Texas A&M Transportation Institute

Role of the Texas Transportation System in Attracting and Retaining Business

Final Report

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TRANSPORTATION
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Table of Contents

Executive Summary

Purpose of This Project

In 2015, the Texas A&M Transportation Institute surveyed 500 Texas businesses to determine transportation factors that affect freight business decisions, including facility siting (*1*). In 2016, researchers sought to further clarify the importance of transportation in site selection decisions for six key industry sectors:

- Advanced technologies and manufacturing.
- Aerospace and defense.
- Biotechnology and life sciences.
- Information and computer technology.
- Petroleum refining and chemical products.
- Energy.

Methodology

Researchers interviewed 13 economic development corporations, four site selector companies, and four private-sector businesses across Texas. Interviews focused on:

- Whether transportation was critical to key cluster decisions or part of a routine site selection assessment.
- Whether and how transportation provides a competitive advantage to various regions across Texas.
- The importance of transportation incentives in the business development negotiation process.
- How different transportation modes and alternatives compare to key cluster needs.

Summary of Findings

Is Transportation Critical to Key Cluster Site Selection Decisions or Part of a Routine Site Selection Assessment?

This research suggests that transportation affects the site selection process in two ways:

- Employee commute considerations.
- Efficient supply-chain logistics.

Whether companies treat transportation as critical or routine varies (even within key clusters) because of commute and supply-chain considerations, company-specific values, and other factors such as:

- Real estate costs.
- Location of key customers.
- Adequate utilities.
- Labor markets.
- Production materials.

Typically, the top three considerations in site selection rotate among transportation, labor market access, and production material access.

Business development occurs in phases where companies do a high-level search for suitable regions that contain the transportation, labor, and production materials they require, and that meet strategic needs of the company. A region may have all of the fundamental requirements covered, but there could be a strategic need such as a location close to a key customer or customer base that trumps other considerations. Following this high-level overview, companies may either prioritize one region over the rest or work with local economic development corporations or councils (EDCs) in several regions to get them to compete. In contacting these EDCs, companies request details on available sites that meet the company's transportation requirements.

Transportation connects the labor market to the production materials the company requires. Companies with a large volume of physical products (requiring adequate supply-chain logistics to receive production materials and ship out to their customers) may emphasize the cost of supply-chain logistics in their site selection considerations. Companies needing a specific highly skilled tech labor base may emphasize a location close to an urban core with multiple commute and transit options. A company's product or service also affects site selection decisions.

Transportation Needs in Relation to Key Industry Clusters

Researchers found some common themes from the interviews that shed light on how companies incorporate transportation needs in their site selection calculus:

1. Advanced technologies and manufacturing examples repeatedly place high importance on roads and access to interstates, and vary overall in how they rank rail, ports, and intermodal connections. Increasing congestion levels cause concern from this sector about the efficiency of the surface road network to move goods and human resources. Some sector professionals suggest that congestion-induced transportation issues may result in businesses choosing to (re)locate to other regions or states.

2. Information and computer technology companies tend to place more emphasis on commute and labor market access, but vary on whether they need sites with reduced real estate and supply chain costs or sites that are located in the urban core with transit alternatives. Those that have physical products rely on road-to-air freight since they are generally lighter-weight, high-value shipments. Several information and computer technology companies locate around towns along the suburban periphery of major urban areas since they require more real estate for production and will pay their employees adequate wages to afford transportation to sites that do not have alternative commute modes.
3. Energy sector and petroleum refining/chemical products companies that produce heavier equipment or move heavier volumes of production materials over supply routes rely on a mixture of road, rail, and port connections.
4. Aerospace and defense rely on roads to ship products out to local and regional airports to test their products and ship products to various customers around the globe. Some aerospace sector companies rely mostly on roads to ship lighter-weight products at lower volumes for customers' use in aircraft assembly.
5. Biotechnology and life sciences favor commute options such as pedestrian and bike trails, and locations close to interstates that facilitate reduced commute times. Those lighter-weight products rely mostly on roads.

How Does Transportation Provide a Competitive Advantage to Various Regions across Texas?

Several EDCs attributed site selection success or failure directly to presence or lack of specific transportation infrastructure. However, in many (if not most) cases, it is extremely difficult for EDCs to positively assert the magnitude or significance transportation played in the process because most private-sector site selection teams do not provide a post-site-selection debrief. Rather, EDCs are left to theorize about how to deal more effectively with the next iteration of the process.

Fortunately for Texas, its geographic location in the middle of the United States makes it a logical place for companies wanting to be equidistant from East and West Coast markets. Likewise, its proximity to Mexico provides an opportunity to tap into labor costs that are, in the long run, potentially less expensive. The presence of a number of universities makes Texas an incubator for skilled labor. Additionally, a wealth of other non-transportation-related, quality-of-life factors still makes it a place that people want to live, despite the transportation issues. When combined with a pro-business tax climate and a track record for having weathered the Great Recession better than a significant number of states, Texas remains an attractive place for businesses to consider when making site selection decisions.

A common theme heard from site selectors is that Texas should remain vigilant and aggressive as it strategizes on how to use transportation as a means to stimulate economic growth. Selectors

suggested that staying competitive with other states requires keeping economic development at top of mind when designing the transportation network to provide connectivity to, from, and between hubs of economic development. The outcome is that economic growth is one of several well-calculated end goals of transportation planning, not a coincidental by-product.

The Importance of Transportation Incentives in the Business Development Negotiation Process

Incentives and negotiations play a large role in business development and site expansion considerations in Texas. The State of Texas has a myriad of mechanisms available to help incentivize businesses in the site selection process, including:

- Tax abatements (i.e., reducing local taxes paid by companies).
- Cash for infrastructure improvements (i.e., paying companies so they may build a road).
- Completion of infrastructure improvements (i.e., developing a road) through bonds, local funds, and negotiations with the Texas Department of Transportation to get a project advanced and developed more quickly.
- Connector service contracts (i.e., hiring short-line railroad companies to connect factories to Class I[1] freight lines).

Few EDCs estimate the business development impact on local transportation infrastructure.

Companies often leverage internal transportation cost estimates to drive incentive negotiation. For example, one advanced technologies and manufacturing representative looked at how this move was going to affect the supply chain of all four facilities being consolidated. Once this overall supply chain cost was identified, it was used in tax abatement negotiations with the region to help offset the costs of moving.

How Texas Can Leverage Transportation as a Tool to Help Stimulate the State Economy

Interview respondents reinforced the belief that the state should continue to make transportation investments to stimulate the economy. The priorities in the identified areas are:

- Investment in intermodal infrastructure (particularly rail) to relieve already congested surface highways from the movement of goods via truck. The need for this investment will only increase as the Panama Canal improvements modify the patterns of global goods movement.

[1] In the United States, the Surface Transportation Board defines a Class I railroad as having annual carrier operating revenues of $250 million or more in 1991 dollars.

- Investment in regional oversize/overweight corridors. This could help stimulate the development of business parks, which often house heavy-goods manufacturers.
- Investment in (additional) airport international connectivity. This will help reduce the burden placed on those few airports that do offer the type of connectivity required by industry sectors that operate globally.
- Investment in Class I rail service. This could be a tremendous benefit to those regions interested in attracting advanced manufacturing, energy, petroleum, and chemical production sectors.
- Investment in non-personal auto modes. This will become increasingly important due to worsening congestion and its detrimental impact on regional quality of life. This is particularly germane to companies recruiting younger highly skilled workers that are not as attached to their vehicles as past generations.

Texas should remain vigilant and aggressive as it strategizes about how to use transportation as a means to stimulate economic growth. This can be done by designing the transportation network to prioritize connectivity to, from, and between hubs of economic development. Economic growth should be viewed through the transportation planning lens as a well-calculated end goal, not a coincidental by-product.

Researchers interviewed individuals in both the private sector (business representatives) and public sector (economic development corporation officials) regarding transportation-related concerns about site location decisions. Some primary concerns were distinct for each group, while others were commonly shared by both. Figure 1 illustrates the collective responses from interviewees representing multiple industry sectors.

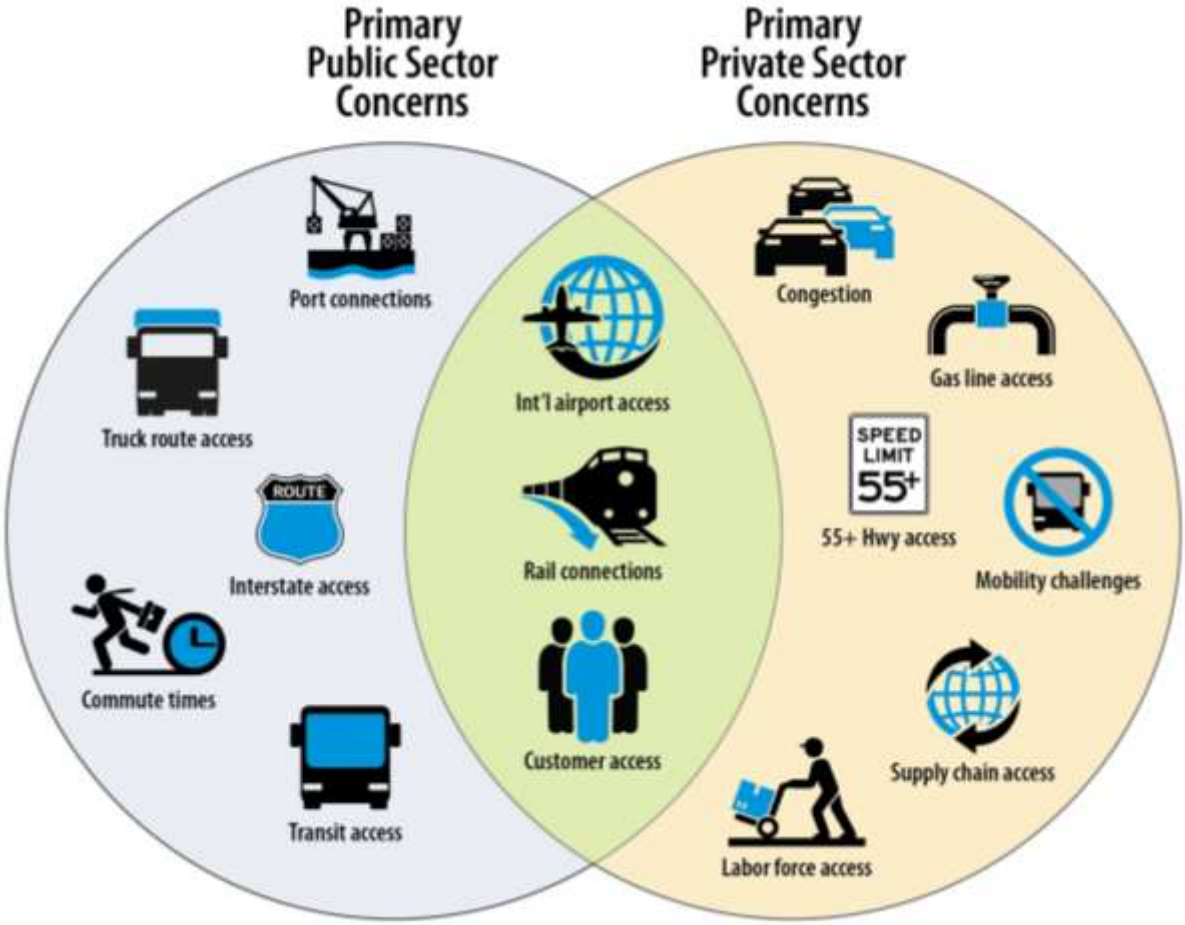

Figure 1. Transportation Concerns of the Public and Private Sectors.

Project Overview

Texas's transportation system is vital to the Texas economy, with highways that connect the state's communities and major cities, commercial airports that move goods and people throughout the state and country, and rail and ports that provide a gateway to the international market. Results from a 2015 Texas A&M Transportation Institute (TTI) Transportation Policy Research Center (PRC) statewide survey of more than 500 Texas establishments suggest that access to transportation was the most important factor among those offered to respondents when considering where to locate their facility. Additional research conducted in 2015 by TTI on behalf of the Federal Highway Administration suggests that access to transportation/multimodal transportation is a critical factor in the site selection process.

In this research, professional site selectors ranked transportation as one of the key site selection factors alongside the availability of skilled labor and access to key markets. This assessment is a function of the industry type and the specific business needs of the sector. This research built upon previous quantitative research and further investigated (through a series of structured interviews) the role of transportation in both attracting and retaining key industry sectors in Texas. Researchers determined what specific aspects of the Texas transportation system are important to each of the chosen industry sectors and why these aspects are important. Researchers also assessed how well Texas's transportation infrastructure ranks compared to that of other states.

On What Sectors Did the Research Attempt to Focus?

The project began in November 2015 when TTI researchers met with staff members from the Office of the Governor Economic Development and Tourism Division (EDT). The purpose of the meeting was to gain a better understanding of how the State of Texas approached economic development and what industry sectors were deemed important for business attraction and retention.

EDT stated that economic development activities were originally the responsibility of the Texas Department of Commerce and then transitioned to EDT. During this time, there was no formal statewide methodology or strategy to guide how the state recruited industry. Marketing efforts were mostly focused on going to trade shows, where industries that were capable of producing a high number of primary jobs (*2*) were targeted.

In 2002, the state successfully recruited the Toyota manufacturing facility to San Antonio. At the time, Texas had no centralized or coordinated means to help Toyota site its facility. When Toyota officials approached the state, EDT worked with partner agencies (the Texas Commission on Environmental Quality, Texas Department of Transportation [TxDOT], Texas Comptroller, etc.) as a coordinator, essentially helping broker the incentive package that ultimately resulted in Toyota establishing its facility in San Antonio. In light of this success,

Governor Rick Perry recommended that EDT become the central coordinating agency and be located within the Office of the Governor to recruit industries to Texas.

Realizing that it might be beneficial to accompany this transition with more formal planning for economic development, the legislature asked Ray Perryman, an Odessa, Texas–based economist, to create a plan for statewide economic development. The result was *Texas, Our Texas: An Assessment of Economic Development Programs and Prospects in the Lone Star State* (*3*).

Shortly after *Texas, Our Texas* was published, the Texas Workforce Commission implemented the Industry Cluster Initiative. This initiative was key to Governor Perry's commitment to job creation and economic development in Texas and was made a requirement via legislation. The product of this statistical methodology was the identification of industry sectors (or clusters) that "compete across regions and tend to be the core drivers of regional economic competitiveness." Since 2004, the following six clusters have been the focus of industry recruitment and retention for economic development:

- Advanced technologies and manufacturing.
- Aerospace and defense.
- Biotechnology and life sciences.
- Information and computer technology.
- Petroleum refining and chemical products.
- Energy.

Texas, Our Texas and the Industry Cluster Initiative are now considered the blueprints for current economic development activities in Texas. EDT is reviewing the six industry clusters, largely because it believes technology has changed significantly enough over the last decade to impact these clusters in meaningful ways. EDT is not only looking internally but is also investigating how other cities across the United States are handling economic development, particularly which industry sectors are being targeted.

Given that the state has put forth significant time and effort into implementing a statistically robust methodology to identify industry sectors that are significant drivers of its economy, and has a successful track record of economic development using a model largely based on these results,[2] TTI chose to focus on these six industry sectors for this research project.

[2] While the State of Texas realizes the importance of the industry clusters in economic development, the State of Texas is interested in retaining and attracting a wide variety of industry.

Methodology

To gather detailed information on the importance of the Texas transportation network to each of the six industry sectors in the process of site selection, a series of structured interviews were conducted with industry experts, site selection professionals, and economic development professionals engaged in the business of industry recruitment. As a means to maintain consistency across more than 20 focused discussions, a detailed interview guide was developed that could be disseminated to respondents prior to the conversations. The guide was informed by the initial background research and discussions with internal-to-TTI and external-to-TTI topical experts.

How Were Interviewees Selected?

The ideal interviewee was someone who, through professional experience, was knowledgeable about organizational site selection and the criticality of transportation to that process. An earlier PRC project conducted in 2013 identified professional site selectors as an ideal choice for inclusion. An internet search yielded a directory of professional site selectors at the Site Selectors Guild (http://www.siteselectorsguild.com/), which served as the primary recruitment database for site selectors.

Additional discussions with EDT suggested that economic development corporations (EDCs) play a key role in business attraction and retention, and would benefit the project greatly. The Texas Economic Development Council (http://texasedc.org/) provided a list of active members and suggestions on specific EDCs that might be good fits for the research project. This prioritized list served as the primary recruitment database for EDCs.

The final group targeted for interviews was comprised of individuals working in the private sector who served a key role in site selection internal to their organization. Most private-sector contacts were offered as suggestions during interviews with professional site selectors or EDCs. Recruitment was primarily conducted via email, with telephone follow-up.

How Many Interviews Were Conducted?

A total of 21 interviews were conducted from March through June 2016, representing 84 percent of the project goal of 25 interviews. Of these interviews, 4 were with professional site selectors, 13 were with EDCs, and 4 were with corporate representatives. Nineteen of the 21 interviewees were based in Texas, with the two out-of-state interviewees being professional site selectors with significant experience working in Texas. Figure 2 presents a map that was created for the 2015 Texas Freight Survey, upon which this 2016 PRC project was predicated. Researchers interviewed individuals based in every region except West Texas.

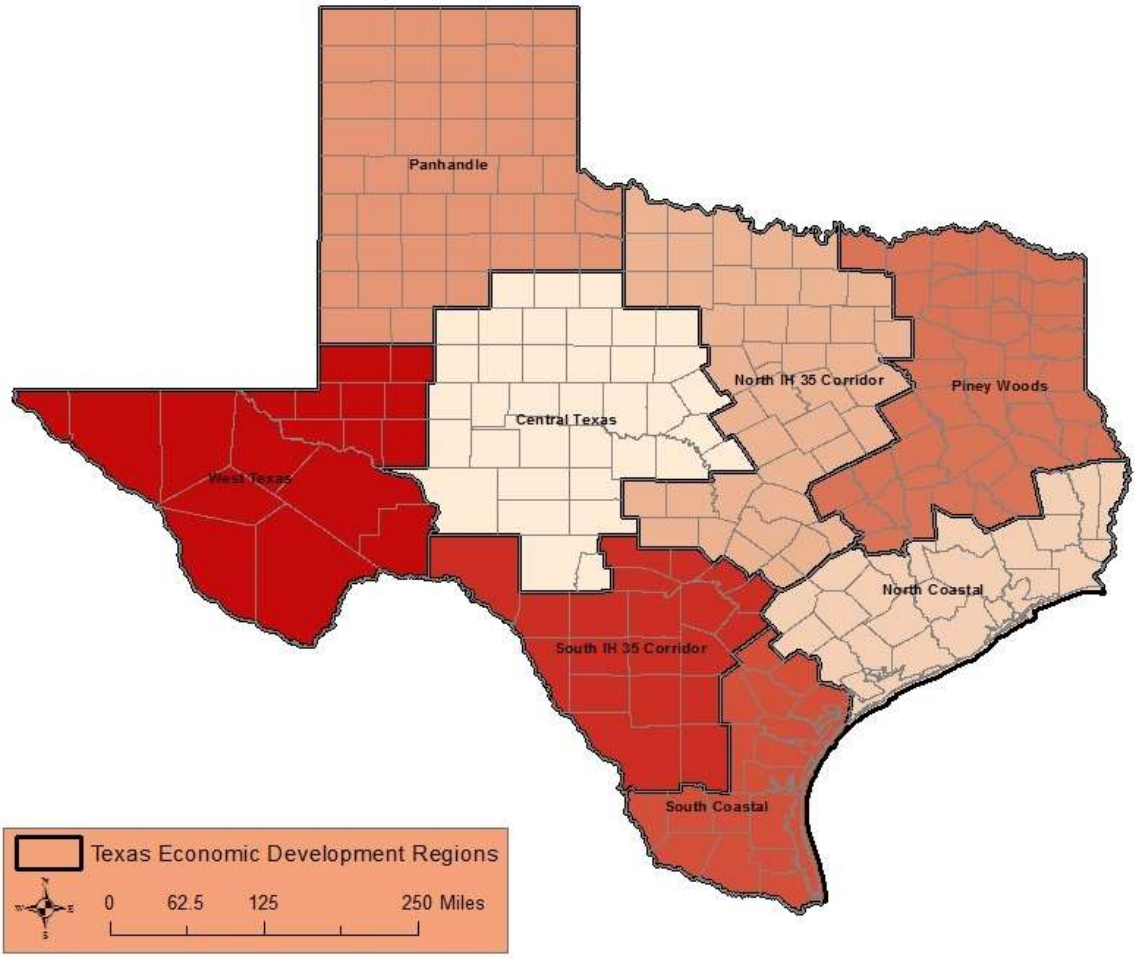

Figure 2. Texas Economic Development Regions.

How Are the Research Findings Presented?

The research team chose to segment the interview findings into two major sections: EDCs and the private sector (site selectors and corporate representatives). This was done for two reasons:

- Researchers felt that the responses from the private-sector respondents were similar enough in content to facilitate a single summary.
- The aggregation of private-sector responses would help to balance the report, limiting the bias from the high level of EDC participation. When possible, the research findings are aggregated by geography, industry, or group.

The conclusions section discusses these findings in a higher-level policy context.

Specific names (either organization or individual) are not used in this report. This level of anonymity was promised to all interviewees because many of the discussions involved confidential business strategy.

Findings

Economic Development Corporations

In Texas, economic development is driven primarily at the local level, which could be EDCs, chambers of commerce, municipal government, county government, or regional government associations. EDCs are funded by a half-cent sales tax, enabling communities to conduct their own economic development. In some regions, EDCs act independently, pursuing business development in their specific jurisdictions. This model is often implemented by major metropolitan areas. Others operate in a more integrated manner to ensure effective economic development for the region as a whole.

Statewide coordination of economic activity is largely the responsibility of EDT, which works with local EDCs to market and recruit a wide range of national and international industries.

In Texas, the success of any economic incentive is highly correlated with community backing. The state maintains the Texas Enterprise Fund (TEF) for state-level incentives to lure businesses to Texas. The TEF can be used for a variety of projects including infrastructure and community development, job training, and direct business incentives. However, the state cannot offer the incentive to a company in the form of investments in infrastructure from the TEF without obtaining approval from the local economic development entity. EDCs enjoy a high level of control and autonomy in how they can encourage local economic development. EDCs can purchase land, develop business and industrial parks, and spend on road and rail infrastructure or service to encourage economic development. For example, one EDC used public funds to secure a short-line rail contract, develop roadway infrastructure to facilitate business park access, and build a bicycle and pedestrian network to provide employees with transportation options.

Additionally, EDCs often serve as champions to help secure bond funds, which help to prioritize local projects that can be used in negotiating incentive packages with industries looking to locate or relocate.

Finally, EDCs can serve as local-level coordinators by working with the transportation agencies to complete strategic transportation projects that could attract business to the area. This was the case with one EDC that worked with a transportation agency to expand an oversize/overweight (OS/OW) freight corridor.

The findings in this section are based on interviews with 13 separate EDCs representing jurisdictions in all economic development regions of the state as indicated in Figure 2, with the exception of West Texas.

The Relevance of Product in Transportation Considerations

The importance of transportation varied between key industry clusters due to two main reasons:

- Access to labor (employee commutes).
- Access to raw materials or finished products (supply-chain logistics).

These primary reasons generally alternate based on the type of product or service provided by a specific business within a cluster. For example, one local automotive company that produces sport utility vehicles recently consolidated part of its operation previously located in Mexico. This consolidation was primarily due to the strength of the intermodal networks in the home region, enabling the automaker to move raw materials and finished goods at a cost that essentially nullified any savings realized by outsourcing labor to Mexico.

A large biotech firm providing customer service support chose a site in this region because of access to skilled biotech labor from a nearby university. Since this service-oriented organization does not have a heavy supply-chain footprint, access to skilled human resources was a more significant priority than transportation infrastructure.

The Impact of Travel Options and Congestion on Site Selection

Employee commute times and employee travel options can play a significant role in the site selection process, particularly for the advanced manufacturing and information and computer technology clusters.

For example, light-rail and rapid-transit options appeal to the millennial generation often recruited by the advanced manufacturing and information and computer technology clusters, who also wish to work and live closer to the urban core. To that end, a tech firm had previously bypassed one EDC's region due to a lack of a light-rail line into the area.

Similarly, another EDC commented that an advanced manufacturing plant initially considered a lower-cost, industrial part of town without any transit access. However, it ultimately decided to locate in a higher-cost, transit-accessible area because a significant portion of its employees were likely to be transit dependent.

Many international businesses interested in a different EDC area want to be within a one-hour drive of major international airports. But this region's worsening congestion causes a peak-period travel time of two hours to the airport, which jeopardizes its ability to attract these businesses.

To assess the potential impact of regional congestion on their business processes and quality of life, prospective companies often request traffic count data and commute times for a given site. In this way, EDCs provide valuable information, enabling businesses to more accurately estimate the pros and cons of each short-listed site.

Alternatively, prospective companies may conduct field site visits. For example, a business considering one site in the IH 35 corridor close to the interstate ultimately ended up at another site farther east, offering equal access to both IH 35 and SH 130, after business representatives witnessed firsthand the impact of an IH 35 shutdown from a traffic accident.

Transportation Needs and Variations within Key Industry Clusters

The site selection process often starts with an initial request for sites within a region that match transportation-related requirements (e.g., surface road weight parameters, warehouse access and egress, and access to alternative transportation modes). The information presented in this section provides a summary of cluster-specific transportation needs and concerns across the state.

Advanced Technologies and Manufacturing Sector

Need: Rail Access

EDCs in the IH 35 corridor indicated that advanced manufacturing companies expressed concern over the lack of intermodal connections (rail to port, road to rail, and road to port) to support goods movement in and out of the region. Advanced manufacturers in this region had to rely overwhelmingly on truck shipments on an already congested IH 35 to ship freight north to another city that has adequate rail-to-road intermodal freight facilities. As a result, this region runs the risk of having several medium-size companies relocate to a region with more intermodal freight hubs if congestion and shipping costs increase.

Class I rail companies with service through a region will often extend service to manufacturers that offer a minimum threshold of volume shipped. Once a region secures rail service, this mode can help attract other companies requiring rail for their supply chain.

One EDC collaborated with a Class I rail line on a proposal put forth to an automotive manufacturer interested in moving to the area. Ultimately, the manufacturer selected another region, but the Class I rail line's willingness to team on the proposal established a precedent for future EDC/rail line collaboration.

In another example, a Gulf Coast EDC won an advanced manufacturing site development contract over another EDC in a separate region because the Class I rail carrier in the coastal region offered its services directly, whereas the non–Gulf Coast EDC relied on a short-line rail operator as a go-between to make the connection.

Need: OS/OW Corridors

One EDC mentioned the presence of an OS/OW corridor as being a draw to advanced manufacturing firms looking to move to the region. This EDC developed business parks along a regional OS/OW corridor, which also merged with intermodal rail connections and major planned interstate developments. This park provided an attractive site for organizations looking to move heavier freight in and out of factory settings.

Need: Ports

Many of these OS/OW corridors lead to ports, which are often targeted by advanced manufacturers due to the weight of the goods moved in and out of factories. One EDC indicated that an international automotive chassis manufacturer sought roadway improvements to help speed up road-to-port routes for production material shipped from the Port of Houston to the region.

This company also relied on just-in-time production methods, which placed a premium on freight shipments arriving within very narrow time durations. Just-in-time operations in advanced manufacturing require that a company be provided the material to complete production as the material is needed, with reduced amounts of on-site storage of the material, which saves space and waste. A result of just-in-time operations is a reduced production material inventory at the factory. This increases transportation costs and demands on the transportation network through higher frequency of trucks using the roads, and potentially jeopardizes factory operations if a shipment is delayed.

Need: Transit/Airports

This sector also relies on transit (for employee commutes) and international airports (for the movement of goods and human resources). One EDC relayed two separate examples where automotive manufacturers planning to come to the region withdrew over a lack of direct international flight connectivity in the region.

Information and Computer Technology Sector

Need: Truck Infrastructure

Several EDCs indicated that information and computer technology sector companies emphasize truck-to-air freight infrastructure because of their small, lightweight freight (silicon wafers, chips, etc.).

One EDC stated that information and computer technology companies generally ship their products by truck to the local international airport or north along IH 35 to another major international airport for destinations around the world. Worsening congestion on IH 35 might cause those companies that ship north to the major international airport to relocate.

As a way to reduce the impact of congestion, one EDC offered an example where the development of a loop road around an urban area helped ease access and egress for trucks transporting goods to and from local airports in that region.

Need: Airports

Airports provide executive travel options for this sector, particularly those with an international scope. Among the economic development professionals engaged in this research, direct connections to Asia, Europe, and South America were ranked highly. One EDC provided an

example of a technology company in the region that seriously considered moving headquarters from the region due to lack of direct international flight options to both Europe and Asia.

Energy Sector and Petroleum Refining and Chemical Products Sector

A few EDCs indicated that energy and petrochemical companies rely on a combination of rail, truck, and sea freight, depending primarily on the location of production sites.

Need: Truck Infrastructure/Rail Access

EDCs along the Gulf Coast advised that energy companies with Eagle Ford Shale production sites primarily relied on trucks to carry equipment to the Eagle Ford Shale production sites. Energy companies in the same region that explore and develop the Bakken crude regions in North Dakota relied on a south-north road-to-rail supply chain network to facilitate delivery of oil field equipment. Petrochemical industries relied on a north-south rail delivery of product to refineries in the region.

Need: Ports

Another EDC reported that a regional energy company with production sites in international locations relied heavily on road-to-port connections to facilitate its overseas business, using the Port of Houston. The energy company pledged interest in connecting the region with the Port of Freeport via short-line rail operations to three Class I rail line providers tied to the port. It is currently working with the EDC and region to help develop alternative road, rail, and port connections to points south at the Port of Freeport. In this case, a coalition had also been formed along a major regional highway corridor to merge rail and road transportation considerations with any connection opportunities.

Aerospace Sector—Need: Airports

One EDC indicated that a longtime aerospace company in its region relied heavily on a mixture of regional, local, and international airports to conduct its business operations. The company used the local and international airport to facilitate executive travel. Furthermore, the company has an agreement with the regional airport to perform product and materials testing, in addition to using this facility to ship products to various aircraft manufacturers around the world.

Biotechnology and Life Sciences Sector

Need: Access to a Skilled Labor Force

In almost every discussion with EDCs that have a significant biotechnology and life sciences cluster in their region, the interview revealed that the primary draw of the region was the presence of a college or university that could provide abundant access to skilled labor. Non-urban regions with a college, university, or technical school can be extremely attractive to a

variety of clusters (including biotechnology and life sciences), not only because of the access to skilled labor but also because of reduced real estate costs and lack of congestion.

Need: Access to Production Materials

While service providers may be more focused on access to labor markets, goods producers are likely more interested in transportation and production materials considerations. One EDC commented that a biotechnology and life sciences sector company recently invested $140 million in a regional facility, primarily because of its proximity to production materials (agricultural crop seed) and a university. Only after these two factors had been addressed was access to an interstate for truck shipments and an airport for regional executive travel considered.

Site Selectors' Perspectives

The research findings presented in this section are based on interviews conducted with four professional site selectors and four corporate representatives.

The site selectors' collective experience spans the spectrum of the six key industry sectors, and each has experience working in Texas. Generally speaking, site selectors assist companies with facility siting, incentive negotiations, or smaller pieces of each of these processes. Occasionally, site selectors are asked to provide follow-up services (after initial site selection). One such example might include requests from a private-sector organization that is settled in and is interested in reaching out to a local college or university to institute a technical workforce training program. Another example might include assistance with site expansion, in which case site selectors might help manage conversations with local entities (EDCs, other governmental organizations, utility providers, etc.).

Sectors represented included information and computer technology, advanced technologies and manufacturing, and energy.

Role of Transportation in the Site Selection Process

The site selection process establishes a dynamic between two parties that is similar to the traditional marketplace relationship between buyer and seller. A private-sector corporation (often represented by a site selector) acts as the buyer seeking a place to do commerce that will best suit its specific business needs, while the seller (an EDC) often emphasizes the qualities of its region or property that are most attractive to the buyer. This section of the report examines the role of transportation from the buyer's perspective.

Site selectors often first initiate a fact-finding session with corporate clients during which a comprehensive and prioritized list of overall project objectives is established. During this initial macrolevel phase, the primary drivers of the site selection process are determined. These might include expansion of a customer base, proximity to labor force, and/or proximity to supply chain.

For example, for some advanced manufacturing, quick and easy access to interstates is critical. Often the term "5 to 55" is used to suggest that a manufacturing facility needs to be within five minutes of a corridor with a minimum free-flow speed of 55 mph. Some advanced manufacturing facilities (as well as those in the energy sector) also place a very high degree of importance on rail or port access, although access to an intermodal facility may lessen this specific need. For the aerospace sector, airport access is vital.

Similarly, another advanced technologies and manufacturing representative stated that the most important factor in the process is utilities, primarily water and electricity, followed by access to a well-educated workforce. These far outweigh any consideration given to transportation as part of the site selection process. Additionally, over the years, a network of suppliers has come to exist in the region to specifically serve this industry's needs, making transportation even less of an issue.

Given these high-level directives, corporations and/or their site selectors begin to identify regions or subregions that would satisfy business needs. As likely geographies begin to surface, other factors are brought into play.

Once a short list of likely regions or subregions has been identified, a finer-resolution search is initiated as specific counties, cities, or actual sites are sought out. It is during this microlevel phase that transportation can take on a more significant role in site differentiation, as acquisition teams begin to investigate local transportation infrastructure through various lenses that are products of the organization's operating models and/or site needs. For example, a technology company might specify being within walking distance of transit, while an advanced manufacturing facility might specify a site that has a rail spur that is serviced by a short-line operator and provides access to a major rail service provider. Typically, it is during this microlevel analysis that acquisition teams initiate conversations with the local EDC in a short-listed locale.

Types of Data Used in Site Selection

Because no two site selection projects are the same (not even those within the same sector), it is necessary to customize the analyses for each project. The quantity and quality of the data available as inputs to these analyses will affect how decisions are made in determining a site that matches the requirements.

During the macrolevel analysis, site selectors seek answers to very fundamental questions, such as "Are the desired transportation assets in place?" This usually translates into the presence or absence of interstates, highways, rail lines, intermodal sites, or international airports (direct versus non-stop flights). The answers to these questions will favor some regions over others.

Within these favorable regions, the analysis becomes more focused as site selectors attempt to quantify various aspects of transportation, such as congestion, commute times, and/or factors that might affect freight movement. When it comes to logistics-heavy analyses (such as those typical

of advanced manufacturing), the company more often than not chooses to use internal staff because their knowledge about internal company processes surpasses what site selectors may be able to offer. Furthermore, businesses have internal performance data that can be used to model the likelihood of a specific region/or location meeting corporate needs.

Site selectors specifically mentioned comparing company employee profile data to Texas Workforce Commission data to identify the fitness of sites on labor force. Site selectors also mentioned using traffic count data to estimate commute sheds. Multiple site selectors suggested that the data made available by EDCs are of vital importance in both the macrolevel and microlevel analyses. Most site selectors reported having physically gone out to sites to facilitate an in-person analysis because no data can replace the value of "boots on the ground."

Criticality of Transportation in the General Site Selection Process

Overall, site selectors deemed transportation critically important in the site selection process. One site selector commented that for operating cost and risk mitigation (preventing interruption of operations), transportation is if not the most significant factor, then among the top five. However, as previously mentioned, transportation's criticality varies across sectors, and adopting a one-size-fits-all approach to site selection is a gross overgeneralization. Generally speaking, the businesses that produce goods are more concerned with supply-chain logistics, while those service-oriented organizations place more emphasis on the efficient movement of human resources and quality of life offered by transportation.

For example, a representative of an information and computer technology company stated that even though the company does not engage in a high degree of shipments, it does rely somewhat on the transportation system from a supply chain point of view. Currently, its Texas-centric shipping processes are most heavily reliant on airports (85 percent of shipments), using the services of UPS or FedEx for the short trip from its facility to the local international airport. About 15 percent of shipments are received through the Port of Long Beach and shipped via truck to Texas. This same representative added that one significant limitation of the local international airport was international connectivity, particularly for executives desiring to travel directly to Asia and Latin America.

Another representative of an advanced manufacturing company stated that his/her organization considered moving from Texas several years ago, primarily due to the difficulty of executive travel out of the local international airport to Asia and Europe. However, this idea was tabled when the executive team considered the amount of investment that had been made in its Texas facility.

A final advanced technologies and manufacturing representative stated that because his/her company is global, with a majority of its fulfillment services located outside the United States, transportation did not play an overly critical role in choosing Texas as a location for manufacturing consolidation. If the organization were to choose further consolidation to include

bringing all fulfillment activity to the United States, transportation would be prioritized as a site selection factor. As a result, Central Texas would not make the short list, which includes a West Coast city (which provides easy access to the Port of Long Beach for Asian shipments) and a city located in the IH 35 corridor in North Texas (which provides a superior highway network and airport service).

Transportation as an Incentive

The State of Texas has an extensive array of mechanisms available to help incentivize businesses in the site selection process (*4*). One site selector mentioned incentives as a means to even the field of competition at the tail end of the site selection process. For example, a detailed analysis may identify a specific industrial site as a good candidate for meeting the needs of an organization. However, the site may offer less than ideal highway access. The corporate client may try to negotiate an incentive package that includes provisions for making highway access more ideal. This could include the local EDC providing some cash for construction of the infrastructure by the organization, the EDC funding the project, or the EDC working with the necessary partners (local or department of transportation or both) to facilitate rapid completion of the project. In this example, transportation infrastructure development or enhancement is used as an incentive.

An example provided involved a negotiation to secure transportation infrastructure incentives as part of the site selection process for a manufacturing organization moving to a mixed-use facility. The negotiation was centered on upgrading a rail spur that serviced the facility. In this case, the incentive came in the form of the local entity bringing cash to the table to help the client pay for the upgrade. In other cases, the local entity may choose to take on the project itself. Generally speaking, companies prefer the latter, with the risk falling on the city to meet costs to perform and maintain the transportation improvements.

Another example was offered by an advanced technologies and manufacturing representative who stated that once Texas had been shortlisted, the internal staff looked at how this move was going to affect the supply chain of all four facilities being consolidated into the new Texas location. This involved consideration of a fair volume of shipments being moved to or from Asia. Once this overall supply chain cost associated with moving to Texas was identified, it was used in discussions in which tax abatements were negotiated with the Texas city to help offset the costs of moving to the region.

The Effect on Transportation on Quality of Life

One site selector specifically mentioned that transportation absolutely affects quality of life, and quality of life can play a significant role in site selection, particularly for the information technology sector. This individual suggested that the development of Texas metropolitan areas as tech centers was correlated with the perceived degradation of the quality of life in Silicon Valley

10 to 15 years ago. One factor contributing to this degradation was transportation and, more specifically, burdensome commute times, made so by ever-increasing congestion.

At this time, Texas was an easy sell to companies wanting to relocate from the Silicon Valley gridlock. Now, with some Texas metropolitan areas characterized by some of the worst congestion in the United States, Texas cannot differentiate itself from Silicon Valley from a transportation perspective. Quality of life in Texas metropolitan areas is no longer what it was. The lack of robust public transportation systems in some Texas metropolitan areas is starting to contribute to the quality-of-life degradation. The tech industry is extremely interested in locating in areas where there are transportation options (using public transit, walking, or bicycling). To a significant extent, this is due to the fact that a large part of its labor force is young professionals that value quality of life to a degree that is foreign to a lot of employees that are in the later part of their career. Having the option of leaving the car at home, avoiding congestion, and logging on to the internet on your way to work is huge to this group.

Access to a skilled workforce is still the most significant factor in site selection. Fortunately for many Texas metropolitan areas, the presence of universities and many other non-transportation-related quality-of-life factors still make it a place that people want to live, despite the transportation issues. This will not be the case forever; the number of companies choosing to locate outside the core is growing every day.

A representative from the information and computer technology cluster suggested that, in retrospect, more thought should have been put into the effect of congestion on quality of life during the site selection process. The corporate consolidation that provoked the move to Texas involved moving people from locations characterized by robust transit systems. The quality of life issue was not considered, and it should have been. At that time, the primary consideration was access to the airport. During the past two years, the commute has gotten exceedingly worse on IH 35 and is negatively affecting employee morale.

Future Transportation Investment as a Means to Attract Business

Multiple site selectors commented that their clients are generally not concerned with the amount of future transportation investment planned for a region as a metric in the site selection process. Corporations are hesitant to put a high degree of faith in long-range transportation plans because they realize that a planned project may not be realized. Rather, their decision is largely predicated upon what is present at the time the site selection process is ongoing and what may be included in an incentive package. That is not to say that an entity cannot use a proven track record of transportation investment in the region as a marketing tool. Following through on planned investments can prove meaningful to business retention efforts and is an effective way for EDCs to show how they plan on being a good partner to local businesses.

Despite corporate client emphasis on the present site infrastructure attributes and values, at least one site selector reported that within the site selection process, he/she had reviewed plans for

company site expansion alongside public plans for public transit expansion, neighborhood development, and land use. This individual felt that understanding what was likely to happen in an area 5 to 10 years in the future facilitated a higher level of service to his/her client.

One site selector mentioned local entities investing in site certification as being potentially advantageous as a means for differentiating themselves from other entities competing in the site selection process. This is particularly germane to advanced manufacturing site selection when there is a need for rail access. This process essentially helps determine whether the industrial sites meet rail organization readiness standards, which are intended to minimize development risks customers may face.[3] Since rail service can be characterized by a high degree of variance on service levels and reliability, certification means that site selectors will not need to interview rail customers to determine quality of service.

What Texas Offers to Businesses Looking to Locate or Relocate

One advanced technologies and manufacturing representative suggested that his/her move to Texas was primarily driven by the state's geographic location in the middle of the southern United States. This organization was looking to consolidate four manufacturing facilities into one facility that was centrally located between the East and West Coasts, where the majority of its clients are located. Texas was the top choice among the 16 cities identified in the site selection process, in which professional site selectors played a significant role. Access to a skilled labor force and affordable real estate were the most important factors in the site selection process.

One energy sector representative involved in compressed natural gas (CNG) fueling stations indicated that his/her energy sector work grew organically from work in other sectors. Texas cities with good CNG pipeline networks (such as Houston and Midland) work well for the organization's business model needs.

One site selector commented that industries across the United States and abroad are well aware of the pro-business climate in Texas. Texas has done a good job of using incentive packages to draw business to the state. Furthermore, its geographic position alone makes it a strong consideration for any organization looking to operate in the southern United States. The strong state economy enabled Texas to weather the Great Recession very well.

What Can the State of Texas Concentrate on from a Transportation Perspective?

Each interview concluded with a purposely broad question seeking to challenge the respondents to think critically about what the state could do, from a transportation perspective, to help make Texas a more attractive destination for the six key sectors.

[3] Additional information on the rail certification process may be found at https://goo.gl/mHV6mt.

Connectivity

One site selector mentioned that keeping economic development top of mind when designing the transportation network to provide connectivity to, from, and between hubs of economic development was vitally important. This process involves a high degree of not only transportation planning in the traditional sense of increasing mobility, but also investigating how the system should be designed to serve as a platform for future economic growth. The state should always be asking, "What could the system be doing to link people and goods and services more strategically?" Investing in transportation strategically will demonstrate that Texas realizes the value of a well-designed system that places economic development at the forefront. It is not an afterthought or a hopeful by-product. It is like saying, "Strategic connectivity is important to us."

Transportation Infrastructure

The site selector went on to say that, with regard to the development of transportation infrastructure, some states adopt a mentality akin to if we build, it they will come. This may be particularly relevant to Texas, which fared very well during the Great Recession and continues to be a major attractor of a wide range of industries. In this situation, construction of transportation infrastructure will lead to economic development, but the situation will not be optimal. The optimal situation is first asking, "Where do we want to develop zones of economic growth, and what do we want those zones to look like?" Using this bottom-up approach is a smart way to build regional economies, which establish the framework for a robust statewide economy…all connected seamlessly by the transportation network.

Integrated Approach

One site selector identified the Dallas/Fort Worth region as having done a good job of implementing an integrated approach. The Dallas/Fort Worth region identified the type of economic growth it wanted and designed its transportation network to facilitate that type of growth. The key to this success story was the role of the private sector in driving the initial economic development; then governmental agencies designed a system that maximizes the connectivity offered by the transportation network. This type of collaboration is key to success.

One site selector identified SH 130 as an example of how this integrated approach could have been implemented to better serve as a conduit for future economic growth. It was the opinion of this site selector that planning for SH 130 was conducted with little thought about how it would drive future economic growth in that area or consideration for alternatives. This serves as a prime example of the if-we-build-it-they-will-come mentality. In time, the economic development will come, but it will come with a lack of emphasis on land use strategy. Consequently, suboptimal transportation issues associated with that facility will become entrenched.

Multimodal

Citing an extreme rise in the need and demand for intermodal facilities in Texas as a result of recent changes to the Panama Canal, one site selector mentioned a need to spend money in a strategic way that connects ports to intermodal sites and industrial sites. This process involves elevating land use considerations and optimizing the system to take advantage of existing transportation infrastructure. Key to this process is a significant amount of cross-agency planning at the state and local level. Texas is well positioned to capitalize on this situation, and not doing so would be a significant loss to future economic growth.

Incentives

One energy sector representative involved in CNG fueling facilities stated that Texas has done a great job with incentive grant funding aimed at clean/alternative fuels, and the industry would like to see Texas continue doing this. For example, the Houston-Galveston Area Council offers incentives to organizations with commercial fleets to upgrade or transition the fleet to clean-burning fuels. For CNG energy producers, this incentive helps drive new company business and expansion. The Department of Energy is also offering incentives for the continued development of CNG infrastructure.

This same energy sector representative suggested that his/her organization felt that the demand for CNG will increase as regions battle air quality non-attainment or near non-attainment. Currently, the Environmental Protection Agency incentivizes state and local government to implement techniques to avoid non-attainment, and CNG is a way to do this. If the federal government ties non-attainment to transportation funding, some of the penalties associated with reaching non-attainment could eventually impact major transportation infrastructure. What if the funds to dredge the Port of Houston were not forthcoming? Similarly, what if the funds to repave the runways at Houston Intercontinental were not forthcoming? This energy sector representative sees this happening as early as the next 5 to 10 years, perhaps, and would like to see Texas continue to incentivize the industry. In doing so, the state will continue to be a strong partner in helping demonstrate the opportunity for CNG to help manage some pressing regional transportation issues.

Summary

This research suggests that, across the board, access to a skilled workforce is by far the most significant factor considered in the site selection process. Transportation may not be the most significant factor but was deemed as vital and likely among the top five, particularly when viewed with factors having the potential to interrupt business operations. The role of transportation in the site selection process can be viewed as a function of access to labor (employee commutes) and/or access to raw materials or finished products (supply-chain logistics).

Some rather fundamental relationships between industry and transportation exist that affect how site selection in Texas is conducted. The modes required by an industry to successfully conduct its business is affected by the goods produced or raw materials required to produce that good. For instance, as the size of the raw material required to produce a good or the good produced increases, so too does the reliance on intermodal, rail, or surface road modes. Furthermore, service industry sectors have a tendency to place more emphasis on how the network facilitates the efficient movement of human resources, whether by daily commute or executive travel.

Texas has a myriad of intrinsic factors that provide adequate incentives for many organizations that have chosen to call Texas home. Its geographic location in the middle of the United States makes it a logical place for companies wanting to be equidistant from East and West Coast markets. Likewise, its proximity to Mexico provides an opportunity to tap into labor costs that are, in the long run, potentially less expensive. The presence of a number of universities makes Texas an incubator for skilled labor. Additionally, a wealth of other non-transportation-related quality-of-life factors still makes it a place that people want to live. When combined with a pro-business tax climate and a track record for having weathered the Great Recession better than a significant number of states, Texas remains an attractive place for businesses to consider when making site selection decisions.

Texas should remain vigilant and aggressive as it strategizes on how to use transportation as a means to stimulate economic growth. This can be done by ensuring that economic development is kept top of mind when designing the transportation network to provide connectivity to, from, and between hubs of economic development. This mentality suggests economic growth as one of several well-calculated end goals of transportation planning, not a coincidental by-product.

The research has identified several key areas in which the state can invest to ensure that transportation is used as a tool to help stimulate the state economy:

- The lack of adequate intermodal infrastructure (particularly rail to road) has become a concern, forcing an overreliance on the movement of goods via truck on already congested surface highways. Some EDCs and site selectors agreed that this situation could result in the loss of some companies to other regions or other states that have better intermodal infrastructure and/or less congestion. Both also suggest that the trend of

increased reliance will continue as the Panama Canal improvements modify the patterns of global goods movement.

- Investment in regional OS/OW corridors could prove advantageous because these corridors act as fertile ground for the development of business parks, which often house heavy-goods manufacturers.
- Companies with an international scope repeatedly identified the lack of international connectivity at airports as both a major frustration and concern. In fact, some EDCs reported losing out to regions that offered better services in this regard. This was of particular concern for organizations in central and south central Texas, who have become increasingly reliant on Dallas/Fort Worth airports that provide superior service to overseas destinations.
- Regional rail service, particularly Class I service, was identified as a tremendous asset to help drive economic development, particularly those regions interested in attracting advanced manufacturing, energy, petroleum, and chemical products. Additionally, for regions with limited rail connectivity, the presence of a short-line operator can be the determining factor in winning or losing in the site selection process.
- Because of worsening congestion and its detrimental impact on regional quality of life, the presence of alternative-mode infrastructure (transit, walking, and bicycling) is becoming an increasingly significant factor in the site selection process. This is particularly germane to companies actively recruiting younger, highly skilled workers that are not as attached to their vehicles as past generations. To that point, both site selectors and EDC representatives reported public transit being the make-or-break factor in several site selection scenarios.

This report has discussed the linkage between transportation services, infrastructure, and economic development from the perspective of economic development professionals in the public and private sectors. The Texas Legislature has recently directed TxDOT to adopt a performance-based planning and programming process (in Section 201.809[e] of the Texas Transportation Code, added by House Bill 20, 84th Regular Session, 2015). The Texas Legislature has also directed local transportation planning organizations to adopt project recommendation criteria that include the consideration of "projected effects on economic development opportunities for residents of the region" (Section 201.9932 of the Texas Transportation Code, also added by House Bill 20). As the legislature evaluates the progress of performance-based planning and programming of state highway projects, it can consider how projects being selected will address the major highway-related issues raised by EDCs and companies in this report.

PRC has prepared reports and testimony related to the significant new transportation funding authorized by the 83rd and 84th Legislatures (2013 and 2015, respectively) and authorized by

Texas voters in Proposition 1 (2013) and Proposition 7 (2015). These new resources have allowed TxDOT to increase the scale of the Unified Transportation Program, addressing congestion, safety, and connectivity issues across the state. The highway system improvements enabled by this infusion of funding will address some of the congestion and connectivity issues raised in this report by EDCs and private companies. These resources are reallocated from other funds into the State Highway Fund, which is constitutionally limited to state highways.

This report indicated that companies interested in relocating to Texas or expanding facilities in Texas are concerned about other transportation modes: transit accessibility, rail services, and port capacity. Legislators have chosen to authorize voters in urban areas to choose to allocate sales taxes to transit authorities that address transit issues on a local and regional basis, and permitted these organizations to directly seek federal capital and operating funds. Texas does not have a formal funding program for freight railroad improvements, although the legislature has authorized the creation of rural rail transportation districts on the county level to retain and improve short-line railroad access (PRC has also produced a recent report on public investments in freight rail projects, *Considerations for Public Freight Rail Projects in Texas* [PRC Report 15-57F]).

The legislature has allowed local governments to create port authorities to fund and manage ports along the Gulf Coast, and created a Port Authority Advisory Committee for TxDOT that recommends projects to be funded by legislative appropriations to the Port Access Account Fund (Section 55.005 of the Texas Transportation Code). The Texas Senate created a Select Committee on Ports after the 84th Regular Session, and the Texas House created a Select Committee on Texas Ports, Innovation, and Infrastructure. As the 85th Legislature considers a range of issues and legislation that addresses port investments, it can consider the economic development issues raised by EDCs and companies in this report.

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