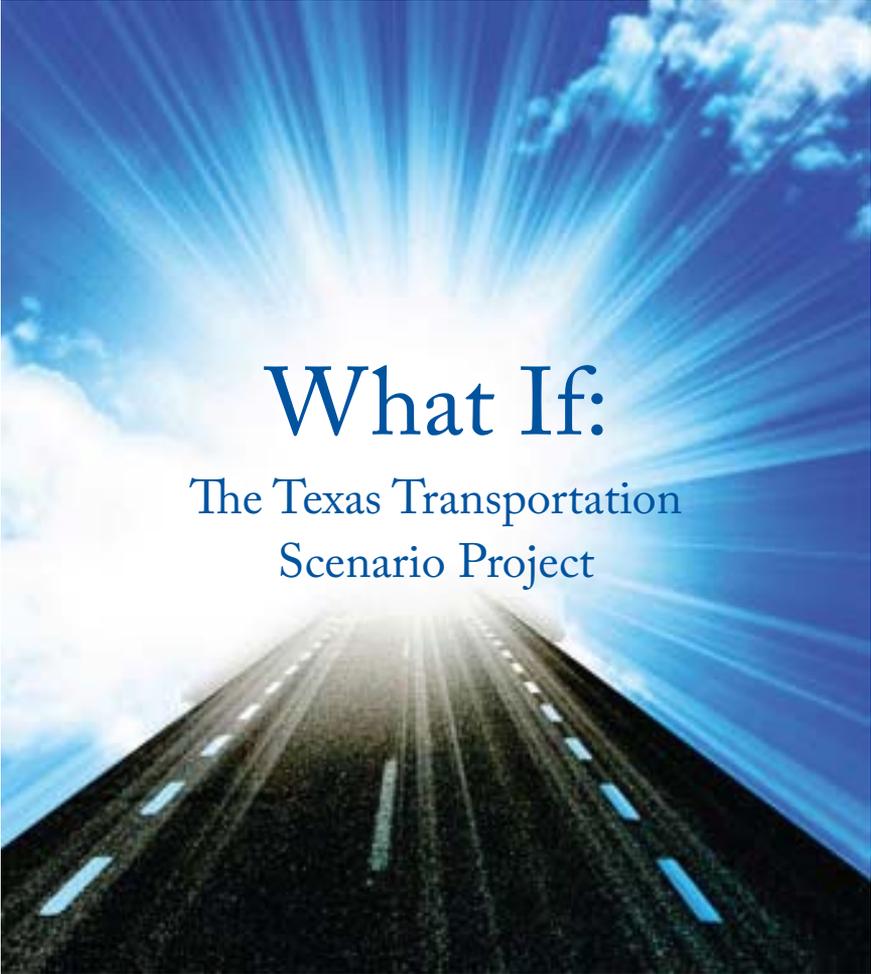


HORIZON

THE FUTURE OF TRANSPORTATION

A PUBLICATION OF THE TEXAS DEPARTMENT OF TRANSPORTATION

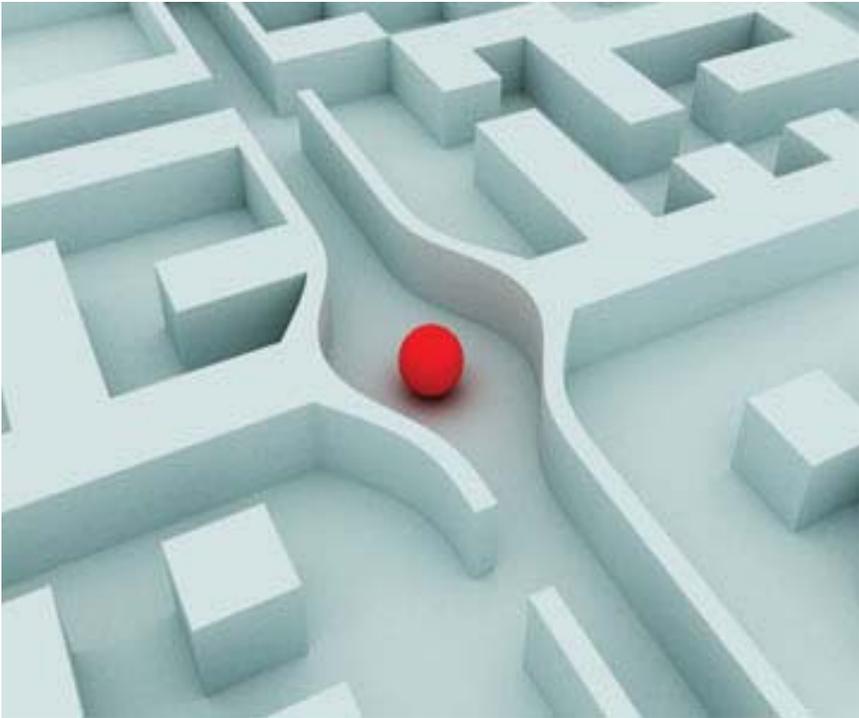
SUMMER 2008



What If: The Texas Transportation Scenario Project

Gazing Into The Future: Seven Possible Scenarios For Texas Transportation :: Transportation Scenarios (Congestion, Shifting Transportation Experiences, Economic Development) :: ON THE HORIZON: An Interview with Dr. Peter Bishop :: Coming Soon: "Judges of the Secret Court"

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HORIZON

THE FUTURE OF TRANSPORTATION

New technologies, rising populations, global market shifts, and environmental concerns are bringing economic and social changes to an increasingly complex world. The furious pace of these changes raises serious questions about what lies ahead. While it is impossible to be certain about the future, it is possible to plan for it by studying current trends and likely outcomes to gain the insights necessary to set reasonable goals and develop effective strategies to achieve them.

In 2007, the Texas Department of Transportation (TxDOT) partnered with the University of Houston (UH) graduate program in Futures Studies to develop the Texas Transportation Scenario Project, a set of “what if” scenarios that explore factors that could shape the future of transportation and their impact on TxDOT’s long-term strategic goals.

This issue of HORIZON presents the scenarios the study team produced, each with its own set of assumptions and time horizons. These scenarios illustrate expected and plausible alternative futures for transportation as well as generate questions about new opportunities and challenges that are sure to follow. Also, our On the HORIZON section includes an interview with Dr. Peter Bishop, a leading futurist and the project director for the UH research team. He offers his views on the nature of futures studies and what the future may hold for transportation.

In addition, HORIZON proudly presents a sneak preview of *Judges of the Secret Court*, the upcoming novel by national transportation expert Joseph Giglio, Ph.D., of the Hudson Institute. In his previous works, Dr. Giglio spoke directly to the transportation

community about the severity of our national infrastructure problem and how and why Americans must alter their thinking about it. In this book, however, Giglio strives for a wider audience by weaving an intricate plot with unique fictional characters that will bring life to this topic and spark public recognition and discussion about a problem that Giglio believes we should all care about.

We hope you enjoy this issue of HORIZON and we welcome your comments.

Sincerely,



Amadeo Saenz, Jr., P.E.

Executive Director

Texas Department of Transportation



Gazing Into The Future: Seven Possible Scenarios For Texas Transportation

It is no longer a cliché to say that the transportation sector is at a crossroads. The Interstate Era, which began in the 1950s, is over. New conditions and forces are shaping how transportation systems might evolve in this century. Transportation leaders are now exploring strategic questions related to finance, market-driven revenue models, the role of state and regional governments, the growth in freight traffic, and the implications of high energy costs.

Most leaders believe that the traditional solutions offered by expanding capacity

are no longer viable given the challenges of gaining broad public and legislative support for new taxes, the rising costs of materials and land acquisitions, and looming environmental regulations. Some advocates argue that decades of low-cost, personal vehicle ownership have led to “overconsumption,” and that the nation must rethink its entire transportation system.

The implications of our transportation decisions today are a matter of intense controversy and uncertainty, so it is critical to think about the future and to explore what the next era could be like.

A Perfect Storm or An Inevitable Transition?

The story of how the transportation sector has changed over the past few decades is widely discussed within the industry itself. Infrastructure demand from vehicle miles traveled (VMT) and the expansion of freight traffic have grown faster than our ability to add capacity and effectively deal with congestion. Revenues from the motor fuel tax have not kept pace with the real cost of meeting demand. Beyond adding new capacity in Texas and around the nation, an increasing portion of funds will be needed to maintain an aging infrastructure. The political will to either raise taxes or enable alternative finance strategies has simply not materialized. Meanwhile, the constraints of the growing costs of

congestion, high energy costs, and carbon-driven climate change are placing more pressure to change driver behavior and accelerate the evolution to cleaner, more efficient vehicle propulsion systems.

The Role of Futures Thinking

Given the high degree of uncertainty, it would be misleading to attempt to create a single forecast about the future of transportation infrastructure. Because there is no consensus on specific prescriptions or solutions, it is important to talk about transportation infrastructure “futures” rather than a single future.

Among these is the expected or baseline future, what people expect to happen based on current conditions, trends, and plans. It is not the only future by any means, but a good place to start in reviewing the alternative futures out there.

Based on research and TxDOT interviews, there is a belief that the sector will continue to evolve towards managed infrastructure, market-driven solutions, and a devolution from state

projects to regional ones that rely more heavily on innovative financing and public-private partnerships. In Texas and around the nation, the belief is that more dynamic market

pricing will help reduce congestion, expand revenues, optimize the use of existing infrastructure, and more accurately reflect the true cost of driving. The transition from fuel-based fees to user fees is already changing given the expansion of toll roads and dynamic pricing models (e.g. VMT tax, congestion pricing, value pricing, road tolling, HOT lanes).

The late Transportation Commission Chairman Ric Williamson once said, “In dealing with our day-to-day challenges and crises, it is easy for us as an organization to forget the longer term. But actually, all our major issues and the solutions we propose are about the long term, whether it is innovative financing, public-private partnerships, or the Trans-Texas Corridor. And the biggest impediment to good policy is shortsightedness.”

In 2008, TxDOT began a project to develop alternative transportation-related scenarios for Texas’ future and allow for the examination of “what-if” events and trends. The goal for this project was to stimulate thinking about critical transportation policy issues and effectively communicate a long-term view to Texas stakeholders.

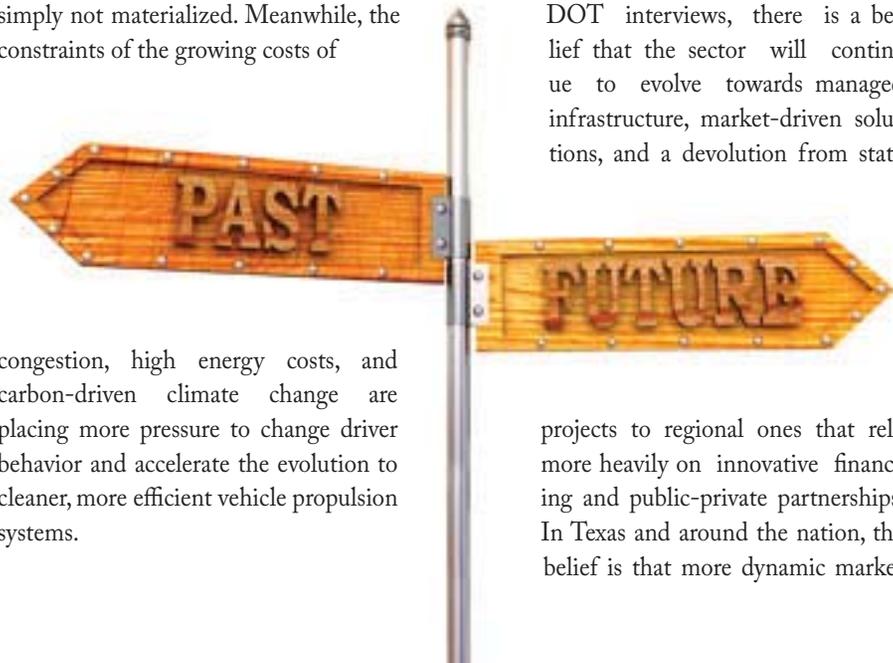
The TxDOT team, representing various divisions throughout the agency, worked with the University of Houston, a leader in the future studies field, to collect data, develop scenarios, analyze their impacts, and develop potential strategic responses.

The Role of Scenarios

Scenarios are depictions of alternative plausible futures. They help identify our major assumptions in forecasts and images of the future and they explore the limits of plausibility in a world with new conditions and driving forces. They also introduce new ideas which could have an impact on the decisions and actions taken to further develop the transportation infrastructure.

Some of these major assumptions in our images of the future are based on critical questions such as:

- What forces might shape future attitudes towards ride-sharing and mass transit?
- Is there a ‘tipping point’ for congestion and energy costs that could change commuting behavior?
- How might automobile companies, insurance providers, and private transportation service companies influence future behavior?
- How will Texas remain competitive in the 21st century global economy?
- What role will transportation infrastructure play in that landscape?
- What is the future of freight systems including trucks, rail and air?
- What might be the sources of innovation? And sources of capital investments?



- How might the future of work change our commuting patterns?
- How might the world change after a decade or two of sustained high energy costs?



This project explored the implications of these assumptions by developing seven scenarios based around the three themes below:

Theme #1: Congestion

Scenario:

Managed Decline 2.0 looks at a future in which transportation agencies are unable to overcome the challenges of congestion, creating an opportunity for the automotive industry to ease the pain of drivers. The industry collaborates and standardizes Adaptive Cruise Control as a mitigating solution to congestion, and continues its development towards more autonomous “intelligent vehicles.” What happens in a future where Texans simply believe they can buy their way out of congestion?

Scenario:

Look How It Turned Out is a future in which the cumulative effect of lucky breaks resolves many of today’s problems. Regions expand capacity, companies allow more flexible work schedules, location-based services help expand mass transit ridership, and a new suburban landscape changes commuting patterns. What are the key broad elements to thinking about more comprehensive mobility solutions?

Theme #2: Shifting Transportation Experiences

Scenario:

Driven by Connections explores the future of transportation choices in a world where services have become highly localized through mobile computing, personalized around digital maps, and coordinated through social relationships. How do we leverage this coming age of connectivity to expand choices and maximize the existing infrastructure?

Scenario:

Surfing the Freight Tsunami: UPS Acquires Union Pacific considers a very different landscape for the freight industry. Global market pressures for ‘just in time’ delivery have pushed companies towards greater integration of trucking, rail, and air systems. What role might the public sector play in expanding rail capacity and enabling next generation trucking and air delivery?

Theme #3: Economic Growth

Scenario:

An Energy Constrained World looks at our national vulnerabilities caused by years of high energy costs. A series of gas infrastructure attacks and brief conflict in the Middle East lead to ‘Month without Oil’ around the world. The result is an accelerated push to end the era of liquid fuel combustion engines as the nation’s fleet moves towards electric-hydrogen power. How might the transportation sector respond to revenue losses around an accelerated shift from liquid fuel combustion engines?

Scenario:

Texodus is a future where the perfect storm of economic, political, social, and environmental problems leads to a sharp decline in the Texas economy. Major employers and tens of thousands of families leave the state seeking a better life in new regions. Could our assumptions about continued strong economic growth in Texas be challenged in the decades ahead?

Scenario:

San Angelo Blues is a future in which access to desalinated Gulf Coast water and a fast growing health-wellness industry transform a small city off the main interstate corridor into a major metro area. While planners attempt to relieve congestion, local citizens use sophisticated techniques to oppose their efforts. What unexpected factors could change growth patterns and stretch transportation infrastructure? How might

opposition groups adapt their strategies in the 21st century?

Each of these scenarios explores a very different alternative future that tests many of our core assumptions about changes in transportation infrastructure. They are designed as a tool for talking about plausible futures rather than single-point forecasts or visions for the state. They may be used to educate Texas residents, politicians, legislative aides, and business leaders in understanding the critical issues facing the transportation sector, engaging them in considering alternatives, and ultimately, to have an impact on our decisions to act or not act in a particular way.





Congestion - Scenario # 1

“Managed Decline” 2.0: Buying Our Way Around Congestion

Year: 2018

It seems that money can buy you a little of bit of happiness—at least when it comes to battling congestion on Texas highways.

For the seventh consecutive year, three Texas cities rank among the top five U.S. cities with the highest levels of congestion. In Austin, Dallas, and Houston, commute times are now 30 percent higher than they were at the turn of the century, prompting some citizens to mount aggressive Internet campaigns and to demonstrate in front of the state capitol. Commuters were tired of adapting to their own solutions

like leaving before sunrise to beat the morning rush hour. Now rush hour simply starts at 6 a.m.

What has happened? For the past 20 years, the Texas Department of Transportation (TxDOT) has been unable to build new capacity as federal funds continued to decline and political gridlock over public-private partnerships kept the agency from expanding road networks. Some regional agencies expanded capacity, but the reality is that new roads resemble a patchwork of inadequate and poorly integrated roads. Unable to address congestion, TxDOT’s unspoken policy has been to

simply “manage the decline” and hope that problems simply get worse—more slowly.

So, many Texans have simply taken a new approach. By purchasing his new 2016 Lexus IS-F, marketing consultant Robert Suarez believes he’s essentially bought his way out of the headaches of traffic congestion. The car comes equipped with many “smart” features that help him avoid the most congested roads, but when it is unavoidable and traffic is moving at a crawl, he simply turns on the vehicle’s Adaptive Cruise Control (ACC) and relaxes while the car fights the stop-and-go traffic.

“. . . commute times are now 30 percent higher than they were at the turn of the century.”

“Since Dallas opened the HOV lane to all cars with ACC, I decided the cost was finally worth it,” Suarez said, pointing to his shiny black Lexus with over 500 externally mounted sensors invisible to our eyes. “Forget about horsepower, the new luxury is computer power.”

At \$120,000, some might consider the price tag exorbitant, but many Texans are willing to pay more to reduce the personal cost of congestion. Robert was sold after he tested the ACC, the car’s most advanced feature. ACC allows the car to automatically increase speed, brake, and even stay in its lane at speeds



below 45 mph, perfect for the stop-and-go nature of congested roads.

“Even if I can’t get to the HOV lane,” Suarez continued, “this car essentially drives itself through the congestion and takes away the headaches of commuting. Now when I pass another luxury car with ACC, the other driver and I will exchange a smile that says, ‘hands free’

Robert’s car has also become a connected digital hub for his work and family life. With one touch of a button, he can attend a video teleconference, and with another, pick products off a virtual retail shelf and order groceries that will be ready for drive-thru pick up on his way home from work. “And my Google map console,” Suarez added, “shows me live video feeds and instructions on how to avoid the majority of the congestion if I can. Nowadays, I find myself using out-of-the-way, residential roads to find my way home. Sometimes it’s better to simply avoid the highways and take local streets.”

Robert is not alone, but most Texans cannot yet afford the luxury of adaptive cruise control. Things are changing however. Nearly 70 percent of vehicles on Texas roads have advanced global positioning systems (GPS) that now tap into short-distance communication networks with other vehicles. On the road, Robert’s car is constantly “talking” to other cars ahead on the road, providing valuable real-time data on traffic flow. Like many Texans, Robert subscribes to Microsoft’s TransPort™, a traffic information service that suggests alternative routes, estimates times of arrival, and provides real-time updates and live information feeds.

Even when roads are congested, Robert’s car calculates the optimum speed along “brake-free” commutes, resulting in fewer “phantom” traffic jams caused by unnecessary braking and lane changes.

“I have figured out that it is best to follow other luxury smart cars. As long as we all stay in one lane,” Suarez said, “it’s pretty accurate. The same lane, same speed, and traffic just flows. Now I know exactly how long each trip will take.” The optimal speed system works by collecting vehicle flow data from vehicles surrounding smart cars with external motion detection sensors. “I guess,” Suarez said, “TransPort™ traffic flow specialists say that if there are six smart vehicles per lane mile, that traffic flows can be sustained as other cars simply follow along. Does that



mean I am subsidizing their congestion solution?!”

Suarez’s attitude towards people without TransPort™ services is a symptom of what some Texans call the new “digital road divide,” said TxDOT business analyst Linda Jameson. “There’s a growing sentiment among Texans that congestion is something ‘rich’ people can buy their way out of. Most new cars are equipped with features like Adaptive Cruise Control, and that’s great, but what if you can’t afford to buy a new car?”

“It definitely raises issues of fairness,” says Jayce Panell, an Austin city planner. “It reminds me of the early 2000s, when California started letting hybrid vehicles into their HOV lanes no matter how many passengers they had. People complained and it was a mess. Anytime you try to reduce congestion through vehicle purchase patterns, you run into these kinds of problems.”

She’s referring to TxDOT’s unwritten “grow with the flow” policy, an attitude some blame for problems with the



current infrastructure and the shifting of the burden to the commercial automotive sector. “TxDOT’s unspoken policy seems to be to simply manage the decline,” says Panell. “That may have worked at one point, but now it’s making people really mad. Those who can’t afford the new technology are starting to band together. They hold TxDOT responsible for developing solutions for everyone.”

Dallas ISD employee Karin Epps agrees. “I resent the implication that I should trade in my perfectly good 2012 Honda for one of those fully-loaded, new smart cars,” she says. Epps teaches 9th and 10th graders during the day at an alternative school and delivers Domino’s pizza in the evenings. “Sure, I’d love to be able to sit back and relax during my morning commute or my pizza runs and let the car basically drive itself. That

would be great! But if legislators really want me to have a car like that, then they should supply me with one! Otherwise, they need to come down to Earth with the rest of us and start fixing these dang roads.”

While people like Epps cannot afford cars with the new technology, there are others who can but choose not to. “My issue with it is being too connected and always available,” says Alex Gorman, a 52-year-old real estate agent in San Antonio. “On the one hand, you think, well, it sure would be nice to sit back and have a cup of coffee while I talk to my kids on my way home from the office, but on the other hand, you think, if my kids, my wife, my clients, and my colleagues can see exactly where I am at every point of my ride, where is the down time I used to have? Where is that point where I can crank up my stereo and just drive? Ten years ago, the problem was people talking on their cell phones, now I look over inside other cars and see people holding video teleconference conversations or checking their email.”

But Suarez, 33, doesn’t share Gorman’s concern. “If you don’t want to check your email, you don’t have to. If you don’t want to be seen, you just go invisible,” he says, as he gets into his Lexus to go home from work. “Or you can choose who sees you. It’s like it is on the Internet—you don’t have to give people access to anything.”

Meanwhile, Suarez punches a button and his seatbelts close around him. He waves his hand and gesture sensors launch TransPort™. The system launches the 3-D map and simulates his commute home including a quick stop at the pharmacy. As it does so, the map swivels and shows a large block in the HOV lane on the freeway. Despite the advances of the system, there’s been an accident.

Suarez said, “As far as the idea that we are ‘buying our way out of traffic’ is concerned, all you have to do is look at this to see that’s not entirely true. There’s still congestion; it’s just that these cars help.”

The car comes equipped with many “smart” features that help him avoid the most congested roads.

As Suarez nods, the map swivels back, his windows close, and the car starts. Because of the accident, the vehicle won’t go to the HOV lane today. Instead, he’ll be taking the back roads, but he won’t be alone as soon as other drivers find out about the accident. And he will have the option to agree or disagree, because with the ACC feature, Suarez is in the driver’s seat—even if he is no longer the driver.



Congestion - Scenario # 2

“Look How It
Turned Out . . .”

Year: 2024

John Jackson almost spilled his coffee when he reached down to pick up the Sunday morning paper and read its main headline: “Congestion on the decline, but who deserves the credit?” Walking back inside towards the kitchen table, he browsed through the article on a recent study by the Texas Transportation Institute (TTI) which reported that a majority of Texans have seen steady improvements in their daily commutes over the past few years.

At first he couldn’t believe it. How could things be better? He could see for himself that growth extending the boundaries of the Dallas metro area had not slowed down and it was hard to believe that the few road projects in the region had kept pace. Everyone knew that TxDOT was still struggling to sell its vision of new state transportation corridors.

Reading through the article only added to his confusion. While the TTI study confirmed that commuter times had

improved across the state, they could not say exactly why. As it turns out, it wasn't one thing at all. It wasn't planned to happen this way. Instead it was a set of unintended consequences that made it difficult for anyone to claim responsibility.

Over breakfast, his wife Nancy sat reading, while their two children ate, with headphones on, listening to music. It was a Sunday morning ritual that John would read articles aloud hoping that someone would engage him in a conversation.

"It says here," John said, "the source of the change was that vehicle-miles-traveled (VMT) per year for Texans simply hit a plateau and stopped growing. But according to Patricia Suarez, the study's director, 'The trouble is we don't know exactly why. The obvious answer is more than a decade of \$6 to \$9/gallon gasoline has changed behavior and more drivers were taking fewer, more planned trips and ridesharing. But other things are changing as well, like the nature of work.'"

Now this was something John could believe. He read on, "Five years ago, it became commonplace across the country for new employees to include flexible work schedules in their work contracts. To keep employees happy, most Dallas businesses have implemented subtle changes in flexible schedules by introducing part-time telecommuting



options. More workers were using video-conferencing one or two days a week or leaving later in the morning to avoid congestion." That much, John could see for himself. His wife, Nancy, had been working from home one day per week for the past two years. She sat in their home office with five or six thin display screens, each connected to co-workers in other locations.

John wondered what work might be like for his children. Maybe his children might never drive to work. He pulled the earplug out of his son's ear and asked, "Do you think that you will drive to an office when you grow up?" Rolling his eyes, the son said, "Not unless I have to! Why would I waste my time driving to work when I could just immerse myself in a 3-D or video mirror world of the office right in my home? Haven't you seen the new PlayStation graphics, Dad? Stuff looks real, already! Plus, what if I want to work for a leading Chinese graphics design company? How would I commute there, Dad?!" Looking at his children, John wondered whether the idea of a daily commute could become obsolete in their lifetimes.

John continued, "It says here that Microsoft and Google are also taking credit for congestion relief by providing us with more accurate information on traffic. You know all those updates I get each morning on my cell phone? Those text message updates..." his voice trailing off as his children threw him a look. They were not impressed.

Reading through the article, John started to recognize that his own commuting patterns had changed. Ten years ago, he simply left at 7 a.m. each morning. But for the past few years, he made different decisions on when to leave in the mornings based on real-time traffic reports which outlined two-hour forecasts. The study suggested that commuters had become smarter and better informed. Had he also become smarter?

The study suggested we need to update our image of life in the suburbs. The whole "suburban" lifestyle has also changed in the Dallas area in response to higher energy costs and the pains of congestion. More suburban Texans work in suburban business centers or satellite offices. Today, fewer people commute to major downtown centers as "suburban to suburban" commutes continue to grow. But the biggest change has been the rise of rideshare rates among suburban residents, now nearly twice that of downtown commuters. Neighbors and colleagues are now connected through social networks that make ridesharing

convenient and cheaper than owning a second vehicle.



And according to [study director] Suarez, "There has also been a more deliberate coordination to offer mass transit support for suburban markets. Transit agencies are more innovative. Metro transit operators use smaller buses that function more like chartered van service companies. Rather than follow a fixed travel schedule, transit vans operated around on-time demand. Most transit

. . . more than a decade of \$6 to \$9/gallon gasoline has changed behavior and more drivers were taking fewer, more planned trips and ridesharing.

buses are co-funded by major employers who see clear benefits in offering the service to employees and getting them focused on work along the way.”

Suarez said, “TxDOT has also made some progress. We have also seen more roads built. Despite early setbacks at the turn of the century, TxDOT has made progress in building new capacity through public-private partnerships and more innovative finance methods. And we must recognize improvements at the regional level. In Dallas, local counties have organized and expanded roads in the region through more innovative finance.”

But John was still a little skeptical. He had vivid memories of TxDOT’s efforts to build its original vision of the Trans-Texas Corridor (TTC). And he remembers how much they had to scale back in order to proceed on the first phase. Maybe they had quietly empowered local agencies to deal with road expansions?

Suarez continued, “TxDOT has also put more money into budget allocations for information technology infrastructure to keep drivers connected and informed

on traffic conditions and real-time mobility options. Ten years ago, the state legislature started a Transportation Digital Infrastructure – providing a fixed fee from telecommunication taxes dedicated to transportation information services. Congestion had also improved as the region learned to ‘grow with flow.’” Delays from accidents were also in decline. Cars had gotten smarter over the past five years which meant that drivers had also become “smarter,” making better decisions on which roads to take during rush hour.



John thought to himself, “Yes, more people are staying in their own lane and following the optimal speed based on traffic service feeds from their dashboard GPS units.”

But while congestion problems had been mitigated, two other major headaches remained unchanged: freight traffic and funding.

... fewer people commute to major downtown centers as “suburban to suburban” commutes continue to grow.

Although the first phase of the TTC had started to relieve commercial freight along the Interstate 35 corridor, growth was outpacing road expansion. And while trucks were less of a factor in congestion, they continued to tear up road infrastructure. TxDOT’s maintenance budget continued to soar and, at the same time, there was less money coming into the state.

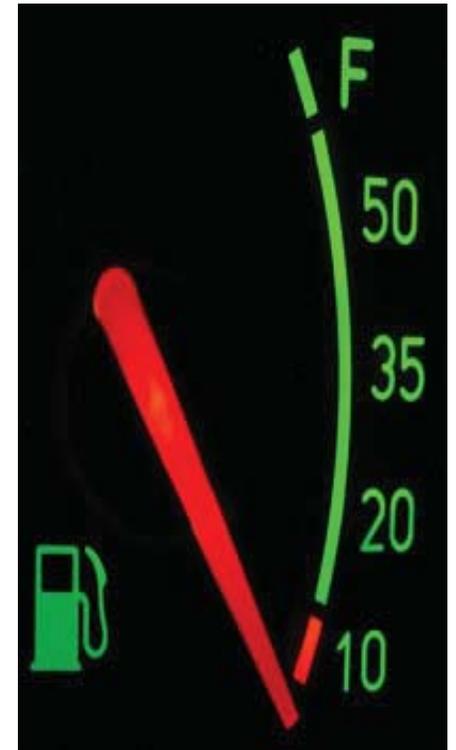
... more people are staying in their own lane and following the optimal speed based on traffic service feeds from their dashboard GPS units.

Like most other agencies, TxDOT has been unable to transition its revenue stream from gas tax to VMT fees, and must deal with a sharp decline in its revenue stream. And the TTI study revealed that while Texas drivers are reporting shorter commuting times, they are also describing worse road conditions. TxDOT’s inability to make up revenue losses from the gas tax has meant less money for maintenance on its aging infrastructure.

And there were new issues to deal with—control over local roads and the new growth of traffic on non-highway roads. More accurate information about travel options has led to more traffic on non-highway road systems. County officials and local residents are starting to complain about increased vehicle

traffic on local roads as drivers attempt to avoid congested highways.

John agreed that he took more short cuts. He remembered that one month earlier, he received a survey call about supporting legislation that would require non-residents to pay for driving through local residential streets during busy commuter hours. He remembered how difficult it was for Dallas to pass congestion pricing a few years ago and he could only imagine how many lawsuits would be filed if communities tried to charge fees for passing through their streets!





Shifting Transportation Experiences - Scenario # 3

Driven By Connections

Year: 2022

Samantha Davis loves how her smart phone organizes her life. With a touch of her flexible fold-out screen, she sees a realistic 3-D digital map of Austin with dozens of moving blue dots, one of which is red and in the shape of a heart.

“That’s Eric, my boyfriend.” Samantha points to the dot with her pink, glittery nails. “He’s at the airport, getting ready to go on a ski trip for five days. He gets to play, but I have to stay here. I’m going to miss

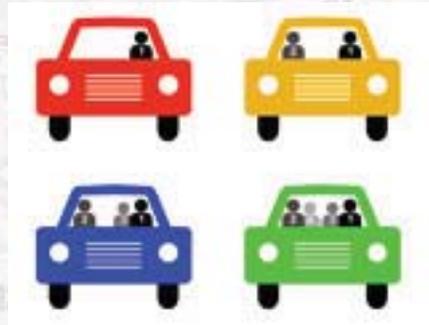
him.” The other blue dots on Samantha’s digital map represent friends driving cars or riding on buses and trains. With one click, she can see a real-time motion model of all traffic flowing through the region. Another click and she can see a projection of traffic flows in the next hour. Samantha pouts and bites on a strand of her long, curly hair, but she doesn’t sulk for long. Within seconds, she has clicked another screen that shows her the status of Eric’s plane, and then a third, that shows her the locations of all her friends. She taps one and a chat screen pops up.

With one click, she can see a real-time motion model of all traffic flowing through the region. Another click and she can see a projection of traffic flows in the next hour.

“It’s my friend, Stacy,” she says, typing in a message. “She was coming to pick me up so we can go to our night class, but she’s late. She’s still across town and she hasn’t even started.” Samantha sighs. “Now I’m going to have to find someone else.” With one click, Samantha’s request for a ride goes out to her rideshare network. If no friends are around, she’ll simply find the next local bus. She can see that it is 17 minutes away.

Only in her second year of college, Samantha is too young to remember life before the age of advanced global positioning and 3-D digital maps. She’s been sharing map-based information with her friends since the fifth grade and she is comfortable managing her real-time location when it makes life more convenient. Her parents have always known and shared their locations and she could not get insured as a 16-year-old driver without having an event recorder installed in the family car. For Samantha, mobility is all about connectivity, and she is not alone. Nor is she short of transportation choices: driving, rideshare, train, and bus rapid transit. She always knows exactly when she’ll arrive.

Increasingly, mobile computing and location-based services are changing life in Texas cities and around the world. Over 85 percent of Texans now carry advanced mobile computing devices and subscribe to location-based transportation services. The state is blanketed with broadband wireless networks that deliver information anywhere and at anytime, whether at work, home, or on the road. With the click of a button, Texans can see what is happening on the road networks around the state. And, not surprisingly, many residents have self-organized around ride-sharing to reduce the headaches of congestion and their monthly gas bills. But rideshare services are not just for



college students and young people. Andy Flynn, 47, lives in Katy, just west of Houston, and he has a vast network of rideshare commuters that follow the same route to work each day. If Andy does not connect directly with a neighbor inside his housing development, he simply drives to the local Park-and-Ride where there is a covered gathering platform for social network rideshare groups and

fresh coffee. A large display screen shows “ride offers” in real-time for those still seeking a ride. But by the time Andy arrives, he has had a quick conversation with a friendly driver looking for riders to use the HOV lane and share in the gasoline costs. Both of them will get downtown in less than 20 minutes. Andy is part of a growing number of suburban commuters using social networks to cut down on transportation costs and the headaches of congested roads.

Of course, increased connectivity and these ad hoc travel arrangements (known as “slugging”) have not made the car disappear. Private vehicle ownership remains the dominant mode of transportation. But it has changed how TxDOT officials look at improving safety, transit riders, and regional traffic flows for private vehicles and freight.

“I hate driving,” Andy says. “I grew up in New York and we never had a car. But when I came down here the only place we could afford a new home was Katy, miles from downtown Houston. It is a great place for our children, but I hated every minute of my first few months of commuting. Things did not change until after I started slugging with my commuter social network. It is all about saving time and money.”

Last year, TxDOT launched its new Predictive Model Service that provides a three-hour forecast of traffic flows

based on rich data collected from privately controlled transportation services now dominated by brands like Google, Microsoft-Garmin, Nokia-NAV and TomTom. Few could have imagined that consumers would pay \$50 per month for car-based web services! Now people make route decisions based on near total information awareness.

Drivers reveal their daily schedules to their transportation service provider in exchange for valuable information that helps them avoid congestion.

Drivers are no longer limited to the highways and can often find the quickest route using interior roads.

Jami Shelton, TxDOT spokesperson, describes a new vision for information services changing driver behavior. “We are seeing two big shifts. First, there are more passengers per car thanks to more synchronized data on personal travel plans. Drivers reveal their daily schedules to their transportation service provider in exchange for valuable information that helps them avoid congestion. People value social connections that ease the pain and costs of commuting.”

“But the other shift,” Shelton said, “is more of a challenge. There are still more and more cars on the road and many drivers have a complete ‘bird’s eye’ picture

of real-time traffic flows. Often, they choose to get around the region on non-highway roads.” According to Shelton, “TxDOT is now confronting complaints from residents who capture video evidence of highway traffic pouring into local residential streets as people look for short-cuts provided by their GPS units and flows based on our Predictive Model Service. There is even a rumor that the Legislature might pass a new law allowing price congestion authority for residential area roads during rush hour.”

Shelton added, “First, we started pricing downtown areas, now residential communities want more control over their roads. We expect lawsuits ahead from groups representing the ‘rights of drivers’ to use any and all roads in the region, versus the ‘rights of community members’ to restrict non-local commuter traffic. It could get ugly.” “But, there is a positive revenue side of this traffic information age,” Shelton said. “Our goal is to have an accurate model of traffic flows to forecast and then to produce the most desirable system behavior based on delivering traffic information to drivers. But we are also going a step further to sell predictive modeling services to freight and logistics operators and private road operators who vary pricing rates to attract drivers. Those rates can change every two to three minutes, so we need the real-time information to calculate the least costly route. Companies are

willing to pay for the most accurate big picture of traffic flows in the region.”

Of course, TxDOT’s system would not work without gathering data from private transportation service providers who anonymously aggregate subscriber schedules. It is a “win-win” situation. If someone, like Samantha or Andy, expects to leave 30 minutes later than usual in the morning, they can change their plans on their phones and know immediately what to expect so they can adjust their travel times or meetings accordingly. Life is not just connected, it is also synchronized.



Few people could have imagined how important smart phones and mobile computing would become for the transportation sector. It’s a portable GPS unit for delivering services, a bank for micro-payments, and a security device for managing safety at all times. Everything is controlled entirely by the individual.

“It is amazing how much data is created and revealed by individuals,” Shelton said, “This mobile computing revolution helps us understand real world travel

conditions and how people’s personal profiles affect their driving habits. We can also better calculate how far people are traveling, how many miles, what times of the day, and then use that information to make decisions. It’s also helping us better understand how and why accidents happen if we can gain access to the vehicles’ data recording systems.”

Those recording systems, standard equipment since 2022, monitor speed, braking, and driver responses, and are used by automobile insurance agencies to calculate rates on a per-trip basis. They are also mandatory for underage teens in several states. This helps pacify people like Cheryl and Glen Davis, Samantha’s parents.

Born in the late 1970s, Cheryl and Glen are a little more cynical about the latest technological advances. They like knowing where Samantha is, especially now that she’s away in college, but they worry she’s too free in sharing her location on other people’s maps. “She (Samantha) carpool with everybody now,” Cheryl said. “She has all these web-based ‘trust circles’ that include friends, friends of friends, even friends of friends of friends. It’s hard for her to keep up with sometimes and I worry she’s going to get into the wrong car. I mean, I experimented with Facebook™ when I was in college. Everyone was doing it. But I tell you, it is nothing like the mobile social networks these kids

are using today. I wish the government would mandate open access to safety video cameras inside cars so a mother can see who their child is riding with.”

“Yeah, that’s my mom,” said Samantha, blowing a blond curl off her face. “She’s a little spastic sometimes. But I never get into a car without a live video feed and I always check out the person on the ‘Net first. My mom just worries. To calm her, I send occasional video ‘chats’ along the way until I arrive safely. But I know that she’s always glancing at her map to see where I am.”

As she finishes her sentence, Samantha clicks on another screen and pumps her fist. “Yes!” she says, as a sleek, black sedan turns the corner. “That’s Annie. She’s a friend of Lynne, who’s a friend of my friend, Stacy. She has a night class too, so it’s all good.”

As the sedan pulls up to the curb and Samantha prepares to get inside, her phone beeps. It’s Eric, telling her his plane’s about to take off. “But I already knew that,” she said with a wink. “It shows it right here.” She grins and opens Annie’s car door and slings her backpack into the backseat. “Watch my stuff,” Annie said, a pale-faced girl with bright red hair. “Oh, sorry,” Samantha replied, as she finishes saying goodbye to Eric and shuts the car door. “And hi, Annie. I’m Samantha.”



Shifting Transportation Experiences - Scenario # 4

Surfing The Freight Tsunami

Year: 2027

Texas Senate Hearing Transcripts, 90th Legislature
Texas Senate Total Modal Transportation Committee
Hearing on the Proposed Texas Freight Investment
January 15, 2027

Afternoon Session: 2:00 pm to 6:00 pm

Committee Chair: Art Daly, Republican, District 11

Committee Member Amber McDermot, Democrat, District 25

Speaker: Hank Jones, CEO UPS/Union Pacific (UPAC)



r. Daly:

This hearing will now come to order. All live blogging will now be a part of the official proceedings record and conversation analytics reports. All video streams will now be recorded, archived, and verified for authenticity to avoid false

image manipulation. Any attempts to alter or deliver messages during live testimony to our guest speakers and/or Senate panelists will result in fines determined by the Texas State Senate Transparent Information Act of 2015. [Pause]

Our purpose today is to get some insight into the future of freight transportation in Texas, and in particular, the potential public investment in expanding the state's rail systems. We will also explore two other issues for the future of freight – regulatory favor for pilot programs of semi-autonomous trucking along Texas highways and permit requests to support unmanned freight carrying aircraft to operate within the State of Texas.



As the first order of business, we'll hear testimony from Hank Jones, the CEO of UPS/Union Pacific (UPAC). Then we'll proceed to questions from the panel. I'd like to express our appreciation to you, Mr. Jones, for taking the time to come here and give testimony. As a matter of introduction, with the \$225 billion merger of UPS and Union Pacific into UPAC two years ago in 2014, your company remains a preeminent player in the global freight sector, but you stated publicly that you need to tightly integrate trucking and rail industries to remain competitive.

Recently, your company proposed centralizing UPAC operations in Texas around a very radical proposition to double our rail mile capacity within the next decade and reinvent the trucking industry within our state. Phase One would connect this expanded rail-truck system to massive regional inland ports. Phase Two would expand semi-autonomous trucks on Texas highways and support unmanned air freight operations at newly created regional jetports. These hubs will be strategically located around Houston, Dallas, and Austin-San Antonio.

To support the Phase One endeavor, you are requesting a \$60 billion public investment to expand our rail miles and inland ports around the state in order to transform Texas into a global freight hub.

This is a very ambitious vision of our state, Mr. Jones, especially from a gentleman born and raised in Oklahoma, if I might add to the unofficial record of this testimony!

I hope you will help us understand why the public purse should fund this vision of freight, which with all intents and purposes, appears to be a private venture.

Mr. Jones: Thank you Mr. Daly. I'd like to thank you and the committee for affording me the chance to give testimony at what I think is a momentous time for freight transportation in Texas. I hope that my opening statement will address the concerns you've raised.

In 2024, as you noted, Mr. Daly, UPS merged with Union Pacific to form UPAC. Our motivation was to fight against the decline in profitability of freight transportation in the face of increasing international competition, rising energy costs, shipping and sea port delays, and a global market skewed by foreign government subsidies. UPAC was formed in the belief that the seamless integration of next generation trucking, rail and air systems, supported by advanced information logistics and asset tracking are the key to a sustainable future. Trade is what keeps our economy growing.

Our intent is to join the public in transforming state transportation networks by adding jobs, increasing safety, decreasing congestion—all while expanding freight volume within the state. Texas could become the world's leading "total modal" hub by integrating air, sea, road, and rail facilities used to transport people and freight. Senator Daly, this is a bold vision that could only be suitable to this great state!

Our plan, as you mentioned, Mr. Chairman, requires a major expansion of rail capacity and existing inland ports. We also expect Texas to become a leader in next-generation, smart trucking systems which will make our roads safer and more attractive to businesses seeking the fastest trade routes. We must also recognize the great potential of military-tested, and now commercialized, unmanned airplanes carrying freight. A Texas-based network of total modal hubs would make this state the destination of choice for rapid global trade routes in the states.



From a business perspective, we identified Texas early on as an ideal focal point of global freight operations. There are natural advantages here in terms of the existing rail infrastructure, coastal waterways, large inland ports, and major airports. And we cannot forget that Texas is the home base for major industries and employers.



Quite frankly, Mr. Chairman, freight growth in this state has come from unexpected places. Since 2015, Texas Gulf Coast ports have been the leading entry point of choice for manufactured goods and biofuels entering from Africa and South America. Brazil could soon surpass Mexico as the state's largest trade partner. The state is also becoming a primary hub for higher valued, lower weight cargo shipments from Asian manufacturers of electronics and energy appliances.

We expect more Asian trade to pass through the western part of the state after 2030 with the completion of the new Trans-Mexico Corridor providing

freight with a seamless path from Mexico's Pacific ports via rail and road through west Texas on its way to Kansas City. UPAC's vision will bring thousands of jobs to the west Texas economy, but only if the state's infrastructure can absorb it.

Chairman Daly, many people ask 'Why is UPAC focused on Texas?' The reason is because we are at the beginning of a great age of the Texas freight industry. The increased traffic that occurred following NAFTA will pale in comparison to trade in the years ahead as the global economy matures. But if we do nothing to expand freight infrastructure, the results could cripple the state's economy and clog our highways.

But we cannot realize this vision alone. The investments are large and so are the benefits to the people of Texas. An investment in rail infrastructure that will take freight off our highways could also support high-speed commuter trains connecting downtowns within the major cities of the 'Texas Triangle.' And everything rests on the backbone infrastructure of freight.

The first step is building a 21st century rail network and then integrating our truck fleets which will be the smartest and safest vehicles on Texas roads. Our advantages will be speed and agility. In a few years, fleets of semi-autonomous trucks could transform Texas highways. One driver, supported by a team of three remote operators, could

handle one dozen flatbed cargo units. And, looking forward, our unmanned airplanes will be the most cost-efficient way to move goods quickly around the nation and planet without disturbing ground traffic. This is the total modal strategy upon which our UPAC merger was founded.

I'll now be happy to answer any questions that the committee may have.

Mr. Daly: Thank you, Mr. Jones. But you have ignored concerns that extending our freight architecture will create added congestion and detract from the quality of lives of our citizens. How does this vision to connect networks of inland ports bring economic benefits to rural Texans?

Mr. Jones: First, let me say that I don't think we've been successful thus far in getting the message across about just how much revenue this will generate for the state. The economic benefits of global trade are expanding and will likely bypass this region unless Texas expands its ability to handle 'just-in-time' freight systems. Even today, ships wait patiently to unload at seaports while our inland centers are operating at a fraction of their full potential. We expect them to double in size and that means an increase of over 50 percent in jobs where those centers are located outside of major metro areas that border small towns and rural communities. Our proposal includes major investments in high paying jobs related to total asset management systems, truck fleet operators, and unmanned vehicle pilots.

Congestion is a more complex problem to address because freight is only one part of the picture. Our vision is that the state can "grow with flow" and develop ways to reduce congestion in a cost-effective manner.

Congestion is a more complex problem to address because freight is only one part of the picture. Our vision is that the state can 'grow with flow' and develop ways to reduce congestion in a cost-effective manner. I think our greatest offering will be in safety and resources devoted to information technology.

Our trucks will be the 'smartest' vehicles on Texas highways. Each truck contains more than 500 externally-mounted sensors that monitor traffic conditions surrounding the vehicle as well as the traffic flow miles ahead. We will have the smartest trucks and the smartest drivers on the road. We also expect tremendous improvements in efficiency and safety with our next-generation, semi-autonomous trucks that form a tightly

integrated 'virtual train' along the highway. Each autonomous truck bed will operate in unison with the lead driver and with the assistance of a team of remote drivers monitoring every mile.

Mr. Daly: Ok. Senator McDermot?

Senator McDermot: This issue of taxpayer money is still worrisome to me. Even if we can convince the citizens the extra congestion is worth it, I don't think it's going to go down well to ask them to pay for that with their tax dollars. The people in my district are already launching viral advertising campaigns against the proposal and some are going so far as to suggest boycotts of UPAC altogether.

They have created a 3-D mock-up simulation with shows how your company trucks might begin to have an impact on their daily commutes. I've seen the video clip and it is a very convincing argument against your vision of freight traffic in Texas.

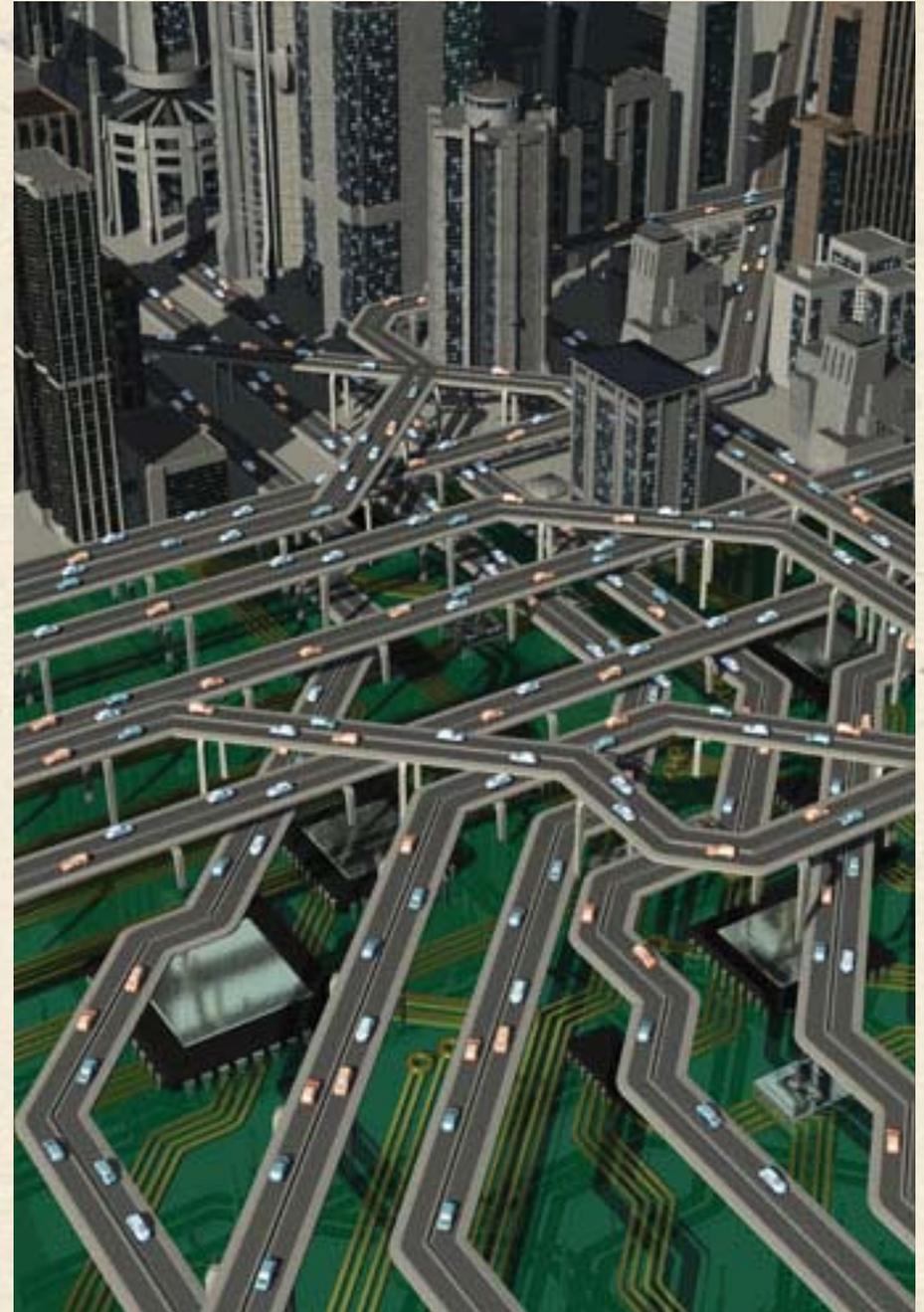
Mr. Jones: The proof of the idea is in the results. We have also seen these media clips generated by well funded 'citizen groups' and disagree on all their major assumptions and input models. Quite frankly, we believe these simulations are being funded by private interest groups outside of the state of Texas.

We are responding by releasing 'SimRoad', a 3-D world construction tools that allows citizens to model their own changes. They can see with their own eyes the implications of doing nothing to improve the backbone infrastructure of freight.

Senator McDermot: Can you give me an assurance to take back to my constituents that they will not face congestion problems due to your rail expansion?

Mr. Jones: As I mentioned earlier, the issue of congestion is complicated. There are many factors beyond freight... [cut off]

Mr. Daly: Thank you Senator McDermot, but we are experiencing some technological challenges with our stream. A group has broken our video feed and seems to be manipulating Mr. Jones' responses on our live broadcast. The last five minutes of testimony have already been altered and we need to pause to shut down and re-open our lines around the state. We will continue in 30 minutes. [Adjourned]





Economic Development - Scenario # 5

An Energy Constrained World

Year: 2022

Spc. Cindy Johnson
USS Nimitz - CVN 68
FPO AP 96620-2820
22nd September, 2022

dust storm clouds covered up the smoke from the burning oil refineries. That was some sight! Please say you always wear your air filter mask!

Dear Cindy,

I know, I know, you told me to voice message your GPS handheld, but I still can't figure out how all that secure line communication works. So here is an old fashioned paper letter! I got your email with the latest the pictures of your ship and the beaches of Iran after the

I'm so glad that the attacks and fighting have died down quickly and that we avoided a major war with Iran. Now you say that you have "only" the weather to cope with from your aircraft carrier. It doesn't look stable from here! And the rest of our forces need to stop those terrorist attacks on oil pipelines and sea terminals – or else we might see another month without oil.

“Ford and GM are phasing out gas-powered vehicles altogether. Their CEOs say the new Detroit auto industry could soon be exporting electric-hydrogen vehicles around the world!”

Sweetheart, you know that I pray for you every single day and I can't wait to see you at Christmas. I think that John's going to come down from Dallas for your homecoming. It'll be so wonderful to have the entire family together again! When was the last time? 2019? Yes, I remember because it was just before the first wave of oil industry attacks in Iraq. And we all know who was involved.

You said you were worried about us and the landscaping business because of the economy and oil prices. Don't be. It's true that gas prices have skyrocketed since you left but so has everything else. We're hanging in there and I think the worst is over. After all, grass doesn't stop growing just because there's no more oil flowing around the world!

There have been a lot of changes over here lately. A couple of weeks ago, your dad made the big decision and took out a loan to switch all the landscape trucks and equipment over to electric motors. He says that he is done with the combustion engine. It's the way things are going anyway, and between the tax incentives



and gas being so unpredictable at \$5 to \$9 per gallon, it's been a blessing.

I'm sure that you saw the President's speech launching a massive investment in new vehicles that will eliminate the combustion engine and the use of oil. John told me that Ford and GM are phasing out gas-powered vehicles altogether. Their CEOs say the new Detroit auto industry could soon be exporting electric-hydrogen vehicles around the world. Both CEOs were on the news last night declaring to "reinvent" the industry around wheel-based electric motors. Who knows what that means or how long it will take! But your father has already changed our business.

Today, it's just not economical any more to drive in today's gasoline-powered cars. I was talking to Kathy Harlan, from across the street, the other day, and she thinks that gas prices are going to come down by the end of the year, and it's all just oil companies trying to increase their profits. But John says the oil prices are due to demand from China and India and the terrorist attacks on the oil infrastructure earlier this year that started this conflict with Iran. Well, if that's right, I can't see China and India getting any smaller, and there's certainly no lack of terrorists in the world, though things would be a lot worse without you and your unit out there defending those pipelines!



Rosie the Riveter

“Everything’s online video now and I can talk face-to-face with customers from here.”

You asked if I’d got my old job back with Halliburton. Well, no, I didn’t. I really wasn’t making that much, once the cost of getting across town every day was taken into account. I’ve been able to help out dad with the business and I have an interview for a receptionist job next Tuesday. And guess what? It’s by telecommuting! Can you imagine your mom as a “telecommuter?! Well, that is another sign of the times, isn’t it? But really, it just makes sense. Everything’s online video now and I can talk face-to-face with customers from here. And I won’t have to shave my legs! I feel like the new Rosie the Riveter, saving the country’s scarce resources.” You know they are bringing back those old ads, don’t you? Didn’t you do a paper on that one time in high school? They have Internet ads all over the place about it! Well, now many of those phone call centers based in India are trying to compete with U.S. companies using video-based service centers.

And, honestly, I won’t miss commuting. I don’t like to drive with the roads being so bad. Apparently there is no money left in the state highway maintenance budget. But if the potholes get much

worse, pretty soon we’ll need to drive Army tanks to the grocery store!

I heard on the news the other night that because so many people are telecommuting or switching to electric-hydrogen, the state isn’t collecting what it used to in gas taxes. So now they want to start taxing us by the mile instead, by tracking where our vehicles travel. Typical! Who knows what they will do with that information. And just when everyone has paid to switch to more efficient cars like they asked us to, they want to start taxing all cars the same now! Soon everything is going to be calculated on a per mile basis. Aren’t you glad you’re no longer working that delivery job! Still, we must be thankful for small mercies. At least we can drive again. There was a point during the summer commuter ban when I wondered about that. It’s hard to forget the month without oil.

Well, that’s enough blather from me. Cindy, you know that I pray for you everyday, and I love you and can’t wait to see you come off that ship and give you the biggest hug you’ve ever had. I know, I’m hopelessly sappy. John, Kathy, and Charles all send their love.

Thinking of you always,
Mom



Economic Development - Scenario # 6

“Texodus”

Year: 2040

There’s no question now: Texas is in trouble.

It started slowly, with a three percent drop in the economy in 2035 and another four percent drop in 2036. But despite reassurances from state officials, a full 20 percent of Texas employers have now relocated to other states, leaving behind older people, poor families with lots of children, and people trapped in the downward spiral. In a recent web address, Governor Marquina described a “perfect storm” of economic, political and environmental problems that “have

culminated in what is now a statewide crisis.”

This “Texodus,” as demographer Erica Chang puts it, threatens to hollow out cities like Dallas and San Antonio, while rendering smaller towns, like San Angelo and Amarillo, virtually extinct. Already, a large portion of the southeast Gulf Coast is riddled with ghost towns, and Houston, which used to boast a population of 7.1 million, has dropped back to what it was at the turn of the century. Dallas and San Antonio’s populations have shrunk by 20 percent.



And given Hewlett Packard's (HP) announcement to completely shut down its Texas plant, it looks like the trend will continue. It is because of this that people like Michael Gonzales, 37, are finally making the move out of the state.

Gonzales knew it was time to move when the Texas Department of Transportation began shutting down lanes on the Katy Freeway because it could not keep up with maintenance costs to fix lanes that had become unnecessary. "Although the government denies it," Gonzales said, "these roads are a mess. Potholes everywhere, debris all over the lanes—we knew it was time to leave when we saw a 'Don't Mess with Texas' sign left twisted over from an accident."

His wife, Celia, agreed. "Just look over there," she said. The image she points to is self-explanatory. In the closed lanes, blades of grass poke up through cracks in the concrete, and red and yellow wildflowers press through deep potholes.

First, there was less money to keep the roads up, and then, fewer people to drive on them. "So I guess things just balanced out," she said. "We really wanted to stay—we were the first people back in our neighborhood after Hurricanes Omar and Pauline in 2033—but between this and the weather now, it's just too much. The final blow came from the state's crumbling economy."

The Gonzales family is headed to Michigan, where Celia hopes to find work and Michael already has a job. He's been hired by General Motors to work on developing electric-hydrogen vehicles and is making over 20 percent more than his former HP salary.

"What used to be called the Rust Belt is finally booming again," said Michael. "GM emerged from near bankruptcy in 2017 to reinvent itself. Its new visions are for America's auto industry to export electric power-train parts and vehicles to India, China, Brazil, and Europe and to maintain our global leadership in hydrogen production and storage systems."

Michael's wife Celia has feelers out to several accounting firms, hoping to be employed for the first time in seven years. She lost her former job when the chemical company she worked for chose not to return to the Houston area after Hurricane Pauline, and opportunities emerged in Asia to build new plants closer to manufacturers.

"The whole area was practically destroyed," Celia said, "but Michael and I chose to come back anyway. We were pregnant at the time, so I decided that as long as he had work, and we could find housing, we would give it a go, and I would just be a stay-at-home mom. But now Gracie and Douglas





are getting bigger and the schools are horrible. Texas hasn't taken care of its roads or its schools. The state economic development strategy was all about low taxes, which worked for a time, but then the neglect caught up with us. We want a better place for our kids. Opportunities in Texas are shriveling up, but states like Michigan and Ohio are thriving—that's the life I want for my kids."

And as weather patterns shift for the worst, it's not just the southeast part of the state that is hurting. Because of the extremely dry conditions in west Texas and the extensive droughts in places

like Lubbock and Dallas, water is at a premium and families are forced to ration. This is why people like Jerry

Allen, 43, said they are leaving. He's tired of having to be careful how much water he uses when he showers, and "not being able to water my own lawn."

Allen, a Denton resident, has lived in Texas his whole life. His family has been in Texas for five generations. Although Allen now does janitorial work for the University of North Texas, he's worried that the school will start layoffs as the student population continues to shrink.

This is why Allen is already packed up and ready to go to live with his brother in Virginia, even though he has regrets. "I don't like leaving Texas," he said. "This state's a part of me. But as far as I see it, things are going to get worse, not better. I gave it as long as I could, but now I just have to get out. My dad's still here, but he's a stubborn coot and he doesn't need to work, since he's on Social Security. Me, though, I have to work. Have to have an income."

In recent years, Texas has also struggled to attract talented workers from outside the state. Recruiters complain about imbalances in the quality of life within the state and about the difficulty of labor laws to attract workers for road maintenance and other home and commercial construction to drive growth.

"Yeah, it's kind of funny," Michael Gonzales said, "For so long the Legislature fought about immigration and they finally got that wall built across the border. But now they have to pay good money just to get people from Mexico to come over and work on the roads. It's sort of weird. After those hurricanes, everything changed. The summers got hotter and drier. We had to struggle to cover our homeowner's insurance, and fight to get them to restore our home.

And now, there just aren't enough opportunities to attract new workers.

After seven years of trying to make it work, companies have lost faith in the area. Everything just feels backwards."

"Yes, it does seem backwards," Allen agreed. "But some people like that. Take my dad, for instance. He likes that there aren't so many people here anymore. He thinks it's like getting back to the old days."

"I do," said Troy, Gary Allen's father, as he helps put a light load in the back of Allen's truck. Troy's face is weathered and tanned and there are crinkles around his bright blue eyes.

"Less traffic, fewer people, and open skies. Look at this." He points across the highway to a field of bluebonnets. They line the cracked asphalt and cover the median.

Even though Gary laughs and shakes his head, Troy smiles. "It's Texas how I like it—just like it used to be."





Economic Development Scenario # 7

San Angelo Blues

Year: 2027

Standard Times

Letters to the Editor

Dear Ms. Branlon,

While I usually appreciate your quick and colorful features on activists around our community, I was appalled at the bias of your recent "Smart Growth" article. You were clearly in favor of Leigh Ann Penuel's aggressive campaign against San Angelo's new developers and TxDOT.

As for Penuel herself, while I understand her frustrations about the

congestion and about the unpredicted growth of this area, I cannot understand why she continues to oppose "smart growth." We could all pretend to be back at the turn of the century, before the Gulf Coast water nano-desalination plants transformed our "shining star" state into what it is today—the center of the nation's water industry. But the truth is that we cannot go back. The state legislature has already passed their legislation to expand water transfer rights and state business leaders have already invested billions of dollars in making this state the leader in

The state legislature has already passed their legislation to expand water transfer rights and state business leaders have already invested billions of dollars in making this state the leader in water technologies and distribution.

water technologies and distribution, and the pipelines and aqueduct have all been completed!

I can remember the day that the east to west Texas Super-Aqueduct reached San Angelo and the flood of development that followed. But it has put our small town on the map, and transformed this off-the-main- road region. In less than a decade, San Angelo has grown into a leading healthcare-wellness hub for aging Baby Boomers. Can you believe that people want to move to San Angelo?

There is no point in turning back nor is it even possible to do so. There are already 600,000 more people living within the greater San Angelo area and 750,000 more are expected to move here within the next 20 years. San Angelo has attracted more than 50 of the nation's leading health-wellness companies and this is good for local jobs and keeping our young people from moving to Dallas or Austin.

Could you imagine five years ago that we would be on the covers of Forbes

and Time magazines in the same year or featured by the American Association of Retired Persons (AARP) as "America's Best City for Boomers?"

Even if no new roads are constructed in the San Angelo area and Spur 691 is not extended, developers will continue to build wellness-retirement communities for the new "Sand Birds" as well as subdivisions for the skilled workers who support them. This, in turn, will create even more congestion and contribute to many more problems within our city.



So what does Ms. Penuel expect us to do? Stopping smart growth is not the answer and it is sad that one fanatical Texan has been able to sway so many to think so.

Brad Chambers
Assistant County Commissioner
Tom Green County

To the Editor:

Will West Texas become the New Florida?

Yes, we do have a congestion problem in San Angelo, and yes, it would be good to build new roads. But if we do, that's only going to encourage more of these planned retirement communities and these lower level suburban developments that house the cheap workers who will come here to work in the hospitals and nursing homes.

This rapid growth in our nation's "wellness" industry is not always a good thing for the welfare of native Texans. We want to welcome new families and new blood into our community, but we can't do it at the expense of native residents. Some of these people moving here now are not even native Texans. They are coming here from places like Philadelphia and Chicago to escape the snow and because Florida is too expensive to be a viable retirement option. And housing there is too expensive for working families.

We want to welcome new families and new blood to our community, but we can't do it at the expense of native residents.

If we aren't careful, we will become the new Florida, if we haven't already, and

the "Sand Birds" will crowd the rest of us out.

Sincerely,
Julia Alvarez
Sanitation Engineer

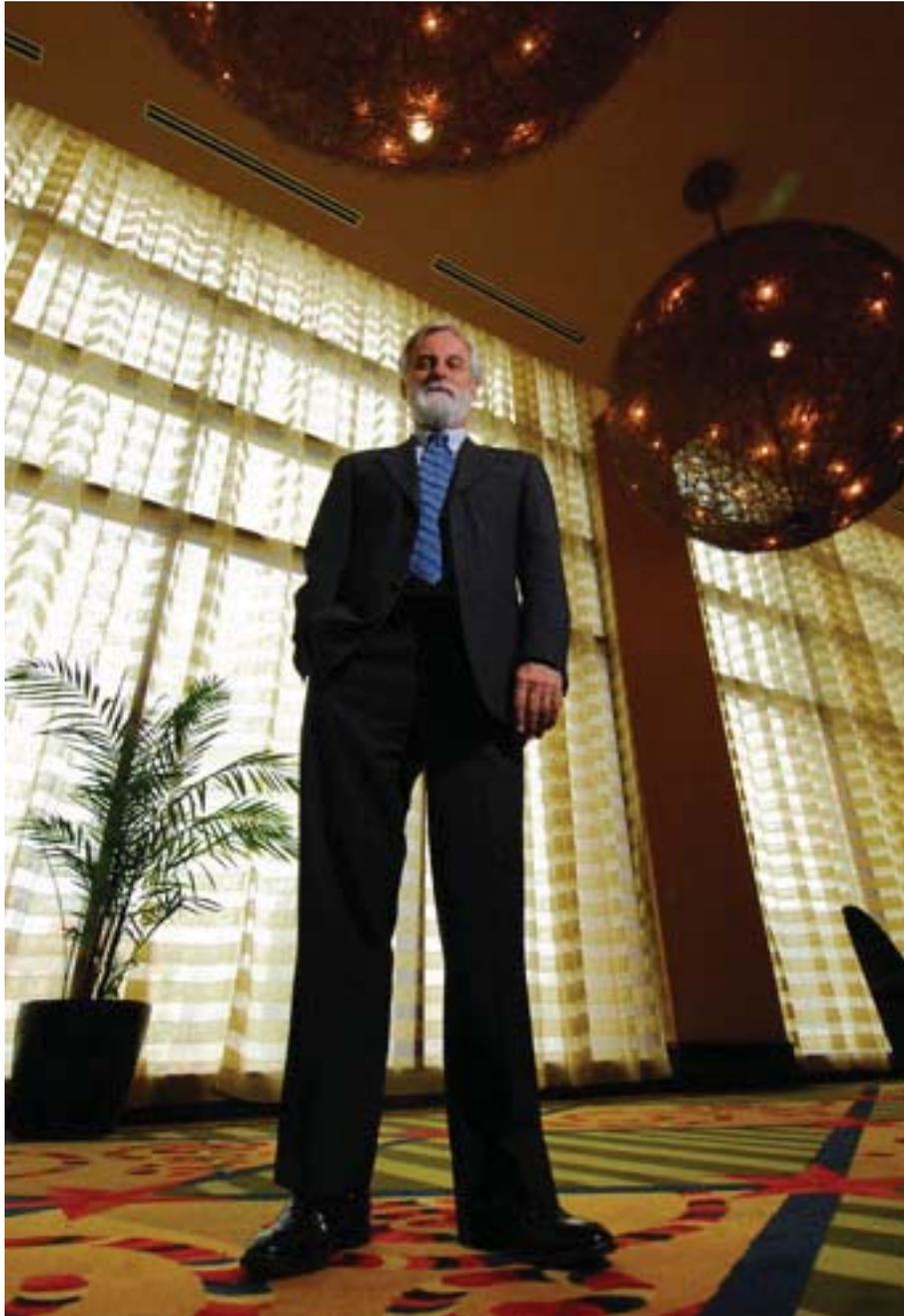
Dear Editor,

Do you want to stop this debate over growth, no growth or smart growth? So Ms. Penuel is using some pretty sophisticated tactics to oppose TxDOT's plans. She must have studied her history books of Austin citizen groups in the 1980s.

While I applaud her 3-D, web-based campaigns and her ability to organize quickly, if she really wants to stop road expansion and development, it's simple: rescind the unconstitutional law that made water transfer rights legal, eliminate the subsidies paid to keep the Texas Gulf Coast desalinated water industry afloat, and turn the east to west Texas Super-Aqueduct into a corridor for high speed rail.

That would solve our problems. Take out the foundation of growth in west Texas.

John Harrington
Community Activist



Peter Bishop, Ph.D.

ON THE HORIZON

An Interview with Dr. Peter Bishop, University of Houston

In April 2008, Peter Bishop, Ph.D., a leading futurist, spoke about the Texas Transportation Scenario Project at the 3rd Annual Texas Transportation Forum in Austin. Dr. Bishop was among the panelists who addressed attendees during a session entitled, “The Future: What’s in Store for the Next Generation?”

Recently, Dr. Bishop agreed to participate in an interview with HORIZON to talk about future studies as well as share his views about the futures studies field, what the future may hold for transportation, and the importance of being prepared.

Dr. Bishop is an associate professor of Strategic Foresight and coordinator

of the Graduate Program in Futures Studies at the University of Houston. He specializes in techniques for long-term forecasting and planning.

He assists groups in developing scenarios, visions, and strategic plans for the future. His clients include IBM, the NASA Johnson Space Center, Nestle USA, Shell Pipeline Corporation, the Lawrence Livermore National Laboratory, and the California Environmental Protection Agency.

Dr. Bishop is also a founding board member of the new Association of Professional Futurists and President of his own firm, Strategic Foresight and Development.



HORIZON: What exactly is a "futurist" and what is the primary purpose of futures studies?

Dr. Bishop: A futurist is a person who helps people and organizations prepare for and influence the long-term future, usually the future that's more than five years out.

HORIZON: Would it be fair to say that futurists make "predictions?"

Dr. Bishop: No, futurists don't make predictions. We consider predictions to be definite statements about the future, saying what "will" happen. In the long-term future and, to some extent,

in the short-term as well, uncertainty dominates. The future is so complicated that no one can really tell what "will" occur. Therefore, futurists describe sets of alternative possibilities, called scenarios that "might" occur. The scenarios are admittedly not as satisfying as a nice, clear prediction, but they are many times more valid because the predictions are almost always wrong.

HORIZON: Can futurists really know anything about events that have yet to happen?

Dr. Bishop: There are many ways to "know" things. Most people believe that they must make a single prediction in

order to "know" what is going to happen. But knowing things that could happen is a way of knowing as well. When I invest my money in the stock market, I know that the market could go up, down, or stay the same. At least I should know that. If I don't, if I "know" that the market is going to go up, then I am making an investment without assessing the true risk. We are quite familiar with this way of knowing in our daily lives. Why don't we use it when thinking about the long-term future?

HORIZON: What tools or techniques does a futurist use in his/her work to explore the future?

Dr. Bishop: There are many techniques, too many to list here. Fundamentally, futurists use standard social science research techniques to gather information about the future: primary research (asking people what they expect and what they want) and secondary research (reading what is already published in journals and on the Internet).

It's a lot of information so futurists then select those forces that they believe will have a big impact on the future. Of those forces, they then select two types: those for which they know the impacts and those for which the impacts are uncertain. The former shape the baseline future (what we expect will occur if nothing unusual happens) and the rest go into the alternative futures (what

could happen instead). We often develop those into full blown stories in order to highlight the differences between the present and these futures. The stories can, in turn, be presented as a written narrative or in almost any other way, like videos, memoranda, devices; just about anything that carries the story.

HORIZON: What draws someone into this field?

Dr. Bishop: Students come to the futures studies program at the University of Houston for a variety of reasons. All are interested in change and all want to do something that is exciting and unusual. Some want to be futures researchers and consultants, helping others prepare for and achieve their preferred future; others want to work toward a preferred future themselves, like sustainability or new technologies.

HORIZON: What do you see as some of the more recent successful contributions of futures studies and to whom?

Dr. Bishop: The recent difficulties with energy prices and climate change were no surprise to futurists. In fact, a book written way back in the 1970s called, *Limits to Growth* forecast difficulties in the world economy sometime in the 2010s due to resources shortages and pollution. While those forecasts have not come true exactly, they are amazingly similar to what is happening today.

At the same time, other forecasts have prepared us for changes due to information technology and now bio- and nano-technology. In general, futurists keep us aware that the world is changing and advise us not to take the “present,” however we define that, for granted because it is bound to change in the long-run.

HORIZON: What events/trends/developments do futurists see that will change our way of life in the coming years?

Dr. Bishop: Some of the most significant developments include:

- Aging leading to stress on government financing
- A sudden tipping point in the atmosphere due to climate change
- Biotechnological cures and enhancements to human beings
- A collapse of the dollar due to the economic difficulties in the U.S.
- The rise of China, India, and other large nations as they reach superpower status

HORIZON: In the post-WWII 1950s, Americans were obsessed with the future and saw the year 2000, the end of the millennium, as a particularly important

cultural milestone to measure themselves against—how and what would we be driving, traveling, living, eating? Now that we have reached (and surpassed) that year, what is the next milestone (a particular year) that we, in 2008, should be looking toward?

Dr. Bishop: Of course, those milestones are completely arbitrary. There are big events in the world, like the fall of the Berlin Wall, the appearance of World Wide Web, and 9/11 that create massive change, but they do not occur at the beginning of a decade or a century. In fact, we “know” that big changes will happen in the future; we just do not know how or when. Therefore, people tend to forget that they are always possible.

Some of the big changes that could occur would be: 1) the collapse of the dollar due to recent financial difficulties; 2) a radical and sudden change in the climate due to the build-up of greenhouse gases; or even 3) the appearance of intelligent computers. We do not know whether any of these events will happen, but we know that something this important will definitely occur.

HORIZON: Is it even possible to predict a milestone for a present culture and consumer economy that is so tied into the “now?” What is the downside of such short-term thinking?

Dr. Bishop: When we do not prepare



for the long-term future, we are often surprised and caught in a situation we do not like. So I personally have little sympathy for people who bought a house an hour from work and an SUV that gets 10 miles to the gallon. They certainly enjoyed the time when gasoline was inexpensive, but now they are “surprised” that they have high gas bills.

The same can be said for the country as a whole. We knew we were importing more foreign oil since the 1970s; we knew that terrorists wanted to harm the United States; we knew that the infrastructure was decaying; we knew that schools were not preparing people for the world of the future, but we have not done anything significant about that.

HORIZON: Why is it important to contemplate the future of transportation, (i.e. the way that a society moves its people and goods)?

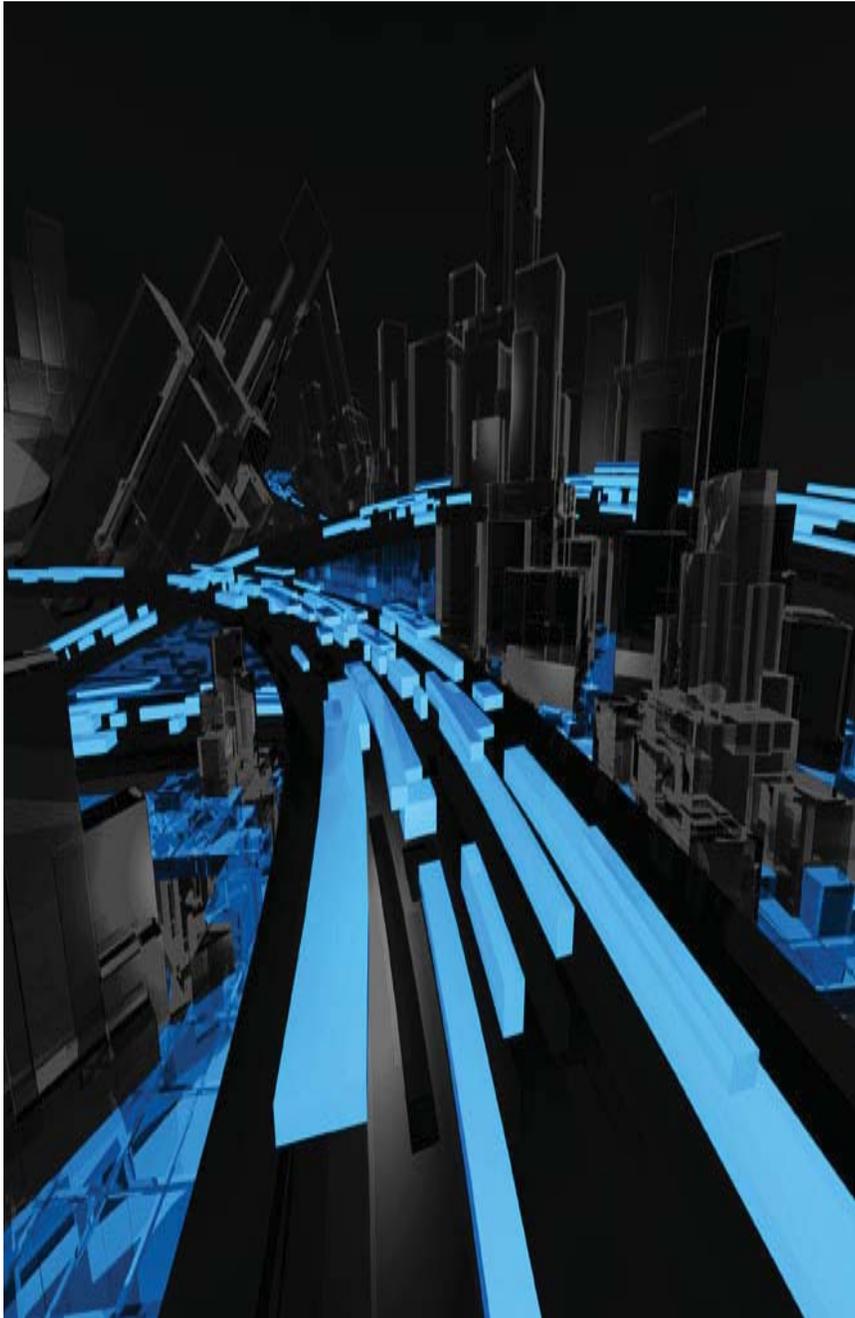
Dr. Bishop: Transportation depends

on an infrastructure that takes decades to build and even more decades to use. Therefore, it is necessary to think about the world out to even 2050 because that is how long the infrastructure being planned will be used. While we can’t “predict” what that world will be like, we should consider what the alternatives are so we make our plans as flexible as possible and so we can start to work to make the more preferable ones even more probable.

HORIZON: What kind of national conversation about the future of our transportation system should we, as a nation, (and as a state) be having right now?

Dr. Bishop: In my opinion, the most important topics to be discussed are:

- The financing of new infrastructure or even continued maintenance given the fixed motor fuel tax, the resistance to toll roads, and private



sector investment in transportation infrastructure.

- The degree to which transportation will be personalized vehicles (probably all electric) and mass transit, including ride sharing.
- The growth of VMT and congestion given increasing motor fuel prices and decreased growth for new capacity.
- The degree to which people will adjust their long-term behavior based on higher fuel costs, such as buying more fuel efficient vehicles, living closer to work, school and amenities, and working more from home or other locations closer to home.
- The effects of climate change on the economy and on transportation infrastructure.

HORIZON: How can public agencies such as TxDOT benefit from scenario planning? Could you cite some examples of other public entities that use scenario planning effectively?

Dr. Bishop: Documented success stories of public agencies using scenario planning “effectively” are very hard to come by. The basic difficulty is that the benefit of scenario planning is to reduce surprise because it helps us to prepare for

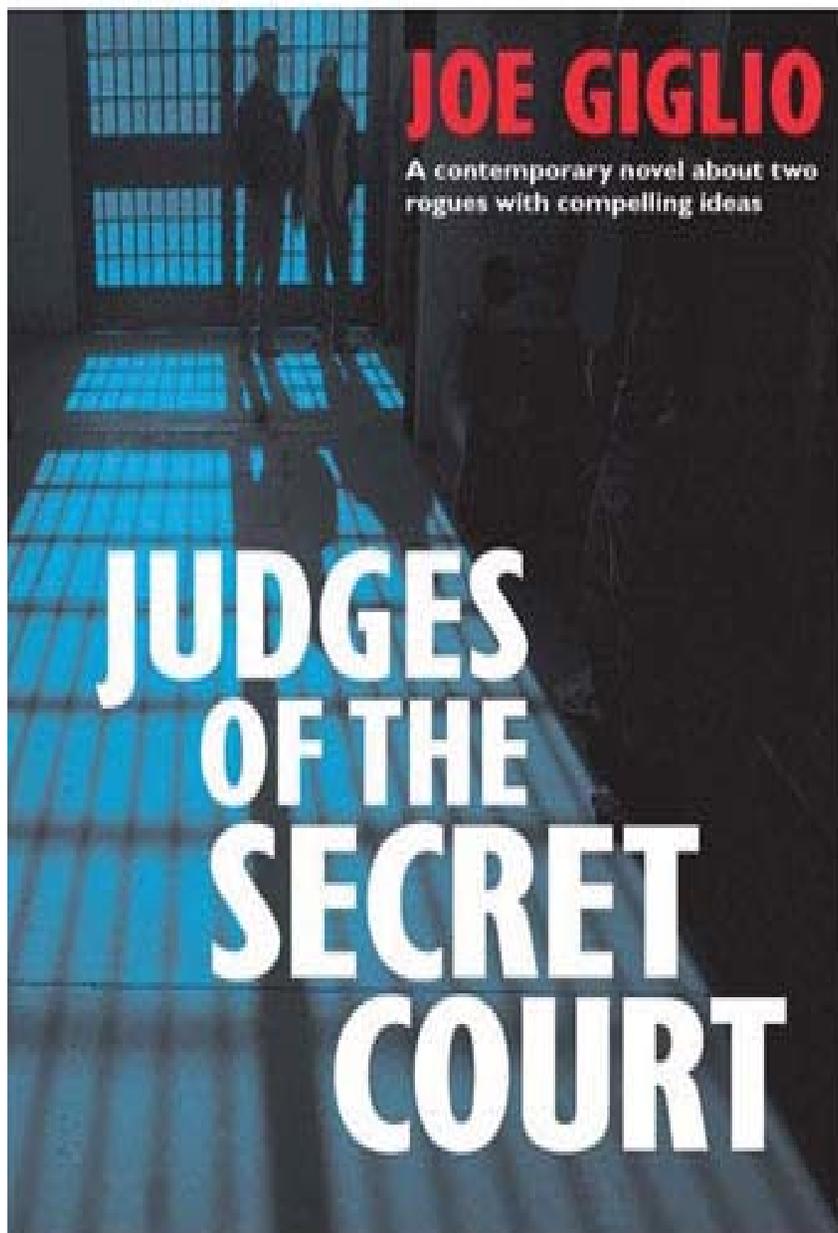
multiple futures. The problem is that we don’t get credit for not being surprised!

The lack of scenario planning or scenario thinking has caused harmful surprises for many public agencies. One only has to point to the terrorist attacks of 9/11 and the lack of scenario planning for the war in Iraq to see how disastrous those can be. In the transportation sector, cost overruns are common. The lack of capacity to handle the (Hurricane) Rita evacuation is another recent example of the lack of scenario planning—not realizing that so many people would get on the roads ahead of the approaching storm even though (Hurricane) Katrina had occurred just three weeks before.

Scenario planning does not prevent mistakes, but it makes them fewer and less harmful.

TxDOT has clearly distinguished itself by picking up on the emerging scenario approach to the future, particularly given the relatively straight-forward planning methodologies that most transportation agencies employ. Increasing complexity and mounting pressure to change encouraged TxDOT to consider a wider range of futures than it ordinarily would.

This approach will almost certainly be imitated by other transportation agencies around the country.



Coming Soon:

Judges of the Secret Court

A Contemporary Novel About Two Rogues
With Compelling Ideas

Unlike other authors, Joseph Giglio is not shy about revealing the catalyst for his books. In fact, trying to spark a candid discussion about the severity and scope of our national transportation system has been a calling for this business management professor and advocate of change.

Thus far, however, his works describing roadway demand drivers, outdated U.S. planning efforts, or the private sector's role have resonated only with transportation insiders already familiar with these esoteric issues.

But in his new novel, *Judges of the Secret Court*, Giglio steps out from behind the podium and uses popular fiction to present these ideas about transforming America's transportation system. The story is told through the eyes of Wesley Graham, a Brooklyn kid whose natural charisma propels him to a life of private prep schools, Ivy League degrees, and eventually a career as a talented investigative journalist.

As the book begins, Wesley is in California, having been fired for fabricating stories and sources that resulted in a libel suit. Now working for a

small newspaper, he spends his free time writing freelance articles, determined to make a triumphant return home.

While researching a story on securities fraud, Wesley contacts Jacob Cohen, a former Wall Street star now serving time in a California federal prison for insider trading. Jacob, a fellow New Yorker, reached the upper echelons of both Wall Street and New York City government until the collapse of an elaborate transportation finance plan that landed him in prison.

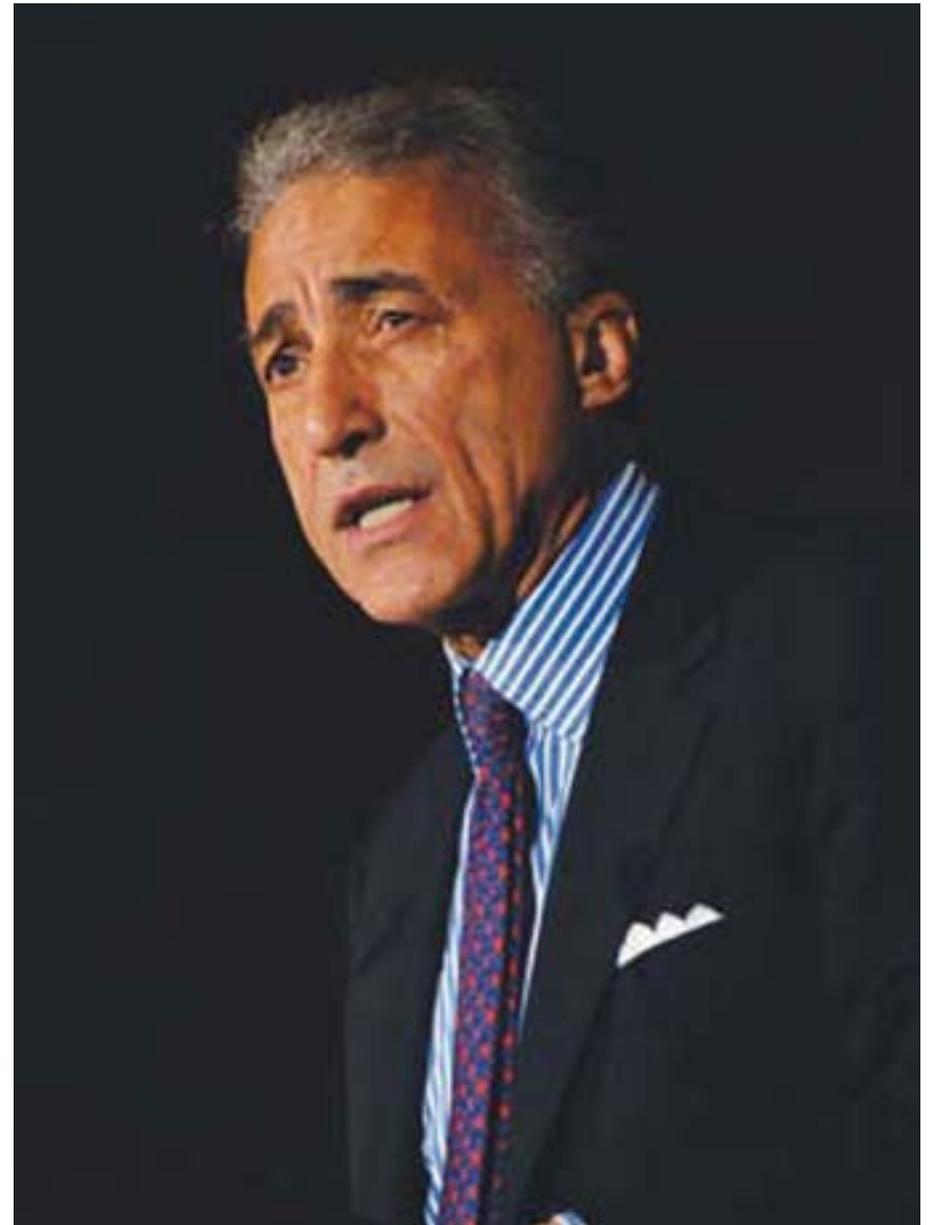
The fast-paced and fragmented dialogue between Jacob and Wesley reflects Giglio's familiarity with these streetwise, yet highly-educated, characters. As Jacob

reveals the details of his plan, Wesley realizes how capitalism could work for the public interest and become America's long-term mobility solution. Wesley also discovers how far up the halls of power that Jacob had taken this plan and who he is trying to protect.

Giglio brings such a strong, gravitational pull to the page that even readers with only a cursory knowledge of Wall Street, transportation, or government policy will find themselves reluctant to put the book down.

Judges of the Secret Court will be available on Labor Day 2008 and is currently available for pre-ordering on Amazon.com.

Joseph M. Giglio, Ph.D., is a professor of strategic management at the Graduate School of Business at Northeastern University in Boston. He is also currently the Vice Chairman of the Hudson Institute Board of Trustees. His other works include *Mobility: America's Transportation Mess and How to Fix It*; *Driving Questions: Developing a National Transportation Vision*; and *Fast Lane to the Future: The Privatization Route*."



Joseph M. Giglio, Ph.D.

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