

ACRP Project 03-43
**Integrating Airport Ground Access and Metropolitan Surface
Transportation Planning Efforts**
Final Report

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Introduction

Efficient ground access is key to the operation of airports. Primarily through the master planning process, airports devote considerable resources to identifying the needs of airport users for facilities such as access to the terminal curbs, parking, and rental car facilities. At the same time, surface planning agencies study and implement solutions to improve access to the airport and themselves develop transportation plans that include the airport as a major origin and destination of many regional trips. However, collaboration and coordination between airports and surface transportation planning agencies often is lacking, with each entity focusing on its side of the airport property line. Given the importance of airport ground access, this lack of coordination could have important consequences for the success and cost of ground access projects. In addition, it could affect the sustainable growth and operations of airports, which heavily depend on efficient and effective access.

There are many opportunities in the planning processes of both airports and planning agencies for collaboration to occur. For planning organizations, such opportunities could occur in the planning for the metropolitan long-range transportation plan (the responsibility of the metropolitan planning organization (MPO); comprehensive plans (the responsibility of local jurisdictions) that include land use and transportation components; corridor-level plans focusing on major transportation corridors that are experiencing safety and/or congestion problems; regional transit plans (usually the responsibility of the transit agency although in some cases developed by the MPO); site-specific, development-oriented planning that focuses on traffic impacts; and environmental planning that includes noise pollution, air pollutant emissions and a myriad of other environmental concerns.

For airports, opportunities for collaboration could include airport master plan updates; other planning studies (e.g., terminal-specific plans, airfield plans); airport layout plans (drawings that include off-airport property sites) required by law for airports that receive federal funding; and environmental assessment studies for major changes in airport access.

With many air traveler expectations increasingly including high quality airport access via different transportation modes, there is a need to understand how the different planning organizations can work collaboratively in providing the most effective airport access strategies. Evolving transportation technology, such as autonomous vehicles, might be another factor that influences the future of transportation and that could lead to a rethinking of airport access strategies. With respect to transit, not only will improved transit access to an airport benefit air travelers, but enhanced service could be mutually beneficial to the region, business interests and to the community at large.

Project Purpose

This research project had two objectives: 1) prepare a guidebook to help airports and transportation planning agencies develop compatible ground access and surface transportation plans; and 2) develop a detailed education and outreach plan that could be implemented in a future Phase 2 of the project.

This report summarizes the research approach, presents the major findings of the data collection, offers a guidebook for collaborative ground access and transportation planning, and recommends an education and outreach program for a possible Phase 2. For some topics, such as the case studies, we discuss general outcomes in the text and present the details in an appendix.

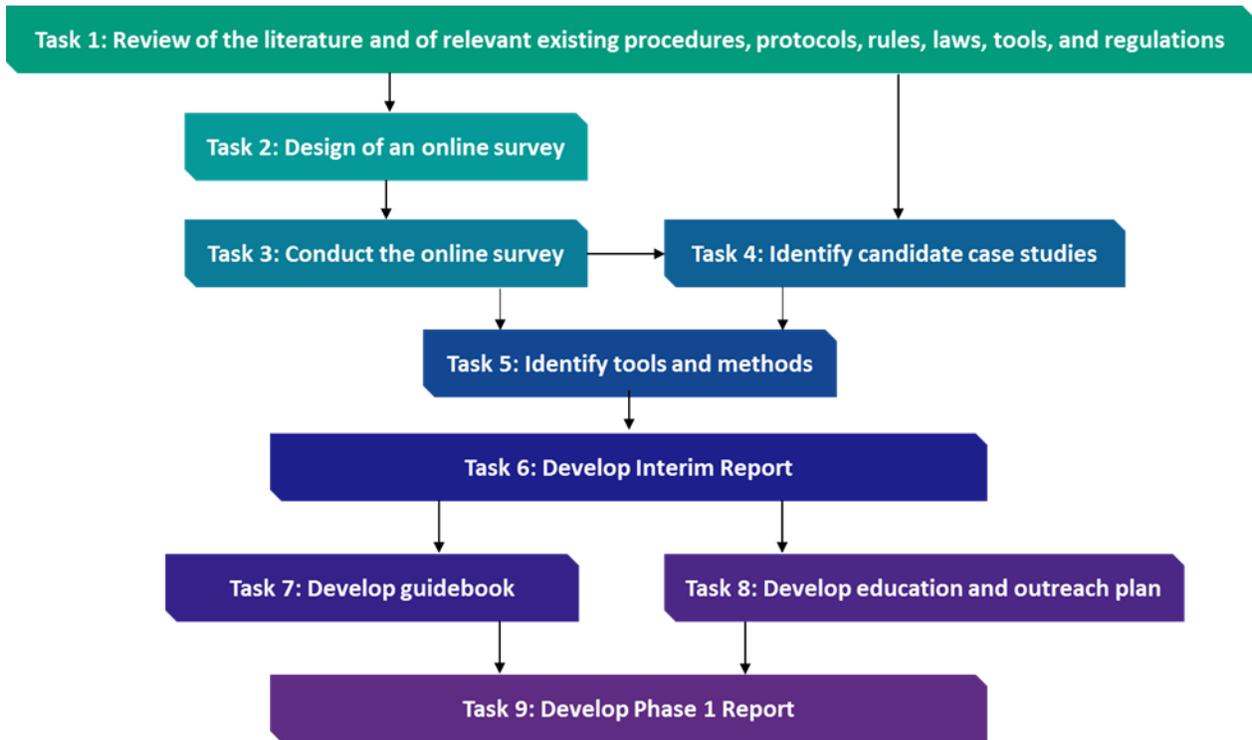
Research Approach

The research design for this project is shown in Figure 1. As indicated, the research included nine tasks.

- Task 1: Review and assess the research practices and approaches found in the U.S. relating to the project objectives. More than 100 documents were considered out of which about 75 documents became part of the final review.
- Task 2: Develop an airport and metropolitan planning organization (MPO) survey plan. The survey plan identified the targeted audiences, suggested survey instruments for each audience, laid out the survey methodology and established a schedule for associated survey steps.
- Task 3: Implement the Task 2 survey plan, working with the Association of Metropolitan Planning Organizations (AMPO), the American Association of Airport Executives (AAAE), and Airports Council International – North America (ACI-NA).
- Task 4: Identify candidate case studies of airport and planning agency interactions through a systematic process of defining desired case study criteria. Task 4 also began conducting the case studies to illustrate what type of information could be gathered from such studies.
- Task 5: Identify tools and methods that can be used to enhance collaborative undertakings among airport planning staff and those with regional or local planning agencies.
- Task 6: Develop an interim report.
- Task 7: Develop a guidebook for collaborative planning efforts between airport planning staff and planning agency staff. The guidebook is aimed at both airport staff and regional/local planning staff, and executives for both agencies.
- Task 8: Develop an education and outreach plan for implementing the guidebook and the other results of the project in a Phase 2.
- Task 9: Produce a Phase 1 final report.

The following sections provide more detail on the research approach and results.

Figure 1: Research Approach



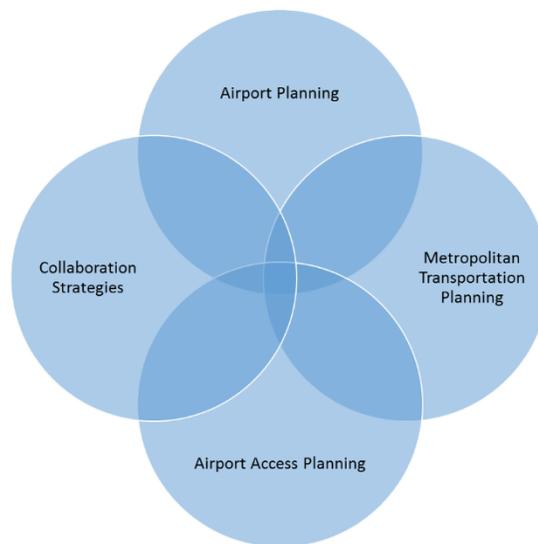
Review of the Literature and of Relevant Existing Procedures, Protocols, Rules, Laws, Tools and Regulations

The type of information of interest to the research was categorized in the following areas: 1) ground access and surface transportation planning for airports; 2) airport planning; 3) metropolitan transportation planning; 4) collaboration strategies; and 5) statutes, regulations and guidance that govern and guide the respective planning efforts. Various documents, including journal articles, reports, conference papers, articles in periodicals, news articles, presentations, and electronic sources were the primary information sources informing this research. The literature review examined documents from 1975, for the oldest Federal Aviation Administration (FAA) circulars, to 2017.

The topic of airport and surface transportation planning agency collaboration is not well explored in the literature. In general, the topic is found at the intersection of several bodies of literature (see Figure 2), as follows:

1. Airport ground access planning, which has been the focus of select academic and practitioner-oriented research;
2. Airport planning, a topic where guidebooks, handbooks, federal regulations, and guidance, exist but where academic research is scarce;
3. Metropolitan transportation planning, a topic that has been abundantly studied since it emerged as a planning activity in the 1960s, but not in relation to airports, even though airports are regional assets for which access could usefully be considered at the scale of the metropolitan area;
4. Collaboration strategies, a field in which academic and practitioner-oriented literature exists but has never been applied to the topic of airport ground access.

Figure 2: Bodies of literature related to airport and surface transportation planning agency collaboration



One reason for this sparse attention is that the major stakeholders in this interaction operate in separate policy and decision-making environments; airport managers tend to be primarily focused on

issues within airport boundaries, while for many surface transportation planning agencies and most MPOs, separate funding sources, planning processes and planning requirements lead them to different emphasis areas. Notable exceptions to this characterization exist, but they have not been described or received a typology in the scholarly or practitioner literature.

Some examples of the literature relevant to collaboration in particular that informed the results and recommendations for this project include the following. The full literature review is available in a technical report produced for this project.

General Literature on Airport Ground Access (all modes and types)

A significant body of research investigates airport ground access generally, without focusing on specific modes. Topics include commercial ground transportation, the factors affecting travelers' mode choice and transportation modeling, and the funding of airport access projects. An Airport Cooperative Research Program (ACRP) report, *Commercial Ground Transportation at Airports: Best Practices*, reviewed best practices for commercial ground transportation at airports (LeighFisher et al. 2015). The report suggested several policies for an airport's ground transportation program, including the need to support sustainability objectives, recover construction and maintenance costs, and increase airport revenues. In addition, ground access is a significant part of the customer experience, which was highlighted in an ACRP guidebook, *Improving the Airport Customer Experience* (Boudreau et al. 2016).

Among air travelers, as opposed to employees, previous TCRP research (Leigh Fisher Associates, Coogan, and MarketSense 2002) has identified four markets with respect to public transportation interest:

- Regions with demand for rail services, such as Boston Logan and Washington Reagan National,
- Regions which support regional collection points, such as Los Angeles International
- Markets supportive of door-to-door services, such as the Silicon Valley south of San Francisco International
- Markets with demand for exclusive airport buses to downtown, such as New Orleans.

Several sources note that increasing the flexibility of federal transportation funds, FAA Airport Improvement Program (AIP), and Passenger Facility Charge (PFC) funds, would improve collaborative ground access planning (United States Government Accountability Office 2005; Gosling, Wei, and Freeman 2012). Gosling *et al.* further recommend establishing a regional task force co-chaired by the airport and MPO that would have a mandate and funding to develop airport ground access plans.

Automobile Access: With respect to auto access to airports, at large airports globally, there is a trend of increased congestion on airport access roads, stemming from growth in air traffic and passengers. In the U.S., this trend is also due to a reliance on cars as the preferred mode choice for airport access, as noted above (United States Government Accountability Office 2005; Budd, Ison, and Ryley 2011). While access to airports has become increasingly congested, the extent of the problem is not well-known. Scholars have established a flexible methodology to measure and qualify this access issue by providing a variety of metrics across different access modes (Shriner and Hoel 1999), however little research has followed this methodology over the last 20 years.

Although parking and rental car facilities have historically been a significant source of non-aeronautical revenue for many airports (Volkova and Müller 2012), roadway congestion, environmental impacts, and efforts to improve sustainability have resulted in many regions looking to reduce the reliance on

automobile access to the airport. It should also be noted that the transit mode share for airport travelers is limited at US airports, even when high-quality transit service is available. Transit is often heavily used by airport workers rather than travelers.

Taxi/Transportation Network Companies (TNCs): Although taxis have been the most preferred airport access mode for business travelers and at airports located close to downtowns for many years (Coogan 2008), the recent dramatic market share increase of TNC, such as Uber and Lyft, has added to the challenges airports face with their ground access (Mandle, Box, and InterVISTAS Consulting 2017). TNCs raise numerous questions regarding regulation and airport revenue losses. In fact, taxicabs and shared-ride services that operate under airport agreements have lost business, which led them to renegotiate the terms of their agreements with airports. TNCs are impacting rental car demand as well. Some airports have negotiated agreements with TNCs that defray the loss of parking and rental car revenue as modes shift, while others are facing significant losses in revenues.

Transit: ACRP Report 4, *Ground Access to Major Airports by Public Transportation* found that the public transportation mode share (defined as including public transit and shared vans such as Super Shuttle) never exceeded 25 percent among the 27 large U.S. airports studied, with the highest mode share occurring in San Francisco at 23 percent and New York JFK at 19 percent (Coogan 2008). However, this study is almost 10 years old, and numerous changes have affected airport ground access since, including the emergence of TNCs and the completion of various rail links across the country (e.g., Denver, Dallas-Fort Worth, and the Oakland BART connector, among others). The study highlighted a “Four Cell Matrix,” categorizing airport users that broadly have different transportation needs and behaviors: resident business, resident non-business, non-resident business, non-resident non-business. For airport employees, transit tends to have a more significant mode share, most notably in large metropolitan areas and areas with fixed-guideway transit.

A previous TCRP report on *Strategies for Improving Public Transportation Access to Large Airports* highlighted six key steps to reach this goal (Leigh Fisher Associates, Coogan, and MarketSense 2002):

Step 1. Establish the public policy goals: Form the collaborative effort that will be needed for implementation, and understand the travel behavior of the longer-distance traveler.

Step 2. Undertake the program for data gathering and system monitoring: Design the survey to reveal key market characteristics, and emphasize accurate geography and market segmentation for both air passengers and airport employees.

Step 3. Interpret the markets and their relationship to candidate modes: Understand the makeup of the overall airport market, the precedents for market support of various modes and services, and establish the target markets at several levels of trip-end density

Step 4. Design a program of services and strategies: Understand the quality attributes achieved by successful services, match modes with markets, and acknowledge the role for dedicated higher-cost services.

Step 5. Manage the airport to encourage higher-occupancy use: Examine priorities and implications of curbside allocation and pricing, and evaluate the level of amenity experienced by the public-mode user.

Step 6. **Get the word out:** Provide basic service description to the users, and develop programs for integrated passenger information and ticketing

All these steps require close coordination between airports and surface transportation planning agencies, which this research seeks to facilitate. As transit planning is a regional policy, most airports provide rights of way in their plans and accommodate transit when ready for development, rather than actively participating in the development of transit lines. Denver International and Washington Dulles International airports are notable exceptions, where the airport actively promoted the development of new transit.

Freight Landside Access: While the logistics hubs are located at mid-sized passenger airports that have strong highway access, large international airports tend to be located in extremely congested metropolitan areas. Furthermore, freight-dedicated flights tend to depart and arrive at night, while international flights carrying belly cargo follow regular airport opening hours (roughly, 5 a.m. to midnight). This means that freight ground access is a greater challenge for belly cargo than dedicated cargo flights. In addition, many integrators have a high volume of air-to-air transfer of cargo, while belly cargo nearly always arrives via trucks that operate on regional highways. A few airports are dedicated to freight in midsize metropolitan areas, such as Columbus Rickenbacker and Sacramento Mather Airports, alongside passenger airports.

Scholarly and professional publications on landside freight access are relatively scarce. The Texas Department of Transportation commissioned a *Guidebook on Landside Freight Access to Airports* (Frawley et al. 2011), which provides useful insights, although focused exclusively on Texas. The report highlights the importance of group discussions among the airport, local city, MPO and state DOT. In addition, the guidebook explores two key issues on landside freight access to airports that require the cooperation between the airport and surface transportation planning agencies: 1) system/roadway design and 2) co-mingling of freight and passenger traffic. These issues focus on the dominant mode of truck traffic.

Airport Planning

Airports regularly conduct master plan updates and other planning studies (e.g., terminal specific plans, airfield plans) on an as-needed basis. Historically, airports had relatively little involvement with studying or facilitating road access beyond their property boundaries, and almost no involvement in rail public transportation to the airport, except for on-airport facilities. The few airports that do have rail access have benefitted from the development of transit systems in their cities.

Airport integration with regional planning is increasing along with growth and awareness of impacts on communities. By 2020, 15 new airport rail projects will have come online since 2000, most with support from airport funds, and some, most notably the Metro extension to Washington Dulles International Airport, benefitting from proactive planning involvement by the airport. As large airports are growing, expansion projects are having more significant impacts on regional transportation systems that require collaboration with surface transportation planning agencies. For instance, the fifth runway at Atlanta Hartsfield-Jackson International Airport opened in 2006 and includes a bridge over Interstate 285. Similarly, Fort Lauderdale-Hollywood International airport's 2014 runway extension required bridging over U.S. 1 and the Florida East Coast Railway. The realignment of the airfield in the Chicago O'Hare Modernization Program included extensive ground transportation study regarding the level of service on

nearby roadways. New terminal landsides in Atlanta for the International Terminal, which opened in 2012, and Orlando International Airport South Intermodal Terminal complex, scheduled for completion in 2020 with a new rail link to south Florida, provide examples of how airports are responding to growth in landside access demand. These projects have ground transportation impacts that necessitate collaboration across modal agencies.

The airport planning guidance literature mostly consists of practitioner guidebooks about ground access reaching back to the 1996 *Intermodal Ground Access to Airports: A Planning Guide*, developed by the FAA and FHWA. This planning guide provides details on the process, performance measures, and alternatives to improve ground access planning on and off airport property. Few studies have investigated the airport planning process in depth. They have proposed to improve the practice of airport master planning with more adaptive concepts, especially in the European context (Kwakkel, Walker, and Marchau 2010; Wijnen, Walker, and Kwakkel 2008). These adaptations are critical because of rapid changes in the aviation industry, forcing airports to consider a larger variety of terminal development scenarios (see, for instance, Nixon 2014; Magalhães, Reis, and Macário 2017). A key part of airport planning is capacity expansion. An ACRP report highlights key principles for “Developing and Maintaining Support for Your Airport Capacity Project”, including the need for regional stakeholder involvement (Futterman et al. 2013).

Rules/Regulations/Laws

The requirements associated with the FAA’s sponsor grant assurances are an important reference in characterizing planning efforts (e.g., agency sponsors of airport improvements must assure that the project is “reasonably consistent with plans existing at the time of submission of the application of public agencies in the planning area.”). FAA’s focus in airport planning is on safety and preserving space and airspace for future airport capacity increases are addressed primarily through airport planning and design standards for the airfield.

Airport layout plans (which are a set of drawings including off airport property) are required by law for airports that receive federal funding. Any AIP-eligible project that an airport sponsor wishes to receive federal funding for must be shown on an FAA-approved ALP. The ALP includes a property map, on- and off-airport land use drawings, airspace drawings, and other sheets that would aid regional access planning efforts. Airport Layout Plans are required to show general future needs for the terminal areas and landside.

FAA published in the summer of 2018 AC 150/5360-13A *Airport Terminal Planning Circular*, which addresses ground access. The *Circular* details levels of service and provides useful considerations for planning access for each mode to the terminal, while emphasizing the need to think of access projects and terminal facilities design at the same time. Chapter 8 of Circular 150/5360-13 - *Planning and Design Guidelines for Airport Terminal Facilities* details planning and design of airport access systems. The chapter contains guidelines on the design of curb areas for departure and arrival, parking for employees, tenants and passengers, access signage and public transportation and rental car areas. The *Circular* encourages integration of transit systems with airports, noting among sustainability objectives in Chapter 9 the goal of “Planning for convenient and integrated public transport to and from the terminal, efficient mass transit options between terminals, and convenient access to the local community. When possible, integrating these considerations into municipal plans.” However, no specific guidelines on collaboration with surface transportation planning agencies are included.

Additional airport terminal planning references that complement the Circular include ACRP Report 25 “Airport Passenger Terminal Planning and Design: Volume 1: Guidebook” (Landrum and Brown 2010) and ACRP Report 40, “Airport Curbside and Terminal Area Roadway Operations” (LeighFisher 2010), which present among other elements detailed information about calculating airport roadway requirements.

Another area of collaboration between MPOs and airports regards the role of metropolitan and/or regional planning organizations in the airport system planning process, which is determined by their legislative authority and the aviation expertise they possess. The Circular 150/5070-7 - *The Airport System Planning Process* directly addresses GAO audit findings and requires consultations among the local FAA Airports Office, the state aviation agency, and local airports to determine what role, if any, the regional or metropolitan planning organization will have in airport system planning for its region. The *Circular* also notes that the role of metropolitan and/or regional planning organizations in the airport system planning process is determined by their legislative authority and the aviation expertise they possess. Finally, the *Circular* makes clear that “metropolitan planning should not be considered a separate effort but should complement the ongoing state airport system planning process. Demand forecasts in the metropolitan airport system plan should be reviewed for incorporation in, or compatibility with, the state system plan.”

Circular 150/5050-4 - *Citizen Participation in Airport Planning*, for which FAA has proposed a draft update in 2015 to the 1975 version, provides an overview of the components to be considered while organizing a citizen participation program, such as developing a citizen planning group (responsibility of the Planning Committee and the Organizing Committee) that organizes initial citizen planning group meetings and workshops. Further, the *Circular* advises that the membership of the Citizen Planning Group should be representative of the areas affected by the planning and that citizen outreach should ideally be during the formative stages of the planning process, while the maximum number of alternative actions are still available. This topic is nevertheless only peripheral to collaborating with surface transportation planning agencies.

In addition to these Circulars, FAA Bulletin 1: *Best Practices-Surface Access to Airports* (FAA, 2004), recommends that airport sponsors participate in MPO meetings, that intermediate and long-range airport plans should be included in the MPO long-range transportation plan, and that airports meet regularly with state DOT officials to discuss surface transportation. Specific recommendations included in the Bulletin for airports are as follows:

- Regularly participate in MPO technical meetings related to transportation and land use
- Regularly meet with local State DOT field offices and State DOT aviation offices to discuss planned surface transportation activities
- Educate the community on the importance of the airport (establish stakeholder coordination process)
- Obtain local support for airport access (and airfield) projects
- Ensure that airport master plan and state/regional aviation system plans identify surface access needs
- Understand and participate in the development of the region’s long-range transportation plan, TIP and the STIP

- Know what justification and data needed to support an off-airport access project
- Work with the State DOT, MPO and transit operator to get worthwhile off- airport access projects on the TIP or long-range transportation plan
- Work with the State DOT and transit operator to get projects on STIP implemented

Finally, as of the date of this report, the FAA is close to publishing *Airport Land Use Compatibility Guidance* that also addresses the topic of collaboration.

The most cited challenges to collaboration are the legal and regulatory restrictions on FAA-managed funding and how such restrictions placed on airports limit airport involvement in access projects. Most importantly, airports can legally expend funds only on airport-owned property¹. Furthermore, until 2016, FAA regulation restricted the use of Airport Improvement Program (AIP) grants and Passenger Facility Charges (PFC) funds for ground transportation improvements unless the facilities were dedicated to airport users. The 2004 FAA “Notice of Policy Regarding the Eligibility of Airport Ground Access Transportation Projects for Funding Under the Passenger Facility Charge (PFC) Program,” restated the agency’s longstanding policy requirement from the AIP Handbook, FAA Order 5100.38, that to be AIP and/or PFC eligible, an airport ground access transportation project must meet the following conditions:

- 1) The road or facility may only extend to the nearest public highway or facility of sufficient capacity to accommodate airport traffic;
- 2) the access road or facility **must be located on the airport or within a right of-way acquired by the public agency;** and
- 3) the access road or facility **must exclusively serve airport traffic.**

¹ Title 49, U.S.C., subtitle VII is the legislation governing the use of airport revenue. The FAA provides further detail in FAA Airport Compliance Manual — Order 5190.6B, Chapter 15, dated 2009. Section 15.9. discusses the permitted use of airport revenue. Section I, Ground Access Projects states “*It is the policy of the United States to encourage the development of intermodal connections on airport property between aeronautical and other transportation modes and systems to serve air transportation passengers and cargo efficiently and effectively and promote economic development. (See 49 U.S.C. § 47101(a)(5).) Consistent with this policy, a sponsor may use airport revenue to pay for the airport's share of a ground access project in two general cases: (1) if the project qualifies as an integral part of an airport capital project, and (2) if the project is owned or operated by the sponsor and is directly and substantially related to the air transportation of passengers or property.*”

Section 15.13 of the Compliance Manual speaks to revenue diversion, or the use of airport revenue off airport property: *Prohibited Uses of Airport Revenue. a. Unlawful Revenue Diversion. Unlawful revenue diversion is the use of airport revenue for purposes other than airport capital or operating costs or the costs of other facilities owned or operated by the sponsor and directly and substantially related to air transportation. Revenue diversion violates federal law and AIP grant assurances unless: (1) it is grandfathered within the scope of grandfathered financial authority established before 1982, or, (2) it is authorized under an exemption issued by the FAA as part of the airport privatization pilot program. Revenue diversion is the use of airport revenue for purposes other than airport capital or operating costs.*

Finally, the FAA has developed a set of grant assurances to ensure that airports receiving federal AIP grant funds comply with the law. Grant Assurance 25, as found in *Airport Sponsor Assurances 3/2014* states that “*All revenues generated by the airport and any local taxes on aviation fuel established after December 30, 1987, will be expended by it for the capital or operating costs of the airport; the local airport system; or other local facilities which are owned or operated by the owner or operator of the airport and which are directly and substantially related to the actual air transportation of passengers or property; or for noise mitigation purposes on or off the airport.*”

The FAA Reauthorization Act of 2018 (H.R. 302) included a change in the PFC that removes the prior restriction on implementing a PFC at the \$4.00 or \$4.50 level for certain projects, including ground access, at medium and large hub airports. This update will make it easier for airports to apply PFC funds to ground access but will not actually increase the amount of PFC dollars airports collect.

In addition to legal restrictions, airlines often may have strong negotiating positions at US airports. Many airports have majority-in-interest (MII) clauses or similar mechanisms that limit the use of airport funds without more than 50% of airlines by both passengers and landed weight approving. Even where there is no legal/regulatory approval required by airlines, such as with PFCs, the airlines typically prefer funds flow to areas of the airport they directly use, such as the airfield and terminals. Thus, the PFC utilization can become a de-facto part of the airline agreement negotiation.

Metropolitan Transportation Planning and Airports

The roles and responsibilities of MPOs as part of the regional transportation planning process have been the focus of a limited amount of research. FTA and FHWA jointly administer the federally-required transportation planning processes in metropolitan areas, as set forth in 49 U.S.C. 5303 and 23 U.S.C. 134. The final US DOT rule “Statewide and Nonmetropolitan Transportation Planning and Metropolitan Transportation Planning,” published on May 27, 2016, outlines the requirements for statewide and metropolitan transportation planning. These new requirements are an important foundation for metropolitan transportation planning requirements as they stand today. However, few of these requirements have a direct bearing on the collaboration between airports and surface transportation planning agencies. For instance, states and MPOs must consider new planning factors that include enhancing travel and tourism, which airport access may facilitate. The relationship between this new requirement and the focus of the current report is by no means obvious.

MPOs have come to serve as conveners, orchestrators, and in some areas, as integrators of the collection of transportation planning interests and activities within their region. They are required to guide the investment of federal highway and transit funds in their region through the development of a long-range transportation plan: “Each metropolitan planning organization (MPO) must prepare a Metropolitan Transportation Plan (MTP), in accordance with 49 USC 5303(i), to accomplish the objectives outlined by the MPO, the state, and the public transportation providers with respect to the development of the metropolitan area’s transportation network. This plan must identify how the metropolitan area will manage and operate a multi-modal transportation system (including transit, highway, bicycle, pedestrian, and accessible transportation) to meet the region’s economic, transportation, development and sustainability goals – among others – for a 20+-year planning horizon, while remaining fiscally constrained”.

The MPO must also prepare an annually updated short range Transportation Improvement Program (TIP), from which federally-funded projects must emanate. These requirements provide the leverage for making MPOs a relevant and compelling partner in addressing surface transportation issues within their region, which, of course, includes providing access to airports. In many areas, the role of the MPO has expanded over the years to become a proactive forum for policy development and decision making on regional issues ranging from transportation to land use and from meeting regional air quality standards to the implementation of regional transportation projects.

Although the metropolitan transportation planning process is strongly influenced by federal planning regulations, each MPO has its own history and relationships with partner agencies in conducting transportation planning activities within their planning boundaries. Several books, reports and research studies have described the transportation planning process in similar ways as found in federal guidance. For example, the recent Institute of Transportation Engineers (ITE) Transportation Planning Handbook (Meyer, 2016) utilized a planning framework that was also used in some NCHRP projects to identify how the transportation planning process could better consider important issues (e.g., safety concerns in NCHRP 546 (Washington et al. 2006) and environmental concerns in NCHRP Report 541 (Amekudzi and Meyer 2005)). This transportation planning framework was first developed in 1984, and has been used to describe how many different issues and concerns can be incorporated into the transportation planning process (Meyer and Miller 2010).

MPOs currently face several challenges that are important to understand for airport managers and other stakeholders seeking to cooperate with MPOs on airport ground access projects. The diversity of MPOs' size and status strongly influences their capacity and their role: some of them are hosted within other organizations that have fiscal and hiring authority over them, while others are independent institutions of their own (Federal Highway Administration 2010). MPOs also face a variety of financial situations: many MPOs are struggling to raise funds to provide the 20% local match to federal grants) (Federal Highway Administration 2010) (Importantly, many airports especially small and mid-sized airports also struggle to raise the necessary funding to move projects forward. Some projects are grant eligible while others are not, and other funds do not always cover the cost of a project),

With respect to airport ground access planning, it is important to note the distinction between MPOs that opt to produce an airport system plan (e.g., the Delaware Valley Regional Planning Commission or DVRPC for the greater Philadelphia area, the National Capital Region Transportation Planning Board or NCRTPB for the Washington region) and those that do not. The FAA provides funds to regional planning agencies to conduct optional regional aviation systems plans (RASPs) (Ryerson and Woodburn 2014), but the role of MPOs on airport access is not defined specifically in federal guidance documents. For instance, in a 2012 FHWA guide on best planning practices for metropolitan transportation plans, airports are only mentioned in the context of multimodal systems, as an option in addition to the modes MPOs focus on, i.e. transit, rail, automobile, and non-motorized modes (U.S. Department of Transportation Research Innovative Technology Administration John A. Volpe National Transportation Systems Center 2012). Several states, notably Florida, Oregon, and California, have strong requirements for use of airport data that must be included in MPO traffic/roadway plans.

A GAO report notes federal guidelines exist on airport-MPO collaboration, but only with respect to data sharing (United States Government Accountability Office 2005):

“The FAA Airport Improvement Program Handbook provides guidance on coordination of intermodal airport projects. The FAA Airport Improvement Program Handbook states that federally funded airport access projects should be coordinated by the metropolitan planning organization and listed in its transportation improvement program. It also states that airports are encouraged to complete planning projects that are consistent with system forecasts, ground access and air quality studies, land use planning as well as other information, procedures, plans or policies. A provision in Vision 100 requires that large and medium hub airports provide metropolitan planning

organizations, upon request, copies of proposed changes to airport layout plans or master plans showing certain projects (i.e., new runways and runway extensions).”

Many airports share trip data gathered in the planning process with MPOs based on passenger forecasts and including timing of peak demand. This data sharing offers an opportunity of collaboration between MPOs and airports.

Collaboration Strategies

A key research topic of this report includes the approaches and strategies for fostering collaborative planning and decision-making processes. Several studies have examined methods of enhancing collaboration, whether focusing on multimodal transportation planning, institutional strategies that foster joint planning and implementing intercity passenger rail service, focusing on collaboration as a research topic itself, or examining the integration of planning processes. A Transit Cooperative Research Program (TCRP) report in the mid-1990s examined the institutional barriers in implementing intermodal transportation projects, and indicated three primary types of institutional barriers to collaborative implementation: organizational, interjurisdictional, and resource (Crain & Associates 1996). The study described the challenges of intergovernmental conflict among neighboring jurisdictions, and the importance of “cross-boundary” conflicts.

Research conducted under the Strategic Highway Research Program, Phase 2 (SHRP 2) developed a decision-making guide that aimed to encourage collaborative decision making among the groups and agencies involved in project development (ICF International and URS Corporation 2014). This research ultimately developed the PlanWorks framework currently supported by the FHWA (<https://fhwaapps.fhwa.dot.gov/planworks/>). However, the research process that led up to the final collaborative decision-making framework relied on case studies of what worked and what did not work in collaboration.

The most complete report on this topic is *From Handshake to Compact: Guidance to Foster Collaborative Multimodal Decision Making*, which identifies tools to improve (Campbell et al. 2005):

- **Basic Foundations:** Writing a purpose and needs statement; Establishing common language and terms; Creating an ad hoc or formal task force/committee; Using third-party facilitation; Training staff members.
- **Leadership:** Writing a purpose and needs statement; Creating an ad hoc or formal task force/committee; Using third-party facilitation; Rotating staff assignments.
- **Process of Collaboration:** Defining a jointly developed work program; Establishing common terms and language; Creating an ad hoc or formal task force/committee; Rotating staff assignments; Training staff members; Adopting a memorandum of understanding; Using collaboration technology in communications; Co-locating staff in a common collaboration space.
- **Organizational Support:** Adopting a memorandum of understanding; Using third-party facilitation; Training staff members, Rotating staff assignments; Creating a new organization.

This report was the first research project jointly funded by NCHRP and TCRP because of the non-modal nature of the topic. The research produced a guidebook for practitioners that described several types of

collaboration strategies that could be used for different phases of implementation or bringing about change.

Other research has examined the concept of a capability maturity model (CMM), which focuses on the different levels of organizational capacity for developing and managing selected agency functions, and how organizational cultures could change by using a CMM-based self-evaluation tool. For example, a CMM-based approach was used to develop guidance as part of a Strategic Highway Research Program (SHRP) research project to support DOTs “institutionalizing” a culture of transportation systems management and operations (TSM&O) (Parsons Brinckerhoff et al. 2012).

The collaboration literature specific to airports is limited. Two main sources existed at time of research. First, the FAA defined best practices for airport officials to collaborate with surface transportation planning agencies in order to enhance ground access to airports (FAA 2004), as described earlier. A brief review of airport master plans and MPO long-range transportation plans suggests that, while many organizations strive toward following these best practices, the need for additional tools exists.

A previous ACRP guidebook suggested strategies for “Advancing Collaborative Decision Making (CDM) at Airports” (Vail et al. 2015). Although the following principles were centered on intra-airport collaboration, they extend to coordination and work with non-airport entities as well:

- Collaborative success will require commitment of airports and participant resources, particularly staff time.
- All impacted entities need to be included, even those that have little technical knowledge of the issue being addressed.
- Team building and trust must be established.
- Data availability must be guarded and protection provided from use for competitive reasons between participating entities.
- Sharing of knowledge and experience is critical.
- Metrics should be utilized to measure success.

The guidebook developed as part of this research assists airport and MPO managers in accomplishing these goals.

Survey of Key Stakeholders

Surveys of airport and transportation planning officials were conducted to solicit information on collaborative planning efforts. In particular, the surveys focused on the following key issues: 1) how important airport access is as a planning issue in the region, 2) what has been the experience of airport and planning agency staff in considering airport access as part of planning efforts, 3) what institutional mechanisms and strategies have been used to encourage collaborative planning between airport and planning agency staff, and 4) what are some of the major barriers/challenges to collaboration across a large spectrum of airports and MPOs. In addition, the survey was intended to identify potential case studies.

The survey was conducted through an online survey tool that supports custom branding, survey configuration and reporting. The survey tool was web-based, and provided efficient and cost-effective

delivery across a large, geographically-dispersed audience. Software tools facilitated data tabulation and statistical reporting in a variety of tabular and visual formats for the complete data set or data subsets. The survey was distributed through the American Association of Airport Executives (AAAE), Airports Council International (ACI), and Association of Metropolitan Planning Organizations (AMPO), with follow-up emails and calls made by the research staff to encourage survey responses. Several MPOs and airports mentioned that they had a policy not to answer surveys, which limited the number of responses obtainable. Other MPOs mentioned that they did not have any collaboration with the airport and felt they could not answer the survey for that reason. The survey instruments for both airports and planning agencies are found in appendix A.

A total of 92 organizations comprising regions with 79 commercial airports completed the survey. Of these respondents, 33 were from airports and 59 were from Metropolitan Planning Organizations (MPOs). For 13 airports, both an airport and an MPO representative completed the survey. **Error! Reference source not found.**1 presents the detail of these 13 complete data points; Figure 3 shows the location of the survey respondents.

Some important characteristics and insights from the survey include:

Size: Of the 79 airports represented, large hubs, as defined by the Federal Aviation Administration (FAA), comprised 26% of respondents. Medium hubs accounted for 27%, small hubs encompassed 20%, and the remaining 27% consisted of nonhubs. For the 33 airport respondents, large hubs comprised 24%, medium hubs 45%, small hubs 18%, and nonhubs the remaining 12%. Of the 59 MPO respondents, 41% correspond to large metropolitan areas with populations greater than one million people and the remaining 59% encompass smaller metro areas with less than one million inhabitants.

Location: The FAA-defined Southern region, which is the largest in terms of annual enplanements, accounted for the largest percent of respondents at 24%. The Eastern, Great Lakes, Southwest and Western Pacific regions each comprised between 10-15%. The Northwest Mountain, Central, New England and Alaska regions individually consisted of less than 10% of respondents.

Table 1: Surveys Completed by Both Airport and MPO Representatives

Survey Completed by Airport and MPO Representatives			
Name	Region	Hub	Metro Population (mn)
Seattle-Tacoma International	WP	Large	3.3
Detroit Metropolitan Wayne County	GL	Large	4.3
Salt Lake City International	NM	Large	1.2
St Louis Lambert International	CE	Medium	2.8
Nashville International	SO	Medium	1.9
Raleigh-Durham International	SO	Medium	1.3
Indianapolis International	GL	Medium	2.0
San Antonio International	SW	Medium	2.4
Pittsburgh International	NE	Medium	2.3
Palm Beach International	SO	Medium	1.0
Jacksonville International	SO	Medium	1.5
Memphis International	SO	Small	1.3
Corpus Christi International	SW	Nonhub	0.5

Evaluation of Access

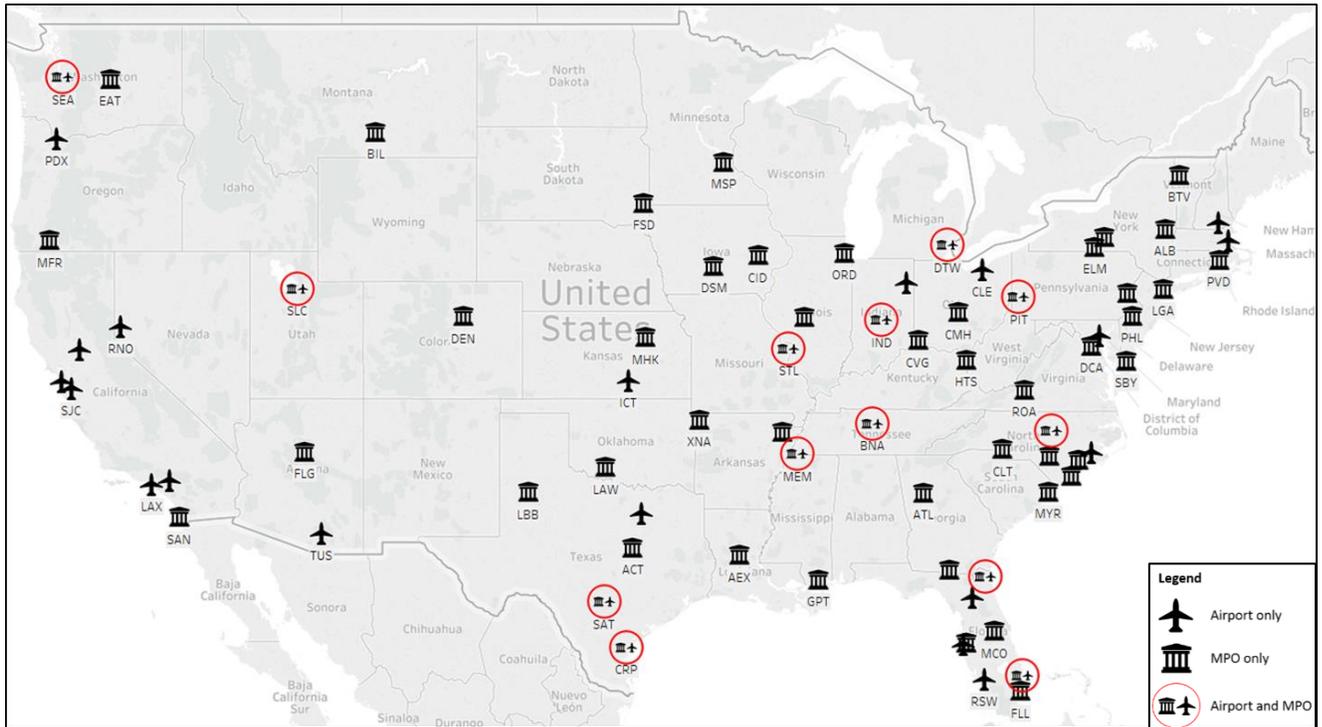
Highway Access: Of the 92 respondents, a total of 24 (26%) indicated highway/road access is in need of major improvement. Generally speaking, airport representatives considered roadway access to be of greater concern than MPOs, with 30% indicating a need for major improvement, compared to 24% of MPOs. In the 13 instances in which both the airport and the MPO representing that same airport answered the question, four airports (31%) indicated highway access is in need of major improvement, while only one MPO (8%) responded as such.

Transit Access: A large number of airport and MPO respondents identified transit access as in need of improvement. For airports, 30% indicated that transit access is in need of major improvement – equal to the number that consider highway/roadway access in need of major improvement – while another 30% consider it in need of minor improvement. For MPOs, transit was divided into two areas: bus and rail. Bus access is considered a bigger issue, with 22 respondents (37%) indicating it is in need of major improvement, compared to only 14 (24%) indicating that rail is in need of major improvement.

Other Access: Airports and MPOs were generally in agreement in their views on access to traveler information, parking supply, curbside pick-up and truck delivery in that the majority of both considered each issue to be in need of minor improvement or no improvement at the current time.

Future Challenges: Generally speaking, airports are more concerned about future access than MPOs. Two-thirds of MPO respondents indicated that the aforementioned access issues will either be the same as today or less challenging in ten years, assuming planned improvements are undertaken. This general

Figure 3: Location of survey respondents



dynamic was true for both small and large metropolitan areas. Nearly 70% of MPOs from metros with less than one million residents and 75% of MPO respondents from metros with greater than one million residents expected access issues to be either less challenging or the same as today. For airports, a much larger percentage of respondents expect access issues to be more challenging in the next ten years. This includes highway/road access (47%), transit access (41%), Transportation Network Companies (TNC) access (50%), and drop-off/pick-up access (44%). The last two items are particularly noteworthy because they were not regularly cited as currently needing major improvement. Indeed, several airports included specific comments about the rise in TNCs and self-driving vehicles and their potential impact on curbside congestion and demand for parking supply. A smaller number also included written comments about the continued rise in roadway congestion and its strain airport access.

Airport - MPO Collaboration

Access Plans: The majority of airports and MPOs indicated that airport access is included in the region’s long-term transportation plan. However, only 22% of MPO respondents felt that airport access is examined thoroughly and included in the plan, while 51% acknowledged that it was mentioned in the plan, but was not extensively studied as part of the plan development process. Meanwhile, for airports, 72% of respondents indicated that the long-range transportation plan developed by the MPO examined access options to the airport. This dynamic generally played out in the 13 instances in which both the airport and the MPO representing that same airport answered the

question. Nine airports (69%) indicated the MPOs long-range transportation plan examined access options to the airport, while 62% of MPOs indicated that it was mentioned, but not extensively studied as part of the plan development process.

Current Interaction: Airports and MPOs differed somewhat in their views on current interaction. Just over 60% of airports responded that they are actively involved in most/all MPO studies that have some relevance to the airport. However, 41% of MPOs indicated airport personnel were involved in all such studies, and 44% characterized airport involvement as limited to only a few such studies, depending on the topic. Moreover, a majority of airport respondents (58%) felt there should be more involvement between airport officials and public sector transportation agencies with respect to airport surface transportation planning, while just under half of MPOs (49%) felt the same way.

Potential Improvements: Broadly speaking, airports were more optimistic about options for enhancing engagement. A vast majority of airport representatives reported that they consider regular technical meetings with regional planning staff, increased sharing of data, formal participation of airport staff on regional planning committees (and vice versa) as either highly or somewhat effective means of enhancing engagement. For MPOs, including airport personnel in planning-related efforts on work programs and related planning tasks received the most positive responses at just over 50%, followed by increased data sharing, regular technical meetings, and formal participation of airport representatives on regional planning committees.

Sources for Best Practices: Airports and MPOs are generally in agreement regarding strategies for obtaining information on best practices in collaborative planning. A large number of both groups cited peer exchanges, professional organization conference sessions and research papers/reports as highly effective. Several airport respondents also pointed to conference networking as highly effective, while professional organization webinars were more popular with MPOs.

Airport-Transportation Planning Agency Collaboration Case Studies

Case studies were conducted to: 1) provide an in-depth analysis of the effectiveness of current rules and regulations, 2) document unsuccessful planning collaboration between surface transportation planning agencies and airports (What went wrong? What did not work?), and 3) identify successes and best practices that could be replicated in other contexts (What went right? What worked best?). The criteria for selecting the case studies reflected different transportation planning contexts found in the U.S., including the following:

- 1) Metropolitan area size,
- 2) Airport size,
- 3) Airport ownership (e.g., municipal, authority, etc.)
- 4) Airport system or single airport,
- 5) Multimodal ground access options,
- 6) Examples of successful collaborative planning efforts,
- 7) Type of transportation planning agencies involved in planning airport access, and
- 8) Governmental structure of the MPO.

Based on these criteria, six case studies were identified for detailed analysis: Atlanta, the Baltimore-Washington region, Indianapolis, Los Angeles, Minneapolis, and San Diego. The case studies consisted of a document review including airport master plans; long range surface transportation plans (especially for MPOs); MPOs' Transportation Improvement Programs (TIPs); other types of regional and local transportation plans; public presentations and documents for projects; and news and media reports. Those interviewed (varying on the case study) included airport planners / managers and directors; transportation agency planners / managers; third parties; public authorities (local / regional governments); transit agencies; private actors (Chambers of Commerce); federal agencies reviewing planning documents (Federal Aviation Administration-FAA, Federal Railroad Administration-FRA, and Federal Highway Administration-FHWA) and former airport and planning officials. Short case studies of additional airports/MPOs in smaller regions, and using more limited sources, are included as sidebars in the guidebook.

The individual case studies are found in a technical report produced for this project. A summary of each case study follows;

For Atlanta:

The Atlanta case study illustrates one of the challenges facing collaborative transportation planning that involves both the airport and regional/local planning agencies, this being that the airport staff primarily view such interaction necessary on a project-by-project basis. The exception to this was the Aerotropolis Atlanta initiative where the non-airport business unit in the airport organization has been very active in working with local communities, business leaders and developers. To a large extent this reflects the personal interests of the airport staff, while at times this also reflected the desires/interests of the general manager.

Several suggestions were made in improving the collaboration among planning participants.

1. MPO Funding of Airport-Relevant Studies: the Aerotropolis Atlanta initiative showed an example of the Atlanta Regional Commission (ARC) providing grant monies for studies locally and regionally that laid the basis for the Blueprint, and which were of interest to airport staff. Given its regional forum role, ARC was uniquely qualified to bring the different partners together to foster collaborative action among interested parties. These studies were able to further define market potential and place boundaries on expectations of what could come from the strategy. ARC has also funded Livable Centers Initiative grants to communities in the Aerotropolis market that are intended to enhance the development market in selected communities.
2. MPO Funding of Airport-Impacted Studies: The distinction between this effort and the prior one is that the studies directly affect the future of the airport in a direct way, or link closely to airport goals. Thus, for example, the MPO has funded a freight cluster study and a regional freight and logistics study that relates directly to the airport's goal of increasing air cargo as part of its portfolio. Airport staff recognized that the feasibility of increasing freight and logistics activities at or near the airport relates to providing an efficient road network, easily accessible to the state highway system and one that is relatively congestion free. There is interest among airport staff in at least following the progress of these efforts, and if possible and time permitting, participating in the studies.
3. MPO Processes: Not surprisingly, MPO planners would like to see a more formal participation of airport staff in MPO planning activities, especially given the very important position the airport has

in the region's transportation system. MPO planners feel that many formal institutional mechanisms already exist for airport participation, and it is just a matter of motivating the interest. For example, MPO planners suggested that in the best-case scenario it would be need to hold quarterly meetings with airport planning staff to exchange information on recent studies and near future efforts. One of the examples used to showcase the benefits of such interaction were efforts by ARC staff to meet with local government planners in order to avoid local zoning decisions that would create challenges to the Aerotropolis Atlanta initiative.

4. Transportation Professional Outreach: MPO planners also suggested that airport staff could participate more actively with ARC outreach efforts to local communities and chambers of commerce in educating key decision makers on airport-related development opportunities. As one planner noted, "there are lots of events occurring all the time and being a partner with ARC in attending these events would go a long way to build good will for the airport."
5. Formal Participation in Planning Studies: MPO planners also suggested that some form of advisory committee role should be created for mutual involvement in both the airport's and MPO's most important planning efforts. For example, MPO planners said they would welcome airport staff participation in the development of the region's transportation plan, and they said there would be interest in playing such a role in the airport access issues associated with the airport master plan. There are a lot of factors that will likely affect both efforts (such as connected and autonomous vehicles) where joint consideration in the different planning studies would be beneficial.

For Baltimore (Thurgood International Airport)

The Baltimore Thurgood International Airport (BWI) case study offered examples of an atypical MPO and airport governance structure which shaped the lessons learned from this study. The Maryland Aviation Administration (MAA) who operates the airport is a state agency whose involvement in regional or local surface transportation projects increases in proportion to the effect that the project has on the airport. This is unlike other airport owners that may need to advocate their own role.

1. Existing Institutional Structures: The institutional setup provides the airport authority with existing collaboration structures to coordinate with the State Highway Administration, Maryland Transit Administration and other modal agencies for airport access and related improvements projects.
2. Institutional Leverage: When it has "bandwidth issues" in planning, MAA can leverage its position as a state agency to rely on other agencies such as the MTA and the FHWA to more easily resolve issues. MAA also relies on modal agencies to assist counties regarding airport access planning. It can leverage this position to assist counties with their regional transportation and revitalization plans, particularly with a focus on airport access. As a result, the local MPO plays a limited role of in airport access planning: regional planning occurs at state level.
3. Limited Financial Capacity: Another effect of the state-led centralization is that MAA is not able to issue its own bonds. The Maryland Department of Transportation (MDOT) issues Consolidated Transportation Bonds, which fund investments in all modes represented among MDOT's assets. This consolidated approach can be challenging because the airport business and financial model under which MAA operates is very different from the models under which sister agencies MTA and SHA operate, in terms of revenue sources and timing of investments.

4. Designated Authority: This case study also provides a unique example of formal delegation of MPO planning duties for BWI from the Baltimore Regional Transportation Board (BRTB) to the National Capital Region Transportation Planning Board (NCRTPB), a larger MPO that already had a well-established air systems planning structure in place for Washington Dulles International Airport (IAD) and Ronald Reagan Washington National Airport (DCA). The consolidation of air systems planning across three major airports allowed for a comprehensive regional outlook on airport access planning.
5. Regional Aviation Forum: The Aviation Technical Subcommittee of the NCRTPB provides a forum to airport authorities, aviation professionals, and state, federal and MPO officials to participate in information-sharing and presentations stemming from the MPO's air systems planning cycle. However, because of three different airports there is limited regional cooperation on access planning across all airports: airport system planning only identifies access issues and improvement opportunities for specific airports. This is reinforced in a multi-airport region when airlines are primarily concerned at passenger access at individual airports in their conversations with each airport.

For Indianapolis:

Agencies believe that collaboration among the city, state, MPO, and airport authority is essential to implementing needed transportation improvements. Effective communication among various agencies and levels of government has allowed for the efficient implementation of ground access improvements and redevelopment efforts around the airport, after the airport terminal was moved and the interstate highway was realigned.

1. Existing Institutional Structure: The benefits of using existing collaboration structures between the airport and MPO can sometimes be overlooked. Characteristics of successful collaboration were identified as:
 - Having a formal, clear role of the airport on the MPO planning board is essential.
 - Nominating a responsive, involved airport manager to the Board is a precondition to achieve this.
 - Once the airport has a strong voice on the MPO planning board, it can broaden the conversation by sharing its priorities and projects with the other agencies and local governments, while making sure airport needs such as connectivity, economics, etc. are covered at MPO meetings. The airport can help broaden the conversation around the overall transportation plan.
2. Key Leadership Figures: Key leaders in the collaboration can drive interaction and cooperation beyond existing structures. While the airport authority had a good record at collaboration and community involvement, new leadership has redoubled collaboration efforts outside of the traditional structures.
3. Willingness to Include Airport Representation: The willingness to have airport officials "at the table" was considered an important ingredient to successful, long-term collaboration. The message from key transportation planning leaders was that airport participation was important to show the public value of airport actions.

4. Sense of 'Volunteerism': Airport staff and official engagement with neighboring communities was considered critical in changing the perception of the airport among key constituencies. As noted by a former airport official, "community engagement is essential for transportation improvements, and strong transportation systems are necessary for economic development," which was the rationale for airport engagement in collaborative efforts.
5. Maintenance of Relationship Efforts: Working to maintain relationships with participating agencies leads to a more effective path toward collaboration when required specific projects and studies. Using existing structures for collaboration helps to build trust. As noted by one interviewee, "You can't wait till you need it to get relationships---existing relationships have concrete benefits, such as making it easier to receive conditional permits."

For Los Angeles:

Los Angeles World Airports (LAWA) and Los Angeles County Metropolitan Transportation Authority (LA Metro) established a strong collaboration structure specific to the Landside Access Modernization Project (LAMP) by signing a Cooperative Agreement followed by a Master Cooperative Agreement (MCA) prior to the start of the environmental phase of the program projects.

1. Master Cooperative Agreement: Signing a master cooperative agreement specific to a set of projects early in the process had a variety of benefits:
 - It ensured consistency between the two agencies
 - It guaranteed that there was no duplication of effort in the various phases of the project cycle.
 - The MCA set parameters for roles and responsibilities for both agencies during the environmental phase, design, document review, construction etc. as well as outlining the structure of Technical Committee meetings. The stricter agreement language meant there was a clear delineation of roles and responsibilities of the two agencies as they relate to specific LAMP projects.

Other case studies and agencies have illustrated the use of a Memorandum of Understanding (MOU) to establish collaboration between agencies. Unlike an MOU, an MCA is a product of months of negotiation between the agencies and as such has much more detail to the agreement. It is also a legal document whereas MOUs tend to be nonbinding. Hence, MCAs are appropriate for multi-year cooperation programs, whereas MOUs are appropriate for more limited efforts such as one-off projects.

2. Trust: Both airport and planning officials stressed the importance of establishing trust between agencies, which requires being willing to take the time to partner with the other agency to understand their goals and priorities. Approaching other agencies early in the planning process is critical in developing this understanding.
3. Existing Institutional Structures: Interviewed staff highlighted the utility of using existing collaboration structures in the planning process. While leadership is important in establishing a culture of collaboration, robust collaboration structures are useful in involving other stakeholders and the public.

4. Information-sharing Forums: Interviewed staff also indicated that in multi-jurisdictional regions such as Southern California information-sharing forums such as the Aviation Technical Advisory Committee within SCAG, are particularly useful in fostering a regional outlook among airport representatives and local governments.

For Minneapolis:

The Minneapolis-St. Paul (MSP) airport, operated by the Metropolitan Airports Commission (MAC), provides an interesting example of collaboration with the local MPO, the Metropolitan Council (METCouncil). For institutional and cultural (Minnesota's traditional "good government" ethic) reasons, the working relationship between the MAC and the METCouncil has been very close and productive for many years, leading to the successful planning and delivery of light-rail transit to both terminals of the airport, among other ground access projects over the last 15 years.

1. Long-term Relationship-building: Building relationships over time is critical to ensure positive collaboration when needed. Having institutional processes in place helped when specific project-oriented collaboration was necessary. Interviewees recommended setting up regular meetings between the airport planning agency and the regional planning agency would be of benefit to the participants. In addition, even though the airport planning agency provides some data on operations, parking and employment to the MPO, it was recommended that both parties could enhance data sharing processes and rules.
2. Top Leadership Commitment: A culture of collaboration led by top airport management has been a part of airport standard procedures. It was noted that staff and executives need to be willing to have informal relationships, not only formal ones.
3. Avoid Surprises: A true collaborative process avoids "surprises" in terms of project content and timelines. For instance, the airport and the planning agency consult each other on the timing of the formal planning processes. This sharing of information on timelines allows awareness and involvement of the other party when plans and policies are updated. Technical review panels set up with other planning partners help provide an understanding of the airport projects to these other bodies.
4. Role of the MPO: Recognizing the role of the MPO in regional decision making and how it can help the airport implement its projects can help build the rationale for collaboration for airport officials. The planning agency is very helpful in engaging with local communities and has been willing to assist airport planners in that regard.
5. Funding for Planning: The funding of airport planning at the regional level by the MPO strongly contributes to the positive collaboration between the two bodies.

For San Diego:

The San Diego International Airport (SDIA) has been the subject of various collaborative planning efforts at both the local and regional level. The MPO for the region, the San Diego Association of Governments (SANDAG), is mandated by state law to conduct joint airport multimodal planning with San Diego County Regional Airport Authority (SDCRAA) by coordinating the development of the Regional Aviation Strategic

Plan (RASP) and the Airport Multimodal Accessibility Plan (AMAP) and the Regional Transportation Plan (RTP). As such, SANDAG has participated in several studies that evaluated ground access improvement options at SDIA.

1. Importance of Funding: The defeat of the Measure A, a referendum for a ½ cent local sales tax to fund transportation initiatives, in 2016 impacted the ability of local agencies to fund airport access project initiatives, such as the development of an Intermodal Transportation Center.
2. Geographic and Technical Challenges: Agencies agree that coordination among the cities, SDCRAA and SANDAG at the board and technical levels is critical to achieve transportation improvements. However, geographic, funding and technical constraints can challenge such collaboration and joint planning. These challenges are exacerbated given SDIA's land constraints, which results in limited access improvement options, as roadway right-of-way is very limited and shallow ground water makes tunneling very difficult and costly. Significant planning efforts often occur prior to any major investment in airport access.
3. Communication and Interaction Among Agencies: While there are examples of inter-agency collaboration on airport projects, a shared understanding on the limitations of allowable uses of airport revenues for airport access projects might enhance collaboration.

Tools and Methods for Collaboration

Task 5 identified strategies, practices and tools for enhanced collaboration among airports and transportation planning agencies as well as appropriate tools to support recommended practices. The literature review, survey, and case studies, provided examples of best practices of enhanced collaboration, including institutional tools used for such collaboration.

The literature review found several Cooperative Research Program (CRP) and Strategic Highway Research Program (SHRP) projects that have examined different ways of enhancing collaboration among public agencies, whether focusing on multimodal transportation planning, institutional strategies that foster joint planning and implementing intercity passenger rail service, focusing on collaboration as a research topic itself, or examining the integration of different planning processes. Important to this analysis is understanding how collaborative efforts have occurred among transportation agencies in a region, and what factors are necessary for success. For example, the Port Authority of New York and New Jersey (PANYNJ) did not undertake a plan to upgrade LaGuardia Airport until the governor became involved, securing a public-private partnership for the ongoing central terminal redevelopment and requiring PANYNJ to retain right-of way for a future rail connection to the subway system, now under design. A Transit Cooperative Research Program (TCRP) report in the mid-1990s examined the institutional challenges in implementing intermodal transportation projects and indicated three primary types of institutional challenges to collaborative implementation: organizational, interjurisdictional, and resources. The study also described intergovernmental challenges among neighboring jurisdictions.

Research conducted under the Strategic Highway Research Program, Phase 2 (SHRP 2) developed a decision-making guide that aimed to encourage collaborative decision making among the groups and agencies involved in project development. This research ultimately developed the PlanWorks framework

currently supported by the FHWA (<https://fhwaapps.fhwa.dot.gov/planworks/>). However, the research process that led up to the final collaborative decision-making framework relied on case studies of what worked and what did not work in collaboration. Table 2, for example, shows the results of the case studies that focused on successful collaborative decision making. In addition, the research identified the following strategies that could be used to foster more collaborative decision making.

Reports on airport-oriented collaboration that come closest to the topic of this research include: ACRP “Advancing Collaborative Decision Making (CDM) at Airports, and the Federal Aviation Administration’s “Best Practices - Surface Access to Airports. Bulletin 1” in 2004. The FAA defined best practices for airport officials to collaborate with surface transportation planning agencies in order to enhance ground access to airports. The Bulletin recommended that airport sponsors participate in MPO meetings, that intermediate and long-range airport plans should be included in the MPO long-range transportation plan, and that airports meet regularly with state DOT officials to discuss surface transportation needs.

Table 2: Summary of success factors for collaborative decision-making²

Manage Risks
Anticipate environmental and social issues
Anticipate public concerns
Use a Context-Sensitive Approach
Listen to the public
Focus on enhancing places, not just enhancing mobility
Link Phases of Transportation Decision-Making Process
Bring environmental issues into long-range planning
Transfer information to subsequent phases
Create an implementation plan and conduct follow-up
Connect vision goals with alternative selection
Integrate Transportation, Land-Use, and Environmental Issues
Partner with local governments to integrate land use and transportation
Practice good environmental stewardship
Structure Decision Making/Use a Formal Process
Use Performance Measures and Evaluation Criteria
Collaborate with Agency Partners and the Public

Specific recommendations included:

- Regularly participate in MPO technical meetings related to transportation and land use

² Source: FHWA, PlanWorks, Case studies. <https://fhwaapps.fhwa.dot.gov/planworks/>

- Regularly meet with local State DOT field offices and State DOT aviation offices to discuss planned surface transportation activities
- Educate the community on the importance of the airport (establish stakeholder coordination process)
- Obtain local support for airport access (and airfield) projects
- Ensure that airport master plan and state/regional aviation system plans identify surface access needs
- Understand and participate in the development of the region's long-range transportation plan, TIP and the STIP
- Know what justification and data needed to support an off-airport access project
- Work with the state DOT, MPO and transit operator to get worthwhile off- airport access projects on the TIP or long-range transportation plan
- Work with the state DOT and transit operator to get projects on STIP implemented

The ACRP guidebook, "Advancing Collaborative Decision Making (CDM) at Airports," suggested strategies for enhancing collaboration at airports. Although the proposed principles were centered on intra-airport collaboration, they extend to coordination and work with non-airport entities as well:

- Collaborative success will require commitment of airports and participant resources, particularly staff time.
- All impacted entities need to be included, even those that have little technical knowledge of the issue being addressed.
- Team building and trust must be established.
- Data availability must be guarded and protection provided from use for competitive reasons between participating entities.
- Sharing of knowledge and experience is critical.
- Metrics should be utilized to measure success.

Based on the research, several collaboration tools could be structured and form the basis for a self-assessment tool for enhancing airport-planning agency collaboration. These include the following:

Tools to Improve Basic Collaboration Foundations

- Writing an agreement on planning assumptions and definitions and identify key stakeholders
- Establishing common language and terms
- Creating an ad hoc or formal task force / committee and sharing results of mutual studies
- Establishing lines of communication and collaborative agreements
- Seeking collaborative funding opportunities
- Using third-party facilitation
- Training staff members

Tools to Improve Leadership

- Writing an agreement on planning assumptions and definitions and identify key stakeholders
- Creating an ad hoc or formal task force / committee and sharing study results

- Using third-party facilitation
- Rotating staff assignments

Tools to Improve the Process of Collaboration

- Defining a jointly developed work program, (e.g., coordination data collection efforts and signing environmental planning)
- Establishing common terms and language
- Creating an ad hoc or formal task force / committee and sharing study results
- Establishing lines of communication and collaborative agreements
- Rotating staff assignments
- Training staff members
- Adopting a memorandum of understanding that leverages existing relationships
- Using collaboration technology in communications
- Co-locating staff in a common collaboration space

Tools to Enhance Organizational Support

- Adopting a memorandum of understanding that leverages existing relationships
- Seeking collaborative funding opportunities
- Using third-party facilitation
- Training staff members
- Rotating staff assignments
- Creating a new organization

Guidebook for Assessing Collaborative Planning Efforts Among Airport and Public Planning Agencies

The *Guidebook for Assessing Collaborative Planning Efforts Among Airport and Public Planning Agencies* is found in a separate document. The following discussion provides an overview of how the Guidebook is organized and some of the underlying rationale for its content.

The following points of departure were factors considered in the development of the guidebook and are thus important contextual factors for its use.

- Airports are defined as public-use commercial and general aviation facilities;
- Transportation planning agencies are defined as local, regional and state transportation planning agencies, including metropolitan planning organizations (MPOs), each of which have their own institutional and planning context;
- The types of ground access and surface transportation challenges facing airports will vary from one locale to another. On the transit side, rail / fixed-guideway access is becoming the norm for the largest metropolitan areas and airports (e.g. Oakland in 2014, Denver International in 2016, Dulles in the near future), as well as some smaller airports (some of which were previously major hubs, like Saint Louis), while bus access remains the norm for midsize MPOs (e.g., Cincinnati, Columbus, Pittsburgh). Smaller airports vary between direct bus service from downtown (e.g., Reno) to no direct bus service from downtown to the airport (e.g., Front Range airport, which only

has a shuttle from Denver International) or no bus service at all for smaller airports, particularly those without commercial service. Similarly, separated-access highways are frequent for the largest metros and their airports, although it is more difficult to achieve for airports located in dense urban areas (in New York in particular). Much smaller arterial roads or even secondary roads often provide access to smaller airports. Small airports within large metropolitan areas often do not have large freight traffic flows. The guidebook is relevant to all such contexts.

- Many states and metropolitan areas have undertaken or are currently conducting regional freight studies. Surface access to airports, for both air cargo and supplying airport-related retail / commercial businesses, is an important part of these studies. Airport officials often have very little involvement in such studies. In contrast, numerous airports are developing their own freight strategies and plans. The guidebook reflects the importance of freight access to an airport, in particular, how the planning process can include such concerns and who will be involved.
- While the focus of this study was on the interaction among relevant agencies for planning airport ground access, many airport planning groups are also engaged with local planning agencies with respect to major development projects.

Another factor influencing the interaction between the planning processes at airports vis-à-vis the rest of the region relates to an airport's funding support. In most cases, the FAA rules limit the ability of airports to fund access projects beyond the airport property line, which must be primarily dedicated to airport access if airport funds are to be used. This may, in turn, limit the interest of airport planners beyond the property line as well.

The guidebook was organized to allow users to access information that will be of most interest for a particular task.

For those wanting information on the respective roles of airport and public planning agencies/staffs in surface transportation planning: a chapter describes the different roles for both airport and public planning agency staffs in airport access specifically and regional/community transportation planning more generally. In addition, the evolving relationship among these groups in the context of major development projects near the airport is discussed. This chapter also identifies some of the legislative and regulatory factors that influence collaborative interaction.

For those wanting information on the benefits of more collaborative planning: the guidebook identifies the benefits to the airport, public planning agencies and the region more broadly of more collaborative planning. Put simply, what does each gain by working more closely in planning and implementing projects that will improve access to the airport and enhance regional mobility.

For those wanting to know how well their current collaborative planning environment is performing: a self-assessment tool is provided that can be used by airport planning staff and public planning agencies to assess the current collaborative nature of joint planning efforts. The tool identifies specific areas where collaboration seems to be working and areas where improvements can be made. The self-assessment tool chapter in the guidebook also identifies different strategies for improving collaborative planning reflective of the level of collaboration that currently exists in the region.

For those wanting examples of how a self-assessment process and the identification of enhancement strategies can occur: the guidebook provides prototypical cases of how the self-assessment tool and the

use of institutional strategies for improving collaboration can occur for different types of challenges facing the planning process.

The foundation for the guidebook was the use of a capability maturity model (CMM) approach. The concept of using a capability maturity model for assessing an organization's capacity for change and identifying strategies for doing so was first developed for the information technology (IT) industry. Today, using a CMM to develop a conducive environment for new software products is very common, and similar applications have spread to other sectors, especially in industries and sectors where products, services and processes are outcome-oriented.

The CMM approach has not been used as much in the transportation sector. Several Transportation Research Board Cooperative Research Program (CRP) projects have examined different ways of using CMM approaches to enhance collaboration among public agencies, whether focusing on multimodal transportation planning, institutional strategies that foster joint planning and implementing intercity passenger rail service, focusing on collaboration as a research topic itself, or examining the integration of different planning processes. A Transit Cooperative Research Program (TCRP) report in the mid-1990s examined the institutional barriers in implementing intermodal transportation projects and indicated three primary types of institutional barriers to collaborative implementation: organizational, interjurisdictional, and resource.³ The study described the challenges of intergovernmental conflict among neighboring jurisdictions, and the importance of "cross-boundary" conflicts.

The most complete report on the topic of collaboration in the public sector is reported in *From Handshake to Compact: Guidance to Foster Collaborative Multimodal Decision Making*, which identified tools to improve multimodal transportation program implementation between highway and transit agencies.⁴

FHWA identifies the following "rules" (taken from the FHWA guidance on CMM applications) for the application of the CMM tool that will be found in the proposed tool in this guidebook:

1. "A set of action plan steps for each level are required for an agency to move up to the next level of capability, beginning from the point of departure indicated by the user's self-evaluation. The factors found at the lowest level of capability are usually the principal constraints to improvement in program effectiveness and therefore the highest priority to be addressed.
2. It is more difficult to improve capability in certain dimensions than others, as actions required may be at odds with the agency's legacy processes and organization, and/or outside the complete span of control of a given manager. However, each of the dimensions included is essential and must be addressed. Omitting improvement in any one dimension will inhibit continuous improvement of program effectiveness.
3. For any dimension, levels cannot be skipped. Each level builds on the technical and/or organizational readiness of the previous level. Steps take for a given dimension need to be in

³ Crain & Associates. 1996. "Institutional Barriers to Intermodal Transportation Policies and Planning in Metropolitan Areas." TCRP Report 14. Washington, D.C.: Transportation Research Board.

⁴ Campbell, Meyer, et al, "From Handshake to Compact: Guidance to Foster Collaborative, Multimodal Decision Making," TCRP Report 106/NCHRP Report 536, Transportation Research Board, 2005.

place for a period (one year) to become embedded as the basis of the next level of improvement.

4. In each case, users of the self-assessment tool should proceed through the self-evaluation for the user's agency or planning process. After the user has proceeded through the self-evaluation, the tool will present guidance on how to improve performance. The self-evaluation questions probe the strengths and weaknesses of an agency's current capability level in the key dimensions shown to be critical to improving effectiveness on a continuous basis. The evaluation provides a user with a starting place to develop agency actions to improve the effectiveness of the agency's activities.
5. Action plans can be developed to improve capability from the current level indicated in the self-evaluation up to the next level and establish the basis for continuous improvement (which would include the use of tools and strategies that we have found in our research).⁵

Research conducted under the Strategic Highway Research Program, Phase 2 developed a decision-making guide that aimed to encourage collaborative decision making among the groups and agencies involved in project development.⁶ The results of the case studies used in this project that focused on successful collaborative decision making identified the following issues that should be addressed to foster more collaborative decision making.

1. Manage risks
2. Use context-sensitive approaches⁷
3. Link phases of transportation decision-making processes
4. Integrate transportation, land use and environmental issues
5. Structure decision making/Use a formal approach
6. Use performance measures and evaluation criteria
7. Collaborate with transportation partners and the public

Another example includes a CMM-based approach to develop guidance to support DOTs "institutionalizing" a culture of transportation systems management and operations.⁸

Education and Outreach Plan

TRB's Cooperative Research Programs (CRPs) have emphasized the importance of implementing the results of its research projects. This has included incorporating into the research designs of many of its projects a task to identify strategies and actions that can be used to enhance such implementation. The Airport Cooperative Research Program (ACRP) has been very successful in using a range of innovative

⁵ Federal Highway Administration. 2016. "Transportation Performance Management Capability Maturity Model," Office of Transportation Performance Management, <https://www.tpmtools.org/wp-content/uploads/2016/09/tpm-cmm.pdf>

⁶ ICF International, and URS Corporation. 2014. "Framework for Collaborative Decision Making on Additions to Highway Capacity." SHRP 2 Report S2-C01-RR-1. Washington, D.C.: Transportation Research Board. <https://www.nap.edu/download/22851>.

⁷ It is interesting to note that one objective "focus on enhancing places not just enhancing mobility" is very close to the Aerotropolis concept.

⁸ Parsons Brinckerhoff, Delcan, Philip J. Tarnoff, George Mason University School of Public Policy, and Housman and Associates. 2012. "Institutional Architectures to Improve Systems Operations and Management." SHRP Report S2-L06-RR-1. Washington, D.C.: Transportation Research Board. <https://www.nap.edu/download/14512>.

strategies to expose the industry to research results and in identifying different ways for industry participants to use the products its research. ACRP utilizes several tools to make airport professionals aware of new research reports, such as email blasts to registered recipients, hosting booths at industry conferences, and supporting online webinar trainings. Task 8 of this research project developed an education and outreach plan that will provide a task-by-task description of steps that can and should be taken for the products of the first research phase to have a constructive and measurable impact. Unlike most ACRP research reports, ACRP 03-43 required outreach to non-aviation communities that need to collaborate with airports in order for research dissemination to be successful. In addition, a key outcome of this project research is to develop collaborative opportunities where airport and surface transport professionals can interact and work together on regional ground access solutions.

The purpose of this Initial Outreach Plan is to provide a road map by which ACRP can refine and execute Phase 2 of this project. Phase 2 will engage with professionals at industry trade associations and with airport and transportation planning agencies. The research team strongly suggests that Phase 2 engage with the trade associations for both airport and surface transportation planning organizations to brainstorm and refine the outreach plan.

The recommended steps for Phase 2 include:

1. Review Phase 1 work products and Initial Outreach Plan
2. Hold workshop with ACRP, NCHRP, and TCRP staff to develop National Academies outreach plan. This may include materials such as a jointly-branded brochure, as well as plan to disseminate via existing channels.
3. Engage industry organizations to assess willingness to assist with outreach
4. Develop detailed plan for outreach
5. Develop materials (i.e., presentations, web content, articles, etc.) to support the outreach plan
6. Develop construct to evaluate the success of the outreach plan
7. Conduct a webinar that widely disseminates the results of phase 2 work.
8. Implement outreach plan by holding peer-exchanges, workshops on the model of the activities proposed in the rest of this document.

The following sections of the Initial Outreach Plan describe the target audiences and the key organizations to reach these audiences, a proposed content and outline of materials and selected dissemination methods. Section 6 is dedicated to performance monitoring. The last section contains a proposed approximate budget, based on the menu of activities described previously, and schedule.

Target Audiences

Successful research dissemination has often depended on understanding the needs of targeted audiences and using representative associations and other groups as a liaison for introducing the research results into the different industries or sectors. There are two primary markets for this research: surface transportation planning agencies and airport operators. Within each of these markets, a distinction between staff (in charge of technical aspects) and executive/oversight (in charge of policy, collaboration frameworks) levels is important in order to develop appropriate dissemination strategies. Thus, for example materials aimed at staff might focus on very specific strategies to enhance

collaboration (e.g., data-sharing protocols among different planning groups), whereas information presented to executives might focus on higher level benefits of such collaboration and the different models for achieving these benefits.

Executive and technical professional staff in agencies responsible for surface transportation planning outside of an airport's boundaries (MPOs, state DOTs, transit agencies and city and county planning agencies) already collaborate with their counterparts other agencies already as part of the urban transportation planning process: therefore, it is useful to think of them together as a single audience, even though MPO, city and state staff have different perspectives and responsibilities.

The second primary audience consists of planning professionals representing airports and airport leaders and managers having prime responsibility for fostering and overseeing collaborative efforts related to airport ground access planning, and for agreeing upon underlying goals and approaches. Even at large airports, the number of technical staff on the planning side tends to be limited.

Successful education and outreach can occur on a peer-to-peer basis within each of the four sub-audiences – technical professionals and agency leadership for both airport and surface transportation planning agencies. From the Phase 1 research, it is apparent that the rationales for collaboration and level of knowledge of what the “other” organizations are often not understood among airport and surface transportation planning agencies. In addition, it was also apparent that the benefits of such collaboration were not understood, nor well-articulated by guidance or planning support documents.

Relevant Organizations for Targeted Audiences

Successful implementation of the research results could be stimulated through the leadership activities of many different groups. Professional and industry organizations are critical for success, as preliminary survey results and case study interviews suggested. For the airport audience, some relevant organizations include the American Association of Airport Executives (AAAE), Airports Council International – North America (ACI-NA), TRB aviation group, etc.

The American Association of State Highway and Transportation Officials (AASHTO), the American Public Transportation Association (APTA), the Association of Metropolitan Planning Organizations (AMPO) and the National Association of Regional Councils (NARC) can disseminate and lend credence to the research results for public agencies through their respective planning committees. All these organizations have national (and often regional) meetings where the latest issues are presented and relevant information disseminated. In addition, many of these organizations sponsor network blogs, webinars, or newsletters that distribute to their members the latest information on topics of interest to their responsibilities.

Other organizations that should be approached for research dissemination include the National Association of City Transportation Officials (NACTO) and the American Public Works Association (APWA). To the extent that the two sets of groups – those that include surface transportation planners and those that include airport planners – can collaborate in joint education and outreach activities at both the technical professional level and the leadership level, they would be practicing the very collaborative approach advocated by the Phase 1 research. That is why one of the proposals for outreach discussed below includes joint airport/planning agency presentations at national meetings. We call this the “ambassador” strategy. By this is meant that professionals will react better to their peers explaining the benefits of an action than if the same message came from a research team.

Federal agencies that provide professional capacity building activities and guidance materials can play an extremely important role in both funding and delivering education and outreach. These include the Federal Aviation Administration (FAA), the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA) and the Federal Railroad Administration (FRA), at a minimum. The Council of University Transportation Centers (CUTC) can help to raise awareness of the research products through continuing education programs as well as curricula for graduate level courses.

Proposed Content and Outline of Materials

Outputs from Phase 1 will be summarized or synthesized into usable products for Phase 2 (e.g., for newsletters or PowerPoint presentations for use in webinars). The types of materials that would be useful for Phase 2 efforts include the following, mostly focused on disseminating information on the substance and use of the Guidebook:

1. Executive Summary of the Guidebook

This would be a one-page summary of the Guidebook that could be used for newsletters or other forms of communication utilized by professional organizations to highlight technical reports of interest to their members. It would focus on the content of the Guidebook and how it can be used to enhance collaborative planning among the many participants involved with airport access. This information would not only provide a summary of the Guidebook for all audiences, but would also focus on the types of questions that top executives might be interested in. For example, for both airports and MPOs, what are the benefits of closer collaboration with planning agencies or with airport staff? What are the types of strategies that each can use to foster such collaboration? The benefits of collaboration would be outlined for airport staff, including coordination of technical analyses, taking advantage of the MPO's community outreach program, possibly incorporating airport access projects into the regional funding program, and making sure that airport access concerns are highlighted in regional planning documents. For MPO staff, this might include sharing of data, linking airport plans more effectively into economic development forecasts, leveraging coordination of joint funding of projects, and linking airport access more effectively into regional mobility programs.

2. Key Strategies and Recommendations for Collaboration (Separate 2-page Brochure)

The Guidebook on collaboration strategies will be useful reference material even if the self-assessment tool is not utilized at the beginning of the process. The intent of this brochure would be to identify strategies for making collaborative transportation planning among the airport/planning agency participants more successful. The brochure would be designed to be "eye-catching" (a title something along the lines of, "So, you want your planning process to be more successful?"), and all those reading the brochure to find very quickly advice and guidance on what can be done to enhance their planning process. This brochure would be of value to both agency executives and technical staff who are interested in knowing more information on how to make collaboration work. For airport and MPO executives, the brochure would focus on successful institutional mechanisms, implementation steps, and expected outcomes and benefits. Likewise, for technical staff, the brochure would provide information on the various roles that both MPO and airport staff can plan in existing institutional structures for planning, and what can be done for project-specific initiatives (e.g., Atlanta's Aerotropolis effort). The

emphasis would be on the value planning agencies and airports contribute to overall collaborative success.

3. Primer on Funding Sources and Eligibility

One of the key issues raised in this research was understanding the different funding sources available for airport access projects, and how different funding programs could be used to leverage funding from other sources. This primer would provide an overview of the different funding strategies along with funding-focused case studies. For airports, this information would emphasize the public funding sources that can be used to support airport access projects. For MPOs, this information would examine the types and limitations associated with airport funding sources.

4. PowerPoint Presentation on the Guidebook for Webinars/Peer Exchanges

As described in this outreach and education plan, the use of webinars and peer exchanges are emphasized as some of the more effective strategies for disseminating the results of the research. This presentation would focus on the self-assessment tool and the rest of the Guidebook that identifies different strategies for different levels of maturity. The presentation could be the sole content of a webinar or used as an introductory session in a peer exchange. To illustrate the use (and thus the usefulness) of the Guidebook, the presentation would include prototypical applications of the self-assessment tool and identification of strategies, similar to what is already found in the Guidebook.

5. Self-assessment Tool (Abridged) from the Material in the Guidebook

This material would be simply a stand-alone self-assessment tool that would allow a user to conduct a self-assessment without the rest of the Guidebook attached. The intent of such material is to provide users with an easy-to-use document that can be undertaken in a very short period of time, and importantly material that can be handed to several individuals if they are to participate in the process. Note that in the illustrative examples in the Guidebook of conducting a self-assessment that in several instances several staff members or several high-level managers did the self-assessment. This material is intended to facilitate a multi-participant self-assessment.

6. Role-playing Materials

To the extent that peer exchanges are part of the outreach strategy, it would be useful to have the participants engage in role playing in the context of specific ground access scenarios. The intent would be for the participants to use the self-assessment tool and identify potential strategies to overcome barriers and challenges to provide more successful planning process. The role-playing material would introduce the institutional and planning contexts within which planning decisions need to be made.

Dissemination Methods

As a first step, we suggest that focus groups be conducted at a transportation conference or meeting where both types of agencies might be in attendance in order to assess how the findings and their presentation, in particular with respect to best practices, resonate. The TRB meeting in January 2020,

after conclusion of the research, could present an appropriate opportunity to do so. Comments and reactions from focus groups will help in the identification of the most appropriate strategies to present, share and disseminate the findings of this study.

The following strategies are recommended to maximize the awareness of the Guidebook and to help professionals utilize the tools it includes to improve ground access planning collaboration. For both airports' and surface transportation agencies' leadership and staff, these strategies will focus on disseminating awareness of the guidebook and providing training to improve collaboration.

Strategies to make professionals aware of the guidebook

- a) **TRB internal collaboration:** Given that the research results reflected in the Guidebook are multi-modal, a joint training session with NCHRP and TCRP staff is a useful first step. These sister programs can jointly develop an outreach plan to regional planners beyond the airport community. In addition, outreach to the key federal modal administrations within the Department of Transportation could also increase awareness (FAA, FHWA, FTA, FRA).
- b) **Industry Association Outreach:** This involves a meeting/call with key staff at the industry associations to discuss the goals, budget, and opportunities for the associations to support outreach efforts through their conferences, committees, and publications. Based on these discussions, outreach options would be ranked and a roadmap developed for collaboration.
- c) **Practice and trade journal articles:** ACRP staff, consultants, and/or industry professionals would utilize the research and case studies from Phase 1 to develop content that could be distributed via industry hardcopy and online publications.
- d) **Peer-to-Peer (P2P) outreach or peer exchanges:** For similar outreach efforts, P2P is often the most effective tool to get attention from busy professionals. Staff working in the airport and transportation planning sectors are best positioned to help industry colleagues understand the benefits of planning coordination and to how improve collaboration at the local level. There are several ways that P2P outreach could be used. Some ideas include:
 - i. Through professional organizations, identify champions in the airport and regional planning community that are willing to collaborate in the outreach program. Members of the ACRP 03-43 panel are particularly well suited to champion the research.
 - ii. Co-author articles/presentations with industry champions.
 - iii. Encourage industry champions to work distribute materials/information through the collaboration channels they currently utilize for peer knowledge exchange.
 - iv. Work with accreditation agencies to include airport/transport collaboration as part of their continuing education curriculum for maintaining industry certification.
- e) Outreach to universities and research institutes encouraging the consideration of collaboration course materials in aviation and surface transportation planning coursework.

Strategies to develop virtual and in-person forums to train professionals on use of the techniques in the guidebook

Surveys and case study interviews have suggested that webinars could be helpful to disseminate information on airport/surface transportation planning agency collaboration best practices and

fundamentals. A series of webinars/discussions on different topics (i.e. collaboration on highway airport access planning, collaboration on transit airport access planning) as well as for different audiences (airport staff, MPO staff) should be considered. Exchanges on these topics might be most helpful. Peer exchanges, which are very popular among transportation officials, should be considered, for instance at the FAA region level (on the model of the state DOT CFO peer exchanges organized by BATIC for instance).

In addition to reading and using the Guidebook, industry professionals can benefit from hands-on experiences that can help them better understand the opportunities and challenges inherent in ground access planning and develop specific strategies to collaborate in their region. The outreach plan would include an assessment of the feasibility and efficacy of several potential training forums including:

- a. **Webinars** are a low-cost way to engage with professional staff. They could be sponsored by industry associations to enhance attendance while still offering the benefit of real-time learning and the opportunity for questions and exchange of ideas among professionals. Technology enhancements for videoconferencing can improve the experience compared to traditional webinar presentations. TRB also offers webinars that have been very appealing to transportation professionals.
- b. The organization of **regional P2Ps** is another more costly, but highly popular, option at the scale of FAA regions for airport practitioners and for MPO, city and other regional transportation planning staff professionals. The scale of the FAA region is all the more significant in this case given that FAA regions often provide additional regional guidance for planning projects that could be of relevance for such peer-to-peer exchanges. It also provides a framework for other surface transportation planning organizations.
- c. **In-person workshops** are ideal for an exchange of ideas. The research team has partnered with governmental organizations to develop training programs that can be hosted by airports or MPOs regionally. These could be stand-alone workshops or held in conjunction with industry conferences. Funding for these sessions would, of course, need to be identified. This could be through a combination of government funding and agency participation, as well as attendee registration fees.
- d. A **customized workshop** could be developed for a single region interested in enhancing ground access collaboration. In this format, expert facilitators could be engaged to assist multi-modal representatives in a region in developing action plans to enhance collaboration. One of the regional agencies would host the event, keeping costs limited.
- e. Industry associations or governmental agencies may be willing to offer **technical assistance** to service providers by being available **for one-on-one discussions on an ad-hoc basis**. This could be part of the duties of staff to support users in implementing the guidebook.

Other dissemination methods might include newsletter articles, presentations at professional meetings, research meeting presentations, listserv announcements of material availability, case studies for use in college courses and the like.

Something that should be considered in a Phase 2 outreach effort is to expand the marketing of the Guidebook to beyond the topic of just airport access. The Guidebook can be applied to a variety of

topics that would benefit from joint MPO and airport planning collaboration. It might be an effective strategy to expand the policy and planning topics for which the Guidebook is relevant. The logic is that airports might find a broadened tool of more interest than one targeting one aspect of airport operations.

Table 3 summarizes the strategies discussed above and an estimate of cost range.

Table 3: Efficacy and Cost of Different Dissemination Strategies

	<u>Efficacy</u>	<u>Cost</u>
Guidebook Awareness		
TRB Collaboration	Medium	Low
Industry Association Outreach	Medium	Low
Articles/White Papers	Medium	Medium
Peer-to-Peer Education	High	High
Technical Assistance		
Webinars	High	Medium
Peer-to-peer Exchanges	High	High
In-Person Workshops	High	High
Regional Collaboration	High	High
Call-in Technical Assistance	Medium	Medium

Performance Monitoring

The primary intent of this research is to improve the collaborative planning for airport ground access and surface transportation planning. Ultimately, two of the most important criteria to measure progress will be the degree to which agencies incorporate the concepts resulting from this research and the extent to which more initiatives to implement collaborative partnerships are put in place. This will have to be approached with a long-term perspective given the timeframe for implementing new processes and collaborative arrangements. With respect to monitoring the performance of the Education and Outreach Plan, the following metrics are proposed:

1. Number of contacts with the material (Guidebook downloads)
2. Surveys of users to assess usefulness of both the material itself and of the dissemination strategy

Budget and Schedule

A “menu-style” budget and schedule are provided below. This budget (Table 4) and schedule (Figure 4) reflect the levels of effort and relative importance of the different implementation strategies.

Table 4: Estimated Budget for Outreach Effort

	<u>Number of Instances</u>	<u>Number of Hours per Instance (includes preparation)</u>	<u>Average Rate</u>	<u>Approximate Total Cost</u>
Guidebook Awareness				
National Academies Collaboration	3	15	\$200	\$9,000
Industry Association Outreach	5	15	\$200	\$15,000
Articles/White Papers	2	80	\$150	\$24,000
Peer-to-Peer Education	4	20	\$200	\$16,000
Technical Assistance				
Webinars	4	20	\$200	\$16,000
Peer-to-Peer Exchanges	8	40	\$250	\$80,000
In-Person Workshops	5	40	\$200	\$40,000
Regional Collaboration	5	40	\$200	\$40,000
Call-in Technical Assistance	Ad-hoc	Ad-hoc	\$200	Medium

Figure 4: Proposed Schedule for Outreach Effort

	1	2	3	4	5	6	7	8	9	10	11	12
Guidebook Awareness												
National Academies Collaboration												
Industry Association Outreach												
Articles/White Papers												
Peer-to-Peer Education												
Technical Assistance												
Webinars												
Peer-to-Peer Exchanges												
In-Person Workshops												
Regional Collaboration												
Call-in Technical Assistance												

Note: the average rate for articles and white papers is lower because it includes junior staff for background research and editing staff. A higher rate is used for peer-to-peer exchanges, which require more experienced staff.

The proposed schedule takes as a basis that Phase 2 would last 12 months, which the research team assumes to be the minimal duration for which dissemination and training would produce meaningful results.

References

- Amekudzi, Adjo, and Michael Meyer. 2005. "Consideration of Environmental Factors in Transportation Systems Planning." NCHRP Report 541. Washington, D.C.: Transportation Research Board.
- Boudreau, Bruce J., Greg Detmer, Susan Tam, Stephanie Box, Ryan Burke, Joanne Paternoster, and Lou Carbone. 2016. "Improving the Airport Customer Experience." <https://trid.trb.org/View/1416555?ajax=1>.
- Budd, Thomas, Stephen Ison, and Tim Ryley. 2011. "Airport Surface Access Management: Issues and Policies." *Journal of Airport Management* 6 (1): 80–97.
- Campbell, S., D. Leach, K. Valentine, M. Coogan, M. Meyer, and C. Casgar. 2005. "From Handshake to Compact: Guidance to Foster Collaborative, Multimodal Decision Making." TCRP-NCHRP Report. Washington, D.C.: Transportation Research Board. </view.aspx?id=753957>.
- Coogan, Matthew A. 2008. "Ground Access to Major Airports by Public Transportation." ACRP Report 4. Washington, D.C.: Transportation Research Board. <https://trid.trb.org/view/2008/M/863556>.
- Coogan, Matthew A., Daniel Brand, Mark Hansen, Hanan Kivett, Jörg Last, Richard Marchi, Megan Smirti Ryerson, Marilyn Jordan Taylor, and Louis Thompson. 2015. "Integrating Aviation and Passenger Rail Planning." ACRP Report 118. Washington, D.C.: Transportation Research Board. <http://trid.trb.org/view/2015/M/1351086>.
- Crain & Associates. 1996. "Institutional Barriers to Intermodal Transportation Policies and Planning in Metropolitan Areas." TCRP Report 14. Washington, D.C.: Transportation Research Board.
- Federal Aviation Administration. 2004. "Best Practices - Surface Access to Airports." Bulletin 1. Washington, D.C.
- . 2015. *Change 1 to 150/5070-7 - The Airport System Planning Process*. Vol. 150/5070-7.
- Federal Aviation Administration, and Federal Highway Administration. 1996. "Airport Ground Access Planning Guide." Washington, D.C. <https://ntl.bts.gov/DOCS/AGAPP.html>.
- Federal Highway Administration. 2010. "Staffing and Administrative Capacity of Metropolitan Planning Organizations." Washington, D.C.
- Frawley, William E., Jeffrey D. Borowiec, Annie Protopapas, Jeffery E. Warner, and Curtis A. Morgan. 2011. "Guidebook on Landside Freight Access to Airports." <https://trid.trb.org/View/1099046>.
- Futterman, Evan, Stephanie A. D. Ward, David Dietz, Regan A. Massey, Mary Vigilante, Tom J. Browne, Rusty Chapman, Paul B. Gaines, Michael J. Powderly, and Peter J. Kirsch. 2013. "Developing and Maintaining Support for Your Airport Capacity Project." ACRP Report 85. <https://trid.trb.org/View/1256534?ajax=1>.

- Gosling, Geoffrey D., Hugh Johnson, and Joan Zatopek. 2017. "Influence of the Bay Area Rapid Transit System Oakland Airport Connector on Airport Access Mode Use: Early Experience." In . <https://trid.trb.org/View/1439191>.
- Gosling, Geoffrey D., Wenbin Wei, and Dennis Freeman. 2012. "Collaborative Funding to Facilitate Airport Ground Access." 11–27. San Jose, CA: Mineta Transportation Institute. <https://trid.trb.org/View/1148004>.
- ICF International, and URS Corporation. 2014. "Framework for Collaborative Decision Making on Additions to Highway Capacity." SHRP 2 Report S2-C01-RR-1. Washington, D.C.: Transportation Research Board. <https://www.nap.edu/download/22851>.
- Kwakkel, J. H., W. E. Walker, and V. a. W. J. Marchau. 2010. "Adaptive Airport Strategic Planning." *European Journal of Transport and Infrastructure Research (EJTIR)*, 10 (3), 2010, September. <http://repository.tudelft.nl/view/ir/uuid:4de3f8ef-119a-4b2b-bcdf-9a39555577f6/>.
- Leigh Fisher Associates, Matthew A. Coogan, and MarketSense. 2002. "Strategies for Improving Public Transportation Access to Large Airports." TCRP Report 83. Washington, D.C: Transportation Research Board.
- LeighFisher. 2010. "Airport Curbside and Terminal Area Roadway Operations." <https://doi.org/10.17226/14451>.
- LeighFisher, Tennessee Transportation and Logistics Foundation, GateKeeper Systems, and Merriwether & Williams Insurance Services. 2015. "Commercial Ground Transportation at Airports: Best Practices." ACRP Report 146. <https://trid.trb.org/View/1372604?ajax=1>.
- Magalhães, Liliana, Vasco Reis, and Rosário Macário. 2017. "A Literature Review of Flexible Development of Airport Terminals." *Transport Reviews* 37 (3): 365–82. <https://doi.org/10.1080/01441647.2016.1246488>.
- Mandle, Peter, Stephanie Box, and InterVISTAS Consulting. 2017. "Transportation Network Companies: Challenges and Opportunities for Airport Operators." ACRP Synthesis 84. Synthesis of Information Related to Airport Practices. Washington, D.C.: Transportation Research Board. <https://trid.trb.org/View/1481372>.
- Meyer, Michael D. (ed.). 2016. *Transportation Planning Handbook*. Institute of Transportation Engineers, Washington D.C.
- Meyer, Michael D, and Eric J Miller. 2010. *Urban Transportation Planning: A Decision-Oriented Approach*. Place of publication not identified: McGraw-Hill Primis.
- Nixon, Chad. 2014. "The Dynamic Planning Approach and the Death of the Traditional Master Plan." *Journal of Airport Management* 8 (4): 343–50.
- Parsons Brinckerhoff, Delcan, Philip J. Tarnoff, George Mason University School of Public Policy, and Housman and Associates. 2012. "Institutional Architectures to Improve Systems Operations and Management." SHRP Report S2-L06-RR-1. Washington, D.C.: Transportation Research Board. <https://www.nap.edu/download/14512>.

Petro, Adam. 2017. "Reserved Airport Parking: A Creative Parking Product to Enhance Revenue and Improve Service." *Journal of Airport Management* 11 (2). <https://trid.trb.org/View/1460571>.

Ryerson, Megan S., and Amber Woodburn. 2014. "Build Airport Capacity or Manage Flight Demand? How Regional Planners Can Lead American Aviation Into a New Frontier of Demand Management." *Journal of the American Planning Association* 80 (2): 138–52. <https://doi.org/10.1080/01944363.2014.961949>.

Shriner, Heather, and Lester Hoel. 1999. "Evaluating Improvements in Landside Access for Airports." *Transportation Research Record: Journal of the Transportation Research Board* 1662 (1): 32–40. <https://doi.org/10.3141/1662-04>.

United States Government Accountability Office. 2005. "Potential Strategies Would Redefine Federal Role in Developing Airport Intermodal Capabilities." Report to the Chairman, Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives 05–727. Washington, D.C.: United States Government Accountability Office.

U.S. Department of Transportation Research Innovative Technology Administration John A. Volpe National Transportation Systems Center. 2012. "Best Planning Practices: Metropolitan Transportation Plans." Washington, D.C.: Federal Highway Administration.

Vail, Steve, Andrew Churchill, Joakim Karlsson, Timothy McInerney, Jessica Domitrovich, and Tim Phillips. 2015. "Guidebook for Advancing Collaborative Decision Making (CDM) at Airports." ACRP Report 137. <https://trid.trb.org/View/1367899?ajax=1>.

Volkova, Nadezda, and Jürgen Müller. 2012. "Assessing the Nonaviation Performance of Selected US Airports." *Transportation Journal* 51 (3): 289–304.

Washington, Simon, Michael Meyer, Ida van Schalkwyk, Eric Dumbaugh, Sudeshna Mitra, and Matthew Zoll. 2006. "Incorporating Safety into Long-Range Transportation Planning." NCHRP Report 546. Washington, D.C.: Transportation Research Board.

Wijnen, Roland A. A., Warren E. Walker, and Jan H. Kwakkel. 2008. "Decision Support for Airport Strategic Planning." *Transportation Planning and Technology* 31 (1): 11–34. <https://doi.org/10.1080/03081060701835670>.

Appendix A: Survey Instruments for Airport and Planning Agency Staffs

A1: Airport Survey

TRANSPORTATION AND AIRPORT PLANNING SURVEY AIRPORTS

* Required

Enter name of your Airport (*airport name allows us to obtain data from national sources for airport characteristics; airport name will not be used to quote responses to the survey*):

- 1) How many airports with scheduled commercial service (passenger and/or freight) does your agency operate? (choose one)
- 1
 - 2
 - 3
 - 4
 - 5+ _____

- 2) Does the region’s long-range transportation plan (developed by the metropolitan planning organization) examine access options to the airport?
- yes
 - no
 - Don't know

- 3) To what extent do you agree with the following statements?

1-Very strong agreement ----- 3 Neutral -----5 Very strong disagreement	No opinion
Airports should consider access beyond the property line in planning for the future	<input type="radio"/>
The local MPO/transport planning agency understands my airport	<input type="radio"/>
The local MPO/transport planning agency is a strong partner with the airport	<input type="radio"/>
Grant assurances make participating in airport access projects difficult	<input type="radio"/>
If more eligible funds were available (e.g., if the Passenger Facility Charge is increased above \$4.50), the airport would direct more funds to access projects	<input type="radio"/>
New vehicle technologies (e.g., autonomous vehicles) could fundamentally change airport access	<input type="radio"/>
Access planning to my airport takes the preferences and needs of both employees and passengers into account	<input type="radio"/>

- 4) How would you characterize the involvement of your airport’s officials and/or planning staff in local (city or MPO) transportation planning agency’s efforts that have some relevance to the airport (such as road improvements, improved transit, travel demand strategies, etc.)?
- Actively involved in most/all such studies
 - Limited, involved in only a few such studies, depending on the topic
 - Not involved at all
- 5) In which of the following transportation planning activities have airport officials and/or planning staff interacted with public transportation planning agencies in your region? *(choose all that apply)*
- Noise/environmental studies
 - Regional efforts to encourage non-auto use (not just to and from the airport)
 - Plans for improved road access to the airport
 - Plans for improved transit access to the airport
 - Strategies for accommodating other access modes to the airport (e.g. Uber, shuttles, kiss-and-ride)
 - Corridor plans for transportation improvements near the airport
 - Reviews of major “near airport” commercial or retail development studies
 - Development of the regional transportation plan or Transportation Improvement Program (TIP)
 - Other (Please specify) _____
- 6) How would you characterize the involvement of the public transportation planning agencies (city and MPO) in your airport’s planning efforts, such as road improvements or relocations due to airport layout plan changes, improved ground access, travel demand strategies, etc.?
- Actively involved in most such studies
 - Limited
 - Not involved
- 7) In considering interaction with regional planning agencies, identify the top three most important factors for encouraging collaboration. * *(choose 3 only)*

Political leadership	<input type="radio"/>
Knowing our counterparts	<input type="radio"/>
Joint project funding	<input type="radio"/>
Community involvement	<input type="radio"/>
Willingness of management/staff to engage with other modal agencies	<input type="radio"/>
Governance structure of airport and transportation agencies	<input type="radio"/>
Rules that require joint planning	<input type="radio"/>
Other _____	<input type="radio"/>

- 8) Do you think there should be more involvement between airport officials and public sector transportation agencies with respect to surface transportation planning related to your airport?
- Yes
 - No
 - Engagement fine as is

9) If enhanced engagement is desired, which of the following actions would be very effective and desirable (from your agency’s perspective) to improve such interaction? (choose all those that apply)

	Highly Effective	Somewhat Effective	Not Effective	NA
More formal participation of our planning staff on planning or leadership committees of the regional planning agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More formal participation of regional planning staff on transportation planning committees of my agency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hold regular technical meetings with regional planning staff to better understand what our respective agencies are working on	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Include public planning agency-related efforts into our work program, and invite public agency staff to participate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Joint funding of airport-related planning studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Joint funding for developing and using planning tools and databases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased sharing of data to improve airport and regional planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rules that require joint planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10) Rate the following strategies for obtaining information on best practices in collaborative regional transportation and airport planning (choose all that apply)

	Highly Effective	Somewhat Effective	Not Effective	NA
Professional listserv or email/messaging groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional organization conference sessions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference networking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference exhibits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional organization webinars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional organization newsletters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research reports and/or papers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peer exchanges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

List any other strategies your agency uses for obtaining information on best practices in planning

May we can contact you with follow-up questions and a possible invitation to a focus group? *

Yes No

If 'Yes':

Name: _____

Telephone: _____

Email: _____

A2: MPO Survey

TRANSPORTATION AND AIRPORT PLANNING SURVEY MPOs

* Required

Enter name of your MPO (name allows us to obtain data from national sources for airport characteristics; name will not be used to quote responses to the survey):

- 1) Which of the following statements best describes your MPO? (choose one)
 - MPO is housed in a city agency
 - MPO is housed in a county agency
 - MPO is a stand-alone governmental agency, such as a regional planning agency or a council of governments
 - MPO is part of a state agency
 - Other: _____

- 2) How many staff members in the MPO are dedicated to transportation planning? *
 - 1 to 5
 - 6 to 10
 - 11 to 20
 - >20

- 3) Does your region have any commercial airports? *
 - Yes
 - No

- 4) How many commercial or freight airports service your region?
 - 1
 - 2
 - 3
 - 4
 - 5
 - 6+

- 5) With regard to current airport access challenges in your region, how do you see airport access changing in the next 10 years, assuming that the improvements planned today are undertaken? (choose one)
 - The issues are likely to be the same as they are today
 - The issues will be more challenging than today
 - The issues will be less challenging than today
 - Other (please specify):

- 6) Does the airport authority/agency itself have official/formal representation on the MPO policy board?
 - Yes
 - No
 - Varies by airport (if multiple airports in MPO region)
 - Do not know

- 7) If there is no exclusive airport representation, is there an airport's proxy (e.g., local government official) that adequately represents the airport's interest during the regional planning process?
- Yes
 - No
 - Varies by airport (if multiple airports in MPO region)
 - Do not know
- 8) To what extent does your region's long-range transportation plan address different access options to the airport(s)?
- Examined thoroughly and included in the plan
 - Mentioned in the plan, but were not extensively studied as part of the plan development process
 - Not mentioned in the plan
 - Varies by airport (if multiple airports in MPO region)
 - Other (please specify):
- 9) Are the airport's ground accessibility priorities in agreement with the priorities established by the MPO/local/municipal governments?
- Yes
 - No
 - Somewhat
 - Varies by airport (if multiple in MPO region)
 - Do not know
- 10) Has your agency developed any plans or studies other than the region's transportation plan where airport ground access has been examined?
- Yes
 - No
- 11) In which of the following activities - supported by your agency - have your airport executives and/or airport planning staff been actively engaged? * (choose all that apply)
- Noise/environmental studies
 - Regional efforts to encourage non-auto use (not just to and from the airport)
 - Plans for improved road access to the airport
 - Plans for improved transit access to the airport
 - Strategies for accommodating other access modes to the airport (e.g. Uber, shuttles, kiss-and-ride)
 - Corridor plans for transportation improvements near the airport
 - Reviews of major "near airport" commercial or retail development studies
 - Development of the regional transportation plan or Transportation Improvement Program (TIP)
 - Other: _____
- 12) How would you characterize the involvement of airport executives and/or its planning staff in your agency's planning efforts that have some relevance to the airport (such as road improvements, improved transit, travel demand strategies, etc.)? *
- Actively involved in all such studies.
 - Limited, involved in only a few such studies, depending on the topic
 - No involvement
 - Varies by airport

13) Would you like to see more active engagement of airport officials/planners in your agency’s planning efforts, where such efforts include efforts to improve access to and from the airport? *

- Yes
- No
- Engagement fine as is

14) For enhancing engagement with the airport(s), which of the following actions would be most effective to improve such interaction? (choose all that apply)

- More formal participation of airport officials/staff on my agency’s planning or leadership committees
- Hold regular technical meetings with airport planning staff to better understand what our respective agencies are working on
- Include airport planning-related efforts into our work program, and invite airport agency staff to participate in related planning tasks
- Joint funding of airport-related planning studies
- Joint funding for developing and using planning tools and databases
- Increased sharing of data to improve airport and regional planning
- Rules that require joint planning
- Other (please specify):

15) Rate the following strategies for obtaining information on best practices in collaborative regional transportation and airport planning (choose all that apply)

	Highly Effective	Somewhat Effective	Not Effective	NA
Professional listserv or email/messaging groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional organization conference sessions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference networking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference exhibits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional organization webinars	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional organization newsletters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research reports and/or papers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peer exchanges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

List any other strategies your agency uses for obtaining information on best practices in planning.

May we can contact you with follow-up questions and a possible invitation to a focus group? *

- Yes No

If 'Yes':

Name: _____
 Telephone: _____
 Email: _____

Appendix B: Case Studies

All case study reports follow the same structure:

1. Introduction
2. Background
3. Description of Collaborative Planning Process and Problems Being Addressed
4. Case Study Events of Collaborative Planning
5. Lessons Learned

B.1 Atlanta Hartsfield-Jackson Airport Case Study

1. Introduction

Atlanta’s Hartsfield-Jackson International Airport (ATL) holds many international and national records. It is the world’s busiest airport in terms of airport flight operations (it also was the first airport in the world to serve over 100 million passengers in a single year), one of the world’s most efficiently run airports, and depending on the sponsoring organization, one of North America’s favorite airports.⁹ In 2017, just over 52 million enplanements occurred at ATL.

From the perspective of the City of Atlanta and the Atlanta metropolitan region, ATL holds a critically important economic position. It is the State of Georgia’s largest employer and contributes an estimated \$35 billion in economic benefits to the region. It is widely stated that the growth of Atlanta, one of the fastest growing metropolitan areas in the U.S. over the past 30 years, was in part generated by the position that ATL holds in the international and national air system. Many Fortune 500 companies relocating to Atlanta have pointed to the airport as a major reason why they moved to Georgia.

From the perspective of ground access, ATL has devoted considerable resources to improve both the quality and number of options of the transit and highway access to the airport. ATL was one of the first major cities in the U.S. to have the heavy rail system connect into the airport terminal. Major highway and road construction projects have occurred over the past 20 years to provide more efficient and safe access via motor vehicles. With more than 30,000 parking spots on airport land, with many thousands more in private lots off site, the airport has provided ample parking capacity for those interested in driving and parking at the airport (parking revenue was the largest source of operating revenue at the airport in 2017). In 2009, ATL opened a new car rental facility served by the automated Sky Train, and most recently, the airport provided dedicated space for Uber and Lyft service to and from the airport. Although primarily known for its passenger travel, ATL is also an air cargo airport, 11th in the U.S. and 41st in the world as measured in metric tons (just over 673,000 tons in 2017). Much of the land surrounding the airport is dedicated to air-related logistics.

The airport is run by the City of Atlanta (Department of Aviation) and has over time interacted with adjacent cities (especially when runway expansion was contemplated), as well as with the region’s metropolitan planning organization (MPO), the Atlanta Regional Commission (ARC). Most recently, a planned Aerotropolis development near the airport has motivated even more interaction.

Four features of the relationship among the ARC, local communities, and ATL provide lessons for other airports and planning agencies across the country:

- MPO funding of airport-relevant studies has been a catalyst in airport staff engagement in MPO planning activities.
- Obtaining airport top management interest in airport-relevant planning efforts has been key in garnering airport planning staff participation in MPO planning efforts.
- Aerotropolis Atlanta has been a major catalyst for airport, MPO, business community, and local community participation in planning studies.

⁹ Hartsfield Jackson, “Awards.” Website. <http://www.atl.com/about-atl/awards/#1513317620674-cd5e3c6d-5416>

- The “culture” of the MPO is such that collaborative institutional mechanisms are available for many different planning efforts, which would benefit from airport staff participation.

This report describes the Atlanta case study, the collaboration approaches/institutional structures between the airport and MPO, highlights of this relationship in specific planning initiatives, and the lessons learned.

2. Background

This background section describes the structure and governance of ATL and the ARC.

Table B-5: ATL and ARC Key Metrics

Metric	ATL
Owner Agency	City of Atlanta
Operator Agency	City of Atlanta Department of Aviation
MPO	Atlanta Regional Commission
Distance to downtown	10
No. of runways	5
Passenger Enplanement figures (CY16)	50,501,858
OD Passenger (CY16)	16,152,407
OD Passenger % share of enplanement	32%
No. of plane movements (CY17)	879,498
Hub size (Small, medium, large)	Large
Most recent annual operating revenue (in thousands) (FY17)	\$497,955
Parking share of operating revenue (in thousands) (FY17)	\$131,895
Car rental share of operating revenue (in thousands) (FY17)	\$40,359
Taxi (ground transportation) share of operating revenue (in thousands) (FY17)	\$5,723
MPO TIP size (in \$ billion) (FY18)	7
Transit access options	Roadway: Highway, TNC: Special drop off/loading zone, Rail: MARTA, Amtrak, and Skyrail, Bus: MARTA Bus and Greyhound
Annual Freight volume (metric tons) (FY17)	673,210

2.1. Description of ATL, Other Airports and Airport Ground Access Provisions

The Atlanta region is served by one major commercial airport (ATL) and six general aviation airports for various business and recreational users. The general aviation airports are owned by the counties in which they are located, for example, Fulton County Airport – Brown Field is owned and operated by

Fulton County and Dekalb-Peachtree Airport is owned and operated by Dekalb County. These two airports are designated “reliever” airports in the National Plan of Integrated Airport Systems.

Airport Governance: City of Atlanta Department of Aviation

The City of Atlanta owns and operates ATL, and it is the City’s Department of Aviation that oversees budgets and policy recommendations from the City Council, although the airport general manager and executive staff are largely responsible for airport operations. All concession contracts (over a set amount) must be approved by the City Council. The Department of Aviation is a major enterprise fund wholly owned by the City. It is self-supporting and does not use other City financial resources, and the City does not use airport funds to fund non-airport activities. The Mayor appoints the ATL general manager.

According to the 2017 financial statement for the Department of Aviation, of the top 10 accomplishments for FY 2017, the following were those relating to airport ground access:

1. Integrated transportation network companies (Lyft and Uber) into airport operations, providing customers with more ground transportation operations.
2. Completed Cargo Building C, adding 110,00 additional square feet of cargo space.
3. Launched TruckPass staging lot to increase efficiency in cargo staging and loading operations.
4. Installed over 100 new electric vehicle charging stations in the parking decks.

Figure B-1 shows the organizational structure of the Department of Aviation.¹⁰

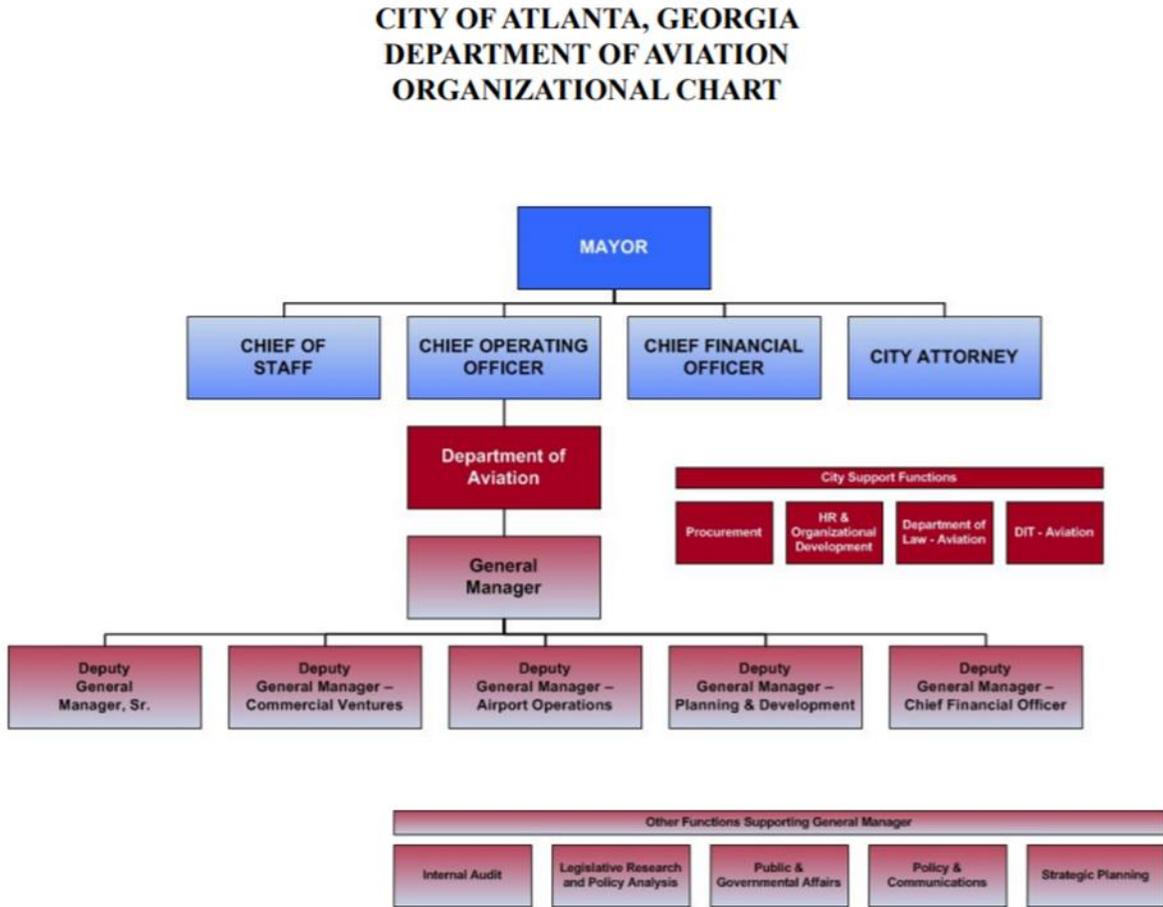
Hartsfield-Jackson International Airport (ATL)

ATL is the only commercial airport in the Atlanta region, and as noted earlier, plays a major role in the nation’s air system as well as serves as a major economic engine for the metropolitan area. As indicated in Figure B-1, the airport has a planning and development unit with responsibility for planning future capital investments and, with other departments, working with surrounding communities, planning agencies, and with the Georgia Department of Transportation (GDOT).

As with other airports, ATL enters into Airport Use and Lease Agreements with the airlines serving the airport, and in most cases this agreement leads to a mutually agreed upon capital investment plan. In the case of ATL, a \$6.2 billion capital plan was agreed to in 2017, which includes the addition of new gates, and the expansion of infrastructure to increase the amount of cargo space at the airport.

¹⁰ City of Atlanta, Department of Aviation. 2017. “Comprehensive Annual Financial Report.” <http://www.atl.com/wp-content/uploads/2016/01/FY17-Comprehensive-Annual-Financial-Report.pdf>

Figure B-1: Organization of the City of Atlanta Department of Aviation



Of interest to the Atlanta case study, a major policy initiative originally led in part by the ARC, called Aerotropolis Atlanta, has focused on how to take advantage of ATL’s position in the world’s aviation system to foster economic development in the region. According to the Aerotropolis Atlanta Blueprint, “Aerotropolis Atlanta will be a preeminent location for economic investment in the southeastern US by leveraging its unique advantage of proximity to Hartsfield-Jackson Atlanta International Airport, by expanding the concentration of targeted industries and furthering strategic development while enhancing the area’s quality of life.”¹¹ More will be said about this initiative in a later section of the case study.

Finally, it is important to note that as shown in other case studies in this research, the Federal Aviation Administration (FAA) develops the National Plan for an Integrated Airport System, approves and funds planning and development projects, operates and maintains the national air traffic control system, certifies aircraft and pilots, and establishes and enforces flight operation rules. The Airport District Office

¹¹ Aerotropolis Alliance and Atlanta Regional Commission. 2016. *The Aerotropolis Atlanta Blueprint: A Vision And Strategy For The Atlanta Region*. <https://aeroatl.org/wp-content/uploads/2017/06/aerotropolis-atlanta-blueprint-final.pdf>

(ADO) of the FAA plays a key role in providing local support and oversight, but like in other cases, their involvement in access planning has been limited due to staffing constraints.

Current Situation

Roadway Access

ATL is strategically located with easy access to the region’s interstate highway network. On the west, the major highway access is from I-85; from the east, it is from I-75 and from the south it is from I-285 (see Figure B-2). Historically, airport officials have worked closely with GDOT to provide high capacity road access from these interstates onto the airport property. The most recent example of this was a 2012-2016 road redesign in road access to the airport terminals. Currently, massive overhead canopies are being built over the drop-off zones outside the terminals to provide more convenient access to the terminals (see Figure B-3). An estimated \$200 million is currently being spent on improvements to both the curb side and immediately inside the terminals to make the traveler experience more appealing.

Parking

There are just over 30,000 public parking spaces at ATL, split between near terminal lots and a large lot served by shuttles. The capital plan for ATL includes the current parking decks to be replaced with a new domestic parking deck and park-and-ride lot served by the SkyTrain (which currently serves the Car Rental Center). Additional private parking spaces are located off site.

Transportation Network Operators

In recognizing the changing market for airport access, airport officials have designated special pick-up and drop-off zones for individuals using Lyft or Uber as their means of transportation. These zones had to be moved during the canopy construction underway currently, but are expected to be placed back near the terminal in a newly designed location once construction is complete.

The airport authority charges TNCs \$3.85 for every trip originating at ATL, whereas taxis currently pay \$1.50 per ride.

Figure B-5: ATL Highway and Road Access



Figure B-3: New Canopies over ATL Access Points



Transit

ATL was one of the first major airports in the US to have direct rail access to its terminal. Originally, when the Metropolitan Atlanta Regional Transit Authority (MARTA) rail network was constructed in the mid-1970s it stopped just north of the airport. In 1988, the Director of Planning for the City of Atlanta worked with the Airport and other city agencies to approve a MARTA rail line extension to improve transit accessibility to the airport. Except for Five Points Station, the major transfer station serving downtown Atlanta, the Airport Station has the second highest number of transit boardings in the system.

The major transit concern for regional planners is access to the airport from the south, which would currently have to come via bus. Clayton County, which joined MARTA in 2016, is the county immediately south of the airport (in fact, some portions of the airport are in Clayton County), and many of the airport employees live in this county. There is currently one bus route serving the airport with a headway of approximately 30 minutes.

Current Projects

Master Plan

In 2015, the Department of Aviation adopted a master plan that laid out just over \$8 billion in improvements (up to the year 2031). Some of the key inputs driving the recommendations of this master plan included:¹²

1. “Total number of enplaned passengers is forecast to increase from 46,332,795 to 60,331,400. During this period, the number of originating enplaned passengers is forecast to increase from 14,360,706 to 21,728,000, while the number of connecting enplaned passengers is forecast to increase from 31,972,089 to 38,603,400. The connecting passenger share of total enplaned passengers is forecast to decrease from 69.0 percent in 2011 to 64.0 percent in 2031 as Southwest continues to assimilate the AirTran operation and reduces connecting passenger volumes.
2. The number of passenger airline aircraft operations is forecast to increase from 892,256 in 2011 to 1,034,600 in 2031. Between 2011 and 2031, the majority of passenger airline aircraft operations are forecast to be domestic operations; however, the domestic share of total operations is forecast to decrease from 92.4 percent in 2011 to 88.8 percent in 2031.
3. Total cargo weight at ATL is forecast to increase from 663,136 tons in 2011 to 1,414,000 tons in 2031. Approximately 60 percent of this cargo weight will be carried by all-cargo aircraft, with the remainder carried as belly cargo on passenger aircraft. The number of all-cargo aircraft operations is forecast to increase from 11,908 in 2011 to 19,200 in 2031. The number of general aviation (GA)/air taxi operations is forecast to increase from 19,430 in 2011 to 21,100 in 2031, while the number of military aircraft operations is forecast to remain constant at 400 annual operations throughout the planning period. Total operations will grow from 923,991 in 2011 to 1,075,300 in 2031.”

¹² Hartsfield-Jackson International Airport, 2015. “Master Plan,” http://www.atl.com/wp-content/uploads/2016/12/ATL_ExecSumm_2015_101415_Spreads.pdf

The master plan includes a new runway (the sixth), new configurations for taxiways, additional gate capacity, a new concourse (connected to the international terminal), reconstructing and expanding airport parking decks, development of an on-site hotel complex and expansion of air cargo facility capacity. With respect to road capacity, the recently completed major road redesign for terminal access is expected to provide adequate road capacity during the planning time horizon. There are some curbside capacity constraints at some of the terminal access points; these are to be redesigned to provide improved road operations.

Current Airport Expansion Project

As noted earlier, the Airport has entered into an Airport Use and Lease Agreement with the airlines. This agreement outlines the investments that will be made in the early phase of the master plan. Close to \$1 billion was spent in 2017 implementing the early phases of the master plan (e.g., the road canopy). Over the next 10 years, the airport will spend nearly \$1 billion on tearing down the old parking decks and building bigger ones. Starting in 2018, airport officials will add five new gates to Concourse T and ready construction for a new 10-gate Concourse G on the airport’s east side off of the International Terminal. Both projects will boost the overall number of gates at the airport by seven percent. With respect to the MARTA airport station, it is scheduled for major reinvestment using MARTA funds over the next 10 years.

2.2. Aerotropolis

The Aerotropolis Atlanta Alliance was formed in 2014 after many years of discussions concerning the potential development impact represented by the airport. The ARC played a pivotal role in organizing the Alliance (primarily as a convener and funder of initial studies), as did the airport and the Georgia Power economic development group. The Alliance is governed by a 26-member Board consisting of top private sector leaders, local mayors, county commissioners, and chambers of commerce.¹³ The current chairman is from Georgia Power company, and the Board consists of the “who’s who” in the business community and local governments in south Atlanta. The Alliance commissioned the Blueprint and adopted the following vision, guiding principles, and goals.

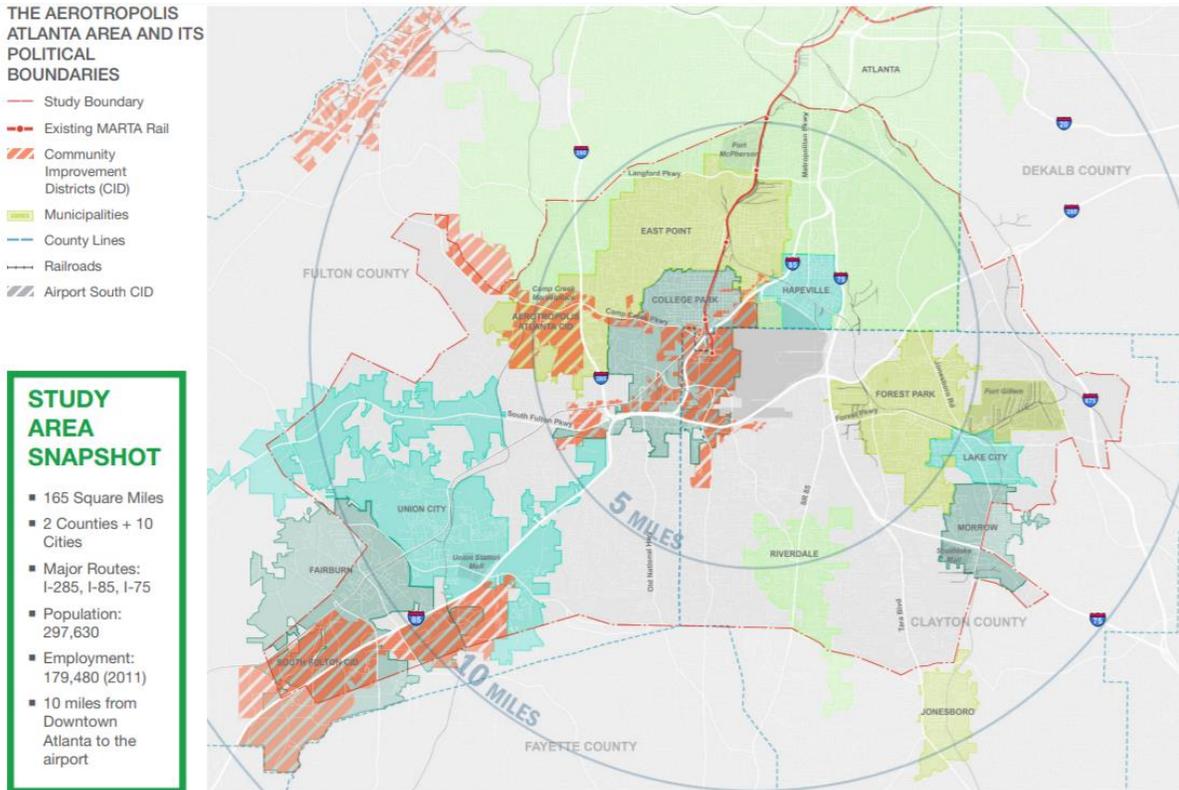
The Aerotropolis Atlanta Blueprint defines an aerotropolis as “an alignment of the metropolitan region to better leverage an airport’s assets and provide a framework for the strategic planning and development of economic activity and real estate.” The Atlanta study area was defined as being that part of the region within a 20-mile drive of the airport (see Figure B-4). From the perspective of the ACRP study, the blueprint importantly notes that “Ultimately, the Blueprint’s success will be not only the result of the formal actions of the Alliance as an entity, but also the regular activities that its many partners undertake to further joint goals.”¹⁴ The intent of this initiative is to take advantage of both the transportation accessibility afforded by the airport, the market attractiveness of locating near the airport, and the funding opportunities represented by the state and local governments, as well as that provided by developers and other economic development enablers. In Georgia, a rather unique funding source for transportation improvements called community improvement districts (CIDs) provide the

¹³ Aerotropolis Atlanta. 2018. “About the Aerotropolis Atlanta Alliance.” <https://aeroatl.org/about/>

¹⁴ Aerotropolis Atlanta, 2016. “Aerotropolis Blueprint, A Vision and Strategy for the Atlanta Region.” <https://aeroatl.org/wp-content/uploads/2017/06/aerotropolis-atlanta-blueprint-final.pdf>

possibility of funding that can help leverage other investments in the study area. Two such CIDs are located in the study area.

Figure B-4: Aerotropolis Atlanta Market Boundaries



“VISION STATEMENT

Aerotropolis Atlanta will be a preeminent location for economic investment in the southeastern US by leveraging its unique advantage of proximity to Hartsfield-Jackson Atlanta International Airport, by expanding the concentration of targeted industries and furthering strategic development while enhancing the area’s quality of life.

GUIDING PRINCIPLES

- A win for one is a win for all.
- Maintain inspired leadership.
- Target our efforts.
- Leverage what makes the Aerotropolis so special.
- Success is a public private effort.

GOALS – A PICTURE OF SUCCESS

- Improved perception of the area within the Aerotropolis - accomplished through Blueprint rollout, branding, marketing, word of mouth, and positive media coverage.
- Increased economic investment – expansion of existing businesses and headquarter locations.
- A true partnership - working and thriving partnerships help facilitate information transfer and a high level of customer service.
- Advancing our catalyst sites - these areas of opportunity are those that will have elevated interest in the Aerotropolis.”

The Blueprint also identified major transportation improvements that were part of state, regional, and local comprehensive transportation plans that would benefit the Aerotropolis study area. Such improvements included capacity and operational performance increases to the study area’s freeway network, enhanced “last mile” capacity to routes to handle traffic, improved access and capacity for air cargo, and expanded freight rail access to the study area. For local transportation plans, the Blueprint identified arterial road projects, upgraded traffic signals, intelligent transportation system (ITS) applications, improved transit access, and pedestrian/bicycle infrastructure.

With respect to the institutional participation in Aerotropolis Atlanta, as noted earlier, the ARC was a lead actor in motivating the stakeholders to form the Alliance. This included acting as a forum for meetings, interacting with local officials to foster an understanding of what the Alliance was intended to accomplish, as well as providing grants and other funding in support of studies to improve the desirability of local communities as development opportunities. In addition, part of the Blueprint was funded by the ARC.

With respect to airport staff participation, airport officials have expressed a lot of interest in the Aerotropolis concept, although as the airport general managers have changed, the level of participation in Aerotropolis meetings has varied. In particular, the non-airport business unit within the Hartsfield-Jackson airport organization has been primarily engaged with the Alliance to support its efforts.

2.3. Atlanta Regional Commission

Organization

The ARC (and its predecessor agency created in 1947) is one of the oldest regional planning agencies in the US. The ARC members include 10 counties and the City of Atlanta. ARC is governed by a 39-member board consisting of:

1. The county commission chair from each of the 10-member counties.
2. The mayor and a council member from the region’s largest city (City of Atlanta).
3. One mayor from each of the 10-member counties, with the exception of Fulton, which has two mayoral representatives (one from north Fulton and one from south Fulton).
4. A representative from the Georgia Department of Community Affairs.
5. 15 citizen members who are selected by the ARC board’s elected officials.

Institutionally, ARC serves many different roles. Under Georgia law, ARC is the designated Metropolitan Area Planning and Development Commission as well as a Regional Commission. It is the federally-

designated MPO for the region, as well as the Area Agency of Aging, Atlanta Regional Workforce Development Board, the local administrative agency for the Atlanta Urban Area Security Initiative and provides planning staff to the Metropolitan North Georgia Water Planning District. These many different roles result in ARC having a variety of planning boundaries depending on which role it is serving. For example, Figure B-5 shows the MPO designated planning area, which goes beyond the 10-member counties.

Figure B-5: ARC Metropolitan Area Planning Boundary



The mission statement of the ARC is: “The Atlanta Regional Commission advances the national and international standing of the region by leveraging the uniqueness of its evolving communities, anticipating and responding to current realities and driving a data-driven planning process that provides a high quality of life, balancing social, economic and environmental needs of all our communities.”¹⁵ In order to accomplish this mission, ARC has organized itself as “centers” of expertise. These centers include:

Center for Livable Communities includes the following ARC divisions:

- Community Development
- Community Partnerships
- Mobility Services
- Natural Resources
- Research & Analytics

¹⁵ Atlanta Regional Commission. 2017. “About the Atlanta Regional Commission.” <https://atlantaregional.org/about-arc/>

- Transportation Access

Center for Strategic Relations includes the following ARC divisions:

- Communications & Marketing
- Community Engagement
- Government Affairs

Center for Community Services includes the following ARC divisions:

- Aging & Health Resources
- Homeland Security & Recovery
- Workforce Solutions

Importantly from the perspective of collaborative planning activities, ARC has created technical committees that allow ARC staff, technical staff from other agencies, and other stakeholders to interact on critical issues. The technical committees include:

- Aging Advisory
- Aging and Health Resources
- Atlanta Regional Workforce Development Board
- Budget and Audit Review
- Community Resources
- Land Use Coordinating
- Strategic Relations
- Transportation and Air Quality
- Transportation Coordinating
- Regional Transit

ARC Planning Efforts and Products

The ARC’s role in transportation planning and programming includes a variety of planning efforts and planning products that could affect the airport. In particular, these efforts include:

Atlanta Region’s Plan: For the first time in 2017, the ARC developed a regional plan that incorporated all of its planning responsibilities – transportation, community development, water resources, aging & health services and workforce development. The theme of the plan was “Win the Future” and categorized recommendations in three major policy areas: providing world-class infrastructure, building a competitive economy and ensuring the region is comprised of healthy, livable communities.¹⁶ The Plan specifically mentions the importance of fostering economic development opportunities around the airport.

Regional Transportation Plan: The transportation component of the Atlanta Region’s Plan is called the Regional Transportation Plan (RTP).¹⁷ The RTP time horizon is the year 2040, and the estimated cost

¹⁶ Atlanta Regional Commission, 2017. “Atlanta Region’s Plan,” <https://atlantaregionsplan.org/>

¹⁷ Atlanta Regional Commission, 2017. “Regional Transportation Plan,” <http://documents.atlantaregional.com/The-Atlanta-Region-s-Plan/rtp/rtp-complete-document.pdf>

of implementing the Plan’s capital program is just under \$94 billion. The Plan also identified another \$10 billion that would have to be set aside in 2041 to continue projects that had been started with the Plan’s time horizon. The Plan includes 13 new freeway interchanges and the reconstruction of 22 others. Just over 1,000 new miles of arterial roadways are added, and the Plan envisions a 276-mile express toll lane system (managed lanes) of which 108 miles are either in place or under construction. A 199-mile rail and bus rapid transit system is envisioned of which 50 miles are currently in place and the Plan sets aside funding for another 93 miles by 2040. A comprehensive walking and bicycling network is supported, and over \$500 million is set aside to support community planning (called the Livable Centers Initiative).

Hartsfield-Jackson International Airport is described in the RTP as the region’s greatest economic infrastructure asset, and notes in particular that the airport wants to increase its activities in air cargo, which will “have an impact on employment and transportation needs in the southern half of the region.” In addition, the Aerotropolis Atlanta Blueprint is mentioned as an important source of ideas and concepts that were incorporated into the RTP.

Comprehensive Transportation Plan (CTP) Program: The ARC sets aside funds in its capital investment program to support local transportation planning and the development of local comprehensive transportation plans. Grants to communities can range from \$250,000 to \$1 million (with a local required match of 20 %) and can focus on a range of issues. Every CTP must consider the following 10 factors:

- State of Good Repair/Maintenance
- Roadways
- Transit
- Active Transportation (primarily pedestrian and bicycle strategies)
- Freight and Goods Movement
- Human Services Transportation
- Transportation Demand Management
- Intelligent Transportation Systems Technology
- System Resiliency/Emergency Preparedness
- System Performance Monitoring and Reporting Program

Five additional optional factors were identified by ARC, depending on the issues being faced by the jurisdiction. These being:

- Airport Access
- Subarea and/or Corridor Analyses
- Traffic Calming Program
- Health Impact Assessment
- Project Screening

The CTPs act as a source of projects for the Atlanta Region’s Plan and the RTP.

Transportation Improvement Program (TIP): The TIP lists the initial federal and major project expenditure of funds for improving Atlanta’s transportation system, in the ARC case, describing the first six years of projects from the RTP. The TIP is updated on a regular basis by the ARC Board, although amendments to the TIP can also be initiated as needed by the Transportation & Air Quality Committee. This document is important because any major highway or transit project needs to be placed in a TIP if it is to be funded.

Other ARC Plans: The ARC develops many different plans that focus on topics that could potentially affect airport access. For example, the following plans have been published in the past five years: *Regional Transit Vision*, *Atlanta Regional Freight Mobility Plan*, *Atlanta Strategic Truck Route Network*, and the *Strategic Regional Thoroughfare Plan*. In each case, the airport was included as a major generator and/or destination of trips. In each case, airport staff had minimal participation in the plan development process.

Conformity Determination: The ARC is responsible for conducting a conformity analysis on the RTP, TIP, and for any major changes that occur in transportation system configuration.¹⁸ The conformity analysis determines whether the actions proposed in the document will lead to a deterioration of the region’s air quality. The region is currently labeled a ‘maintenance’ area for the ozone 2008 standard, but with implementation of the 2015 ozone standards it is likely that some portion of the region will be in non-attainment of these new standards. At one time, the region was considered in non-attainment of the PM_{2.5} particulate standard, but as of 2016 the non-attainment status has been removed.

Congestion Management Process (CMP): Federal law requires that MPOs in areas with population over 200,000 must develop a CMP that “manages traffic congestion and provides information on transportation system performance.” For the Atlanta region, the ARC has defined the RTP as the congestion management process for the MPO study area.

2.4. Georgia Department of Transportation (GDOT)

Given the heavy reliance on interstate freeways for access to the airport, GDOT is an important partner with the airport. GDOT is responsible for developing and implementing state transportation plans and programs. As part of this responsibility, GDOT builds and maintains state and interstate highways, conducts statewide multimodal transportation planning and modal planning, and allocates funding to various projects. As in other states, GDOT develops the State Transportation Improvement Program (STIP), which incorporates the Transportation Improvement Programs (TIPs) from the various metropolitan areas within the state as well as all other federally-funded transportation projects in the state. The state plans that have addressed ATL-related topics because of its role in the state’s transportation system include: *Georgia Statewide Freight and Logistics Plan*, *Georgia State Aviation System Plan* and *Metro Atlanta Operational Planning Study and Managed Lanes Implementation Plan*. Except for the state Aviation System Plan, airport staff have had little involvement in the preparation of other plans. Airport and GDOT staff communicate and interact on a project-specific basis such as the recent reconfiguration of the road access to the airport terminal, which required improved signage and some minor geometric changes on state highway ramps.

¹⁸ Atlanta Regional Commission. 2016. “Conformity Determination,” <http://documents.atlantaregional.com/The-Atlanta-Region-s-Plan/rtp/Conformity-Determination-Report.pdf>

2.5. Georgia Regional Transportation Authority (GRTA) (now combined with the State Road and Tollway Authority--SRTA)

By state law and executive orders, GRTA/SRTA approves the final ARC TIP. Additionally, GRTA is responsible for evaluating all land Developments of Regional Impact (DRIs) within its jurisdiction for their impacts on the surrounding transportation infrastructure. It is this latter responsibility that likely has a more direct impact on the airport surroundings in that major developments (e.g., surfacing from the Aerotropolis Atlanta initiative) would have to be reviewed by GRTA/SRTA.

3. Description of Collaborative Planning Process and Problems Being Addressed

Interviews with the region's transportation officials indicated that there are institutional structures in place (such as technical committees and task forces) to foster collaborative efforts between the airport and planning agency staffs. The ARC, being one of the longest established regional planning agencies in the country as well as having both federal and state legislative and regulatory authority for coordinated transportation planning in the region, has had a very well-established institutional structure for collaborative planning for many years. The Policy Board and the numerous technical planning committees provide many state and local agencies with the opportunities to participate in the development of the ARC planning products. Airport staff have participated in such committees especially when the airport is a subject in the planning study. The airport is a City of Atlanta agency, and the City has representation on the ARC Board and in the technical committees. However, participation depends on staffing priorities and availability. Airport staff (business staff, not planning staff) have participated in discussions and strategy development.

4. Case Study Events of Collaborative Planning

Airport staff have interacted with ARC and local agency planning staff in a variety of projects. The interactions have generally been on a project-by-project basis, such as the extension of the MARTA rail line into the airport terminal and the expansion of airport road capacity and connection to the interstate system. In these instances, especially where projects affected major, non-airport highways, airport planners interacted with the Georgia DOT to provide coordination in project design and construction. The original extension of MARTA rail to the airport terminal included extensive collaboration between the airport and MARTA (the same is beginning now as the airport station is part of a rail station modernization program). In some instances, airport staff have briefed ARC officials on the update of the airport master plan, realizing that regional transportation planning requires the MPO knowing what was being planned for the airport.

An example of a transit planning issue of interest to surrounding planning agencies is the desire of Clayton County, south of the airport, to have improved bus access to the airport, primarily because of the large number of airport employees that live in the county. Some of the issues associated with new service to the airport concern the connections of such service to the regional transit network, the exact routing of the bus service, and where the bus would connect at the airport. MARTA and ARC transit planners have examined potential options, but have (as of the date of the case study) not been able to determine how to provide such access.

5. Lessons Learned

The Atlanta case study illustrates one of the challenges facing collaborative transportation planning that involves both the airport and regional/local planning agencies, this being that the airport staff primarily view such interaction necessary on a project-by-project basis. The exception to this was the Aerotropolis Atlanta initiative where the non-airport business unit in the airport organization has been very active in working with local communities, business leaders, and developers. To a large extent this reflects the professional interests and responsibilities of the airport staff, and at times this also reflected the desires/interests of airport leadership. This raises an interesting question then of how to engage the interests of such staff or of top decision makers in the agency for collaborating with regional/local planning agencies on a periodic basis?

Several suggestions were made in accomplishing this (primarily coming from the ARC).

MPO Funding of Airport-Relevant Studies: One of the lessons from the Aerotropolis Atlanta initiative was that the ARC provided grant monies for studies locally and regionally that laid the basis for the Blueprint, and which were of interest to airport staff. Given its regional forum role, ARC was uniquely qualified to bring the different partners together to foster collaborative action among interested parties. These studies were able to further define market potential and place boundaries on expectations of what could come from the strategy. ARC has also funded Livable Centers Initiative grants to communities in the Aerotropolis development market that are intended to enhance the development potential in selected communities.

MPO Funding of Airport-impacted Studies: The distinction between this effort and the prior one is that the studies affect the future of the airport in a direct way, or at least link closely to airport goals. Thus, for example, the MPO has funded a freight cluster study and a regional freight and logistics study that relates to the airport's goal of increasing air cargo as part of its portfolio. Airport staff recognized that the feasibility of increasing freight and logistics activities at or near the airport requires an efficient road network, easily access to the state highway system, and one that is relatively congestion free. There is interest among airport staff in at least following the progress of these efforts, and if possible and time permits, participating in the studies.

MPO Processes: Not surprisingly, MPO planners would like to see a more formal participation of airport staff in MPO planning activities, especially given the very important position of the airport in the region's transportation system. MPO planners feel that many formal institutional mechanisms already exist for airport participation, and it is just a matter of encouraging the interest. For example, MPO planners suggested that in the best-case scenario it would need to hold quarterly meetings with airport planning staff to exchange information on recent studies and near future efforts. One of the examples used to showcase the benefits of such interaction were efforts by ARC staff to meet with local government planners in order to avoid local zoning decisions that would create challenges to the Aerotropolis Atlanta initiative.

Transportation Professional Outreach: MPO planners also suggested that airport staff could participate more actively with ARC outreach efforts to local communities and chambers of commerce in educating key decision makers on airport-related development opportunities. As one planner noted, "there are lots of events occurring all the time and being a partner with ARC in attending these events would go a long way to build good will for the airport."

Formal Participation in Planning Studies: MPO planners also suggested that some form of advisory committee role should be created for mutual involvement in both the airport's and MPO's most important planning efforts. For example, MPO planners said they would welcome airport staff participation in the development of the region's transportation plan, and said they would be interested in playing such a role for airport access issues examined in the airport master plan. Many future considerations (such as connected and autonomous vehicles) could affect both types of studies where joint consideration in the different planning studies would be beneficial.

B.2 Baltimore Washington International Airport Case Study

1. Introduction

The Baltimore/Washington International Thurgood Marshall Airport (BWI) is the primary international airport serving the Baltimore metropolitan area, and one of the three major airports for the Baltimore-Washington region (the other two being Ronald Reagan Washington National Airport and Washington Dulles International Airport). In addition to handling passengers from the Baltimore metro area, the airport also has a heavy population base from the Washington DC and Harrisburg, PA metropolitan areas.

The airport is located in Anne Arundel county, for which the federally-designated MPO is the Baltimore Regional Transportation Board (BRTB). BWI is unique among the selected case studies in that it is owned and operated by the Maryland Aviation Administration (MAA), a modal agency of the Maryland Department of Transportation. State ownership provides the ability to use existing collaboration structures within the state DOT to coordinate with other state modal agencies.

The geographic proximity and shared travel patterns within the Baltimore and Washington DC metropolitan areas requires a regional outlook in airport access planning. As such, this case study provides an example of regional coordination between neighboring MPOs in aviation planning, with formal delegation of air systems planning duties by BRTB to another MPO, the National Capital Region Transportation Planning Board (NCRTPB). The extent of the delegation and the ensuing coordination that arises from this transfer is examined in this case study.

Key lessons learned from this case study include:

1. MAA is a state agency whose involvement in regional or local surface transportation projects increases in proportion to the effect the project has on the airport. Further, MAA can leverage its position as a state agency to rely on other agencies within the state DOT such as the Maryland Transit Administration (MTA) and the State Highway Administration (SHA) to more easily resolve planning issues. MAA also relies on these modal agencies to interact with counties regarding airport access planning. Because of this position of the MAA within a state DOT and the ability to call upon its sister modal agencies for help, the local MPO plays a limited role of in airport access planning.
2. The consolidation of airport systems planning across the three major regional airports allowed for a comprehensive regional outlook on the interactions among the airports from an air operations perspective. There has been limited attention given to multimodal airport access planning across all airports; airport system planning only identifies access issues and improvement opportunities at each individual airport.

2. Background

This institutional structure for airport planning in the BWI travel shed include BWI itself; MAA, which owns and operates BWI; the National Capital Region Transportation Planning Board (NCRTPB); and the Baltimore Regional Transportation Board (BRTB), the latter two being the MPOs in charge of regional transportation planning for the District of Columbia-Maryland-Virginia region in which BWI is located.

Table B-2: BWI and BRTB Key Metrics

Metric	BWI
Owner Agency	Maryland Aviation Administration
Operator Agency	Maryland Aviation Administration
MPO	Baltimore Regional Transportation Board
Distance to downtown	9
No. of runways	4
Passenger Enplanement figures (CY16)	12,340,972
O&D Passenger (CY16)	9,008,334
O&D Passenger % share of enplanements	70%
No. of plane movements (CY17)	261,702
Hub size (Small, medium, large)	Large
Most recent annual operating revenue (in thousands) (FY17)	233,965
Parking share of operating revenue (in thousands) (FY17)	45,365
Car rental share of operating revenue (in thousands) (FY17)	18,896
Taxi (ground transportation) share of operating revenue (in thousands) (FY17)	4,559
MPO TIP size (in \$ billion)	3.2 (FY 2019-2022)
Transit access options	Roadway: Highway, TNC: Special drop off/loading zone Rail: Light rail, MARC regional rail, Amtrak Bus: MTA Bus service, MTA ICC Bus
Annual Freight volume (metric tons) (FY17)	161,932

2.1. Description of Airports and Airport Ground Access Provisions

Airport Governance – Maryland Aviation Administration (MAA)

The MAA, the owner and operator BWI and the Martin State Airport, is a modal agency within the Maryland Department of Transportation (MDOT). The MAA Administrator is a political appointee of the governor. The MAA is advised by the Maryland Aviation Commission, a panel consisting of nine voting members. Eight members are appointed by the Governor, and the Secretary of Transportation serves as the Chairman.

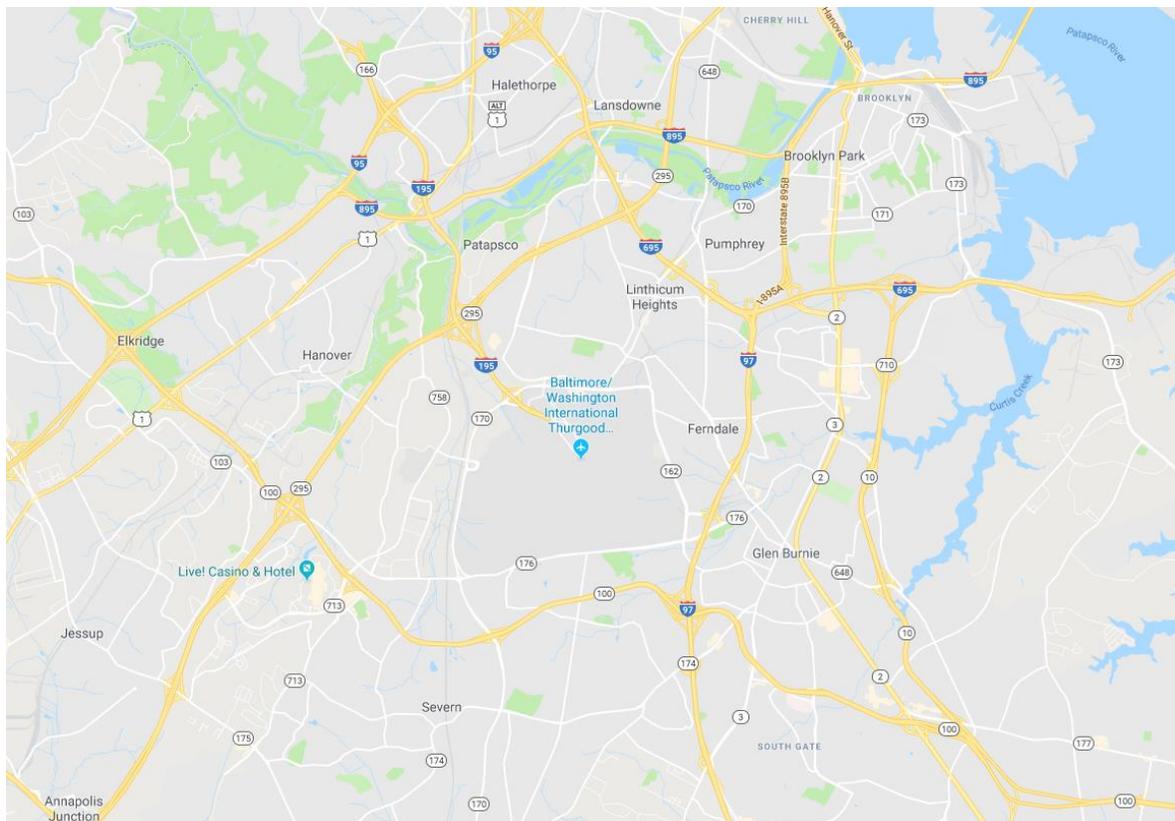
Ground Access Options to and from San Diego International Airport

Roadway Access

BWI has excellent access to the region's high capacity highway network. Direct interstate highway access is provided by I-195, which connects to I-95, US 1, and the Baltimore-Washington Parkway (MD

295)¹⁹. Located directly adjacent to the airport boundary is a four-lane primary highway network of roadways known as the Airport Loop. The Airport Loop, comprised of MD 170 (Aviation Boulevard), MD 162 and MD 176 (Dorsey Road), is connected to I-195, I-695, I-97 and MD 100. The airport is situated between four controlled-access highways; I-695 (Baltimore Beltway), I-97, MD 100 and MD 295. These highways connect to other primary highways and the two interstate beltways (I-95/I-495 Capital Beltway and I-695 Baltimore Beltway). Interstate highways I-70, I-795, I-83 and I-97 connect to the Baltimore Beltway. Montgomery County access is currently provided by the I-270 connection to the Capital Beltway. The completion of the Intercounty Connector (MD 200) has improved access from Montgomery County to BWI. Interstate access to the north and south are primarily provided by I-95 and I-83. Access to the west is provided by I-70 and access to Annapolis and the Eastern Shore is provided by I-97 (see Figure B-6).

Figure B-6: BWI Highway and Road Access²⁰



¹⁹ Metropolitan Washington Council of Governments (MwCOG) and National Capital Region Transportation Planning Board (NCRTPB). Undated. "Ground Access Element of the "Regional Airport System Plan," page 8: http://www1.mwco.org/transportation/activities/airports/documents/GAEU_Phase2_Report_Final_FAA.pdf

²⁰ Google Maps -

<https://www.google.ca/maps/place/Baltimore%2FWashington+International+Thurgood+Marshall+Airport/@39.1560586,-76.7219909,12.54z/data=!4m5!3m4!1s0x89b7e2fcbbc2e00b:0x150cfa971740!8m2!3d39.1774042!4d-76.6683922>

Transit

BWI has an extensive network of public transit (including intercity/commuter rail, light rail, and bus services), on demand shuttle services, and TNC options²¹.

Intercity and Commuter/Regional Rail: The BWI Marshall Rail Station is located a mile from the airport and is reached via a free shuttle from the airport terminal. Amtrak and Maryland Area Rail Commuter (MARC) trains, heading north and south, depart from this station. Located on Amtrak’s Northeast Corridor, the station has direct connections to cities from Richmond to Boston. On weekdays, Amtrak has sixty train departures from BWI between 4:30 am and 12:50 am. Seventeen of these departures are Acela Express trains.

The MTA offers MARC service on the Penn Line from the BWI Marshall Rail Station with more than 40 daily departures. MARC operates at 30-minute intervals in the morning and evening peaks and one-hour intervals off-peak (Monday through Friday, only). The Penn Line has 13 stations from Washington Union Station, through Prince Georges, Anne Arundel, and Baltimore Counties; City of Baltimore, Harford and Cecil Counties, ending in Perryville, MD. MARC patrons may transfer to either the Brunswick Line or Camden Line at Washington Union Station. In addition, the MARC Camden Line can be accessed by taking MTA light rail from BWI to Camden Yards in Baltimore City.

Light Rail: The BWI Marshall light rail station is located directly adjacent to Concourse E. MTA provides light rail service from BWI to 30 stations into downtown Baltimore to Hunt Valley in central Baltimore County. There are 50 departures from BWI at 15- to 20-minute frequencies from 5:00 am to 12:40 am. Additional light rail service to Ferndale and Cromwell in Glen Burnie as well as Baltimore Penn Station is available via transfer. Patrons may also transfer from light rail to the Baltimore Metro at the Lexington Market stations on both systems.

Bus Service: There are five bus lines providing scheduled transit service to BWI:

- Metrobus Route B30 runs every 40 minutes, 7 days a week to the Greenbelt Metro Station, which is located on the Green Line of the Washington Metrorail System. Buses run 25 times each weekday and 21 times on Saturdays and Sunday.
- MTA offers the No. 17 Bus service from BWI Marshall Airport connecting to Parkway Center, Arundel Mills Mall, Airport 100 Park, and the Patapsco Light Rail Stop. This bus line provides connections to the Baltimore City public transportation system.
- Annapolis Transit offers express C-60 Bus Line service to the State Capital in Annapolis and Arundel Mills Mall in Anne Arundel County. Weekday departures are infrequent and limited during the day (between 7:45 am and 5:45 pm every two hours).
- Howard Transit provides fixed route bus service (Silver Bus Line) from BWI to Columbia Mall with stops at Arundel Mills Mall and other points in between. The Howard County Transit stop at Columbia Mall is the main transfer stop for eight of the nine Howard Transit bus routes. MTA Route 201 operates seven days a week with hourly service accommodating 34 weekday trips and 30 weekend trips. This service operates using MD 200 in Montgomery and Prince George’s County and began with the opening of that roadway in fall 2011. Route 201 stops at BWI Terminal A/B and Terminal E and connects with the BWI Marshall Airport Rail Station, Arundel

²¹ MWCOG and NCRTPB, op cit. page 10.

Mills, MARC's Dorsey Station on the Camden Line, the Burtonsville, Georgia Avenue, and Gaithersburg Park and Ride facilities in Montgomery County, as well as the Shady Grove Metrorail station (terminus of the western branch of the Red Line) and the National Institute of Standards and Technology (NIST) campus in Gaithersburg.

Shuttle Service: BayRunner Shuttle service provides scheduled, fixed route service connecting BWI to Maryland's Eastern Shore, terminating in Ocean City seven times daily, and to western Maryland, terminating at Grantsville twice daily. Private door-to-door services are also available for air passengers using BWI. Shuttles operate on a shared ride, on-demand basis. Shuttles provide service to/from Baltimore's Inner Harbor Hotel District; Baltimore City and Baltimore; Prince George, Montgomery, and Anne Arundel Counties; and the City of Annapolis as well as Northern Virginia.

TNC – Uber/Lyft: BWI, like other airports, has designated pickup and drop off locations for TNCs, as well as specific waiting areas for Uber drivers. BWI charges Uber \$2.50 for every trip originating at BWI, which the TNCs typically pass to consumers. TNC access has offered a challenge for the airport because of the configuration of the road access to the terminals.

Current and Recent Projects

Recent infrastructure improvements at BWI have included the expansion of the international terminal. This \$60 million construction project extended international Concourse E and modernized airside and landside elements of the existing terminal. The construction added six new airline gates—two full-service gates with airline hold rooms and four arrival-only gates. Other features included a new electrical substation, added restroom facilities, new mechanical and electrical support spaces, an extension of the sterile corridor system to connect with the federal inspection station, and space for additional baggage make-up operations.

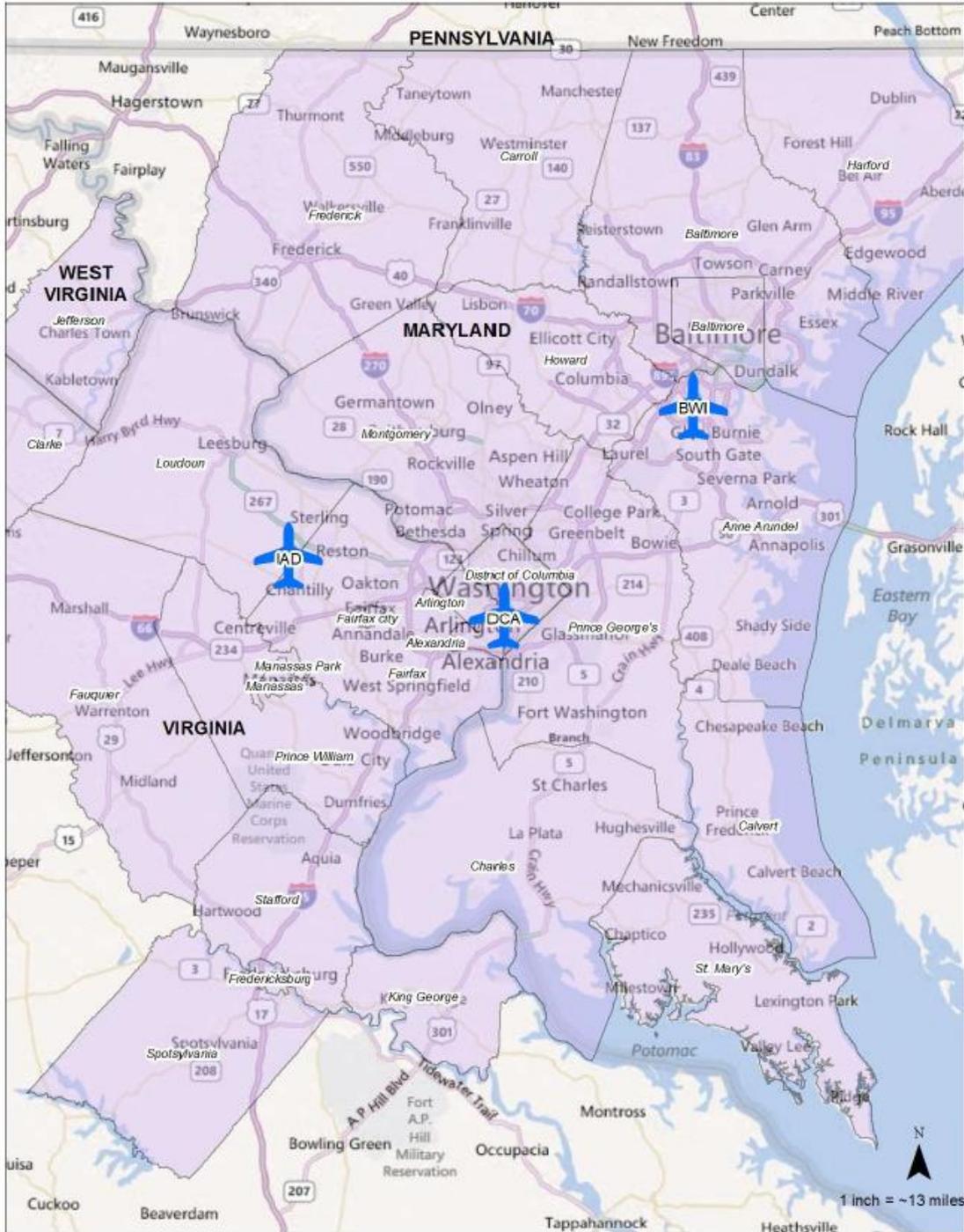
2.2. Metropolitan Planning Organization (MPO) structure – MWCOG/NC RTPB

MWCOG/NC RTPB

Although BWI is located in Anne Arundel County, which is part of the Baltimore Regional Transportation Board (BRTB) MPO region, air system planning duties for BWI airport were given to the National Capital Region Transportation Planning Board (NC RTPB) that is housed within the Metropolitan Washington Council of Governments (MWCOG). The main rationale for this transfer was that the NC RTPB had an established air system planning structure that extended beyond the geographical area defined by its MPO boundary. Historically, it had incorporated BWI airport and its vicinity in its planning efforts. In order to foster a cohesive regional plan and given the NC RTPB's aviation planning capabilities, planning responsibilities for BWI were incorporated into NC RTPB's Continuous Air Systems Planning (CASP) cycle.

The Washington Baltimore Air System Planning Region is larger than both BRTB and NC RTPB. It includes counties in West Virginia and Fauquier County in Virginia. for instance (see Figure B-7).

Figure B-7: Washington-Baltimore Air System Planning Region²²



²² Roisman, R. 2016. "Washington-Baltimore Regional Air Passenger Survey 2015," NCRTPB. December 21. [https://www.mwcog.org/assets/1/28/12212016 - Item 11 - Presentation - Air Passenger Survey Geographic Findings.pdf](https://www.mwcog.org/assets/1/28/12212016_-_Item_11_-_Presentation_-_Air_Passenger_Survey_Geographic_Findings.pdf)

MWCOG Governance: Board of Directors members are appointed each year by MWCOG local governments and from the Maryland and Virginia state legislative delegations. The current Board consists of 34 members—the majority are elected officials. According to the Bylaws, the Board of Directors shall be selected from the general membership as follows:

- (a) One member selected by each government having a population of no more than 300,000.
- (b) Two (2) members selected by each government having a population of more than 300,000 but no more than 600,000.
- (c) Three (3) members selected by each government having a population of more than 600,000.
- (d) Four (4) members selected by the District of Columbia, two (2) from the Executive Branch and two (2) from the Legislative Branch, unless the two (2) branches shall decide on a different apportionment. A representative from the Executive Branch of the District of Columbia need not be selected from the general membership.
- (e) One member of the Maryland General Assembly and one member of the Virginia General Assembly, representing portions of the Washington Metropolitan Statistical Area, both of whom shall be selected biennially by separate consultation of the same-state Board members of COG followed by election by the entire Board of Directors.

NCRTPB governance: The NCRTPB is the federally-designated MPO for metropolitan Washington. It is an independent policy board staffed by MWCOG. The NCRTPB is comprised of council members and leaders of local governments within MWCOG, as well as having representation from WMATA, FHWA, FTA, and the Maryland House of Delegates.

BRTB/BMC

The Baltimore Metropolitan Council (BMC) is a regional organization created in 1992 as a successor to the Regional Planning Council and Baltimore Regional Council of Governments. Analogous to MWCOG, it serves the Baltimore region. The BMC consists of elected executives representing Baltimore City and Anne Arundel, Baltimore, Carroll, Harford and Howard Counties.

The Baltimore Regional Transportation Board (BRTB) is the federally-designated MPO for the Baltimore region. The BRTB is a 13-member board representing the cities of Annapolis and Baltimore, the counties of Anne Arundel, Baltimore, Carroll, Harford, Howard, and Queen Anne's and the Maryland Department of Transportation, the Maryland Department of the Environment, the Maryland Department of Planning, Maryland Transit Administration, and Harford Transit.

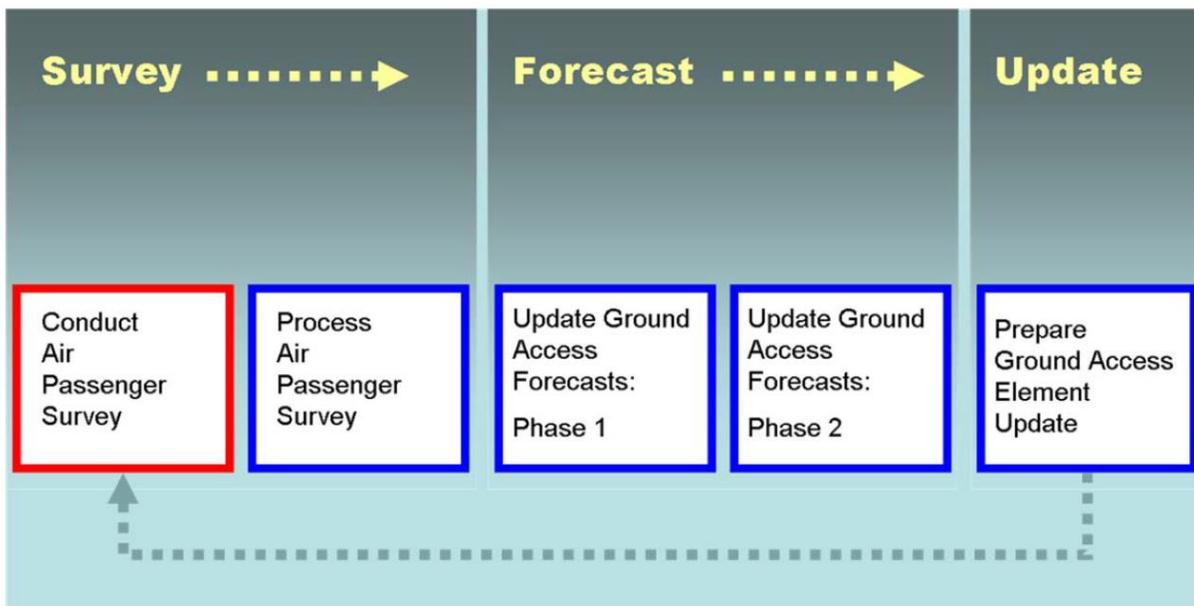
MPO Plans

Continuous Airport System Planning (CASP): NCRTPB has conducted a Continuous Airport System Planning (CASP) program since 1978 when the first grant application was approved by the Federal Aviation Administration (FAA). The goal of the CASP program is to provide a systematic framework for

planning, developing, and operating airport facilities and transportation facilities serving the airports in the Washington-Baltimore region.

The CASP process (see Figure B-8) begins with a regional air passenger survey. This survey is followed by forecasts of future air passenger travel and the ground travel of these air passengers to and from the region's three commercial airports. These forecasts in turn lead to the development of a revised ground access plan for the region. The CASP program is developed, implemented, and monitored with the assistance of the Aviation Technical Subcommittee. In the current CASP cycle, in addition to beginning preparations for the 2017 Air Passenger Survey (APS), a comprehensive update to the Regional Air System Plan (RASP) is taking place. A full RASP update has not occurred for nearly four decades. The full RASP update will be broken into three phases.

Figure B-8: CASP cycle²³



There are three major airport access-related products of the CASP process:

- *Ground Access Travel Time Study* – Last conducted in 2011, the purpose of the airport ground access travel time study is to analyze: (1) travel time and changes in peak-period delay and level of service on principal airport-serving roadways from selected activity centers to the three commercial airports; and, (2) changes in airport accessibility due to highway and transit improvements. Prior to 2011, ground access travel time studies were conducted in 1989, 1995, and 2003. The APS was jointly funded by the Metropolitan Washington Airports Authority (MWAA) and the MAA. The forecast presents detailed average weekday local originating air passenger ground access trips from 160 local area Aviation Analysis Zones (AAZ) to each of the region's three commercial airports. The forecasts are further broken out by major ground access

²³ MWCOG and NCRTPB. 2013. "Washington-Baltimore Regional Airport System Plan, Ground Access Element Update 2013." https://www.mwcog.org/assets/1/6/GAEU_Phase2_Report_Final_FAA.pdf

mode for each local AAZ-to-airport origin-destination pair. These ground access forecasts are used as inputs for the triennial update of the NCRTPB's Constrained Long Range Plan and as the basis for revising the Ground Access Element of the CASP Regional Airport System Plan.

- The *Ground Access Element of the "Regional Airport System Plan"* provides an analysis of current and expected ground access problems at Ronald Reagan Washington National, Washington Dulles International, and BWI airports. This plan element also integrates airport system ground access and facility planning into the overall regional transportation planning process for the National Capital Region and includes recommendations for improving ground access to the region's airports.
- The *Airport Cargo Study* examined existing demand, and analyzed how the movement of cargo affects the regional ground transportation network. It also focused on the goods movement portion of airport access, examining the estimated potential demand for air cargo facilities, and comparing this demand with current and planned facilities to determine what air cargo facilities are needed in the region to meet future demand. The work was done in coordination with the air cargo programs of Virginia Department of Aviation (VDOA), MAA, and MWAA.

The most recent Ground Access Element Update (2017) identified the following critical highway improvements to improve access to BWI airport:

- Widening sections of I-70 to improve airport access from Frederick, Carroll and Howard Counties.
- Widening of I-95 north between the Prince George's and Howard County line to I-695 (Baltimore Beltway), and the widening along the Columbia Pike (US 29) in Montgomery and Howard counties to improve north and southbound access to I-195, a major artery to BWI.
- Widening of I-95 South in Harford and Baltimore Counties, and the widening of I- 695 (Baltimore Beltway) from the intersection of I-95 South and I-895 to I-95 near Arbutus, (Baltimore County) Maryland to improve travel time to BWI from Baltimore, Harford and Carroll Counties as well as for trips originating beyond Pennsylvania.
- Widening sections of the Baltimore-Washington Parkway (MD 295) from I- 695 (Baltimore Beltway) to MD 100 near Arundel Mills to improve travel for airport trips southbound from Baltimore County and Baltimore City and beyond, as well as trips northbound from Montgomery, Howard, and Anne Arundel Counties and from the DC metropolitan area to BWI.
- Widening of sections along the John Hanson Highway (US 50) between the Prince George's County line and the Bay Bridge, and the widening along I-97 between John Hanson Highway (US 50/301) and the Patuxent Freeway (MD 32/) and Robert Crain Highway (MD 3) to improve travel conditions to BWI from much of Anne Arundel County and the eastern shore as well as from Delaware.
- Widening along sections of Sykesville Road / Patuxent Freeway (MD 32), and widening of sections of MD 100 to improve travel to BWI from much of Howard and Carroll Counties.

The report also highlighted the construction of a new MARC Commuter Rail station at East Baltimore as a catalyst for increasing transit access to BWI from Eastern Baltimore City and the adjacent southeast Baltimore County. It identified the following transit improvements for improving airport access within the planning area:

- Corridor Cities Transitway along the I-270 corridor to make northern Montgomery County accessible by transit to all airports.
- The Bi-County Transitway, or “Purple Line,” between Silver Spring and Bethesda Metro stations to improve transit access to all airports.
- The construction of a new VRE Commuter Rail station at Potomac Shores to improve transit access to all airports.

BRTB Long Range Transportation Plan: The 2040 Long Range Transportation Plan (LRTP) is the long-range transportation plan for all modal services in the Baltimore region. The LRTP noted that forthcoming Bus Rapid Transit (BRT) access to BWI airport from Dorsey MARC station and Arundel Mills to the BWI light rail station, via the BWI consolidated rental car facility, would likely affect transit demand to BWI. It also highlighted a BRT route from the Purple Line at College Park to Dorsey MARC station and BWI as the aspirational transit goal for the airport.

BRTB Unified Work Program (UPWP): The BRTB Unified Planning Work Program (UPWP) initiated a feasibility study for the development of a multimodal transportation center at BWI airport. The objectives of the study would include:

- Propose a location and facilities for a regional multi-modal center
- Determine whether, how and where a multi-modal center could be financed, constructed, and operated within the state’s capitol or surrounding area.

Examining the feasibility of airport shuttles to BWI would be part of the overall study.

2.3. Maryland Department of Transportation (MDOT)

The Maryland Department of Transportation (MDOT), the primary state transportation agency, includes five modal business units and one Authority:

- Maryland Aviation Administration (MAA)
- Maryland Transit Administration (MTA)
- Maryland Port Administration (MPA)
- State Highway Administration (SHA)
- Maryland Motor Vehicle Administration (MMVA)
- Maryland Transportation Authority (MDTA)

MAA Plans

In 2018, MAA was revising the Master Plan for BWI; the previous Master Plan had been completed in 2011. MAA has been implementing elements of this 2011 plan, including the development of smaller scale studies updating specific projects described in the initial master plan.

Description of Collaborative Planning Process and Problems Being Addressed

Collaboration Structures

Given their geographic proximity, shared travel patterns, and employment and economic growth trends, BRTB and NCRTPB have a long history of staff collaboration. While discussion around regional travel demand modeling provided the initial spur for collaboration between the two agencies in the 60s, today they coordinate on most aspects of transportation planning. One of these is air systems planning. BRTB

and NC RTPB have a number of committees and subcommittees that focus on specific technical and policy areas. Both BRTB and NC RTPB staff participate in several of the other agency's subcommittees, thereby building relationships and facilitating future collaboration. Of specific interest to airport access is the Aviation Technical Subcommittee of NC RTPB's Technical Committee, which is responsible for the coordination of airport system planning with the regional transportation planning process. The region's three major commercial airports (Reagan National, Dulles International, and BWI) are represented on the NC RTPB by the MAA and the MWAA. The District of Columbia is also part of this subcommittee, even though it does not own or operate an airport.

Collaboration occurs at the MDOT Secretary's Office level among state modal agencies. The MAA Executive Director meets regularly with the Maryland Secretary of Transportation and the executive directors of MDOT's other modal agencies, which facilitates efforts to solve any issues concerning airport access. Working groups (e.g., a real estate group and a planning council) also exist across agencies.

As a result of the delegation of air system planning to NC RTPB and the centralized planning in the state, the BRTB does not have a record of much interaction with BWI staff. BRTB interacts directly with the Office of the Secretary at MDOT for such concerns. The LRTP does not discuss airport access issues.

BWI Ground Access Issues

Curb access has been a recurring issue. The majority of passengers use the Southwest Airlines gates which are located in the first terminal in the Airport Loop, thus slowing down access to other airlines and parts of the airport. Road chokepoints extend farther out of the airport toward I-195. Transit access for airport, concession, and freight employees has also been problematic, especially for late night and early morning shifts, but also for new cargo buildings on airport property. This problem is especially important because BWI is a growing job center. In prior decades, coordination among MDOT modal agencies led to added weekend MARC service for passenger access to downtown Washington (with MTA), as well as added light-rail service to downtown Baltimore.

Case Study Events of Collaborative Planning

Employee access

Employee access is a topic that has received the attention of those interested in airport access. The BMC has supported studies to improve access to the airport for various travel market segments, and completed in 2018 an evaluation of airport access for potential airport employees in its region. Local governments, including Ann Arundel County where BWI is located, and the City of Baltimore, are particularly interested in increasing transit access to late-night and early morning shifts at the airport. The MTA and the MAA Office of Ground Transportation have supported a Mobility on Demand grant from the Shared Use Mobility Center in order to examine how such service could be provided.

A recent example of collaboration among different state agencies on airport access includes the change of a bus route to serve the needs of a new air cargo company. The MAA worked with MTA to change a bus route so that it would allow employees to access the cargo building directly. The process took slightly more than eight months including public engagement. According to those involved, this collaboration was both effective and efficient because both agencies involved were part of the larger DOT. The MDOT Secretary's insistence on the importance of collaboration on such topics has encouraged collaboration among state transportation agencies.

2.4. Regional Air Passenger Survey

Since 1981, MWCOG has conducted the Washington-Baltimore Regional Air Passenger Survey as part of its CASP program. Data from this air passenger survey provide the basis for the analysis of major changes in airport use. One-third of the survey administration costs are funded by MAA while the rest are funded by MWAA. The analysis of the survey is part of the Ground Access Element Update of the RASP, and as such is funded by an FAA grant.

Air passenger demand in the Washington-Baltimore region has been steadily increasing throughout the past 10 years, with 36.4 million passengers in 2017, an increase of 7% from 2015.²⁴ With regional demand forecasted to increase in the future, regional planners realized that none of the three airports (DCA, IAD, and BWI) have the necessary infrastructure to handle regional passenger demand if one of the airports stopped operating. With all three airports growing in passenger enplanements, coordination among the airport authorities is necessary to make sure future airport access demand is handled effectively. A collaborative effort such as the regional air passenger survey provides the data foundation for making investment decisions and the MAA considers the survey costs to be well-worth the resources expended. The survey results are used in the planning of airport access roadways and services, including improving the regional transportation demand model, as well as the planning of terminals and groundside facilities such as parking.

2.5. Collaboration Among State Agencies on Airport Road Access

Road realignment and expansion around BWI tie into working groups organized by MDOT. Each year, in conjunction with development of the Maryland Transportation Plan, MDOT conducts a “coordination tour” to each county in the state to coordinate transportation initiatives and priorities. While these are primarily focused on road networks and MDOT-funded improvements, airports are represented and access issues discussed.

MAA and SHA have been taking a broad view of highway access to BWI, beyond simply the direct connection to I-195. According to those interviewed, coordination among state agencies allows each to better understand the other’s priorities, focusing on access from the west of the airport and southern Pennsylvania. There is a shared understanding that BWI depends on good quality highway access from interstate highways that do not directly serve the airport such as I-695, I-95, and I-83.

Collaboration with local counties and BRTB on the TIP and LRTP has also been reformed by MDOT. While, in the past, the MAA worked directly with local counties on the TIP or LRTP, planning collaboration now happens at the MDOT level. MDOT reports airport access planning issues to MAA as needed, and highway grants are accessible through the Secretary of Transportation’s office. Partnerships also exist at the county or state level for some programs, such as community revitalization and economic development grants.

²⁴ NC RTPB. 2018. “Washington-Baltimore Regional Air Passenger Survey – 2017, General Findings.” June. [https://www.mwcog.org/assets/1/28/07062018 - Item 9 - Report - Washington-Baltimore Regional Air Passenger Survey - 2017 General Findings.pdf](https://www.mwcog.org/assets/1/28/07062018_-_Item_9_-_Report_-_Washington-Baltimore_Regional_Air_Passenger_Survey_-_2017_General_Findings.pdf)

3. Lessons Learned

The BWI case study offered examples of an institutional structure for state government, MPO and airport interaction that is unique in the US. This structure helped shape the lessons learned from this case study.

MAA is a state agency whose involvement in regional or local surface transportation projects increases in proportion to the effect that project has on the airport. This structure allows MAA to use existing collaboration structures within the state DOT to coordinate with the SHA, MTA, and other modal agencies for airport access and related projects. Further, MAA can leverage its position as a state agency to rely on other agencies such as the SHA and MTA to more easily resolve planning issues. MAA also relies on modal agencies to assist counties regarding airport access planning. MAA does not issue its own bonds, in contrast to independent airport authorities, though it operates on a financial model distinct from sister agencies MTA and SHA.

MAA has a role in reviewing and influencing local (airport-related) development plans. MAA can leverage its position in MDOT to assist counties with their regional transportation and revitalization plans, particularly with a focus on airport access. A mechanism that helps ensure coordination among the MAA and local counties that are pursuing development projects (including roadways) is the Code of Maryland (COMAR) Airport Zoning District that extends for a four-mile radius from BWI. Within this zone, development plans must be submitted to MAA for review to ensure that a proposed development does not adversely impact the safety of air travel for both passengers and the local community. Through this process MAA is alerted to and can collaborate on roadway, access, and land use projects within the local area.

Given the strong role of state agencies in BWI access planning, with respect to airport access, the local MPOs have focused on developing the technical foundation for supporting investment decisions (for example, conducting surveys and examining regional travel patterns). MPO planning concerns for BWI were transferred from BRTB to NCRTPB in recognition of the fact that NCRTPB had a well-established, air systems planning structure in place for Washington Dulles International Airport (IAD) and Ronald Reagan Washington National Airport (DCA). This consolidation of air systems planning across three major airports permits a comprehensive regional outlook on airport access planning. In addition, the Aviation Technical Subcommittee of NCRTPB provided a forum to airport authorities, aviation professionals, and state, federal, and MPO officials to participate in information-sharing and presentations stemming from the MPO's air systems planning cycle.

However, even with a structure for regional analysis of airport access, most of the airport access planning has been airport-specific. There has been limited regional cooperation on access planning across all airports. The current structure for airport system planning only identifies airport-specific access issues and improvement opportunities. It was noted by those interviewed that airlines in their conversations with individual airports are mainly interested with the access issues for that airport.

B.3 Indianapolis International Airport Case Study

1. Introduction

The Indianapolis International Airport (IND) is operated by the Indianapolis Airport Authority (IAA). This case examines the decision to relocate an airport terminal that included a significant redesign of the highway access to the airport. This redesign was conducted in collaboration with the state DOT. Transit access is provided by local bus service. Ten years after the terminal relocation, businesses have left the former terminal area, leaving underdeveloped areas. At the same time as the terminal relocation was happening, the growth in air cargo activities at the airport has been strong.

Another aspect of this case study different from others is that the Indianapolis MPO is the only one among the case studies hosted by a city rather than being an independent structure or being part of a Council of Governments. IAA and the MPO have collaborated on transit access, land redevelopment, and local roadway redesign to take advantage of developable land and support growth in the western Indianapolis metropolitan area. IAA has taken a very active role in these initiatives, of which airport access is only one component, by being an active participant in the MPO Policy Board activities. This has been viewed by airport managers as part of the airport's mission and goals to foster strong relationships with surrounding communities.

2. Background

This background section describes the structure and ground access options of IAA, as well as the governance structure influencing airport access issues (see Table B-3 for base data).

2.1. Description of Airports and Airport Ground Access Provisions

IND is a public-use airport located seven miles southwest of downtown Indianapolis in Marion County, Indiana. It spans 7,700 acres and is used for both passenger and cargo airline service. It is classified by the Federal Aviation Administration (FAA) as a medium hub. In 2016, the airport saw a total of 4.2 million enplanements, making it the 45th busiest airport in the country. IND is also a major freight hub serving as a FedEx Express National Hub, the company's second largest hub after Memphis. This made IND the seventh largest cargo airport in the US by cargo weight in 2016.

IND is the only major commercial airport in the Indianapolis metropolitan area. It is not a major airline hub; Southwest, Delta, and American Airlines each contribute to just over 20 percent of IND's air passengers. The airport consists of one passenger terminal – the Colonel Harvey Weir Cook Terminal – located between the airport's two parallel runways. This terminal, which opened in 2008, contains two concourses and 46 total gates.

Table B-3: Key Metrics for IND and the Indianapolis MPO

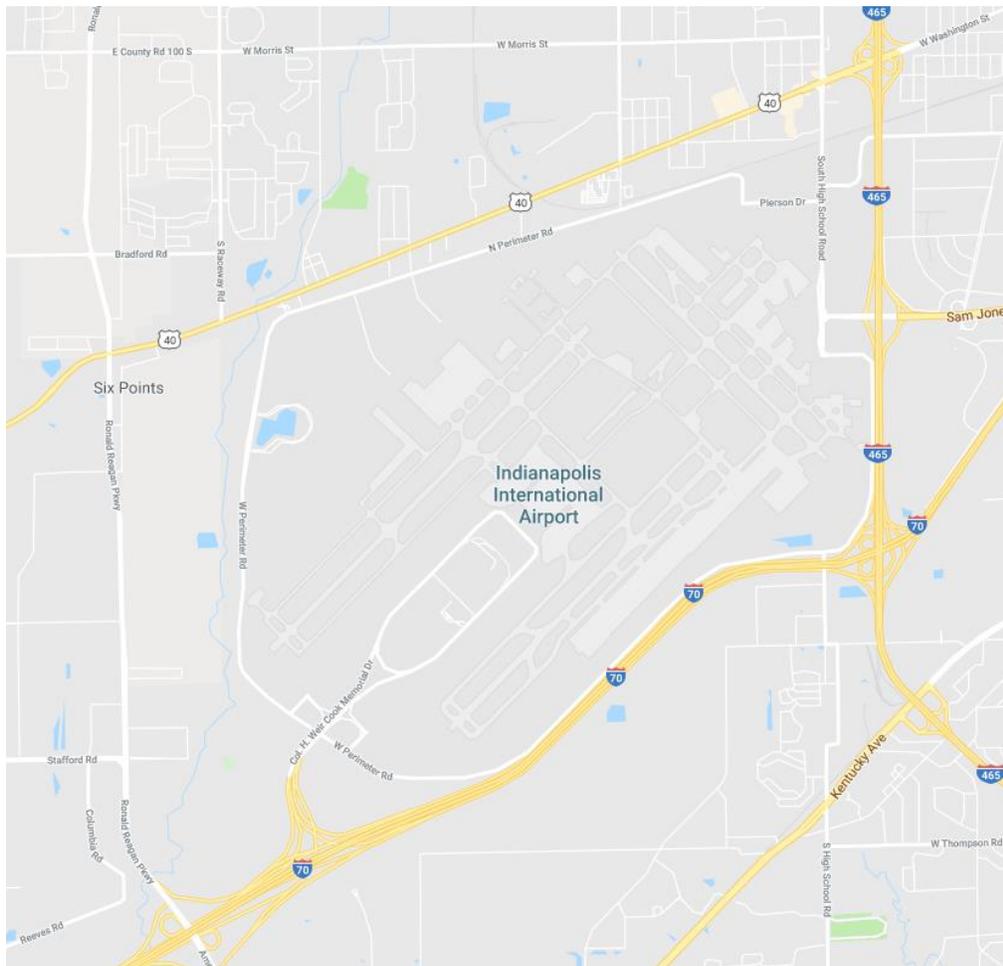
Metric	IND
Owner Agency	Indianapolis Airport Authority
Operator Agency	Indianapolis Airport Authority
MPO	Indianapolis Metropolitan Planning Organization
Distance to downtown	13.8
No. of runways	5
Passenger Enplanement figures (CY16)	4,216,766
O&D Passenger (CY16)	3,972,528
O&D Passenger % share of enplanements	91%
No. of plane movements (CY17)	160,122
Hub size (Small, medium, large)	Medium
Most recent annual operating revenue (in thousands) (FY17)	153,260
Parking share of operating revenue (in thousands) (FY17)	50,776
Car rental share of operating revenue (in thousands) (FY17)	10,717
Taxi (ground transportation) share of operating revenue (in thousands) (FY17)	5427*
MPO TIP size (in \$ billion) (FY18)	3.4
Transit access options	Roadway: Highway, TNC: Special drop off/loading zone, Rail: None, Bus: IndyGo Bus
Annual Freight volume (metric tons) (FY17)	1,923,000

Ground Access Options to and from Indianapolis International Airport

Travelers accessed IND rely on motor vehicle ground transportation – private vehicles, taxis, airport shuttles, and city buses. IND benefits from an excellent roadway network having a high level of service with limited roadway congestion. This is largely due to the relocation of the airport terminal and the I-70 redesign in the mid-2000s.

Roadway Access

IND is located southwest of downtown Indianapolis and is bounded by I-70 to the south, I-465 to the east, US-40 to the north, and Ronald Reagan Parkway to the west (see Figure B-9). The primary highways serving the airport are I-70, which connects the airport with downtown Indianapolis, and I-465, a ring road which links the airport to suburbs in the Indianapolis metropolitan area.

Figure B-9: IND Highway and Road Access²⁵

Transit

IND is served directly by IndyGo's Route 8 bus, which provides fixed route service from the airport to downtown Indianapolis for \$1.75 per ride. Passengers board at the Ground Transportation Center in the airport. Travel time to downtown is approximately 45 minutes²⁶. Scheduled bus service is also available from the airport to the greater Indianapolis area, Ball State University (Muncie), Indiana University (Bloomington), and Purdue University (Lafayette and West Lafayette).

²⁵ Google Maps - <https://www.google.com/maps/@39.7143881,-86.3044122,13.58z>

²⁶ <https://www.indygo.net/how-to-ride/airport-service/>

Parking

Three parking lots are available at IND, with over 13,000 public parking spaces---Terminal Garage, Park & Walk Lot, and the Economy Lot. Parking is the largest source of revenue outside of revenues generated by airline use.

TNCs

Given that the new terminal (designed in 2004 and opened in 2008) occurred prior to the advent of TNCs, vehicular access design focused on private automobiles, taxis, airport shuttles, and transit buses. As of 2018, there is no specific design for handling TNCs, and as such passengers are picked up and dropped off in the shared Zone A at the Ground Transportation Center²⁷. The airport authority charges TNCs \$2.50 per ride for every trip originating at IND, while taxis pay \$1 per ride.

Current and Recent Projects

Listed below are current and recent access infrastructure projects at IND.

Roadway Access

Given the high quality of current highway access resulting from the relocation of I-70 and the building of a ramp to access the terminal, there are no major roadway access projects currently underway. The roadway system and infrastructure are expected to remain adequate for both passenger and freight traffic in the foreseeable future. Some limited road improvements are being considered in the Washington Street Corridor north of the airport (US Route 40), as well as connections to the Ronald Reagan Parkway west of the airport, to serve industrial and commercial development.

Parking

Parking at the airport is currently considered to be adequate for existing demand. In the future, airport leaders will need to decide whether expansion of garage capacity is needed or whether other forms of access (such as TNCs or transit) might handle this demand.

Transit

According to IND airport and MPO staff, the airport is currently not well-served by transit. A study is underway for the Blue Line, a proposed east-west electric bus rapid transit (BRT) route to better connect the airport with the downtown and points east of the city center (as far as the Town of Cumberland). In the longer term, a light rail line might link the airport with the downtown area (this is in the conceptual planning stage). According to the Marion County Transit Plan, the initial segment of the Blue Line is expected to be opened in 2022. However, the line's alignment to serve the airport has not yet been decided.

TNCs

²⁷ Uber. "Indianapolis International Airport (IND)." Web site: <https://www.uber.com/airports/ind/>

Airport staff are now considering whether specific access areas should be designed for TNCs (for example, waiting lines for TNCs have been a complaint from airport users). There is a trade-off of providing improved TNC access in that doing so might influence future garage and car rental facility plans. Whether airport access for TNCs should remain free in the future is also at stake. IAA is mostly tackling issues arising from the growth of TNCs by itself, so far with minimal interaction with surface transportation planning agencies.

2.2. Airport Governance - Indianapolis Airport Authority (IAA)

The IAA was created by the Indiana General Assembly in 1962 as a municipal corporation to manage the day-to-day operations of several airports in the Indianapolis area. The Authority is tasked with owning, developing, and operating the following facilities:

- Indianapolis International Airport
- Eagle Creek Airpark
- Indianapolis Metropolitan Airport
- Indianapolis Regional Airport
- Hendricks County Airport-Gordon Graham Field
- Indianapolis Downtown Heliport

In order to foster collaboration with local agencies, the IAA is governed by a nine-member board appointed by the mayor of Indianapolis and officials from Marion, Hamilton, Hancock, and Hendricks Counties. The board also includes one non-voting member representing Morgan County. The board generally convenes once a month, with meetings open to the public.

2.3. Indianapolis Metropolitan Planning Organization (MPO) Structure

The City of Indianapolis' Department of Metropolitan Development (DMD) is the designated metropolitan planning organization for the Indianapolis/Central Indiana region (see Figure B-10), making the Indianapolis MPO the only one among the case studies used in this report hosted by a city rather than being an independent structure or hosted by a Council of Governments. While the MPO is tasked with planning projects across a region spanning six counties, the organization is hosted by the City of Indianapolis.

The Indianapolis MPO staff is overseen by the Indianapolis Regional Transportation Council (IRTC), which is composed of more than 35 elected members representing cities, towns, counties, and other transportation agencies (including IAA) in the Central Indiana region.

The IRTC has formed three committees to review plans and proposals:

- Policy Committee, composed of elected officials and town managers who vote to approve all MPO actions.
- Technical Committee, composed of planners and engineers who provide expertise on proposed policies and plans
- Administrative Committee, a forum for an elected group of Policy Committee members to review and comment on MPO activities.

The MPO has developed a regional freight plan that includes access to the airport.²⁸

Figure B-10: Indianapolis MPO Area²⁹



²⁸ Indianapolis MPOa. 2019. "Freight Movement in Central Indiana." Website. <https://www.indympo.org/whats-completed/regional-plans/freight-plans>

²⁹ Indianapolis MPOb. 2019. "2045 Long Range Transportation Plan." Website. <https://www.indympo.org/whats-underway/lrtp>

2.4. Other Regional Transportation Organizations: CIRT

The Central Indiana Regional Transportation Authority (CIRTA) is a regional governmental organization focused on bringing more transportation options to Central Indiana, by improving and increasing transit options. CIRTA partnered with IndyGo and the Indianapolis MPO on rapid transit corridor studies in the Indy Connect plan. CIRTA also works to obtain funding through federal grants and to enable local authorities to conduct referenda to dedicate new local funding to transit.

2.5. Indiana Department of Transportation (INDOT)

The Indiana Department of Transportation (INDOT) is the state’s principal agency for developing and implementing state transportation plans and programs. INDOT builds and maintains state and interstate highways, conducts statewide multimodal transportation planning and modal planning, and allocates funding to various projects. INDOT also develops the State Transportation Improvement Program (STIP), a four-year transportation improvement plan that identifies the funding and scheduling of transportation projects and programs across all modes of travel. Projects are submitted from six INDOT districts across the state and are selected through a statewide process in coordination with MPOs and local public agencies. The Indianapolis Regional Transportation Improvement Program (IRTIP) developed by the Indianapolis MPO is integrated without change in the STIP.

2.6. Airport, Regional and Statewide Plans and Collaborative Efforts

The plans and documents detailed below provide an overview of agency-specific planning processes for aviation in general and IND in particular, as well as examples of collaboration among the airport authority and local and state agencies.

IAA Plans

30-Year Strategic Development Plan: In 2011, the IAA Board approved a 30-year strategic development plan for its airport system. The guiding principles outlined in this plan focus on better utilizing the authority’s real estate assets to increase revenue and drive economic development in the region. In particular, the plan indicates that, wherever practicable, IAA will return designated property developed for non-aviation uses to local tax rolls.

The plan also included forecasts for aviation demand at IND. These forecasts indicated a doubling of the commercial passenger and cargo operations at IND by 2040. Total enplanements are expected to average 7.2 million, and 1.7 million metric tons of cargo are projected to be handled at the airport, up from 900,000 in 2009.

Finally, the plan focused on the development of an “aerotropolis” at IND, or a planned, fully integrated urban development that drives economic development in the region (similar in concept to what was discussed in the ATL case study). The airport complex – passenger and cargo aviation service facilities, hotels, conference centers, and offices – would be a “city center,” encircled by a roadway. Outside of this ring, other forms of development – office parks, industrial parks, warehouse facilities, education and healthcare facilities, etc. – would radiate outward. Key elements of this development vision include separating passenger and office operations from cargo and logistics operations, and developing a roadway system that separates heavy trucks from regular vehicular traffic.

MPO Plans

2045 Long Range Transportation Plan: The Indianapolis MPO’s 2045 Long Range Transportation Plan (LRTP), approved in December 2017, does not specifically mention airport access.³⁰ However, the plan includes funding for the Blue Line, which includes potential alignments to the airport, as well as for extending the Ronald Reagan Parkway, which ultimately will support access to development west of the airport on and off airport property.

Other Plans

Marion County Transit Plan: The Marion County Transit Plan, released in June 2016 as part of the larger Central Indiana Transit Plan (see Figure B-11), recommends several improvements for Marion County transit, including greater frequency of service, longer hours, and easier transfers. In particular, the Transit Plan proposes three bus rapid transit lines, including the Blue Line BRT service, which will ultimately link IND to downtown Indianapolis and points east.

IndyGo 2018-2022 Capital Plan: The Indianapolis Public Transportation Corporation (IndyGo) is a municipal corporation of the City of Indianapolis, which operates the city’s public bus transit system. Its 2018-2022 Capital Plan, approved in December 2017, includes several improvements to transit infrastructure, including the Blue Line BRT service.³¹ Transit improvements included in this plan derive largely from the Marion County Transit Plan.

Central Indiana Transit Plan: The Central Indiana Transit Plan was prepared jointly by CIRT, the Indianapolis MPO, and IndyGo.³² It is the county-specific, regionally-coordinated transit vision based on many years of planning and public input. It includes a highly detailed Marion County Transit Plan, a preliminary Hamilton County Transit Plan, and a model for other counties to develop their own transit vision within a regional context.

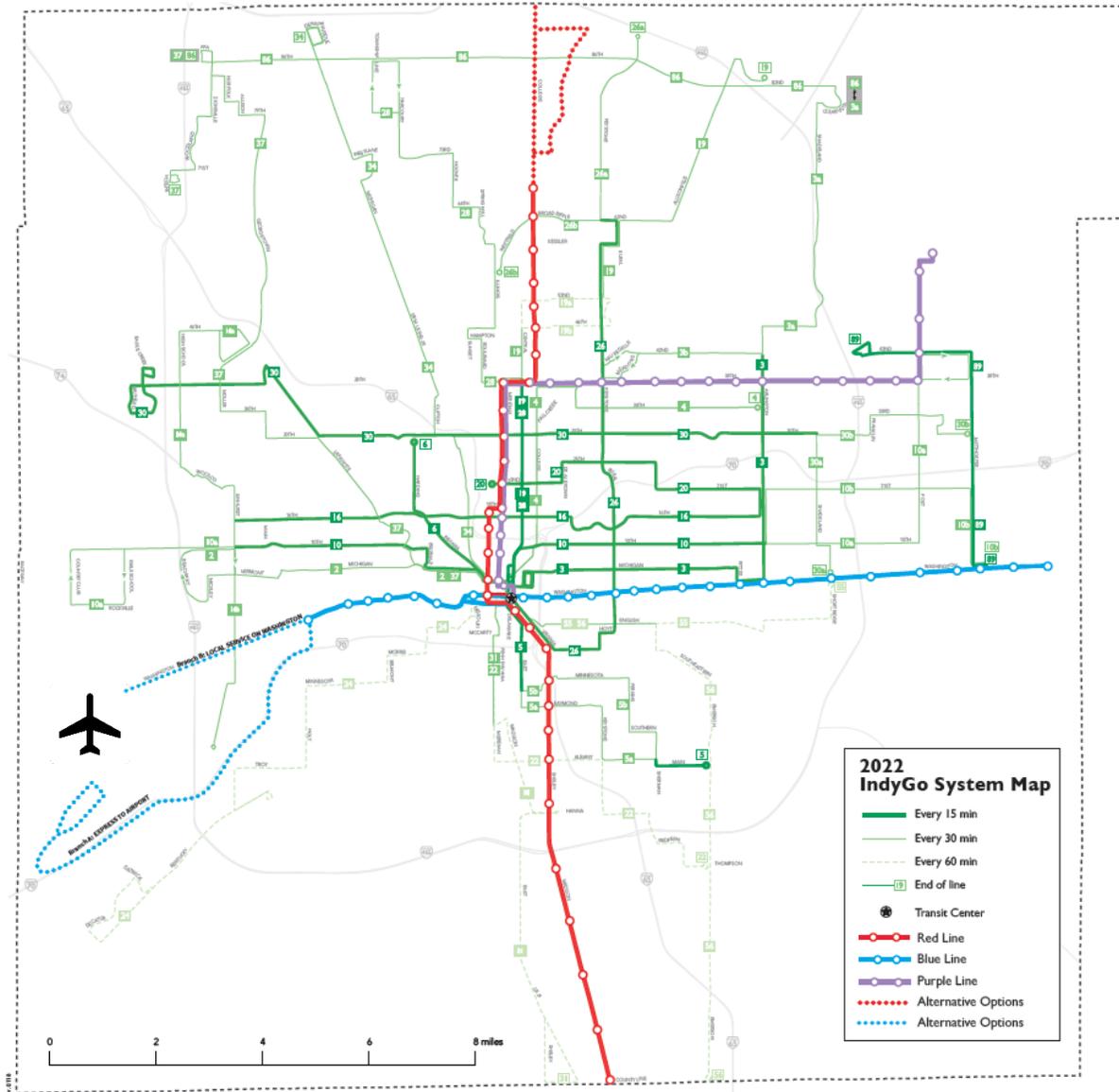
State (Indiana) Plans

Airport access is not addressed in any state plan. The State Transportation Improvement Plan (STIP) refers to the TIPs of each MPO, including Indianapolis, which covers the Blue Line BRT project. The State Aviation plan, last updated in 2012, considers near airport zoning but not airport surface transportation access.

³⁰ Indianapolis MPO. 2019b. op. cit.

³² Indianapolis MPO. 2019c. “Central Indiana Transit Plan.” Website. <https://www.indympo.org/whats-underway/central-indiana-transit-plan>

Figure B-11: IndyGo System Map in 2022³³



3. Description of Collaborative Planning Process and Problems Being Addressed

3.1. Collaboration Structures

The IAA has supported the MPO in moving transportation projects forward, even beyond airport access projects, including those outside of or having no direct relation to the airport footprint. The involvement of the IAA in the Regional Transportation Plan has been more substantial in this case study compared to others in this report. For instance, the IAA has provided comments on the BRT Red Line, which does not serve the airport or its surrounding areas.

³³ IndyGo. 2018. Website. <http://www.indygo.net/wp-content/uploads/2018/01/2022-System-Map-1.pdf>

Some of those interviewed noted that one of the residual effects of IND being a new facility was the lack of concerns about landside access to airport. As a result, airport staff was able to focus more on involvement in external community impacts rather than airport access issues in particular.

Collaboration between the IAA and the MPO has occurred at both staff and executive levels. With respect to the Regional Transportation Plan, the MPO has worked with IAA leadership directly. The MPO has mostly assisted the IAA with respect to transit access questions, since the highway access issues were settled by the terminal relocation and I-70 realignment a decade ago. From the airport authority standpoint, having multiple agencies with different responsibilities in planning agencies makes collaboration more challenging. For example, CIRTAs having overlapping responsibilities with the MPO and IndyGo can introduce some complexity into airport-related transportation planning (this observation is not uncommon among the airport authorities interviewed). However, as they also noted and as past collaborations have shown, the respective agencies have been able to work successfully in this multi-agency institutional environment.

3.2. Objectives of Collaboration/Problems to be Addressed

Collaboration efforts between the IAA and local governments have tended to focus on community-specific ground access to IND and development efforts in areas nearby the airport. Intergovernmental collaboration played a key role as the state, the MPO, and the IAA coordinated improvements to airport ground access during the development of the new passenger terminal, which opened in 2008. This project was aimed at reducing significant traffic access issues to the old terminal.

For transit, planning the Blue Line BRT, which will ultimately serve the airport and potentially the areas north of the airport in need of redevelopment, is the next large project that will require collaborative planning.

Development efforts in the airport's surrounding areas are currently another focus of collaboration. The airport has acquired more land than many other airports, and wants to engage multiple stakeholders in developing this land as well as land near the airport (but not under the airport's control).

4. Case Study Events of Collaborative Planning

4.1. Terminal relocation and highway access

As has been mentioned earlier, the relocation and improved access to the new terminal is considered the model of collaborative airport access planning by those interviewed for the case study. The Indiana Department of Transportation (INDOT), the MPO, and the IAA collaboratively planned improved ground access during the development of new passenger terminal, in particular, realigning Interstate I-70. The IAA was involved in the development of the Regional Transportation Plan at the time, in particular to make sure the project was included in the RTP and TIP, thus securing necessary funding. Major consideration was given then to the future of FedEx expansion near the airport, which required planning for higher truck traffic on the I-465 loop and the Sam Jones Expressway.

Airport access issues had been apparent for decades before the project started, and the first plans to move the terminal emerged in the 1970s. A Program Study Group was formed to create multiple scenarios of adding onto the old terminal, reconfiguring the airport, and making changes to the roadway system. A key part of the project was to coordinate the airport terminal relocation with the rehabilitation and expansion of I-70, while taking into account FedEx' needs as it was planning facility

expansion as well. The DOT worked with airport for I-70 relocation and lowering the elevation of the highway; the airport contributed about \$10 million to this effort. The fact that the IAA owned land that it had reserved for building a third parallel runway south of the I-70 helped in getting consensus from the DOT on the new design (in other words, some right-of-way was already available for a redesign).

4.2. Land redevelopment and access

IAA has also been collaborating with the MPO on land redevelopment and local airport access, in particular for freight-related activities. Figuring out what to do with excess land acquired in the 1980s and 1990s, as well as land freed from moving the old terminal (especially from former parking lots), required coordination with local communities. Airport staff believes that helping local communities make this land ready for development is good for the communities as well as for the airport. The Washington Street corridor, north of the airport, is a prime area for revitalization, as businesses located close to the old terminal had moved away. The airport helped convene a West Side neighborhood group, which also included the MPO, the primary focus of which is the Washington Street corridor. Surface street access to the airport in this corridor is important from the north for airport employees. The MPO has provided funds to improve Washington Street as part of the TIP process.

In addition, major redevelopment planned for the airport-owned former parking lot near I-465 will require changes to the roadway system. This is already leading to meetings with the communities, IDOT, and IAA (this will require relocation of local roads).

FedEx expansion and freight development have also required collaboration on improving local airport access. While IAA worked on its own plans to better accommodate freight access to airport property, the MPO has played a role in freight planning around the airport, collaborating in a study that was also supported by an industrial park around the airport. The IAA and the MPO have worked together to facilitate redevelopment efforts on both the western and eastern sides of the airport.

Finally, a regional stakeholder group worked on the IND aerotropolis project, with strong support from the airport, to foster redevelopment with local communities on the western side of the airport (and more generally of the Indianapolis metropolitan area). This effort would require the widening of roads to spur economic growth stimulated by bringing people to and from the airport. Institutionally, the group of stakeholders involved with this project developed a memorandum of understanding (MOU) that defined the goals and respective roles of the collaboration.

4.3. Transit access

Airport employee access is a major topic for collaborative efforts on the part of INDOT and the local transit operators. Worker access is important for workers in airport-related logistics and cargo-handling activities and for FedEx employees, in particular. Transit is considered an option for employee access but given the improvements in road access that have occurred over the past 10 years, transit has a difficult time competing with single-occupant vehicles. IndyGo's Blue Line BRT is expected to provide more convenient transit access to the airport, and as well help stimulate growth and economic development in communities closest to the airport. Airport helped facilitate along with IndyGo the conversation with the affected communities, in particular, showing how the alignment could stimulate growth along Washington St.

An ad hoc committee chaired by the airport that is looking at improved transit access includes representatives from the City of Indianapolis, neighboring cities like Plainfield, as well as FedEx.

5. Lessons Learned

Those interviewed believe that collaboration among the city and state agencies, MPO, and airport authority is essential to implement needed transportation improvements benefiting the airport. As has been indicated earlier, there are many examples of successful collaboration relating to improved airport access. The following observations come from the IND case study.

Using existing collaboration structures and processes between airport and MPO can sometimes be overlooked. In order for this to be successful, however, it is essential to have a formal and clear role for the airport on the MPO planning board and involved in MPO technical committees. In Indianapolis, this included having an airport representative on the MPO Policy Board. Once the airport had a voice on the MPO Board, it was able to broaden the conversation by sharing its priorities and projects with other agencies and local governments, while making sure that airport needs such as connectivity, economics, etc. are covered at MPO meetings. The airport helped broaden the perspective of the overall transportation plan.

Airport leaders can help drive collaboration beyond existing structures. One of the more impressive aspects of the IND case study was the extent to which the airport has been involved with transportation planning efforts, even if the topic was not directly related to the airport. The airport leadership strongly felt that “having the airport at the table” was an important role for the airport and in the long run will benefit the airport’s position in the regional transportation institutional structure. As noted by airport staff, changing the perception of the airport among its regional partners and constituents was a “game changer” in fostering collaborative planning efforts for projects that followed.

Although using existing institutional structures for project-specific collaboration has been accomplished in Indianapolis, maintaining day-to-day relationships with agencies helps facilitate the creation of more formal collaboration structures when they are deemed necessary. Successful, existing relationships among the major stakeholders can have lasting benefits when it comes time to solicit participation in other project actions (such as requesting conditional permits). In essence these day-to-day interactions build trust among the participants.

B.4 Los Angeles International Airport Case Study

1. Introduction

The Los Angeles International Airport (LAX), operated by Los Angeles World Airports (LAWA), is the primary international airport serving Los Angeles, California. It is the second busiest airport in the US, and fourth busiest worldwide (2018). Of particular consequence to ground access, the airport holds the record for being the world's busiest origin and destination (O&D) airport.

2. Background

The LAX case study examines a very large urban airport that is constrained on all sides, and is in the midst of an access modernization program to cope with ever-increasing passenger demand. LAWA also operates in a unique multi-jurisdictional environment, with various governing bodies at regional, county, city, and local levels. Table B-4 shows the key data for LAX.

Table B-4: Key Metrics for LAX and SCAG

Metric	LAX
Owner Agency	Los Angeles World Airports
Operator Agency	Los Angeles World Airports
MPO	Southern Californian Association of Governments
Distance to downtown	18.8
No. of runways	4
Passenger Enplanement figures (CY16)	39,636,042
OD Passenger (CY16)	30,519,482
OD Passenger % share of enplanement (and absolute number)	77%
No. of plane movements (CY17)	700,362
Hub size (Small, medium, large)	Large
Most recent annual operating revenue (in thousands) (FY17)	1,332,644
Parking share of operating revenue (in thousands) (FY17)	96,700
Car rental share of operating revenue (in thousands) (FY17)	87,433
Taxi (ground transportation) share of operating revenue (in thousands) (FY17)	25,100
MPO TIP size (in \$ billion) (FY18)	10.9 for Los Angeles
Transit access options	Roadway: Highway, TNC: Special drop off/loading zone, Rail: Metro, Bus: Multiple bus lines
Annual Freight volume (metric tons) (FY17)	805,580

2.1. Description of Airports and Airport Ground Access Provisions

LAX is located on the west side of Los Angeles in the suburb of Westchester. LAX is the fourth busiest airport in the world, handling approximately 85 million passengers annually, and is a major entry point to the US for flights from Asia and Oceania. LAX consists of eight terminals as well as an international terminal and covers an area of 3,500 acres. It is owned and operated by Los Angeles World Airports (LAWA), an agency of the government of Los Angeles, formerly known as the Department of Airports.

Ground Access Options to and from San Diego International Airport

Roadway Access

LAX is bounded by Westchester and Playa del Rey to the north and northwest, I-405 to the east, El Segundo to the south, I-105 to the south, and the Pacific Ocean to the west. The primary freeways serving the airport are I-405 and I-105, with connections to State Routes 90 and 187, and I-110. Direct access to the airport is provided by either State Route 1 (Sepulveda Blvd) or by local roads such as Century Blvd, Arbor Vitae, W 98th St. etc. in order to access the passenger terminals (see Figure B-12).

Transit

A number of rail and bus transit services converge just outside the LAX Central Terminal Area (CTA). The Metro Green Line is the closest rail transit line to the LAX CTA with the nearest Metro station 2.5 miles away at Aviation/LAX on Imperial Highway. Eight bus routes operated by five different transit agencies serve the Aviation/LAX station. LAWA operates a free transfer service, Shuttle Bus G, approximately every 20 minutes between the Aviation/LAX station and the LAX CTA.

In addition to the bus lines that converge on the Aviation/LAX station, passengers can also utilize the LAX City Bus Center near Lot C, which provides connections to ten bus routes operated by five different transit agencies. As with the Aviation/LAX Green Line station, LAWA provides a free bus transfer service, Shuttle Bus C, approximately every 10 minutes between the LAX CTA and the LAX City Bus Center, which is approximately one mile from the LAX CTA.

The only direct transit service from regional destinations such as Hollywood, Long Beach, downtown LA, West Los Angeles, and San Fernando Valley to the LAX CTA is the FlyAway service operated by LAWA.

Parking

Various parking options are available at LAX:

- Central Terminal Area (CTA) Parking Structures – There are 8 parking structures in the CTA with approximately 8,000 parking spaces available. This option is useful for making pickups or drop-offs.
- Economy Parking Lot C – The airport operates this parking lot located just outside the main airport. The 'Lot C' shuttle buses run regularly to bring passengers to and from the 7,300 open-air parking spaces available in this lot.
- An additional cell-phone waiting lot adjacent to Lot C is available for those waiting to pick up passengers, with a maximum wait time of two hours.

Private companies including hotels offer many additional options in the vicinity of the airport property.

Figure B-12: Road access to LAX³⁴

TNC – Uber/Lyft, and similar

LAX has designated pick up and drop off points for TNC drivers and customers traveling to and from the airport. Like most airports, drivers are required to drop off a customer and then wait in the queue to pick up a new ride.

Further, LAX “Rematch” looks to alleviate congestion by pairing a pick up with a drop off so the driver does not need to cycle around to Uber’s First In/First Out line for the next assignment.

Current and Recent Projects

Listed below are current and recent infrastructure projects at LAX conducted by LAWA and/or regional transportation authorities.

Landside Access Modernization Program (LAMP)

The LAMP, developed by LAWA, is a set of modernization projects at LAX that includes:

³⁴ Wikipedia. “LAX airport terminal map.png.” Website:
https://commons.wikimedia.org/wiki/File:LAX_airport_terminal_map.png

- An Automated People Mover (APM) to be built and operated by LAWA connecting the CTA to new ground transportation facilities between Sepulveda Boulevard and I-405.
- Intermodal Transportation Facilities (ITFs) that will provide pick-up and drop-off areas outside the CTA for airport passengers and commercial shuttles, parking, and access to the APM.
- A Consolidated Rental Car Facility (CONRAC).
- Roadway and utility improvements.
- Potential future land use development (approximately 900,000 square feet) on LAWA-owned property adjacent to the proposed ground transportation facilities.

LAWA's APM is anticipated to be an elevated line on a dedicated right-of-way with three stations currently planned within the CTA. Three additional stations are also planned to be located outside the CTA at LAWA's proposed Intermodal Transportation Facility (ITF), Metro's AMC Transit Station, and LAWA's Consolidated Rental Car Facility (CONRAC). Passengers, visitors, airport employees, and others will be able to transfer from the at-grade Metro transit station to the elevated APM. Figure B-13 shows a visual representation of the LAMP and related projects.

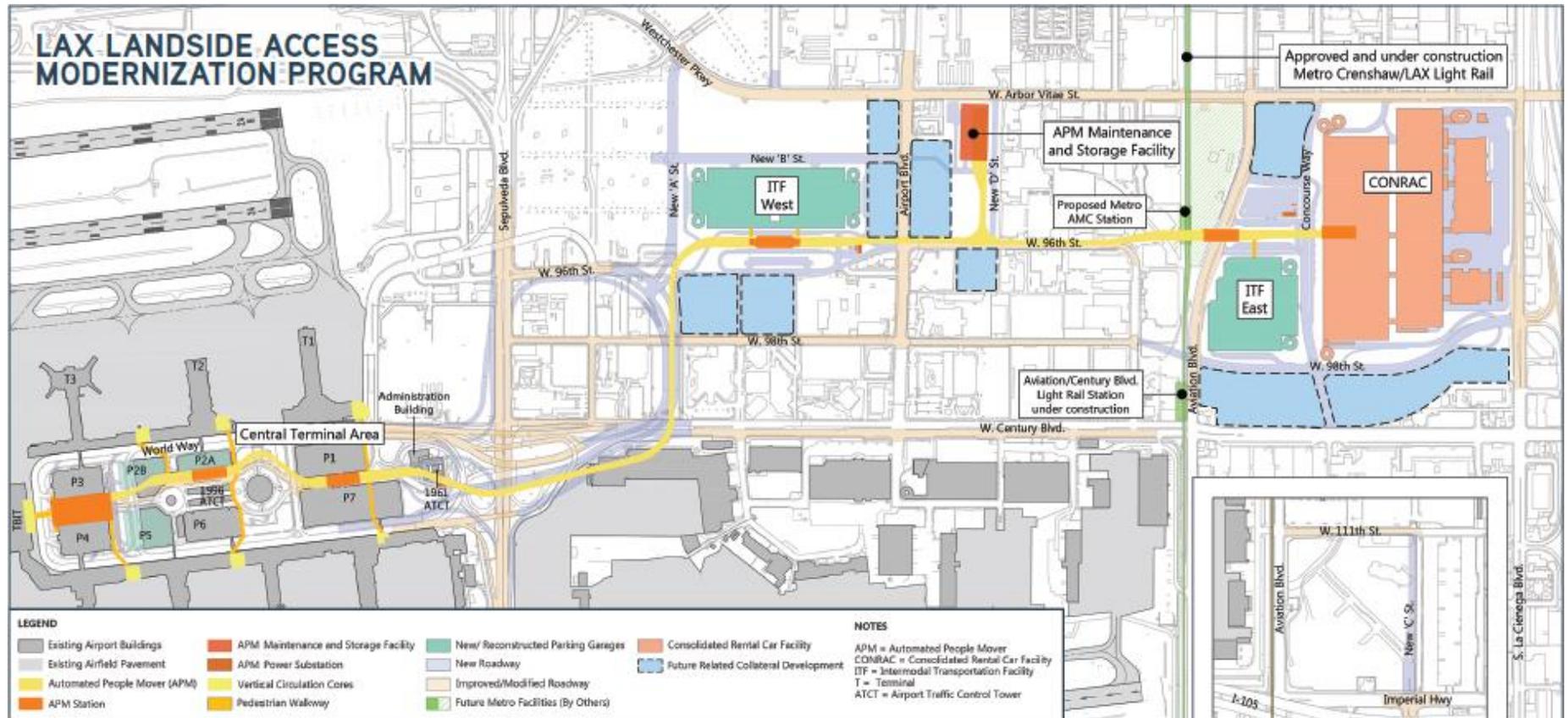
Metro Airport Rail Connector

The Los Angeles County Metropolitan Transportation Authority (known as Metro) is planning a new transit station that will connect LAX to the regional transit system. Approximately one percent of airport passengers and employees utilize the existing Aviation/LAX station to access LAX, but new projects have the potential to significantly increase rail transit usage. According to LAX's 2006 Passenger Survey Report, up to 33% of airport passengers use a form of collective transportation (including public transportation, shared ride vans, taxis and limousines). This demonstrates a potential for public transit to capture a greater portion of market share.

Once complete, the Airport Metro Connector (AMC) Transit Station (near Aviation Blvd/96th Street) will provide a connection to the future Automated People Mover (APM). In June 2014, the Metro Board of Directors approved adding a station to the Crenshaw/LAX Line (currently under construction) at Aviation Blvd/96th St that will serve as a transit "Gateway" to LAX. The AMC Transit Station is envisioned to include the following basic components (see Figure B-14):

- Three at-grade Light Rail Transit (LRT) platforms to be served by the Crenshaw/LAX Line and an extension of the Metro Green Line.
- Bus plaza and terminal facility for Metro and municipal bus operators.
- Metro transit center/terminal building ("Metro Hub") that connects passengers among the various modes of transportation.

Figure B-13: LAX Landside Access Modernization Program³⁵



³⁵ Los Angeles World Airports. Undated. "LAX Landside Access Modernization Program Fact Sheet." <https://www.lawa.org/connectinglax>

Figure B-14: Metro Airport Rail Connector³⁶



LA Metro Crenshaw/LAX Transit Project

The Metro Green and Crenshaw/LAX Lines will also serve a station at Aviation/Century that will connect transit patrons with destinations along the Century Blvd corridor (see Figure B-15). The Metro Crenshaw/LAX Line will extend from the existing Metro Exposition Line at Crenshaw and Exposition Boulevards. The Line will travel 8.5 miles to the Metro Green Line and will serve the cities of Los Angeles, Inglewood, and El Segundo; and portions of unincorporated Los Angeles County.

³⁶ Los Angeles World Airports. Op cit.

Figure B-15: Crenshaw/LAX Transit Project³⁷



³⁷ LA Metro. 2019. "Metro Crenshaw/Lax Transit Project – Overview Fact Sheet." https://media.metro.net/projects_studies/crenshaw/images/factsheet_crenshawlax_eng.pdf

2.2. Airport Governance – Los Angeles World Airports (LAWA)

LAWA is a branch of the City of Los Angeles, also known as the Department of Airports, and is governed by a seven-member Airport Commissioner's Board. The Board is appointed by the Mayor of Los Angeles and approved by the Los Angeles City Council for staggered five-year terms. By the Charter of the City of Los Angeles, the Board is responsible for the formulation of airport policy.

LAWA's revenue sources include aircraft landing fees, lease fees from airport tenants, airport concession fees, and parking fees. LAWA employs close to 2,500 employees who work for the two airports under its control—LAX and Van Nuys airport. LAWA previously had jurisdiction over the LA/Ontario International Airport, but ownership reverted to local control in 2016.

2.3. Metropolitan Planning Organization (MPO) structure - SCAG

The Southern California Association of Governments (SCAG), the largest of nearly 700 councils of government in the US, is the designated MPO for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial Counties. The region encompasses a population exceeding 18 million people in an area of more than 38,000 square miles. As the designated MPO, SCAG is mandated by federal and state law to research and draw up plans for transportation, growth management, hazardous waste management, and air quality.

SCAG's policies are guided by an 83-member governing board known as the Regional Council. Most of the discussion and debate on policy issues occurs in one of three committees--Community, Economic and Human Development; Energy and Environment; and Transportation.

The largest airports in SCAG's purview are LAX, LA/Ontario Airport, Burbank Bob Hope Airport, Long Beach Airport, Palm Springs International Airport, and Imperial County Airport. While LAX is operated by LAWA, the others are under local city or county control.

2.4. California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) is the state's principal agency for developing and implementing state transportation plans and programs. Caltrans builds and maintains state and interstate highways, conducts statewide multimodal transportation planning and modal planning, and allocates funding to various projects.

Caltrans also develops the State Transportation Improvement Program (STIP) and the Interregional Transportation Improvement Plan (ITIP), while regional agencies such as SCAG prepare Regional Transportation Improvement Programs (RTIPs). The STIP incorporates nominated projects within the RTIPs from various metropolitan areas as well as all other federally-funded transportation projects in the state.

2.5. City of Los Angeles

The Department of Transportation of the City of Los Angeles (LADOT) is responsible for planning multi-modal transportation options and facilities in the city and especially among and between LA's major activity centers. Through its Strategic Plans, the City details future land uses, technology improvements, and public improvement plans. The City is also involved in developing the Westside Mobility Plan, which among other things, involves consideration of multimodal travel to the airport.

The City of Los Angeles is represented on the boards of both LAWA and the SCAG. Staff members are regularly involved in working groups and committees with LAWA and SCAG.

2.6. Los Angeles County Metropolitan Transportation Authority (Metro)

Metro is the agency that operates public transportation for the County of Los Angeles. Metro, along with other agencies such as Long Beach Transit, directly operate bus, light rail, heavy rail, and bus rapid transit services within Los Angeles County. Metro also provides funding and planning services for these options, as well as commuter rail and freeway projects within the County. Metro serves as the Los Angeles County Transportation Commission, with authority as Los Angeles County's transportation planner and coordinator, designer, builder, and operator. Metro develops Los Angeles County's long-term transportation investment plan. Metro is governed by a Board of Directors whose 13 members include:

- Five Los Angeles County Supervisors
- Mayor of Los Angeles
- Three mayoral appointees
- Four city council members from cities other than Los Angeles within Los Angeles County
- One non-voting member appointed by the Governor of California

2.7. Subregions in Los Angeles County

Due to the size and complexity of Los Angeles County, nine geographic subregions have been created for planning purposes. These subregions consist of local government representatives (city council members and Los Angeles County Board of Supervisors) and share the goal of cooperatively addressing regional priorities and matters of mutual interest. These subregions are:

- Arroyo Verdugo
- Central Los Angeles
- Gateway Cities
- Las Virgenes/Malibu
- North Los Angeles County
- San Fernando Valley
- South Bay Cities – LAX is located within this subregion
- Westside Cities

2.8. Airport, Regional and Statewide Plans and Collaborative Efforts

The plans and documents detailed below provide an overview of agency-specific planning processes for aviation in general and LAX in particular, as well as examples of collaboration between the airport authority and local and state agencies.

LAWA Plans

Landside Access Modernization Program (LAMP): The Landside Access Modernization Program (LAMP) consists of four primary components:

- An Automated People Mover (APM) system that will connect passengers to the airline terminals via six stations, a Consolidated Rent-A-Car Facility (CONRAC), new passenger pick-up and drop-

off locations (Intermodal Transportation Facilities) with airport parking facilities, roadway improvements, and Metro's regional transit system. LAWA will also construct new roadways and improve freeway access to LAX.

- The above-mentioned CONRAC, which would be designed to accommodate the currently-dispersed rental car agencies at one centralized location, while providing direct access to airline terminals via the APM and to the regional freeway network.
- Intermodal Transportation Facilities (ITF) that would offer facilities close to the I-405 freeway and Sepulveda Boulevard to allow for pick-up and drop-off of passengers, check-in kiosks, parking, connections to shuttles and transit, and direct access to the CTA via the APM system. ITF features connection to a future Metro station.
- Proposed roadway improvements that include improved access to the Central Terminal Area (CTA), bicycle and pedestrian improvements, and additional traffic lanes, and new freeway ramps.

LAX Master Plan: The LAX Master Plan, last updated by LAWA in 2004, was intended to guide development of the airport through its planning horizon of 2015. In terms of access improvements, it set the basis for many of the elements of the LAMP, and is supplemented regularly by the LAX Plan and the LAX Specific Plan, which are developed by the City of Los Angeles.

LAX Traffic Generation Report: The LAX Traffic Generation Report is a requirement of the LAX Specific Plan. This annual report identifies the number of trips generated by LAX, the number of trips anticipated to be generated at the completion of any LAX Master Plan Project(s) in development at the time of the report, the number of trips proposed to be generated following the implementation of the LAX Master Plan as informed by current and project-based trip counts, and the number of trips anticipated to be generated by on-going LAX Master Plan construction activities. Vehicle trips are counted during Fridays in August, which is the "design day" that is used for airport planning, and is consistent with the methodology used in the LAX Master Plan. Traffic is counted in the Central Terminal Area and in more than 60 airport-related driveways in and around the airport.

MPO (SCAG) Plans

2016-2040 Regional Transportation Plan (RTP): The Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) is a long-range transportation plan developed by SCAG with input from local governments, County Transportation Commissions (CTCs), tribal governments, non-profit organizations, businesses, and local stakeholders within all SCAG counties. The RTP/SCS allows project sponsors to qualify for federal funding. Over 4,000 transportation projects are included in the RTP – ranging from highway improvements, railroad grade separations, bicycle lanes, new transit hubs, and replacement bridges. These projects were included in county plans developed by the six CTCs (Metro is the designated CTC for LA County).

The RTP includes a section dedicated to airport ground access, which includes strategies for reducing the impact of passenger airport access trips on ground transportation congestion. Such strategies include:

- Supporting the regionalization of air travel demand.
- Continuing to support regional and inter-regional projects that facilitate airport ground access (e.g., high-speed train).

- Supporting ongoing local planning efforts by airport operators, county transportation commissions, and local jurisdictions.
- Encouraging the development and use of transit access to the region's airports.
- Encouraging the use of modes with high average vehicle occupancy.
- Discouraging the use of modes that require "deadhead" trips to/from airports (e.g., passengers being dropped off at the airport via personal vehicle).

LA Metro Plans

2009 Long Range Transportation Plan (LRTP): Metro's LRTP, last updated in 2009, is a county-wide, multimodal transportation plan with a major goal being sustainable transportation development. The Plan prioritized public transit investments to meet the expected travel growth in the county. As the state-designated planning and programming agency for Los Angeles County, Metro through the LRTP submits recommended projects and programs to SCAG for inclusion in the RTP. Only projects and programs included in the RTP and in the RTIP are eligible for federal funding. No airport-specific projects were identified in the 2009 LRTP. Metro is currently working to update the LRTP, which will consider the new revenue source generated by Measure M and associated airport access projects such as the LAX/Crenshaw line. Metro anticipates adopting a new LRTP in the near future.

Regional Airport Connectivity Plan (RACP): The Regional Airport Connectivity Plan (RACP), approved in 2013, examined the integration of the regional airports in Southern California with the regional rail system and was developed in response to a July 2012 motion request by Metro's Board. Four of the airports covered in the RACP are in Los Angeles County--LAX, Burbank Bob Hope (BUR), Long Beach (LGB), and LA/Palmdale Regional (PMD). One airport is in the adjacent San Bernardino County---LA/Ontario International (ONT). The RACP established the range of transit options currently available at the airports, identified gaps in service, and cited opportunities for improvements from both funded and unfunded projects. It incorporated input from the Federal Aviation Administration (FAA), SCAG, and provided an overview of coordination and potential funding from partner agencies (such as LAWA and the Los Angeles Department of Transportation). The FAA provided guidance on the general involvement of airport authorities with ground transportation projects and on the applicability of funding programs overseen by FAA.

City of LA Plans

2017 LAX Plan: The LAX Plan is a part of the General Plan of the City of Los Angeles. The LAX Plan is intended to promote an arrangement of airport uses that encourages and contributes to the modernization of the airport in an orderly and flexible manner within the context of the city and region. The LAX Plan area includes approximately 3,900 acres comprised of five general areas: the airfield, landside, supporting landside facilities (including the airport access system), LAX Northside, and the Los Angeles Airport/El Segundo Dunes area.

The Plan specifically identifies improving ground access to LAX as one of its goals. The objectives include:

- Establish secure and efficient airport ground connection systems to the regional ground transportation network, which consists of major and secondary highways, freeways, and public transit systems.

- Relieve congestion in the CTA and on the surrounding street system by developing a flexible transportation system that provides travel options to passengers, airport employees and airport-related vendors.
- Enhance the passenger experience by providing new access options, including a direct connection to transit.
- Provide passengers easier and more efficient access to rental cars.

2013 LAX Specific Plan: The LAX Specific Plan, also developed by the City of Los Angeles, guides the implementation of the LAX Plan at a more focused level. It includes zoning and development regulations, and sets out the permitted and prohibited uses for property in the LAX Zone. It is the principle mechanism by which LAX Master Plan projects are implemented.

State (California) Plans

California Transportation Plan 2040: The latest iteration of the state long-range transportation plan, the California Transportation Plan 2040 (CTP), was developed in 2016. The CTP brings together several internal and external interrelated plans and programs to envision a future transportation system. For instance, the CTP draws from the following modal plans:

- Interregional Transportation Strategic Plan (ITSP)
- California Freight Mobility Plan (CFMP)
- California State Rail Plan (CSRP)
- California High Speed Rail Business Plan
- Statewide Transit Strategic Plan
- California Aviation System Plan (CASP)

The CTP serves as the statewide policy framework for all transportation partners as well as Caltrans' modal system investment plans. This multimodal plan establishes guidance and priorities for state transportation decisions, which filter down into specific plans for each mode and into the STIP, which identifies priority projects and how money will be spent. Per Senate Bill SB-391, Caltrans must update the statewide long-range transportation plan every five years.

CalTrans' "Freight Planning Fact Sheet" for LAX identifies the three focus areas for freight access to the airport:

- Improve cargo access to and from LAX.
- Implement ways to alleviate highway bottlenecks and improve pavement conditions along truck routes.
- Plan for handling sea level rise to ensure freight accessibility.

3. Description of Collaborative Planning Process and Problems Being Addressed

3.1. Collaboration Structures

Institutional structures for collaboration exist among many of the agencies involved with transportation planning in Southern California. With an 83-member governing board of local governments and agencies, SCAG provides a broad forum for information-sharing and building relationships. The Aviation Technical Advisory Committee (ATAC) at SCAG is specific to aviation officials and airport representatives and provides technical and professional expertise to SCAG staff with respect to industry standards and developing the aviation element of the RTP. At the county level, LAWA and Metro are working together via project-specific Master Cooperative Agreements (MCAs) to simplify governance, knowledge-sharing, and coordination on specific projects. At the local level, LAWA and local jurisdictions typically collaborate directly with each other on an as-needed basis.

Further, the State of California requires municipalities to create a General Plan that sets out the planning, zoning, and other land use regulations for the entire city. For LAWA, the LAX Plan, developed by the City of Los Angeles, provides the long-range land use policy framework and serves as the land use element for the City's General Plan for the Airport and LAX Northside.

3.2. Objectives of Collaboration/Problems to be Addressed

The major challenge facing LAX ground access is the limited space available to expand. Such a situation leads to capacity improvements for existing infrastructure associated with the LAMP, and consequently most collaboration between the airport and regional agencies involves projects within the LAMP or Metro projects such as Crenshaw/LAX line, and the Airport Rail Connector.

LAWA also coordinates with SCAG and the City of Los Angeles on long term transportation planning, as well as in developing mitigation plans for impacts and disruptions caused by the LAMP.

4. Case Study Events of Collaborative Planning

4.1. Westside Mobility Plan

The City of Los Angeles developed the Westside Mobility Plan as a long-range vision for improving the connectivity of the transit network, better serve all modes of transportation (transit, auto, bicycle and pedestrian), improve the efficiency of the transportation system, and enhance the livability of the major boulevards in Westside communities. As part of the effort, the City updated the existing Coastal Transportation Corridor and the West Los Angeles Transportation Improvement and Mitigation Specific Plans. These two specific plans require new development to pay transportation impact fees. Developers pay the impact fee to the City prior to the issuance of any building, grading, or foundation permit. A one-time fee is charged to new development based on the number of new trips generated by the new development within the specific plan areas. The fee would be assessed on the amount of net new trips resulting from the project.

As part of this study, the first task was to develop a detailed traffic model for the west side of the city (which includes LAX and communities within its vicinity). The City offered to provide this model to LAWA when LAWA was identifying impacts associated with the LAMP as part of its mitigation plan. LAWA's consultant and the City's consultant had a working relationship which facilitated data sharing and collaboration. While data sharing is not mandatory, it was the logical step in this process as both

agencies had to develop Environmental Impact Reports (EIRs) for their respective projects in the area. The data sharing ensured consistency and credibility in the respective documents.

Both agencies were involved in monthly Technical Advisory Committee (TAC) meetings, and a larger quarterly Stakeholder Update meeting. TACs were generally comprised of city staff, consultants, other agencies within the city that were affected, airport, and LA Metro. While planning executives from both agencies met regularly during the development of the study, consultants and planning staff were in more frequent contact to coordinate project specifics and data sharing.

4.2. Regional Airport Connectivity Plan (RACP)

The Regional Airport Connectivity Plan (RACP), developed by Metro, examined the integration of the regional airports in Southern California with the regional rail system and was developed in response to a July 2012 motion request by the Metro Board. It incorporated input from Federal Aviation Administration (FAA), SCAG, and provided an overview of coordination and potential funding from partner agencies. SCAG, as the metropolitan planning organization, provided regional planning context for all of the various airport initiatives. The FAA provided guidance on the general involvement of airport authorities with ground transportation projects and on the applicability of funding programs overseen by FAA.

The RACP highlighted the importance of coordination with local airport authorities and oversight by FAA to advance projects and secure funding. More specifically, the report notes,

“Only airport owners can initiate decisions to move forward with projects on their property and to apply for authority to use airport-related funds. The use of airport-related funds such as the Airport Improvement Program (AIP) and Passenger Facility Charges (PFC) is overseen by FAA and is narrowly defined by federal regulations. At a minimum, projects must be determined to support the capacity, safety, or security of the affected airport. As regional plans are developed (such as the SCAG RTP/SCS and future updates to the LRTP), coordination with the relevant airport authority and FAA to determine the range of eligible projects and project features that would qualify for FAA funding is important.”

4.3. LAWA APM/Metro AMC Station & Crenshaw/LAX Line

LAWA and LA Metro signed a Master Cooperative Agreement (MCA) for the LAMP and Airport Metro Connector projects in 2014 given that both agencies were undertaking parallel planning and development efforts for the APM and the AMC Station respectively. Both projects were also going to be built in proximity and during the same time period. LAWA had already begun work on the LAMP before the MCA was signed, and the decision was made to collaborate with Metro to streamline coordination with respect to the design and construction of the APM and the AMC station, as well as potential street improvements, utility relocations, on-site work, and other new accommodations in the immediate vicinity of the APM and the AMC station.

The MCA established a clear process for providing review, comments, or approvals of design deliverables, coordinating construction efforts, inspecting work, and allocating responsibility for coordinating the elements of the projects that interface with one another in order to minimize project costs, risk of delays, and the potential for contractor claims. The MCA also required both agencies to

participate in a Technical Advisory Committee (TAC) and establish and participate in an Oversight Committee and a Steering Committee to manage the coordination of the APM and AMC station projects. The MCA established the members of the TAC and Oversight Committee and the schedule for committee meetings.

The MCA between LAWA and Metro facilitated coordination and collaboration between the two agencies during the planning phases of the APM/AMC project. As the MCA was signed before the environmental phase began, the two agencies cooperated in the development of the Environmental Impact Reports (EIRs), sharing technical resources as well as design documents for both projects. LAWA led the environmental review for the APM, while Metro completed the environmental review for the AMC Transit Station.

The agencies collaborated on roadway improvements associated with the Aviation Blvd and Arboreta projects, as well as those associated with the AMC/APM design, roadway coordination, utility relocation, bus routing, real estate, and other project development issues. Metro is working with LAWA on the design of a multi-use pathway associated with this project to expand bike and pedestrian access to the airport.

While the MCA language was specific to the LAMP and APM/AMC project, it includes accommodations for extending collaboration for the Metro Crenshaw/LAX line and Southwestern Yard projects. The Metro Green and Crenshaw/LAX Lines will serve a station at Aviation/Century that will connect transit patrons with destinations along the busy Century Blvd corridor. Metro and LAWA are coordinating and collaborating throughout the environmental review process to design an effective connection to the airport.

5. Lessons Learned

Key lessons learned from this case study include:

Establishing a formal institutional mechanism for collaboration, in this case a Master Cooperative Agreement (MCA), specific to a set of projects early in the process had a variety of benefits. The MCA ensured consistency of process and contribution among the partner agencies. It set the parameters for the roles and responsibilities for both agencies during the environmental phase, design, document review, and construction phases as well as outlining the structure of Technical Committee meetings. For example, LAWA and LA Metro established a strong collaboration structure specific to the Landside Access Modernization Project (LAMP) by signing a Cooperative Agreement followed by a Master Cooperative Agreement (MCA) prior to the start of the environmental phase of the program projects.

Other case studies and agencies have illustrated the use of a Memorandum of Understanding (MOU) to establish collaboration between agencies. Unlike an MOU, an MCA is a product of months of negotiation between the partner agencies and as such has much more detail in the agreement. It is also a legal document whereas MOUs tend to be nonbinding.

Both airport and planning officials stressed the importance of establishing on-going trust among the agencies, which requires: (1) being willing to take the time to partner with other agencies to understand their goals and priorities; and (2) approaching other agencies early in the planning process to establish the specifics of the collaboration. Those interviewed highlighted the utility of having specific collaboration structures in the planning process. While leadership is important in establishing a culture

of collaboration, robust, staff-level collaboration structures are useful in involving other stakeholders such as the contractor community and for presenting a unified message.

In multi-jurisdictional regions such as Southern California, information-sharing forums, such as the Aviation Technical Advisory Committee within SCAG are particularly useful in fostering a regional outlook among airport representatives and local governments. Interviewed staff also indicated that in multi-jurisdictional regions such as Southern California, information-sharing forums, such as the Aviation Technical Advisory Committee within SCAG, are particularly useful in fostering a regional outlook among airport representatives and local governments.

B.5 Minneapolis - St. Paul International Airport Case Study

1. Introduction

The Minneapolis-St. Paul (MSP) airport, operated by the Metropolitan Airports Commission (MAC), provides an interesting example of collaboration when the airport management authority is located in the MPO, in this case, the Metropolitan Council (METCouncil). For institutional reasons, the working relationship between the MAC and the METCouncil has been very close and productive for many years, leading to the successful planning and delivery of light-rail transit to both terminals of the airport, and for other ground access projects over the last 15 years.

This report describes the MSP case study, the collaboration approaches/institutional structures between the airport and MPO, highlights of this relationship in specific planning initiatives, and the lessons learned.

2. Background

This background section describes the structure and governance of airport planning in the Twin Cities. Table B-5 provides some of the base data for this case study.

2.1. Description of Airports and Airport Ground Access Provisions

The Twin Cities region is served by one commercial airport and ten general aviation airports for various business and recreational users³⁸. The airports, classified according to their system role as a Major, Intermediate, Minor or Special Purpose facility, are shown in Figure B-16. Seven of these airports are owned and operated by the MAC.

General aviation activities occur at all seven MAC airports. The majority of this activity occurs at the six smaller airports, which relieve congestion at MSP and provide accessibility for the region's corporate and leisure aviation needs³⁹. The existing and planned ground access provisions are described below for MSP. Secondary airports in the region are described in the appendix as per their Long-term Comprehensive Plans.

2.2. Airport Governance: Metropolitan Airports Commission (MAC)

MAC is a special-purpose agency with broad powers to acquire, develop, and operate airports within a district that approximates the seven-county metropolitan area. It owns and operates seven public-use airports, and can raise money to finance airport development and operations. MAC answers directly to the state legislature, but its long-range plans must be consistent with Metropolitan Council plans and policies. Moreover, specific airport development projects of \$5 million or more at MSP and \$2 million or more at other airports must have Council approval. The MAC board has an ex officio member from the

³⁸ Metropolitan Council. 2015. "2040 Transportation Policy Plan." Minneapolis, MN: Metropolitan Council. [https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan-\(1\)/The-Adopted-2040-TPP-\(1\).aspx](https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan-(1)/The-Adopted-2040-TPP-(1).aspx).

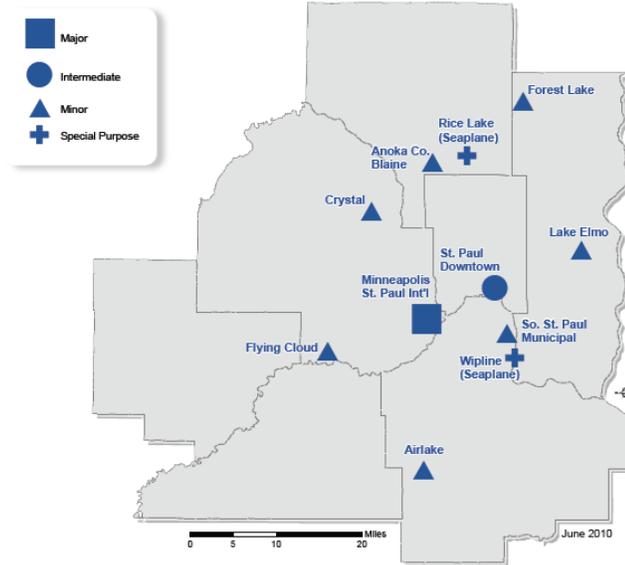
³⁹ Metropolitan Airports Commission. 2019. "General Aviation Airports System." Website. <https://metroairports.org/general-aviation.aspx>

Council. MAC board members serve staggered terms, and 13 out of 15 members are appointed by the Minnesota governor.

Table B-5: Key Metrics for MSP and the METCouncil

Metric	MSP
Owner Agency	Metropolitan Airports Commission
Operator Agency	Metropolitan Airports Commission
MPO	Metropolitan Council
Distance to downtown	12
No. of runways	4
Passenger Enplanement figures (CY16)	18,123,844
OD Passenger (CY16)	9,960,490
OD Passenger % share of enplanement (and absolute number)	52%
No. of plane movements (CY17)	415,703
Hub size (Small, medium, large)	Large
Most recent annual operating revenue (in thousands) (FY17)	332,419
Parking share of operating revenue (in thousands) (FY17)	95,231
Car rental share of operating revenue (in thousands) (FY17)	20,584
Taxi (ground transportation) share of operating revenue (in thousands) (FY17)	16,218
MPO TIP size (in \$ billion) (FY18)	3.52
Transit access options	Roadway: Highway, TNC: Special drop off/loading zone, Rail: Light rail Bus: City bus, Greyhound
Annual Freight volume (metric tons) (FY17)	203,663

Figure B-16: Airports in the Minneapolis-St. Paul metropolitan area



The FAA develops the National Plan for an Integrated Airport System, approves and funds planning and development projects, operates and maintains the national air traffic control system, certifies aircraft and pilots, and establishes and enforces flight operation rules. MAC policies must be in keeping with both Council plans and those of the FAA.

2.3. Minneapolis – St. Paul International Airport (MSP)

MSP is the only commercial airport in the Minneapolis-St. Paul area. It is a large hub (as classified by FAA), with strong international traffic, and a major economic engine for the metropolitan area.

Current Situation

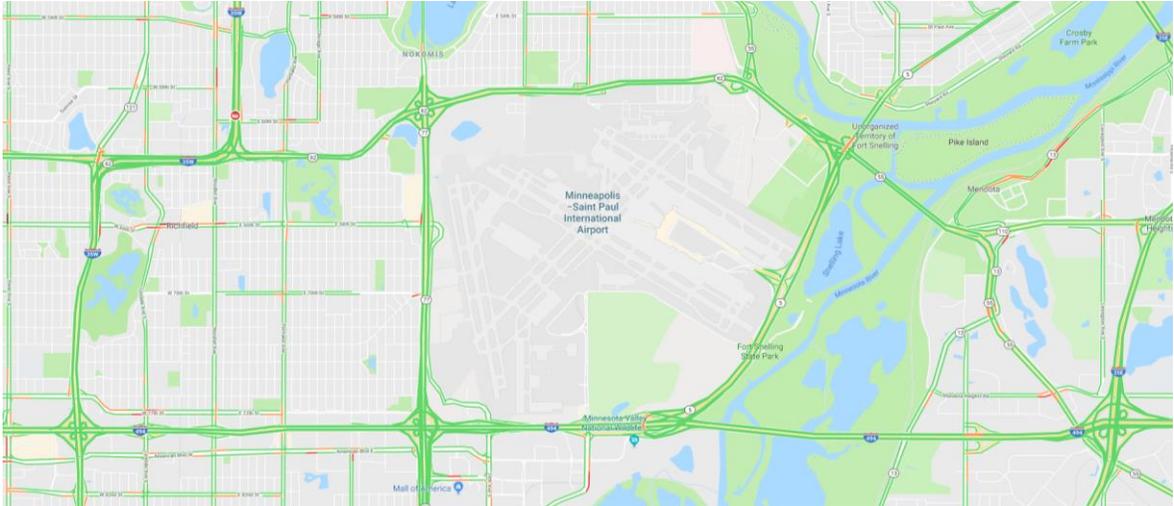
Roadway Access

MSP is surrounded by a high capacity, high speed highway network (see Figure B-17). The Crosstown Highway (State Highway 62) is located directly north of MSP, while I-494 lies directly south of the airport⁴⁰. State Trunk Highways 55 and 77 are located directly east and west of the airport, respectively. MSP has two terminals – the Lindbergh and the Humphrey Terminals – located on entirely separate roadway systems. The Lindbergh Terminal is accessed directly off of Highway 5 via Glumack Drive. The Humphrey Terminal is accessed directly off of 34th Avenue from I-494, Highway 5, or Post Road (East 70th Street), via Humphrey Drive/East 72nd Street. The airport has a network of internal roads providing

⁴⁰ Metropolitan Airports Commission. 2010. “Minneapolis St. Paul International Airport (MSP) 2030 Long Term Comprehensive Plan Update.” Minneapolis, MN. July 26. <https://docplayer.net/29886089-Minneapolis-st-paul-international-airport-msp-2030-long-term-comprehensive-plan-update.html>

access to general aviation, cargo, and other facilities. It is a challenge to significantly modify or expand roadways around the airport because of its siting on river bluffs, which are natural preservation sites.

Figure B-17: MSP Highway and Road Access



Transit

MSP has direct access to downtown Minneapolis and the Mall of America via the region’s light rail transit (LRT) (see Figure B-18). Currently, two stations serve the airport--the first is located directly east of the Humphrey Terminal and the second is below ground in the tunnel at the southeast end of the Lindbergh Terminal parking garage. Trains run every seven or eight minutes during peak hours and every 10 to 15 minutes off-peak. Metro Transit provides public bus service to the airport. The bus station is located in the Lindbergh Terminal’s Transit Center.

Parking

There are approximately 23,600 public parking spaces at MSP, split between the Lindbergh and Humphrey parking ramps. At the Lindbergh Terminal, four parking ramps designated Green, Gold, Red, and Blue provide short-term and general parking for passengers and space for rental cars, for a total of 14,400 public parking spaces. A tram provides service to the Red and Blue parking ramps located farthest from the Lindbergh Terminal.

Two parking ramps – designated the Orange and Purple ramps – at the Humphrey Terminal provide a total of 9,200 public parking spaces. The LRT provides access to the Lindbergh Terminal from the Humphrey parking ramps.

TNCs – Uber/Lyft etc.

Like other airports, MSP has designated pick up and drop off areas for TNC users, as well as specific waiting lots for queued drivers. Starting January 1, 2018, all TNC drivers must obtain an airport-specific permit in order to pick up passengers from MSP. The permit costs \$25. Further, MSP charges TNCs \$3 for every ride originating at the airport.

Figure B-18: Metro Transit Existing and Planned Transitways⁴¹



Current Projects

Current Airport Expansion Project

The MAC is in the midst of roadway and utility work in preparation for the construction of a 5,000-space parking ramp⁴². The ramp, scheduled to open in 2020, will help alleviate parking constraints at Terminal 1-Lindbergh where current facilities regularly fill for short periods on Tuesdays and Wednesdays. Customers who park in the new ramp will take the existing tram between the Red and Blue ramps to the terminal building.

As part of the project, the outbound roadway has been realigned and the parking exit plaza moved east. The rental car facilities (currently located on levels 2 and 3 of the Red and Blue parking ramps) will move to the new ramp to free up parking spaces closer to the terminal building, and a transit center will be placed at the far east side.

⁴¹ MetroTransit. 2019. Website. <https://www.metrotransit.org/metro-system>

⁴² Minneapolis-St. Paul Airport. "Parking, Roadways & Ground Transportation." Website. <https://reimaginemsp.com/parking-ground-transportation-and-roadways/>

Master Plan

As the MAC was in the process of developing its 2035 Long Term Comprehensive Plan, the FAA identified an issue with MSP's converging runways⁴³, which prevented the MAC from finalizing its plan until the issue was resolved. The MAC has reached an agreement with the METCouncil to prepare a 2020-2040 plan instead. Data collection started in 2018. The current airport master plan includes the airport parking project mentioned in the previous section.

2.4. Surface Transportation Planning Agencies: Structure and Governance

The major participants in the regional transportation planning process include:⁴⁴

- Metropolitan Council
- Transportation Advisory Board (TAB) and its Technical Advisory Committee (TAC)
- Minnesota Department of Transportation (MnDOT)
- Minnesota Pollution Control Agency (MPCA)
- Metropolitan Airports Commission (MAC)
- Transit Providers
- Counties and Cities
- County Transit Improvement Boards (CTIB)
- County Regional Railroad Authorities
- Private Citizens
- US Department of Transportation (US DOT)

The roles and responsibilities of each of the planning participants as they pertain to airport ground access planning are described below.

Metropolitan Council

Created in 1967, the Metropolitan Council, in conjunction with its Transportation Advisory Board as further detailed below, is the designated MPO for the seven-county Twin Cities area, which includes Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties. The Metropolitan Council also operates the main transit system in the Twin Cities area, Metro Transit. Metro Transit is a department of the METCouncil.

The METCouncil board has 17 members, all appointed by the governor and confirmed by the State Senate. Sixteen members represent individual geographic districts; the chairperson serves at large. The Council districts are coterminous with the MAC districts (one MAC district corresponding exactly to two Council districts).

⁴³ "A Converging Runway Operation (CRO) describes a condition when the extended runway centerline intersects with another extended centerline at a distance of one mile or less. At MSP, the extended runway centerlines of Runways 30L and 30R intersect with the extended runway centerline of Runway 35 within one mile to the north of MSP." Source: FAA, <https://www.macnoise.com/faq/what-converging-runway-operation-cro>

⁴⁴ Metropolitan Council. 2013. "Transportation Planning and Programming Guide for the Twin Cities Metropolitan Area." St. Paul, MN. <https://metrocouncil.org/Transportation/Publications-And-Resources/Transportation-Planning-and-Programming-Guide-2013.aspx>

The Council develops the Regional Development Framework (RDF), currently called “Thrive MSP 2040”, that includes policies for shaping future growth and provides direction to three system policy plans: transportation/aviation, parks and water resources.

The Council’s role in transportation planning and programming is multi-faceted. It includes conducting studies and preparing planning guidance documents for agencies that plan and operate highways, transit, and airports. These documents and studies include:

- The Transportation Policy Plan (TPP), which includes plans for the metropolitan highway, regional transit, and aviation systems;
- The four-year, multi-modal Transportation Improvement Program (TIP), a program of highway, transit, bike, walking, and transportation enhancement initiatives proposed for federal funding;
- The congestion management process (CMP), a process for evaluating and developing strategies that manage existing and expected future traffic congestion.
- Conformity determinations to assess whether plans and programs conform to Clean Air Act requirements.
- Road and transit classifications before design and operational guidelines are implemented.
- Reviews and approvals of applications for federal and state funds and assuring these applications are consistent with the stated goals and policies of the RDF and the Transportation Policy Plan.
- Reviews of local communities’ long-range plans to make sure they are consistent with regional system plans.

Among the Council’s advisory committees, the Transportation Advisory Board (TAB) has a special role. The Council, made up of members appointed by the Governor, was the regional transportation planning agency in 1974 when federal law was changed to require that governing bodies of all MPOs include local elected officials as part of the decision-making process. The TAB was established at that time to include local elected officials in the process, allowing the Council to continue as the designated MPO and to receive federal transportation funding. TAB membership is now spelled out in state law, and the majority of TAB members must be city and county elected officials from the seven-county area. The TAB, in conjunction with the Council, satisfies the federal requirement that a designated MPO include local elected officials in the decision-making process and plays a major role in the development of transportation policy for the seven-county area.

The TAB works closely with the Council, reviewing, commenting on and coordinating transportation planning and programming activities. A key responsibility of the Council’s TAB is to solicit and evaluate project applications for funding from federal programs. The TAB receives technical input from its Technical Advisory Committee (TAC).

[Minnesota Department of Transportation \(MnDOT\)](#)

The Minnesota Department of Transportation (MnDOT) is the state’s principal agency for developing and implementing state transportation plans and programs. MnDOT builds and maintains state and interstate highways, conducts statewide multimodal transportation planning and modal planning, and allocates funding to various projects.

MnDOT also develops the State Transportation Improvement Program (STIP), which incorporates the TIPs from the various metropolitan areas within the state as well as all other federally-funded transportation projects.

MnDOT plays an integral part in the Twin Cities metropolitan planning process, serving as the liaison between the Council and the FHWA and FTA.

2.5. Collaborative rules/Practices

A number of federal and state rules, practices, requirements, and procedures support collaborative transportation planning and programming activities in the region. Various agencies and individuals participate in these required activities.

Memorandum of Understanding (MOU)

Federal regulations require that the mutual transportation planning responsibilities of the MPO, state, and public transportation operator be incorporated into a written agreement—a Memorandum of Understanding. The MOU is signed by the Council and MnDOT and is reviewed at least every four years. The MOU may also be modified by mutual agreement at any time.

Aviation Plan

The Council, working with MAC, airport users, owners, affected communities, and MnDOT, develops the aviation plan element of the Transportation Policy Plan. It includes goals, policies, review criteria, guidelines, coordination, and implementation procedures, as well as an airports system plan. There used to be a significant airport chapter in the Council's long-term comprehensive plan. Currently, the airport section is only a subsection of the transportation chapter⁴⁵.

Long-Term Airport Plan

The MAC prepares Long-Term Airport Plans or airport master plans for MSP and the six reliever airports periodically, following FAA guidance. The Airport District Office (ADO) of the FAA plays a key role in providing local support and oversight to the Airport Master Plan, but their involvement in access planning has been limited due to staffing constraints.

Transportation Policy Plan

The Transportation Policy Plan (TPP) is a federally-required plan that is prepared and updated on a four-year cycle by the Council. The TPP describes the region's approach to metropolitan transportation investments for at least the next 20 years. The transportation plan is one chapter of the Council's comprehensive development guide⁴⁶.

⁴⁵ Until 2005, the Aviation Policy Plan was a standalone document that would guide MAC and city owned airports on how to develop individual airports. The Transportation Policy Plan only covered land transportation, especially highways and transit. The aviation plan had specific strategies to enhance air service, amenities, and land use guidance. During this time, the MAC was developing the airports into a cohesive regional airport system. In 2005, the state statute changed and nullified the requirement that the Aviation Policy Plan be a separate document. The long range plan for the aviation system is now a chapter in the Transportation Policy Plan (TPP). Several TPP appendices cover aviation topics. (Source: Metropolitan Council internal documents).

⁴⁶ Metropolitan Council. 2013. Op cit.

The Council's current TPP is Thrive MSP 2040. It includes a description of the existing ground access system to the region's airports and an "Aviation Investment Direction and Plan" section. The Council plan refers to each of the regional airports' Long-Term Comprehensive Plans. In fact, Minnesota Statutes (473.145) direct the Council to prepare a metropolitan development guide that addresses "... the necessity for and location of airports..." More specifically, Minnesota Statutes 473.146, subd. 3.8 requires the METCouncil to adopt a long-range comprehensive transportation policy plan that includes "a long-range assessment of air transportation trends and factors that may affect airport development in the metropolitan area and policies and strategies that will ensure a comprehensive, coordinated, and timely investigation and evaluation of alternatives for airport development."

The METCouncil does not develop a transit plan separate from its Transportation Policy Plan. The current transit long-term plan (see Figure B-19) does not envision additional transit links serving the airport. A potential arterial BRT on the I-494 corridor would serve the Mall of America station on the Blue Line, offering a connection to the airport.

[Unified Planning Work Program \(UPWP\)](#)

The UPWP is a federally-required description and documentation of proposed transportation and transportation-related planning activities in the metropolitan area. The UPWP also serves as the Council's application for US DOT transportation planning funds. The UPWP is prepared annually and describes metropolitan-area transportation planning activities being undertaken by four agencies: Metropolitan Council, MnDOT, MPCA, and MAC.

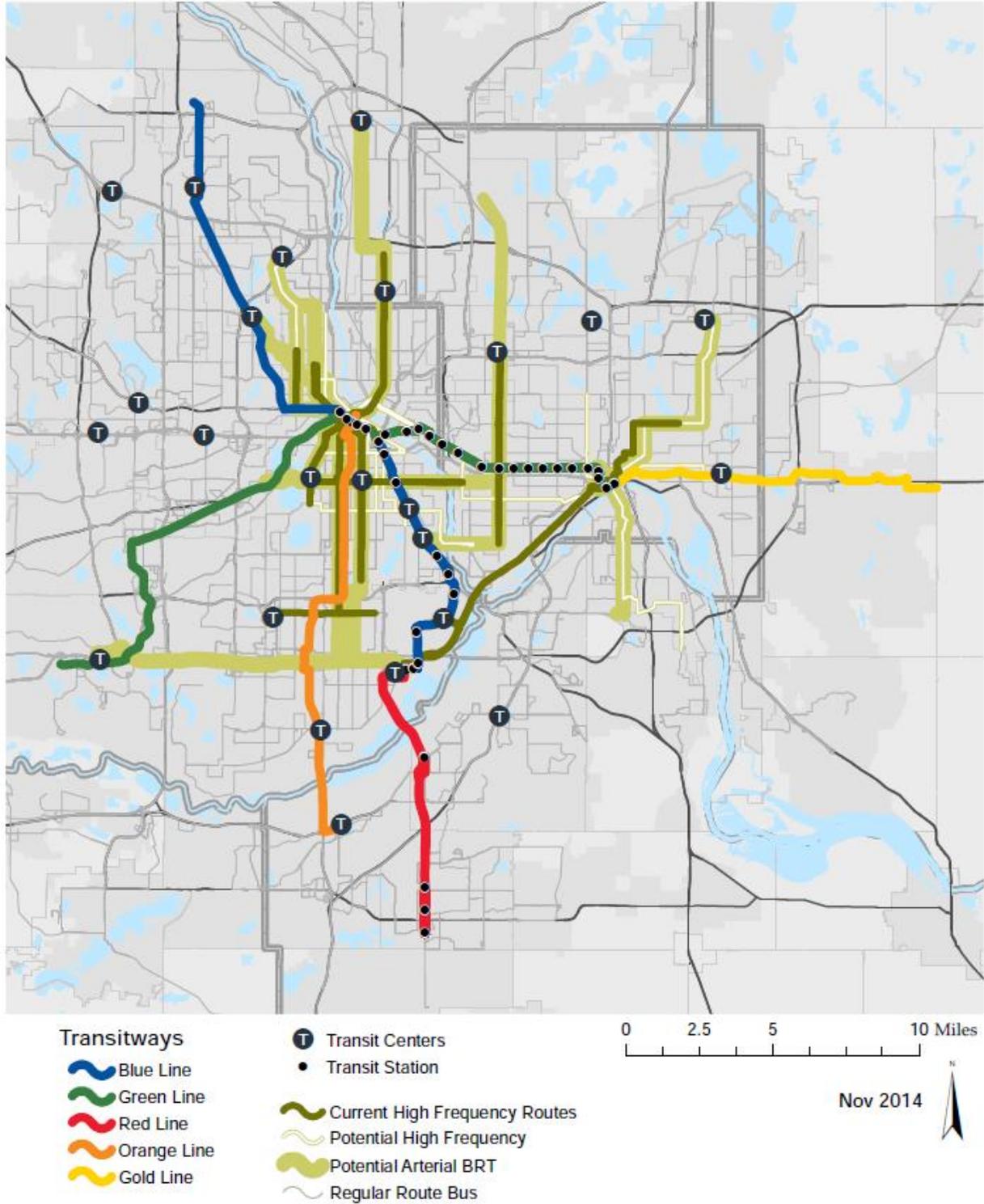
[Congestion Management Process \(CMP\)](#)

Under federal law, MPOs in areas with a population over 200,000 must develop a CMP that manages traffic congestion and provides information on transportation system performance. A CMP must: (1) measure multimodal transportation system performance, (2) identify the causes of congestion, (3) assess alternative actions, (4) implement cost-effective actions, and (5) evaluate the effectiveness of those actions. The CMP incorporates and coordinates the various activities of the Council, MnDOT, transit providers, counties, cities, and Transportation Management Organizations to increase the efficiency of the multimodal transportation system by reducing vehicle use and providing lower-cost safety and mobility projects where feasible. There was no apparent involvement of airport staff in the development of the CMP.

[Statewide Multimodal Transportation Plan](#)

The Statewide Multimodal Transportation Plan serves as the statewide policy framework for all transportation partners as well as MnDOT's modal system investment plans. This multimodal plan establishes guidance and priorities for state transportation decisions, which filter down into specific plans for each mode, and into the Statewide Transportation Improvement Program (STIP), which

Figure B-19: Existing and Potential High-Frequency Transit Routes



identifies priority projects and how money will be spent. To keep pace with changing priorities, opportunities, and challenges, the Statewide Multimodal Transportation Plan and the different modal plans are updated every 4 to 6 years.

Development of a Statewide Multimodal Transportation Plan per Minnesota Statute 174.03 is an integral element in the overall MnDOT planning process. The statewide plan must be updated every four years. The plan establishes overarching guidance and priorities for making state transportation decisions across all modes—roadways, railroads, aviation, transit (outside of metropolitan Minneapolis-St. Paul), and bikeways. The plan focuses on activities over a 20-year time frame. The plan is intended for use as a guidance document for local and regional planning efforts. Within MnDOT, the plan guides future modal system and investment decisions, such as the State Aviation System Plan and the Highway Investment Plan.

3. Description of Collaborative Planning Process and Problems

This section addresses practices, rules and regulations, masterplans, Memoranda of Understanding (MOUs), legislation, and governance in the collaborative planning process.

3.1. Collaboration Structures

Collaboration and consensus are key elements of the relationship between the Council and the MAC. This has been a tradition and a dimension of the MAC culture since the 1980s. The MAC interacts with the Council in three formal ways:

- The MAC has a representative on the Council Transportation Advisory Board, while a council member from the Council has a seat on MAC's Board as a non-voting member
- The MAC VP for Planning and Development sits on the Technical Advisory Committee that reports to the Transportation Advisory Board.
- The MAC funds Council airport planning activities, contributing approximately 50 percent of the Council's airport planner position, per Minnesota statutes⁴⁷.

Typically, one or more Council staff members have served as primary airport contacts, and attend MAC board meetings.

The MAC CEO briefs the Council every year on MSP development plans, and when the Council has to approve the MAC's yearly Capital Improvement Program (CIP). The Council has authority to review the MAC's CIP program, which can generate issues. For example, some Council members have been strong advocates for airport-related noise reductions, which they have tried to get a greater funding commitment for.

As noted in the interviews, informally, both airport and Council planners communicate as needed. Most of the communication takes place staff to staff. However, it was noted that collaboration with local cities has been more on a project-by-project basis: efforts have mostly focused on specific roadway connections and traffic signals, bike lanes, and excess real estate available at reliever airports.

⁴⁷ Minnesota Statute 473.164 states that "the Metropolitan Airports Commission shall annually reimburse the council for **costs incurred by the council in the discharge of its responsibilities relating to the commission.**" The statute can be found at <https://www.revisor.mn.gov/statutes/?id=473.164>

3.2. Objectives of Collaboration/Problems to be Addressed: Airport Ground Access Planning & Airport Access Mode Share

The Council oversees the update of the comprehensive plans of the communities in its jurisdiction, confirming the compatibility with MSP and the six reliever-airport plans. No formal airport ground access planning process exists between the MAC and the Council. However, significant data sharing occurs, in particular for survey information and travel behavior inventories. Collaboration with MnDOT especially occurs in highway corridor studies. The Council, as a transit operator, has been involved in a major corridor study between MSP and downtown St. Paul (described in more detail below).

The Council and the MAC have also worked on airport access mode share. They have occasionally had meetings on how to encourage passengers to use transit. The Council prioritizes the development of transit and bicycle use projects.

4. Case Study Events of Collaborative Planning

4.1. “Dual Track” Decision-making Process between Airport Expansion and Relocation

By statute, the Council is responsible for the location, purpose, and need for airports in the Twin Cities area. As such, the Council supported the evaluation of potential new airport locations through the “Dual Track” process, a planning process that resulted from the 1989 Airport Planning Act, to determine whether the airport should be expanded on its current location or relocated.

In the planning process, the MAC prepared all documents that were then reviewed by the Council. All air traffic forecasting data was shared with the Council. All ground access topics were included in the MAC’s plans, including environmental impacts, capacity issues, congestion on regional highways etc. The Council was more directly involved on ground access than on airside issues. The Council identified the need for a new, larger airport and determined its location. The MAC was in charge of developing plans, financing, constructing, and then managing the new airport. The Legislature and the Governor were the ultimate decision-makers and opted to keep the airport at the same site and expand. The Council was not the planning entity responsible for the airport expansion project, but had a strong collaborative relationship with the MAC on this topic.

4.2. Light-Rail Transit expansion to MSP and the Mall of America

The Blue Line, initially called the Hiawatha Line, was the first light-rail project planned in Minneapolis since the dismantling of the streetcar system in the 1950s. Initially led by MnDOT, the project had planned service to the Mall of America since its inception. The MAC provided input to MnDOT regarding the alignment, which was going to serve the airport as well. At the time, the MAC was building parking and wanted alternative options for access to the airport. While the relationship with MnDOT was collaborative, the discussions of the alignment on airport property required involvement of the Governor.

The Council became heavily engaged in the proposed project, but the MAC wished to keep control of the construction on airport property, considering the risks and complexity of tunneling under the airport. Given the focus on transit construction, the MAC wanted to lead the project engineering, and made a significant financial contribution to fund the project (\$87 million). The MAC was responsible for the drilling of the tunnel and the designing, building, and lighting the stations underground. The Council was tasked with laying rails and provide additional rail support (safety and signals). MnDOT’s limited experience in tunneling, given Minnesota’s topography, was an important driver in the MAC’s decision to engineer the LRT construction on airport property directly rather than delegate it to MnDOT.

4.3. Direct Bus Service to St. Paul for Airport Workers

The MAC and the Council have collaborated on a number of corridor studies over the years. The latest example is a study of the corridor between MSP and downtown St. Paul, which considers new transit options. The MAC participates on technical and policy committees for such corridor studies, with respect to passenger and airport worker access.

In addition to formal corridor studies, the MAC has collaborated with the Council on improving airport access at night for concession and operations employees when Metro Transit is not in service. This initiative included the design of a special shuttle service run by the Council, similar to a ridesharing service, with a guaranteed ride home. The Airport Customer Service Action Council, a structure designed

for the airport tenants to collaborate with the MAC, helped the MAC to understand the needs of airport workers. This initiative was worked out at the staff level, without Board action of the MAC or the Council.

4.4. Transportation Network Companies (TNCs) and Congestion Management

From the MAC's perspective, roadway congestion is currently a significant issue, which will likely persist into the foreseeable future. During peak flight periods, capacity constraints on inbound roadways are causing traffic backups to spill over onto roadways outside of the MAC's jurisdiction. Congestion exists, too, on the main arteries that bring travelers to and from the airport property.

Since the airport is confined by an Interstate and three state highways that are part of the regional transportation system, it is a regional issue rather than an airport-specific one. While the MAC needs to solve its own roadway congestion issues on inbound roadways, airport users rely on MnDOT to address travel congestion on trunk highways and interstates. MnDOT continues to study ways to reduce congestion, and staff-to-staff conversations are taking place among the three entities (MAC, Metropolitan Council and MnDOT) to ensure cooperation and coordination exists as much as possible. The lack of funding, however, is a key factor that has led to jointly acknowledging that the timelines for such improvements are likely years away. And with the growing population, capacity limitations are expected to continue contributing to the forecasted overall increase in traffic congestion regardless of proposed transit-specific improvements in the metro area.

5. Lessons Learned

From an institutional perspective, the MAC is an independent and autonomous authority, with the majority of board members appointed by the Governor on staggered terms. The Council has significantly more power than other MPOs: it has strong regional planning powers; it operates Metro Transit; and it has oversight over the MAC's capital program. In addition, the MAC and Council are not only embedded in regional and airport planning processes, but also through financial relationships. By statute, the MAC funds a full-time airport planner position at the Council. Other features of the boards and committees, such as the representation of the MPO on airport committees and of the airport on MPO committees, support this institutional collaboration.

From an organizational culture perspective, both the MAC and the Council consider that collaborative approaches to solve problems are valued and enshrined in Minnesota public service in general and in the Twin Cities in particular. From an individual perspective, senior management at the MAC has long been encouraging a culture of collaboration with the Council at the executive and staff levels.

Even given the unique nature of this relationship, the MAC-Council case offers interesting lessons for other airports and MPOs that seek to enhance their collaboration:

- 1) **Building relationships** over time is critical to ensure positive collaboration when needed⁴⁸. Interaction with the Council through institutional processes helped, as well as the MAC's culture of collaboration led by top management and permeating the organization. Staff and executives need to be willing to have informal relationships, not only formal ones.

⁴⁸ The MAC and Council interviewees differed on whether collaboration worked well because there was no focus on project ownership or whether, on the contrary, boundaries were well established between each agency's role.

- 2) A **true collaborative process** avoids surprises, in terms of project content and timelines. For instance, the MAC and the Council consult each other on the timing of the formal planning processes. This sharing of information on timelines allows awareness and involvement of the other party when plans and policies are updated. Technical review panels set up with MnDOT, FAA, and the Council help provide an understanding of the MAC's projects to these other bodies.
- 3) **Recognizing the role of the MPO** and how it can help the airport carry through its projects can help build the rationale for collaboration on the airport side. In the case of Minneapolis-St. Paul, the Council is very helpful in engaging with local communities, and has been willing to assist the MAC in that regard.
- 4) The **funding of airport planning at a regional level** at the Council by the MAC strongly contributes to the positive collaboration between the two bodies.

Finally, a few areas of improvement were suggested by those interviewed. For instance, setting up regular meetings between the MAC's Vice President for Planning and Development and Council, similar to the current bimonthly meetings among MAC, MNDOT and the FAA, would be helpful. In addition, the MAC provides data on operations, parking, and employment to the Council. Some thought that more sharing of data and data analysis results would be beneficial.

Appendix: Secondary Airports

Airlake Airport

Airlake Airport lies in Dakota County, with most of the facility adjacent to the City of Lakeville in Eureka Township⁴⁹. Roadway access from 215th Street/County Road 70 and Hamburg Avenue in Lakeville leads to the existing building area. Primary roadway access to the airport is from County Road 23, otherwise known as Cedar Avenue, from the east, and from the west via Interstate 35. These main roads link the airport to the metropolitan area and the entire region. The south side of the airport can be accessed from a township road, 225th Street W. The fixed-base operator (FBO) parking lots are accessible to the public and can accommodate approximately 60 vehicles. All privately owned hangars are accessed via paved alleyways, with tenants parking inside or adjacent to their individual hangars.

At this time, airport access and parking facilities appear to be adequate.

Anoka County – Blaine Airport (ANE)

The airport is located in the southern part of Anoka County and the City of Blaine⁵⁰. It can be accessed from U.S. Highway 10 from the south, MN State Highway 65 (Central Avenue) from the west, and County

⁴⁹ Minneapolis-St. Paul Metropolitan Aeronautics Commission. 2017. "Airlake Airport 2035 Long-Term Comprehensive Plan (LTCP) Report. July 17. <https://www.metroairports.org/General-Aviation/Airports/Airlake/Airlake-Airport-Archived-LTCP-Documents.aspx>

⁵⁰ Minneapolis-St. Paul Metropolitan Aeronautics Commission. 2010. "Anoka County – Blaine Airport (ANE) Long-Term Comprehensive Plan (LTCP) Update." June. https://www.metroairports.org/Metroairports/media/Media/Documents/general_aviation/ANE-LTCP/ANE-LTCP-DOCUMENT.pdf

Road 52 (Radisson Road) from the north and east. Local roads providing direct access include 93rd Lane on the west and Xylite Street on the east. The northwest hangar area is accessed from Radisson Road. Each FBO has parking for their customers. The number varies for each facility. There are no public parking spaces available at the airport aside from people visiting the FBO facilities.

All privately owned hangars are accessed via the taxi lanes, with tenants parking inside or adjacent to their individual hangars.

At this time, there are no issues related to airport roadway access or parking.

Crystal Airport

The Crystal Airport lies in Hennepin County, within the City of Crystal and partially in Brooklyn Park and Brooklyn Center⁵¹. Primary roadway access comes from County Road (CR) 81 (Bottineau Boulevard). Bass Lake Road provides access from CR 81 on the south, and 63rd Avenue provides access from CR 81 on the north. The east building area can be accessed from Bass Lake Road. The east frontage road from CR 81 is used to access the west building area. Interstate 94/694 is a half-mile north of the airport, Highway 169 is 2.5 miles to the west, and Highway 100 is 2 miles to the southeast. These main roads link the airport to the metropolitan area and the entire region. Drive time to downtown Minneapolis is approximately 10 minutes.

The FBO parking lot can accommodate approximately 20 vehicles. The former FBO sites also have parking available for any future uses of those spaces. The air traffic control staff administration building parking lot has approximately 40 vehicle parking spaces for employees and visitors.

Most of the aircraft storage hangars are accessed via alleyways that connect to taxiways/taxi lanes, with tenants parking inside or adjacent to their individual hangars.

At this time, airport access and parking facilities appear to be adequate. Primary roadway access comes from CR 81/Bottineau Boulevard, which continues to see increases in the average daily traffic every year. Airport entrances currently have passing and turning lanes, which should be maintained.

Flying Cloud Airport

The airport is located in Hennepin County, in the south-central area of the City of Eden Prairie⁵². It can be accessed from Flying Cloud Drive (former Trunk Highway 212), and County-State-Aid-Highway 1, also known as **Pioneer** Trail. The airport lies southwest of I-494, south of Trunk Highway 5, and just west of Trunk Highway 169. CR 4 (Spring Road) and Eden Prairie Road bound portions of the airport on the west.

⁵¹ Minneapolis-St. Paul Metropolitan Aeronautics Commission. 2017. "Crystal Airport 2035 Long-Term Comprehensive Plan (LTCP) Report." October. https://www.metroairports.org/General-Aviation/Airports/Crystal/Crystal_Airport_2035_reduced_LTCP_FINAL_Narrative.aspx

⁵² Minneapolis-St. Paul Metropolitan Aeronautics Commission Flying Cloud Airport (FCM) Long Term Comprehensive Plan Update. 2010. October. https://www.metroairports.org/Metroairports/media/Media/Documents/general_aviation/FCM-LTCP/FCM-LTCP-Doc-October-Final.pdf

The airport sits adjacent to the Minnesota River, which borders the airfield on the south. Hangar areas have access to these adjoining roadways.

Each FBO has parking for their customers with the number varying for each facility. There are no public parking spaces available at the airport aside from people visiting the FBO facilities. A small parking area is located at the base of the ATCT for FAA and MAC use. The aviation school has a large parking area for students and staff. All privately-owned hangars are accessed via the taxi lanes, with tenants parking inside or adjacent to their individual hangars.

The existing FBO facilities maintain parking areas for their customers and employees. There is also parking located at the air traffic control tower for FAA employees. The aviation school has a large parking area for students and staff. The MAC maintenance facility includes a few parking areas for visitors and MAC staff.

No additional parking needs have been identified.

Airport access has been enhanced by the expansion and widening of County State Aid Highway CSAH 1 (Pioneer Trail) along the northern border of the airport. The project included wider airport entrances and turn lanes for safer vehicle movements. In the early 2000s, the City of Eden Prairie completed numerous roadway improvements on the west and south sides of the airport, including reconstruction of CSAH 4/Spring Road and construction of the new Charlson Road (now named Robinson Way). These are primary access corridors for tenants utilizing the airport. The former Trunk Highway 212, now known only as Flying Cloud Drive, also provides access to the airport from the south, and from the east as well.

Combined with the construction of the extended east-west runways is the construction of two airport perimeter roads. One road connects the very east end of the north building area with the southeast hangar area. This road will allow airport maintenance and airport fuel trucks to access the building areas without crossing runway pavements. The same is true for the new west perimeter road, which will connect the west end of the north hangar area to the new south building area.

Lake Elmo Airport

Roadway access to Lake Elmo Airport comes from Washington County Road 15 (Manning Avenue) for both of the existing building areas⁵³. Primary roadway access from the north is State Trunk Highway 5 (less than a mile), and from the south via I-94 (about four miles). These main roads link the airport to the metropolitan area and entire region.

The current FBO in the north building area has automobile parking for customers that contains approximately 20 spaces. Aside from this, there are no designated public vehicle parking areas at the airport. Most hangars are accessed via alleyways, with tenants parking inside or adjacent to their individual hangars.

⁵³ Minneapolis-St. Paul Metropolitan Aeronautics Commission. 2016. "Lake Elmo Airport 2035 Long-Term Comprehensive Plan (LTCP) Volume 1 – Narrative Report." Sept. https://www.metroairports.org/Metroairports/media/Media/Documents/general_aviation/FCM-LTCP/FCM-LTCP-Doc-October-Final.pdf

At this time, airport access and parking facilities appear to be adequate. The two access roads connect to CR 15 (Manning Avenue), which continues to see increases in the average daily traffic every year. As described in the above section, Washington County is proposing to upgrade and improve Manning Avenue.

Development is expected to continue in the vicinity of Manning Avenue, which will result in additional pressure on the existing transportation system. Therefore, Washington County has initiated a project to improve operations and safety along the CR 15 corridor by evaluating intersection realignment options and capacity needs to accommodate current and future traffic levels.

Preliminary design for the four-lane divided highway section adjacent to Lake Elmo Airport has occurred. The design preserved both existing entrances to Lake Elmo Airport and indicated that the expanded roadway footprint could be accommodated within the existing right-of-way.

St. Paul Downtown Airport (STP)

The airport lies just south of I-94 and east of I-35E, and can be accessed using Trunk Highway 52 to Plato Boulevard⁵⁴. These main roads link the airport to the metropolitan area and the entire region. Robert Street, a main thoroughfare in downtown St. Paul, connects with Fillmore Street and Plato, both of which connect directly to Bayfield Street. Interior airport access roads include Bayfield Street, Airport Road, and Eaton Street.

A large parking lot exists in front of the main terminal building, accommodating more than 200 vehicles. Each FBO has parking for its customers. The number varies for each facility. The Minnesota Army National Guard also has a large parking lot across Airport Road from their building that contains more than 300 spaces. Note, however, that many of these spaces are located on railroad right-of-way, and not on MAC property, and most are just gravel, not paved.

All privately-owned hangars are accessed via the taxi lanes, with tenants parking inside or adjacent to their individual hangars.

At this time, there are no issues related to airport access or parking. The MAC-owned administration building, the FBOs, and hangar areas are all connected to the street system surrounding the airport.

⁵⁴ Minneapolis-St. Paul Metropolitan Aeronautics Commission. 2010. "St. Paul Downtown Airport (STP) Long-Term Comprehensive Plan." June. <https://www.metroairports.org/General-Aviation/Airports/St-Paul.aspx>

B.6 San Diego International Airport Case Study

1. Introduction

The San Diego International Airport (SDIA), operated by the San Diego County Regional Airport Authority (SDCRAA), is the largest commercial airport in San Diego County. It has been the subject of various collaborative planning efforts at both the local and regional level. The MPO for the region, the San Diego Association of Governments (SANDAG), has been involved in various studies that evaluated ground access improvement options at SDIA. Further, SANDAG is mandated by state law to conduct joint airport multimodal planning with SDCRAA by coordinating in the development of the Regional Aviation Strategic Plan (RASP) and the Airport Multimodal Accessibility Plan (AMAP).

Prior to 2006, ground access planning at the current SDIA site was curtailed in anticipation of Proposition A, an advisory vote ballot initiative in 2006 that asked voters their opinion on moving the commercial airport to the Marine Corps Air Station (MCAS) at Miramar. The ‘yes’ vote only received 38% of the votes, and plans to move the airport site were subsequently shelved. Major ground access improvement proposals since then have included a move of the airport terminal to the north side of the current site (deemed to be technically difficult), improved Trolley connections (Trolley-to-Terminal shuttle started in 2015), the development of a proposed Intermodal Transportation Center (ITC), and a proposed connector ramp that provides direct access to the I-5 freeway (the cost of which was deemed prohibitive but further studies are underway). The defeat of another funding referendum, Measure A in 2016, greatly limited transportation funds available in the San Diego area, which led to the postponement of the ITC.

This case study describes the collaboration approaches and institutional structures between the airport and MPO, highlights of this relationship in specific planning initiatives, and the lessons learned.

2. Background

This background section describes the structure and ground access options of SDIA, as well as the governance of SDCRAA and SANDAG (summary data are shown in Table B-6).

2.1. Description of Airports and Airport Ground Access Provisions

The San Diego County Airport System consists of 12 public-use airports in San Diego County, of which only two airports – SDIA and McClennan-Palomar Airport are certified by the FAA for commercial airline service⁵⁵. The airports shown in Figure B-20 are owned by local agencies (with the exception of SDIA, which is owned and operated by the SDCRAA). These airports are classified as either commercial service, reliever, or general aviation airports.

⁵⁵ San Diego County Regional Airport Authority. 2011. “Regional Aviation Strategic Plan” San Diego, CA: San Diego County Airport Regional Airport Authority. <http://www.san.org/Airport-Projects/Regional-Aviation-Strategic-Plan#134188-technical-report>

Table B-6: San Diego International Airport Key Metrics

Metric	SAN
Owner Agency	San Diego County Regional Airport Authority
Operator Agency	San Diego County Regional Airport Authority
MPO	San Diego Association of Governments
Distance to downtown	3.5
No. of runways	1
Passenger Enplanement figures (CY16)	10,340,164
OD Passenger (CY16)	9,719,754
OD Passenger % share of enplanement (and absolute number)	92%
No. of plane movements (CY17)	209,563
Hub size (Small, medium, large)	Large
Most recent annual operating revenue (in thousands) (FY17)	248,847
Parking and ground transportation share of operating revenue (in thousands) (FY17)	49169
Car rental share of operating revenue (in thousands) (FY17)	37,152
MPO TIP size (in \$ billion)	14.3
Transit access options	Roadway: City streets, TNC: Special drop off/loading zone, Rail: intercity and commuter, Bus: Multiple bus lines
Annual Freight volume (metric tons) (FY17)	139,706

Figure B-20: Airports in the San Diego County Airport system⁵⁶

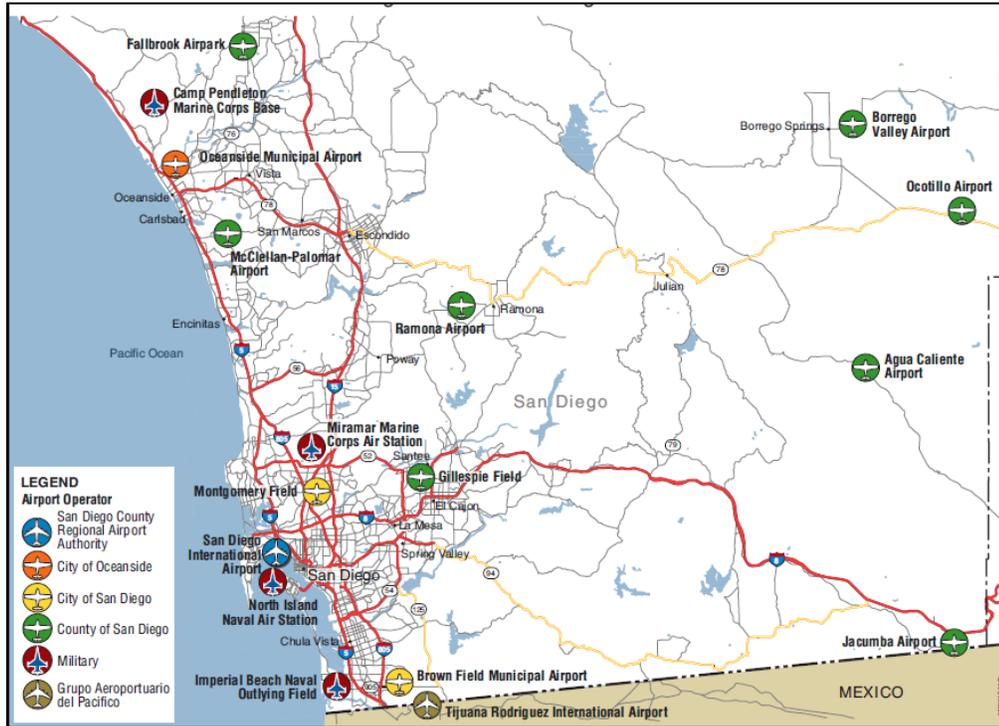


Figure B-21 lists the sponsors and classifications of each of the airports in San Diego County.

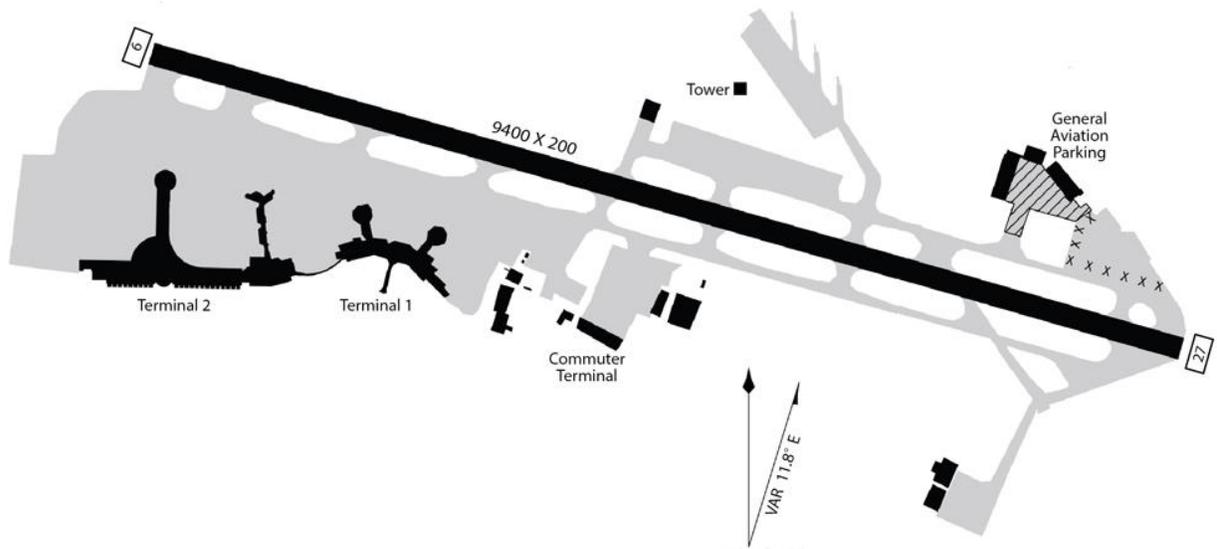
SDIA is the major commercial and only international airport in San Diego County. Although it is not a major hub for any airline, it is a focus city for Southwest Airlines and Alaska Airlines. SDIA is the busiest single-runway airport in the US, and is one of the most land-constrained airport sites in the country, with a 661-acre footprint. The airport consists of two passenger terminals (Terminal 1 and Terminal 2) located to the south of the airport (see Figure B-22). Historically, the passenger terminal was located to the north east of the airport; it was moved to the south side in the 1960s.

⁵⁶ San Diego County Regional Airport Authority. 2011. "Regional Aviation Strategic Plan" San Diego, CA: San Diego County Airport Regional Airport Authority. <http://www.san.org/Airport-Projects/Regional-Aviation-Strategic-Plan#134188-technical-report>

Figure B-21: Sponsor and Classification of Airports in San Diego County⁵⁷

Airport	Sponsor	Classification
San Diego International (SAN)	SDCRAA	Large-hub Commercial Service
McClellan-Palomar (CRQ)	County of San Diego	Non-hub Commercial Service
Montgomery Field (MYF)	City of San Diego	Reliever
Gillespie Field (SEE)	County of San Diego	Reliever
Brown Field Municipal (SDM)	City of San Diego	Reliever
Ramona (RNM)	County of San Diego	Reliever
Oceanside Municipal (OKB)	City of Oceanside	General Aviation
Fallbrook Community (L18)	County of San Diego	General Aviation
Borrego Valley (L08)	County of San Diego	General Aviation
Agua Caliente (L54)	County of San Diego	Limited Use General Aviation
Ocotillo (L90)	County of San Diego	Limited Use General Aviation
Jacumba (L78)	County of San Diego	Limited Use General Aviation

Figure B-22: Map of San Diego International Airport⁵⁸



⁵⁷ San Diego County Regional Airport Authority. 2011. "Regional Aviation Strategic Plan." San Diego, CA. <http://www.san.org/Airport-Projects/Regional-Aviation-Strategic-Plan#134188-technical-report>

⁵⁸ FAA. Website. <https://www.faa.gov/nextgen/snapshots/assets/img/airports/maps/SAN.png>

Ground Access Options to and from San Diego International Airport

According to a 2012 airport passenger survey, 74 percent of airport users access the airport by private vehicle, even though the airport is among those with the fewest parking spaces per million passengers in the country.⁵⁹ Twenty-two (22) percent of airport users are coming from downtown, while other key corridors include the areas around I-5 north of the airport and areas near the three San Diego Metropolitan Transit System (MTS) Trolley lines. Many employees live along the I-5/Blue Trolley Line corridor to the south.⁶⁰

Only four percent of airport users ride transit to access the airport (just one percent of the region's residents use public transportation on a daily basis).

Roadway Access

SDIA is located to the west of the City of San Diego, and is bounded by the I-5 to the north east, Harbor Drive and the San Diego Bay to the south and west (see BWI has excellent access to the region's high capacity highway network. Direct interstate highway access is provided by I-195, which connects to I-95, US 1, and the Baltimore-Washington Parkway (MD 295). Located directly adjacent to the airport boundary is a four-lane primary highway network of roadways known as the Airport Loop. The Airport Loop, comprised of MD 170 (Aviation Boulevard), MD 162 and MD 176 (Dorsey Road), is connected to I-195, I-695, I-97 and MD 100. The airport is situated between four controlled-access highways; I-695 (Baltimore Beltway), I-97, MD 100 and MD 295. These highways connect to other primary highways and the two interstate beltways (I-95/I-495 Capital Beltway and I-695 Baltimore Beltway). Interstate highways I-70, I-795, I-83 and I-97 connect to the Baltimore Beltway. Montgomery County access is currently provided by the I-270 connection to the Capital Beltway. The completion of the Intercountry Connector (MD 200) has improved access from Montgomery County to BWI. Interstate access to the north and south are primarily provided by I-95 and I-83. Access to the west is provided by I-70 and access to Annapolis and the Eastern Shore is provided by I-97 (see Figure B-6).

Figure B-B-23). The primary freeway serving the airport is the I-5, with connections to State Route 163, I-8 and I-15. However, in the airport vicinity, passengers must take a series of local roads such as the Pacific Highway, North Harbor Drive, Kettner Blvd. etc. to access the passenger terminals. These local, city roads also serve cars traveling from the east side of San Diego to localities on the west side such as Liberty Station, Point Loma etc., as well as local residents. The multi-purpose nature of these roads contributes to significant congestion on North Harbor Drive in particular.

Transit

Terminals 1 and 2 are served directly by the MTS Route 992 bus, while four rail service lines run near the eastern end of the airport. Three of these rail lines are MTS Trolley Lines (Green, Orange, and Blue lines)

⁵⁹ Leigh Fisher Management Consultants. "2012 Airport Passenger Survey." As reported in https://www.sandag.org/uploads/projectid/projectid_577_25534.pdf

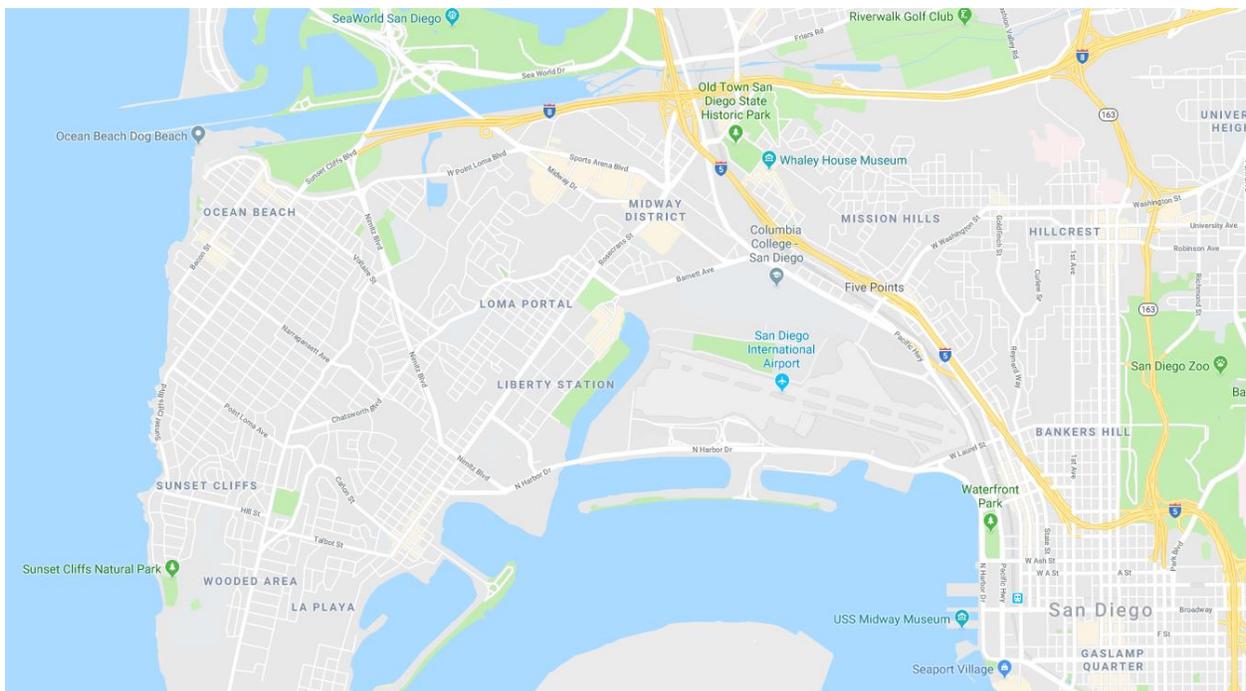
⁶⁰ San Diego County Regional Airport Authority. "2016 Transit Plan." https://www.sandag.org/uploads/projectid/projectid_577_25534.pdf

that serve the city of San Diego, and one is the Coaster commuter train operated by the North County Transit District (NCTD) that runs from Santa Fe Depot downtown to the City of Oceanside in the north. FigureB-24 shows the transit service to the airport.

MTS Bus Route 992 serves users between the airport and downtown San Diego, including key origins and destinations such as the Embarcadero, the B Street Cruise Ship Terminal, and Horton Plaza. This bus service provides connections to the Trolley system. Transfers to regional rail service, the NCTD's Coaster, and Amtrak's intercity rail service are also possible.

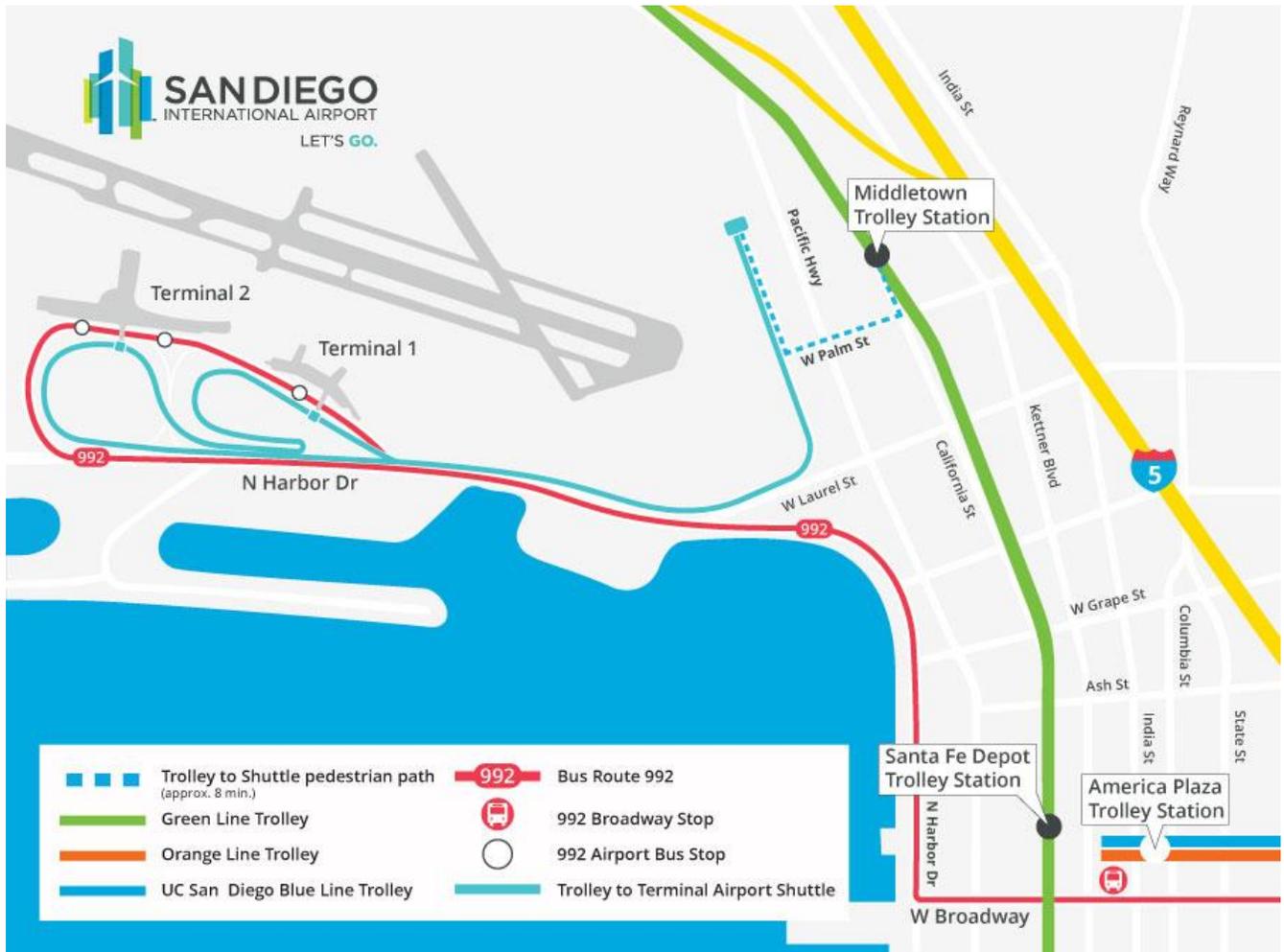
Following the construction of a new terminal link roadway for rental car and parking shuttle buses and improvements to the pedestrian pathways in the area, a better connection between the Trolley system and the terminals was created. The Trolley-to-Terminal Airport shuttle operated by the airport provides frequent service between the terminals and a shuttle stop on the new terminal link roadway just west of Pacific Highway, approximately one-quarter mile from the Middletown Station on the Trolley's Green Line.

Figure B-23: SDIA Highway and Road Access⁶¹



⁶¹ Google Maps - <https://www.google.ca/maps/place/San+Diego+International+Airport/@32.7334738,-117.2176128,14.08z/data=!4m5!3m4!1s0x80deab3944f1e6ef:0xdc2e46f957550b6b!8m2!3d32.7338006!4d-117.1933038>

Figure B-24: Airport Area Transit Service⁶²

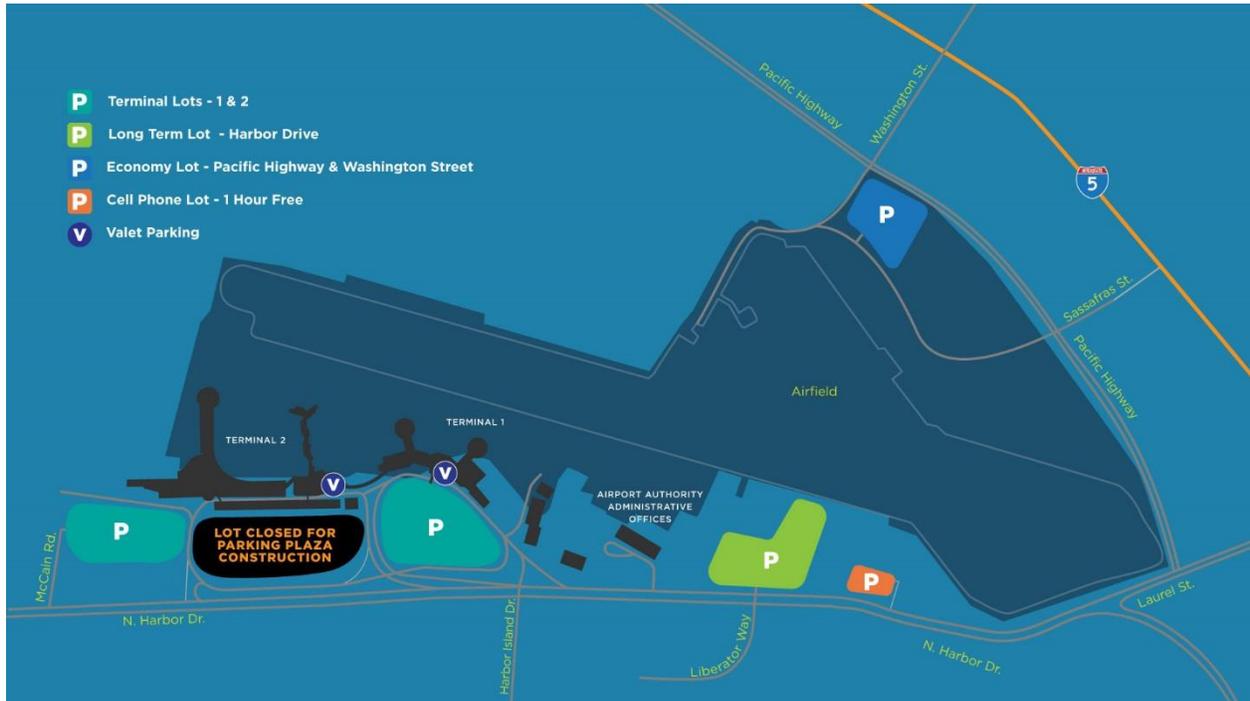


Parking

There are four parking lots available at SDIA, with approximately 5,700 public parking spaces of which 2,450 of these spaces are split between Terminal Lots 1 & 2. An Economy Lot at Pacific Highway and Washington Street to the north east of the airport provides 1,900 parking spaces and is served by the shuttle buses that also pick up passengers using rental cars and passengers from Middletown Station. A map of the parking lots locations is shown in Figure B-25.

⁶² San Diego International Airport. 2019. "Public Transportation." <http://www.san.org/Parking-Transportation/Public-Transportation#117819-trolley-service>

Figure B-25: Current Parking Locations at SDIA⁶³



TNC – Uber/Lyft etc.

SDIA has designated pick up and drop off points for TNC drivers and customers. Further, based on operating agreements with SDCRAA, queued TNC drivers must wait in specific staging lots behind the Airport Cell Phone Lot near North Harbor Drive. SDCRAA also institutes a \$3.86 trip fee on every trip originating at SDIA, which the TNCs typically pass on to customers.

Current and Recent Projects

Listed below are current and recent infrastructure projects at SDIA conducted by the San Diego County Regional Airport Authority (SDCRAA):

North Side Development Projects

In order to improve traffic flow around the space-constrained north side of the airport site, SDCRAA has undertaken various projects over the past few years. These projects include(d):

- **Roadway Improvements** – a set of projects that have improved traffic and access to the north side of the airport include:
 - Expansion of the Washington Street entrance roadway at Pacific Highway.
 - Widening of Sassafras Street north of Pacific Highway.

⁶³ San Diego County Regional Airport Authority. “Airport Projects – Parking Plaza.” <http://www.san.org/Airport-Projects/Parking-Plaza>

- The terminal link roadway for rental car and parking shuttle buses on which the Trolley-to-Terminal shuttle operates, which reduces traffic from Laurel Street and North Harbor Drive.
- **Receiving and Distribution Center** – A 21,000 square-foot central delivery location for food, beverage, retail, and other goods was completed in November 2012, which helped reduce traffic on surrounding roadways by centralizing all truck deliveries. Further, from this central location, airport vehicles deliver goods via on-airport roadways. This eliminates 50-75 truck trips on North Harbor Drive each day.
- **Rental Car Center** – Opened in January 2016, this facility consolidated operations of many of the rental car companies serving SDIA within a single building. The facility reduced rental car traffic on North Harbor Drive and the number of shuttle buses circulating around the airport.

Parking Plaza

Construction occurred of a three-story parking plaza at Terminal 2 with approximately 3,000 parking stalls. By enabling motorists to find available spaces in advance and to reserve them, the plaza will reduce circulation and idling while searching for a parking space. The plaza opened in summer 2018.

2.2. Airport Governance - San Diego County Regional Airport Authority (SDCRAA)

The SDCRAA was created on January 1, 2003 as an independent agency to manage the day-to-day operations of SDIA and address the region's long-term air transportation needs. The legislation that created the SDCRAA mandated three main responsibilities:

- Operate San Diego International Airport
- Plan for future air transportation needs of the region
- Serve as the region's Airport Land Use Commission – and ensure the adoption of land use plans that protect public health and safety surrounding all 16 of the county's airports.

In order to foster collaboration with local agencies, the SDCRAA is governed by an appointed board of nine members who represent all areas of San Diego County and three ex-officio members. The voting members of the board are appointed as follows:

- Three representatives of the City of San Diego
- Two representatives of the County of San Diego
- A representative of the north county coastal cities
- A representative of the north county inland cities
- A representative of the south county cities
- A representative of the east county cities

Non-voting, non-compensated, ex officio members of the Board, appointed by the Governor, include:

- The District Director of Caltrans for the San Diego region.
- A Department of Finance representative on the State Lands Commission.

2.3. Metropolitan Planning Organization (MPO) structure - SANDAG

SANDAG is an association of local San Diego County governments, comprised of the county government and the 18 cities located within San Diego County. It is the MPO for San Diego County. The Board of Directors is composed of mayors, councilmembers, and a county supervisor from each of the region's 19 governments. Supplementing these voting members are non-voting advisory representatives from Imperial County, the US Department of Defense, Caltrans, San Diego Unified Port District, Metropolitan Transit System, North County Transit District, San Diego County Water Authority, Southern California Tribal Chairmen's Association, and Mexico.

SANDAG is responsible for the design, engineering, and construction of transit and rail projects. It holds an oversight role regarding fare setting for the county's transit systems, the San Diego Metropolitan Transit System and North County Transit District, in addition to having the authority to review and approve transit system budgets prior to allocating transit funds.⁶⁴

2.4. California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) is the state's principal agency for developing and implementing state transportation plans and programs. Caltrans builds and maintains state and interstate highways, conducts statewide multimodal transportation planning and modal planning, and allocates funding to various projects. Caltrans also develops the State Transportation Improvement Program (STIP) and the Interregional Transportation Improvement Plan (ITIP), while regional agencies such as SANDAG prepare Regional Transportation Improvement Plans (RTIPs). The STIP incorporates nominated projects within the RTIPs from the various metropolitan areas within the state as well as all other federally-funded transportation projects in the state.

2.5. City of San Diego

The Division of Transportation Planning at the City of San Diego is responsible for planning multi-modal transportation options and facilities between the San Diego's major activity centers and SDIA in collaboration with SANDAG and the SDCRAA. The City develops a General Plan and Community Plans for each of the 52 communities within the city, which detail future land uses and public improvement plans. While the airport does not belong to any of the communities for which plans are developed, communities neighboring the city, such as Point Loma, Little Italy, and Park West include airport-related issues in their respective Community Plans.

The City of San Diego is represented on the boards of both SANDAG and the SDCRAA, and staff members are regularly involved in working groups and committees within SANDAG and SDCRAA.

⁶⁴ San Diego Association of Governments (SANDAG). 2006. "SANDAG – An Assessment of its Role in the San Diego Region." California Legislative Analyst's Office. http://www.lao.ca.gov/2006/sandag/sandag_033006.pdf

2.6. Port of San Diego

The Port of San Diego owns 2,491 acres of land around the San Diego Bay where the airport is located. In its master plan, the Port studies and conducts planning for entire port area, as well as localized community areas and planning associated with developments around SDIA and the Port.⁶⁵ The Port collaborates with SDCRAA in its planning efforts. For instance, the Port holds membership in the Harbor Drive Mobility Committee (HDMC), which studies the development of an on-airport access roadway to reduce airport-related traffic on North Harbor Drive.

The Port is governed by a seven-member Board of Port Commissioners. One commissioner is appointed by each of the city councils of Chula Vista, Coronado, Imperial Beach and National City, and three commissioners are appointed by the San Diego City Council.

2.7. Airport, Regional and Statewide Plans and Collaborative Efforts

The plans and documents detailed below provide an overview of agency-specific planning processes for aviation in general and SDIA in particular, as well as examples of collaboration between the airport authority and local and state agencies.

SDCRAA Plans

The San Diego Unified Port District operated SDIA until 2002, when the state Legislature created SDCRAA to operate the airport. Under the operation of the Unified Port District, the airport was eligible to use airport revenue for expenditures that were impermissible under federal legislation such as the Airport and Airway Improvement Act of 1982 (AAIA). This was pursuant to a “grandfathering” agreement between the Unified Port District and the FAA. However, this grandfathering agreement has expired with the transfer of the airport to the SDCRAA. As such, the airport plans listed below must all conform to federal legislation on the restrictions on the use of airport revenue.

Airport Development Plan (ADP): The Airport Development Plan (ADP) is an iteration of the master plan for SDIA. The last master plan was developed in 2008. SDCRAA planning staff are developing a new ADP, which will study the future of Terminal 1 and SANDAG’s plans for future intermodal transportation facilities.

The SDCRAA Act calls for SDCRAA to form a citizen’s advisory committee to assist the Board in its responsibilities specific to the planning and development of airport facilities at SDIA. The purpose of this Authority Advisory Committee is to serve as a sounding board and catalyst for the development of recommendations to the Board on issues for which SDCRAA is responsible. To foster collaboration with local and regional agencies, the Authority Advisory Committee includes representatives from local public transit authorities and one representative for local governments.

Regional Aviation Strategic Plan (RASP): The RASP, last updated by SDCRAA in 2011, assessed the long-range capabilities of the public-use airports within San Diego County with the goal of improving the performance of the regional airport system. The plan forecasted aviation demand in the RASP study area

⁶⁵ Port of San Diego. 2017. “Port Master Plan – San Diego Unified Port District.” <https://www.portofsandiego.org/document/environment/land-use-planning/4729-port-master-plan-1/file.html>

and considered various alternatives for airport system capacity and optimization, including an ITC on the north-side terminal at SDIA and a station providing access to California High Speed Rail services.

The RASP suggested that a regional airport coordinating committee, including airport owners and operators as well as regional planning representatives, be considered to coordinate future improvements to airport access and to the aviation system in general.⁶⁶

Airport Transit Plan: The Airport Transit Plan report was first prepared in 2010 and an update to the Plan was prepared in 2016. The update to the Airport Transit Plan was funded by the Caltrans Transportation Planning Grant Program. The overall project objectives of the Airport Transit Plan were to:⁶⁷

- Increase airport transit ridership from 1.2% to 5%.
- Enhance airport and regional mobility.
- Reduce airport, City of San Diego, and San Diego region vehicular traffic congestion.
- Provide remote terminal bus service to and from the airport that will offer an alternative to using a single occupant vehicle.
- Assist in reducing greenhouse gas emissions associated with the operation of the airport.
- Compile additional airport passenger and employee transit data that can be used to plan and implement recommended transit improvements.

The Airport Transit Plan recommended specific transit improvements to enhance access to SDIA and identified four potential programs to improve public transit ridership for airport employees and passengers:⁶⁸

- Maximize marketing and passenger information utilizing airport and non-airport information channels.
- Enhance the new Trolley access, building on the Trolley to Terminal connection utilizing the new exclusive airport roadway and bus stop.
- Convert the existing MTS bus route between the airport and downtown San Diego, Route 992, to a “Rapid” route, with improvements to the operations on the airport and on the route through downtown.
- Partner with transit operators to consider a transit line from the Old Town Transit Center and Amtrak Station to the airport.

⁶⁶ San Diego County Regional Airport Authority. 2011. “Regional Aviation Strategic Plan.” http://www.san.org/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=3755&Command=Core_Download&language=en-US&PortalId=0&TabId=185

⁶⁷ San Diego County Regional Airport Authority. 2016. “Airport Transit Plan.” http://www.san.org/DesktopModules/Bring2mind/DMX/Download.aspx?EntryId=8765&Command=Core_Download&language=en-US&PortalId=0&TabId=451

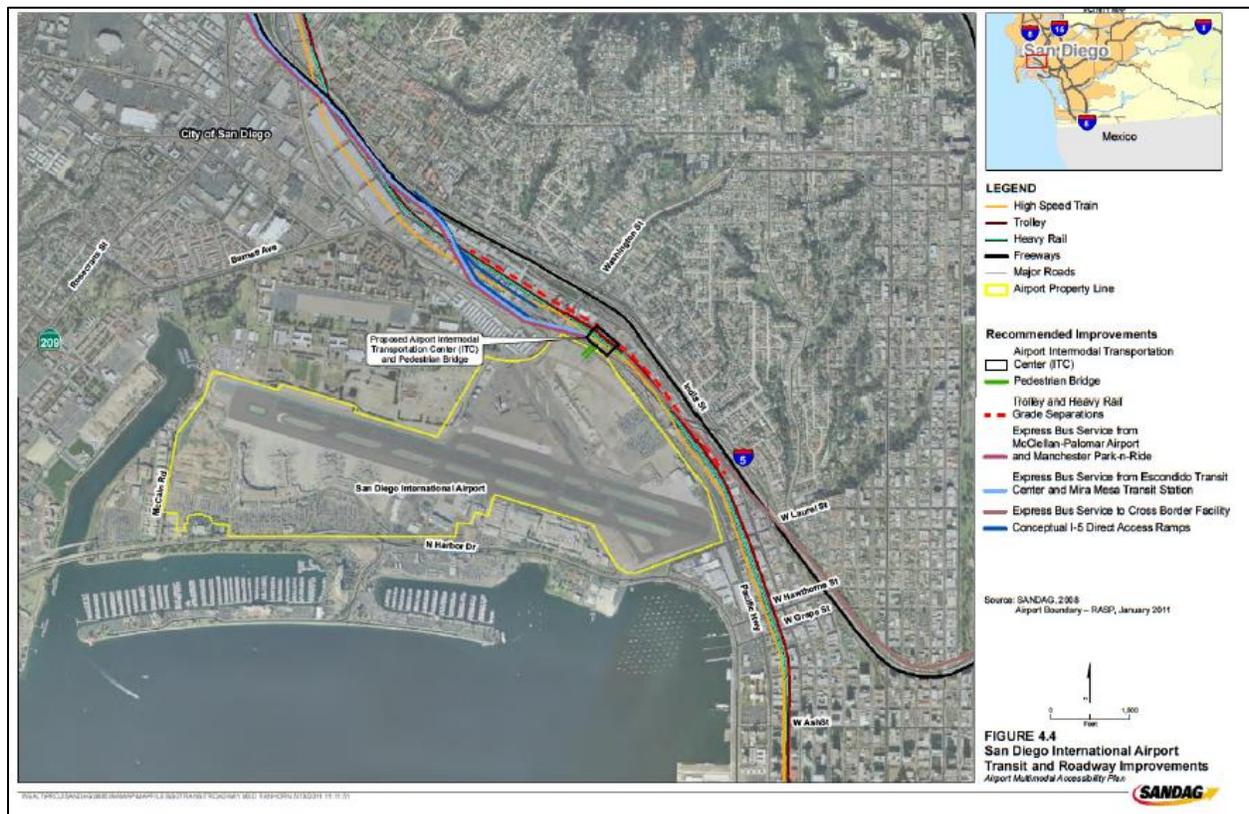
⁶⁸ Ibid.

MPO (SANDAG) Plans

Airport Multimodal Accessibility Plan (AMAP): With the AMAP, SANDAG developed a multimodal strategy to improve transportation access to airports in San Diego County. The AMAP developed ground access improvement alternatives as identified in the RASP. The last iteration of the AMAP (2012) included alternatives such as direct connector ramps from I-5, new express bus services for direct connections to SDIA from Inland North County and McClellan-Palomar Airport, and advanced planning for an ITC located on the north side of the airport where existing rail service are located, and the southern terminus for the California high-speed train service at the ITC. A visual representation of the suggested improvements is shown in Figure B-26.

The AMAP Stakeholder Working Group (SWG) was established early in the planning process to provide input on the development of the proposed ground access transportation improvements. The SWG included SANDAG, SDCRAA, Caltrans, MTS, and NCTD.

Figure B-26: AMAP Transit and Roadway Improvements for SDIA⁶⁹



⁶⁹ SANDAG. 2012. "Airport Multimodal Accessibility Plan."
http://www.sandag.org/uploads/publicationid/publicationid_1644_14238.pdf

The proposed ground access alternatives were discussed with the SWG at monthly coordination meetings. There was inter-agency participation between SANDAG and SDCRAA in presenting draft findings from both the RASP and the AMAP.

2016 Regional Transportation Improvement Program (TIP): In the listing of projects with funding in the most recent RTIP, SANDAG included a pedestrian improvement project related to ground access at SDIA (West Palm Street Pedestrian Improvements).⁷⁰

2050 Regional Transportation Plan: The 2050 Regional Transportation Plan (RTP) is the long-range transportation plan for all modal services in the San Diego region. Major findings from both RASP and the draft AMAP report were included in the RTP, including the ITC at SDIA. In particular, the plan considered future alternatives such as Airport Express services from McClennan-Palomar airport and Escondido Transit Center to the proposed ITC, extension of the Orange Line trolley to the ITC, and termination of the California High Speed rail line at the ITC.⁷¹ In the long term, the RTP called for all passenger access and processing to occur on the north side of the airport property, and for direct ground access from North Harbor Drive to Terminals 1 and 2 to cease.

State (California) Plans

California Transportation Plan 2040: As noted earlier, the California Transportation Plan 2040 (CTP) integrates several other interrelated plans and programs. The CTP serves as the statewide policy framework for all transportation partners as well as Caltrans' modal system investment plans. This multimodal plan establishes guidance and priorities for state transportation decisions, which filter down into specific plans for each mode, and into the STIP, which identifies priority projects and how money will be spent.

3. Description of Collaborative Planning Process and Problems Being Addressed

3.1. Collaboration Structures

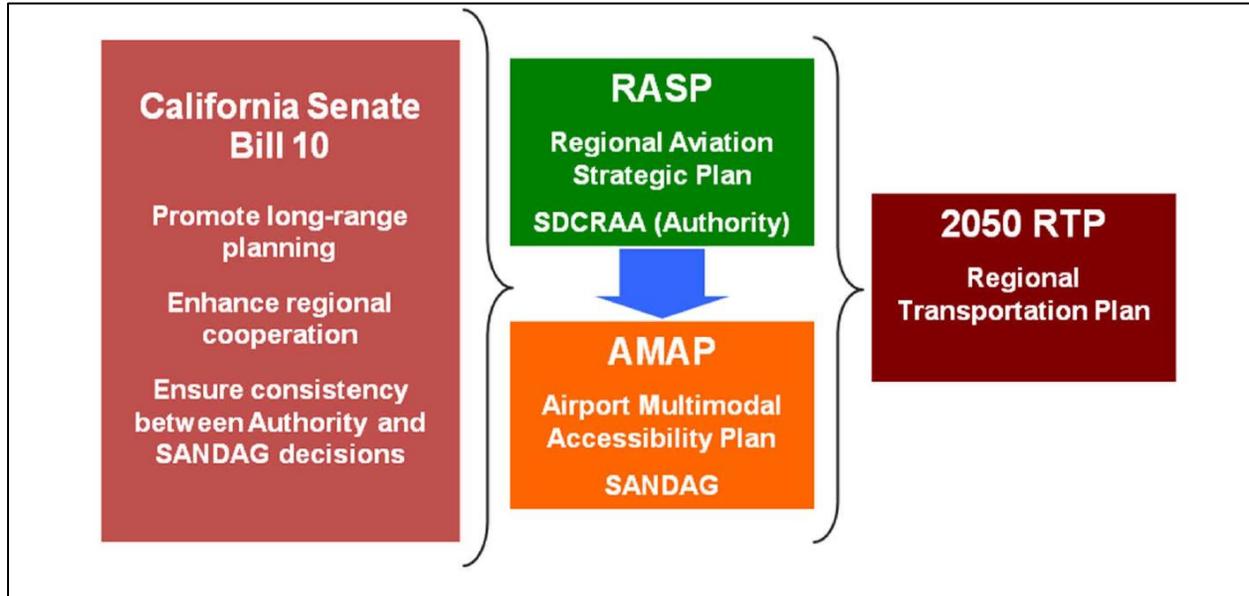
Various federal and state rules, practices, requirements, and procedures support collaborative transportation planning and programming activities in the region. Primarily, California Senate Bill 10 of 2007 (SB-10) requires airport multimodal planning to be conducted and coordinated in San Diego County by SDCRAA and SANDAG. The main planning provisions of SB-10 are the development of a Regional Aviation Strategic Plan (RASP) and an Airport Multimodal Accessibility Plan (AMAP). SDCRAA typically leads the development of the RASP, which identifies strategies to improve the performance of the airport system for San Diego County. SANDAG, as the MPO for the region, typically leads the AMAP, which develops a multimodal strategy to improve surface transportation access to airports. The development of the RASP and AMAP is a coordinated process between SANDAG and SDCRAA, described in Figure B-27 below, with the overall planning schedule designed to allow RASP findings to be incorporated into the AMAP, which will subsequently be incorporated into the next update of the Regional Transportation Plan (RTP). SANDAG is required under federal law to update the RTP every four

⁷⁰ SANDAG. 2016. "Regional Transportation Improvement Program." http://www.sandag.org/uploads/publicationid/publicationid_2071_21174.pdf

⁷¹ SANDAG. 2011. "2050 Regional Transportation Plan." October. http://www.sandag.org/uploads/2050RTP/F2050rtp_all.pdf

years, with the last update completed in 2015 with the development of the 2050 Regional Transportation Plan, called San Diego Forward: The Regional Plan.

Figure B-27: Coordinated RASP and AMAP Development Process⁷²



The governance structure of the two agencies also lends itself to cooperative efforts in the development of these plans as well as other technical studies. The Board of Directors of both agencies are composed of local government members from the cities within San Diego County. Further, SDCRAA also has representation on the SANDAG Board of Directors as a non-voting member. This overlap at the executive level facilitates communication and alignment in regional planning efforts.

In addition, an Airport Transit Committee was organized by the SDCRAA in 2005 to identify potential enhancements to the transit and transportation system serving SDIA. The Committee is comprised of regional transportation agencies and meets periodically to discuss both transit and road access to SDIA. The Committee is chaired by SDCRAA and includes transit/transportation planning staff from:

- San Diego Association of Governments (SANDAG)
- Metropolitan Transit System (MTS)
- North County Transit District (NCTD)
- Caltrans
- City of San Diego
- Civic San Diego
- Port of San Diego
- Federal Aviation Administration (FAA)
- California Coastal Commission

⁷² SANDAG. 2012. "Airport Multimodal Accessibility Plan."
http://www.sandag.org/uploads/publicationid/publicationid_1644_14238.pdf

- California State Parks – Old Town State Park

3.2. Objectives of Collaboration/Challenges to be Addressed

Collaboration efforts between the airport authority and local governmental agencies have tended to revolve around ground access to airport terminals and strategies to fund the proposed projects that arose from these discussions. These discussions have also touched upon mitigation efforts of additional airport landside traffic on local neighborhoods such as Peninsula, Midway, Pacific Highway, Uptown, and Centre City. Historically, SDCRAA considered its primary responsibility being the airside operations while ground access to the airport terminals were the responsibility of the MPO and local governments. This perspective has changed over time. As noted earlier, for example, state law requires that the Authority act as the Airport Land Use Commission for the airports in the San Diego County Airport System. This gives the Authority the responsibility to develop Airport Land Use Compatibility Plans that detail the policies and procedures for land use and airport compatibility for areas surrounding each airport. The Authority coordinates with and assists the City of San Diego in developing the community plans that are incorporated into the City's General Plan, and in zoning and noise policies and development regulations within airport influence areas.

4. Case Study Events of Collaborative Planning

4.1. AMAP and RASP development

Senate Bill 10, passed in 2007, requires SDCRAA and SANDAG to work cooperatively on airport multimodal planning in the region and specifically on the development of the Regional Aviation Strategic Plan (RASP) and the Airport Multimodal Accessibility Plan (AMAP). The coordination efforts for the development of these plans occur primarily through mutual participation of staff from both agencies in technical working groups. Although the development of these two separate documents is not considered a joint planning effort, when one agency is the designated lead, the other agency acts in an advisory role. For instance, in its capacity as an advisor in the development of the AMAP, SDCRAA provides SANDAG with airport employment data and local traffic and circulation data around the airport.

The latest RASP from 2011 studied various scenarios that included ground access changes such as the development of an intermodal transportation center (ITC) at SDIA. It identified a series of measures that could accommodate additional aviation demand up to 2030. The latest AMAP from 2012 followed the timeline of the RASP in addressing corresponding ground access improvements through 2035. Ground access alternatives were developed to coincide with the various scenarios developed as part of the RASP study.

Concurrently, SANDAG is also required under federal law to develop the RTP, which is the long-range transportation plan for San Diego County, every 4 years. The findings and recommendations of both the RASP and the AMAP are incorporated in the RTP developed by SANDAG.

4.2. Destination Lindbergh study

The Destination Lindbergh Study, developed in 2009, was an integrated, regional surface and air transportation planning effort developed between the SDCRAA, the City of San Diego and SANDAG to address three priorities around SDIA:

- Determine the configuration of SDIA
- Minimize airport-related traffic impacts to adjacent communities
- Improve intermodal access to the airport.

The SDCRAA, City of San Diego, and SANDAG formed the Ad Hoc Airport Regional Policy Committee to implement the year-long study. The effort evaluated the potential for an ITC in order to reach ground transportation and intermodal facility goals for the airport. In addition, future facility requirements for the airfield and passenger terminals were evaluated within the broader context of the overall region's transportation needs, which enhanced the need for coordination between SDCRAA and SANDAG.

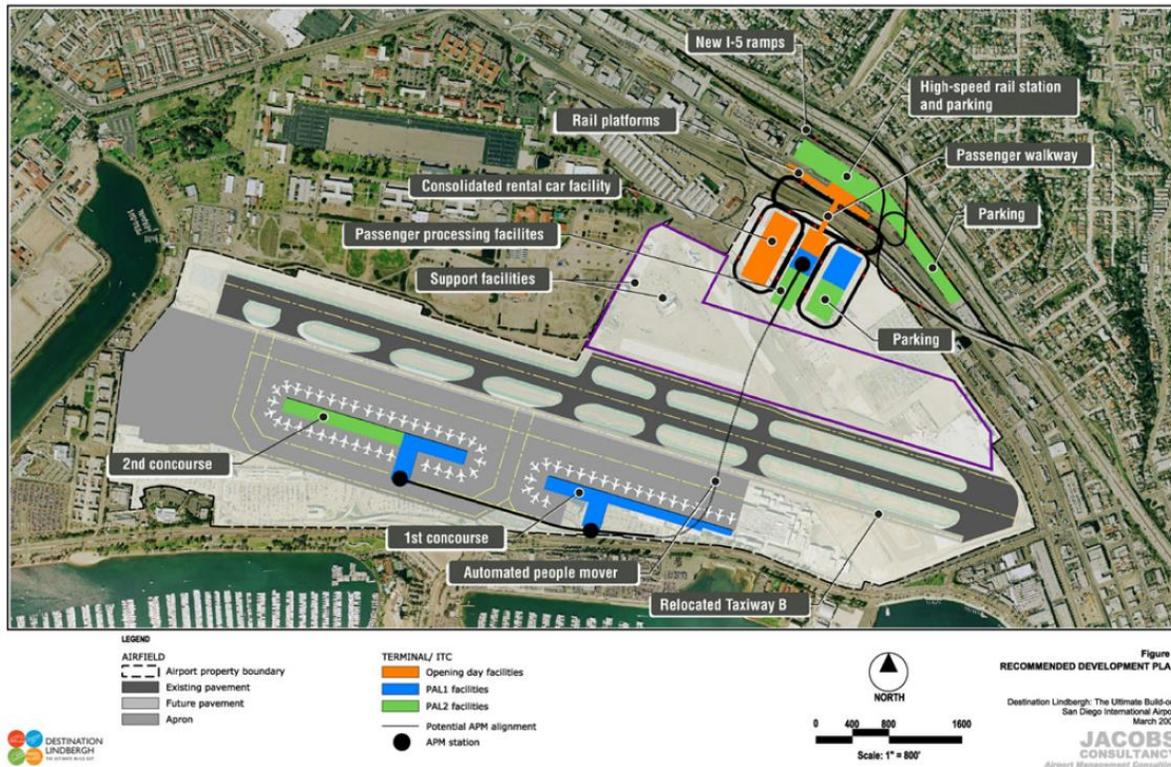
In the recommended buildout plan (presented in Figure B-28, all access to the airport processing functions would have been provided in facilities north of the runway along Pacific Highway with a people mover connection to redeveloped terminals on the south. The plan also included other elements such as the development of an ITC allowing connection and transfer from rail (intercity, commuter and high-speed), Trolley, and bus (local, future Bus Rapid Transit, and Fly Away), direct I-5 ramp access, a consolidated rental car facility (CONRAC), and parking garages.

Since this study, the AMAP and other studies have further evaluated the development of the ITC and direct I-5 access. However, the technical issues of moving the airport terminal and the high costs of improving access from I-5 have proved to be challenges that have yet to be overcome. What has emerged from the collaborative work have been incremental improvements which SDCRAA has funded. This limited movement on the more expansive plans is partly due to lack of funding, and in particular to the defeat of Measure A in 2016, which greatly limited transportation funds available in the San Diego area.

4.3. Harbor Drive Mobility Committee (HDMC)

The Harbor Drive Mobility Committee (HDMC) arose out of the SDCRAA Airport Access Roadway study, which studied strategies to reduce or remove airport-related traffic from North Harbor Drive. The Committee consisted of a Working Group and a Policy Group that met on a scheduled basis to enhance discussion among the agencies involved. The Working Group consisted of representatives from the SDCRAA, SANDAG, Port of San Diego, Caltrans, MTS, the City of San Diego and Solar Turbines. The Policy Group consisted of executive representatives from SDCRAA, Port of San Diego, the Office of the Mayor of San Diego, and SANDAG.

Figure B-28: Recommended Development Plan from the Destination Lindbergh Study⁷³



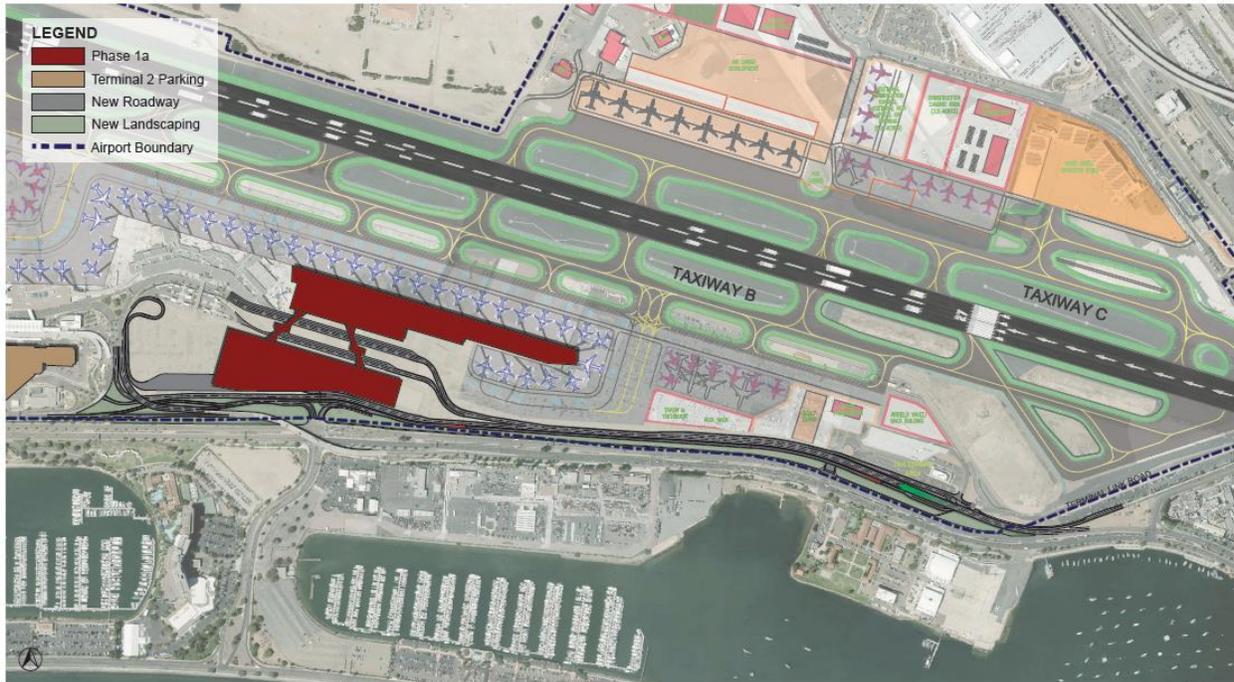
Existing conditions made it difficult for automobiles, rental cars, and bicyclists to enter, merge and exit North Harbor Drive from the Rental Car Center, Pacific Highway, Laurel Drive, and other city arterials. In order to alleviate backed-up traffic due to the above conditions, the Committee proposed the development of an on-airport access roadway adjacent to North Harbor Drive that would capture most of the airport-related traffic. Figure B-29 illustrates the proposed on-airport entry roadway.

The development of this proposal involved collaboration between the airport authority and local planning agencies. The Board of the airport authority determined that concerns requiring coordination included:

- Parking and access to the Solar Turbines facility
- Changes in local traffic patterns
- Alignment with regional transportation plan
- Coastal access to Harbor Island and North Embarcadero

⁷³ SDCRAA. 2009. "Destination Lindbergh Study." <https://www.sandag.org/uploads/2050RTP/F2050RTPTA16.pdf>

Figure B-29: Proposed On-Airport Entry Roadway Concept⁷⁴



Committee meetings centered around agency updates, discussions about the preferred access roadway alternative, and in addressing concerns with the development of the on-airport access roadway. Such discussions in the Policy Group meetings also led to the Port of San Diego’s decision to initiate a North Harbor Mobility Study of its own that was geared towards setting a transportation vision for the Harbor Drive corridor. This study focused on intersection operations in the area and an assessment of North Harbor Drive between Shelter Island Drive and Park Boulevard.

Working Group meetings also facilitated data sharing across the agencies. For example, in order to assist the SDCRAA with its Airport Development Plan Environmental Impact Report, the Port of San Diego provided forecasted development information for the Harbor Island, Shelter Island, and Embarcadero Planning Districts.

5. Lessons Learned

Agencies agree that coordination among the cities, SDCRAA, and SANDAG at the board and technical levels is a necessary component of a successful airport access program. Yet, geographic, funding, and technical constraints can often present very difficult barriers to even the most collaborative process. SDIA is exceptionally land-constrained, which results in many proposed access solutions requiring

⁷⁴ Kimley Horn. 2018. “Harbor Drive Mobility Study Technical Report,” San Diego International Airport Development Plan. Draft EIR. July. https://www.sandag.org/uploads/projectid/projectid_577_25551.pdf

tunneling. However, a high-water table makes tunneling very difficult and costly. Significant planning efforts occurred before the airport was able to make a technical determination regarding the feasibility of moving the terminal to the north side. Funding shortfalls, such as the defeat of Measure A for a ½ cent local sales tax to fund transportation initiatives in 2016, also affected the ability of local agencies to fund airport access project initiatives, such as the development of an ITC.

As was found in other case studies, using existing institutional structures for collaborative airport access planning was certainly a characteristic of the San Diego case. Working groups, advisory committees, and technical committees have been used with good results in fostering collaborative planning efforts. In some cases, these efforts have also been motivated by state laws that require the joint participation of transportation agencies in joint planning efforts. However, the San Diego case has many examples of where the airport, port authority, MPO, Caltrans, City and County of San Diego, and other cities have worked together to successfully plan for improved ground access.