



IDENTIFYING ORGANIZATIONAL CHANGES TO FACILITATE MPO MEGAREGION PLANNING

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Abstract

Given current transportation planning processes, this study finds that organizational changes focused at the metropolitan planning organization (MPO) level will be necessary for future collaboration within the Texas Triangle megaregion. This analysis reviewed the organizational and operational documents and agreements, board compositions, boundary changes, and planning documents for three anchor-city MPOs to determine how megaregional planning could be conducted within current legal structures. It found that organization-level guiding documents, like the MPO bylaws and the MPO planning agreements with the Texas Department of Transportation, provide opportunities to structurally and contractually formalize a megaregional intent. However, the value of taking such steps to integrate a megaregional focus depends on an MPO's willingness to proactively pursue collaborative opportunities with other MPOs within the megaregion, and to define within formal agreements where the megaregion crosses state lines. Declaring and refining a megaregional intent in the identified opportunity areas can help to improve and define cooperation between MPOs and other state entities. These governance-focused recommendations can help MPOs use available resources to integrate new processes that encourage collaborative techniques for the benefit of an entire megaregion.

Chapter 1. Introduction

Previous research has identified the potential of metropolitan planning organizations (MPOs) to motivate and develop new collaborative processes for megaregional transportation planning. Ross noted that: “As metropolitan-level organizations, the interactions between multiple MPOs will be crucial to the success of megaregion transportation planning initiatives” [1]. The Center for Cooperative Mobility for Competitive Megaregions—a Tier 1 University Transportation Center—has been researching how MPOs could conduct megaregion/inter-regional transportation planning. This paper, part of a larger project determining how MPOs could practicably conduct megaregion planning in Texas, looked specifically at the MPOs in San Antonio, Houston, and Dallas, the “anchor cities” of the Texas Triangle. Ankner and Meyer explicitly identified the MPOs’ cyclical planning process as a ripe area for introducing strategic megaregional planning, noting that: “The metropolitan transportation planning process, which is used to update the metropolitan transportation plan every 3 to 5 years, should examine the role of metropolitan areas in a megaregion economy” [2].

Regional planning has evolved over the last century as a tool to enable collaboration between municipalities and achieve sustainable-shared outcomes, recognizing that factors affecting populations do not stop at jurisdictional lines. The federal requirement for MPOs recognizes the need for metropolitan or regional coordination in transportation investments and serves as a catalyst for broader regional planning, given the impact that transportation investments have on shaping the future development of cities. Megaregional planning is a natural evolution from regional planning as economies and transport systems become increasingly interconnected. Recent research has identified MPOs as the appropriate entity to conduct megaregional planning based on their scope of responsibilities. Ross noted the need to evaluate the future role of MPOs in a megaregion within the context of establishing new governance and funding structures to allow for conducting transportation planning at a megaregion scale and across MPO boundaries [1].

However, specific activities that MPOs should undertake and integrate into existing processes, functional capacities, and board structures have yet to be determined or analyzed. While evolving and increasingly integrated economic and political boundaries create a compelling case

for megaregional transportation planning, the role that MPOs can structurally play is limited by existing legal structures [3]. Loftus-Otway et al. identified areas within existing law that could allow MPOs to craft an initial framework for MPO megaregional transportation planning [3]. Considering these recommendations and the heightened need for megaregional cooperation among MPOs, this analysis examines the structure and form of the anchor-city MPOs in the Texas Triangle megaregion to identify opportunity areas where the three MPOs could integrate a megaregional focus. The recommendations that follow hone in on immediate organizational changes MPOs could enact within the existing legal and regulatory environment.

1.1. Regional Planning in the United States

As urban transportation networks and economies become increasingly connected, developing megaregional transportation planning would seem to be a natural progression of current regional planning practices. Instead of creating new institutional frameworks, megaregionalists can learn from barriers and challenges previously encountered in regional planning. The overarching thread connecting megaregional and regional planning is a focus on linking diverse interests to achieve goals based on identified shared interests [4].

Numerous regions across the United States have been conducting regional planning without formal organizational structures in place. Successful frameworks for regional planning that could be emulated for megaregional planning include ad hoc alliances, leaderless groups that encourage joint ownership, and collaborative process design to work toward shared outcomes. Boundary definitions, however, continue to serve as barriers for both regional and megaregional planning. Seltzer and Carbonell write about the importance of defining the boundaries of a region properly to avoid threatening local control and autonomy, while fully encompassing places, agencies, partners, and dynamics vital to the success of a regional plan [4]. Strategies and frameworks used in successful regional planning efforts could be scaled up for effective transportation planning at the megaregional level. Seltzer et al. identified three major motivators for regional planning to occur:

- 1) Mandate of plans and planning processes to ensure efficient coordination and resource allocation.
- 2) The rise of a specific need or problem that requires inter-jurisdictional solutions.
- 3) Regional planning may be the only or best strategy for seeking and identifying commonly held goals [4].

One example of an MPO regional alliance is the West Central Florida MPOs Chairs Coordinating Committee (CCC). This was established by statute in 1993 to coordinate projects deemed regionally significant, review regionally significant land use decisions, review all proposed regionally significant projects affecting more than one MPO, and institute a conflict resolution process throughout the West Central Florida region [5]. In 2007, the Tampa Bay Area Regional Transportation Authority (TBARTA) was created by statute to develop and implement a regional transportation Master Plan for the seven counties within the Tampa Bay region. CCC and TBARTA integrated their planning for the region more closely, and on July 1, 2016, CCC was merged into TBARTA. The CCC is now referred to as the TBARTA MPOs CCC. House Bill 7061, signed by the governor in 2016, contained the legislative language merging the CCC into TBARTA [5]. TBARTA MPOs CCC's major goal is to find and prioritize ways to address the transportation needs of West Central Florida through the support and cooperation of its member agencies, partner entities and advisory committees [6, 7]. TBARTA MPOs CCC ensures a consistent regional planning approach to develop regional solutions to transportation problems. It is responsible for:

- Cost-Affordable Regional Long-Range Transportation Plan
- Regional Congestion Management Process
- Air Quality Management System
- Regional Multi-Use Trails Element
- Major Investment Studies Coordination
- Regional Data Sharing and Mapping
- Regional Public Involvement Program

Within Texas itself the MPOs are aligned through the Texas Association of Metropolitan Planning Organizations (TEMPO). The bylaws of TEMPO allow any MPO representing any area or portion of an area to be eligible for membership [8]. A seven-member executive committee oversees and guides the activities. Meetings are to be held at least quarterly, and a quorum within meetings requires representation of 51% or greater of all member MPOs [8].

The development of MPOs was the first step in formally recognizing the need for metropolitan or regional coordination in transportation investments. The next steps in incorporating megaregional planning into the current transportation planning process is the recognition of this rising theory's importance by including megaregional planning considerations into the MPO planning process. As suggested by Seltzer and Carbonell, mandatory plans and processes are the first primary motivator [4]. Long-term successful megaregion planning will need to include ad hoc alliances formed from the identification of shared problems and desired outcomes and a commitment to work toward achieving identified goals.

1.2. A History of Metropolitan Planning Organizations

In the early 20th century, voluntary entities led regional planning efforts. Growing economic and social interdependencies in metropolitan areas motivated public agencies to coordinate land and transportation planning. While elected officials and administrators recognized the need for coordination between public agencies with a vested interest within a single location or metropolitan area, the lack of regulatory framework allowed for state departments of transportation (DOTs) to maintain ultimate decision-making power. This was further enforced by the administrative role of state DOTs in funding transportation assets.

Local governments believed that the 1956 Federal-Aid Highway Act silenced their voices on local transportation planning. The Act arrived during an era of automobile-centered suburban development and authorized construction of the multi-billion dollar, 41,000-mile interstate highway system [8]. The planning component of building out the interstate highway system primarily manifested itself in route alignment decisions. Local agencies were interested in making joint decisions to ensure state DOTs did not impose routes that would have a detrimental effect on

local development patterns. However, state DOTs were granted final authority to determine the extent to which local agencies were consulted. The consequent construction of the interstate system led to increasingly underfunded infrastructure for other transportation modes in many metropolitan areas. As the national landscape began to visibly change over the next decade, planners and local and federal agencies had to consider the desired outcome of their future transportation investments. In the aftermath of many uncoordinated regional investments that had disparate local impacts, an oppositional force to highway investments developed and became a prominent voice within many metropolitan areas, demanding a diversification of transportation investments funded by the federal government [8].

The Kennedy Administration first acknowledged growing discontent with the state of transportation planning in the 1960s. Federal aid for mass transit and additional incentives for metropolitan transportation planning was provided in the Housing Act of 1961, and in the Highway Act of 1962, where the “three-C” approach (referring to a continuous, comprehensive, and cooperative process) to transportation planning emerged [8]. The 1962 Highway Act made funding to areas with populations of at least 50,000 contingent upon “a continuing and comprehensive transportation planning process carried out cooperatively by state and local communities” (Pub. L 87-966). As these policies were passed, regional and metropolitan planning was on the rise in the backdrop, with voluntary collaborative initiatives creating inconsistency throughout the nation. Existing political and ideological tensions between decision-making powers and competing interests remained throughout the establishment of the three-C planning process. In many states, coordination was treated as a formality to access funding, without true collaboration to achieve mutually beneficial outcomes. The three-C approach to metropolitan planning remains in place as the planning framework carried out by MPOs today.

While funding and incentives were already available for existing regional planning entities, MPOs were first mandated in the Highway Act of 1973 [10]. Urban and environmental interests protested a 1972 bill reserved for funding highway interests and fought for diversifying funding based on existing transportation needs [11]. The federal government was supportive of regional planning as a way to seek both consensus and cost-effective approaches to regional planning of transportation investments. They solidified support by mandating the creation of MPOs for any urbanized area

(UZA) of 50,000 or more, as determined by the most recent census, funded by redirecting a portion of state funding from the Highway Trust Fund. For state DOTs to receive regional project funding, MPO approval was required to ensure alignment with regional plans and planning principles. At the time, this was viewed as a significant step forward in the formalization of the “Era of Comprehensive Planning” [11]. Local governments were pleased with the new check MPOs would have on state DOTs from making unilateral investment decisions that had consistently favored highways [11].

In the interceding years a series of surface transportation authorization acts, beginning with the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) (Pub. L. 102-240), would further refine the roles and requirements of MPOs. ISTEA was the first significant piece of legislation after the 1973 Highway Act to expand the collaborative role of MPOs. ISTEA emphasized the strength of MPOs as semi-autonomous and localized decision-making bodies for metropolitan areas [12]. The law strengthened the MPO role in decision-making by requiring that plans be fiscally constrained and abide by federal air quality standards, and by providing increased and flexible funding sources for MPOs to allocate [12]. ISTEA also encouraged multimodal investment strategies and provided greater clarity and guidance on the involvement of public participants and decision-makers in the MPO planning process by issuing fifteen comprehensive planning factors [12]. In 1998, the Transportation Equity Act for the 21st Century (TEA-21) (Pub. Law 105-178) consolidated the comprehensive planning factors into seven broad areas, which remain embedded in the ten comprehensive planning factors applied today:

- (1) Support the economic vitality of the United States, the States, metropolitan areas, and nonmetropolitan areas, especially by enabling global competitiveness, productivity, and efficiency;
- (2) Increase the safety of the transportation system for motorized and non-motorized users;
- (3) Increase the security of the transportation system for motorized and non-motorized users;
- (4) Increase accessibility and mobility of people and freight;
- (5) Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;

- (6) Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;
- (7) Promote efficient system management and operation;
- (8) Emphasize the preservation of the existing transportation system;
- (9) Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
- (10) Enhance travel and tourism [12].

1.3 Federal Regulations for Transportation Planning Processes

State DOTs and MPOs are now required to develop a series of planning documents to instruct the transportation planning process that must be interlinked and financially constrained. Each document requires specific projects to be outlined and defined in order to be eligible for funding streams as the plans progress from long-range to short-term implementation. MPOs have the option to include projects without identified funding sources, detailed separately, to provide flexibility for potential future funding source identification.

The 2012 Moving Ahead for Progress in the 21st Century (MAP-21) Act (Pub. L. 112-141) required MPOs to establish a performance-based approach to decision-making and transportation plan development [15]. Performance targets identified in alignment with state DOTs and public transit operators should be integrated into long and short-range plans: the Metropolitan Transportation Plan (MTP) and the Transportation Improvement Program (TIP), respectively. The MTP serves as a guiding document of regional goals with not less than a 20-year timeframe, detailing regionally significant transportation projects to be completed. The TIP is short-term and details all projects with identified funding sources expected to begin or be completed within its timeframe. Building on previous legislation, Fixing America's Surface Transportation Act (FAST Act) (Pub. L. 114-94), passed in 2015, explicitly encouraged MPOs to "consult with officials responsible for other types of planning activities" and clarified the role of transit providers on MPO boards by requiring MPOs that serve Transportation Management Areas (TMA) to include representation of providers of public transportation (23 Code of Federal Regulations [CFR]

§450.310 (14)). It also put greater emphasis on incorporation of intermodal transportation facilities and projects supportive of intercity bus systems.

Notwithstanding the evolution of legislation augmenting MPOs' roles and responsibilities, state governments have maintained primary responsibility for the distribution of regional transportation funding. Critics argue that the continuous subordinate status of MPOs hinders the opportunity for regions to grow multimodal options [12]. The level of impact an MPO can have largely depends on roles and responsibilities it shares with the state DOT as delineated in existing planning agreements.

Chapter 2. The Texas Triangle: A Case Study

Assessing the role and formation of anchor-city MPOs in the Texas Triangle megaregion today provides a template for how megaregional planning could take place within existing MPO processes based on existing resources, financial and operational restraints, and current legal structures.

MPOs are statutorily limited to funding projects within their boundaries. Thus, evaluating the development and amendment of boundary areas is crucial to determine how MPOs might develop new processes for megaregional transportation planning in the future. Each UZA with a population greater than 50,000 must be served by an MPO. UZAs with more than 200,000 individuals are designated as TMAs and must create a congestion management process. At a minimum, the MPO boundary must include the entire UZA, in addition to the contiguous area that is predicted to be added to the UZA in the next 20 years (23 CFR §450.312). After each census, MPO and TMA designations are adjusted or established. In situations where one UZA is served by more than one MPO, the MPOs must create a written agreement that outlines the coordination and division of responsibilities between MPOs (23 CFR §450.312).

The Texas Triangle Megaregion includes five TMAs: Alamo Area MPO (AAMPO) in San Antonio, Capital Area MPO (CAMPO) in Austin, Killeen-Temple MPO (KTMPO), North Central Texas Council of Governments (NCTCOG) in Dallas-Ft. Worth, and Houston-Galveston Area Council (H-GAC). The additional two MPOs in the Texas Triangle are in Bryan-College Station and Waco (Figure 1). Note that NCTCOG and H-GAC MPOs have combined functions with the regional Council of Governments, which presents many efficiencies in operations and tends to expand the number of resources available for transportation planning.

In 2005, authority to approve MPO boundary changes was delegated by the governor to the Texas Transportation Commission (TTC) [17]. Upon approval from the TTC, changes are submitted to the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) (Texas Administrative Code [TAC] 43 § 16.51.) In the case that two MPOs estimate that

the same non-urbanized area will be urbanized within a 20-year time frame, the MPOs, with TTC approval, may mutually agree upon boundaries to avoid overlap.

The MPOs (in cooperation with the state and public transportation operators) shall review the metropolitan planning area (MPA) boundaries after each census to determine if existing MPA boundaries meet the minimum statutory requirements for new and updated UZAs and shall adjust them as necessary (23 CFR §450.312). Both AAMPO and CAMPO expanded their boundaries in 2013 after local area commuting data was released from the 2010 census. Burnet County, approximately 55 miles northwest of Austin, was added to CAMPO [18]. The process of the boundary expansion authorization took four months. However, not all boundary changes are achieved so quickly. A similar but more prolonged process took place in the eighteen months between April 2012 and October 2013 to add the counties of Comal, Guadalupe, and a portion of Kendall to AAMPO.

While AAMPO and CAMPO have recently expanded their boundaries, federal law does not require boundary consolidation but requires that “At a minimum, the MPA boundaries shall encompass the entire existing UZA (as defined by the Bureau of the Census) plus the contiguous area expected to become urbanized within a 20-year forecast period for the metropolitan transportation plan” (23 CFR, §450.312 (a) (1)). Consolidation, however, requires the integration of long- and short-range plans, and federal regulatory code recognizes this may not always be appropriate if the “size and complexity” would make one MPA infeasible for comprehensive planning. Additionally, the variation in size of MPOs can vary significantly, which affects the availability of staff and monetary resources to conduct such a transition. This phenomenon creates the first hurdle in creating any form of roadmap for MPO megaregion planning. CAMPO and AAMPO, which share a border along their southern and northernmost edges respectively, will serve as a good example for whether this status quo can be sustained or may need to change over time. Future census data and commuting trends are expected to continue to expand density outwards within the two regions and may warrant reconsideration. Additionally, CAMPO and AAMPO serve as an example of two MPOs with ongoing attempts to partner on projects, such as the attempt to implement a Lone Star Rail District. The project would have connected the Austin and San Antonio regions by high-speed rail. The nuances of this project and its related

difficulties are not explored in this paper; an evaluation of this project would be a valuable case study on the relevant factors and entities that should be considered when coordinating across multiple regions. Other efforts, such as My35, which encourages entities to conduct long-term planning along the statewide IH-35 corridor, have been ongoing for several years. However, because this project is led by the Texas Department of Transportation (TxDOT), the perspective and approach to coordination between regional entities is different than is evaluated in this paper.

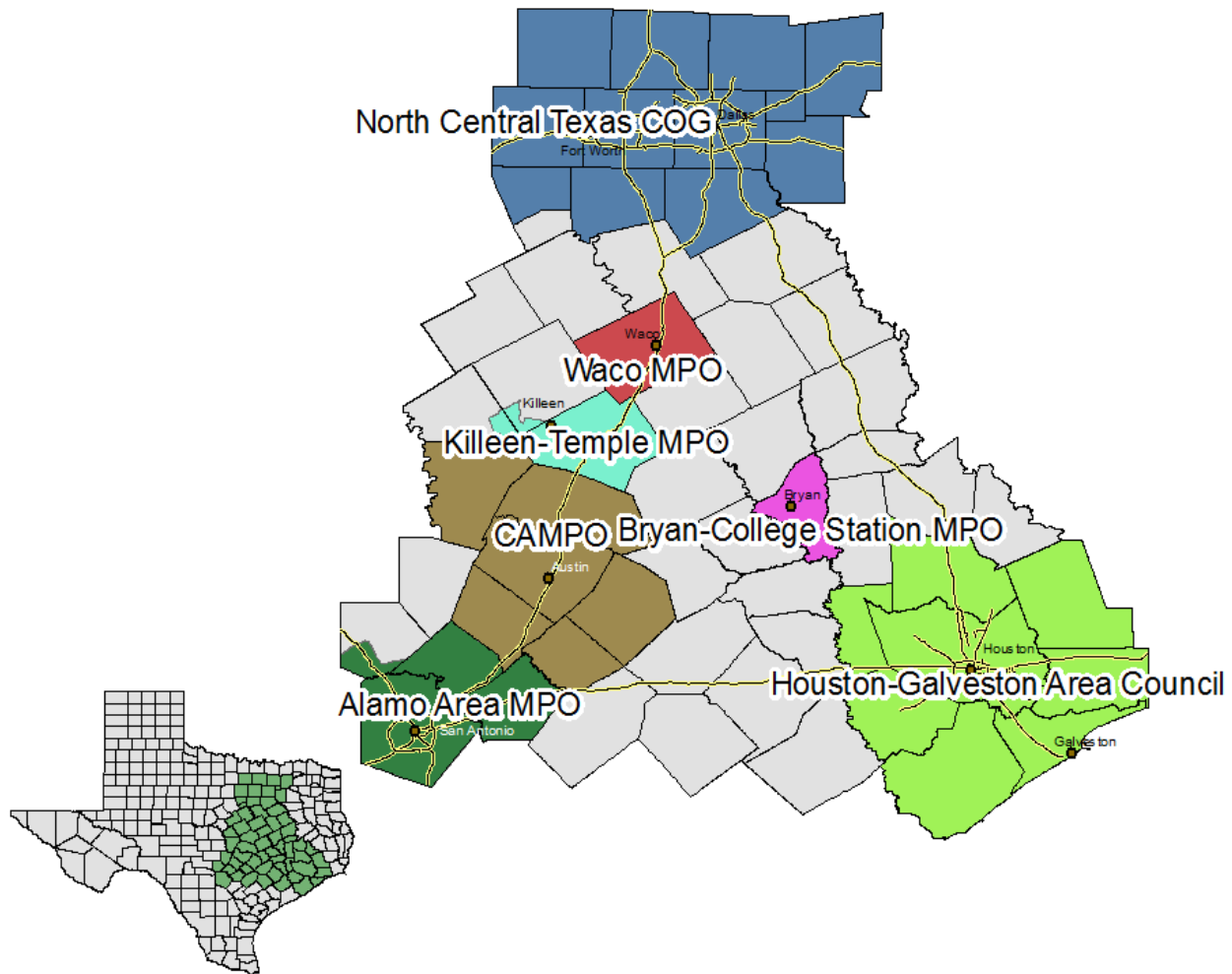


Figure 1. MPO Boundaries in the Texas Triangle

In 2016, the FHWA proposed regulatory changes to increase MPO coordination and reform designated planning areas [19]. Among the proposed changes was a definitional change to MPAs, potentially requiring MPOs existing within a single UZA to merge after the 2020 Census, and for MPOs to begin creating unified planning work products if they co-exist within a single MPA [19]. This proposed rule spurred extensive pushback from state DOTs and MPO

associations, who cited administrative and financial burden, difficulty in coordinating across state lines, and the successful implementation of processes and projects under current regulations. The American Association of State Highway and Transportation Officials specifically recognized the difficulty of merging planning documents between MPOs with different air quality conformity requirements, noting that “two MPOs, each in a different nonattainment/maintenance area, or in nonattainment/maintenance to different criteria pollutants, would face a complex situation when demonstration conformity of a combined or coordinated TIP or plan to meet various attainment deadlines, standards, or Motor Vehicle Emission Budgets” [20].

While state DOTs and MPOs cited the desire to continue under current regulations and move forward with voluntary coordination, the FHWA has noted it wanted to strengthen the role of MPOs in the planning process and enhance a regional vision in transportation decision-making by reducing competition between MPOs with adjacent regions and interrelated priorities [19]. Referring to current regulations, the FHWA specifically stated: “While these statutes require that States work in cooperation with the MPOs on long-range statewide transportation plans and STIPs, the extent to which MPO voices are heard varies significantly” [19]. The proposal from FHWA seems to indicate support and recognition of the need to bolster the voices of MPOs to sustain the initial grass roots efforts they supported in transportation planning decisions. For MPOs to play a significant role in megaregional planning, improved coordination processes will be critical. However, the difference in operational capacity presents an ongoing difficulty, as the ability to dedicate staff to voluntary megaregion planning will vary across all MPOs. Notwithstanding this push, the MPO consolidation rule was rescinded by statute with overwhelming bipartisan support.

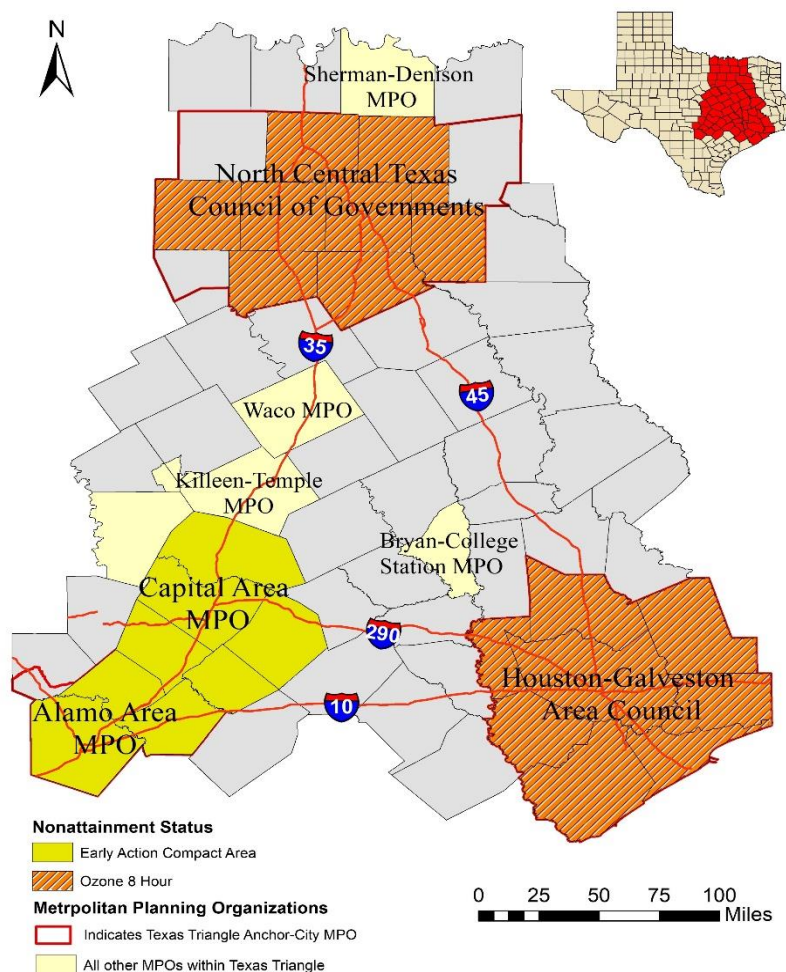


Figure 2. Designated Nonattainment Areas in the Texas Triangle

Maintenance areas are areas that were previously designated as nonattainment areas [22]. Figure 2 shows the designated nonattainment areas within the Texas Triangle megaregion.

States are required to develop plans to meet and maintain air quality standards in a State Improvement Program (SIP) [21]. Transportation conformity applies to transportation projects, plans, and programs identified to potentially receive federal funding for execution and implementation, i.e., those developed by MPOs.

In MPO areas designated as nonattainment or maintenance areas for transportation-related pollutants, the MPO planning work products must conform to the SIP air quality standards and

Another area that adds extra layers of complexity in transportation planning at a megaregional level is that of attainment or maintenance area status under the Clean Air Act (CAA) (Pub. L. 88-206) in which MPOs are part of the process required to mitigate negative impacts to National Ambient Air Quality Standards [21, 22]. Nonattainment designations can affect project eligibility and prioritization, requiring prioritization of projects that contribute to reduction in congestion and improvement of air quality (23 CFR § 149). *Nonattainment areas* are areas designated as those that do not meet air quality standards.

conformity regulations created by the Environmental Protection Agency (EPA) (Texas Admin. Code, 43 §16.51). Specific regulations can be found in federal and state code related to MPO planning products. Most notably, MPOs in areas designated as nonattainment are required to update the long-range MTP at least every four years, as opposed to five; MPOs in areas without a nonattainment designation may update MTPs every 5 years (49 CFR §5303). The two nonattainment designations with conformity requirements in the Texas Triangle are in the Dallas-Ft. Worth and Houston-Galveston-Brazoria areas.

A nonattainment or maintenance designation requires the affected areas to conduct analysis to estimate emissions that caused the nonattainment designation to occur [20] and demonstrate that potential transportation projects will not negatively impact or exceed emission limits found in the SIP [23].

This current process does not easily lend itself towards a megaregional approach for transportation planning, as MPOs within one megaregion will have varying designations. This is the case in the Texas Triangle, where it is not immediately clear how MPOs conducting these activities could coordinate across the region, or what benefit this drastic change would provide.

2.1. Planning Agreements

Once an MPO in Texas has been established, the organization executes a planning agreement with TxDOT that specifies accountability and responsibilities between the two entities as they cooperatively carry out transportation planning. In addition to the department planning agreement that is required by TxDOT rules, the MPO also executes an agreement with the public transportation operators and TxDOT per 23 CFR 450. Federal rules also require nonattainment areas to develop cooperative agreements with both TxDOT and the Texas Commission on Environmental Quality.

A planning agreement delineates responsibilities between the MPO and TxDOT, identifying each party responsible for explicit activities. TxDOT uses a template that can be modified during the contracting process. A review of the active planning agreements at the Texas Triangle anchor-

city MPOs shows no significant differences in responsibilities that are crucial to the transportation planning process (Table 1). One minor discrepancy between the three planning agreements is the designated party responsible for hiring and terminating the MPO planning director. At AAMPO, this oversight is delegated to the policy board, whereas the at-large council of governments at H-GAC and NCTCOG retain this power. A second distinction within the agreements is the party in control of setting procurement procedures, which also varies among the MPOs based on the organizational structure and whether there is a controlling body above the Policy Board. Beyond these relatively minor changes to TxDOT's sample agreement, the anchor cities are nearly aligned in their responsibilities with respect to TxDOT, potentially providing opportunity for future alignment and definition of roles with a megaregional focus. All three planning agreements contain a subsection on the Unified Transportation Work Plan (UTWP), which outlines federal and state requirements (as set out at Texas Transportation Code Title 6 Roadways, Chapter 201 General Provisions and Administration at Subchapter P Unified Transportation Program at Section 201.991 that requires MPOs with TxDOT to list all projects that TxDOT intends to develop or begin construction on during the program period) for the plan that is submitted to TxDOT. In the three MPO contracts, Article 7.I. addresses federal limitations that require federal planning funds to be used exclusively on corridor and subarea level planning within an MPO's boundaries. It is currently untested as to whether MPOs could spend local funds on corridor or subarea studies that extend beyond their borders. In working towards local transportation planning with a megaregional focus, this could be a key area where TxDOT could enable and encourage further exploration of megaregional studies, still within the confines of federal code. All three anchor-city planning agreements were valid until September 30, 2018. The next contract cycle may provide an opportunity to consider adding language that explicitly allows for local funds to be used for corridor planning with a megaregional focus.

Table 1. Primary Responsibilities Delineated in Anchor City and TxDOT Planning Agreements

Article 1. Agreement Period	Establishes terms for the duration of the contract, not to exceed two years.
Article 2. Responsibilities of the Department	Itemizes the responsibilities of TxDOT: 1) define department role in developing of planning documents, 2) ensure that TTC allocates MPO funds on an annual basis, 3) handle the distribution of federal funds, 4) provide technical assistance and guidance as needed and requested by the MPO, 5) promote an intermodal transportation system within the metropolitan area, and 6) communicate any departmental concerns related to topics covered in the agreement.
Article 3. Responsibilities of the MPO	Itemizes the responsibilities of the MPO: 1) create planning documents, 2) ensure conformity to federal and state laws and regulations, 3) hire and retain an effective and knowledgeable staff that can perform the duties of the organization, 4) collect and maintain data on a timely basis, 5) submit required deliverables to the department on time, and 6) communicate MPO concerns on any topics covered in the agreement.
Article 4. Responsibilities of the MPO Policy Committee	Itemizes the responsibilities of the MPO's Policy Committee: 1) ensure compliance with federal law, 2) adopt a long-range plan that is consistent with the STIP, 3) retain the right to hire, supervise, evaluate, and terminate the MPO planning director, and 4) provide guidance and direction to the MPO planning director (AAMPO only).
Article 5. Responsibilities of the Fiscal Agent	H-GAC and NCTCOG act as the fiscal agents for their respective MPOs, whereas Brazos County is designated as the fiscal agent for AAMPO. Responsibilities of the fiscal agent include: 1) maintain accounting records consistent with state and federal law, 2) provide adequate funding to the MPO to execute activities identified in the Unified Planning Work Program (UPWP), 3) provide human resources services and other employment benefits consistent with the fiscal agent's own practices, 4) establish procurement and purchasing procedures, and 5) hire, supervise, and terminate the MPO Planning Director (H-GAC and NCTCOG only).
Article 6. Responsibilities of the MPO Transportation Planning Director	Itemizes the responsibilities of the MPO planning director, including: 1) administer the UPWP, 2) act as liaison with TxDOT, 3) oversee MPO activities, 4) submit required deliverables in a timely manner, and 5) present MPO planning documents to the Policy Committee.
Articles 7-17	Other sections include: 1) components of the UTWP, 2) authorized compensated activities, 3) required reporting, 4) document retention, 5) work performance and conduct standards, 6) resolution of disputes, and 7) non-collusion, subcontracting, termination, force majeure, and other legal requirements.

2.2. MPO Transportation Planning Process

To ensure an equitable and outcomes-focused portfolio of projects and distribution of federal funds, an MPO's primary role is coordination of the transportation planning process. To maintain eligibility to receive federal funds, MPOs must maintain a cooperative, performance-driven process aligned with federal and state requirements and approval processes [24]. As needs are determined, regionally significant projects are submitted during a "call for projects," typically requested prior to the production of the MTP. Projects are scored and reviewed based on planning and outcome priority criteria set by the FHWA and FTA and are subsequently evaluated for eligibility to receive available funding. For a project to receive funding, it must be included in the MTP and the TIP. The UTWP functions as an annual budget document that identifies spending on MPO operations and activities to support production of the MTP and TIP. Relevant activities can include travel demand modelling or specific studies relevant to long-range planning decisions and project identification. All three planning documents are fiscally constrained and are regulated by both federal and state statutes (Texas Transportation Code Chapter at Section 201.991 (2)) requires that the UTWP list all projects that the department intends to develop or begin construction of during the program period, including the project selection criteria and defining program funding categories and each major phase of the project from planning to construction). As Figure 3 conveys, each document has a different "outlook" planning timeline.

The TIP is one of multiple tools designed to enable MPOs to facilitate long- and short-range transportation planning programming and decisions for UZAs. A megaregional strategy or program of investments could be articulated in each MPO's TIP. A section on megaregional planning or megaregional projects could require TxDOT to include a section in the template provided to MPOs to maintain consistency in creation of the STIP. The requirement to identify innovative financing techniques could serve as a catalyst for MPOs and the state DOT to discuss funding opportunities and potential trade-offs between megaregional projects and regional or local projects.

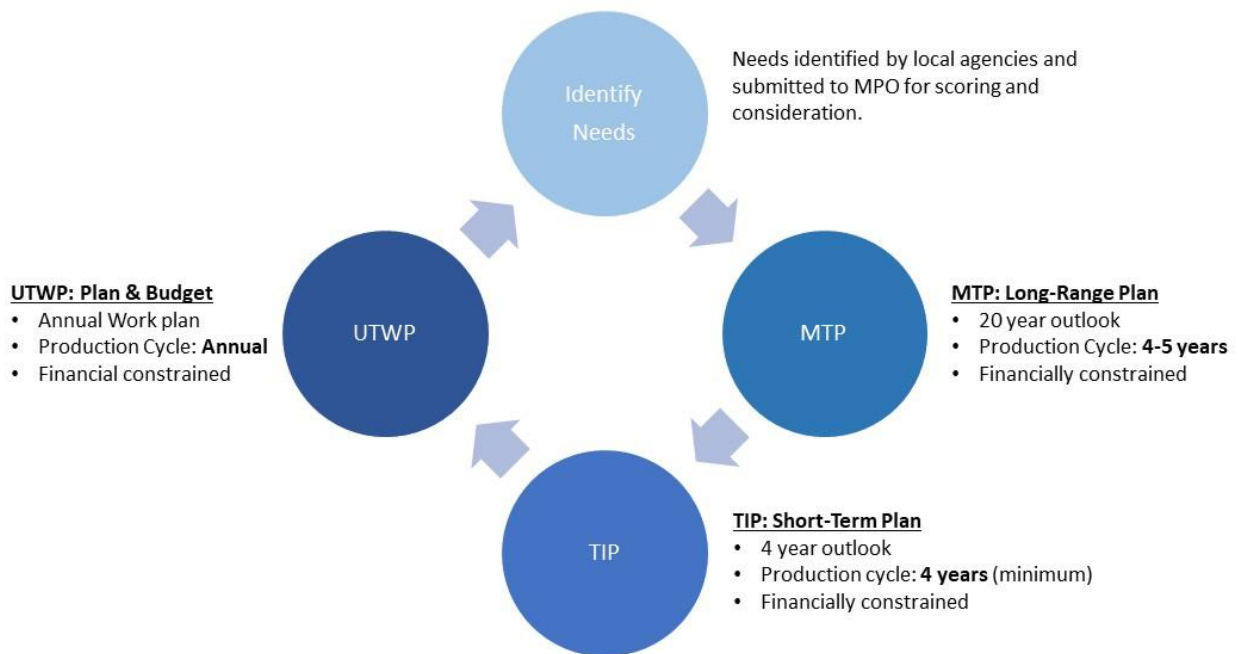


Figure 3. Transportation Planning Life Cycle at the MPO

2.3. Anchor City Transportation Policy Board Composition and Representation

Moving towards a megaregional approach by integrating long-range planning to better facilitate the movement of people and goods in the Texas Triangle will require an expansion of the three-C process among MPOs. In 2010, the three anchor-city MPOs in the Texas Triangle represented 56% of Texas's total population. Ross and Foster have suggested that true megaregional planning will require solutions focused on governance, not government [25, 2]. In this vein, analysis of the bylaws of the three anchor-city MPO Transportation Policy Boards (TPBs) identified discrepancies in organizational structure and opportunities for more formal collaborative governance.

Bylaws for MPO Policy Boards govern the size and composition of the board. The makeup of the three anchor-city TPBs varies in size and representation, which can impact how transportation planning projects in the region are prioritized and approved. On the TPB, there is overlap in constituent representation between members of overlapping jurisdictions, such as city

and county representatives from the same area. Some TPB members do not have direct constituents, such as TxDOT representatives. Consideration of how representation varies among anchor cities in the Texas Triangle can inform the potential impact on decisions made at the board level.

There is considerable variation in board composition among the Texas Triangle anchor-city MPOs. H-GAC has an MPO 2010 population estimate of 5,891,999 and a TPB of 28 that represents 210,429 citizens per member. AAMPO has a 2010 population estimate of 1,988,188 and a TPB of 18 that represents 110,455 citizens per member. NCTCOG has a 2010 population estimate of 6,371,773 and a TPB of 44 that represents 144,813 citizens per member.

Although NCTCOG has 44 voting members, each member represents a larger number of citizens than their counterparts at AAMPO because of the MPO's size. With a significantly smaller TPB than NCTCOG, H-GAC members represent the most citizens, at 210,429. Beyond disproportionate sizes, all three anchor-city TPBs have an overrepresentation of suburban and rural communities compared to population. Studies suggest that MPO boards' de-emphasis of the urban cores helps TPBs reach consensus [25]. However, little analysis has been conducted to discern how the discrepancy of direct representation between urban and suburban/rural interests varies within one MPO or on a regional scale, and how this may change the prioritization of transportation projects.

Beyond the implications of direct representation, other compositional differences among the anchor-city TPBs exist. AAMPO, for example, allows seven ex-officio non-voting members on its TPB to participate in discussion, including executive sessions, but cannot vote. Its 18-voting-member TPB includes one voting representative from TxDOT, one direct transit authority representative, four elected officials from the City of San Antonio, and three from Bexar County. All other entities represented have one voting representative. H-GAC's 28-voting-member TPB includes two TXDOT representatives, one direct representative of transit, and three representatives for the City of Houston. The entities within the NCTCOG policy board that have more than one representative include the City of Arlington; Cities of Dallas, Highland Park, and University Park; City of Fort Worth; Dallas County; and Tarrant County. There are also two

TxDOT representatives, one rapid transit representative, and three members representing transportation authorities. Non-voting members can be appointed from the FHWA, FTA, TxDOT's Austin office, the local transit authority, a mobility coalition, the council of governments, and another non-governmental member determined by the TPB. Best practices for nonprofit and public interest groups call for inclusion of communities that are served within decision-making bodies as an effective way to integrate diverse perspectives. Neither H-GAC nor NCTCOG's bylaws allow non-voting members to participate. In the interest of representation and future megaregional coordination, this may be a valuable avenue to pursue moving forward.

Chapter 3. The Role of Performance Management

Megaregional analysis by many authors has historically identified MPOs—a term that includes councils of governments and regional planning organizations—as a logical home to develop megaregional (and inter-regional) transportation planning [28]. This section, determining how MPOs could practicably conduct megaregion planning in Texas, looked specifically at the MPOs in San Antonio, Houston, and Dallas, the anchor cities of the Texas Triangle. Like other MPOs around the country, these agencies have been developing performance measurements after the adoption of MAP-21 in 2012, (P.L. 112-141) [29]. However, little effort has been made to integrate performance metrics across the megaregion.

The analysis evaluates how, when, or if performance measures could play a role in developing MPO megaregion planning activities within the Texas Triangle. The originating thesis posited for this analysis, was that MPOs might not be able to achieve the concurrent goals of megaregion planning and the development of performance measurement metrics, given constraints of time, resources, and politics.

3.1. History of Performance Management

Performance measurement and performance management have come to define public agencies' data-driven strategic and managerial decision-making processes. While often used interchangeably, the two processes identify separate components of the same performance strategy. Performance measurement is defined as “the systematic, orderly collection of quantitative data along a set of key indicators” [30]. When conducted thoroughly, performance measurement is continually incorporated into all facets of an organization, including strategic planning, program implementation, and performance management [30, 31].

The strategic collection of data for performance measurement ensures that decision-making is rooted in quantitative reasoning. The intentional use of performance measurement for decision-making was expected to reduce the likelihood of politically motivated decision-making in public administration. Since the 1980s performance measurement has increasingly become the dominant performance model in the public sector [31]. Performance management, whereby data

collectors and decision-makers implement performance measurement goals, has occurred with varying degrees of effectiveness as the trend has proliferated.

One of the major underlying assumptions driving performance management in the public sector is that government is inherently inefficient and decision-making structures can always be improved [32]. Inefficiency and politically driven decision-making are commonly found within regional-scale initiatives. Regional projects involve multiple jurisdictions with overlapping boundaries, which requires collaborative strategic planning between stakeholders with diverse perspectives and interests. The transportation-planning field is particularly susceptible to this weakness within its planning processes, with multiple agencies and stakeholders with specific agendas often pulling in divergent directions.

From a public-sector management perspective, authors have noted that the perceived inefficiency and lack of focus on results is a byproduct of public managers' need to focus on regulations, procedures, and compliance [32]. Cross-jurisdictional and contradictory priorities create additional barriers to implementing a process like performance management that requires a considerable upfront investment of time and resources. This pattern in the public sector has frequently detracted from a long-term results-oriented strategy, instead compensating with short-term goals that have often focused on budgetary needs and other programmatic inputs of the moment.

Transportation planning suffers from an overreliance on outputs that often reflect an amount of programmatic production: miles traveled, minutes of delay, lanes added, and other similar measurements. However, with the addition of indicators to a performance measurement system, transportation planning agencies can redefine and refine their larger goals and missions. Though outputs have a role in this, indicators allow organizations to measure how outputs might ultimately contribute to outcomes. Thus, outcomes in the transportation planning field might instead measure items like changes in multimodal adoption or overall system efficiency—more complex states that are impacted by many programming areas and contribute to the organization's larger indicators.

Public agencies may face a number of barriers in the implementation of performance management. Most notably, the development of performance measures, if done effectively, requires the agency to define a core mission that is represented by measurable key indicators. Public agencies often have multiple and sometimes conflicting goals. Transportation planning particularly embodies this contradictory condition, whereby many state and federal agencies are simultaneously trying to increase system safety and improve efficiency and capacity, which may not always go hand in hand. Further, once indicators and quantitative measures are chosen, an agency's technical capacity may inhibit them from realizing their ideal measurements [32]. This can lead to the selection of more general and less accurate measures that do not directly relate to or measure desired outcomes. Additionally, public agencies may collect performance measures only to comply with reporting requirements. Indicators and measures may be implemented, but performance reporting itself does not guarantee its use in subsequent management [30] [31]. Such tension between simple adoption and actual implementation is apparent at many public agencies that may not have the bandwidth for the necessary analysis of data once collected, or the political will to make data-driven decisions. Thus, if an individual organization or entity is failing to implement performance management, aligning measurements across jurisdictional boundaries remains an even greater challenge along large connected economic regions and corridors.

3.2. MAP-21 Performance Goals

MAP-21, passed in 2012 (23 United States Code (USC) 150(c)(6)), was an attempt to “refocus” the Federal-Aid Highway Program around national performance goals [29]. Historically, MPO and state DOTs conducted performance measurement according to state statutes or as discretionary activity. MAP-21’s goal was to align local decision-making processes across the nation by mandating the integration of performance measurement through the creation of seven national goals. Each goal established in the law has a corresponding “goal area” and states are required to set performance targets that work towards these goals.

The United States Department of Transportation (USDOT) established minimum standards for the seven goal areas outlined in MAP-21 within 18 months of the bill’s passage and gave states

one year to create state-level performance targets after the rulemaking process. The bill requires that states coordinate with MPOs to establish performance targets. Table 2 shows MAP-21's national performance goals.

Table 2. MAP-21 National Performance Goals (23 U.S.C 150 (b) §1203)

Goal Area	National Goal
1. Safety	To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
2. Infrastructure condition	To maintain the highway infrastructure asset system in a state of good repair
3. Congestion reduction	To achieve a significant reduction in congestion on the National Highway System
4. System reliability	To improve the efficiency of the surface transportation system
5. Freight movement and economic vitality	To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
6. Environmental sustainability	To enhance the performance of the transportation system while protecting and enhancing the natural environment
7. Reduced project delivery delays	To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

Source: 23 United States Code, 150 (b) §1203

3.2.1. Performance Measurement in the Texas Triangle Anchor-City MPOs Before and After MAP-21

In 2015, TxDOT initiated a new statewide long-range strategic plan called the Texas Transportation Plan (TTP) 2040 to focus and consolidate state goals with national performance goals under MAP-21. The TTP is a multimodal plan that identifies the state's performance measures required in MAP-21, in addition to the goals of the agency's 2015–2019 Strategic Plan.

Unlike previous state transportation improvement plans, the TTP is Texas’s first performance-based long-range plan [33].

The TTP states that its primary goal is to focus on performance measurement to inform investment policies and strategies, i.e., conduct performance management based on performance measures [34]. Through the mandate of performance measurement, TxDOT designed the TTP under the state’s existing overarching fiscal goals and previous biannual strategic plan goals.

This framework will assist in optimizing MAP-21 goal areas identified within the TTP. Figure 4 shows the six goal areas of the TTP, created by incorporating and consolidating national goals with goals identified in the TxDOT strategic plan. Figure 4 shows TxDOT’s plan goals and umbrella strategy of financial sustainability; progress in an identified area is dependent upon the identification of an adequate funding source. The only TTP goal area that is not directly connected to a MAP-21 performance goal is the goal of customer service. Instead, this goal is derived from the TxDOT Strategic Plan’s goal of becoming a “best in class” agency [35].

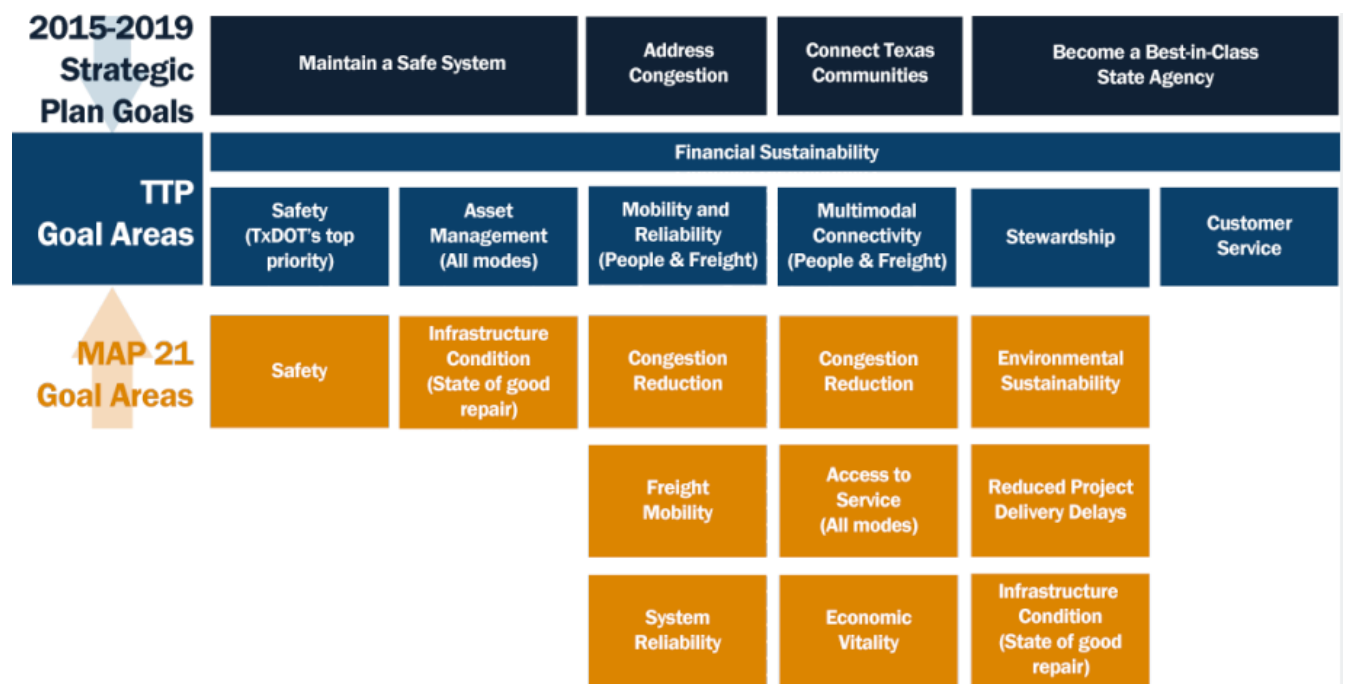


Figure 4. Development of Texas Transportation Plan Goal Areas [33]

3.2.2. Analysis

MPOs of different staffing and administrative capacities have noticeable differences in their ability to go beyond federal mandates within the long-range plans. For MPOs with a smaller staff such as AAMPO, MAP-21 may serve as a catalyst to implement new performance measures that they may not have had the capacity to prioritize previously. MPOs with a larger administrative capacity that utilized and tracked performance measures prior to MAP-21 will need to adjust or collect new data elements that they measure to evaluate progress towards national goals. This may mean that these MPOs will need to prioritize the types of data points collected, potentially leading to an interruption of historical collection of other measures that may be of relevance to the MPO but not mandated by new requirements.

Six years after MAP-21's adoption, the Texas Triangle anchor-city MPOs set safety targets or agreed to support those established by TxDOT in February 2018 [45]. Overall, the process and rollout directed by USDOT has resulted in a slow and gradual assimilation of performance measures. The ultimate impact of the slow-moving implementation remains unclear. The next step in the process at the time of writing this report is for MPOs to include targets for 'safety' in MTPs that come after May 27, 2018, which will be included in the MTPs currently under development by H-GAC and NCTCOG. AAMPO and other MPOs in the Texas Triangle will be required to include safety performance measure targets and transit asset management targets in subsequent MTPs. Under current processes, MPOs were required to act by February 27, 2018, and choose to either adopt their own safety targets or commit to currently undetermined state safety targets determined by TxDOT [45]. The five performance measures include:

- Number of fatalities
- Rate of fatalities (per 100 million vehicle miles traveled)
- Number of serious injuries
- Rate of serious injuries (per 100 million vehicle miles traveled)
- Number of non-motorized fatalities and serious injuries [45]

The option for large metropolitan regions to adopt targets in support of TxDOT targets may slow local, regional, and inter-regional progress on more aggressive performance measurement goal,

or on strategic initiatives set at the local level that are not associated with the National Highway System (NHS), but are critical connections or projects needed at the local level to improve mobility in arterials and local streets. On the other hand, statewide objectives can serve as comprehensive targets that MPOs can integrate and report on as measures for progress of the Texas Triangle. However, if MPOs are not required to adopt more specific targets, this could result in large MPOs in the Texas Triangle being held to a less rigorous standard relative to the disproportionate impact these large urban areas have on the statewide transport system. As an example, the top ten roadways on the 2017 list of the 100 most congested roadways in Texas were highways connecting the three anchor regions [46]. Without a requirement to set MPO area-specific targets, these large MPOs may have no incentive to prioritize funding projects and solutions to relieve congestion impacts beyond their region.

The slow approach to integrating performance measures and targets throughout MTPs paints a complex picture for anticipating meaningful short- or medium-term outcomes. Data-driven decisions rely on dependable data collected over a period of time to effectively measure progress. The status quo currently limits the ability of Texas Triangle MPOs to make meaningful progress in adjusting or creating new performance measures until they cycle through the production of several MTPs, leading eight or more years into the future. Additionally, changes with implementation of new performance measure goal areas outlined in the FAST Act will also determine whether any consistency between performance measures can be achieved and lead to comparable outcomes of determined goals.

It is unclear how each MPO will prioritize projects between the seven performance measurement areas to optimize outcomes of the overall system. This creates an ongoing barrier to coordination among MPOs in Texas. Limited by the ability to plan projects within their boundaries, each MPO has a unique set of interconnected local and regional systems to manage in order to achieve optimal performance within the metropolitan area. Prioritizing coordinated projects would likely lead to added time and complications for project implementation—an unappealing route to choose absent a specific incentive or funding bucket.

Finally, an additional potential barrier to coordination between regions in the Texas Triangle is the different methods used to estimate future demand on the transportation system. Travel demand model predictions are highly affected by the population and demographic projections used for each region. NCTCOG and H-GAC use different travel demand models than AAMPO. The differences in predictions and use of models are determined by resource and data collection constraints. All models are created based on the demographic and network data available to be used in each simulation. The use of different assumptions and/or different projections across the megaregion may also inhibit seamless coordination across the three large metropolitan regions. A 2010 study on best practices for effective use of microsimulation models drew no consensus across transportation entities on software packages best suited for congestion pricing, new highway infrastructure improvements, regional modeling and planning studies, and multimodal planning [44].

3.2.3. Regulatory Application Trade-offs

The existing performance measures collected prior to MAP-21 implementation by the MPOs reflected discrepancies in resource availability. However, even comparatively well-staffed agencies such as H-GAC found that they were unable to develop their own targets during the MAP-21 target setting period. While attributed to the truncated period after federal rules were set, H-GAC was also set back by inclement weather and ultimately decided to use TxDOT's safety performance target. As H-GAC's Technical Advisory Committee reported out after the decision:

“In December 2017, the Technical Advisory Committee reviewed staff analysis of safety targets for crash reduction and the staff recommendation to support Texas Safety performance targets. Due to inclement weather, TAC was unable to meet in January. In order to remain compliant with federal deadlines for adoption of an MPO safety targets, TPC approved Resolution No. 2018-04 to support the State's safety targets at the TPC meeting on January 26, 2018” [47].

This particular set of circumstances illustrates how resource constraints coupled with a force majeure event can affect the ability for a large region to adhere to target deadlines. By choosing to support the state targets, an MPO skips an essential step in the performance management

process. Having the option to skip this step relinquishes the ability to guarantee that an MPO will have optimal targets. Committing to such targets at the state level risks the adoption of targets that are inappropriate for specific regions and offers little hope that the implementation of performance measurement will lead to improved outcomes. Furthermore, it is still unclear if H-GAC will be required to collect any new performance measure data to report on state targets. Without the intentional selection of performance measures by each MPO, the window of opportunity to begin incorporating performance measures into an overarching performance management strategy is reduced.

3.2.4. Performance Management Strategies

A critical component of aligning performance measures across regional entities is identifying tangible performance management strategies from the onset of the performance measure and target selection process. Alignment of performance management strategies will be necessary for future coordinated planning among MPOs to maximize the use of performance measures to develop regionally connected plans. If this type of strategy is not explicitly outlined from the beginning, MPOs risk creating a disconnect between performance measure collection and the decision-making that performance management is meant to inform [32]. Deciding on specific performance management strategies and incorporating them into an agency's bylaws or a memorandum of understanding with other MPOs may facilitate the ease of transfer of useful data. Decisions can then be made to determine how much time should lapse before a change of strategy is needed if an individual MPO is not on target to meet certain goals. This will also provide decision-makers motivation to continuously analyze and assess performance measures.

3.3. Strategic Area Identification

MPOs are also tasked with establishing vision and goals for their metropolitan region, while staying consistent with federal guidelines and legislation to access funding for projects. The number of plans involved in the transportation planning process embodies a complicated bureaucratic system that administrative staff at the MPO level must navigate. Each MPO must align with its respective DOT; both entities must then align with current strategic plans created at the federal level.

The USDOT Strategic Plan produced at the beginning of each new administration provides a framework for long-term, outcome-oriented objectives and the steps required to bring the vision to fruition [49]. The Government Performance and Results Act of 1993 (GPRA) (Pub. L. 103-62) requires USDOT strategic objectives to be tied to performance goals and indicators [49]. In addition, the USDOT develops an Annual Performance Plan (APP) to set yearly quantitative targets to achieve performance goals and specific indicators. An annual evaluation of performance goals and indicators in both the APP and Strategic Plan informs USDOT budget formation and legislative reauthorization decisions [49].

Strategic goals included in the USDOT Strategic Plan of 2018–2022 include:

- “Safety: Reduce Transportation-Related Fatalities and Serious Injuries Across the Transportation System
- Infrastructure: Invest in Infrastructure to Ensure Safety, Mobility and Accessibility and to Stimulate Economic Growth, Productivity and Competitiveness for American Workers and Businesses
- Innovation: Lead in the Development and Deployment of Innovative Practices and Technologies that Improve the Safety and Performance of the Nation’s Transportation System.
- Accountability: Serve the Nation with Reduced Regulatory Burden and Greater Efficiency, Effectiveness and Accountability” [49]

USDOT also monitors and evaluates performance through other activities, including conducting surveys such as the Commodity Flow Survey and National Household Travel Survey, and tools like the FTA Transit Award Management System (known as TrAMS) and Safety Management System [49].

3.3.1. Changing Goals of USDOT Strategic Plans

The USDOT FY 2014–2018 Strategic Plan, *Transportation for a New Generation* [50], focused on the importance of the ability for transportation systems to adapt to emerging trends and project populations to move people and freight more effectively and efficiently [50]. The

Secretary of Transportation acknowledged the need to consider climate change, crumbling infrastructure, changes in energy production, emerging technologies, and diverse and aging populations, as well as increased migration patterns of those populations to new and continuously emerging economic regions [50]. The Texas Triangle is one of these identified emerging economic regions—an area within which transportation investments must be coordinated in order to achieve desired outcomes in line with national policy.

Transportation for a New Generation was the first USDOT Strategic Plan produced after the adoption of MAP-21 [50]. The plan included numerous strategies objectives and goals to address strategic areas. Below is an example of one breakdown of a strategy to measure the achievement of strategic goals:

Strategic Goals: Safety

Strategic Objective: Improve the safety of transportation systems across all modes through mitigation and prevention of behavior, sharing data, and conducting analysis.

Strategies:

- Reduction of roadway fatalities and injuries for all system users
- Reduction in fatalities in aviation; railroad; transit; pipeline, hazardous materials transport; maritime-related
- Reduction in fatalities and injuries from illegal drug and alcohol use/misuse [50]¹

The strategic goals and strategies for achievement listed above are examples of national performance indicators instigated by MAP-21.

Table 4 illustrates USDOT’s Strategic Plan priority goal areas from the last four strategic plans. Plans adopted in 2006 [51], 2012 [50], and 2014 [50] under the Bush and Obama administrations had many areas of consistency. The difference in strategic plan goal areas based on presidential administration provides a cyclical change in priorities that MPOs must continue to monitor from

¹ Summarized from .United States Department of Transportation. *Transportation for a New Generation US DOT Strategic Plan Fiscal Years 2014-2018*, and, *Transportation for a New Generation. USDOT Strategic Plan Fiscal Years 2012-2016*.

one administration to the next as they prepare to submit projects for federal funding. As can be seen in Table 3, the Trump Administration’s 2018–2022 strategic plan reduced and refocused the USDOT’s priorities [49]. This shift, along with new measures outlined in the FAST ACT will create a potential additional layer of difficulty in maintaining consistency of performance measure collection moving forward. MPO MTP documents will most likely have to change goal areas to align with USDOT goal areas and subsequent transportation bills. The level of consistency of performance measures over time may decline.

Table 3. Comparing USDOT Strategic Plan Priority Goals

FY 2006–2011: New Ideas for a Nation on the Move	FY 2012–2014: Transportation for a New Generation	FY 2014–2018: Transportation for a New Generation	FY 2018–2022: Strategic Plan for FY 2018–2022
Safety	Safety	Safety	Safety
Reduced Congestion	State of Good Repair	State of Good Repair	Infrastructure
Global Connectivity	Economic Competitiveness	Economic Competitiveness	Innovation
Environmental Stewardship	Livable Communities	Quality of Life in Communities	Accountability
Security, Preparedness and Response	Environmental Sustainability	Environmental Sustainability	

Sources: Developed from [49-51]

In addition to federal strategic plans, MPO priorities also need to align with plans or strategies created to implement federal legislation at the state level, such as the TTP. All TMAs designated after each census that contain an urbanized population of over 200,000 are also required to create a Congestion Management Plan (CMP). Each CMP includes a model to determine which projects will have the greatest impact on alleviating congestion [49].

Chapter 4. Conclusion and Recommendations

Megaregional coordination for transportation planning at the MPO level in the Texas Triangle will take a concerted effort among TPBs, TxDOT, the TTC, and local governments to develop. Given the historically metropolitan-level focus of MPOs, the variation of representation on policy boards, and existing federal and state law, sweeping structural changes are infeasible in the short term. Strategic actions with a long-term focus, such as clarifying megaregional definitions and amending existing federal aid highway planning components, could provide a jump-start for MPOs to become a key component in megaregional transportation planning. The STIP remains one element where a megaregion approach could flow both up and down the various planning documents. The scope provided under 23 CFR Section 450.216 is broad enough to allow states and MPOs to align project selection priorities and focus on advancing regionally significant projects and goals in the regional and state TIPs that are important for creating an effective megaregion framework. A further criterion element is suggested: designation of a project that is megaregional in scope and may require further MPO, state, or USDOT coordination.

Structural updates to planning procedures at the MPO level could also begin to initiate and lend momentum to such actions at the state level. This analysis identified numerous ways that Texas Triangle MPOs could begin to codify a megaregional approach in governing documents and processes including.

In terms of performance management, nearly six years have passed between the enactment of MAP-21 and the due date for the first set of targets to be submitted by FHWA. Given the four-year cycle of the USDOT's strategic plan updates, this slow-moving process is problematic for the implementation of effective performance management. While simplified rules may enable the over 400 U.S. MPOs to more easily adapt to new regulations, the intricacies of each individual region do not lend themselves to one-size-fits-all approaches. Integrating effective performance management is a long-term strategy to achieve improved transportation planning across the nation. In the absence of newly available funding incentives, clear national leadership, or additional regulatory requirements, most MPOs are unlikely to prioritize coordinated projects

between economically interconnected regions beyond the required extent. The ability of MPOs within the Texas Triangle to develop regional plans that adhere to federal performance measure requirements will require addressing several obstacles addressed in the recommendations below.

1. Formalize a megaregional planning focus between the MPOs and TxDOT.

As planning agreements between TxDOT and the Texas Triangle MPOs expire, an opportunity arises to incorporate a role for megaregional planning in the next agreements. As these already spell out limitations on using federal planning funds outside an MPO's boundaries, there could be an opportunity to formally delineate whether other non-federal funds could be used on corridor or subarea studies linked across MPO boundaries. In addition, clarifying language could offer opportunities to share data with the megaregion at large. An increase in communication and transfer of data could impact other corridor-level projects, and benefit from awareness of other stakeholders in the megaregion.

2. Expand non-voting memberships on TPBs.

Consider using non-voting members on TPB seats in the anchor cities and MPOs within the Texas Triangle. This could expand membership on boards to include stakeholders from across the megaregion and generate diverse and regional perspectives at TPB meetings.

3. Incorporate megaregionalism into TPB structural and strategic planning.

Consider integrating "megaregion" or the new FHWA term "inter-regional planning" into all MPO bylaws or planning documents. Other MPOs in the Triangle could benefit from a similar articulation of megaregional aspirations. Formalizing this intent throughout the Texas Triangle could be an effective starting point for catalyzing future collaborative efforts.

4. Prioritize megaregional scope in long-range planning.

Once a megaregional definition within planning agreements and individual MPOs is developed, the next step will be for planners and policy advisors to begin including a megaregional focus in the long-range planning process. While MPOs remain limited in the geographic scope of projects that can be included in the MTP, this does not preclude inter-

regional long-range planning conversations, particularly for critical corridors that link the region.

5. Evaluate weaknesses in MPO organization capacity

Organizational capacity is often a prohibitive barrier for performance measure target setting in many organizations, including MPOs. Discrepancies within a megaregion may impede the region's ability to align on data collection and analysis. Within the Texas Triangle, the organizational structure of the MPOs varies greatly depending on their affiliation with other agencies such as the regional council of governments. For example, as a stand-alone entity, AAMPO is the smallest of the anchor-city MPOs, conducting long-range planning for the nation's seventh-largest city with an operating staff of less than twenty [53]. NCTCOG, in contrast, has more than 150 employees in their transportation department [54].

Comparatively, both NCTCOG and H-GAC have more staff resources due to being combined entities with the regional COGs. This combined structure supplements federal funding for MPO operations with local dues paid to the COG. The additional resources typically available in larger organizations may lead to efficiencies and benefits in data collection and modeling capabilities.

6. Regulations applicable to all MPO sizes

Having the option to sign on to state targets is ostensibly geared toward smaller MPOs with limited operating capacity. However, providing this option to MPOs in larger regions, particularly like Texas Triangle anchor cities, may inhibit the MPO from measuring performance true to the intricacies of regional and megaregion planning.

Consider the example of Houston, the fourth-largest city in the U.S. Letting Houston use the same safety targets as other cities a fraction of its size is not strategic for improving performance targets that impact the entire state of Texas and the nation. Larger interconnected areas (like the three anchor cities that are connected by high impact corridors) have a clear regional imperative that should dictate the need for collaboratively derived targets. Adopted targets would help both individual areas and the regions at large to manage mobility, congestion, air quality, and other tangible outcomes.

7. Boundary adjustment process

MTPs include transportation projects that improve system performance based on current conditions and address issues such as relieving congestion, improving quality of life, and improving access to residential and employment centers. Transportation planning requires a balance between the tension of planning for future growth in an intentional way to accommodate future residents, and consistently playing catch-up to maintain a base level of service of existing conditions. Regional transportation planners are faced with prioritizing limited available funding to projects to move identified goals and strategies forward. Since MPO boundaries are reassessed and altered based on decennial census population estimates, existing transportation assets are added over time to MPO jurisdictions and added to the number of assets in need of improvement or maintenance. Without a major infusion of funding or more transportation innovation changes, MPOs will struggle with funding needed improvements and priorities.

8. Modeling for future growth

Population and demographic projections vary by MPO based on staff resource capacity, the size of MPO jurisdiction, and accessibility of different projection models. Each region develops demographic projections and travel demands that are impacted by regional knowledge and local public input. Without a strategic incentive to initiate greater alignment between projection methods or data inputs for comparison across regions, increased comparability is unlikely to naturally occur. As the body of research grows on the trade-offs between use of different extrapolation and projection methods, Texas Triangle MPOs should determine common standards to use in demographic projections and travel demand models.

9. Identification of national, state, and regional goals

When setting performance measures during the performance management process [32], the first step is identifying the indicators that will roll down and determine which measures are selected. If the indicators, or national goals, change with each consecutive national strategic plan, MPOs may feel compelled to adjust regional goal areas as well. In the long run, adjusting performance measures and targets will be a natural part of good performance management. However, these decisions should be addressed in the form of strategic updates

and facilitate the collection of better and more accurate data. Changing measurements or indicators due to a federal reauthorization could cause an organization to lose the power of the historic data that has already been collected. Although it would be ill-advised to rush the target-setting process and risk choosing ineffective measures or targets, a balance should be struck where targets can be chosen without the threat of a change in legislative or strategic mandate.

CONCLUSION

Current federal and legal frameworks offer MPOs flexibility to pursue a megaregional focus within contractual and organizational-level governance frameworks. Incorporating this intent will not be a panacea for megaregional planning. Instead, the recommended areas of opportunity represent a formalized starting point for all MPOs within a megaregion to acknowledge the interdependencies between transportation planning in their own metropolitan areas and better coordinate planning transportation projects that have impacts beyond an MPO's boundaries. To this end, it is possible to utilize existing processes and documents, like the MPO Planning Agreement, an MPO's organizational bylaws, and long-range planning documents, to take concrete actions that incorporate megaregion-level goals and strategic visioning.

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