TRANSPORTATION CHOICES

CASE STUDY COMPENDIUM

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FTP Florida Transportation Plan

SIS Strategic Intermodal System

FDOT

About This Document

This document provides guidance to the Florida Department of Transportation (FDOT) and other statewide, regional, and local partners for working toward the Florida Transportation Plan (FTP) goal of *more transportation choices for people and freight*. The purpose of this document is to identify and share recent innovative strategies that peer agencies in the United States are testing and implementing. This document was developed to be a resource for regional agencies, such as metropolitan planning organizations (MPOs), regional planning councils (RPCs), transit agencies, and local governments to develop and enhance strategies that address questions, such as:

- What does providing *more transportation choices for people and freight* mean in the context of Florida's diverse communities?
- How can new technologies, new business models, and enhanced availability of real-time data help expand transportation choices?
- Given limited funding, what can be done to identify and prioritize investments that improve choice?
- There are many factors, such as land use, that are beyond local transportation agencies' authority, but impact an agency's ability to provide more convenient, rapid, and low-cost choices. How can agencies coordinate land use and transportation policies and investments?
- With the advent of shared mobility services, such as shared bicycles and scooters, and transportation network companies (TNCs), such as Uber and Lyft, how do agencies manage the limited right-of-way and infrastructure at key locations, such as curbs, for competing uses?
- As transportation choices are made available, how do agencies effectively communicate options to the public? How can agencies encourage people who might consider trying new transportation approaches?

  For more information on the goal of *more transportation choices for people and freight*, please see the FTP website at: http://floridatransportationplan.com/.

Executive Summary

The FTP goals reflect the broader vision of a state that is growing and changing. Florida's population, number of visitors, and economy are projected to continue to expand at a rapid pace during the next 50 years, leading to growth in demand for moving both people and freight. Changing demographics, including a high rate of growth among both older and younger populations along with a diversifying economy, are reshaping the transportation needs of residents, visitors, and businesses. Changing technologies are transforming how we consume and provide transportation, including new types of vehicles, such as automated, connected, and shared vehicles, as well as newer public transportation services, such as local circulators, personal rapid transit, and higher-speed intercity bus and rail services.

The statewide goal of providing *more transportation choices for moving people and freight* was called out specifically for the first time in the 2015 update of the FTP. This goal, along with associated objectives and strategies, reflects widespread input from the public and Florida's transportation partners about the need to provide more transportation options to meet the needs of a diverse population and economy. This document provides guidance to FDOT and other statewide, regional, and local partners for working toward this new statewide goal. The topics and case studies presented in this document were selected to share recent innovative strategies that peer agencies in the United States (U.S.) are testing and implementing that can advance the transportation choices goal and ultimately improve service for FDOT's customers.

The case study topics include the following:

1. The Transportation Equity case study explores how providing a focus on equity in transportation planning and system management can potentially lead to more equitable access to the system for all.

2. The Coordinated Services case study describes the opportunity to harness information and technology to create a more seamless, integrated multimodal transportation system.

3. The Managing the Curb case study delves into the most effective strategies for managing an increasingly critical piece of real estate, the curb lane of roadways, as new mobility devices, platforms, and systems evolve and emerge.

4. The Public Information and Education case study identifies how effective and creative marketing can help make people aware of their options and encourage and enable people to use the existing system to get around without having to drive.

Key findings from across all of the case study topics are summarized below:

Equity for traditionally underserved or underrepresented communities is a consideration that is inherent in most policy and investment decisions that impact choice of travel. Those that are most vulnerable, underserved, or underrepresented tend to have the least choice when comparing transportation options and have to make the most significant tradeoffs in terms of transportation cost, travel time, comfort, and convenience. The case studies demonstrate ways to address all types of customers and their unique

needs, such as providing cash payment options for transportation, even as technologies advance to automated payment systems.

Data driven decision-making, inventorying, mapping, and visualization are powerful tools that local governments and regional agencies can use to inform where investments and services can be enhanced or introduced to increase choice.

Reaching out to the public directly and comprehensively continues to be essential to responding to a wide variety of needs for personal and commercial travel. Conducting public outreach, such as through surveys, public meetings, social media, workshops, and focus groups, is essential to creating programs, policies, projects, and services that have a significant impact in expanding choice for how people travel.

Communicating to customers using effective, up-to-date methods is necessary. Ensure campaigns (such as online social media campaigns) reach a broad cross-section of the community with culturally sensitive, age-appropriate, geographically specific, and contextual messaging. Targeted campaigns that are tailored to the individual user are likely to be more effective.

Public and private partner coordination and collaboration to advance new technologies will be more necessary and frequent in the future to coordinate services, modes, routes, schedules, payment methodologies, technologies, and data platforms. Agencies can expect an increase in the need to coordinate with other local and regional agencies, as well as to collaborate with stakeholder groups such as business improvement districts and private partners such as TNCs and technology companies.

Agency and community leadership will need to create a culture of agility and adaptability to be most successful. Monitoring and managing performance and then adjusting over time as needed, may be necessary when implementing many of the strategies discussed herein.

Community leaders can play an important role in championing programs and supporting or conceptualizing agency initiatives. Building strong relationships with community leaders can lead to stronger public relations campaigns, facilitated outreach, expedited program development, and focused resources on initiatives.

Conduct pilots and test strategies before broader application. While there are significant infrastructure investment needs to make a real difference in transportation choices for people and freight, there can be a benefit in first taking small steps to test new strategies, infrastructure designs, and services. It is important to select the most effective and implementable strategies that are most likely to result in desired outcomes.

Access and mobility are important factors for all trip types. Accessibility is the ease of traveling to preferred destinations, often considered in terms of travel choice (e.g., having options such as being able to walk, bicycle, ride transit, or drive from one location to another). Mobility is the ease of traveling along the transportation system (e.g., being able to drive the speed limit rather than experience congestion delays). Both mobility and accessibility are important benefits of efficient transportation systems. The fewer the number of trips and the shorter the distance people have to travel every day, the better it is for society and the more likely it is people will choose something other than a motor vehicle for every trip.

While commuting trips are important and create certain challenges due to demand peaks that cause congestion, commuting trips should not distract from overall travel patterns and opportunities.

Land use and community context play a critical role in transportation choices. Geographic context has an impact on how agencies evaluate equity and identify strategies that improve choice. FDOT has started to address this understanding in its Context Classification documentation. FDOT will routinely plan, design, construct, reconstruct, and operate a context-sensitive system of Complete Streets. To this end, a context classification system comprising eight context classifications was adopted. The context classification of a roadway, together with its transportation characteristics, will provide information about who the users are along the roadway. The context classification and transportation characteristics of a roadway will determine key design criteria for all non-limited access state roadways regional and local travel demand of the roadway.[1] While the implementation of the FTP transportation goal is important across the state, the potential challenges that limit choice and opportunities to address those challenges vary greatly in urban, suburban, and rural places. Each strategy should be considered within the context of the community it will serve. Continued emphasis on community design and land use plans and policies that facilitate multimodal transportation options is essential to increasing transportation choice across many geographies. While not all places will be 'walkable,' many Florida communities have the potential to implement transit supportive land use policies in town centers, downtowns, and regional centers. These policies can lead to land use configurations that create resilient, high quality places with growth in economic opportunity while at the same time enabling more reasonable tradeoffs when making transportation choices. Rural town centers, for example, can benefit from land use policies that allow drivers to 'park once' and walk to numerous destinations in the community town center.

Public health, economic development, environment, energy, resiliency, and quality of life objectives often are positively impacted by making investments that expand transportation choices. If the public can shift even three trips (or parts of three trips) per week to walking or bicycling, minimum healthy activity guidelines would be met. By removing trips from the road, congestion is reduced, energy use diminished, and transportation emissions limited. Infrastructure or policies provided to achieve a primary purpose, such as transportation choice, can have broad, positive impacts. By tracking performance metrics for a range of desired outcomes, clear linkages can be defined among the goals of the FTP and impacts of the strategies implemented to achieve those goals.

[1] Information sourced February 2019, https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/roadway/completestreets/files/fdot-context-classification.pdf?sfvrsn=12be90da_2

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Introduction

This document provides guidance to FDOT and other statewide, regional, and local partners for working toward the goal of more transportation choices. During stakeholder outreach conducted in 2018, participants were asked which aspects of transportation choices would be beneficial for the 2019 five-year FTP update and what type of guidance would be beneficial. The case study topics were selected to address feedback provided during these sessions, highlight strategies for advancing the transportation choices goal, and ultimately improve service for FDOT's customers. The purpose of this document is to identify and share recent innovative strategies that peer agencies in the U.S. are testing and implementing. This document is a resource for regional agencies, such as MPOs, regional planning councils (RPCs), transit agencies, and local governments, to address questions, including:

- How can providing more transportation choices increase equitable access?
- What can be done to identify and prioritize investments that improve choice for all people, including traditionally underserved communities?
- How can agencies coordinate land use and transportation policies and investments to improve access?
- How can new technologies, new business models, and enhanced availability of real-time data help expand transportation choices?
- How can the public sector and private partners coordinate to provide more transportation choices?
- What does providing *more transportation choices for people and freight* mean in the context of Florida's diverse communities?
- With the advent of shared mobility services, such as shared bicycles and scooters, and TNCs, such as Uber and Lyft, how do agencies manage the limited right-of-way and infrastructure at key locations, such as curbs, for competing uses?
- As more transportation choices are made available, how do agencies effectively communicate options to the public?
- How can agencies encourage people to consider trying different transportation options?

Questions such as these formed the foundation of the research that led to the production of this document. FDOT conducted a scan of agencies and local governments across the U.S. to identify strategies to expand and implement transportation choice. From this scan, a series of topics were identified that impact transportation choice, including equity, coordinated services, managing the curb, and public information and education. In addition, related strategies that were most applicable and transferable to communities in Florida were included in this document as case study highlights. To the extent possible, the communities that were most comparable to Florida were prioritized for inclusion, as were those strategies that were most current and innovative.

This document is organized as follows:

- The remainder of this introduction describes what more transportation choices could mean to individuals, businesses, and communities in Florida, and lays out the rationale for providing more

transportation choices. It then provides an overview of the case study topics and how they are organized.

- Section 2 describes how this goal relates to the other goals of the FTP.
- Sections 3 through 6 provide case studies to guide FDOT and its partners in advancing four specific implementation strategies related to providing more transportation choices: ensuring equity in transportation choices, coordinating services, managing the curb to accommodate a growing number of choices, and providing better public information and education on transportation choices.
- Section 7 summarizes the key findings and identifies cross-cutting issues from the case studies that could inform the activities of FDOT and its partners, including input to the next update of the FTP.

Characteristics of Transportation Choices

The FTP goal: *more transportation choices for people and freight* is intended to set policy direction and give higher priority to strategies and investments that would help expand the range of choices available to Florida residents, visitors, and businesses. The intent of the goal is to provide a range of appropriate choices for each community that increase travel flexibility, convenience, and reliability, and reduce travel time and cost compared to options available today.

Transportation Choices Characteristics Include:

- ***Economical costs of travel.***
- ***A high degree of convenience and comfort.***
- ***Reliable travel times and schedules throughout the day.***
- ***Minimal time dedicated to travel.***
- ***Safety and security when traveling.***
- ***Multimodal access to a range of destinations.***

Today, many people have limited choices in how they travel and must endure tradeoffs that limit their economic opportunities and quality of life. For example:

- Many Florida residents must own (or share) and maintain a personal vehicle because in many geographically dispersed areas, like elsewhere in the Nation, there are no other safe or adequate travel choices.
- About three percent of households in Florida have no access to a vehicle.[2] Transit schedules and routes often are limited and non-motorized travel networks often are incomplete.
- Many Florida residents must use low-cost services such as bus services that are often less reliable and require more travel time than a personal vehicle, thereby limiting options for employment; increasing time to reach medical appointments, grocery stores, schools, health care, and social engagements; and thereby also reducing time available for other activities that add to the quality of life.
- Visitors to Florida often need to rent a car because there are few other easy and connected ways to move around the state.

[2] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

Transportation choices means having a range of options available from which to choose. Over half (52.4 percent) of Florida workers traveling by car spend less than 25 minutes to commute to work. Over half (51.3 percent) of Florida workers traveling by public transportation spend over 45 minutes commuting to work.[3] To be 'actual choices,' options would need to offer similar travel time, cost, and convenience, so that each individual person, based on his or her own preferences and values, could select the option for any given trip that works best on any given day. In some cases, this choice might mean combining transportation options, for example, walking or bicycling to a destination to enjoy time outside and physical activity, but opting for rideshare or transit on a return trip. Providing more choices is expected to not only improve equitable access to desired destinations, but also lead to high quality places, support desired public health outcomes, and reduce energy use and transportation emissions. FDOT recognizes that the range of options will differ depending on the geographic context and population of each community. Nevertheless, focusing on strategies that are adaptive, agile, and innovative can expand choice.

Why Do Transportation Choices Matter?

The FTP goals reflect the broader vision of a state that is growing and changing. Florida's population, number of visitors, and economy are projected to continue to expand at a rapid pace during the next 50 years, leading to growth in demand for moving both people and freight. Changing demographics, including a high rate of growth among both older and younger populations along with a diversifying economy, are reshaping the transportation needs of residents, visitors, and businesses. Changing technologies are transforming how we consume and provide transportation, including new types of vehicles, such as automated, connected, and shared vehicles, as well as newer public transportation services, such as local circulators, personal rapid transit, and higher-speed intercity bus and rail services.

The extensive public and partner input on development of the 2015 FTP demonstrated that Florida's residents and visitors want the freedom to choose among and move seamlessly through different modes of travel from the start to the end of a trip. Florida's communities increasingly are looking for a wider range of transportation choices, including passenger rail, bus, shared vehicles, bicycles, walking, and other transportation technologies being developed today. Residents and visitors want these options to provide high-quality service, convenient schedules, and rapid, reliable routes that serve key destinations. In particular, more options are needed for people who are aging in place, have limited mobility, or are unable or choose not to drive.[4] Florida's businesses seek multiple choices of transport to meet customer demands for goods and services.

Nearly 80 percent of all workers in the state drive to work alone; this share has declined slightly since 2009 while the number of people using transit to get to work and those working from home have

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[3] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

[4] The Safe Mobility for Life Coalition promotes the benefits of lifelong communities. A toolkit can be found here: http://safemobilityfl.com/LifelongCommunitiesToolkit.htm

increased.[5] Trucking accounts for about 95 percent of all tons of freight moved within the state.[6] A total of 30 urban and 23 rural transit systems operate in Florida; few of these systems provide options beyond local bus service and few connect across county lines. Floridians took over 231 million transit passenger trips in 2017, a decrease since 2008. Further, 56 percent of Florida's population lives within a half mile of a fixed-route transit station, meaning that the remaining 44 percent of Florida's population may not be able to easily or safely access transit as an alternative to driving or carpooling.[7] Increasing the coverage of the transit facilities as well as the quality and accessibility could lead to more Floridians choosing active transportation and transit modes for part of or all of each trip.

Florida's railways, waterways, and airspace provide additional options in many parts of the state, with noteworthy gaps that include passenger rail service in Northwest and Southwest Florida and commercial air service in most of rural Florida.

FIGURE 1. MULTIMODAL STATISTICS

The inclusion of the goal for *more transportation choices for people and freight* explicitly recognizes that the long-term vision for Florida's transportation system is a comprehensive, seamless, multimodal system. The FTP defined five long-term objectives to support this goal. The first objective recognizes the tremendous changes underway in the transportation sector, driven by rapid technology developments. The second, most quantifiable objective specifically underscores the importance of providing more alternatives to single occupancy motor vehicles. The third and fourth objectives recognize the unique needs faced by visitors and freight. The final objective highlights the importance of providing connectivity among the modes to support end-to-end trips.

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5 U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

6 Freight Analysis Framework Version 4 (FAF4), 2016.

7 Information sourced February 2019, 2018 Sourcebook—https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/fto/sourcebook/2018sourcebook.pdf?sfvrsn=59320405_34.

Recent Activities in Florida to Expand Transportation Choice

The Florida Department of Transportation and many regional transportation agencies and local jurisdictions are already advancing the expansion and quality of transportation choices within Florida communities.

FDOT takes numerous steps to advance transportation choices, including:

- Adopting context-based design criteria to match transportation facilities with their surroundings to maximize mode choices.
- Identifying champions within FTP Steering Committee and externally to advance the goal.
- Identifying near-term actions to research, develop, and implement new mobility business models and services, enhance public transportation options, and identify strategies for enhancing bicycling and walking as transportation choices.[8]
- Conducting stakeholder outreach to obtain input on opportunities and challenges for expanding choices.
- Documenting District and MPO initiatives and long range plans goals and objectives to identify areas where goals and policies are synchronized.
- Documenting planning processes in other states related to more choices.
- Identifying priority issues and developing case studies.

Case Study Topics

The case study topics were selected to highlight ideas and approaches for accomplishing the transportation choices goal. They provide examples of approaches to increase choice, improve communication, embrace innovation, collaborate with partners, serve FDOT's customers, and improve data and processes. Specifically:

1. **The Transportation Equity** case study explores how providing a focus on equity in transportation planning and system management can potentially lead to more equitable access to the system for all.

2. **The Coordinated Services** case study describes the opportunity to harness information and technology to create a more seamless, integrated multimodal transportation system.

3. **The Managing the Curb** case study delves into the most effective strategies for managing an increasingly critical piece of real estate, the curb lane of roadways, as new mobility devices, platforms, and systems evolve and emerge.

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[8] Information sourced February 2019, http://www.floridatransportationplan.com/choices.htm.

4. **The Public Information and Education** case study identifies how effective and creative marketing can help make people aware of their options and encourage and enable people to use the existing system to get around without having to drive.

Case Study Organization

For each case study agency highlight, the following information is provided:

- Overview
- Benefits/Outcomes
- Partners
- Lessons Learned
- Industry Guidance (when relevant)
- Key Findings

For each topic, key findings suggest guidance for Florida. Table 1 provides a listing of the case studies highlighted for each topical area. Together, the case studies provide information and notable practices for statewide, regional, and local agencies and providers to consider as they seek to maximize their own investments in transportation infrastructure.

TABLE 1. CASE STUDY HIGHLIGHTS SUMMARY

Case Study Topic	Strategy	Strategy Description	Website Links
California Department of Transportation (Caltrans) ***Statewide, CA***			
Equity	• Cal EnviroScreen	• Statewide approach to identifying underserved communities, used to evaluate investments and applications for competitive grant programs	https://oehha.ca.gov/calenviroscreen
Polk County Transportation Planning Organization (TPO) ***Bartow, FL***			
Equity	• Neighborhood Mobility Audits	• Project level prioritization for equitable transportation access.	http://polktpo.com/what-we-do/our-planning-documents/neighborhood-mobility-audit s
VIA Metropolitan Transit ***San Antonio, Texas***			
Equity	• VIA and San Antonio Housing Authority (SAHA) Interagency Committee.	• Coordinated long term planning, cross-agency grant support, policy development, and improved service provision.	https://www.viainfo.net/2018/12/19/via-selected-to-receive-part-of-16-6-fta-million-grant/ https://www.viainfo.net/2016/04/06/san-antonio-one-nine-cities-selected-fta-project/

Case Study Topic	Strategy	Strategy Description	Website Links
Pinellas Suncoast Transportation Authority (PTSA) ***Pinellas County, FL***			
Coordinated Services	• Microtransit.	• Continued adoption of next-generation payment technologies.	https://www.psta.net/programs/moderntransit/ https://psta.net/flamingofares/index.html
Metropolitan Atlanta Rapid Transit Authority (MARTA) ***Atlanta, GA***			
Coordinated Services	• Breeze Card electronic fare payment.	• Implementation of payment technologies that can ultimately increase ease and convenience for transit customers.	https://www.breezecard.com/ https://www.itsmarta.com/how-to-guide.aspx
Los Angeles County Metropolitan Transportation Authority (LA Metro)			
Coordinated Services	• TAP Card electronic fare payment.	• Coordinated fare payment across multiple county and municipal transit services, with evolving incorporation of bike-shares and TNCs.	https://www.taptogo.net/ https://www.metro.net/riding/fares/tap/
Jacksonville Transportation Authority (JTA) ***Jacksonville, FL***			
Coordinated Services	TransPortal multimodal trip planning application.	• Approach to coordinate multimodal transportation offerings across a 12-county region of Northeast Florida.	http://www.transportal.net/#!/ https://www.jtafla.com/riding-jta/getting-started/plan-your-trip/
District Department of Transportation ***Washington, D.C.***			
Managing the Curb	• Interregional bus parking. • Shared Used Mobility (SUM) zones. • Dockless scooter and bikeshare parking. • Freight loading/unloading.	• Approaches to managing the curb—from intercity bus, to freight loading/unloading, and managing spaces for new services, such as TNCs, bike share, and scooter share.	https://ddot.dc.gov/page/dockless-vehicles-district https://comp.ddot.dc.gov/Documents/District%20Department%20of%20Transportation%20Curbside%20Management%20Study.pdf
Seattle DOT ***Seattle, Washington***			
Managing the Curb	• Flex zones and right-of-way decision-making framework.	• Implementation of a right-of-way prioritization process to define curb space as 'flex zones'	http://streetsillustrated.seattle.gov/street-types/row-allocation/.

Case Study Topic	Strategy	Strategy Description	Website Links
MetroPlan ***Orlando, Florida***			
Managing the Curb	• Curb management for Complete Streets. • Prioritization of space for transit (LYMMO).	• Curb management strategies as part of complete streets programs.	https://metroplanorlando.org/wp-content/uploads/17873_ComlpeteStreetsFinalReport-opt_CC.pdf. https://www.golynx.com/plan-trip/riding-lynx/lymmo/lymmo-history.stml
Arlington County Commuter Services			
Public Information and Education	• Transportation demand management.	• The program assists those commuters who are most likely to seek a range of non-automobile options and has dedicated staff that puts information on transportation options in the hands of employees.	https://www.commuterpage.com/about/arlington-county-commuter-services/
Portland Bureau of Transportation			
Public Information and Education	• Smart trips/ individualized marketing.	• A multi-pronged approach for individualized marketing.	https://www.portlandoregon.gov/transportation/
Durham Mayor's Office			
Public Information and Education	• Mayor's Challenge.	• The challenge engaged a series of strategies to encourage people to choose to change their travel behavior.	https://durhamnc.gov/3727/Mayors-Challenge https://durhamnc.gov/1002/Transportation

Implementing the Transportation Choices Goal

The FTP is the single overarching plan guiding Florida's transportation future. It is a plan for all of Florida created by, and providing direction to, FDOT and all organizations that are involved in planning and managing Florida's transportation system, including statewide, regional, and local partners.

The most recent FTP, completed in 2015, is built around seven overarching goals:

- **Safety and Security** for Residents, Visitors, and Businesses
- Agile, Resilient, and Quality Transportation **Infrastructure**
- Efficient and Reliable **Mobility** for People and Freight
- More Transportation **Choices** for People and Freight
- Transportation Solutions that Support Florida's Global **Economic Competitiveness**
- Transportation Solutions that Support **Quality Places** to Live, Learn, Work, and Play
- Transportation Solutions that Support Florida's **Environment and Conserve Energy**

The statewide goal of providing *more transportation choices for people and freight* was called out specifically for the first time in the 2015 update of the FTP. This goal, along with associated objectives and strategies, reflects widespread input from the public and Florida's transportation partners about the need to provide more transportation options to meet the needs of a diverse population and economy.

How Does the More Transportation Choices Goal Relate to Other FTP Goals?

Each of the FTP's seven goals stands alone as an essential element in building a successful transportation system. However, the FTP goals also are highly interdependent. The specific goal of more transportation choices is relevant to, supportive of, and impacted by, the other six FTP goals. *More transportation choices for people and freight* is a critical strategy in achieving the other transportation goals, and a valuable tool in delivering other policy priorities, such as equitable access to transportation. Figure 2 shows the key aspects of the relationship between the transportation choices goal and the other FTP goals.

FTP Goals	How "More transportation choices for people and freight" supports each of the FTP goals *More transportation choices can:*
Safety and security for residents, visitors, and businesses	• Increase options and capacity for emergency evacuation and response. • Increase the number of people walking and biking, which improves safety for all by having more 'eyes on the street.' • Improve highway safety by limiting growth in Vehicle Miles Traveled (VMT).
Agile, resilient, and quality infrastructure	• Shift some trips off heavily used roadways and bridges, minimizing wear and tear. • Provide more redundancy if parts of the system are disrupted by incidents or emergencies. • Influence street design and management, from complete streets to agile curb management and designing for a future where vehicles are connected and automated.
Efficient and reliable mobility for people and freight	• Shift some personal and freight trips off congested facilities reducing delay and improving reliability. • Improve first/last mile access to transit for walking, biking, and through new shared mobility micro transit or shuttle services. • Increase the number of people using transit as transit services are made more frequent and reliable and as real-time schedules are made more readily available.
Transportation solutions that support Florida's global economic competitiveness	• Help attract a more diverse workforce. • Help attract and retain businesses by expanding access to workforce. • Support continued growth in visitor activity by providing more options to travel to, from, and within Florida.
Transportation solutions that support quality places to live, learn, work, and play	• Provide more options for reaching homes, schools, jobs, health care, and recreation. • Enable people to enjoy walking or biking to a destination, also improving public health.
Transportation solutions that enhance Florida's environment and conserve energy	• Enable more trips to use options that are energy efficient or low-emissions.

FIGURE 2. HOW *MORE TRANSPORTATION CHOICES FOR PEOPLE AND FREIGHT* CAN IMPACT THE OTHER FTP GOALS

Transportation Choices AND Safety and Security for Residents, Visitors, and Businesses

Transportation Choices Impact on Safety and Security. Florida shares the national traffic safety Vision "Toward Zero Deaths" and formally adopted its own version of the national vision, "Driving Down Fatalities" in 2012. In 2016, Florida established a formal performance target of zero transportation related fatalities. Increasing the share of trips made by modes other than single occupancy motor vehicles will have a positive impact on transportation safety.[9] One of the most effective strategies for improving traffic safety is reducing the number of vehicle miles traveled (VMT), a strategy to which *more transportation choices for people and freight* can contribute. Florida transportation agencies are implementing notable practices to improve safety even as the demand for transportation grows.

Safety and Security Impact on Transportation Choices. Safety and security concerns also influence decisions about which choices people are willing to make. The 2015 MetroPlan Orlando Public Opinion Survey reported ***"There is a strong consensus that respondents do not feel safe when walking and bicycling."***[10] Many urban areas may be similar to the Orlando urban area. The roadway design also has a significant impact on safety for non-motorized choices. Currently, 75 percent of non-freeway facilities on the state highway system have bicycle lanes, paved shoulders, or shared-use paths and 67 percent of those facilities located in urban areas have sidewalks or shared-use paths.[11] Both roadway design and urban design matter to personal safety, and therefore choice. Improving the connectivity, quality, and maintenance of these facilities is important to encourage their use. FDOT, MPOs, and local governments are implementing complete streets and elevating design to improve the quality and safety of non-motorized facilities.

Personal security issues are a crucial factor in mode choice, especially for women and vulnerable populations including the elderly and very young. There is a pronounced and well-documented "safety in numbers" benefit that occurs when more people walk and bicycle in a community.[12] Adding features to pedestrian infrastructure, such as lighting along sidewalks and at transit stops, can have a strong impact on whether or not a person is willing to walk or wait, even for a few minutes, at a bus stop.

Environmental factors also are raising new concerns to consider in multimodal transportation planning. During extreme weather events, the safe and efficient evacuation of Florida's growing number of residents is the top priority. Florida's population continues to grow and population density continues to increase in the state's urbanized areas, creating significant congestion when emergency evacuation is

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9 FDOT 2017 Sourcebook—https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/content/planning/fto/mobility/2017sourcebook.pdf?sfvrsn=6e42b91b_0.

10 Information sourced February 2019, https://metroplanorlando.org/wp-content/uploads/public_opinion_research_2015.pdf.

11 FDOT 2018 Sourcebook—https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/fto/sourcebook/2018sourcebook.pdf?sfvrsn=59320405_32.

12 Information sourced February 2019, https://www.citylab.com/transportation/2015/07/why-its-safer-to-walk-and-bike-where-more-people-walk-and-bike/397568/.

necessary. Transportation choices can help provide adequate and reliable choices in the event of an emergency, which is critical for the safety of Florida's residents and visitors.

Transportation Choices AND Agile, Resilient and Quality Transportation Infrastructure

Transportation Choices Impact on Infrastructure. Infrastructure, like most physical materials, deteriorates with use. Each car or commercial vehicle that travels along Florida's highways and bridges slowly deteriorates the conditions of the facility on which it travels. If more trucks are using the highways they will need repaving more often. If options for personal travel and freight movement, such as transit and rail, are more competitive with roadway travel, Florida could see less roadway demand and therefore less total wear and tear on its existing roadway and highway system.

Infrastructure's Impact on Transportation Choices. The quality of infrastructure also influences the choices people make about how they travel. When people experience roadways in poor condition, they seek out other roads to drive. When a transit vehicle is in poor condition, travels on poor condition rail or roads, is overloaded with riders, or is otherwise uncomfortable, people might seek out other options, making tradeoffs in cost or time to do so. When sidewalks or bicycle infrastructure is under-designed, in poor condition, poorly maintained, or incomplete or unlit, people will not choose to utilize such facilities.

Investing in a range of infrastructure, including redundant travel options across modes, also can be a crucial step in providing a resilient network and transportation security. In the case of major events, such as storms, flooding, and fuel shortages, people and goods will need to move swiftly along the transportation system, both to evacuate and provide essential resources to communities in need. A transportation system that includes redundancy can support the critical movement of people and goods along a parallel route or alternate mode of transportation if another is compromised.

Transportation Choices AND Efficient and Reliable Mobility for People and Freight

Transportation Choices Impact on Efficient and Reliable Mobility. As the population and economy grow, FDOT and local transportation agencies need to expand the options for travel while simultaneously elevating the intelligence of how the transportation system is managed. Florida is the third largest state in the Nation and is home to almost 21 million residents, a 10.8 percent increase since 2010.[13] Visit Florida estimates that Florida hosted a record 126 million visitors in 2018.[14] Projections suggest Florida could be home to as many as 26 million residents in 2040 with 175 million annual visitors by 2027.[15] Florida's economy has seen strong growth since 2010, in part, thanks to the continually growing population and

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[13] Information sourced February 2019, Bureau of Economic and Business Research (BEBR), 2018—https://www.bebr.ufl.edu/population.

[14] Information sourced February 2019, Visit Florida, 2018—https://www.visitflorida.org/resources/research/.

[15] Information sourced February 2019, Florida Chamber: http://www.flchamber.com/wp-content/uploads/2018/06/ES_FLChamber2030_Mar18_9x12_reduced.pdf.

number of visitors. Since 2010, Florida's GDP has increased by 31 percent to $967 billion in 2017.[16] As the number of Florida's residents and visitors grow and as the economy expands, the demand on Florida's transportation system increases dramatically. Florida's daily VMT has increased by six percent since 2015 to 600 million in 2017 and freight truck daily miles has increased by 10 percent to almost 30 million daily truck miles in 2017.[17] These increased demands on Florida's transportation system contribute to increased congestion and more frequent delays. All of these factors have combined to increase the average commute time in Florida to almost 27 minutes.[18] Simply adding more roadway capacity is not an economical solution to managing the demand for transportation services that comes with more people, more jobs, and more freight. As demonstrated during the outreach conducted for the FTP, more roads is not what Floridians and local businesses want, but rather more choices for how they can travel, based on personal preferences and values. The choices that are available to people and freight in Florida impact the efficiency of the existing infrastructure.

Efficient and Reliable Mobility's Impact on Transportation Choices. FDOT and its partners are responding to changing demands for transportation options, based on the composition of Florida's population and their travel behavior and preferences; a few statistics convey this point:

- By 2045, more than 25 percent of Florida's population will be age 65 or older.[19] As some of this population will no longer able to drive, there must be adequate alternatives to driving to ensure they can continue to live safe and active lives.
- The percentage of total licensed drivers that are teenagers has steadily decreased in the last decade. Teenagers ages 15 to19 make up more than seven percent of Florida's total population[20] but account for just under five percent of licensed drivers, indicating that teenagers are either waiting longer to get their license or choosing not to get a license at all.[21]
- About three percent of households in Florida do not own a vehicle while another 22.7 percent own only one vehicle, meaning a quarter of Florida's households either have no vehicle or must share a single vehicle.[22]

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16 Information sourced February 2019, Bureau of Economic Analysis, U.S. Department of Commerce, 2018—https://www.bea.gov/data/gdp/gdp-state.

17 Information sourced February 2019, FDOT 2018 Sourcebook, 2018—https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/fto/sourcebook/2018sourcebook.pdf?sfvrsn=59320405_32.

18 Compared to the average commute time for all U.S. workers of 26 minutes. U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

19 Information sourced February 2019, Bureau of Economic and Business Research (BEBR), 2018—https://www.bebr.ufl.edu/population.

20 Information sourced February 2019, Bureau of Economic and Business Research (BEBR), 2018—https://www.bebr.ufl.edu/population.

21 Information sourced February 2019, Florida DHSMV Driver and Vehicle Statistics Reports, 2018—https://www.flhsmv.gov/resources/driver-and-vehicle-reports/.

22 Information sourced February 2019, U.S. Census Bureau, American Community Survey, 2017—https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF.

- About 56 percent of Florida's population lives within a half mile of a fixed-route transit station, meaning that the remaining 44 percent of Florida's population may not be able to easily or safely access transit as an alternative to driving or carpooling.[23]

FDOT and its partners are increasingly leveraging transportation technologies and data to manage the transportation system. From coordinating transit schedules and advancing smart signal timing to leveraging technologies to connect the first and last mile between destinations, efficiency and mobility are being built into the transportation system. FDOT and partners are testing new technologies, such as connected and automated vehicles, to gain insight on how well these technologies might function in different environments and to determine what types of resources are needed to expand existing Intelligent Transportation Systems (ITS) into truly connected infrastructure that could improve the efficiency and safety of roadways. They are exploring ways to use and communicate real-time information to the traveling public and business community, from dynamic message signs and handheld devices, such as smart phones, to connected vehicle technologies to support individuals' decision-making on their choice of travel and inform logistics planning for commerce. With every investment in a high quality, reliable multimodal system, there are better options for the movement of people and freight.

Transportation Choices AND Solutions that Support Florida's Global Economic Competitiveness

Transportation Choices Impact on Economic Competitiveness. Being able to travel within Florida's cities on foot, on a shared or personal bicycle, on transit, or in a shared or a private vehicle is essential to a vibrant urban economy. Research shows that many companies see a competitive advantage in walkable downtown neighborhoods and are looking for locations that are accessible by a range of transportation options, especially commuting choices for employees and convenient access to the rest of the city and the region.[24] A well-integrated multimodal transportation system is essential for the movement of freight from yards and factories to manufacturing sites and stores. Providing interregional connections by removing bottlenecks and reducing delays that are costly to Florida's businesses is essential to support today's regional and mega-regional growth.

Economic Competitiveness Impact on Transportation Choices. While congestion is a sign of economic health, it also can mean highways and parallel roadways provide limited mobility. Personal and commercial vehicles fill streets en route to destinations, looking for parking, and often double-parking when no other parking is to be found. Bicyclists often are challenged by vehicles blocking bicycle lanes, and bicyclists and pedestrians feel unsafe when congestion leads to distracted, frustrated drivers that lack awareness of pedestrian and bicycle movements. More populous areas can increase economic competitiveness by taking advantage of more dense land uses by investing in well-connected multimodal networks. They can design the services and infrastructure to operate in ways that promote reliability, from

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[23] Information sourced February 2019, 2018 Sourcebook—https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/fto/sourcebook/2018sourcebook.pdf?sfvrsn=59320405_34.

[24] Information sourced February 2019, Core Values: Why American Companies are Moving Downtown, by Smart Growth America, https://smartgrowthamerica.org/resources/core-values-why-american-companies-are-moving-downtown/.

designating roadway space to bus rapid transit. They can promote ease, by providing real-time information about all services, and they can increase safety by building robust, well-designed pedestrian and bicycle networks.

Low income Floridians, especially those living in rural areas, have fewer transportation choices for necessities like employment and healthcare. They may be restricted to working close to where they live or forego regular healthcare appointments due to a lack of affordable transportation. The combination of rural geographies that do not naturally lend to transportation choices due to longer distances between destinations, lower population density, and other factors, combined with economic hardship, can create significant challenges to transportation choice.

Transportation Choices AND Solutions that Support Quality Places to Live, Learn, Work, and Play

Transportation Choices Impact on Quality Places. Initiatives to create a sense of place and improve overall quality of life must arise from the context of each community and grow from the priorities, needs, and values that community holds. Whether that community is a small town in a rural area or a bustling urban center, people in all places look for easy, low cost, safe, and enjoyable travel to their jobs, schools, social activities, and other destinations. The types of transportation choices and the innovation solutions to increase choices might vary based on a community's geography, land use, demographics, and needs.

The transportation system can play a major role in supporting healthier, happier communities by providing more opportunities to walk, bicycle, or take other active transportation options and ensuring access to places of recreation, health care, and fresh foods. Florida has a young population (29 percent of Florida residents are under the age of 25), many young people are looking to live and work in communities that offer a range of transportation options, as well as a significant percentage of the population who are thinking about retirement and aging in place (19 percent of Florida residents are 65 or older).[25] Both of these demographics are well-served by having more transportation choices. Although Floridians are living longer than previous generations, studies suggest that they are not actually healthier than previous generations. Modern medicine and vaccines have helped to prolong lives but rising trends in obesity, high blood pressure, heart disease, and diabetes indicate aging populations are not as healthy as their predecessors. Providing better and more convenient access to active modes of transportation, such as walking and bicycling, and creating communities in which people feel comfortable walking or bicycling, can improve the health of Floridians by creating more opportunities for physical activity.

Quality Places Impact on Transportation Choices. Communities that embrace good urban design can impact how people choose to travel. For example, walkable communities with pedestrian amenities such as quality lighting, landscaping, and pedestrian-oriented design are likely to attract more pedestrians. And every transit rider is at some point, a pedestrian. Places that offers a variety of land uses can lead to more multimodal options—from rural towns with a walkable main street with nearby housing, to suburban

[25] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.

areas with activity centers connected by transit and bicycle facilities, and energized urban areas with a multitude of transportation services.

Transportation Choices AND Solutions that Support Florida's Environment and Conserve Energy

Transportation Choices Impact on the Environment and Energy Conservation. The external environmental and societal costs of motor vehicle traffic are significant. Expanding transportation choices can provide the opportunity to contribute to a healthier environment through continued improvements to air quality and reduced greenhouse gas emissions. An increase in the use of transportation choices, such as walking, bicycling, transit, and shared mobility can simultaneously tackle the mounting costs of emissions, energy consumption, and run-off. By increasing the choice for these transportation alternatives, both environmental benefits and public health benefits can be accrued.

Environment and Energy Conservation on Transportation Choices. While some individuals might make their transportation choice based on a commitment to environmental outcomes and energy conservation—whether walking, traveling by bicycle or transit, or purchasing an electric vehicle, most people have to consider a large number of other factors in their transportation decisions. However, the overall quality of an environment can factor into decisions as to what option a person might travel.

Emerging Trends

The next FTP will not only capture ongoing goals and objectives expressed in the current FTP, it will also grapple with new and evolving challenges Florida's communities are facing that will impact transportation choices. The FTP will need to identify how to direct new technologies, services, partnerships and data platforms to help FDOT, MPOs, local governments, transit agencies, and other partners achieve statewide and community goals. Below, we define several trends and influencers that are anticipated to be considered in the next FTP. Potential implications, challenges, and opportunities of these emerging trends are described in brief.

Technology and Technology Security

The future of Florida's transportation system could well be determined by its successful implementation and integration of communications technology. Communications advancements are likely to impact transportation, including:

- Faster download speeds will mean faster updates on traffic conditions and transit schedules, which could enable commuters to make last-minute decisions as to whether they drive or access a TNC or public transit.
- Transportation management centers will continue to take advantage of real-time data to manage multimodal transportation systems, but that data may increase greatly as vehicles and infrastructure because more connected.

- Connected and automated vehicle technologies could have a significant impact on Florida's transportation system, design, and operations. These technologies could have a range of positive and negative impacts on considerations, such as system efficiency, transportation demand, and safety, among other issues. Through initiatives and plans, FDOT, local, and federal partners have already made significant strides to consider implications of connected and automated vehicles, to mitigate any negative impacts and to ensure Florida obtains benefits of the technologies.
- There may need to be a fully functioning 5G network in place to fully implement connected and automated vehicles. Dedicated short range communication technologies are also being tested for use by connected vehicles and infrastructure.

Shared Mobility/Mobility as a Service (Maas)/Subscription Services

Shared mobility is the shared use of a mode of transport, which can range from automobile and public transit to bicycle and scooter. This wide-ranging term encompasses taxis/TNCs, carpooling/ridesharing, most/all forms of public transportation, and bicycle and scooter sharing, among others. Mobility as a Service (MaaS) is the concept of a transportation system that is no longer centered on personal vehicle ownership, but rather has evolved to focus on as needed/on demand transportation for customers. Subscription services typically are an app-based option for short term vehicle rental/leasing, which can range anywhere from a few hours to a 30-day renewable period. All of these choices offer alternative choices to car-ownership and or daily single occupancy vehicles (SOV) trips to access employment. The FTP may have to consider the high level of coordination needed between public agencies (e.g., transit owners) and private companies (e.g., software vendors) to enable the coordinated payment applications that will in turn allow one-application, single point of purchase fare payments, which can potentially make MaaS a transformative force on the transportation system.

With subscription services, people are often reserving a vehicle for specific use at a specific time. If the majority of vehicles are needed for morning and afternoon rush hours, then companies may introduce premium peak prices for these times, having an impact on equity and access for these services to lower income populations. The FTP might want to consider if the conveniences of on-demand car usage will be enough to encourage people to give up the independence of car ownership and whether there will always be a reliable source of dormant vehicles available to meet user demand.

Also, the FTP, from a perspective of resiliency, safety, and security, will likely explore the implications for Florida's periodic mandatory hurricane evacuations. If people start foregoing car ownership for subscription services, will additional fleets of vehicles need to be sent to an area, and if so, can enough of them arrive in time? Conversely, will companies be reluctant, or simply forbidden by their insurance companies, to send vehicle fleets into an area that is under an imminent emergency evacuation order?

Electric Vehicle (EV) Charging

Widespread adoption of electric vehicles is purportedly one of the fastest ways to reduce carbon emissions. The latest statistics estimated Florida has approximately 24,000 plug-in EVs out of 14.2 million

registered vehicles, which is only.02 percent of all vehicles traveling Florida's road[26] (numbers reflect privately owned vehicles, not public or commercial fleets). There are currently 2,041 charging stations available in Florida, primarily located in Florida's metropolitan areas and along its coasts.[27] Given these relatively low rates of EV ownership, there might be a sufficient number of charging stations, one for every 12 privately owned EVs. However there will be a need for a scalable increase in charging station infrastructure should EV ownership rise, as projected.

With increased EV ownership the FTP may need to consider the partnerships required to expand the number of additional charging stations. Currently, most charging stations are free to customers, a subsidized incentive intended to increase EV ownership, although this is not a cost-sustainable model if EV ownership increases, even modestly. EV infrastructure will also need to be considered for emergency evacuations. The fastest charging station as of 2019 (480V DC) can deliver an 80% battery charge in 30 minutes and the longest range batteries are over 300 miles, while the average EV battery range is around 200 miles on a full charge.[28] The FTP may need to consider safety, security, and resiliency issues that may arise in emergency evacuations

Freight Delivery, Including Personal Package Delivery

With the emergence of Amazon and other online retailers, consumers are accessing more of their goods via freight delivery than ever before. This increase in volume means more delivery trucks on Florida's roads. Just as TNCs provide alternatives to driving a personal vehicle, automated vehicles and drones could provide alternatives to personal package delivery. For example an automated delivery truck could be programmed to routinely patrol office parks where pickups and deliveries are frequent throughout the workday. Also, a delivery driver in the suburbs could park a truck in a shopping center close to a gated community and complete the deliveries for the area via a piloted drone.

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26 Information sourced February 2019, https://pluginamerica.org/wp-content/uploads/2017/04/Florida_Electric_Vehicle_Factsheet_May_2017.pdf.

27 Information sourced February 2019, https://www.fleetcarma.com/electric-vehicle-infrastructure-in-florida/.

28 Information sourced February 2019, https://www.fleetcarma.com/electric-vehicle-infrastructure-in-florida/.

Case Study: Providing Equitable Transportation Choices

Why This Topic Matters

Transportation equity refers to the fair and appropriate distribution of benefits and costs among various customers of the transportation system. In our transportation-dependent society, the ability to access employment, education, health care, fresh food, recreation, community services, and government services is essential to individual economic and social wellbeing. Yet, historically, the availability and quality of transportation options too often has favored some neighborhoods over others, which has led to a lack of real transportation choice in many communities. These traditionally underserved, or underrepresented, communities are those that have less access to the benefits of the transportation system; include low-income, single-parent, and zero-car households; and include persons with disabilities, youth, elders, and those with limited English proficiency.

Today, many people do not have a 'choice' in how they travel and must endure tradeoffs that limit their economic opportunities and quality of life. For example, some people find it necessary to use a personal vehicle because the alternative transportation options that are available, such as transit, are not sufficiently reliable, do not directly connect origins and destinations, and may require more travel time than traveling by auto. Not having real choices can increase household expenses due to car ownership; impact options for employment; increase time to reach medical appointments, grocery stores, civic institutions, and social engagements; and reduce time available for other activities that add to a person's quality of life.

Transportation equity means ensuring that all people enjoy an equitable share of transportation benefits, such as access to services, jobs, and education, while avoiding a disproportionate share of the direct and indirect costs of transportation, which may include congestion, noise, and emissions. When defining transportation policies to address equity, directing a larger portion of transportation investments towards communities that are traditionally underserved and underrepresented may be necessary to balance transportation access.

Why Consider Equity in Transportation Choices?

Communities that are traditionally underserved are disproportionately impacted by limited transportation choices. Household transportation costs, such as fuel, fares, fees, tolls, and vehicle maintenance represent the second largest share of household budgets, after housing and above food.[29] The average cost of owning a car that is driven 15,000 miles per year was about $8,850 in 2018.[30] This is a substantial expense for low-income families whose only option for accessing jobs is a car. People that

[29] Bureau of Transportation Statistics, 2017.

[30] Information sourced February 2019, https://newsroom.aaa.com/auto/your-driving-costs/.

are historically underrepresented typically shoulder a greater share of the *indirect* costs of car-focused transportation as well, including poor air quality, traffic, noise, and poor neighborhood walkability.

EQUITY CONSIDERATIONS IN IMPROVING TRANSPORTATION CHOICES

A scan of the relevant literature reveals a number of critical equity issues to consider when expanding transportation choices.

- ***How do we define underserved communities?*** *To address inequity in transportation choices, agencies must first understand where people that are underrepresented are located.*
- ***What demographic factors should be used to identify the location of disadvantaged communities?*** *Common factors used in defining underrepresented communities include concentrations of household poverty, minority populations, low educational attainment, unemployment, single-parent households, and linguistic isolation. How can transportation choice be increased in areas with lower population density?*
- ***How reliable and accessible are transportation options in communities with underserved populations?*** *Where transportation options are scarce, households often are reliant on neighbors and friends, social agencies, and jitney services to meet their daily transportation needs. Strategies should be employed to increase the viability and reliability of transit, pedestrian, bicycling, and new and shared mobility options. Non-motorized transportation options can be economical choices.*
- ***What is the cost burden and opportunity cost of available transportation options?*** *Transportation choices such as transit, TNCs, and bikeshare generally are fee-based services that disproportionately impact lower-income households. To be viable, a transportation option must be affordable. While a daily roundtrip $3 bus fare might make a reasonable transportation option for low-income commuters, a daily $12-15 Uber or Lyft ride might be prohibitive.*
- ***How are unbanked residents impacted?*** *TNCs and newer transit fare-payment platforms typically must be linked to a credit or debit card to be operated, but many residents are unbanked customers without access to a credit or debit card. Communities must consider the impacts of cash purchase/balance loading alternatives to ensure that the underrepresented have equitable access to transportation choices.*
- ***Are people that are underrepresented involved in the planning process?*** *Residents should play a part in the development of equity solutions, their voices should inform the policy, location, design, and implementation of new transportation options.*

Improving transportation options provides underserved communities with greater access to jobs, education, and services. Numerous studies demonstrate that multimodal, compact, and mixed land

uses improve transportation access, which can translate into economic opportunity for low-income residents by improving access to education and employment.[31]

Accommodating the transportation needs of the most disadvantaged residents can yield universal benefits. For example, ADA compliant ramps for wheelchair access also can benefit parents with baby strollers or people with crutches. Visual and audible countdown traffic signals provide safety reinforcement to all pedestrians and bicyclists.

Providing equitable access to transportation choices helps overcome historical inequities. Enhancing transit, bicycle, and pedestrian access serves to improve safety, economic vitality, and livability in low-income and minority communities.

Florida Policies to Promote Equitable Access

FDOT acknowledges the need to ensure equitable distribution of transportation system impacts in its Title VI policy and limited English proficiency (LEP) guidance, and all other nondiscrimination laws (see text boxes on page 22). As more members of the public seek alternatives to SOV trips, it is important to ensure that new and enhanced transportation choices are accessible by even the most disadvantaged populations.

FDOT understands that transportation actions can affect communities and influence the quality of life of its citizens. To determine the significance of these effects FDOT conducts careful evaluation on a case-by-case basis through application of a Sociocultural Evaluation (SCE) tool. SCE Evaluation is the FDOT's preferred process to evaluate these effects and avoid or mitigate potentially unacceptable consequences of a proposed transportation action. The process starts at the earliest stages of project planning and continues through project construction and maintenance. The process focuses on a transportation project's potential effects on social, economic, land use, mobility, aesthetic, and relocation issues. The SCE Evaluation process involves affected communities and citizens, as well as transportation planners and decision-makers, to evaluate the potential effects of a transportation action on a community. In addition, it provides that human values and concerns receive due attention. The success of an SCE evaluation is based largely on the partnerships formed by the FDOT, MPOs, and cooperating agencies throughout Florida to collect, analyze, document and evaluate pertinent community information to better understand the effects of transportation plans, programs, and projects on people and their communities. The SCE Evaluation process also encourages the coordination and integration of transportation plans with land use plans.

[31] Information sourced February 2019, https://www.epa.gov/smartgrowth/creating-equitable-healthy-and-sustainable-communities.

FDOT, as a recipient of federal financial assistance, takes reasonable steps to ensure meaningful access to its programs, services, and activities for all citizens including those individuals with limited English proficiency. Individuals who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English may be considered LEP. FDOT interacts with persons who may be LEP in the administration of its programs, services, and activities. This guidance ensures that LEP individuals are provided meaningful access to the FDOT's programs, services, and activities.

Equity, in a broad sense, can be thought of as fairness, or nondiscrimination. In transportation, equity implies giving as much consideration, latitude, advantage, or fairness to one group or community (potentially affected by a proposed transportation project), as given to another. FDOT's goal is to maximize equity, and consider and involve all population groups, through all phases of transportation decision making. This means prioritizing equity in planning and corridor studies, throughout the entire life of the project, and even through operations and maintenance. Equity is also a legal requirement, enforced through various acts, orders, policies, and legislation to ensure nondiscrimination.

Where Are Strategies Implemented to Increase Transportation Equity?

FDOT conducted a national scan to identify agencies that are implementing practices to increase transportation equity. Table 2 highlights some of these agencies, along with outcomes and relevance to Florida. The scan included research into notable practices or innovative approaches in both urban and rural areas.

TABLE 2. SCAN OF EQUITABLE PLANNING PRACTICES

Agency or Organization	Strategies	Outcomes	Relevance to Florida
California Department of Transportation (Caltrans) *Statewide, CA*	CalEnviroScreen	Statewide approach to identifying underserved communities, used to evaluate investments and applications for competitive grant programs	• Example of statewide transportation equity analysis using available data
Metro *Portland, Oregon*	Transportation Equity Analysis	Addresses equity and inclusion for diverse populations	• MPO implementation model of community based program

Agency or Organization	Strategies	Outcomes	Relevance to Florida
Metropolitan Transportation Commission (MTC) *San Francisco, CA*	Equity Analysis of Communities of Concern	A detailed definition of communities of concern, and consideration of equity throughout program and project evaluation processes	• Addresses Title VI, environmental justice, and equity issues • Provides robust option for defining equity communities • Integrates equity in prioritization process
Polk County Transportation Planning Organization (TPO) *Bartow, FL*	Neighborhood Mobility Audits	Project level prioritization for equitable transportation access	• Existing MPO implementation in Florida
VIA Metropolitan Transit *San Antonio, Texas*	VIA and San Antonio Housing Authority (SAHA) Interagency Committee	Coordinated long term planning, cross-agency grant support, policy development, and improved service provision	• High growth, dispersed region with focus on increasing equity through multimodal transportation and land use coordination
Plan Hillsborough *Tampa, FL*	Equity Analysis	Project prioritization for communities of concern	• Existing Florida MPO equity guidance for investment decisions

Following this initial phase of analysis, three examples were selected for case studies based on the best practices demonstrated, lessons learned, and potential transferability of findings to local and regional agencies throughout Florida.

- **San Antonio, Texas, VIA Metropolitan Transit Agency.** This case study demonstrates the critical link between planning, interagency coordination, and improving equitable transportation outcomes. Through interagency coordination the San Antonio region is advancing transit-supportive land use, design, and policies to enhance existing communities and create high quality places with walking, bicycling, and transit as competitive travel options for all people. By encouraging more concentrated land uses along major existing and planned transit corridors and in regional centers, and promoting housing at a range of prices near transit, the strategies described are intended to increase mode choice and reduce travel costs, by offering lower-cost, high quality travel options that improve equitable access. This strategy helps to reduce the combined housing and transportation cost burden.
- **California CalEnviroScreen: Considering Equity in Statewide Investments and Grant Programs.** This case study demonstrates how the application of tools and data, combined with equity-forward policies, can promote transportation infrastructure for active transportation, making it possible for bicycling and walking to be more competitive transportation options.
- **Polk County Transportation Planning Organization.** This case study describes the Neighborhood Mobility Audit process, which provides an innovative, proactive approach to meeting Title VI and environmental justice requirements. This approach increases choice by developing and prioritizing

projects that have a meaningful impact on transportation choice in communities that are home to underrepresented populations.

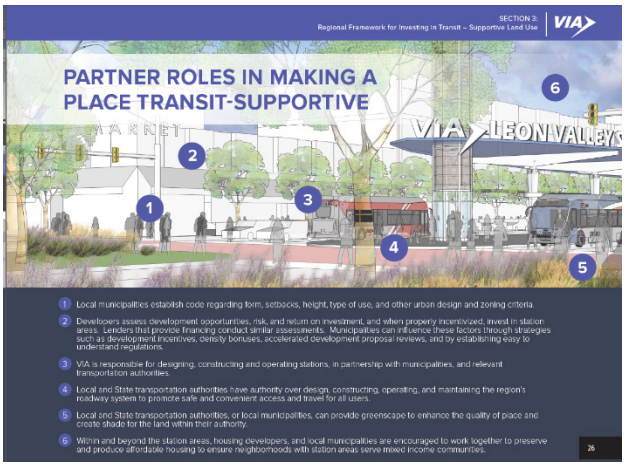
Case Study Highlights

San Antonio, Texas, VIA Metropolitan Transit Agency—Transit Supportive Land Use Policy Development and Interagency Collaboration

This case study demonstrates interagency coordination to advance land use design and policies to enhance existing communities and create high quality places with walking, bicycling, and transit as competitive travel options. By encouraging more concentrated land uses along major existing and planned transit corridors and in regional centers, the strategies described are intended to increase mode choice and offer lower-cost, but high quality travel options. The provision of high quality lower cost transportation is a key element to equitable access to transportation.

Overview

According to the City of San Antonio's 2016 Comprehensive Plan, it anticipates 1.6 million more residents by 2040. Transit is essential to serve and shape the communities and economic centers that it connects. Land use design, and the existing and planned development around transit station areas can be important equity issues. Achieving the right mix and balance of housing types in rapid transit station areas is essential; taking steps to preserve and produce affordable housing near station; and providing a wide variety of housing types can better serve people of all incomes by improving transportation choices. Experts recommend the combined cost of housing and transportation not exceed 45 percent of household income. In the Greater San Antonio Region, the average is 53 percent.[32] By collocating housing near employment and transit centers and ensuring adequate housing choices are available, equitable transportation can be increased by having more transportation options available, increasing accessibility, and by reducing travel time. VIA's coordinated land use planning and rapid transit service can be part of the solution to decrease the combined cost of housing and transportation. VIA Metropolitan Transit (VIA) recommendations for transit



[32] VIA Strategic Plan for Transit Station Areas; Accessed February 2019, http://www.viainfo.net/wp-content/uploads/2018/05/07-2016_1220_Vision_2040_Strategic-Plan-for-Station-Areas_FINAL.pdf. Data generated by Center for Neighborhood Technologies using multiple data sources, including American Community Survey (ACS) 2013 data – for more information see: http://htaindex.cnt.org.

station policy include plans for housing near transit station areas, providing people with economical and frequent transit options to destinations throughout the region.

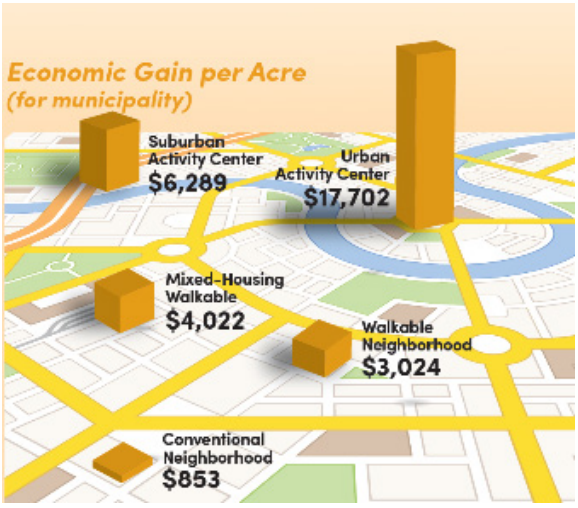
Coordinating with Regional Partners

VIA, the City of San Antonio, and other partners understand that a growing community means there will be an increased demand for transportation services and growth in residential and commercial centers throughout the region. Over the last five years, VIA advanced innovative partnerships with municipalities, regional housing agencies, and private investors to develop and endorse policies that promote walkable, compact, and mixed-use developments with access to frequent transit services. In its long range planning activities for its recent plan update, Vision 2040, VIA noted that it is not enough to meet existing needs; VIA and its regional partners must continuously plan for the future.

Coordinated planning is critical to creating great places and providing real choices in transportation. While driving is the dominant form of transportation today, VIA and its partners are planning for a future where walking, bicycling, or taking rapid transit are fast, reliable, and cost-effective. VIA recommendations for transit station policy include plans for pedestrian-oriented design, ample housing across a ranges of prices near transit station areas, and vibrant spaces that offer frequent and economical transit options. To implement transit supportive land use policies and the resulting transit oriented communities (TOC) and transit oriented development (TOD), VIA is coordinating with partners through joint development agreements, regional coordination, and implementation of proven strategies to develop successful transit stations.

Setting a Vision for Transit-Supportive Land Use

In 2013, VIA began to define a vision for transit supportive land use in the San Antonio region by conducting workshops with partners from the City of San Antonio, the San Antonio Housing Authority (SAHA), local economic representatives, and others to create a station area typology. The participants worked together to determine what types of land use, density, urban form, and transit service could be expected across a range of transit station types. They also discussed the future demand for TOD in the region and its benefits for developers, residents, visitors, employers, and taxpayers.



These conversations led to the development of the Transit Supportive Land Use (TSLU) Guide in 2014. At the same time, VIA led a study to examine policies in the City of San Antonio as well as those in other municipalities served by VIA to determine where TSLU policies existed and where recommendations could be made for TSLU policies in future plans and development code updates. This study resulted in a TSLU Toolkit, which defined notable practices for land use policies that promote walkable communities supported by high frequency transit. VIA led another study that examined notable practices for co-locating housing and rapid transit, recognizing that density and urban form play a role in transit's success and that high quality, rapid transit located near housing

can reduce the combined cost of housing and transportation. This study resulted in another toolkit: the Strategic Housing Policy for High Capacity Transit Corridors. Each of these documents was used to advance the conversation in the region about the important relationship between land use and transportation choice.

Implementing the Vision for Transit-Supportive Land Use

Stemming from these workshops, an Interagency Committee took form to continue the conversations about transportation and land use coordination, promote coordinated planning, share information, coordinate community outreach activities, and support grant applications. VIA and SAHA officially formed the committee, in which city planning and transportation officials also participated. VIA continued to advance the consideration of land use and transit in the region, providing input into the City of San Antonio's 2016 Comprehensive Plan. The transit agency also developed a Strategic Plan for Transit Station Areas (2016) that provides an overview of key issues regarding growth and transit and land use coordination and defines the benefits of a coordinated approach to station area development and catalytic investment. It also describes the discrete roles that regional agencies serve in supporting the enhancement of local communities with high quality walkable environments served by rapid transit. As of 2019, VIA is completing Urban Design Guidelines for Transit Station Areas close cooperation with agency partners.

Land use plays a critical role in transportation choices. Continued emphasis on urban design and land use plans, policies, and investments that facilitate multimodal transportation options is essential to efficiently increasing transportation choice across many geographies.

Benefits/Outcomes

- By inviting partners to the table to discuss the future of land use and to define qualities of future station areas, VIA established lasting partnerships and developed forward thinking policy documents that included partner priorities, such as those from the City of San Antonio, focused on land use planning and policy.
- The VIA/SAHA Interagency Committee created an avenue for ongoing planning discussions, opportunities for coordination of investments and services, and a platform for information sharing. The agencies and city also were able to use this committee to discuss and provide input to federal grant applications. Working with partners, in December, 2018 VIA was awarded an Access and Mobility Partnership Grant by the Federal Transit Administration.
- The collaborative process enabled VIA to be an important partner in planning and policy-making. For example, the City of San Antonio developed 'Place Types' in the 2016 comprehensive plan, and VIA and the city merged these place types with the VIA station area typology to have an aligned approach to station area planning and development in future years.

Partners

- VIA Metropolitan Transit
- City of San Antonio
- San Antonio Housing Authority

Lessons Learned

The following lessons from this case study may be transferable to local and regional agencies throughout Florida:

- While transit agencies do not have land use authority, they can still coordinate with jurisdictions to influence land use policies that support transit as a choice, such as those that promote accessible, walkable communities.
- By inviting partners to the table, agencies can create opportunities to develop relationships, improve communication, and advance policies that promote transportation choices that address equity, by lowering the combined cost of housing and transportation (H+T) to be the recommended 45% H+T guideline.
- Creating community type or station area typologies communicates to partners, developers, local decision-makers, and the public what land use changes might look and feel like in their community. Using typologies and visualizations can be important tools when communicating with underrepresented communities.
- Clarifying roles and responsibilities of coordinating agencies and partners that have authority or influence in station area development/redevelopment can improve communication about station area project development and design.

California CalEnviroScreen: Using Tools and Data to address equity

This case study demonstrates how the application of tools and data, combined with equity-forward policies, can promote transportation infrastructure for active transportation, making it possible for bicycling and walking to become more competitive transportation options.

Overview

This example demonstrates how the application of tools and data, combined with equity-forward policies, can lead to investments in transportation infrastructure that provide more choice for active transportation. California's CalEnviroScreen (CES) tool, shown in Figure 3, is used to identify and provide new transportation infrastructure in disadvantaged communities, "based on geographic, socioeconomic, public health, and environmental hazard criteria." To define at-risk communities, the state developed CES, an interactive, web-based screening map tool that ranks California communities by census tract based on cumulative scores of socioeconomic and environmental risk criteria.[33] Each census tract is given a

[33] For more information, visit https://oehha.ca.gov/calenviroscreen.

percentile score from 0 to 100 based on its cumulative risk of exposure to pollutants, adverse environmental conditions, prevalence of adverse health conditions, and socioeconomic risk factors including poverty, educational attainment, housing cost burden, linguistic isolation, and unemployment.

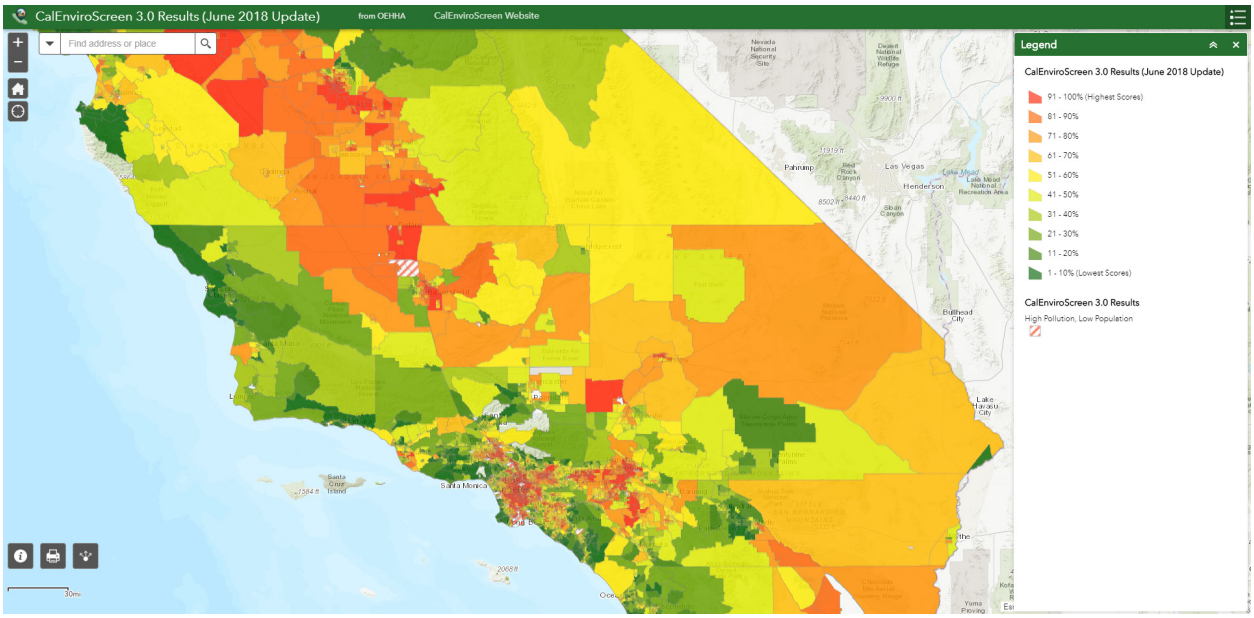


FIGURE 3. CALENVIROSCREEN 3.0

To ensure that CES reflected community input and agency buy-in, a working group consisting of representatives from state and regional agencies, academic partners, and community-based organizations was consulted in the development process. The CES is updated periodically to reflect new data and findings. Whenever CES undergoes an update, a series of workshops are held across the state to share the new release, answer questions, and take public comment.

Application of CES

The CES tool is being used by localities in transportation planning. For example, the Los Angeles County Mobility Plan (General Plan Element) is using CES 3.0 to "prioritize transportation decisions based upon outcomes of safety, public health, equity, environmental justice, language and physical access, social benefits, and economic benefits."[34]

CES also was a key component in the California Department of Transportation's (Caltrans) competitive grant programs, including the Active Transportation Program (ATP), which encourages increased use of active modes of transportation.[35] Twenty-five percent of the ATP program funds are set aside for ATP projects in 'disadvantaged communities' defined by California SB 535 as census tracts within the top 25

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34 Update to the California Communities Environmental Health Screening Tool,3.0, Matthew Rodriquez, Secretary, California Environmental Protection Agency, January 2017, Lauren Zeise, PhD, Director, Office of Environmental Health Hazard Assessment.

35 For more information, visit http://www.dot.ca.gov/hq/LocalPrograms/atp/.

percent of CES scores), while an additional two percent is set aside to fund active transportation planning in these disadvantaged communities. According to the grant program guidelines, a project is not presumed to provide a benefit to a disadvantaged community simply because it is located within one. Applicants "must clearly demonstrate, with verifiable information," how the project will provide a direct, meaningful, and assured benefit; significantly address an important community need; and avoid substantial burdens on a disadvantaged community.[36] As non-motorized/active transportation networks become more complete in underserved communities, the option of taking some trips by foot or bicycle increases. Even if active transportation choices are not feasible for commute trips, there are many other trips that could be conducted through active transportation. By making these choices possible, public health goals also can be advanced through a net increase in physical activity.

Benefits/Outcomes

- Through CES, Caltrans instituted a consistent, statewide analysis tool that identifies communities of need based in part on demographic factors such as poverty, minority populations, educational attainment, housing burden, linguistic isolation, and other measures.
- CES is data-driven and transparent, with information-based summaries that can be depicted and analyzed visually using mapping tools.
- CES enabled the integration of considerations of equity in broader performance-based investment decision-making processes at the statewide level.

Partners

- California Environmental Protection Agency (CalEPA)
- Office of Environmental Health Hazard Assessment (OEHHA)
- California Air Resources Board (ARB)
- California's local jurisdictions that use CES

Lessons Learned

- A data-driven approach to equity analysis based on consensus demographic factors can yield a widely accepted definition of historically underserved communities.
- A transparent equity analysis methodology that reflects research consensus and includes community-based buy-in is critical for gaining approval and ownership of outcomes.
- A web-based map interface can make the tool and the analysis more accessible to agencies, stakeholders, and the public.
- Consensus on the definition of underserved communities enabled the state to implement considerations of transportation equity alongside other performance-based issues (e.g., mobility, safety, economy, environmental quality) in the programming and funding process.

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[36] Information sourced February 2019, CTC. May 2018. 2019 Active Transportation Program Guidelines, p. 9. http://www.catc.ca.gov/ programs/atp/2019/docs/051618_2019_ATP_ Guidelines_Final_Adopted.pdf.

- Ensuring stakeholders are included in the development process and have ownership of tool outcomes can yield better results when applying a tool.

Polk County Transportation Planning Organization, FL: Mobility Audits

This case studies describes the Neighborhood Mobility Audit process, which provides an innovative, proactive approach to meeting Title VI and environmental justice requirements. This approach develops and prioritizes projects that have a meaningful impact on and increase transportation choice in underrepresented communities.

Overview

Polk County is in the heart of central Florida. The county has 17 municipalities, ranging from rural villages to metropolitan areas. There are also 24 unincorporated, populated areas in the county. To improve access across this diverse county, in 2015, the Polk Transportation Planning Organization (TPO) developed an approach to identify and prioritize projects for its communities. With low-income and minority households more dependent on alternative modes of transportation, such as transit, walking, and bicycling, the Polk TPO developed a formal transportation equity evaluation process known as Neighborhood Mobility Audits (NMA) and used this tool to evaluate neighborhoods identified as Environmental Justice Planning Areas (EJPA).

The purpose of the NMAs was to determine how to improve access to jobs, education, and services for the underserved populations located within the TPO's jurisdiction. The methodology of the NMAs includes the steps shown below.[37]

1. Define Neighborhood—Use Census Block Group data (American Community Survey) to identify "underserved areas"—areas with a high concentration of persons living below the poverty level and non-white or Hispanic populations. Local government representatives (TPO Technical Advisory Committee) confirm neighborhood boundaries.

2. Prepare Neighborhood Overview—Identify community services and places within or near neighborhood—locations an average household must access to meet their daily needs. Quantify and describe employment and commute patterns.

3. Review Existing Infrastructure and Safety—Inventory infrastructure or facilities related to walking, bicycling, and transit. Review bicycle and pedestrian crash history.

4. Evaluate Neighborhood Access to Community Services and Places—Assess the potential for residents to walk, bike, or use transit to access essential services. Apply the "Walking Access,"

[37] Polk County TPO Mobility Audit Brochure, accessed February 2019, http://www.floridaplanning.org/wp-content/uploads/2017/05/Exhibit-3-Neighborhood-Mobility-Audit-Brochure.pdf.

"Bicycling Access," and "Transit Connectivity" indices. Identify gaps in the transportation network or barriers that may hinder travel by area residents. Apply "Gaps" and "Barriers" indices.

5. Identify Mobility Improvements—Identify improvements (e.g., sidewalks, pedestrian crossings, bicycle lanes, and enhanced transit access) that will increase safety and mobility.

6. Interact with Neighborhood Residents—Learn how residents travel to key locations within the neighborhood and what they recommend as the most needed transportation improvements.

7. Prioritize Improvements for Funding and Implementation—As part of the TPOs Transportation Improvement Program (TIP).

8. Meet with Local Government Contacts—Confirm mobility improvements identified for each neighborhood. Identify three to five key improvements that are prioritized for funding and implementation.

These steps are critical to identifying mobility improvements, actively engaging the public, and reaching consensus with local governments as to those projects that should be prioritized for funding.

Local Government and Community Outreach

The TPO staff met with local staff to discuss the results of the NMAs and the public comments from people in the neighborhoods. These discussions resulted in three to five transportation projects for each neighborhood that the TPO prioritized for funding as part of the TPO's TIP. The TPO also encouraged local governments to submit mobility audit projects for funding. Following the first round of the audits, seventeen candidate projects were prioritized and submitted to FDOT for funding. Ten of these project received over $10 million in work program funding.

The TPO also identified over 250 recommended mobility improvements as a result of the mobility audits. These improvements include: transit route additions and modifications; the addition/reconstruction of sidewalks, bicycle lanes, sharrow/shared-lane markings, and multi-use trails; enhanced pedestrian crossings, pedestrian flashing signals, and rail safety improvements; and streetscape projects."[38] In addition, the TPO conducted a comprehensive public involvement effort to notify the members of the EJPAs and to gather input for the audits. An example map of the EJPA areas is shown in Figure 4. After each audit was completed, the TPO staff conducted follow-up public outreach efforts in each neighborhood by conducting in-person interviews at a neighborhood store and through written surveys. In total, the TPO received input from 348 people from the affected neighborhoods.[39]

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[38] American Planning Association Florida Chapter, Annual Project Awards Application, accessed February 2019: http://www.floridaplanning.org/wp-content/uploads/2017/05/FAPA-Award-Application-2017-Polk-TPO-Neighborhood-Mobility-Audits.pdf.

[39] American Planning Association Florida Chapter, Annual Project Awards Application, accessed February 2019: http://www.floridaplanning.org/wp-content/uploads/2017/05/FAPA-Award-Application-2017-Polk-TPO-Neighborhood-Mobility-Audits.pdf.

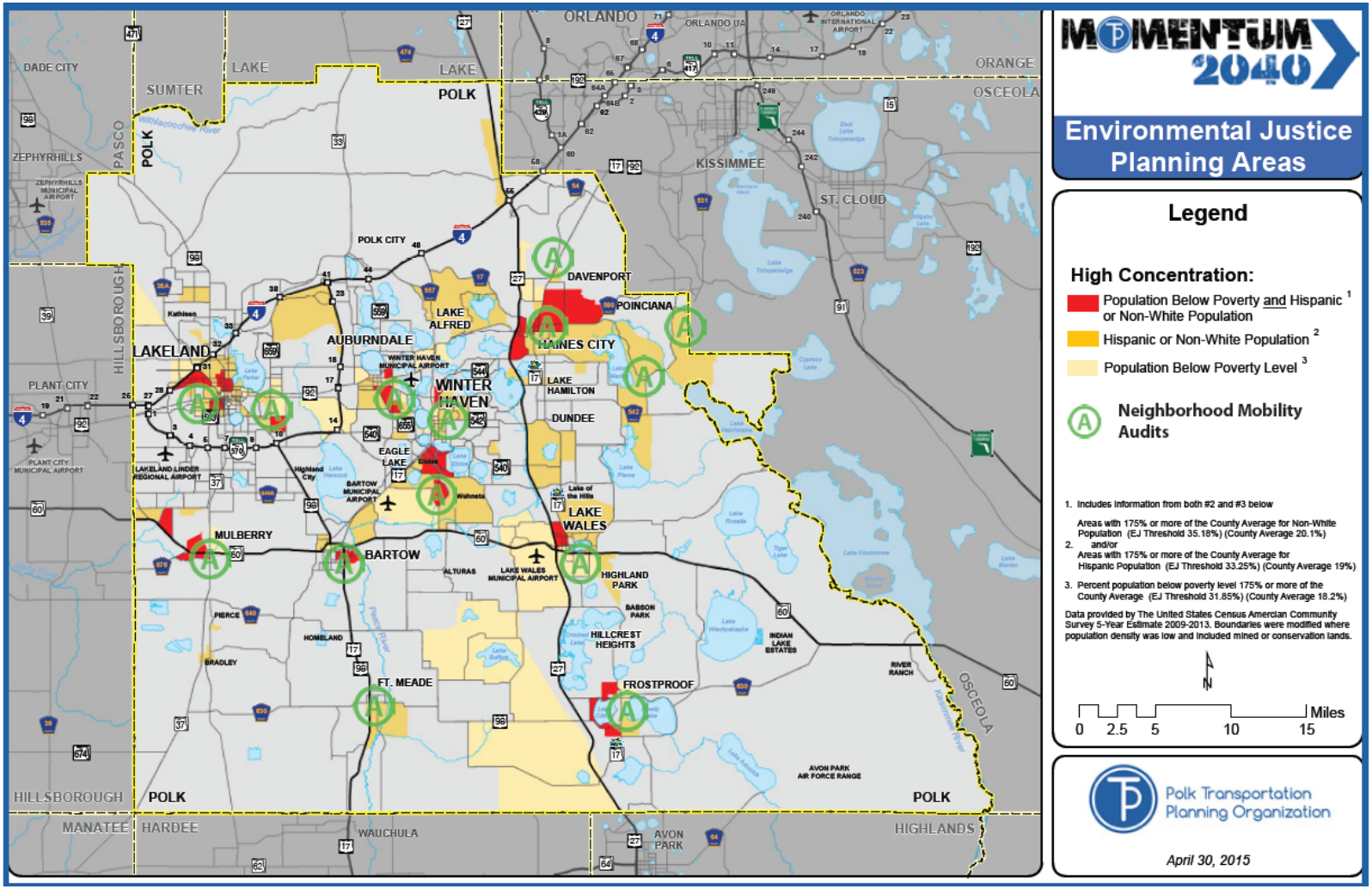

FIGURE 4. ENVIRONMENTAL JUSTICE PLANNING AREAS FOR TPO NEIGHBORHOOD MOBILITY AUDITS

Benefits/Outcomes

- The overall Mobility Index score for the identified underserved neighborhoods were incorporated into the Polk TPO's project prioritization processes to determine how to best use planning funds for mobility improvements.
- The neighborhood mobility audits identified not only existing needs but also the barriers to implementing improvements, which provided an additional factor for guiding planning decision-making.
- The index for measuring transit connectivity used in the NMAs provided a unique way for measuring existing levels of transit service to projected needs of largely transit dependent neighborhoods.
- The NMAs successfully engaged people within the neighborhoods, to provide projects tailored to the communities stated needs.

Partners

- Local governments
- Livable Polk Initiative
- Lakeland Area Mass Transit District (Citrus Connection)

Lessons Learned

- Including key components of transportation choices, such as walking, bicycling, and transit, in the individual indices used to calculate the overall Mobility Index directly helps identify where there is need for additional infrastructure for these transportation options.
- NMAs allow for one-to-one comparisons of underserved neighborhoods and help direct available funding to where the greatest needs exist.
- Providing community and neighborhood groups with both the methodologies and results of the NMAs provides members of underrepresented populations a sense of inclusion in the planning process and communicates how decisions about investments are made.

Industry Guidance

Recent, relevant guidance resources on transportation equity include the following:

- **Transportation Equity Network**. The Transportation Equity Network is a grassroots network of community organizations working to build healthy, equitable communities through transportation funding, policy, and projects. It provides resources and links on transportation equity, with a focus on economic development and access to jobs.[40]

[40] Information sourced February 2019, http://www.transportationequity.org/.

- **National Association of City Transportation Officials (NACTO) and the Better Bike Partnership**, *Strategies for Engaging Community*.[41] Issued in September 2018, this report advises local governments, community organizations, and shared transportation providers on how to engage and establish relationships with historically underserved communities.
- **FHWA Environmental Justice guidance**. This FHWA website provides an overview of federal guidance on identifying and addressing disproportionate impacts of state Department of Transportation policies on low-income and minority populations.[42]
- **Environmental Protection Agency**, *Strategies for Advancing Smart Growth, Environmental Justice, and Equitable Development.*[43] This 2013 report offers low-income, minority, and overburdened communities and Tribal governments a menu of land use and community design strategies that bring together smart growth, environmental justice, and equitable development principles. Community-based organizations, local and regional decision-makers, developers, and others can use it to help revitalize their communities.

Key Findings

The case studies provide key findings and lessons learned that could be applicable to local and regional agencies throughout Florida. General observations among the examples are:

- **Expanding transportation choices is essential for promoting opportunity and engagement in disadvantaged communities.** Low-income, minority, disabled, single-parent, and linguistically isolated residents disproportionately bear the burden of limited transportation options. Expanding access to transit, bikeways, and pedestrian infrastructure provides households of limited means with a more cost-effective way to access jobs, education, healthcare, and other essential services.

ENVIRONMENTAL JUSTICE (EJ)

According to the Federal Highway Administration (FHWA): "Environmental Justice means identifying and addressing disproportionately high and adverse effects of the agency's programs, policies, and activities on minority populations and low-income populations to achieve an equitable distribution of benefits and burdens."

- **Use spatial data to identify underrepresented communities.** Socioeconomic data such as income, minority status, and limited English proficiency can be used to identify and target transportation investments in traditionally underserved communities.
- **Make equity a central component of investment decision-making.** To ensure transportation choices are enjoyed by even the most disadvantaged communities, agencies should consider equity

41 Information sourced February 2019, https://nacto.org/wp-content/uploads/2018/09/NACTO_BBSP_2018_Strategies-for-Engaging-Community.pdf.

42 Information sourced February 2019, http://www.fhwa.dot.gov/environment/environmental_justice/.

43 Information sourced February 2019, https://www.epa.gov/smartgrowth/creating-equitable-healthy-and-sustainable-communities.

alongside mobility, safety, and other traditional performance criteria. These criteria can be used to prioritize regional transportation investments, as well as to support competitive grant programs aimed at expanded transportation choices.

- **Include voices of people that are traditionally underrepresented in the development of equity solutions.** Implementing equity for transportation choices requires engaging with people in underrepresented communities and assessing their transportation needs.
- **Strive for transparency.** Equity approaches should be publicly available, clear, and if possible, map-based to promote understanding of the purpose, methods used, and outcomes desired.

Case Study: Coordinated Services

Why This Topic Matters

Public agencies are testing strategies to coordinate with public and private partners in the use of new technologies to improve transportation choices by providing better coordinated services, coordinated travel, and coordinated payment. These strategies are expanding transportation choice across a range of service types to improve convenience and save travelers time when providing mobility and access for customers. As multimodal transportation services are better coordinated, these options, such as choosing transit or bikeshare, can become more attractive. Examples of coordinated services improvements include:

- Services provided by the public sector, such as enhanced schedule coordination for public transit and paratransit services or coordinated payment systems.
- Services provided by the private sector, such as ride share services and taxis.
- Other shared services that might be provided by the public or private sector independently or as a joint effort, such as bicycle and scooter sharing.

For instance, a commuter might use a local bus service or a rideshare option to connect to a regional transit service, while enjoying the convenience of a single payment method and time savings due to schedule coordination.

Travel by personal vehicle can be convenient due to the point-to-point travel it enables on a person's individual schedule. However, use of a privately owned automobile for transportation can be costly, especially when compared to transit, walking, or bicycling. Many people purchase automobiles even though the cost of ownership and maintenance absorbs a large percent of their income, because they do not perceive other options as convenient, frequent enough, or reliable enough to reach their daily destinations. To compete with car ownership, coordinated services must offer alternatives that provide travel time, reliability, convenience, and costs that are fairly close, if not the same as travel by a privately owned automobile.

In recent years, the private sector's participation grew in the transportation industry, from data management, phone apps, and new technologies to ridesharing and other shared mobility services, such as shared scooters or bicycles. This growth is leading to an expansion of the transportation choices available to customers and increased customers' expectations for convenience, cost, and service. Travelers seek to mix services and modes to reach their destinations in efficient and easy ways, with convenient transfers between services or modes and using a single payment system or single fare. This case study describes the public sector role and notes relevant technologies in two key elements in providing coordinated transportation services to customers: coordinated travel and coordinated pay.

Coordinated travel is the provision of services in a coordinated way so a customer's ability to make an end-to-end trip using multiple services or modes is convenient and efficient. This means schedules among services are coordinated to ensure a traveler transferring from one service or mode to another for legs of a journey experiences minimal time delays. This also may include real-time information updates

on delays, construction detours, or schedule or fare changes dynamically to assist customers in planning their trips.

Coordinated pay systems are mechanisms that allow transportation customers to use more than one service while only needing to use a single fare or fare payment medium. Coordinated payment platforms also may support a diverse customer base by offering solutions for the unbanked and technologically non-adept, as well as provide improved services for non-local customers, such as visitors and tourists, and adaptive services for those with limited language proficiency.

Where Are Coordinated Services Implemented?

FDOT conducted a national scan to identify agencies that are coordinating payment and travel systems. Table 3 highlights some of these agencies and summarizes their activities. The scan included research into notable practices or innovative approaches in both urban and rural areas.

TABLE 3. SCAN OF AGENCIES COORDINATING SERVICES

Agency or Organization	Strategies/Action	Outcomes	Relevance to Florida
Los Angeles County Metropolitan Transportation Authority (LA Metro) *Los Angeles, CA*	• TAP Card electronic fare payment	• Seamless connectivity • Customer convenience	• Similar development patterns • Customers able to cross jurisdictions without changing transit payment or service
Metropolitan Atlanta Rapid Transit Authority (MARTA) *Atlanta, GA*	• Breeze Card electronic fare payment	• Convenience of connections; built-in transfers • Emerging/evolving technologies	• Flexibility in implementing technology solutions • Similar customer expectations on payment systems
Jacksonville Transportation Authority (JTA) *Jacksonville, FL*	• TransPortal Multimodal trip planning application	• Interregional travel	• Diverse visitor population • Tourist friendly • Applied in Florida
Central Florida Transportation Authority (SunRail and Lynx) *Orlando, FL*	• Multimodal accessibility • First-/last-mile connections	• Public-private partnerships • Commitment to transit operations (increasing ridership)	• Regional and local integration • Private-sector innovations • Applied in Florida
Dallas Area Rapid Transit (DART) *Dallas, TX*	• Coordination of regional transportation	• Efficiency and convenience of connections	• Similar development patterns • Multiple providers in separate agencies

Agency or Organization	Strategies/Action	Outcomes	Relevance to Florida
Puget Sound Regional *Seattle, WA*	• ORCA Card electronic fare payment	• Payment platform accepted by seven transit agencies	• Cross-agency implementation • Multi-jurisdictional management structure
Metropolitan Transportation Commission (MTC) *San Francisco, CA*	• Clipper Card electronic fare payment	• Interregional travel options	• MPO implementation model of coordinated payment.
Maryland Transit Administration *Baltimore, MD*	• Charm Card electronic fare payment	• Multimodal fare payment for bus, light rail, and subway	• State implementation model of coordinated payment
Gainesville, Florida, University of Florida student union	• Microtransit	• Improved safety • Expanded access	• Applied in a Florida community
Pinellas Suncoast Transportation Authority (PTSA) *Pinellas County, FL*	• Microtransit	• Reduce cost • Expands access • Increases convenience • Makes transit a more comparable option	• Applied in a Florida community

Following this initial phase of analysis, four agencies were selected for case studies based on the notable practices demonstrated, lessons learned, and potential transferability of findings to local and regional agencies throughout Florida:

- **Pinellas Suncoast Transportation Authority (PTSA).** In testing and expanding innovative mobility on demand services, PSTA demonstrates strategies to manage transit agency costs while at the same time providing better, faster, and more economical options for people to travel within the county. This case study demonstrates how agencies can adapt and innovate to increase transportation choice.
- **Metropolitan Atlanta Rapid Transit Authority (MARTA).** This case study highlights MARTA's continued adoption of next-generation payment technologies and provides an example of coordinated local transit services. The case study demonstrates considerations for advancing implementation of payment technologies that can ultimately increase ease and convenience for customers of the transit system.
- **Los Angeles County Metropolitan Transportation Authority (LA Metro).** This case study provides an example of coordinated fare payment across multiple county and municipal transit services, with evolving incorporation of bikeshare systems and TNCs. The case study demonstrates successful implementation of payment technologies that work across multiple modes of travel to increase ease and convenience for customers of an integrated multimodal transportation system.
- **Jacksonville Transportation Authority (JTA).** This case study demonstrates an approach to provide centralized information about multimodal transportation offerings across a 12-county region of Northeast Florida. The strategy impacts transportation choice by increasing the convenience of trip planning and increasing the public awareness of transportation options through a singular platform.

This strategy also can help people decrease overall time dedicated to travel by having better information about which services are available and when they are provided.

Case Study Highlights

Pinellas Suncoast Transportation Authority, FL: Mobility on Demand Services

This case study demonstrates how agencies can adapt and innovate to increase transportation choice. In testing and expanding innovative mobility on demand services, the Pinellas Suncoast Transportation Authority (PSTA) demonstrates strategies to manage transit agency costs while at the same time providing better, faster, and more economical options for people to travel within the county.

Overview

PSTA provides transit services for Pinellas County, Florida. The area has a population nearing a million people and 24 municipalities, 22 of which are served by PSTA.[44] Like many other communities in Florida and across the Nation, the county faces limited transportation budgets, increased congestion, and falling transit ridership, in part due to the relatively low cost of gas**.** Since 2016, PSTA has been testing and expanding innovative mobility on demand services. These program were designed to manage agency costs while at the same time providing better, faster, and more economical options for people to travel within the county. This case study demonstrates how agencies can adapt and innovate to increase transportation choice.

In 2014, a transit referendum called 'Greenlight Pinellas' that would have provided additional funding to PSTA failed to pass. The agency was faced with having to cut up to five of 43 routes. These cuts would cause hardship for riders that relied on the transit service. Exploring alternatives, PSTA planners reviewed a unique, recent program piloted in Gainesville, Florida. A student association at the University of Florida experimented with paying for half of any student's Uber ride fare within a geofenced area near the campus on weekend nights to reduce driving after parties, thereby increasing safety on roadways. This led PSTA planners to consider potential partnerships with Uber, local taxi, and paratransit services, with the idea that these services could replace low-ridership routes or serve as connectors to more frequent routes.

In February 2016, PSTA launched a pilot program called Direct Connect, replacing a transit circulator in the City of Pinellas Park. This pilot service allowed people originating within a zone to use apps or call to get rides within a 20 minute window. Planners designed Direct Connect to complement, not compete, with local transit. Direct Connect rides began and ended at fixed locations, including the Pinellas Park Transit Center, where they could connect to multiple PSTA buses with frequent service. PSTA covered 50 percent of the cost, up to $3.41. The agency involved the local taxi company, so riders would not have to

[44] Bonnie Epstein, Transportation Planner, July 30, 2018 Presentation at the APTA Sustainability & Multimodal Planning Workshop, Vancouver, BC.

use a cell phone app to use the service. PSTA also made available wheelchair-accessible paratransit vehicles so riders with disabilities would be able to use the service.

The program expanded in January 2017, allowing riders to call an Uber, Lyft, taxi, or wheelchair-accessible vehicle not only in the two designated zones, but across the county. Riders could also be picked up and dropped off at designated bus stops throughout the county. PSTA would pay the first $5.00 of the ride, which was less than the least-efficient bus routes cost per passenger-trip.[45] The ride had to start and end within one of eight designated zones throughout the county.

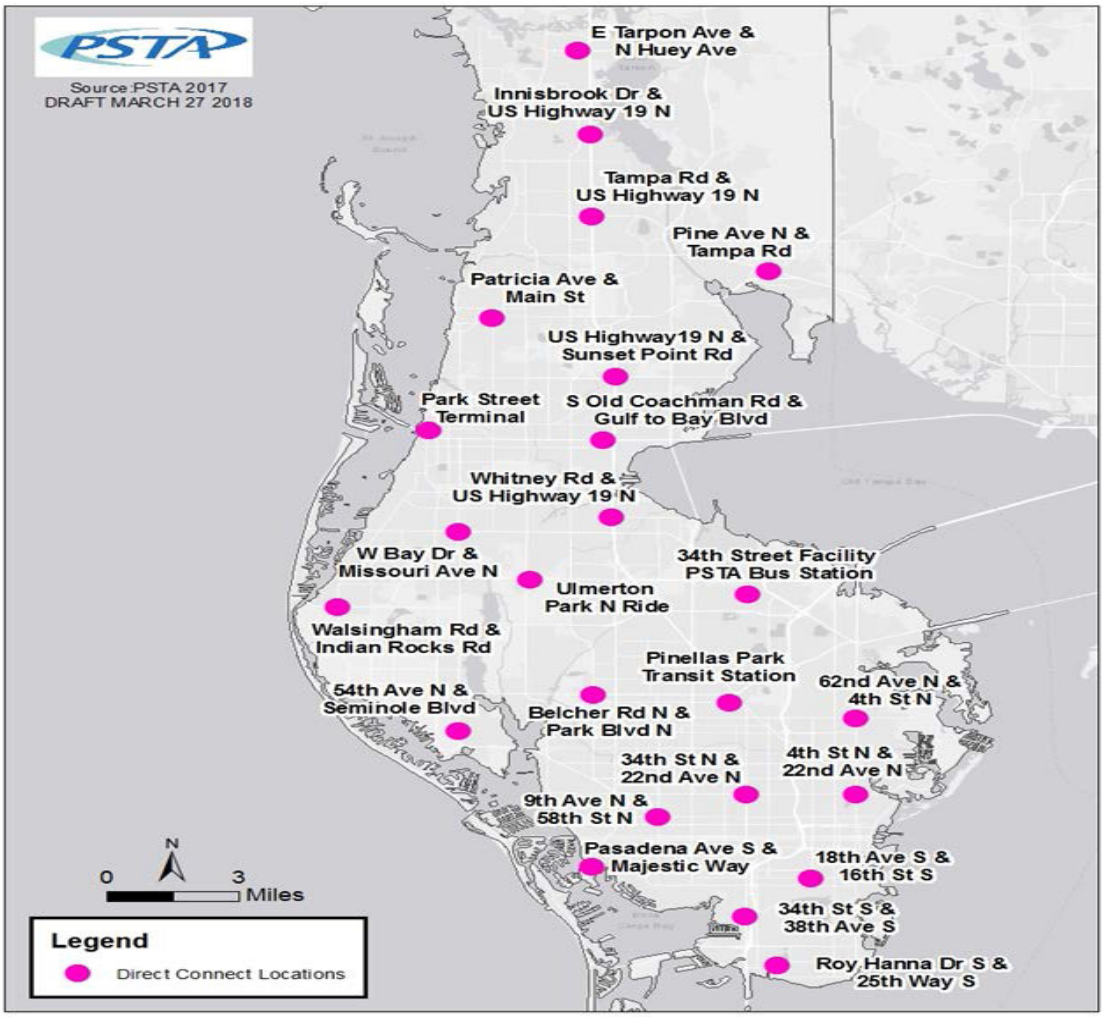

FIGURE 5. PSTA DIRECT CONNECT SERVICES MAP (DRAFT, 2017)

Based on feedback from riders that the zones were confusing, in April 2018, PSTA eliminated the zones and tripled the number of pickup/drop off points to 24.[46] PSTA's goal was to shuttle riders to the core bus

[45] Information sourced February 2019, https://medium.com/sidewalk-talk/where-new-mobility-and-traditional-transit-are-actually-getting-along-15b235242430.

[46] Information sourced February 2019, https://medium.com/sidewalk-talk/where-new-mobility-and-traditional-transit-are-actually-getting-along-15b235242430.

routes that had more frequent (15-20-minute) service, so riders could catch a bus with limited waiting after they are dropped off by a Direct Connect service. This change meant that riders could get partially subsidized TNC/taxi or paratransit to or from a network of fixed stops that connect to PSTA's core bus routes. Direct Connect functions as a 'micro transit' system with smaller vehicles feeding into fixed route system. The micro transit bridges the first/last mile. Wheelchair service was made available for $25 per trip. This service reduced traveler costs and travel time and increased access to destinations within the county.

The program led to improved services for customers at a reduced cost for the agency. The costs associated with the program ranged from about $40,000-$60,000 per year, with the savings due to the innovative partnerships being reinvested in core bus network.[47] For customers, the program expanded transit access in the county and increased the overall convenience of transit for people who do not live or work along corridors that have high frequency service transit. Direct Connect made transit a more competitive travel option by making it easier to access transit service, while minimizing the time it takes to plan a trip, wait for transit, or transfer between routes.

While the agency saw a positive response from the public, improved service, and cost savings, PSTA experienced several challenges in developing and implementing the program. When initiating the pilot, the contracting proved challenging, as the agency procurement department was not accustomed to these types of relationships with the public sector and did not have models for contracting.

Privacy concerns were also a challenge. PSTA coordinated with Uber to acquire information about the most used pick up and drop off locations, average response time, and average distance traveled on a monthly basis. However, citing the privacy concerns of its riders, Uber would not share the more granular data that PSTA needed to inform its planning decisions, such as origin and destination, time of trip, total cost of trip, and contact information. Without contact information, PSTA was unable to survey users regarding their satisfaction with the program.[48]

New mobility on demand services: Transportation Disadvantaged (TD) Late Shift and Healthy Hop in Tarpon Spring:

PSTA expanded the mobility on demand program 'Direct Connect' concept into a series of additional, targeted programs designed to improve services and equitable access for specific populations:

- **Mobility on Demand Response Transit (DART) Sandbox—Paratransit Project.** The Mobility on Demand Response Transit (DART) Sandbox began as a pilot, partnering with Uber, Lyft and taxis to provide on-demand (rather than scheduled) trips to work, school, medical, and shopping areas for eligible paratransit customers. The purpose of DART is to 'improve transit efficiency, increase transportation effectiveness, and enhance customer service to paratransit customers.' DART is

[47] Information sourced February 2019, https://medium.com/sidewalk-talk/where-new-mobility-and-traditional-transit-are-actually-getting-along-15b235242430

[48] Information sourced February 2019, https://medium.com/sidewalk-talk/where-new-mobility-and-traditional-transit-are-actually-getting-along-15b235242430

designed for people who because of their disability cannot safely and independently use the bus. Trips are dispatched by PSTA, and multiple service providers help keep wait times low.[49]

- **Transportation Disadvantaged (TD) Late Shift.** The state-funded TD Program provides subsidized transportation to persons who because of physical or mental disability, income status, or age are unable to transport themselves or to purchase transportation and are, therefore, dependent upon others to access healthcare, employment, education, shopping, social activities, or other life-sustaining activities. PSTA leveraged this program by creating 'TD Late Shift' in August 2016 to provide low-income residents no-cost transportation to and from work when bus service is not available. Participating residents can take up to 25 free trips to or from work in a month. Each ride must occur between 10:00 p.m. and 6:00 a.m. and must begin and end within Pinellas County. To implement the program, PSTA partnered with private partners including Uber, United Taxi, and Care Ride (wheelchair provider) to provide point to point transportation service. TD Late Shift is especially critical in the tourism sector, where many low-income residents work at hotels and restaurants during the second and third work shifts that may run late into the evening.
- **Healthy Hop.** PSTA and the City of Tarpon Springs began the new Healthy Hop program in December 2018. The program, sponsored by the City of Tarpon Springs, provides transportation for low-income seniors. Program recipients receive two round trip or four one-way rides by Lyft, United Taxi, Care Ride, and Liberty Wheelchair, to get to medical appointments, pharmacies, and grocery stores. To qualify, residents of Tarpon Spring must be low-income senior citizens (age 65 or older).

Benefits/Outcomes

- Reduces costs for the agency and customers.
- Expands access and increases convenience50 for all customers, including late-shift workers and those with disabilities.
- Makes transit a more competitive option by providing first/last mile connectivity, adding convenience, reducing travel time, and improving reliability.

Partners

- PSTA
- TNCs
- Taxi services (United Taxi)
- Paratransit Services (Care Ride and Wheelchair Transport)

Lessons Learned

- Transit agencies must continue to adapt to a rapidly changing environment, and ride-hail partnerships are part of that change.

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[49] Information sourced February 2019, https://www.psta.net/programs/dart-ada-paratransit/.

[50] Information sourced February 2019, https://www.psta.net/programs/healthy-hop/.

- Considering innovative, new approaches to providing public transportation options can lead to improved service and reduced costs.
- Incremental actions such as pilot projects can allow agencies to experiment with and refine new approaches before making significant changes across the full transportation system.

Metropolitan Atlanta Rapid Transit Authority, GA: Breeze Card

This case study highlights the Metropolitan Atlanta Rapid Transit Authority's (MARTA's) continued adoption of next-generation payment technologies and provides an example of coordinated local transit services. The case study demonstrates considerations for advancing implementation of payment technologies that can ultimately increase the ease and convenience for customers of the transit system.

Overview

MARTA was formed in 1971 as a bus-only transit system and grew to coordinate existing bus service with a 48-mile light rail system that serves an estimated 62 million and 72 million passengers per year, respectively.

A leader in coordinated payment, MARTA was an early adopter of fare cards and first offered a magnetic stripe card in 2007. Over a number of years problems emerged with this payment medium as the stripes were prone to wear, and it was easy for thieves with card skimmers to steal stored balances.

FIGURE 6. MARTA BREEZE CARD AND KIOSK

MARTA sought an improved payment system that would allow customers the convenience of a one point of purchase fare card with the added safety and balance protection of smart chip technology. The result was the Breeze card, which allows commuters to choose from a variety of fare options such as daily, weekly, or monthly passes that can be purchased in person at MARTA retail stores, vending machines, or online. In 2014 MARTA launched its third generation Breeze card, a smart chip-based card with easy tap technology that allows fare payment when left inside a wallet or purse. The card must be tapped upon entering and exiting the MARTA rail system; if is not tapped upon exiting, any free transfers will not load onto the card.

As the time for Breeze card rollout approached, it was announced that the old token payment system would be phased out and balances not depleted on the older fare payment cards with the magnetic stripe would be lost. MARTA was faced with a wave of disapproval as existing customers were leery of both the new technology and the prospect of losing stored value represented by older fare cards and tokens. MARTA hired a public-relations firm, Jones Worley, to assist with the Breeze card launch. This firm developed the naming and branding of the Breeze card, launched a community/customer awareness initiative, and encouraged early procurement and familiarization with the new card system before actual rollout to ease the implementation process.

With the introduction of the new Breeze card, MARTA implemented a higher, flat fee structure of $2.50 (with four free transfers included) to replace the previous payment protocol where riders would have to pay separately for additional transfers. While those on shorter, direct routes realized a slight additional

cost, the majority of MARTA customers experienced added savings as their trips typically required at least one transfer. For added convenience, the free transfers were valid within a three-hour window, which meant that commuters could add an extra stop or two to their morning or evening trips, such as to pick up coffee on the way to the office or dry-cleaning on the way home.

The Breeze card initially was sold for $1.00; in 2018, MARTA announced an increase to $2.00 per card. To accommodate lower-income riders, the agency gave away over 55,000 Breeze cards to date. Even though the Breeze card is only two years old, MARTA is already moving to a smartphone payment application by advancing to a cloud-based Wi-Fi payment platform that will allow it to add bikeshares and TNCs that only accept cloud-based payment. Rollout is expected for 2019. With successful implementation, MARTA's next-generation coordinated payment system will enable its customers to make trips throughout the Atlanta region, across multiple modes of transportation, while seamlessly paying their fees and fares from their smartphones.

Benefits/Outcomes

A 2014 study of the new Breeze smart card implementation reported:

- A 12 percent overall increase in ridership, including a 22 percent increase in convenience customers (defined as those households with more than $30,000 in annual income).
- A four percent increase in passenger revenues. (The revenue increase was likely lower than ridership growth due to the free transfers included with the Breeze card rather than having customers paying for additional transfers with a token/ticket system).
- A 15 percent decrease in recorded crimes, which is attributed to the improved security of chip-card technology.[51]

Partners

- Cubic Transportation Systems Inc. (Breeze card)
- Kapsch (Smartphone payment application)
- Public relations firm, Jones Worley

Lessons Learned

- Addressing customer perception is key to the introduction of new payment technologies, as customers tend to initially perceive change as inconvenience.
- The realized benefits of newer payment platforms for customers, including convenience of use and account security, can be readily demonstrated in a short-term phase-in period.
- With TNCs and bikeshares accepting only cloud-based payments, agencies must advance to the same platforms to add these service partners to their chosen fare and make them part of the coordinated pay/travel system.

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[51] Information sourced February 2019, http://cdn2.hubspot.net/hub/330950/file-1603411794-pdf/blog-files/MARTA_CaseStudy_9.8.14.pdf?t=1469614733047.

LA Metro, CA: Transit Access Pass (TAP) card

This case study provides an example of coordinated fare payment across multiple county and municipal transit services, with evolving incorporation of bikeshares and TNCs. The case study demonstrates successful implementation of payment technologies that work across multiple modes of travel, for the purpose of increasing ease and convenience for users of an integrated multimodal transportation system.

Overview

Los Angeles County's suburban, post-war development patterns are similar to those throughout Florida. LA Metro is responsible for the planning, coordination, design/build, and operation of the transportation system in Los Angeles County, home to over 9.6 million people. It is a regional transit provider that operates nearly 100 miles of rail and busway services, has a fleet of over 2,300 buses, and connects to services provided by neighboring municipalities and jurisdictions.

LA Metro serves as an example for how collaboration among agencies and private ride-share offerings improves customer convenience. The Transit Access Pass (TAP) card is LA Metro's chip-based smart card electronic fare payment system, which is designed to streamline fare payment for Los Angeles County's multiple transit operators, as well as for those in neighboring regions.

LA Metro first initiated the TAP card for Los Angeles County service only. LA Metro reached out to all providers in the region and many initially did not want to participate. Cross-agency implementation only occurred where collaboration was desired. Subsequently, based on customer demand, other agencies decided to connect to the system. The TAP card is now accepted by 26 different agencies. It processes 29 million transactions (transactions include more than just ticket sales) per month at a value of approximately $12 million and is available for purchase at over 440 separate retail outlets.

FIGURE 7. LA METRO TAP CARD

TAP is migrating from its chip-based smart card to a smartphone based system that will offer coordinated payment for all existing regional transit agency agreements, along with bikeshare, parking, and electric vehicle car sharing. LA Metro operates its own bikeshare program and the TAP card also allows payment for bikeshare rental. Account loading for TAP will be available through smartphone apps (e.g., Android and Apple Pay) and PayPal as well as with credit/debit cards online, at TAP vending machines, via a call center or in-person at participating retail locations.[52] Loading TAP cards with cash is an option. Maintaining the retail outlet partnership allows unbanked customers an opportunity to pay cash, which ensures that equity and dignity are integrated into the coordinated payment system.

[52] Information sourced February 2019, https://www.metro.net/riding/fares/load-tap-card/.

Demonstrating real-time data integration and coordinated payment systems, LA Metro monitors traffic conditions and provide updates to riders that have downloaded their application(s). For example, if a smog alert is issued for Los Angeles County in the morning, TAP customers will receive an offer for discounted transit travel—potentially incentivizing more people to access transportation choices and minimize SOV trips.

Benefits/Outcomes

- Processes approximately 29 million regional transactions per month.
- Compatible across multiple agencies and jurisdictions.
- Consolidates more than 750 separate fare products for ease of use by customers.
- Currently supports LA Metro Bikeshare and will expand to include ride share services.
- Encourages accessing transportation choices such as bicycling with the convenience of a single-pay platform.[53]

Partners

- 27 participating transit agencies within and around the Los Angeles metropolitan area
- LA Metro Bikeshare within and around the Los Angeles metropolitan area
- Low-Income Fare is Easy (LIFE) Fare Subsidy Program
- Cubic (private vendor)

Lessons Learned

- Providing options for cash-loading, such as kiosks or retail outlets, can be considered a convenience to all, and can ensure access of new-payment platform technologies to unbanked and underserved customers.
- Agencies should plan implementation in phases to allow lag-time for retirement of older payment technologies. LA Metro provided time for customers to get used to the new card/system before eliminating tickets/tokens.
- Demonstrating benefits of technologies creates consumer demand for the technology and may bring initially reluctant partners on board.
- Coordinating payment for multiple modes of travel, such as bikeshare and transit, may support first-mile/last mile solutions by providing easy access to vehicles (e.g., scooters, bicycles) that can assist people traveling from their ultimate origin/destination to/from the transit stop or station.

[53] Information sourced February 2019, http://cdn2.hubspot.net/hub/330950/file-1603411794-pdf/blog-files/MARTA_CaseStudy_9.8.14.pdf?t=1469614733047.

Jacksonville Transportation Authority, FL: TransPortal

This case study demonstrates an approach to coordinate multimodal transportation offerings across a 12-county region of Northeast Florida. The strategy impacts transportation choice by increasing the convenience of trip planning and increasing the public awareness of transportation options through a singular platform. This strategy also can help people decrease overall time dedicated to travel by having better information about which services are available and when they are provided.

Overview

The Jacksonville Transportation Authority (JTA) is an independent agency serving Duval County, FL. The JTA responsibilities cross a range of transportation modes, including designing and constructing bridges and highways and providing a variety of public transit services.[54] In 2006 the JTA formed the Northeast Florida Mobility Coalition in recognition of the need to provide improved access to transportation services in and beyond its service area. Jacksonville, Florida, is the largest city in terms of square miles (875 sq. mi.) in the contiguous U.S. The service area includes several rural, or partially rural, counties.

FIGURE 8. MAP OF TRANSPORTAL'S TWELVE-COUNTY SERVICE AREA

After studying the existing levels of transit service, it was determined that there was a specific need to coordinate travel services and trip planning across the expanse of Jacksonville/Duval County and neighboring counties. In response, the JTA applied for and received a Federal Transit Administration (FTA) grant to create TransPortal. This application is a comprehensive, coordinated trip planning platform that supports a diverse range of multimodal transportation options including transit, paratransit, bicycling, walking, passenger rail, and car and vanpools through the ease of a one call/one click operation that allows customers to access scheduling information via computer or telephone. TransPortal was designed to provide a comprehensive listing of transportation services not only within the City of Jacksonville/ Duval County, but also to surrounding counties. The application was launched in 2014.

TransPortal improves the access to information and coordination of travel by providing costs, travel time, and service on all available transportation options in the Northeast Florida, including:

- Traditional transit and paratransit services
- Bikeshare programs

[54] Information sourced February 2019, https://www.jtafla.com/about-jta/.

- Car and van pools
- Volunteer driver programs
- Taxis
- Motor or long-distance coaches such as Greyhound and Megabus
- Passenger rail
- Social and not-for-profit agency services[55]

Benefits/Outcomes

- Provides access to an array of service schedules and data within a single user interface platform.
- Coordinates trip planning across modes, services, and providers for convenient travel scheduling, across a wide range of geographies, from rural to urban areas.

Partners

- FTA
- Twelve participating counties
- Coordinating Council on Access and Mobility (a council of federal agencies comprised of the U.S. Departments of Agriculture, Education, Interior, Health and Human Services, Labor, Transportation, and Veterans Affairs)
- Northeast Florida Mobility Coalition (this includes the transit service providers)
- North Florida Transportation Planning Organization (TPO)

Lessons Learned

- Having multi-county participation provides improved access region wide, from rural to urban areas, as well as the availability of diverse transportation options.
- The initial development of coordinated travel platforms positions agencies to more easily transition to next generation technology platforms as they become available.
- Primary transit agencies, such as the JTA, can lead implementation efforts for coordinated travel and pay systems, allowing smaller transit agencies to participate.

Industry Guidance

There is relatively little recent guidance on providing coordinated services. FTA provides a framework for communities to conduct self-assessments and offers guidance on strategies to coordinate human service

[55] Information sourced February 2019, Information retrieved from: https://www.facebook.com/JTAFLA/posts/transportal-a-one-callone-click-transportation-resource-center-was-launched-by-t/950284524988082/.

agencies that support transportation with public and private transit providers. This publication, *A Framework for Action, Building the Fully Coordinated Transportation System*, can be found online through the following website link:
https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FFA_Self_Assessment_Tool_.pdf

The National Association of City Transportation Officials (NACTO) provides guidance regarding the coordination of shared active transportation, *NACTO's Guidelines for the Regulation Management of Shared Active Transportation*.[56] Issued in July 2018, this document seeks to inform local governments and policy-makers of the issues related to the establishment and oversight of management practices related to shared active modes of transportation like bicycles and scooters. Key topics addressed include:

- Permitting
- Establishing company and city partnerships
- Public information networks
- Data requirements
- Safety standard
- Privacy standards for customers

Key Findings

The case studies provide key findings and lessons learned that could be applicable to local and regional agencies throughout Florida. General observations among the case studies are:

- There is **not a one-size-fits-all approach** to providing coordinated travel and pay solutions. For example, smaller service providers may want to take advantage of existing capabilities, such as Google Transit Feed Specification (GTFS), which delineates a common format for public transportation (e.g., schedule times, routes, stops or, for real-time data, the transit data feed of departures, arrivals, and services alerts). Larger providers with more transactions may prefer all-electronic capabilities. Some agencies may focus on pay enhancements first and others on travel planning and scheduling improvements, depending on local needs and demands.
- **Early adoption of technologies** is important because without a cloud-based mobile phone payment application it is not possible for an implementing agency to partner with TNC's or bikeshares that only accept smartphone payments.
- Regional agencies that are responsible for transportation across multiple jurisdictions are well positioned to coordinate payment systems. **Coordinate information** sharing among providers to support route planning and more convenient travel. Applications such as Google Transit provide this service for walking and transit; adding ride and bikeshare is a next step in a more complete coordination. **Align schedules and co-locate** services to reduce wait times and walking distances when transferring between services and modes. Coordinate with partners to accept other pay

[56] For more information visit: https://nacto.org/wp-content/uploads/2018/07/NACTO-Shared-Active-Transportation-Guidelines.pdf.

systems or establish **a common pay system** so customers need only use a single fare medium for multiple services.

- Since coordinated travel and payment technologies are still in a growth phase, public sector solutions are expected to be **implemented in phases over time**. As product cycles mature, scalability and cross-platform compatibilities will make it easier to find solutions that can be incrementally enhanced. Also, growth of the system should occur where regional agencies are already or willing to collaborate.
- The power of coordinated pay and travel is in **expanding coverage and connections of services**. For example, when an application can facilitate payment for both public transit and a private service (such as ride and bikeshare), it can enable a seamless travel experience and a convenient choice.
- **Common performance measures and standards for data collection and availability** are still being established. This could be a result of the agencies focusing on increasing ridership, reducing costs, and improving customer service and convenience without determining beforehand how performance metrics should be evaluated. It is especially important when coordinating with private companies to ensure equity provisions and data sharing are included.
- In identifying solutions, **all types of customers must be addressed**, although not necessarily in the same way. People who are not adept with technology or without access to smartphones should be accommodated. Information kiosks, as an example, may be important to provide information instead of relying solely on personal technology. Multiple languages and auditory/visual options are other considerations. Similarly, provide non-cash payment mechanisms that eliminate the need to collect cash onboard, thus decreasing delays in boarding and offering convenience to customers that do not carry cash.

Case Study: Managing the Curb

Why This Topic Matters

A "curb" is a raised edge along the side of a street, and for the purposes of this case study, the term is used generally to reflect the edge of the street. Managing the curb is shorthand for describing the activities that take place on the road and sidewalk sides of the curb, some of which are listed in Table 4 below. Activities continue to grow while the curb generally remains fixed. Leveraging the curb as an asset is important for transportation choices because of its critical role in providing access to/from destinations.

TABLE 4. USES OF THE CURB

Traditional Curb Uses	More Recent Uses	Emerging Uses
• Parking • Transit bays • Valet • Bus stops	• Bicycle facilities including protected bicycle lanes • Bus stop and amenities (shelters, benches) • Landscaping • Outdoor cafes • Designated parking areas • Bus lanes	• Parklets and bulb outs • Marked/designated zones (TNCs pick-up and drop-off) • Delivery loading zones • Bicycle and/or scooter sharing stations • Targeted locations for automated vehicles

There are new demands for curb space. Managing the curb is becoming an increasingly complex and critical task because of the multiple demands for moving people and freight at key locations, particularly in urban areas. Where sidewalks are designed primarily for walking, in some areas they now provide places for sitting, waiting, and eating. A growing demand for walking and bicycling leads to the need for safe and comfortable infrastructure for more mobility choices, and these choices are evolving to include such options as electric bicycles and scooters. Similarly, there are changes in public transit, and transit vehicles typically load and unload passengers from a curb. Traditional buses are now supplemented with interregional or limited-stop services, shuttles and trolleys provide local access, and low-speed electric vehicles and in the future small autonomous vehicles will provide service to small groups or individuals. Ride share drivers, provided by TNCs like Uber or Lyft, pick-up and drop-off passengers along the curb. Furthermore, goods delivery is changing as shopping online becomes more prevalent, leading to delivery vehicles parking at the curb and the potential for delivery lockers or robots occupying sidewalk space.

There are multiple considerations in managing the curb. To enable a range of transportation choices, agencies need to plan for every full trip (e.g., from end to end), to ensure convenience, safety, and ease of use. This important space, the curb, is often in demand by many types of transportation. Key curb management features including mapping the curb, prioritizing use of space, making policies or investments that reflect those priorities, and communicating with partners and the public about how that space is to be used. Communication may be direct by reaching out to and working with partners; through capital investment that changes the curb, such as removing parking and adding bicycle infrastructure; or

through signage and enforcement. When a community provides access to the curb for a new transportation service or allocates space for an existing service, whether tacitly via market forces or explicitly via regulations, existing access is affected and needs to be addressed.

Managing the curb space can improve access to multiple transportation options, tailored to local needs and demands. For example:

- To promote active transportation solutions for healthier living and shorter or non-vehicular trips, communities may decide to provide bicycle facilities or support bike or scooter sharing services. Other actions might include allocating parking or sidewalk space for rental locations, or increasing wayfinding, lighting, and landscaping. By increasing the customer's understanding of options and feelings of safety and comfort, these strategies can enhance the traveling experience and encourage people to use non-automobile choices.
- To support the use of transit services, communities may want to allocate dedicated lanes or areas for transit service and stops, providing weather-proof, comfortable, and secure waiting areas with access to goods and services such as food and drink.
- To address travel using automobiles, communities may choose to support on-street parking, offer valet services, or dedicate areas for picking up or dropping off ride share customers.
- To ensure freight moves safely throughout communities without blocking travel lanes, dedicated space for freight parking can be allocated.
- To enable the curb to serve numerous users, time of day solutions can be used, such as encouraging nighttime deliveries or dedicating a bus lane during peak times only.
- To improve corridor mobility, communities may implement flex zones that accommodate different right-of-way priorities, also based on time-of-day.

As new technologies and services emerge, communities may need to evolve their curb management practices.

Where Are Practices Implemented for Managing the Curb?

FDOT conducted a national scan to identify agencies that are implementing curb management practices. Table 5 highlights some of these agencies and summarizes their activities.

TABLE 5. SCAN OF AGENCIES MANAGING THE CURB

Agency or Organization	Strategies/Actions	Outcomes	Relevance to Florida
District of Columbia (Washington D.C.) Department of Transportation	• Interregional bus Parking • Shared Use Mobility (SUM) zones • Dockless scooter and bikeshare parking • Freight loading/unloading	• Established connections and communication with stakeholders in the private and public sector • Lower congestion levels • Laid out a clear idea on how the curb is being used • Increased preparation for possible changes in transportation technology • Increase in safety for the rider, walker, cyclist, and motorist	• Proactively planned for managing the curb • Multiple service providers
Central Florida	• Curb management for Complete Streets • Prioritization of space for transit (LYMMO)	• Urban design guidelines help in modeling a pleasing pedestrian environment along the curb • Increase in transit ridership	• Florida location with urban, suburban, and rural areas
New York City	• Allocate curb space for transit • Mapping the curb and its uses with the help of technology companies like COORD • Designate curb space for short-distance delivery of goods	• Decrease in congestion • Enhanced transit ridership • Visual and inventory of the curb and its uses	• Proactively planned for managing the curb • Multiple service providers

Agency or Organization	Strategies/Actions	Outcomes	Relevance to Florida
San Francisco	• Remove street parking and designate other uses like bikesharing stations • Focus on the pedestrian curb environment and experience and allocate parklets and cafes along the curb • Mapping the curb and its uses with the help of technology companies like COORD	• Decreased congestion • Increased active mobility like bicycling and walking • A visual and inventory of the curb and its uses	• Proactively planned for managing the curb • Place focus on the pedestrian experience • Multiple service providers
Seattle	• Flex Zones and right-of-way decision-making framework.	• Decreased congestion • Enhanced transit ridership • Increased understanding of the flexible uses of the curb • Shift to demand-based planning • Increased safety for the rider, walker, cyclist, and motorist	• Proactively planned for managing the curb • Multiple service providers

The following locations and agencies were selected for case studies due to the notable practices demonstrated, lessons learned, and potential for transferability of those findings to local and regional agencies throughout Florida.

- **District Department of Transportation (DDOT).** This case study highlights the numerous approaches to managing the curb, from intercity bus, to freight loading/unloading, and managing spaces for new services, such as TNCs, bikeshare, and scooter share. This case study defines strategies to manage the curb space to organize and prioritize transportation uses at the curb and allocate curb space to improve the customer experience, convenience, and ease, for multiple uses.
- **The City of Seattle.** This case study highlights the City of Seattle's implementation of a right-of-way prioritization process to define curb space as 'flex zones.' This classification process allowed the city to create a ranking method to prioritize the curb space of each block that identified which areas should prioritize transit and mobility over delivery and/or parking spaces. This case study demonstrates strategies to manage right-of-way to improve the customer experience, convenience, and ease, across a range of transportation options.
- **MetroPlan Orlando.** This case study reiterates the focus on increasing choices for various modes through curb management strategies, specifically through the interaction between transportation modes in movement and the quality of space.

Case Study Highlights

District Department of Transportation, Washington, D.C.: Curb Management Strategies

This case study highlights the numerous approaches to managing the curb—from intercity bus, to freight loading/unloading, and managing spaces for new services, such as TNCs, bike share, and scooter share. This case study defines strategies to manage the curb space to organize and prioritize transportation uses at the curb and allocate curb space to improve the customer experience, convenience, and ease, for multiple uses.

Overview

The Washington, D.C. region responded to evolving needs at the curb and proactively planned for managing the curb in multiple locations to support evolving market demands and innovations. This case study highlights an agile approach that the District Department of Transportation (DDOT) took to manage intercity buses, ride share services, and shared mobility devices as well as visitor, resident, and freight parking. Most of the approaches were developed in response to new or evolving demands at the curb or resulted from the need to address conflicting uses at the curb (such as double parking). Responses initiated at the staff level to address specific challenges that arose at the curbside, but evolved over time into a more planned and programmatic approach. For example, DDOT and partners developed a Downtown Curb-Space Management Program.

Parking for Intercity Buses

Intercity bus travel in the northeast region of the United States began in the late 1990s as an informal service among Chinese immigrants offering trips between Boston and Washington, D.C., with additional stops in New York City and Philadelphia. Unlike traditional intercity bus companies such as Greyhound, these bus companies avoided bus terminal fees and took advantage of curbside pick-up and drop-off. The unplanned uses of curb space created heavy congestion patterns and blocked sidewalks. These services are the forerunners of companies such as Red Coach and Megabus.

Washington, D.C. stands out in that the concept of informal intercity buses was embraced and city-sanctioned curbside stops were created.[57] DDOT also worked with the intercity providers and Amtrak on a longer term solution establishing a bus terminal at downtown Union Station, further enhancing multimodal and interregional transportation choices for Washington, D.C. and surrounding areas.

Shared Use Mobility (SUM) Zones

DDOT has helped manage TNC curb uses by allocating specific TNC pick-up and drop-off zones using inventorying and mapping strategies. Commercial corridors are especially affected when TNC drivers stop in bicycle lanes, jeopardizing travel and safety of bicyclists or double-park, leading to increased

[57] Gabe Klein, “Start Up City” (2015).

congestion. If a TNC driver circles a block looking for a spot, it also can contribute to congestion and air quality impacts.

FIGURE 9. PILOT OF SUM ZONES IN ADAMS MORGAN

In the Adams Morgan neighborhood there was a growing concern about TNC drivers focusing their attention on finding their passenger and stopping the car anywhere, to the point where this scene of obstruction caused by TNC drivers and riders was labeled as "a permanent fixture."[58] DDOT is studying the option of implementing Shared Use Mobility (SUM) Zones for Adams Morgan. A SUM Zone designates a select amount of curb space for TNC and taxi drivers for more convenient and mobile drop-off and pick-up, mirroring solutions often found at airports. Wayfinding or signage helps passengers walk to meet their driver. As shown in Figure 9, the suggested plan places TNC stopping locations specifically at the beginning or the end of each block. This project was intended to reduce congestion and prevent the risk of more bicycle crashes, while also benefitting people with disabilities, since their official pick-up and drop-off would be next to the sidewalk ramp.[59] Following the study, the District decided to implement the program more broadly. It designated pick-up and drop-off zones at five entertainment busy areas: Nightlife hub of 14th and U Streets, the National Zoo, Georgetown, the Wharf development in the Southwest Waterfrpmt, and Union Market. These allocated curb areas also will be used for commercial loading zones. They are expected to be implemented following a public comment period and the installation of the designating signs.[60]

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58 Information sourced February 2019, https://www.enotrans.org/article/ahead-curb-case-shared-use-mobility-sum-zones/.

59 Information sourced February 2019, https://www.enotrans.org/article/ahead-curb-case-shared-use-mobility-sum-zones/.

60 Information sourced February 2019, https://www.washingtonpost.com/transportation/2018/10/26/uber-lyft-pick-up-zones-coming-dc/?noredirect=on&utm_term=.4e39a8e5cb4b.

Dockless Bicycles and Scooters

Dockless bikes and scooters, two modes of transportation that share bike lanes, if available, can be easily unlocked and shared through the use of their host application. In some of the pilot cities where different companies are testing the product; dockless bicycle/scooter sharing services can provide access to active transportation in underserved areas that do not already have such services. Other feedback indicates that riders have no guidance as to where to park the bikes and scooters when a rental is complete, and as such have left them on curb space, blocking the sidewalk, where sometimes they fall over.[61] The companies providing dockless bikes and scooters and the cities accepting them for pilot programs are working on educating their riders on where to park or leave the bikes.

FIGURE 10. PARKED DOCKLESS BIKE AND SCOOTER AT A WASHINGTON D.C. METRO STATION

FIGURE 11. "PARKED" DOCKLESS SCOOTER

Agencies are advancing techniques to monitor and promote curb management for dockless bike and scooter sharing initiatives. For such technologies, DDOT ran a pilot test and issued public-right-of-way occupancy permits to six private dockless companies that currently operate in the District; another eight have conditional approval for 2019 (pending payment for permits and required documentation).[62] These permits, which started in September 2017, are the mechanism of control to qualifying vendors. For scooters or bikes that are improperly positioned after use, DDOT provides contact numbers for the private companies so that improperly positioned bikes can be relocated. DDOT also provides an email address for the public to provide feedback to DDOT about how dockless bikeshare and scooter share is working for the community. DDOT issued terms and conditions for the permits that describe required parking standards and a required response time when notified of improperly parked dockless vehicles. Permit holders must relocate dockless vehicles within two hours if notified by the District of public access and safety concerns. The terms and conditions document can be found at the following website: https://ddot.dc.gov/sites/default/files/dc/sites/ddot/page_content/attachments/Dockless%20Terms%20and%20Conditions%20-%20Phase%20II%20-%20Bicycles%20-%20UPDATED.pdf.

61 Information sourced February 2019, https://ddot.dc.gov/page/dockless-vehicles-district.

62 Information sourced February 2019, https://ddot.dc.gov/page/dockless-vehicles-district.

Dedicating Space for Freight Delivery

Similar to SUM Zones, but more comprehensive in managing the curb, is the Downtown Curb-Space Management Program in Washington, D.C. This program was developed in response to high demand at the curb in the downtown business districts for commercial loading/unloading, car share, residential and visitor parking, and non-auto curbside use. The program addressed these demands with partners and the public, and then allocated/reallocated curb space.

To address commercial/freight parking needs, the program elements included adding new signage, lengthening loading zones from 40 feet to 100 feet where possible, adding multi-space meters, charging for the use of loading zones, and increasing parking enforcement.[63, 64] DDOT and the Golden Triangle Business Improvement District (BID) studied and inventoried all curb-space signage for the 14 most highly congested downtown corridors and streets. Once these were inventoried and mapped, new curb-space regulatory plans were developed for each block. The Metropolitan Police Department was a key partner in this program, providing enforcement to discourage illegal parking. Furthermore, for a study on curbside management, the District collected input from stakeholders and mapped its existing policies and procedures pertaining to curb space usage, including metered parking (see Figure 12); special purpose reserved curb space, such as commercial loading/unloading and car share parking; residential and visitor parking; and non-auto curbside use.

63 Information sourced February 2019, http://docs.trb.org/prp/16-4597.pdf.

64 Information sourced February 2019, https://ops.fhwa.dot.gov/publications/fhwahop10018/notablepractices.htm

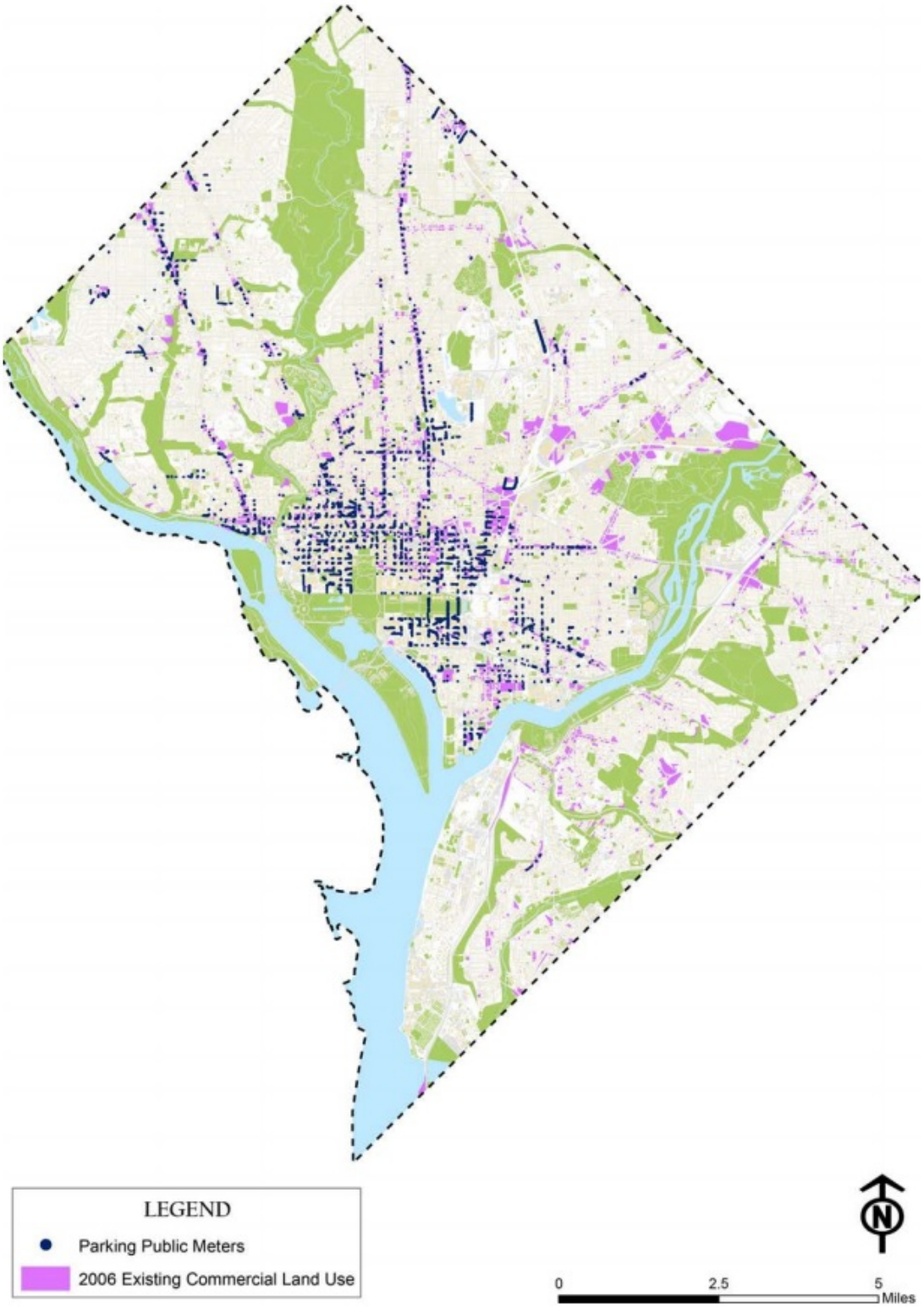

FIGURE 12. DDOT MAP OF METERED PARKING AND COMMERCIAL AREAS

DDOT heard from stakeholders involved in the program that curbside drop-off of commercial goods was a problem in the area with trucks often illegally parking when there was no curb space available. DDOT allocated special curb space for commercial loading to ensure access to curbside space for the delivery of goods. DDOT acknowledged the importance of feedback when working on curbside use. Vendors, business owners, and residents often have every day knowledge of what happens at the curbside and unique curbside management preferences. DDOT considered public and stakeholder priorities by conducting "Think Tanks" and administering surveys. With stakeholder feedback and an understanding of the curbside supply and demand, DDOT identified four approaches to curbside management for the diverse areas in the District:

- **Local Amenity Support—**The premise that all District residents should be able to meet their typical daily needs within an easy walk from and to home.
- **Equitable Access—**Recognizing that although commercial, educational, and other amenities are available, these are not equally distributed throughout the City.
- **Resident Priority and Protection—**Focus on residential protection to prioritize curbside uses for existing local residents over new developments.
- **Managed Availability—**Finding the right balance for "just enough" street parking to meet local needs without having too much of it.[65]

DDOT's collected feedback indicated that residents preferred an approach for curbside management that would work on improving the availability of curbside space and provide access to local businesses and public facilities, while placing a high value on residential curbside space. Stakeholder input from the business side included a focus on commercial areas and loading zones. DDOT also engaged with DC Surface Transit (DCST), a nonprofit organization created by business and government to advise DC on transit service. DCST expanded to address curbside issues which are inextricably tied to transit service.

DDOT noted that curbside management strategies must include freight, because if delivery vehicles are unable to properly park to serve businesses, the delivery of goods may be delayed and double-parking will likely occur, which has a negative impact on the economy and interrupts the flow of traffic.[66] As shown in Table 6, DDOT developed three different approaches for the delivery of goods based on types of businesses including food and beverage; general merchandise, apparel, furnishings, and other businesses; and neighborhood goods and services.

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65 Information sourced February 2019, District Department of Transportation. https://comp.ddot.dc.gov/Documents/District%20Department%20of%20Transportation%20Curbside%20Management%20Study.pdf

66 Information sourced February 2019, https://comp.ddot.dc.gov/Documents/District%20Department%20of%20Transportation%20Curbside%20Management%20Study.pdf.

TABLE 6. DDOT CURBSIDE MANAGEMENT STRATEGY—COMPARISON OF DELIVERY LOADING NEEDS

Type of Business	Customer Curbside Demand	Duration of Parking Need	Loading Zone Size	Loading Zone Time	Representative Neighborhoods
Neighbor-hood goods and services	Lower	Shorter time periods	Larger zones needed	Wider window for reserved loading period needed	• Petworth • Foggy Bottom • Van Ness
Food and beverage	High	Longer time periods	Existing zones generally adequate	Wider window for reserved loading period needed	• 8th Street/ Barracks Road • 14th Street and U Street • Adams Morgan
General merchan-dise, apparel, furnishing, and other	Lower	Longer time periods	Existing zones generally adequate	Existing loading time periods generally adequate	• DuPont Circle • Metro Center • Friendship Heights • Georgetown

Developing a better understanding of existing delivery conditions allows DDOT to respond in an agile, adaptive manner as new transportation innovations change the demand for the curb.

Benefits/Outcomes

- Increases safety for a range of transportation modes through better organization of interactions of users.
- Addresses vehicular congestion on arterials and minor roads by limiting stopped vehicles in travel lanes.
- Decreases illegal curbside behavior (e.g., stopping, standing, and pickup/drop off and goods delivery in undesignated zones).
- Eases mobility for riders, cyclists, and pedestrians by preventing lane blockage and doors opening in vehicles mid-street.
- Provides clarity of use for curb space for all users.
- Facilitates better understanding of curbside uses and needs for city staff and all users.
- Allows for prioritization of use according to goals and objectives and city policies.
- Fosters communication with and among stakeholders.

Partnerships

- Amtrak, Red Coach, Megabus, and nontraditional intercity bus services
- DDOT

- Golden Triangle BID
- Private Freight Companies
- TNCs
- District of Columbia Metropolitan Police Department
- DCST

Lessons Learned

- Acknowledging the importance of stakeholder feedback from residents, industry experts, and the private sector can improve curb management.
- Establishing open and continuous communication with stakeholders helps agencies to understand existing needs and support planning for a transportation system that meets those needs.
- Engaging and embracing nontraditional systems and the private sector supports the creation of partnerships based on transportation needs.
- Adapting to new technologies and demands supports preparation for the future of transportation and its ongoing changes.
- Inventorying the existing curb area can lead to a better understanding of the curb space supply and demand and support the designation of roles for available curb space.
- Enforcement is key for behavior and use change.
- Involving enforcement agencies early and often to work together on planning and focusing on the city's needs can improve understanding and outcomes.
- What appears to be the problem may be a result of another problem (e.g., double-parking is a result of illegal use or misallocation of the curbside).

City of Seattle, WA: Flexible Zones

This case study highlights the City of Seattle's implementation of a right-of-way prioritization process to define curb space as 'flex zones.' This classification process allowed the city to create a ranking method to prioritize the curb space of each block that identified which areas should prioritize transit and mobility over delivery and/or parking spaces. This case study demonstrates strategies to manage right-of-way to improve the customer experience, convenience, and ease, across a range of transportation options.

Overview

The implementation of "Flexible Zones" is becoming more common in cities across the Nation. In these zones, local jurisdictions create a hierarchy of uses of the right-of-way, including the curb. This case study describes how the City of Seattle is applying flex zones to prioritize uses at the curb that expand the transportation choices in Seattle, including walking, bicycling, and transit.

The City of Seattle's Department of Transportation (Seattle DOT) aligns its curb policy with the Seattle 2035 Comprehensive Plan that provides guidelines to make decisions for integration and prioritization of

the diverse uses of the curb. The city clustered its streets into three categories: commercial or mixed-used areas, residential areas, and industrial areas. This classification process allowed the City to create a ranking method to prioritize the curb space of each, which led to identifying which areas should prioritize transit and mobility over delivery and/or parking spaces. The right-of-way allocation policies prepared and is preparing the City to serve existing and future transportation activity.

Since not every function can fit on every street and not every mode can be prioritized in each curb space, the Seattle DOT clustered these curb spaces into three categories:

- Pedestrian Realm: Comprised of frontage, pedestrian mobility, and landscape/furniture zones between the property line and the flex or travelway zones. This space includes the sidewalk, planting areas, bus shelters, sidewalk cafes, and bike racks. See individual sections illustrated on the following website for design criteria: http://streetsillustrated.seattle.gov/street-types/row-allocation/.
- Travelway: Primarily used for mobility purposes. Lanes can serve all modes or be dedicated to serve specific modes, such as a bus or bike lane.
- Flex Zone: An essential zone for people and goods. It provides separation, access, and a space for users to transition between moving vehicles in the travelway and people in the pedestrian realm. This zone can contain multiple uses along a street including: transit stops, commercial deliveries, on-street parking, taxi zones, passenger loading, parklets, streateries, and shared mobility areas."[67]

The Seattle DOT developed visual aids to communicate its framework and its priorities on the use of the right-of-way, one example is shown in Figure 13. Additional examples of visualization and communication tools can be found on the City's website: http://streetsillustrated.seattle.gov/street-types/row-allocation/.

[67] Information sourced February 2019, http://streetsillustrated.seattle.gov/street-types/row-allocation/.

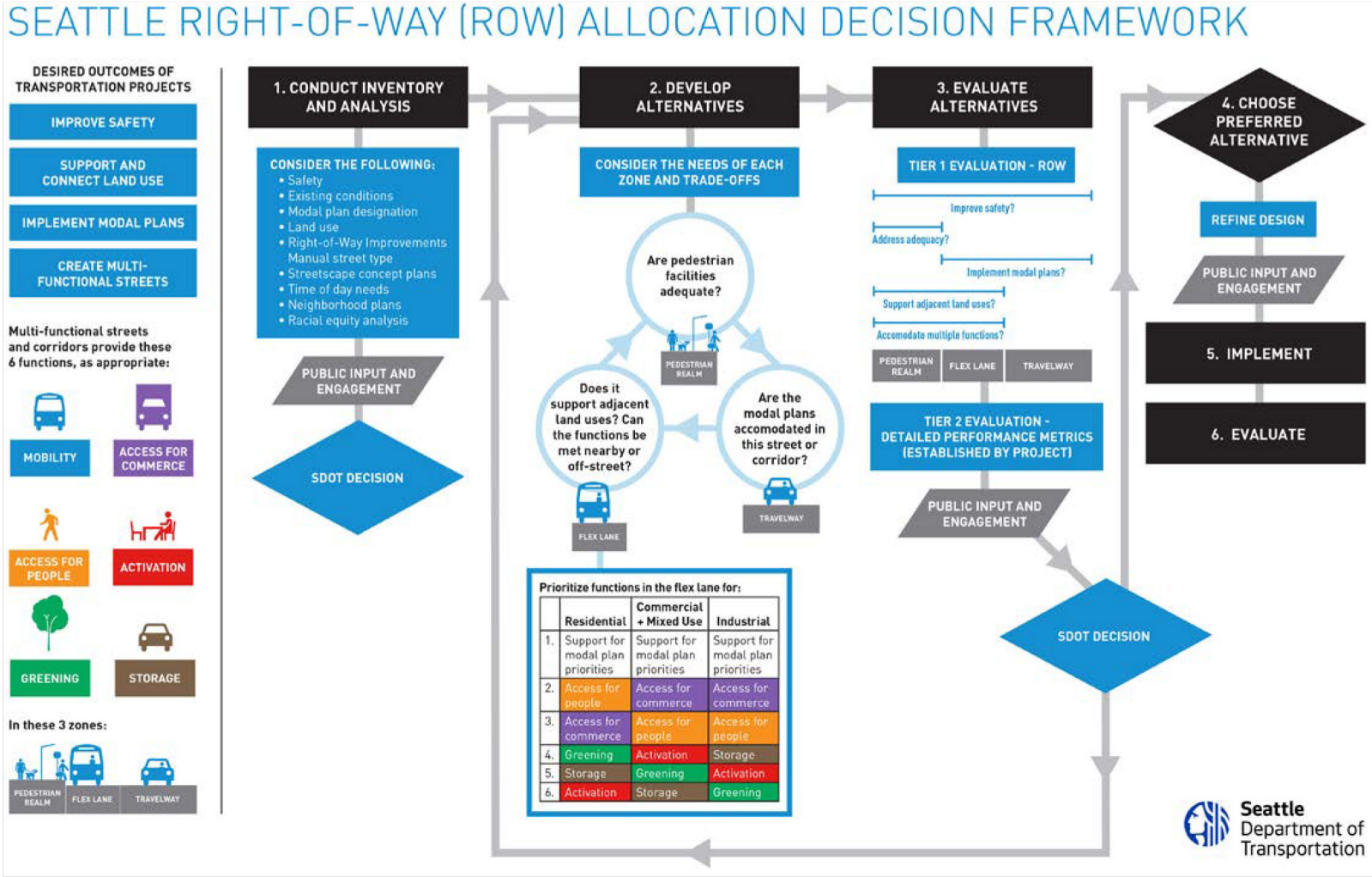

FIGURE 13. SEATTLE RIGHT-OF-WAY

Benefits/Outcomes

- Decreases congestion.
- Increases transit ridership.
- Enhances transit and bicyclist safety.
- Enables the documentation of the existing allocation and inventory of how the curb is being used.
- Increases potential usability of a limited and static existing space (the curb).
- Eases short-distance deliveries.

Partners

- City of Seattle
- Seattle DOT

Lessons Learned

- Plan and prioritize right-of-way based on demand, but also on policies, goals, and objectives of long range plans and other planning efforts.
- Clearly communicate the decision framework (based on prioritization criteria, approach, and implications for all users).
- Consider performance criteria, such as increased safety, when prioritizing allocation of curb space.
- Adapt over time to reimagine possible flexible uses of the curb space.

MetroPlan Orlando, FL: Curb Management through Complete Streets

This case study reiterates the focus on increasing choices for various modes through curb management strategies as part of Complete Streets initiatives, specifically through the interaction between transportation modes in movement and the quality of space.

Overview

This case study reiterates the focus on increasing choices for various modes through curb management strategies, specifically through the interaction between transportation modes in movement and the quality of space. These interactions are imperative for curb management as noted in MetroPlan Orlando's Complete Streets initiative that provides guidelines on how to use curb space and defined what makes up a complete street.

Central Florida implemented multiple curb management techniques including using a complete streets approach and focusing on transit and transit-supportive development patterns. Complete Streets initiatives are increasingly common approaches in Florida to ensure curb access is available for appropriate transportation services and modes, frequently expanding transportation choices through the inclusion or enhanced transit, bicycle, and pedestrian infrastructure.

MetroPlan Orlando is the MPO for the Orlando region. MetroPlan Orlando's Complete Streets policy states: "A Complete Street may include all or a combination of the following: sidewalks, bicycle lanes, dedicated bus lanes, comfortable and accessible bus stops, frequent and safe pedestrian crossing opportunities, median islands, accessible pedestrian signals, curb extensions, narrow travel lanes, roundabouts, and landscaping, among other features."[68] The initiative also includes the following curb management strategies:

- **Curb extensions:** Decrease the width of the roadway at pedestrian crossing locations to provide a visual cue for drivers to slow down.
- **Bicycle facility:** Attempt to separate bicyclists from vehicular traffic and create buffered bicycle lanes, separated bicycle lanes, and shared-use paths.
- **Landscape features and street furniture:** Planting strips, shade trees, and planters to increase pedestrian comfort and safety, and placing benches, trash receptacles, and bollards to enhance pedestrian walkways, without obstructing pedestrian traffic.
- **Wide sidewalks:** Increase pedestrian comfort and activity.
- **Transit stops:** Provide ADA compliant stops with shelters and benches at stops with high ridership.
- **Pedestrian-Scale Lighting:** Illuminate pedestrian walkways.
- **Bicycle Parking:** Provide designated spaces to store bicycles.
- **Pedestrian Wayfinding:** Provide clear signage and legible map displays to enhance travel planning and reduce wrong-direction travel.
- **Building Placement:** Place buildings closer to the road with direct pedestrian access to reinforce safe vehicular speeds and encourage walking.

MetroPlan Orlando and the regional transit provider, the Central Florida Regional Transportation Authority (LYNX), implemented transit related curb management strategies. Sometimes curb management is about prioritizing the use of the curb, and other times it is designed and managed for specific modes, just like Orlando's transit provider did with LYMMO. The downtown LYMMO services use dedicated travel lanes and signal controls to support a local circulator, providing a congestion free mobility option for customers. LYMMO service is frequent, with an average of five to seven minutes for one line during office hours, and every 10 to 20 minutes for the other routes. It also provides a safety benefit for pedestrians and LYMMO riders in that the number of vehicles on these streets is reduced. LYMMO is a free service funded by Orlando's Downtown Development Board and Parking Division.[69]

Benefits/Outcomes

- Implementing multimodal initiatives through the planning of Complete Streets can potentially increase safety for pedestrians, cyclists, riders, motorists; decrease congestion; promote walking, bicycling,

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[68] Information sourced February 2019, https://metroplanorlando.org/wp-content/uploads/17873_ComlpeteStreetsFinalReport-opt_CC.pdf.

[69] Information sourced February 2019, https://www.golynx.com/plan-trip/riding-lynx/lymmo/lymmo-history.stml.

and transit use; create aesthetically pleasing and comfortable streets; increase transit ridership; support safety and comfort of transit riders; and ease vehicular traffic.

- Completes Streets initiatives can lead to more safe, pleasant, and comfortable environments for people walking and bicycling.
- Complete streets policies and programs can support the implementation of partner's plans investments that provide transportation options, such as the dedication of curb space for LYNX to operate LYMMO.

Partners

- MetroPlan Orlando
- Central Florida Regional Transportation Authority (LYNX)

Lessons Learned

- Ensure curb space is appropriately managed by following the Complete Streets guidelines.
- Engage transit riders through ease, comfort, and safety by ensuring bus stop shelters are comfortable and pleasing shelter where riders can board and alight the bus with ease.
- Safety can be improved by better controlled interactions between modes and by communicating expectations of how and where the curb can be used.
- Separating bicyclists from vehicular traffic can improve safety for all.
- Use street furniture, plants, and lighting to increase the comfort and safety of pedestrians.

Industry Guidance

Industry organizations developed guides and reports to convey curb management notable practices and innovate approaches. Table 7 summarizes the more recent publications. The notable practices for curb management recommended from these national organizations are summarized in the following steps:

- **Inventorying:** Keeping a list/count of all the existing curb uses and areas. Examining and recording the area of the curb and its features. This can include demand or availability statistics and metrics on each use.
- **Mapping:** Segmenting the available curb space and the uses attached to each segment, whether flexible or static, such as residential parking at night, designated bus lane at peak time, and allocated TNC boarding zones.
- **Allocating/Designating Use:** Assigning specific use to specific areas along the curb and providing regulations supporting the assignment. This can apply to all or portions of a curb, and may be time-of-day controlled.
- **Monitor and Adjust Use Allocations:** Monitoring and evaluating uses as designated and making adjusted as needed. Periodically evaluate uses based on changing conditions or needs.
- **Preparing for the Future:** Preparing for future transportation technologies and building flexibility into designs and allocations.

TABLE 7. CURBSIDE INDUSTRY GUIDANCE

Document Name	Description	Guidance
National Association of City Transportation Officials (NACTO)		
Curb Appeal	A collection of curbside management strategies for improving transit reliability.	NACTO specifies four techniques: • Shifting from parking lane to flex zone. • Clearing the way for transit. • Moving loading and access nearby. • Looking beyond the corridor.
American Planning Association (APA)		
Planning for Autonomous Mobility	The report reviews the potential impacts of automated vehicles.	APA indicates that automated vehicle impacts on the curb include: • Altering the design of rights-of-way. • Changing access management practices. • Influencing the form and function of traffic signage and signalization. • Bringing massive changes to pedestrian and bicycle networks. • Reducing the demand and altering the design and location of parking. • Creating redevelopment opportunities in urban and suburban locales.
The Institute of Transportation Engineers (ITE), Complete Streets Council		
Curbside Management Practitioners Guide	ITE outlines a decision-making framework for diverse locations and contexts, and the Guide provides a toolbox for analyzing and optimizing the use of the curb for diverse modes and uses.	To assess each curb use and allocate the proper treatment, ITE recommends the following five steps: 1. Inventory existing conditions. 2. Identify land use and activity considerations for prioritization purposes. 3. Identify adequate treatment alternatives. 4. Assess and present alternatives for public feedback. 5. Refine and implement treatments.[70]

[70] Information sourced February 2019, https://www.ite.org/pub/?id=C75A6B8B-E210-5EB3-F4A6-A2FDDA8AE4AA.

Document Name	Description	Guidance
International Transport Forum (ITF) with its Corporate Partnership Board (CBP)		
The Shared-Use City: Managing the Curb	ITF discusses how to manage the growing demand and competition for curb access in cities.	Based on their research and findings from various international cities, ITF came up with eight key recommendations: 1. Establish a system of street designations according to their primary purpose. 2. Anticipate and plan for the revenue impacts of shifting curb use from car parking to passenger pick-up and drop-off. 3. Make room for ride services at the curb where this fits strategic priorities. 4. Build on or create adjudication bodies to manage diverse demand for curb space in flexible ways and ultimately in real-time. 5. Help develop common standards for encoding information about curb use. 6. Rethink streets and their curbs as flexible, self-adjusting spaces and plan accordingly. 7. Manage curb space dynamically so it adapts to different uses and users. 8. Establish effective tracking and monitoring of overall transport activity, including ride services.

ITF advises cities and agencies to know and code their curb through a general curb inventory, where inter-departmental use and access can be easy. It also recommends having the appropriate metrics and data collection for the curb, such as data regarding parking turnover, ride service pick-up and drop-offs, or package and freight movements. A prime example of open datasets published by cities with data related to their curb use is Paris, France, which created an interactive dataset for the precise geotagged location, street view pictures, and rules of delivery zones. ITF advises cities and transportation agencies to start seeing streets and curbs as flexible, self-adjusting spaces.[71]

[71] The Shared-Use City: Managing the Curb.

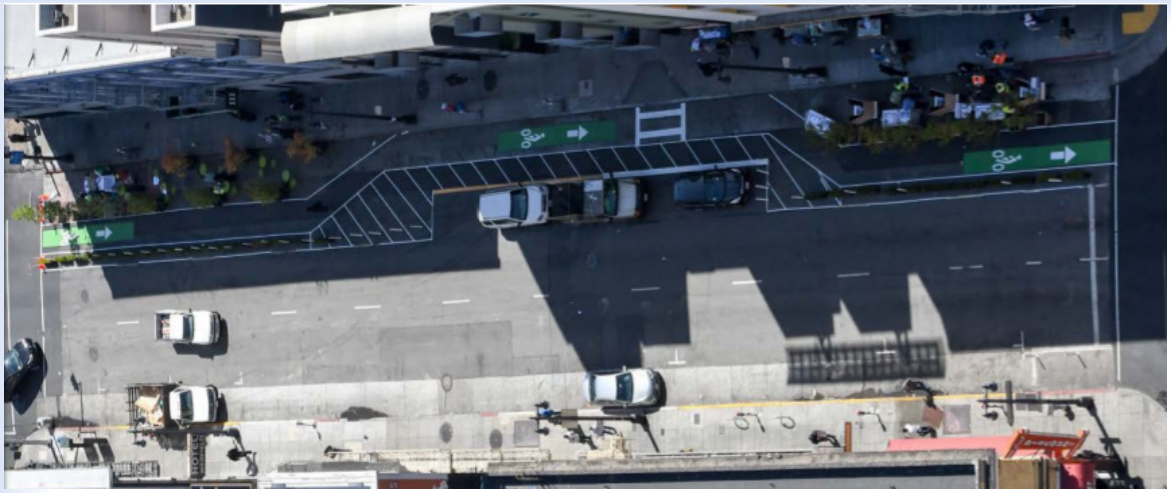

FIGURE 14. ITF CURBSIDE RECOMMENDATIONS EXAMPLE
Source: ITF curbside management practitioners.

Working with the Private Sector to Inventory and Map the Curb

Public agencies can benefit from having open communication and working directly with private companies that are developing innovations for transportation systems, services, and communications. Private companies such as COORD are providing curb mapping and inventorying services and resources. COORD developed an application program interface (API) to interconnect software solutions that help clients, municipalities, individual users, or private companies, easily identify the availability of curbs in specific geographies, along with any restrictions or specifications. For example, a user can access information regarding the times of day a curb space serves as parking (free or paid) or if it is a loading zone. To date, COORD mapped the various curb regulations in San Francisco and New York City.[72] The City of Paris also implemented a similar interactive mapping for uses of its curb.

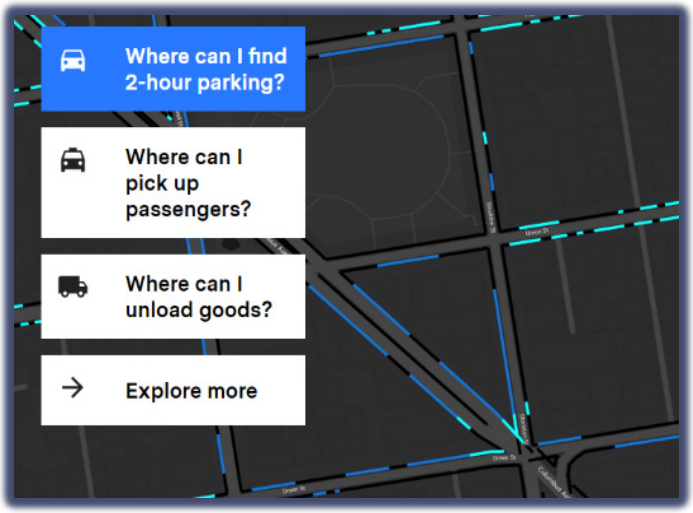

FIGURE 15. CURB MAPPING DONE BY COORD
Source: COORD

[72] Information sourced February 2019, https://www.itf-oecd.org/sites/default/files/docs/shared-use-city-managing-curb.pdf.

Similar technologies being developed by the private sector to maintain an updated inventory of the curb for management purposes include Placemeter and Miovision. Placemeter and Miovision turn video and open-source data collected from the movement of vehicles, pedestrians, and bicyclists into quantifiable data that can be used to manage a curb.[73] In doing so, they help public agencies solve questions such as, "should a city invest more on bicycle infrastructure? Would a designated bus lane benefit riders?"

Public agencies can take steps to adapt to new technologies, identifying opportunities to communicate and coordinate with the private sector for partnerships, planning, promoting ideas, etc. Agencies can also consider working internally with staff to build awareness of rising issues and new technologies.

Key Findings

The case studies provide key findings and lessons learned that could be applicable to local and regional agencies throughout Florida:

- Implement complete streets and context sensitive approaches to roadway and development designs as a first step in managing the curb.
- Agency and community leadership will need to create a culture of agility and adaptability to be most successful in managing the curb. Monitoring and managing performance, and then adjusting over time as needed, may be necessary when implementing many of the strategies discussed herein.
- Use a mapped, data driven approach to address changing the needs for space at the curb.
- Conduct outreach to a broad spectrum of customers and stakeholders to understand needs for curb access and to develop potential solutions.
- Private companies are conducting a significant amount of data collection regarding curb space. Public agencies can benefit from working with the private sector to address privacy or security concerns. More importantly, these companies are leveraging the data as a commodity. Public agencies may want to **use collaborative means to gain access or ownership of data**, such as requiring data sharing when granting use permits for sharing services or when working with a private company for a technology solution.
- The curb is a limited and valuable asset. Just as communities charge for on-street parking, **agencies may want to consider the potential for new revenue models** to remain revenue neutral as curb uses change.

[73] Information sourced February 2019, www.placemeter.com and www.miovision.com.

Case Study: Public Information and Education

Why This Topic Matters

There is a tremendous opportunity to effectively coordinate and build consensus related to existing infrastructure and services that enable the use of transportation choices in Florida communities today. Public information and education campaigns help make the most of those investments and achieve lasting behavior change. That is the focus of this case study.

The goal of any initiative to promote transportation choices, which includes something other than single-occupant vehicle travel, must be to make those choices better (e.g., cheaper, faster, more direct, safer, more comfortable, and mainstream). Public information and education programs are then the essential marketing tools necessary to promote the availability and use of those transportation choices.

Local governments striving to expand transportation choices will be working within the existing context of their communities. The reality is that even the best and most creative marketing campaign to encourage people to walk or ride a bicycle will fail if a community has no sidewalks, crosswalks, or bicycle infrastructure. Literature suggests that there is no lack of understanding that physical activity is a good thing, but if there is no place to safely walk or bicycle as part of daily life, people are not going to do it. A well connected multimodal transportation system to deliver those services is necessary to enable choice.

Where Are Public Information and Education Programs Working Today?

Public information and education often comes in the form of the traditional transportation demand management (TDM) programs. These programs organize car- and van-pooling programs, offer a guaranteed ride home, and promote telework initiatives. These programs provide a valuable service, particularly to government agencies and major employers in a community. This case study identifies the more creative and innovative approaches to inform the public about options so people can choose alternatives to private vehicles for shopping trips, visits to friends and family, getting to school, social and recreational travel, and commuting.

FDOT conducted a national scan for examples of recent and innovative public information and education programs. A summary of those programs is provided in Table 8 below.

TABLE 8. SCAN OF AGENCY PUBLIC INFORMATION AND EDUCATION PROGRAMS

Agency or Organization	Strategies/ Actions	Outcomes	Relevance to Florida
Portland Bureau of Transportation	Smart trips/ individualized marketing	• Mode shift from car to alternative modes • Environmental and health savings	• Numerous cities in Florida could benefit from targeted marketing to increase multimodal decisions
Durham Mayor's Office	Public information and encouragement	• Mode shift from car to alternative modes	• The geography and demographics are similar to some Florida urban/suburban communities
King County Transit	First-/last-mile programs	• Smartphone app linking area residents to transit stations	• Several Florida cities with transit systems
Broward County Miami-Dade County	Interactive maps	• Shows level of comfort for all streets • Shows facility type and suitability for riding	• Florida has year-round bicycling weather • Provides realistic assessment of conditions • Serves visitor populations
WashCOG	Safety and education campaigns	• Raises awareness of regional safety issues	• Florida has a vision "Towards Zero Deaths" to reduce fatalities and injuries
Arlington County Commuter Services	Transportation demand management	• Minimize single occupant car travel; provide information about alternatives at workplace and residential buildings	• The direct marketing approach could be effective in Florida's more urban communities
Michigan DOT	Training	• On-bike facility training	• Helps staff understand first-hand issues and challenges with multimodal transportation

Three programs exemplify the most relevant features of public information and education programs with the potential to play a role in promoting transportation choices in Florida communities.

- **Arlington County Commuter Services, Arlington County, VA.** The Arlington County Commuter Assistance Program provides traditional TDM services and manages all of the county's alternative transportation programs including WalkArlington, BikeArlington, The Commuter Store, Mobility Lab, and others. The program expands transportation choice and increases the ease and convenience of identifying and selecting those choices. The program assists those commuters who are most likely to seek a range of non-automobile options, with dedicated staff that puts information on transportation options in the hands of employees.

- **Individualized Marketing and Smart Trips, Portland, OR.** This case study describes a multi-pronged approach for individualized marketing by the Portland Bureau of Transportation, which was first tested and applied in Germany. By simply making a concerted effort to inform residents of the transportation options that surround them and consistently encouraging their use, residents and employees are trying out non-auto transportation options and discovering the ease and convenience that some of these options offer.
- **Durham Mayor's Challenge, Durham, NC.** This case study describes the mayor's challenge, which engaged a series of strategies to encourage people to change their travel behavior. The focus was on those who worked downtown, including city employees and staff at a major medical research laboratory.

Case Study Highlights

Arlington, VA: Commuter Assistance Program

This case study describes the Arlington County Commuter Assistance Program, a program to assist those commuters who are most likely to seek a range of non-automobile options, with dedicated staff that puts information on transportation options in the hands of employees. The program expands transportation choice and increases the ease and convenience of identifying and selecting those choices.

Overview

In 1989, Arlington County, Virginia established the Commuter Assistance Program, a traditional TDM program, to reduce traffic congestion, promote high occupancy vehicle use, and in general, improve air quality and transportation options around the county. Today, Arlington County Commuter Services (ACCS) is a bureau in the county's Department of Transportation and manages all of the county's alternative transportation programs including WalkArlington, BikeArlington, The Commuter Store, Mobility Lab, and others. ACCS was instrumental in bringing the highly successful Capital Bikeshare program to the region. Figure 16 depicts the evolution of the commuter services program, and Table 9 describes the function of the various business units within the program.

A targeted commuter planning assistance program specifically for employers and new residents to the county is located on the main page of the website.[74] This program includes dedicated staff that puts information on transportation options in the hands of employees. The website provides links and guidance for every possible commuting option, including bus operators and routes, rail services, carpools, vanpools, walking, and bicycling. By simplifying the process of choosing one or more commute options, jurisdictions help residents make that first step toward a car-free or car-light life easier. As ACCS is responsible for raising the public awareness about a range of choices, it communicates that transportation choices can be considered in combination as well as individually. For example, bikesharing programs complement transit service and provide the critical first- or last-mile connection that helps makes transit a more realistic option for people that do not live proximate to transit.

[74] For more information please visit: https://www.commuterpage.com/about/arlington-county-commuter-services/.

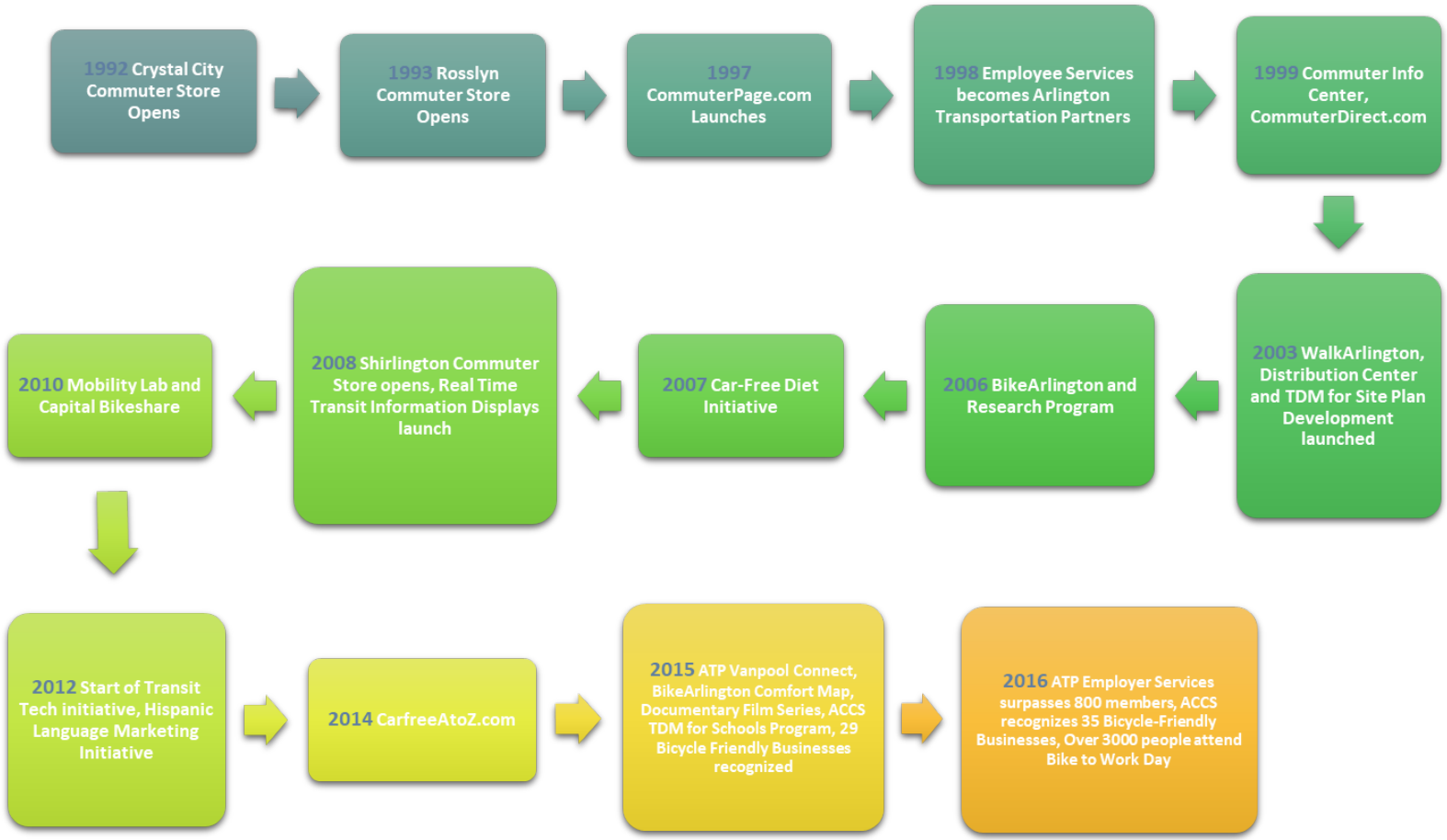

FIGURE 16. ARLINGTON COMMUTER SERVICES TIMELINE

TABLE 9. ACCS BUSINESS UNIT DESCRIPTIONS

Business Unit	Description
Arlington Transportation Partners	Arlington Transportation Partners (ATP) is a business-to-business transportation outreach team. Their programs create engaging relationships with work places, commercial buildings, multifamily residential communities, schools, and hotels to implement programs that include transit benefits, providing place specific commuter information, and promoting all transportation options. ATP also supports property managers and developers to ensure sites, including large commercial and multifamily residential buildings, meet ongoing transportation management program responsibilities.
The Commuter Stores	ACCS' suite of commuter information services includes four Commuter Stores® and three Mobile Commuter Stores®. All stores offer in-person trip planning assistance, transit pass sales, and knowledgeable staff members to help with travel decisions.
Marketing Team	The ACCS marketing team supports all of the bureau's programs, products, and services through its umbrella campaign, Arlington's Car-Free Diet. Their efforts also include outreach and education to the Hispanic, Ethiopian, and other minority populations. Outreach efforts include brochures, direct mail, advertisements, posters, websites, blogs, social media, videos, one-on-one marketing, and events.
Commuter Information Center and Distribution Group	The Commuter Information Center (CIC) operates CommuterPage.com® and CommuterDirect.com®, which allows transit customers to purchase fare media online for delivery and handles phone calls and questions regarding the Arlington Transit (ART) bus service. The Distribution Group provides physical delivery of marketing materials.
BikeArlington	BikeArlington provides information, programming, and grassroots face-to-face outreach to promote bicycling for transportation in Arlington.
WalkArlington	WalkArlington provides information, programming, and grassroots face-to-face outreach to promote walking in Arlington.
Capital Bikeshare	Capital Bikeshare, Arlington's portion of the regional bikesharing service, is operated and marketed by BikeArlington.
TDM for Site Plan Development	The TDM for Site Plan Development team coordinates the design, implementation, and compliance of large building projects with transportation infrastructure and services.
Mobility Lab	The Research Program and Mobility Lab™ teams measure and evaluate the effectiveness of Arlington County's TDM programs. Additionally, Mobility Lab™ collaborates with other researchers and practitioners to produce technology-focused solutions to transportation issues and communicate notable practices in TDM.

Benefits/Outcomes

ACCS summarized the findings of a recent report (2018) on regional commuting patterns in the Washington, D.C. metropolitan area. Among the interesting benefits and outcomes were:

- Commute patterns: Arlington is second only to Washington, D.C. in the number of residents changing from personal-car commuting to transit. Commute distances for Arlington residents are much shorter than the regional average: 9.7 miles one way, compared to 17.3 miles respectively.
- Commute changes, ease, and satisfaction: The top reasons Arlington residents used a mode other than driving alone are: to save time and money, to acquire better job access, because they did not have a vehicle available, or because they moved to a new residence. Key moments in people's lives for reconsideration of transportation options are when they made a home or work location change.
- Quality of life and transportation satisfaction: Reducing traffic congestion is the greatest *societal benefit* resulting from people seeking options to driving alone, according to Arlington workers and residents. The environment also was named as being fairly important. Saving money or gas was named as the top *personal benefit*, and other benefits frequently cited were reducing stress, increasing productivity, and the freedom of not having to bother with car ownership.
- Awareness of commute advertising and commuter-assistance resources: Awareness of commute-information advertising remained high among Arlington residents, and the advertising appeared to influence consideration of options.
- Commuter-assistance services provided by employers: 72 percent of people who worked in Arlington had access to commuter-assistance services, followed by Washington, D.C. (71 percent), Alexandria (55 percent), Montgomery County (52 percent), and Fairfax County (45 percent).

Partners

ACCS partners included a wide variety of businesses and community organizations:

- The business sector including more than 800 local employers
- Transportation providers such as Metro and Motivate (Capital Bikeshare)
- Property managers and developers
- More than 800 local employers

In addition, the Commuter Store, WalkArlington, and BikeArlington programs interact directly with consumers—sometimes on the bicycle trail itself—to promote the various transportation options offered in the county.

Lessons Learned

ACCS moved well beyond a traditional TDM program provider to offer a comprehensive and coordinated suite of services to promote transportation choices. Among the lessons learned are:

- Reach out to people when they are open to change, such as when they move to a new home or job or are going through a major life change.

- Offer a full range of transportation options from walking and bicycling to car-sharing and vanpools, and focus on all trips, not just daily commuting.
- Clearly and consistently articulate the benefits of reducing single occupant car travel to employers, the business community, and residents, with customized messaging and services that appeal to their best interests.
- Be willing to embrace change and champion new mobility options. ACCS was an early-adopter of teleworking, bikesharing, scooters, and a wide variety of micro- and shared-mobility services that all add up to a significant overall share of trips within the county.

Portland, OR: Individualized Marketing and Smart Trips

This case study describes a multi-pronged approach for individualized marketing by the Portland Bureau of Transportation (PBOT), which was first tested and applied in Germany. By simply making a concerted effort to inform residents of the transportation options that surround them and consistently encouraging their use, residents and employees are trying out non-auto transportation options and discovering the ease and convenience that some of these options offer.

Overview

The PBOT applied a multi-pronged approach for individualized marketing that was first tested and applied internationally. Traditional public information and education programs rely on the notion that publishing a large amount of comprehensive information about a particular transportation option or system is sufficient; the assumption is that people will glean the information they want or need from this one source. Similarly, encouragement programs often provide a long list of societal benefits for a course of action, hoping that one may resonate or be persuasive with a reader.

In the 1990s, the German research and marketing company SocialData began applying techniques of individualized marketing to transportation programs, first related to transit and later to active transportation modes, to achieve behavior change and reduce car trips. Their premise was that people who were already motivated to change their travel mode could be identified and provided with the very specific information they needed to make the switch. For example, traditional transit marketing is built around publication of a detailed and comprehensive system map and timetables for every route in the system, which often are very difficult to read or decipher. The information people need to switch from car to bus or train, however, is usually as simple as understanding what bus leaves from the end of their street, how often it leaves, and where it goes.

In cities across the world, this technique was applied to targeted neighborhoods to identify interested participants, narrow the specific information they were lacking to make the switch, and then delivering that information to them, ultimately in person, if necessary.

Starting in 2005, PBOT leveraged local funding with grant dollars to apply this individualized marketing technique in several neighborhoods with the potential for change. PBOT created a multi-pronged approach for individualized marketing that distributes targeted and customized materials to residents via email and hand-delivered packets of information. The targeted emails and packets of information on commuting options are delivered to new residents may contain bicycling and walking maps, information on group walks and bicycle rides, and online portals to connect new residents to the opportunities for shopping, employment centers, and other trips that can be made without a car. While commuting trips tend to dominate the data and thinking, they are less than one-in-five of all the trips that people make every day. The 85 percent of trips that are NOT related to getting to or from work are typically shorter, less time-sensitive, more casual, and thus more flexible. Addressing this fact, PBOT's Smart Trips program was developed to address all types of trips.

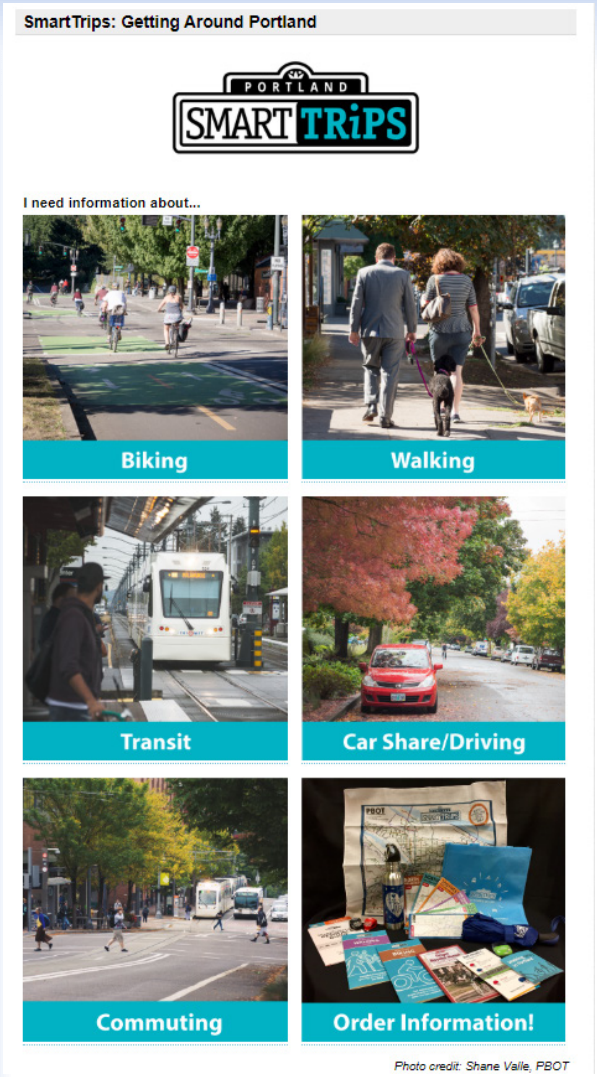

FIGURE 17. PORTLAND SMART TRIPS

Source: https://www.portlandoregon.gov/transportation/43801.

Benefits/Outcomes

- Portland's Smart Trips program resulted in new residents taking 10 percent fewer car trips and 14 percent more active transportation trips.
- Since 2005, this approach resulted in consistently lower numbers of single-occupancy car trips, some years dropping by 21 percent. The success of the program is measured quantitatively, but also by the general positive feedback received.

Partners

While PBOT led implementation of Smart Trips, it provided information about numerous partners in the community that help to facilitate walking, biking, car sharing, transit and other commuting options.

Lessons Learned

- By simply making a concerted effort to inform residents of the transportation options that surround them and consistently encouraging them to make use of them, PBOT succeeded in changing the default transportation mode of "car" to a range of other options.
- Another interesting and consistent finding across dozens of similar programs around the world is that approximately 40 percent of people are not interested, willing, or able to change from their car to other modes. Program resources are better spent working the 60 percent of people who are interested rather than those who are not.
- The Smart Trips program was born in the age of printed materials and direct mail techniques. A recent study highlights the elements of similar programs that prove most effective in social media campaigns. The National Institute for Transportation and Communities partnered with the University of South Florida's Center for Urban Transportation Research (CUTR) to understand the core elements of social media promotion that can most effectively change behavior.[75] While used successfully in Europe, its applicability here was untested, even though social media routinely is tapped to publicize TDM programs. The researchers determined that a segmenting technique including some or all of seven specific features succeeded in the U.S.:
    1. A focus on socially beneficial behavior change
    2. A strong consumer orientation
    3. The use of audience segmentation techniques
    4. The selection of target audiences
    5. The use of marketing's conceptual framework (marketing mix and exchange theory)
    6. The recognition of competition
    7. Continual marketing research

Durham, NC: Mayor's Challenge

This case study describes the mayor's challenge, which engaged a series of strategies to encourage people to change their travel behavior. The focus was on those who worked downtown, including city employees and staff at a major medical research laboratory.

Overview

The City of Durham, NC has a vision of reducing single occupant car trips in the downtown area. Its goals include enhancing the quality of life in the center of the city and avoiding the need to spend money (and resources such as land) on inefficient car parking structures and wider roads. In 2018, the City was awarded a $100,000 pilot program grant by Bloomberg Philanthropies to test a program to eliminate five percent of downtown car trips. The focus of the project was to provide enough information about

[75] Information sourced February 2019, https://nitc.trec.pdx.edu/news/applying-european-marketing-strategy-tdm-programs-us.

transportation choices, demonstrate the convenience and ease of these options, and increase the comfort level with non-auto options so the City could see a change in travel behavior of at least 1,500 people who worked downtown, including city employees and staff at a major medical research laboratory.

The first strategy, a planning tool algorithm, created a personalized route with mapped options, time comparisons, and benefits. Commuters that received the personalized route reported using travel alternatives instead of driving alone; 12 percent more than employees who did not receive it. The second, a GoDurham bus lottery, created a game that made riding the bus a fun competition. Commuters who were invited to play the weekly bus lottery reported commuting by alternatives 19 percent more frequently, and reported a higher level of happiness and lower levels of stress during the pilot.

Benefits/Outcomes

- The Durham Mayor's Challenge worked: During the pilot period car trips in the downtown were reduced by more than five percent, or 800 cars a day.
- The City was rewarded with a one million dollar grant from Bloomberg to expand the pilot into a larger program.

Partners

- The City of Durham, including various city agencies and the Mayor's office
- Duke University's Center for Advanced Hindsight
- Downtown Durham, Inc
- Downtown employers (provided access 1,586 downtown employees)
- Transit provider (GoDurham)
- Business organizations

Lessons Learned

- In addition to confirming many of the lessons learned from the Smart Trips and Arlington Commuter Services programs, the Durham Mayor's Challenge also highlighted the critical role community leaders can play in championing programs. Not only can mayors or city managers focus and coordinate the resources of many partners and government agencies, but also these leaders can be role models and highly visible champions of the program in the media.

Industry Guidance

Industry organizations developed tools and programs to support public information and education. Table 10 summarizes the more recent publications.

TABLE 10. SCAN OF AGENCY PUBLIC INFORMATION AND EDUCATION PROGRAMS

Agency or Organization	Strategies/ Actions	Outcomes	Relevance to Florida
SocialData	Smart trips/ individualized marketing	• Mode shift from car to alternative modes	• Allows tracking of performance relative to climate and health goals
NACTO	Bikesharing programs	• 35 million trips in 2017; Chicago (42%) and DC (65%) users access transit	• Numerous urban/campus areas suitable for bikeshare systems
Walkshed	Wayfinding	• Visual understanding of proximity by foot	• Allows tourists to proactively plan for their trip transportation
TransitScreen	iCommute	• Real-time mobility information for offices, apartments	• Several Florida cities have robust transit systems to support this tool
People for Bikes	Study tours	• Sharing notable practices and inspiring through first-hand experience	• Florida has notable practices that could serve as study tour locations
League of American Bicyclists	Bicycle friendly business designation	• Template for improvements to encourage bicycle use by employers	• Relevant to all employers, large and small

Key Findings

The case studies highlighted in this case study document creative approaches to using public information and education strategies to encourage people to use alternatives to the motor vehicle for some or all of their everyday travel. Some may be directly applicable to Florida communities; others may need adaptation to work in the Florida context.

There are several common elements in these programs from which important lessons can be learned.

- **Transportation choices should be viewed in combination as well as individually**. For example, bikesharing programs complement transit service and provide the critical first- or last-mile connection that makes transit a more realistic option for people that do not live proximate to transit.
- **Reach out to people when they are open to change,** such as when they move to a new home or job or are going through a major life change.
- **Offer a full range of transportation options** from walking and bicycling to car-sharing and vanpools, and focus on all trips, not just daily commuting. Approximately 85% of all trips are not commuting trips.
- **Clearly and consistently articulate the benefits of reducing single occupant car** travel to employers, the business community, and residents with customized messaging and services that appeal to their best interests.

- **Be willing to embrace change and champion new mobility options.** Ensure campaigns **reach a broad cross-section of the community** with culturally sensitive, age-appropriate, geographically specific, and contextual messaging.
- **Respond to documented issues that deter people** from using transit, walking, or bicycling (e.g., perceptions of safety based on crash data and analysis).
- **Community leaders can play a role in championing programs**, and they can serve as role models and highly visible champions of the program in the media.

This case study indicates that governments and other agencies might be most successful in expanding use of and raising awareness of transportation choices by promoting transportation choices in those places where it exists today, and where people are interested, willing, and able to use alternatives for some or all of their daily transportation needs.

Conclusion

The Florida Transportation Plan (FTP) goal, *more transportation choices for people and freight*, is intended to set policy direction and guide investments that would help expand the range of transportation choices available to Florida's residents, visitors, and freight. The intent of the goal is to provide a range of appropriate choices for each community that increase travel flexibility, convenience, and reliability, and reduce travel time and cost compared to options available today.

During stakeholder outreach conducted in 2018, participants were asked which aspects of transportation choices and what type of guidance would be beneficial for the FTP update. The case study topics were selected to address feedback provided during these sessions, highlight strategies for advancing the transportation choice goal, and ultimately improve service for FDOT's customers. The case studies demonstrate cost-effective approaches to reducing travel time and cost while increasing convenience and choice. The case studies demonstrate ways to improve communication, embrace innovation, collaborate with partners, and improve data and processes. The approaches, strategies, and technologies described in these case studies are not 'one size fits all,' each must be considered in the context of the community or region to which it might be applied.

Summary of Findings

Key findings from across all of the case study topics are summarized below:

Equity for traditionally underserved or underrepresented communities is a consideration that is inherent in most policy and investment decisions that impact choice of travel. Those who are most vulnerable, underserved, or underrepresented tend to have the least choice when comparing transportation options and have to make the most significant tradeoffs in terms of transportation cost, travel time, comfort, and convenience. The case studies demonstrate ways to address all types of customers and their unique needs, such as providing cash payment options for transportation, even as technologies advance to automated payment systems.

Data driven decision-making, inventorying, mapping, and visualization are powerful tools that local governments and regional agencies can use to inform where investments and services can be enhanced or introduced to increase choice. Using existing and new data and visualization tools can support local and regional agencies that take steps to redesign and improve transit services, manage the allocation of existing transportation resources such as the curb, and prioritize use of limited funds to make meaningful investments in urban, suburban, and rural communities. These tools and related performance metrics can support the measurement of benefits that result from the implementations of transportation choices strategies.

Reaching out to the public directly and comprehensively continues to be essential to responding to a wide variety of needs for personal and commercial travel. Conducting public outreach, such as through surveys, public meetings, social media, workshops, and focus groups, is essential to creating programs, policies, projects, and services that have a significant impact in expanding choice for how people travel. Ongoing and routine public engagement and involvement informs the planning process and prevents

transportation agencies from over relying on historical understandings of transportation needs. Agencies can make a significant impact by responding directly to issues communicated by the public, as to gaps in the network or barriers to using transit, walking, or bicycling (e.g., perceptions of safety). While the concept of public engagement is not new, there are new, innovative, and targeted approaches to engagement that can be tested and adapted throughout Florida communities.

Communicating to customers using effective, up-to-date methods is necessary. Ensure campaigns (such as online social media campaigns) reach a broad cross-section of the community with culturally sensitive, age-appropriate, geographically specific, and contextual messaging. Targeted campaigns that are tailored to the individual user are likely to be more effective.

Public and private partner coordination and collaboration to advance new technologies will be more necessary and frequent in the future to coordinate services, modes, routes, schedules, payment methodologies, technologies, and data platforms. Agencies can expect an increase in the need to coordinate with other local and regional agencies, as well as to collaborate with stakeholder groups such as business improvement districts and private partners such as TNCs and technology companies. Coordination and collaboration allows agencies to consider transportation choices individually as well as in combination. For example, bikesharing programs complement transit service and provide the critical first- or last- mile connection.

Agency and community leadership will need to create a culture of agility and adaptability to be most successful. Monitoring and managing performance and then adjusting over time as needed, may be necessary when implementing many of the strategies discussed herein.

Community leaders can play an important role in championing programs and supporting or conceptualizing agency initiatives. Building strong relationships with community leaders can lead to stronger public relations campaigns, facilitated outreach, expedited program development, and focused resources on initiatives.

Conduct pilots and test strategies before broader application. While there are significant infrastructure investment needs to make a real difference in transportation choices for people and freight, there can be a benefit in first taking small steps to test new strategies, infrastructure designs, and services. It is important to select the most effective and implementable strategies that are most likely to result in desired outcomes. For example, many of the ‘mobility on demand’ services and new bicycle infrastructure are tested through pilot trials and demonstrations, so that lessons can be drawn from early investments before expanding these investments throughout the transportation system. Lessons also can be learned from pilot trials and demonstrations by other agencies.

Access and mobility are important factors for all trip types. Accessibility is the ease of traveling to preferred destinations, often considered in terms of travel choice (e.g., having options such as being able to walk, bicycle, ride transit, or drive from a residence to a destination). Mobility is the ease of traveling along the transportation system (e.g., being able to drive the speed limit rather than experience congestion delays). Both mobility and accessibility are important benefits of efficient transportation systems. The fewer the number of trips and the shorter the distance people have to travel every day, the better it is for society and the more likely it is people will choose something other than a motor vehicle for every trip. While commuting trips are important and create certain challenges due to demand peaks that

cause congestion, commuting trips should not distract from overall travel patterns and opportunities. Commuting trips tend to dominate the data and thinking, but in fact are less than one-in-five of all the trips people make every day. The 85 percent of trips that are not related to getting to or from work are typically shorter, less time-sensitive, more casual, and thus more flexible.

Land use and community context play a critical role in transportation choices. Geographic context has an impact on how agencies evaluate equity and identify strategies that improve choice. FDOT has started to address this understanding in its Context Classification documentation. FDOT will routinely plan, design, construct, reconstruct, and operate a context-sensitive system of Complete Streets. To this end, a context classification system comprising eight context classifications was adopted. The context classification of a roadway, together with its transportation characteristics, will provide information about who the users are along the roadway. The context classification and transportation characteristics of a roadway will determine key design criteria for all non-limited access state roadways regional and local travel demand of the roadway.[76] While the implementation of the FTP transportation goal is important across the state, the potential challenges that limit choice and opportunities to address those challenges vary greatly in urban, suburban, and rural places. Each strategy should be considered within the context of the community it will serve. Continued emphasis on community design and land use plans and policies that facilitate multimodal transportation options is essential to increasing transportation choice across many geographies. While not all places will be 'walkable,' many Florida communities have the potential to implement transit supportive land use policies in town centers, downtowns, and regional centers. These policies can lead to land use configurations that create resilient, high quality places with growth in economic opportunity while at the same time enabling more reasonable tradeoffs when making transportation choices. Rural town centers can benefit from land use policies that allow drivers to 'park once' and walk to numerous destinations in the community town center.

Public health, economic development, environment, energy, resiliency, and quality of life objectives often are positively impacted by making investments that expand transportation choices. If the public can shift even three trips (or parts of three trips) per week to walking or bicycling, minimum healthy activity guidelines would be met. By removing these trips from the road, congestion is reduced, energy use diminished, and transportation emissions limited. Infrastructure or policies provided to achieve a primary purpose, such as transportation choice, can have broad, positive impacts. By tracking performance metrics for a range of desired outcomes, clear linkages can be defined among the goals of the FTP and impacts of the strategies implemented to achieve those goals.

Key Strategies, by case study topic:

Equity

To improve equity outcomes, agencies can:

- Develop consensus on the definition of equity and what qualities define 'underserved communities.'

[76] Information sourced February 2019, https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/roadway/completestreets/files/fdot-context-classification.pdf?sfvrsn=12be90da_2

- Implement a data-driven approach to equity analysis based on consensus demographic factors.
- Develop a transparent equity analysis methodology.
- Develop a web-based interface mapping tool to make demographic analysis more accessible to agencies, stakeholders, and the public (ensure stakeholders are included in the development process and have ownership of tool outcomes).
- Provide options for cash-loading, such as kiosks or retail outlets, as new payment technologies advance, to ensure access of new-payment platform technologies to unbanked and underserved customers.
- Include key components of transportation choices such as walking, bicycling, and transit in the evaluation of transportation needs to ensure projects that expand choice are considered in the planning and programming process.
- Identify strategies to catalyze redevelopment, infill, and connectivity in transit station areas to encourage colocation of housing and transit.
- Develop community type or transit station area typologies to help communicate with partners, developers, local decision-makers and the public about what land use changes might look like in their community.
- Describe roles and responsibilities of the various agencies and partners that have authority or influence in transit station area development/redevelopment.

Coordinated Services

To coordinate services, such as general travel, paratransit, or payments, agencies can:

- Invite partners to the table and in doing so, agencies can create opportunities to develop relationships, improve communication, and advance policies that promote transportation choice.
- Demonstrate benefits of technologies to create consumer demand for the technology and potentially bring initially reluctant partners on board.
- Work with partners to develop coordinated travel platforms, which can position agencies to more easily transition to next generation technology platforms as they become available.
- Take incremental actions such as pilot projects to allow agencies to experiment with and refine new approaches before making significant changes across the full transportation system.
- Coordinate payment for multiple modes of travel, such as bikeshare and transit, may support fist-mile/last mile solutions by providing easy vehicles (scooters, bikeshare) that can assist people traveling from their ultimate origin/destination to/from the transit stop or station.

Managing the curb

To manage the curb in an agile, adaptive manner, agencies can:

- Plan and prioritize right-of-way based on demand but also on the policies, goals, and objectives of long range plans and other planning efforts.

- Clearly communicate the decision framework (based on prioritization criteria, approach, and implications for all users).
- Inventory and map the curb, a critical strategy to adaptive and agile curb management, which can lead to a better understanding of the curb space supply and demand and support the designation of roles for available curb space.
- Consider performance criteria, such as increased safety, when prioritizing allocation of curb space.
- Seek stakeholder feedback from residents, industry experts, and the private sector to better inform curb management strategies.
- Establish open and continuous communication with stakeholders to understand existing needs and support planning for a transportation system that meets those needs.
- Engage and embrace nontraditional systems and the private sector to support the creation of partnerships based on transportation needs.
- Involve enforcement agencies early and often to work together on planning, and focus on the community's needs to improve understanding and outcomes.
- Separate bicyclists from vehicular traffic to improve safety for all.
- Use street furniture, plants, and lighting to increase the comfort and safety of pedestrians.

Public Information and Education

To provide information and education on transportation choices to the public, agencies can:

- Reach out to citizens when they are open to change, such as when they move to a new home or job or are going through a major life change.
- Offer a full range of transportation options from walking and bicycling to car-sharing and vanpools, and focus on all trips, not just daily commuting.
- Clearly and consistently articulate the benefits of reducing single occupant car travel to employers, the business community, and residents with customized messaging and services that appeal to their best interests.
- Embrace change and champion new mobility options.
- Identify high level public champions that will support initiatives in which community leaders play a critical role in championing programs.

For more information contact:

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Phone: 850-414-4800

Email: planning@dot.state.fl.us

FDOT

FTP Florida Transportation Plan

SIS Strategic Intermodal System