Going for Growth
Enhancing the Economic Impact of Public Transit in Gateway Cities with Comprehensive Service Planning

MARY EBELING, BENJAMIN FORMAN, RICH PARR, AND MEGAN AKI[1]

I. INTRODUCTION

Public transportation connects people to jobs, education, and commercial centers, providing the mobility that makes tight-knit cities attractive places in which to live, work, and visit. But transit's "placemaking" power is often underappreciated in small to midsize urban centers. This has certainly been true in Massachusetts, where the Regional Transit Authorities (RTAs) serving Gateway Cities like Fall River, Springfield, and Worcester have not received the full attention that they merit.[2]

A provision in the state's 2013 transportation finance law requiring RTAs to complete comprehensive service plans offers an opportunity to change this dynamic (see box on page 3 for a description of the process). If done well, these comprehensive service plans can take advantage of improved data collection methods and demonstrate the value of additional investment in Gateway City transit agencies.

Comprehensive service planning is needed to make this case because tight budgets have led to sharp reductions in RTA service and losses in RTA ridership. Between 2002 and 2010, the Pioneer Valley RTA and the South Coast RTA each cut service by nearly 20 percent, Worcester's RTA eliminated nearly a quarter of its service, and the Montachusett RTA halved its fixed-route operations.[3] These reductions further impaired service that was already less than adequate. Service cuts have also reduced the number of passengers—as well as other direct beneficiaries, such as employers—who may be highly motivated to advocate for transit investment. While service planning will not alter this political reality, it can help reveal the number of residents who could gain from stronger service in these communities.

In addition to revealing and defining this latent demand, comprehensive service plans offer a chance to make immediate improvements to service delivery. Public transport networks that have grown cumulatively over time often contain inefficiencies, especially if they have gone through many cycles of expanding and contracting service because of dramatic fluctuations in funding.[4] Quantifying needs and taking stock of available assets will help these agencies identify outdated service and allocate resources more efficiently.

Comprehensive service planning will also position Gateway Cities to get maximum benefit from new transit resources, which could be substantial. The 2013 transportation finance law anticipated that the RTAs would receive $12 million more in annual operating funds in FY 2015, a 20 percent boost over current levels. These new operating dollars will likely be accompanied by an infusion of capital funds. The 2014 transportation bond bill includes $255 million for RTA buses and other cap-

ital needs over the next five years.[5]

Beyond these tangible near-term opportunities, Gateway Cities can realize continuing dividends from a comprehensive service planning process that gains momentum and develops sophistication over time. Service planning can empower residents and community groups, giving them a stake in decision-making and visibly demonstrating how their ideas can translate to improvements for the community. Rigorous comprehensive service plans can also help RTAs establish a stronger voice on regional economic development matters, especially as they relate to repairing the physical fabric of Gateway Cities and making the restoration of urban mobility a channel for investing in transformative development.

Gateway Cities looking to capture the benefits of comprehensive service planning can tap into a growing body of knowledge. Across the country, state transportation departments are showing a greater interest in comprehensive service planning, and state legislatures are tying funds to the completion of comprehensive service plans at regular intervals.[6] This trend may be due in part to the current environment of constrained resources for transportation and unpredictable federal assistance. But improvements in data collection and modeling technology could also be factors, as well as the new performance management criteria required in the 2012 federal transportation bill (MAP-21).[7] Whatever the driver, more resources are flowing toward service planning and best practices are emerging.

Gateway City RTAs are eager to develop comprehensive service plans. RTAs serving Attleboro, Cape Cod, Lowell, and Worcester each undertook service planning work independently over the last decade.[8] The Pioneer Valley RTA issued an RFP for service planning last year, before the requirement was signed into law, and recently completed a high-quality plan that now serves as a model for others.

To support these efforts, the Gateway Cities Innovation Institute has partnered with the State Smart Transportation Initiative to produce this research brief. As the sixth paper in our Going for Growth series, this brief draws attention to the practice of regular transit planning as a component of a long-term strategy for achieving Gateway City growth and renewal. The pages that follow describe best practices in comprehensive service planning, opportunities and challenges facing RTAs working to carry out these activities, and actions that Gateway City leaders and policy advocates can take to support the development of a robust service planning process over time. These practices should not be read as a strict set of rules, but rather as a collection of ideas for communities to draw from as they think about transit planning in the wider context of regional growth and development.

WHY TRANSIT MATTERS TO THE GATEWAY CITIES

Placemaking is the starting point for thinking about why transit matters to Gateway Cities. Historically, the built environment of these regional urban centers was heavily shaped by public transit in the form of streetcars. Streetcar lines supported a dense development pattern, which moved people safely and efficiently into vibrant downtowns for work and recreation. When these systems were removed and replaced by automobiles, these urban environments became less appealing. Attracting modern development to Gateway Cities will require reimaging travel, especially the role of public transit.

Fortunately for Gateway City planners thinking about the future of mobility, a new generation of residents looking to live car-free (or greatly reduce their dependence on cars) represents a segment of consumers eager for innovation.[9] According to a recent real estate analysis conducted for Springfield, young adults comprise more than two-thirds of the potential new market for downtown housing.[10]

Public transit is central to placemaking and reinvestment in the urban core, but in today's economy it is also needed to connect city residents with decentralized suburban job centers. For example, a 2011 study by the Brookings Institution found that fewer than one-quarter of all jobs in the Springfield and Worcester metro areas are accessible to the typical worker by transit in less than 90 minutes (one-way).[11] These long commutes take their toll in both time and money. Transportation can consume one-quarter of the household budget for a low-income family with a single car.[12] The inaccessibility of jobs is a big factor in lower labor force participation and higher unemployment rates among Gateway City residents.[13]

For more on the economic development value of transit for Gateway Cities, see our 2013 report *Reinventing Transit: A Blueprint of Investing in Regional Transportation Authorities for Strong Gateway City Economies.*

I. THE EMERGING PRACTICE OF COMPREHENSIVE SERVICE PLANNING

Comprehensive service planning remains something of a work in progress. There are no straightforward manuals for administrators to follow, but best practices are emerging as planners hone the craft.[15] Facilitating the exchange of knowledge among agencies is critical because comprehensive service planning is an extraordinarily difficult task. Even on paper, reconfiguring established transit networks to increase their efficiency is a complex task. And service planning involves a high degree of public involvement and coordination with agency partners, which makes managing the process in itself an intricate endeavor. Transit agencies are working creatively to deploy new technologies to overcome these challenges and take advantage of the full range of opportunities that comprehensive service planning presents. While the review below is by no means a complete set of best practices for comprehensive service planning, it highlights seven core activities with particular relevance to Gateway City RTAs.

1. Developing a multidimensional public engagement program

Public engagement is fundamental to comprehensive service planning, and it is perhaps the most carefully studied facet of the process.[16] Planners can gain valuable information from residents, who know when and where they need the buses to go. Public involvement also increases transparency, builds confidence in the end product, and provides agencies with a forum to educate residents about proposed changes in transit service.[17] But engaging the public in

service planning is a complicated undertaking. A process that is flawed can do more harm than good.[18]

Public engagement begins with spreading awareness about the service planning effort, and opportunities for participation, as it gets underway. In this regard, transit agencies have some built-in advantages. Existing riders are a ready audience, and the presence of transit assets throughout the community affords extra visibility to promote the process. Agencies can disseminate information through public service announcements, seat drops on transit vehicles, handouts, posters on bus shelters, direct mail, e-newsletters, text messages, social media, and information booths at civic events. Agencies can also partner with a range of trusted organizations, from churches and colleges to community development corporations and health coalitions, that have the ability to reach various constituencies. While these channels are all fairly inexpensive, it is important to have the resources to deliver information about the process clearly and concisely through a variety of outlets in multiple languages.

The communication strategy will depend in part on how transit agencies choose to engage the public. The public hearing is the most common method, but it has some drawbacks.[19] Residents may have difficulty fitting meetings into their busy lives, and those who are lower-income or new to the community may feel unwelcome.[20] For agencies with low ridership, the value of public meetings can be particularly limited. If residents do not have a stake in the current system, they may feel less inspired to turn out and communicate ideas about how

the service should perform in the future.

Other forms of public involvement include advisory groups, focus groups, telephone and door-to-door surveys, and interactive workshops. Technology now allows for various forms of engagement to be conducted online.

Web-based citizen engagement tools that lower the cost of interacting provide one opening to reduce barriers to participation. Communities in Massachusetts are exploring the development of these platforms. For example, the Pioneer Valley Planning Commission is using the software program Metroquest to gauge the public's priorities and preferences regarding specific aspects of its Sustainable Knowledge Corridor project. Watertown turned to MindMixer, another web-based tool, to pose questions and track engagement in the city's 2013 Comprehensive Plan. Kendall Square start-up CoUrbanize has created a project-specific web app that was used by Boston's Hubway bike-share program to collect feedback on its expansion. To build a better sense of community needs and priorities, the Lowell Office of Economic Development has experimented with Neighborland, another web-based platform.

These tools, and others like them, can be particularly effective for asking participants how they would allocate limited resources. They can also create powerful visualizations to help the public understand their choices. Web-based platforms can lower the barrier for participation for some community members—third-shift workers, for example, who cannot attend community meetings at traditional times. But they can also create barriers by catering only to those with Internet access. Moreover, as these tools are relatively new, practitioners have limited expertise with them and may not fully understand how citizens interpret and interact with materials viewed online.[21] Nonetheless, given the limitations of reaching transit-dependent populations through traditional means, these new technologies are well worth exploring.

Regardless of the approach taken, it is critical to provide opportunities to participate early in the process and to be clear about how public input will influence decision-making. It is also important to ensure that complex issues are understood by all involved and that well-organized interest groups do not gain unfair advantage. The most successful public engagement efforts generally incorporate a mix of methods to meet the needs of different constituencies.

2. Harnessing the power of big data

In addition to citizen input, transit agencies collect and analyze quantitative data to plan more efficient routes and address service gaps. These data come in two forms: 1) service data that provide information about the performance of current routes; and 2) travel pattern data, which offer a broader portrait of mobility in a region across all travel modes. As technology improves, agencies will have access both to richer datasets and to advanced software that can distill useful information from raw numbers.

Service Data

Transit agencies use a variety of methods to assemble service data for planning. Each of these methods has strengths and weaknesses; typically several sources are needed to address the limitations of each.[22] For example, data from fareboxes indicate the number of riders on each route at different times of day, but they generally aggregate boardings for the entire route; counts for passengers entering and exiting at each stop are not available. To get a more detailed understanding of vehicle usage, many agencies conduct "ride checks" by placing a survey taker on each bus to enumerate passengers as they board and exit at each stop. In addition to quantifying passenger loads, ride checks can also provide measures of performance along a route.

Agencies also conduct passenger surveys to understand the demographics of customers, the purposes of their trips, and transfers they may make along their journeys. Like ride checks, these surveys are expensive to administer, and they

ASKING "WHERE TO?" IN TAMPA BAY

Asking riders and potential riders a question as simple as "Where does your trip start and where do you want/need to go?" and having them draw the answer on a map can result in eye-opening benefits. The Hillsborough Area Regional Transit Agency (HART) did just that during a comprehensive transit planning effort. The result? A major, and successful, reconfiguration of the entire system. This type of mapping exercise works for either in-person or online meetings.

typically provide only a snapshot of a limited time period.

With the advent of automatic data collection systems, agencies are beginning to collect much more complete ridership and route performance data. Many transit agencies have installed automatic vehicle locators to track the location of buses. As these systems have advanced, they have added capabilities to log running time data to inform scheduling. Agencies also use automatic passenger counters to collect accurate information on the number of riders boarding and exiting a bus and whether a bus achieves on-time performance.

Automatic data collection systems produce massive amounts of data that require resources and sophistication to

data reporting are critical. The newest generation of third-party analysis products can support agencies in this task by helping to standardize data collection protocols. But effective implementation still requires considerable staff effort and an organizational commitment to long-term service planning.[25]

Travel Pattern Data

For comprehensive service planning, often the most important question is not how the current deployment of service performs, but how it corresponds to the changing transportation needs of a regional economy. Understanding these travel patterns requires current data revealing where residents live and their travel destinations at various

Longitudinal Employer-Household Dynamics (LEHD) program to help address this gap. Its data, published annually, link employees to employers using unemployment insurance filings. While the LEHD data will provide a strong sense of where people live and work, with details on their industry and socioeconomic status, they do not contain information about the work trip itself (i.e., mode and time of travel).[26]

Transportation planners looking to overcome this data deficit have another option. New technologies like smart phones, GPS, and wireless sensors offer data sources with great promise for improving the operational efficiency of transit systems. Mobile phones feed powerful data about commuting patterns and congestion. Because they are real-time, they can also provide information about seasonal or other unusual patterns in travel behavior. Summarizing large-scale travel data and making it wholly anonymous before processing addresses privacy concerns. And unlike the Census/LEHD data, these figures are not limited solely to those traveling to a job site.

New technologies offer data sources with great promise for improving the operational efficiency of transit systems.

analyze. Until very recently, even the largest transit agencies have been unable to take full advantage of this resource for comprehensive service planning.[23] But third-party software is emerging that helps agencies synthesize this information. With more data over longer periods, agencies now have the ability to better identify, understand, and minimize outliers (i.e., buses that are very late, trips that are very slow, etc.) that are troublesome from the perspective of riders.[24]

Taking advantage of "big data" requires coordination among agencies at all levels. Operating practices for uniform

times of day.

In the past, transit agencies collected commuting data from the decennial United States Census. The Census's large sample size provided excellent precision at very small geographies, but the 10-year frequency meant that figures were often out of date. The elimination of the "long form" in the 2010 Census means that agencies must now rely on the more frequent American Community Survey, which provides more current data but lacks the geographic precision that the decennial census once provided.

The Census Bureau developed the

New companies like Airsage collect and analyze these mobile phone data for transit agencies at a cost that is steadily declining and may soon be within reach for operators in small to midsize regions.[27]

Travel pattern data can also be developed by analyzing content shared on social networking sites like Facebook, Foursquare, and Twitter.[28] Companies with algorithms to mine and synthesize location-based social networking data may soon provide travel planners with low-cost, real-time origin and destination data.

3. Planning strategically for paratransit service

The Americans with Disabilities Act mandates that paratransit service be delivered within a three-quarter-mile zone around a transit agency's fixed-route service, but many agencies offer disabled riders transportation well outside this area. As the Commonwealth's population ages and grows more reliant on paratransit, one of the greatest challenges facing agencies is balancing the need to provide a particularly transit-dependent ridership with this high-cost service against calls to expand regular fixed-route service.

Agencies have a variety of options that they can consider, from tightening paratransit eligibility requirements to narrowing the zone in which paratransit is provided and offering a tiered pricing structure for trips outside of the ADA zone.[29] The nonprofit Transportation Research Board makes freely available a sophisticated tool for estimating how these policies changes will influence demand for paratransit service.[30]

Comprehensive service planning is also an opportunity to look at how more extensive system redesign could increase the efficiency of paratransit.[31] Increasing frequency on main lines may give agencies the ability to use fixed routes in combination with paratransit feeder service. Several smaller transit agencies have contracted with taxis to carry disabled passengers from their homes to high-frequency, fixed-route trunk lines. As technology improves, the use of trip-by-trip screening and scheduling modules to extract savings from this type of paratransit feeder service has become more common.[32]

A visible and collaborative service planning process helps to inform stakeholders about the benefits of this approach (e.g., the potential to provide additional hours of operation system-wide with the cost savings). Service planning is an opportunity to put in place "travel training" programs that help disabled riders learn and transition to the fixed-route system. Research has shown that these outreach initiatives

can provide significant cost savings for small-city transit systems.[33]

4. Analyzing the impact of fare increases

Tension over fare policies is a perennial challenge for transit agencies. On the one hand, if transit fares do not keep up with inflation, the real value of this revenue stream will decline over time. On the other, transit fares are regressive by nature, taking more dollars out of the pockets of populations who can least afford to pay more. Most transit agencies attempt to keep fares low in recognition of the burdens facing transit-dependent riders. However, additional fare revenue can improve the performance of the system, which will attract more discretionary riders and enhance the quality of life for low-income residents who often rely most heavily on the service.

An analysis of fare policy is central to a comprehensive service planning process because fares have a direct influence on demand.[34] Understanding ridership and travel patterns can also help agencies implement more equitable fare structures. For instance, the cost of monthly passes, or charges for transfers, may disproportionately impact the lowest-income riders.[35]

In addition to providing the technical analysis and a forum for public input

Service planning is an opportunity to look at how system redesign could increase the efficiency of paratransit.

on fare structures, the service planning process is a venue to consider policies for adjusting fares between service planning periods (e.g., pegging a biennial increase to cost-of-living indices to keep pace with rising costs).

5. Optimizing cross-system and cross-sector connections

Public transit agencies rely on a complex web of complementary transportation providers to augment their service. Comprehensive service planning is a chance to explore opportunities to enhance these partnerships, which span a number of realms.

For many agencies, connections to rail are critical. Strategic planning to maximize on-time performance on intermodal routes and minimize wait times associated with the transfer to rail can provide quality service upon which riders can depend.[36] Many systems also provide cross-border bus connections through public agencies in neighboring

regions, as well as private intercity transportation providers. Service planning studies must also take these important relationships into account.

With the decentralization of jobs to outlying areas, regional transit providers can function as feeder services for reverse commutes, often through public-private partnerships. Vanpools are one common model. A vanpool serves a group of commuters who generally work for the same employer and who share a van to get to the job site. Employers often subsidize vanpools, and costs are further reduced because a member of the group volunteers to drive.[37] Federal funding has also supported these services through the Jobs Access and Reverse Commute Program (JARC) and a variety of other programs.[38] In developing comprehensive service plans with greater trunk-route frequency, agencies can look for new opportunities to assemble riders at nodes from which they can travel on to their destinations in vanpools. While vanpools have been in existence since the 1970s, new technologies are increasing their potential.

Public transportation agencies can also develop partnerships with private businesses that create transportation management associations to serve their employees. While these structures are less common in small to midsize cities, there are often major institutions in these communities (e.g., hospitals, colleges, and universities) with significant transportation needs. Comprehensive service planning is an opening to explore opportunities to develop mutually beneficial relationships with these partners.

Public school districts are also looking for opportunities to contract with transit agencies, often as a way to connect their students to programs and services in the community without straining school transportation budgets.

Finally, for many regional transportation agencies, tourism is an increasingly prominent opportunity. Capitalizing on the economic benefits of tourism clearly requires coordination across agencies. Many states link transportation service planning with efforts to promote growth in the tourism sector.[39]

6. Using scenario planning to coordinate transportation and land use

Aligning transportation investment with land use planning can generate substantial economic development benefits. But for many regions, coordinating transportation and land use has been a vexing challenge. Responsibility for planning is divided among a host of agencies at different levels of governments. There is increasing pressure on these agencies to act together, but with competing interests and varying values among the public, generating consensus around coordinated action is still extremely difficult. To overcome this obstacle, small to midsize regions from Albany, New York, to Missoula, Montana, are using scenario planning processes that quantify and visualize alternative transportation/land use futures and the benefits of coordinated planning.

Scenario planning is not new. Several decades ago planners began to borrow the approach from business as a collaborative problem-solving technique to engage a diverse set of stakeholders. Advances in technology are increasing the power of this approach by unlocking both better data and the tools to translate numbers into easy-to-interpret alternative scenarios. Open source scenario planning software such as Envision Tomorrow can be combined with relatively inexpensive visualization programs like CommunityViz.[40]

Transit systems with the capacity to take advantage of these tools for comprehensive service planning will be well-positioned to partner with regional planning agencies to craft long-term land use plans.

7. Establishing performance measures to monitor progress

Transportation agencies are increasingly building performance measures into comprehensive plans to measure progress toward identified goals and objectives. Embedded performance measures can also articulate performance targets for new routes and clarify actions that will be taken if ridership does not meet

MADISON METRO PARTNERS WITH PRIVATE EMPLOYERS TO IMPROVE SERVICE

Madison Metro in Wisconsin has partnered with major employers for a bus pass program to support commuter bus service. The passes give employees an incentive to reduce driving. The employer administers the program, and the employee pays a reduced fare. Employers save money by not providing unneeded parking infrastructure, and the transit system receives a steady revenue stream. In another win for Madison Metro, Epic Systems, a medical systems/data management company, subsidizes two bus routes to serve its main research campus. In less than a year, ridership on these routes exceeded capacity.

these benchmarks.

While choosing the right set of measures can be challenging, since a variety of external factors may influence outcomes, agencies can make use of the Integrated National Transit Database Analysis System (INTDAS), which provides easy access to more than 20 years of data. This system can help RTAs construct trend lines and conduct comparisons with peer agencies.

II. THE PROSPECTS FOR COMPREHENSIVE SERVICE PLANNING IN MASSACHUSETTS

In addition to understanding emerging best practices, Gateway City leaders looking to champion comprehensive service planning as a growth strategy must be aware of the opportunities and challenges RTAs face that are specific to Massachusetts. While there are good reasons to be optimistic about the potential to improve the contribution RTAs make to Gateway City economies, as detailed below, there are also obstacles that must be addressed.

The Opportunities

1. Access to data and analytical capacity is steadily improving. As RTAs purchase new vehicles outfitted with the latest technology, they are building the capacity to collect service data. The Pioneer Valley Transit Authority's recently completed plan demonstrates the value that these service data are already providing (see text box).

RTAs increasingly have a variety of options to make use of more robust service data. As consultants license modeling software and develop expert-

ise analyzing the data, agencies will be able to contract for this technical assistance at reasonable rates. Transportation planners at regional planning agencies are also gaining experience working with transit agency service data. And the MBTA has recently built an in-house analysis team that could provide additional support to RTAs as they put in place policies to build their data infrastructure.

RTAs currently developing service plans face one major hurdle in assembling travel pattern data: Massachusetts is the only state that does not currently participate in the Census Bureau's Longitudinal Employer-Household Dynamics program. Without these data, gaining an understanding of current commuting patterns is more difficult. However, the state is in the process of entering into the program and the first data are expected later in 2014.

2. Efforts to boost transit ridership and coordinate land use are gaining traction. Recent policy developments in Massachusetts aimed at sustainably providing greater mobility raise the stakes for comprehensive service planning. This is most evident in the state's

new "mode shift" goal. The Patrick administration is working to triple the share of travel done through bicycling, walking, and riding transit. MassDOT's Healthy Transportation and GreenDOT policy directives outline strategies to meet this goal. Most notably, a process has been established to review MassDOT investments to ensure that they can support travel across all modes whenever feasible. The Patrick administration is also working to support more efficient land use by targeting state investment through regional planning for priority development areas.

For Gateway Cities, it is imperative to think about physical revitalization in the context of mobility. A dense urban fabric is a key asset to these communities, but in many cases it has been seriously damaged by changes made to the physical environment in order to accommodate cars. If Gateway Cities are going to support higher intensity uses, these wounds must be repaired. Lowell's 2010 downtown Evolution Plan is an excellent example of a Gateway City revitalization strategy that makes increasing urban mobility the primary tactic for generating economic revitalization.

Gateway Cities have access to new

funding mechanisms that will allow them to make physical improvements to promote urban mobility and transit-oriented development. The 2014 transportation bond bill included $50 million for Complete Streets infrastructure and planning grants. The new Gateway City Transformative Development Fund will help bolster weak real estate markets and spur private reinvestment.

The Challenges

1. Building up the practice of comprehensive service planning will be difficult without a requirement for regular updates. Massachusetts's 2013 transportation finance legislation treated comprehensive service planning as a one-time activity. The law did not include provisions requiring regular updates to the plans or the development of new plans at regular intervals. This omission is out of sync with efforts in leading states, which require agencies to perform comprehensive service assessments at regular intervals.

Florida law, for example, requires transit agencies to complete a 10-year plan every five years, and agencies must also submit limited annual updates. To maintain eligibility for California Transportation Development Act funds, regional transit agencies must complete Short Range Transit Plans (SRTP) with five- to 10-year time horizons. Full updates must be completed every four years, and the state's metropolitan planning organizations also typically require annual "mini-updates" to these plans.

A mandate to conduct regular service planning is important to planning financially for this work, investing in the capacity to carry out the service plan-

ning effort, and developing a culture in the community around comprehensive service planning.

2. In the near term, resources for comprehensive service planning are limited. The 2013 transportation finance legislation did not include specific funding to support the development of RTA service plans. But several of the larger RTAs—Pioneer Valley, Southeastern RTA, and Brockton—have been able to utilize their own federal funds to complete transit plans. Ten of the remaining 12 RTAs have entered into a joint procurement for a consultant to comply with the legislation. These 10 RTAs expect to gain efficiencies and

save costs using this approach. To fund this procurement, five of the RTAs contributed a total of $200,000 in federal funding. Additionally, each agency diverted $5,000 from their operating budgets.[41]

Still, this shared $250,000 budget amounts to just $25,000 per agency. A recently completed transit study to bring a single regional transit route into a single community in Cecil County, Maryland, cost approximately $35,000 for consultant and regional planning staff time. The total budget for the 10 RTAs is similar to that of a current contract for implementing transit system improvements in Wilmington, Delaware. In Wilmington's case, however,

COMPREHENSIVE SERVICE PLANNING IN THE PIONEER VALLEY

As the Pioneer Valley Transit Authority (PVTA) rebounded from dramatic funding cuts, it was eager to reexamine routes that had been structured to maintain lifelines for transit-dependent riders. The agency got started on a comprehensive service plan before last year's state legislation was signed into law and is now in the final stages of completing a year-long process.

The effort involved an intensive public engagement campaign beginning with four open meetings to introduce the project. Consultants interviewed riders at bus terminals and held focus groups with drivers. Systems were put in place to collect input from the public online, through voicemail, and through traditional mail. Once a draft plan was produced, 16 outreach meetings were held across the region to receive feedback.

The service planning process benefited from the agency's service data. Automatic passenger counters on most of the fleet yielded a rich set of ridership statistics. With support from consultants at Nelson\Nygaard, PVTA produced route profiles with boardings and alightings for each stop. With Census data, they also created a block-by-block analysis of potential demand, identifying areas that could support different levels of transit service up to 5-minute headways. While the lack of LEHD data made it more difficult to produce a travel pattern study, the consultants used rider and non-rider surveys and American Community Survey data at the block-group level to develop an understanding of origins and destinations for commuters.

This effort is leading to a major restructuring of service. Routes have been changed and eliminated. Others have been added, including three crosstown routes. The plan will help the agency make optimal use of 12 additional buses expected in the fall.

the project does not include a comprehensive assessment of transit services. Rather, it is focusing narrowly on implementing prioritized system changes based on a separate system evaluation.[42]

III. BUILDING ON THE PROMISE OF COMPREHENSIVE SERVICE PLANNING

With the 2013 transportation finance law, the Massachusetts legislature established a mandate for comprehensive service planning and laid a foundation for the growth of the practice in regional transportation agencies across the state. Making the most of this moment to move service planning from a rather technical activity to a strong lever for economic development will require some additional effort. We offer three recommendations to begin that transformation:

1. Champion service planning. From mayors and school superintendents to workforce development board directors and chamber presidents, Gateway City civic leaders should embrace comprehensive service planning as an opportunity to develop a mobility strategy that will make a city and region more competitive. First and foremost, civic leaders can work together to ensure that transit planning is adequately resourced. They can also help bring partner organizations to the table during the process to explore new opportunities.

As recommended by the US Department of Transportation, civic leaders should urge transit agencies to include "aspirational plans" outlining optimal service levels and providing technical analysis to support these recommenda-

tions.[43] By thoroughly understanding the community's evolving transit strategy, local champions can promote these investments and advocate for the role of the transit system in relation to the region's larger economic development strategy.

2. Embrace the broader shift toward a statewide culture of transit ridership. From the perspective of Gateway Cities, statewide efforts to reduce greenhouse gas emissions by promoting greener travel are a hook for advocating for redevelopment. Ridership will increase only with a combination of strong transit service, smart land use practices, and reinvestment in our densely developed urban cores. Gateway City leaders should use conversations about the environment and climate change as a chance to promote a long-term view for a Bay State economy driven by a healthy network of cities interconnected by strong public transit systems.

3. Advocate for the development of service plans at regular intervals. To make comprehensive service planning a powerful mechanism for building toward this future, it is essential to institute a framework for developing these plans at regular intervals. If RTAs know they will be completing service plans, they can set aside resources for service planning in years when large expenditures will be required. They can also arrange staffing patterns or build partnerships with regional planning agencies to maintain in-house capacity. (These local staff can be counted as an in-kind contribution to meet the 20 percent match federal planning grants require.)

To the greatest extent possible, leaders should work to synchronize RTA service planning periods so that they occur in the same year. Producing plans on consistent cycles would draw greater state-level attention to the practice, enabling increased coordination across agencies and facilitating efforts to synthesize results for advocacy.

Ideally, these transit planning processes would also be more tightly coordinated with the preparation of the Metropolitan Transportation Plans that federal law requires. Metropolitan Planning Organizations (MPOs) update these long-range plans every four to five years. More attention to regional transit planning would help ensure that transit needs receive greater consideration in an MPO decision-making processes in which transit constituencies are often underrepresented.[44] This challenge was explicitly recognized in the 2012 federal transportation law, which specifically called for better integrating transit planning into the MPO process by requiring MPOs to include officials from local public transportation providers on their policy boards.[45]

Undertaking comprehensive service planning at regular intervals would also provide a predictable window in which to evaluate fare policies. The 2013 transportation finance legislation includes "own-source revenue" targets for MassDOT and the MBTA and assumes that T fares will increase in small increments every two years. This will increase pressure on RTAs for regular fare increases. Given the large percentage of RTA riders who are low-income, it is imperative that technical analysis accompanies any consideration of fare increases.

Notes

1 Mary Ebeling is a transportation policy analyst for the State Smart Transportation Initiative at the Center on Wisconsin Strategy. Rich Parr is a senior research associate with MassINC. Megan Aki is a MassINC intern and a student at Northeastern University. Robert David Sullivan provided editing support.

2 See Benjamin Forman and others. "Moving Forward with Funding: New Strategies to Support Transportation and Balanced Regional Economic Growth" (Boston, MA: MassINC, 2011).

3 The most recent data for 2012 from the National Transit Database show that combined the RTAs have 20 percent fewer unlinked passenger trips as compared to 2002 (this figure excludes three systems with incomplete data: Franklin, Martha's Vineyard, and Nantucket). For more comparisons, see Benjamin Forman and Catherine Tumber. "Reinventing Transit: A Blueprint for Investing in Regional Transportation Authorities for Strong Gateway City Economies" (Boston, MA: MassINC, 2013).

4 Jarrett Walker. *Human Transit* (Washington, DC: Island Press, 2011).

5 Under the new legislation, the RTAs received an additional $80 million in 2014 to establish "forward funding," meaning the Commonwealth will pay them in advance for their operations instead of in arrears. Forward funding will help the RTAs better manage their programs and give them an incentive to provide service efficiently. It will also save the RTAs money previously lost to interest on short-term loans they had used to fund operations under the old system. For FY 2015, the legislation anticipates an additional $12 million for the RTAs, but the new law leaves this increase subject to appropriation during the annual state budget process. Both the proposed operating and capital spending assumes that the indexing of the state's gas tax to inflation will continue. Voters will be asked to decide whether to repeal the index on the ballot this fall. This uncertainty adds complexity to the planning process.

6 For example, the Virginia Department of Transportation began requiring six-year plans for regional transportation agencies in 2011. Washington State has required the development of six-year plans since 1990.

7 For example, see "Making the of MAP-21: A Guide to the 2012 Federal Transportation Law and How to Use it for Positive Change in Your Community" (Washington, DC: Transportation for America).

8 It should be noted that stronger service planning was also a major emphasis in MassDOT's 2011 "Beyond Boston" study, and the RTAs had been working with the department to implement the report's recommendation well before the transportation finance legislation was signed into law. See "Beyond Boston: A Transit Study for the Commonwealth, Final Report" (Boston, MA: Massachusetts Department of Transportation, 2011).

9 Nationally, the population ages 16 to 34 drove nearly one-quarter less in 2009 than in 2001. See Benjamin Davis and others. "Transportation and the New Generation" (Boston, MA: Frontier Group, 2012).

10 "Residential Market Potential: Downtown Springfield" (Clinton, NJ: Zimmerman/Volk Associates, INC., 2013).

11 Alan Berube and others. "Missed Opportunity: Transit and Jobs in Metropolitan America" (Washington, DC: Brookings Institution, 2011).

12 Margy Waller. "High Cost or High Opportunity Cost? Transportation and Family Economic Success" (Washington, DC: Brookings Institution, 2005).

13 Forman and Tumber (2013).

14 For the full text, see M.G.L. Ch. 46, Section 63.

15 The only current primer on the topic that we uncovered is a 2009 paper prepared for the US Department of Transportation by the Center for Urban Transportation Research. See Mark Mistretta and others. "Best Practices in Transit Service Planning" (Tallahassee, FL: Center for Urban Transportation Research, 2009).

16 This review draws heavily on the primer by Kathryn Quick and Zhirong Jerry Zhao. "Suggested Design and Management Techniques for Enhancing Public Engagement in Transportation Policymaking" (Minneapolis, MN: Center for Transportation Studies, 2011). Also see Scott Giering, "Public Participation Strategies for Transit," *TCRP Synthesis 89* (2011); and Judith Innes and David Booher, "Reframing Public Participation: Strategies for the 21st Century," *Planning Theory & Practice* 5(4) (2004).

17 For example, see Hindy Schachter. "Policy Development and New Immigrant Communities: A Case Study of Citizen Input in Defining Transit Problems" *Public Administration* Review 65(5) (2005).

18 Renee Irvin and John Stansbury. "Citizen Participation in Decision Making: Is It Worth the Effort?" *Public Administration Review* 64(1) (2004).

19 Matthew Lindstrom and Martin Nie. "Public Participation and Agency Planning" *Public Manager* 29(1) (2000).

20 Jennifer Weeks. "Public Involvement by Minorities and Low-Income Populations: Removing the Mystery" *TR News* 220 (2002).

21 Carissa Schively Slotterback. "Planners' Perspectives on Using Technology in Participatory Processes" *Environment and Planning-Part B* 38(3) (2011).

22 Mistretta and others (2009).

23 Chen-Fu Liao. "Data-Driven Support Tools for Transit Data Analysis, Scheduling and Planning." (Minneapolis, MN: Center for Transportation Studies, 2011).

24 Peter Gregory Furth. *Using Archived AVL-APC Data to Improve Transit Performance and Management.* (Washington, DC: Transportation Research Board, 2006).

25 Furth (2006).

26 LED are not a sample; they enumerate 90 percent of all workers in the US. The main group missing is self-employed and federal workers. See Bruce Spear. "Improving Employment Data for Transportation Planning" (Cambridge, MA: Cambridge Systematics, 2011).

27 In an April 18, 2014, telephone conversation, an Airspace representative suggested a transit agency in a small to midsize region could obtain a service planning study for approximately $30,000.

28 Peter Jin and others. "Location-Based Social Networking Data: An Exploration into the Use of a Doubly Constrained Gravity Model for Origin and Destination Estimation" *TRB 2014 Annual Meeting.*

29 Donna Rogers. "Best Practices to Reduce Paratransit Costs" *Mass Transit* 29(6) (2003).

30 See David Koffman and others. "Improving ADA Complementary Paratransit Demand Estimation" (Washington, DC: Transportation Research Board, 2007).

31 Diwakar Gupta and others. "Improving the Efficiency of Demand-Responsive Paratransit Services," *Transportation Research Part A: Policy and Practice* 44(4) (2010).

32 Richard Weiner. "Integration of Paratransit and Fixed-route Transit Services" (Washington, DC: Transportation Research Board, 2008).

33 One study demonstrated that for every dollar invested in travel training agencies saved between $1.45 and $3.98. See Karen Wolf-Branigin. "A Travel Training Cost–Benefit Model for People with Disabilities, Public Transportation Agencies, and Communities." In International Conference on Mobility and Transport for Elderly and Disabled Persons Conference Proceedings (2010).

34 Brian Taylor and others. "Nature and/or Nurture? Analyzing the Determinants of Transit Ridership across US Urbanized Areas." *Transportation Research Part A: Policy and Practice* 43(1) (2009).

35 For example, see Cornelius Nuworsoo and others. "Analyzing Equity Impacts of Transit Fare Changes: Case study of Alameda–Contra Costa Transit, California." *Evaluation and Program Planning* 32(4) (2009).

36 Howard Benn. "Bus Route Evaluation Standards" *TCRP Synthesis 10* (Washington, DC: Transportation Research Board, 1995).

37 Francis Wambalaba and others. "Price Elasticity of Rideshare: Commuter Fringe Benefits for Vanpools" (Tallahassee, FL: Center for Urban Transportation Research, 2004).

38 The Job Access Reverse Commute Program (JARC), which was absent in the most recent transportation reauthorization, has been the main source of federal funding for vanpooling. Other options include the Congestion Mitigation and Air Quality Improvement Program and 5307 Funds allocated via National Transit Data Reporting.

39 Lisa Petraglia and others. "Integrating Tourism and Recreation Travel with Transportation Planning and Project Delivery" (Washington, DC: Transportation Research Board, 2004).

40 See CJ Gabbe and others. "Opening Access to Scenario Planning Tools" (Cambridge, MA: Lincoln Institute of Land Policy, 2012).

41 The five agencies that contributed federal funding were MVRTA, GATRA, LRTA, WRTA and MART. The planning process officially began in February 2014 and is expected to be completed by June 2015.

42 Mary Ebling. "Reimagining a Legacy Transit System Lessons from Wilmington, Delaware" (Madison, WI: SSTI, 2013).

43 "Best Planning Practices: Metropolitan Transportation Plans" (Washington, DC: US Department of Transportation, 2012).

44 For example, see Thomas Sanchez. "An Inherent Bias? Geographic and Racial-Ethnic Patterns of Metropolitan Planning Organization Boards" (Washington, DC: Brookings Institution, 2006).

45 "MAP-21 Moving Ahead for Progress in the 21st Century" (Washington, DC: American Public Transit Association, 2012).