TRANSIT TOMORROW

The Long-Range Public Transportation Plan For Greater Portland, Maine

(2020-2050)

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The Portland Area Comprehensive Transportation System (PACTS) is a federal metropolitan planning organization that coordinates transportation planning and investment decisions with the state, municipalities, and public transportation partners. It directs the spending of more than $25 million in transportation funding each year.

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GPCOG
GREATER PORTLAND COUNCIL OF GOVERNMENTS

PACTS
PORTLAND AREA COMPREHENSIVE TRANSPORTATION SYSTEM

Passengers boarding Casco Bay Lines ferry to Peaks Island.

Photo: Corey Templeton

**All photos of people without masks were taken prior to the COVID-19 pandemic.*

Transit Tomorrow

EXECUTIVE SUMMARY

WE WANT TO IMPROVE THE PUBLIC TRANSPORTATION SYSTEM.

GREATER INVESTMENT IN PUBLIC TRANSIT WOULD ALLOW US TO MEET THE GROWING DEMANDS PLACED ON OUR TRANSPORTATION NETWORK, REDUCE CONGESTION AND ITS ASSOCIATED ENVIRONMENTAL IMPACTS, AND EMPOWER PEOPLE FROM ALL WALKS OF LIFE WITH RELIABLE ACCESS TO AFFORDABLE TRANSPORTATION.

Photo: Corey Templeton

PUBLIC TRANSPORTATION IN GREATER PORTLAND IS ON THE MOVE. In the last decade, we have added train runs and bus routes, expanded service hours, and upgraded terminals, stations, and stops. Prior to the COVID-19 pandemic, more and more people were riding our buses, trains, and ferries. Residents, community leaders, businesses, and visitors want, and deserve, more. To meet demand, we need to plan for the future. *Transit Tomorrow* is the long-range public transportation plan for Greater Portland, a shared vision for how to improve and expand our network of buses, trains, ferries, and mobility services over the next 30 years.

METRO's Falmouth Flyer crossing the Martin's Point bridge en route to Falmouth. Photo: GPCOG

Why Public Transportation?

Whether you ride or not, our entire region benefits from a robust public transportation network. Here are a few reasons why:

- **Greater Portland is growing**. In both population and jobs, our region is on the rise.
- **We cannot build our way out of congestion**. We lack the resources, and physical space, to build more roads; research has also shown that more roads attract more drivers, so any congestion relief is temporary or limited.
- **The environmental impacts of our transportation system are unsustainable**. In emissions alone, transportation is responsible for 54% of Maine's greenhouse gas emissions, up from 44% in 1990.[1]
- **Our economy depends on public transportation.** Transit connects people to opportunity and jobs, building a stronger regional workforce and economy.
- **Our people depend on public transportation**. As the COVID-19 pandemic and racial justice demonstrations of 2020 have highlighted, transit is vital in providing equitable access to transportation and a critical link to work for many essential workers.

Greater investment in public transit would allow us to meet the growing demands placed on our transportation network, reduce congestion and its associated environmental impacts, and empower people from all walks of life with reliable access to affordable transportation.

What is Our Vision?

We envision a regional public transportation system that stimulates economic development, enhances great places, reduces climate pollution, expands mobility, and elevates the customer experience.

Our vision is that by 2050...

> Using our region's public transportation is faster and more affordable than driving a car. Our system is funded sustainably and provides reliable and seamless transportation for our community, including commuters, mainland and island residents, and people with mobility challenges. Our communities support the long-term viability of public transportation by focusing new homes and jobs where people already live and work.

How Do We Get There?

To achieve our vision, *Transit Tomorrow* proposes a four-part strategy that includes the goals of making transit easier, creating more frequent connections throughout the region, improving rapid transit opportunities to connect our region's major market centers, and implementing transit-friendly land use policies that support more development in our villages and downtowns already served by transit.

[1] Maine Climate Council, 2020.

Make Transit Easier

WE WANT TO IMPROVE THE TRANSIT EXPERIENCE. The Make Transit Easier recommendations focus on creating seamless access to the region's public transportation system for everyone, regardless of age, income, language, race/ethnicity, ability, or geography. This includes services like carpooling/vanpooling and Uber/Lyft, as well as pedestrian and bicycle infrastructure that offer critical connections to the system.

The recommendations call for increased coordination, partnerships, and investments that build the foundation for needed infrastructure and technology. Success will mean the customer experience is universally simple and convenient across all seven of the region's transit providers.

Recommendations

- **Adopt innovative customer service technology:** Provide fare payment, trip planning, and real-time vehicle information in one website and app. This technology would simplify the customer experience and make transit a more convenient choice for riders. Additionally, pursue new technology to enhance communication between paratransit providers and customers.
- **Advance partnerships with businesses and anchor institutions:** Launch a Transportation Management Association that will work with employers to promote transit and transit-supportive initiatives such as rideshares, parking solutions, and walking and biking to reduce congestion and worker costs. Partner with social services to provide reduced fares to low-income households.
- **Enhance first and last mile connections:** Enable more people to use fixed route transit through more welcoming places to wait, better sidewalks, crosswalks, shared use paths, and bike paths, and through partnerships with bike share programs and shared mobility services.
- **Strengthen coordination among providers:** Harness mobility management strategies to engage community partners and provide avenues for better coordination among transportation providers of all modes — including community transportation, volunteer driver programs, and providers of MaineCare-funded transportation.

Our goals are to...

Make it easier for people to choose public transportation over a personal vehicle.

Ensure those who rely on public transportation have easy and dependable access.

Enable more people with mobility challenges to access fixed-route transit.

Photos: GPCOG

- **Improve door-to-door options:** Expand and improve options for riders who need door-to-door service due to mobility challenges or geography. Solutions include expanding volunteer driver programs, advancing user-focused improvements to paratransit, and exploring microtransit — small-scale public services that offer flexible routes and on-demand scheduling.

Implementation

The Make Transit Easier recommendations are all achievable within the next decade and some are already being pursued. Compared to other improvements in *Transit Tomorrow*, the costs of the Make Transit Easier recommendations are within our existing means. Additionally, many are eligible for federal funding, and several can save transit agencies money by increasing efficiency and effectiveness. In this respect, these recommendations are highly cost effective.

The Make Transit Easier section of the plan describes each of these recommendations in greater detail and outlines how we plan to achieve them. Over the next ten years, we intend to work with our transit providers, communities, and stakeholders throughout the region to invest in new technology, improve access to transit, and provide flexible alternatives for areas where traditional bus service does not work well.

Create Frequent Connections

WE ENVISION A FUTURE where you can walk out the door knowing that reliable public transit will come soon and take you where you want to go. To meet that high expectation, *Transit Tomorrow* recommends significant frequency and span of service improvements as well as expansion of service to new places. The frequency improvements ensure you will never have to wait long to catch your ride, while the expansion improvements ensure transit will be available in more places. Focusing on frequency and span of service first will allow the transit system to most effectively serve our region's existing urban areas and lay the groundwork for future expansion as demand warrants.

Recommendations

- **Improve frequency and service hours:** The first priority is to target resources to the existing routes serving our most populated urban areas. These routes should increase frequency over time to every 10 minutes for most of the day and every 20 minutes for when demand is lower; service hours should also extend to 6 a.m. to midnight seven days per week.
- **Add local circulator routes:** As demand for transit increases, add six new local circulator routes. These routes, shown in Figure 1, would make frequent stops and loop around our region's major destinations and centers of activity.
- **Create new connections:** To make transit more accessible throughout the region, three new routes are proposed to connect our region's suburban and rural communities not currently served by transit.

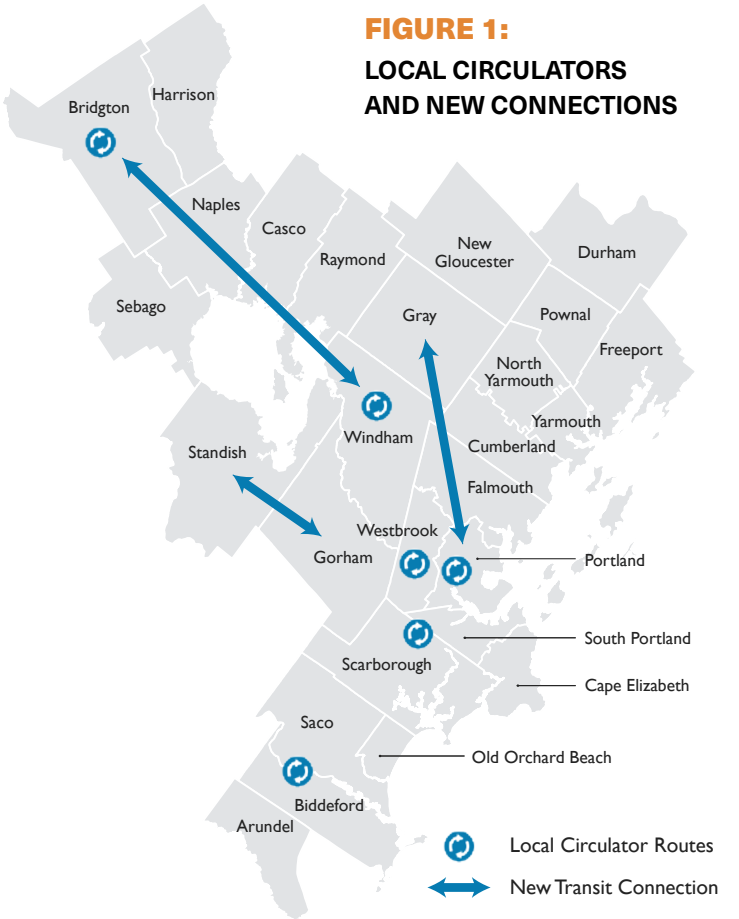
Implementation

A new study underway, called *Transit Together*, will develop an implementation plan for a regionally coordinated and integrated transit network, including strategies to make the system more seamless to ride and more efficient to operate.

Improving the frequency and service hours of routes serving our region's most populated urban areas is the first priority. A new study, *Transit Together*, will make detailed recommendations for how to accomplish these goals. As the desire for using transit increases, Figure 1 shows locations throughout the region where local circulator routes and new connections are proposed.

Above: The Mill Creek Transit Hub in South Portland. Photo: GPCOG

FIGURE 1:
LOCAL CIRCULATORS AND NEW CONNECTIONS



Improve Rapid Transit

AS OUR REGION CONTINUES TO GROW, developing a network of fast, reliable, high-capacity transit corridors will be crucial to achieve *Transit Tomorrow*'s vision. Rapid transit, whether bus rapid transit (BRT), light rail transit (LRT), or commuter rail, often operate separately from vehicle traffic on their own designated right-of-way and/or have traffic signal priority at intersections. This allows them to swiftly bypass congestion and delays and stay on schedule. A regional rapid transit system would provide the type of fast, regional access generally enjoyed by drivers, but denied to those who are unable to drive or choose not to.

Recommendations

- **Rapid transit corridors:** The phased implementation of rapid transit would mark a major transformation in how we move around the region. It would allow us to meet the growing demands placed on our transportation network without building new roads or inducing more vehicle travel. Put simply, if transit is the fastest and most convenient option, people are more likely to take it.

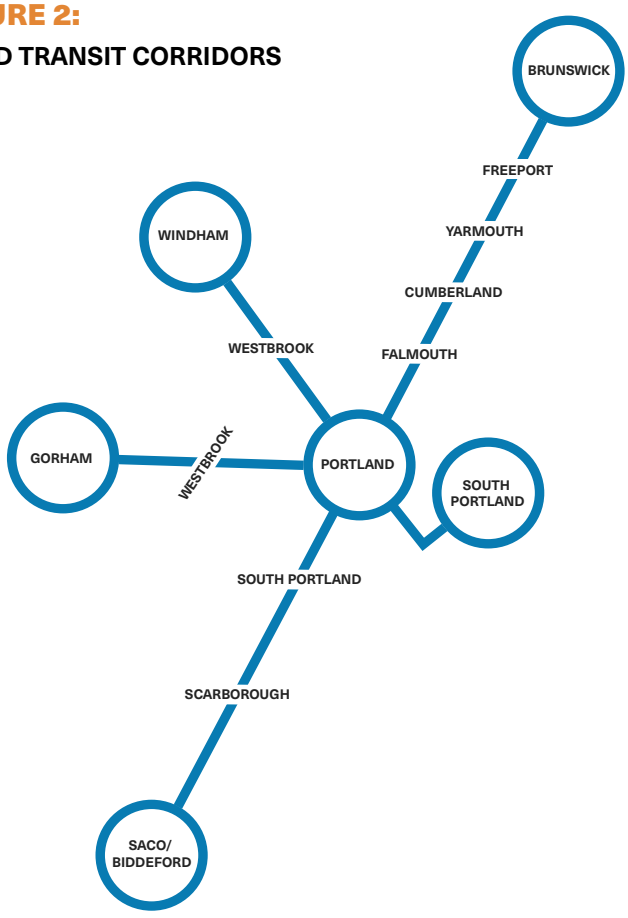
Our preliminary evaluation shows rapid transit is appropriate for several corridors, to varying degrees, connecting major markets in the region. These corridors, shown conceptually in Figure 2, were identified based on current and projected population, socioeconomic characteristics, existing public transit services, and regional employment and commuting patterns.

Implementation

For each corridor, specific route and mode choices would need further evaluation. For example, the corridor between Biddeford/Saco and Portland includes the Maine Turnpike, U.S. Route 1, and the Downeaster rail line, all of which have current transit service and any one of which could be candidates for developing rapid transit. An "alternatives analysis" is the process for evaluating these options and is required to be eligible for federal funding.

FIGURE 2:

RAPID TRANSIT CORRIDORS



Our evaluation shows rapid transit is appropriate for several corridors connecting major markets in the region (Figure 2). For each corridor, specific route and mode choices would need further evaluation. An "alternatives analysis" is the process for evaluating these options and is required for federal funding eligibility.

Above: The Amtrak Downeaster crossing the Saco River. Improving the frequency of the Downeaster is one recommendation for providing more rapid transit service in the region.

Create Transit-Friendly Places

TO FULLY REALIZE THE IMPROVEMENTS this plan envisions, we will need to sensibly manage where, and how, future growth and development occurs in the region. In the last few decades, much of our region's growth has occurred in suburban and rural areas, away from job centers and services. This sprawling development pattern is difficult and expensive to serve by public transit. For this reason, the main goal of the Create Transit-Friendly Places recommendations is to expand housing choices and jobs within walking distance of our major priority centers and corridors that are most critical for supporting public transportation. Figure 3 shows the general locations of these centers.

Land use, zoning, and street design decisions occur at the local level and are the building blocks for successful public transportation (MaineDOT also has an important role in most street design decisions). However, PACTS can influence these decisions through its policies and through incentives to fund projects that demonstrate the integration of public transportation and land use.

Urban to rural development pattern in Biddeford and Saco. Photo: Dave Cleaveland, Maine Imaging

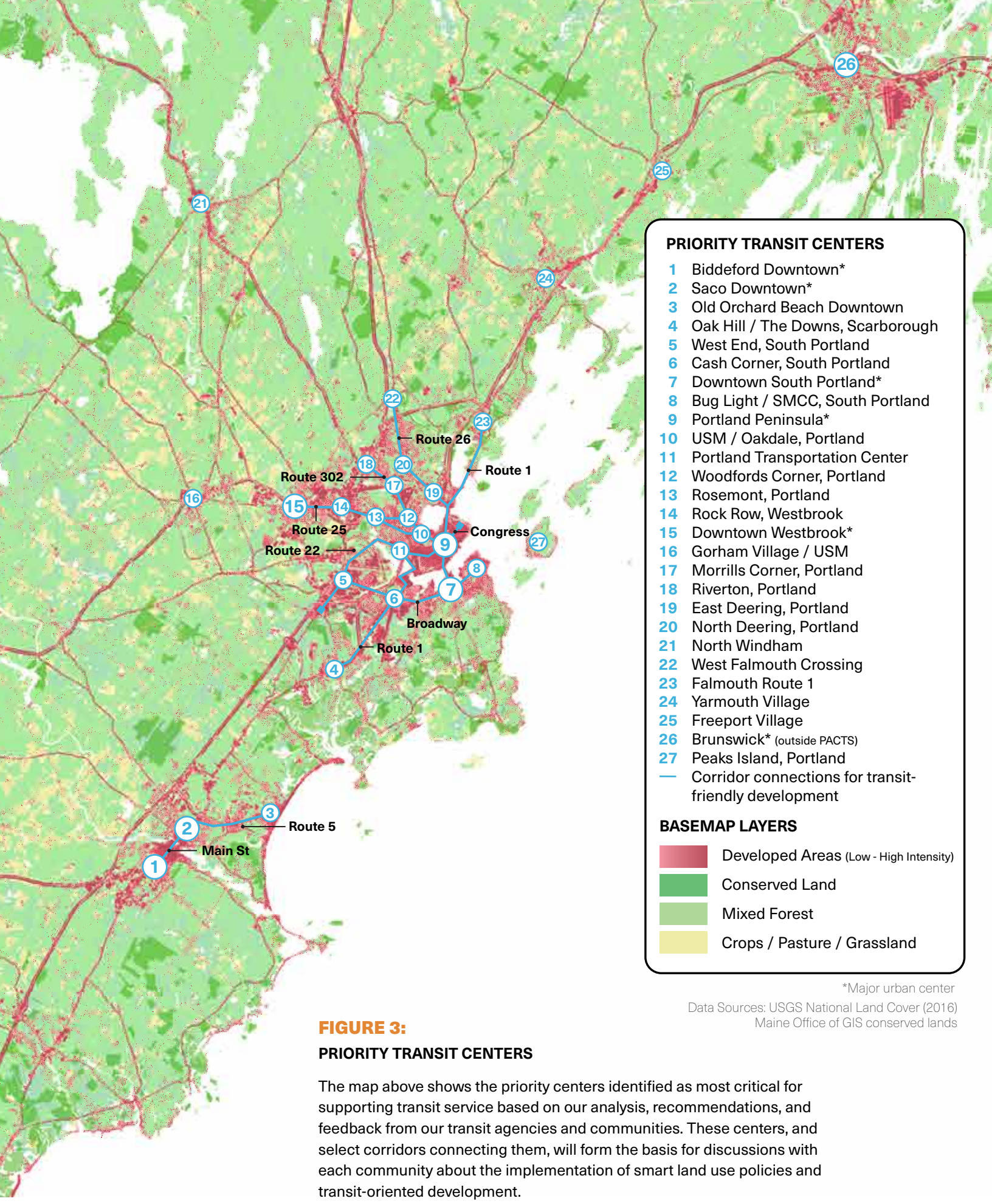
While PACTS has no direct influence over land use, PACTS members do. PACTS member municipalities, as well as cities and towns in the GPCOG region, can adopt transit supportive land use policies. The Create Transit-Friendly Places recommendations identify actions PACTS can take to better align the Transit Tomorrow vision with local land use policies.

Recommendations

- **Zone for public transportation:** Work with municipalities to adopt zoning and policy changes that are compatible for higher density, walkable neighborhoods served by public transportation.
- **Target investments to places that support public transportation:** Prioritize funding to places where people already live, work, visit, and use public transportation, and, where surrounding land use and zoning encourage transit-supportive development.
- **Create TOD plans:** Create transit-oriented development (TOD) plans for all priority transit centers. TOD plans identify ways to maximize the amount of residential, business, and leisure space within walking distance of a major public transportation hub.
- **Ensure complete streets:** Adopt a regional complete streets policy—and support municipalities with local policies—to ensure streets are walkable, bikeable, and provide safe access to transit for all users regardless of age or ability.
- **Protect open spaces:** Coordinate with local conservation groups to help protect natural resources and open spaces through conservation planning.

Implementation

The recommendations above lay the groundwork for "transit-friendly" policy choices and investment decisions. While these recommendations do not bear the same financial burdens as transit service improvements, it takes hard work, time, and buy-in from local communities, and MaineDOT, to enact meaningful land use and street design changes. Additionally, the costs in staff time (or consultant fees) to revise land use codes or draft complete streets policies, for example, can be exorbitant for municipalities currently struggling to balance budgets amidst a pandemic. The Create Transit-Friendly Places section in the plan, and implementation table (Table 1a/1b) at the end of this document, outline in more detail how PACTS intends to achieve these recommendations.



PRIORITY TRANSIT CENTERS

1 Biddeford Downtown*
2 Saco Downtown*
3 Old Orchard Beach Downtown
4 Oak Hill / The Downs, Scarborough
5 West End, South Portland
6 Cash Corner, South Portland
7 Downtown South Portland*
8 Bug Light / SMCC, South Portland
9 Portland Peninsula*
10 USM / Oakdale, Portland
11 Portland Transportation Center
12 Woodfords Corner, Portland
13 Rosemont, Portland
14 Rock Row, Westbrook
15 Downtown Westbrook*
16 Gorham Village / USM
17 Morrills Corner, Portland
18 Riverton, Portland
19 East Deering, Portland
20 North Deering, Portland
21 North Windham
22 West Falmouth Crossing
23 Falmouth Route 1
24 Yarmouth Village
25 Freeport Village
26 Brunswick* (outside PACTS)
27 Peaks Island, Portland
— Corridor connections for transit-friendly development

BASEMAP LAYERS

Developed Areas (Low - High Intensity)
Conserved Land
Mixed Forest
Crops / Pasture / Grassland

*Major urban center

Data Sources: USGS National Land Cover (2016)
Maine Office of GIS conserved lands

FIGURE 3:

PRIORITY TRANSIT CENTERS

The map above shows the priority centers identified as most critical for supporting transit service based on our analysis, recommendations, and feedback from our transit agencies and communities. These centers, and select corridors connecting them, will form the basis for discussions with each community about the implementation of smart land use policies and transit-oriented development.

What Next?

***TRANSIT TOMORROW* IS INTENTIONALLY AMBITIOUS** and would dramatically improve public transportation in our region. However, these improvements are expensive and cannot happen all at once. The implementation table below outlines our strategy for how to achieve the *Transit Tomorrow* vision, step by step, over the next 30

TABLE 1a:

IMPLEMENTATION TABLE

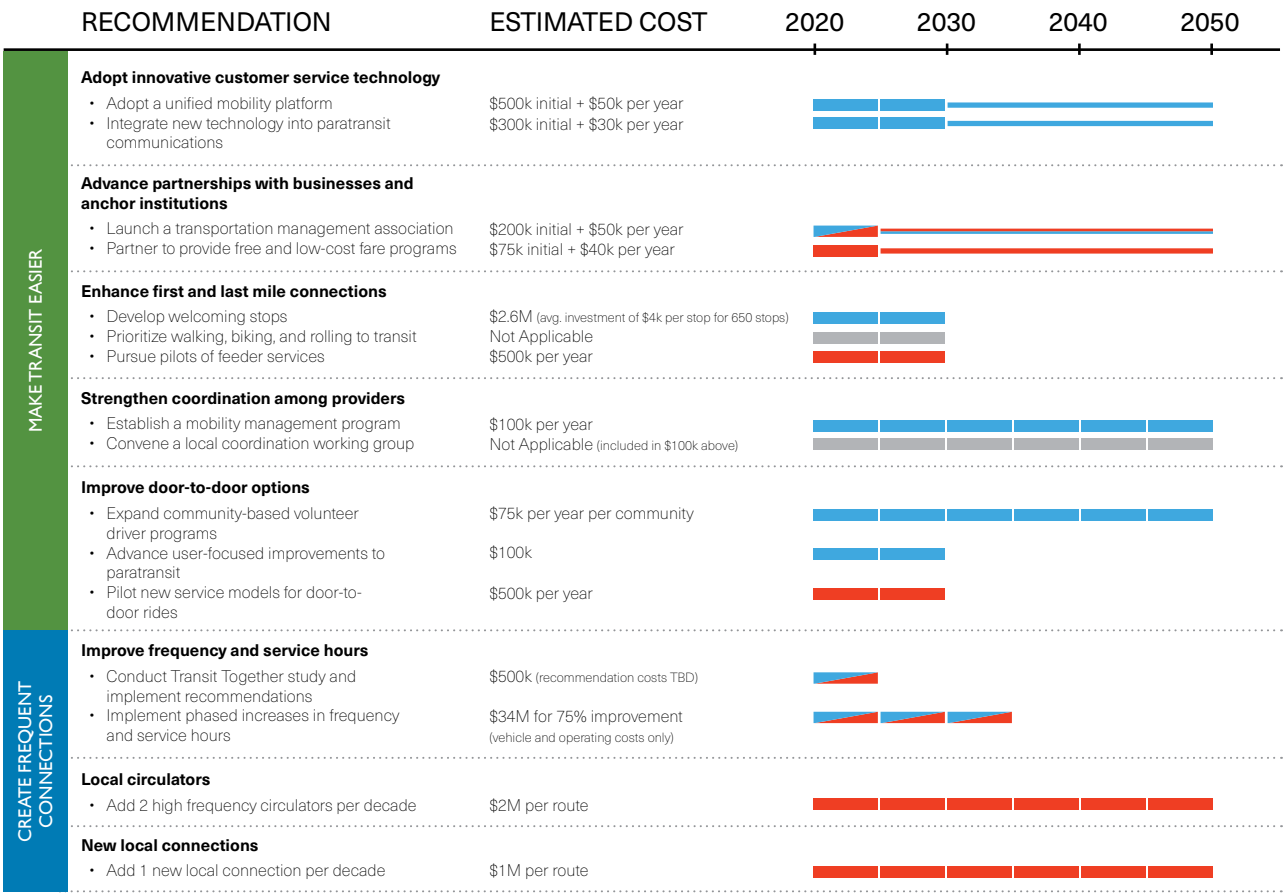
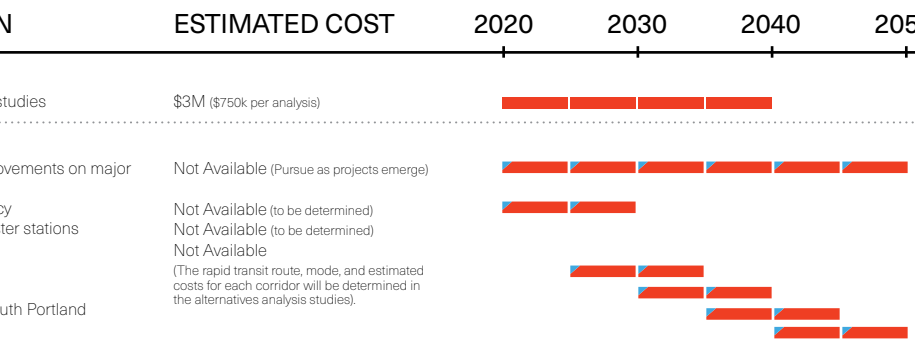


TABLE 1b:

IMPLEMENTATION TABLE

	RECOMMENDATION	ESTIMATED COST	2020	2030	2040	2050
IMPROVE RAPID TRANSIT	**Rapid transit (analysis)**					
	• Conduct alternatives analysis studies	$3M ($750k per analysis)				
	Rapid transit (implementation)					
	• Implement infrastructure improvements on major bus corridors	Not Available (Pursue as projects emerge)				
	• Increase Downeaster frequency	Not Available (to be determined)				
	• Relocate and/or add Downeaster stations	Not Available (to be determined)				
	• Implement rapid transit: Gorham-Westbrook-Portland Biddeford-Saco-Portland North Windham-Portland-South Portland Brunswick-Portland	Not Available (The rapid transit route, mode, and estimated costs for each corridor will be determined in the alternatives analysis studies).				
CREATE TRANSIT-FRIENDLY PLACES	**Zone for public transportation**					
	• Conduct regionwide zoning analysis	$50k - $75k				
	• Provide transit supportive land use technical assistance to municipalities	$25k - $50k				
	Target investments to priority centers and corridors					
	• Review and refine priority centers and corridors	Not Applicable (These action steps are either part of the planning process for the next metropolitan transportation plan, or policy decisions with little to no cost).				
	• Target investments to priority transit centers and corridors					
	• Prioritize places with transit-supportive zoning					
	Create transit-oriented development plans					
	• Develop 1 TOD plan per year	$50k - 100k per plan				
	• Implement TOD plans	Not Available (Costs will vary by project and largely borne by non-PACTS entities).				
	Ensure complete streets					
	• Adopt a PACTS complete streets policy	$85k				
	• Provide complete streets technical support to municipalities	$25k per year				
	Protect open spaces					
	• Coordinate with local conservation organizations	$10k per year				



Anticipated / Needed Funding Sources

- Standard federal and state (formula funds / UPWP)
- Additional federal, state, local, and private sources
- Little to no funding needed
- Ongoing operational costs

Transit Tomorrow
PLAN

AN AMBITIOUS 30-YEAR STRATEGIC PLAN FOR ENHANCING PUBLIC TRANSPORTATION IN THE GREATER PORTLAND REGION.

Photo: Corey Templeton

Aerial view of the Portland Peninsula. Photo: GPCOG

1 Introduction

TRANSIT TOMORROW is an ambitious 30-year strategic plan for enhancing public transportation in the Greater Portland region. The multi-year process to develop this plan was collaborative and thorough, leveraging the extensive transit planning work completed throughout the region in recent years. *Transit Tomorrow* adds to the existing body of work by establishing a bold, consensus-driven vision for a transit system that serves the varied needs of our growing region well into the future.

The plan doubles down on public transportation as an essential strategy for achieving the region's economic, environmental, equity, and land use goals. It also provides concrete steps for the region to pursue this ambitious vision. *Transit Tomorrow* presents the preferred pathway for delivering the region's future transportation system and should be the key reference document for impactful transit funding decisions, infrastructure priorities, technology acquisitions, and regional coordination initiatives.

Transit Tomorrow is being written at an inflection point in the 21st century. The COVID-19 global pandemic has taken a tragic toll on the health and wellbeing of people across the globe and continues to wreak havoc on health systems, global commerce, and travel. At the same time, some underlying trends continue apace: the Millennial generation supplanting the Baby Boomer generation as the largest population cohort and accelerating advancements in new transit technology such as electric buses and mobile applications. This plan takes a sober look at the uncertainty of the coming decades and adjusts where appropriate but reaffirms public transportation as a necessary component to achieving the shared vision for the region.

Transit Tomorrow adds to the existing body of work by establishing a bold, consensus-driven vision for a transit system that serves the varied needs of our growing region well into the future.

2 Vision

***TRANSIT TOMORROW'S* VISION** results from extensive public outreach, peer agency and best practices research, and input from the region's key stakeholders, including the diverse and engaged members of the Project Advisory Committee (PAC). This engagement resulted in an overarching vision that serves as a set of guiding principles informing the goals and recommendations outlined in this plan.

Our vision is that by 2050…

> **Using our region's public transportation is faster and more affordable than driving a car. Our system is funded sustainably and provides reliable and seamless transportation for our community, including commuters, mainland and island residents, and those with limited mobility options. Our communities support the long-term viability of public transportation by focusing new homes and jobs where people already live and work.**

The successful implementation of this vision will create a regional public transportation system that stimulates economic development, enhances our region's great places, reduces climate pollution, expands mobility, and elevates the customer experience.

Photo: GPCOG

3 Recent Plans and Studies

AMONG THE NUMEROUS STUDIES providing the foundation for *Transit Tomorrow*, two recent key studies informing this effort are *Moving Southern Maine Forward* and *Destination 2040*. Both documents provide a foundation for a vision and long-range strategic plan for public transportation in the region.

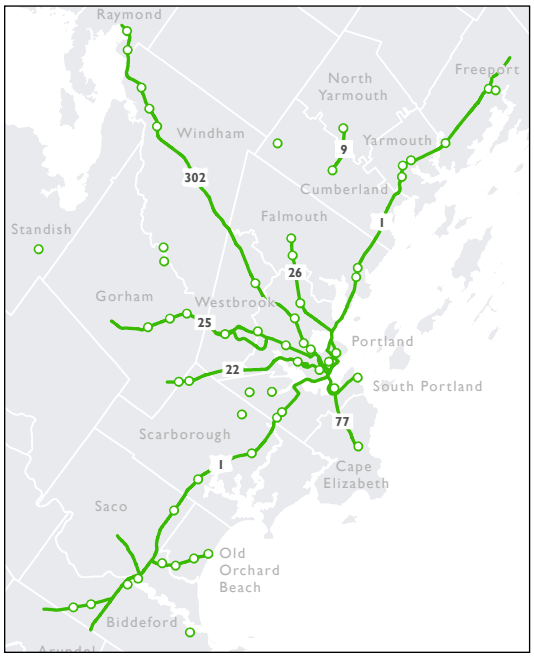
These plans and studies reflect the perspectives of numerous stakeholders, including those of residents, elected officials, business owners, city/town planners, and transportation professionals working in the region. When viewed together, these documents form a mosaic of long-standing regional priorities that inform the vision for *Transit Tomorrow.*

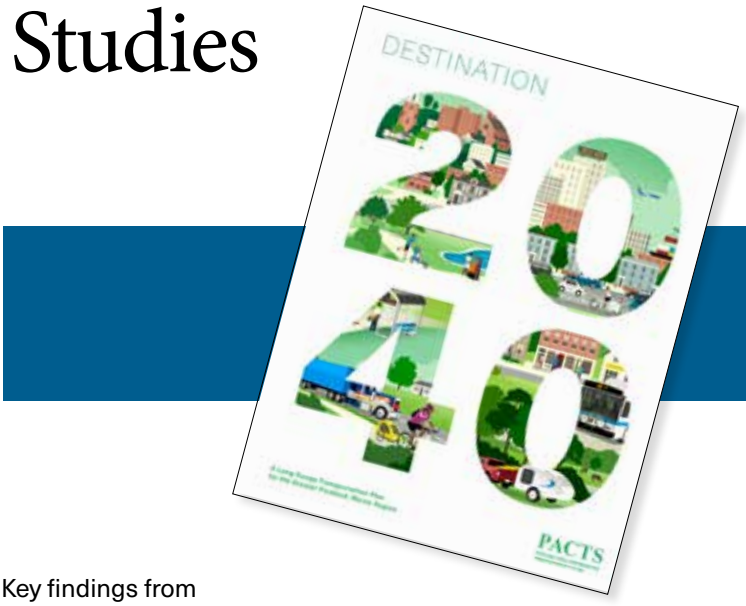
Destination 2040

Destination 2040 is the metropolitan transportation plan for the Portland Area Comprehensive Transportation System (PACTS) region developed in 2016. As stated in the plan, *Destination 2040* "serves as a policy guide for maintaining the best of the existing transportation system, providing focus in areas where the system needs modernization, and taking transformative steps to develop a sustainable transportation system for tomorrow."

FIGURE 4:

PRIORITY CORRIDORS AND CENTERS





Key findings from *Destination 2040* include:

- **Planning for population change:** Most population growth in the state is concentrated in and around Portland. The two largest growing demographics are those age 65+ (Baby Boomers) and people age 18 – 35 (Millennials). Public transportation is well positioned to serve the needs of both groups.
- **Strengthening regional coordination:** Most transportation problems are regional and will require a concerted and coordinated multi-jurisdictional response.
- **Bridging the funding gap:** There is a large and growing funding gap in the region between the need for transportation investments and the resources available. Securing the funds needed to meet the region's identified transportation needs may be the biggest challenge to implementation.
- **Maintaining support for transit:** There is significant support for expanded transit among both younger and older residents in the region and (counter to national trends) growing ridership on the region's systems. Although transit accounts for a relatively small percentage of all trips in the PACTS region, it is increasing.

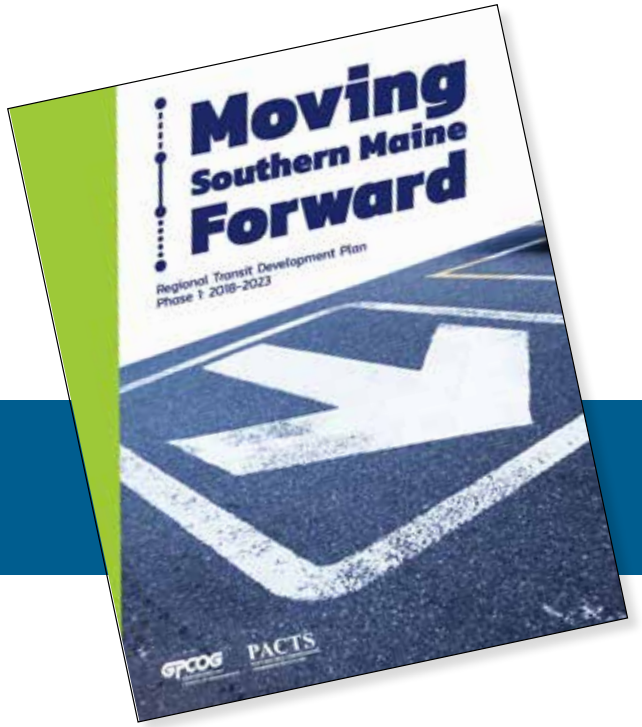
A major focus in *Destination 2040* is the introduction of priority corridors and centers to target investments to regionally significant locations. This comprehensive approach coordinates transportation and land use planning and sets new criteria for prioritizing projects aligned with *Destination 2040*'s goals and strategies. The *Destination 2040* priority corridors and centers are mapped in Figure 4.

Moving Southern Maine Forward

Completed in 2017, *Moving Southern Maine Forward* is a short-range transit plan focused on improving the efficiency of public transit operations while growing the attractiveness and utility of transit in Southern Maine. The findings from *Moving Southern Maine Forward* build upon those documented in *Destination 2040* to include the following:

- **Expected growth:** Demographic projections and current trends suggest continued population and employment growth is expected in urban areas. The densest communities are expected to absorb most of the increase in population and new housing over the next twenty years.
- **The highest transit commute rates are in Portland:** The percent of residents who take transit to work (in Portland or elsewhere) is highest in Portland as well as the Casco Bay island communities, where the ferry is the only means of transit on/off the islands.
- **Varied travel behavior:** Cell phone data shows that those living in the Portland area travel equally often between communities as within them, whereas those living further from the urban core are more likely to travel within one community.
- **Increasing transit ridership:** Ridership is growing for most transit providers operating in Greater Portland.
- **Transit connectivity is limited:** There are limited transfer opportunities between transit service providers, driven partly by the lack of a common fare medium for the region and the need to better connect routes and schedules among the seven transit agency providers.
- **Transit providers are cost-efficient:** Greater Portland's transit providers operate at a roughly comparable cost to peer agencies (slightly more expensive normalized per hour, and slightly less expensive normalized per mile).
- **Route efficiency varies by service:** Service efficiency, as measured by passenger trips per revenue hour, is increasing for fixed route bus service and declining for demand response and intercity rail.
- **Financial performance is steady:** Farebox revenues for most transit agencies have held steady in recent years.

The study also provided a summary of a public survey that showed strong support for public transportation even though less than one-third of respondents listed it as their primary mode of transportation.

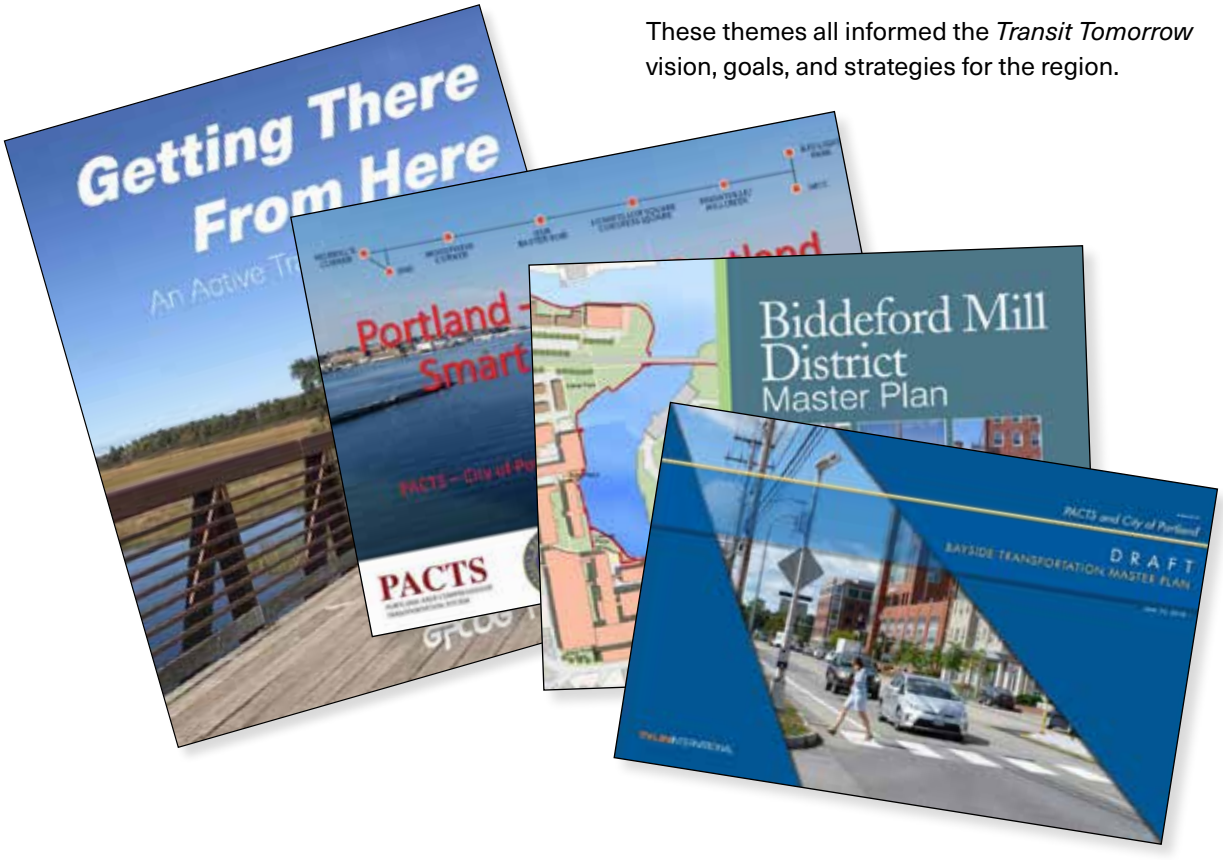


Additional Plans and Studies

Within the last 10 years in Greater Portland, there have been 26 plans or studies considering public transportation, 20 plans or studies dealing with land use, and nine initiatives related to redesigning streets to be safer for all users. In total, the project team found over 1,000 unique recommendations laid out in these documents. Primary themes from this extensive review include the following:

- **The importance of land use planning:** Steer future growth to already developed areas to preserve rural and undeveloped land.
- **The need to expand affordable housing options:** There is a lack of affordable housing options throughout the region, particularly in urban areas near jobs and services.
- **The demand for increased funding:** Raise more revenue for public transportation.
- **Ways to invest in and implement new technology:** Prioritize investment in improved technology.
- **Methods to expand regional collaboration:** Expand coordination between the multiple public transportation providers in the region.
- **Public transportation services need to be expanded:** Increase and expand Downeaster passenger rail service. Expand regional coverage, hours, and frequency of fixed route bus and demand response service.
- **Improve transportation infrastructure:** Invest in alternative fuel infrastructure and improve Americans with Disability Act (ADA) accessibility and passenger amenities at bus stops.
- **Make roadway design a priority in future project planning:** Prioritize planning and improvements to *Destination 2040* priority corridors and adopt complete streets principles to improve accessibility for all users.
- **The importance of climate action strategies:** Reduce the region's carbon footprint and plan for the impacts of climate change.

These themes all informed the *Transit Tomorrow* vision, goals, and strategies for the region.





Photos: Left: MaineDOT Commissioner Bruce Van Note speaks at the kick-off event.
Center/Right: Engagement activities at the 2019 GPCOG Annual Summit. GPCOG

4 Public Engagement

***TRANSIT TOMORROW* IS SHAPED** by input offered by passengers, residents, municipalities, transit agencies, businesses, and many other stakeholders — all working together to achieve a shared vision of better mobility throughout the region. From the start of *Transit Tomorrow* through to the end, the plan has been rooted in a robust, iterative, and responsive public and stakeholder engagement process. The following section highlights how the project team engaged a diverse cross-section of people throughout the region during the plan's development.

Kick-Off Event

The project team officially kicked off *Transit Tomorrow* in March 2019 with a public event at the Casco Bay Lines Ferry Terminal in Portland. Joined by representatives from transit agencies and by local and state elected officials, Maine Department of Transportation Commissioner Bruce A. Van Note opened the project with words of optimism for the strategic 30-year plan for the region.

Project Advisory Committee

The Project Advisory Committee (PAC) consisted of representatives from municipalities, transit agencies, community-based organizations, developers, and businesses. The project team held regular meetings with the Project Advisory Committee, asked for feedback at key decision points, and collaborated with committee members along the way to develop the plan's vision and recommendations.

Two exercises provided the foundation for the plan's vision statement (Figure 5). In the tradeoff exercise, the project team asked committee members to weigh in on three common transit tradeoffs. In the funding priorities exercise, each committee member distributed $1 million in hypothetical transit funds towards more than 20 specific investment categories.

> "South Portland finished its streetcar lines about a century ago, and restored bus service in 1983. We have to demonstrate new projects are no less realistic than those taken on by our parents and grandparents."
>
> Former South Portland Mayor Claude Morgan in remarks at the Kick-Off Event.

FIGURE 5:

PROJECT ADVISORY COMMITTEE EXERCISES

Tradeoff Exercise

While we would like to provide public transportation to everyone, with a limited amount of funding not all needs can be met. In this exercise, the project team asked committee members to weigh three common transit tradeoffs to help understand regional priorities.

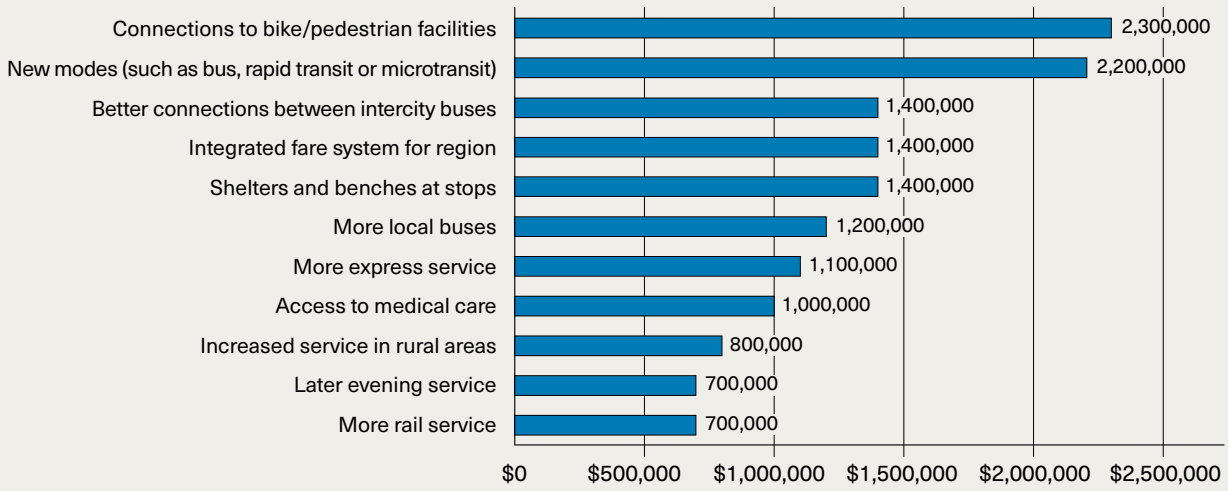
Transit Tradeoffs

	Speed vs. Access	Coverage vs. Frequency	Span vs. Coverage
DETAILS	The tradeoff is being able to get to and from key locations faster (speed) versus being able to access transit from more stops and locations (access).	Offering transit service in more locations, including those further from the central core, at lower frequencies (coverage) versus focusing transit service along key corridors with a higher focus on reducing wait times (frequency).	Providing transit service for longer hours of the day and/or additional days of the week (span) versus providing transit service in more locations, including those further from the central core (coverage).
COMMITTEE PREFERENCE	The committee leaned towards **faster service** with fewer stops.	The committee overwhelmingly preferred more **frequent service**.	More committee members preferred **longer hours of service** over service to more places.

Funding Priorities Exercise

In this exercise, each committee member distributed $1 million in hypothetical transit funds towards over 20 specific investment categories. The graph below shows the top ten priority investments selected by committee members.

Funding Priorities



Pop-Ups

The project team organized four in-person informal "pop-up" tabling events at busy transit hubs in June 2019. Pop-ups were staffed at the Saco Transportation Center in Saco, the Mill Creek transit hub in South Portland, the Maine Mall in South Portland, and the Casco Bay Lines Terminal in Portland.

Key Themes:

- **The need to improve the customer experience:** Most respondents mentioned the importance of taking the needs of customers into account. Issues of reliability, frequency, and span of service were common. Public transportation needs to be easier to use if the goal is to increase ridership.
- **The importance of land use:** Many respondents remarked on the importance of having housing and jobs near transit.
- **Concerns about climate and the environment:** Respondents often cited the impacts of climate change as an important consideration for improving public transportation.
- **The need for universal accessibility:** Respondents frequently mentioned the importance of fully accessible stops, vehicles that kneel and accommodate mobility aids, and seating areas at stops.
- **Methods to increase ridership:** Many respondents offered suggestions for ways to increase ridership, such as improving marketing, communications, and branding; expanding park and ride facilities; adding new fare payment options; and improving mobile apps.

Transit Boards Workshop

GPCOG convened members of all seven transit agency boards in a workshop in September 2019. The workshop helped inform the vision statement through a series of discussion questions around the topics of desired reputation, challenges, tradeoffs, and investments.

Key Themes:

- **Public transportation should be more convenient than driving a car:** To make dramatic gains in ridership, participants felt public transportation needs to be more convenient than driving a car. Board members recommended prioritizing urban connections and increasing frequency as first steps towards reaching this goal.
- **A strong desire for a unified public transportation network:** Participants expressed the desire to have a seamless, commonly branded public transportation network (although common branding is not necessarily applicable to all modes).
- **The importance of accessibility:** Participants discussed the need for public transportation to be universally accessible—both in terms of ADA accessibility and places served.

The Transit Boards Workshop was held in September 2019. The workshop helped inform the vision statement through a series of discussion questions and engagement activities. Photo: GPCOG

- **Public transportation is a key part of the climate solution strategy:** Board members emphasized the key role transit plays in reducing the region's carbon footprint.
- **The need to revise land use policies:** Board members noted the need to implement transit-supportive land use policies in communities across the region.
- **The importance of reputation and public perception:** For transit to reach its full potential in the region, it must be reliable and widely perceived as a safe, clean, friendly, and appealing option.

GPCOG Annual Summits

GPCOG hosted two Annual Summits, each with over 100 attendees. At the 2019 Annual Summit, the project team presented an overview of the planning process and asked participants to weigh in on '"What if?" questions to inform the scenario planning process. The project team learned that attendees were most interested in exploring the impacts of where future population and job growth occurs, and how various levels of transit investment impact ridership.

At the (virtual) 2020 Annual Summit, Greater Portland METRO's General Manager Greg Jordan and PAC representatives presented the plan's draft recommendations to the general assembly. Following the presentation, the project team hosted virtual sub-regional breakout sessions to hear specific feedback on the recommendations. Breakout sessions revealed that 84% of participants were either "satisfied" or "very satisfied" with the *Transit Tomorrow* recommendations.

Municipal Outreach

The project team met with many of the region's municipal staff on an individual basis to discuss each community's priorities for conservation, growth, future development, and public transportation service. The project team conducted this outreach to inform the land use recommendations and priority centers map included in this plan.

Transportation and Community Network

GPCOG's Transportation and Community Network is a regional, multi-sector mobility management network that meets regularly to engage stakeholders in transportation planning and decision-making. Network members include representatives from organizations focused on aging, disability, health care, housing, public health, economic development, bicycle pedestrian advocacy, and transportation. The group also includes individuals with lived experience of transportation barriers—including older adults, people with disabilities, and communities of color that are underserved by transit. The project team met with the Transportation and Community Network on two separate occasions to seek input on the plan's draft recommendations.

Engagement activities at the 2019 GPCOG Annual Summit. Photos: GPCOG

Online Survey

The project team conducted an online survey using the Metroquest survey platform. The survey remained open from July 8, 2019 to August 27, 2019. It received 823 responses from a diverse cross section of people throughout the region. The survey asked respondents to rank various aspects of transit service as a way of prioritizing investments in a resource-constrained environment.

In general, respondents ranked expanding geographic coverage and increasing frequency as the most important priorities. With limited funding, these priorities can often be at odds with each other — more resources devoted to expanding coverage means fewer resources devoted to increasing frequency, and vice versa.

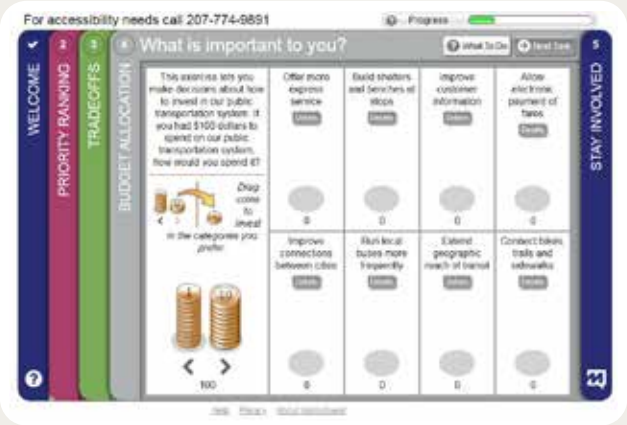
FIGURE 6:

ONLINE SURVEY

Budget Allocation Question

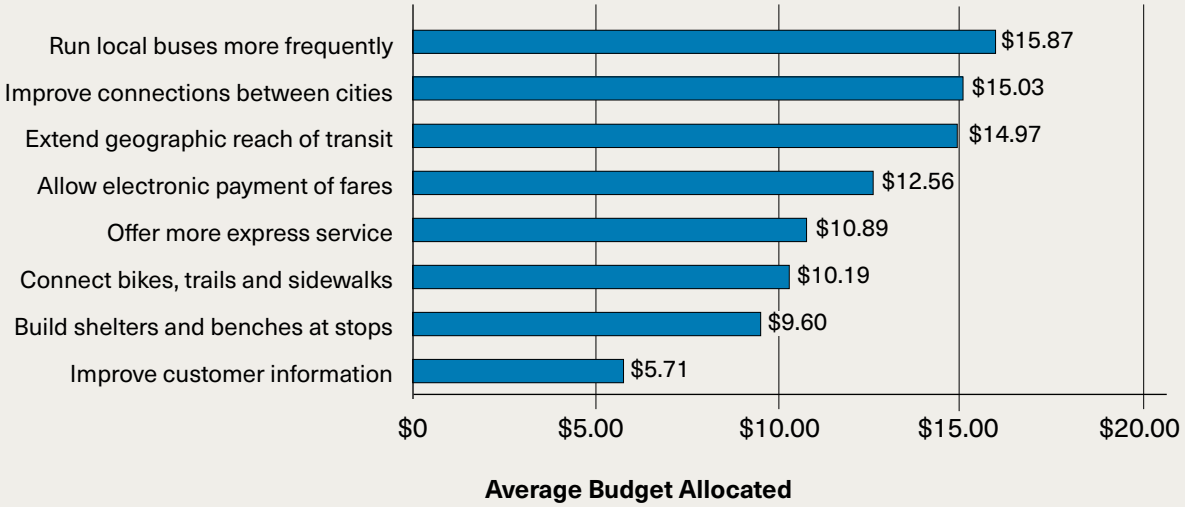
This image shows the results of the budget allocation question which asked respondents,

"If you had $100 to spend on our public transportation system, how would you spend it?"



Budget Allocation Results

The graph shows the average budget allocated to each improvement category. A more detailed survey summary report is available in the appendix materials on the project website.



Casco Bay Lines ferries at the dock. Photo: Corey Templeton

5 Existing Conditions

Transit Providers

Greater Portland has a complex public transportation landscape with seven providers, each with different service areas, modes of service, varying target populations, and a diversity of trip types.

- **Biddeford Saco Old Orchard Beach (BSOOB) Transit** is an urban fixed-route bus network in Biddeford, Saco, and Old Orchard Beach with regional service to Scarborough, South Portland, and Portland.
- **Casco Bay Lines (CBL)** is a ferry service connecting Casco Bay islands with Portland.
- **Greater Portland METRO** is an urban fixed-route bus network in Portland and serves surrounding communities as far west as Gorham and north as Brunswick with regional service.
- **Northern New England Passenger Rail Authority (NNEPRA)** manages the operations of the Downeaster, a passenger rail service between Boston, Portland, and Brunswick with intermediate stops.
- **Regional Transportation Program (RTP)** operates both a shared-ride demand response service that requires riders to book trips in advance and the Lakes Region Explorer — a fixed route bus service between Bridgton and Portland. RTP is the ADA paratransit provider for Cumberland County and provides many MaineCare-funded rides. In addition to staff drivers who operate buses and vans, RTP has volunteer drivers who use their own vehicles and are reimbursed by a mileage rate.
- **South Portland Bus Service (SPBS)** is an urban fixed-route bus network in South Portland with service to Portland and Scarborough.
- **York County Community Action Corporation (YCCAC)** offers a range of transportation options, available to the general public and equipped for people with disabilities. These services include both public transportation and contracted/special service transport. In addition to staff drivers who operate buses and vans, YCCAC has volunteer drivers who use their own vehicles and are reimbursed by a mileage rate demand response transportation.
- **Other Providers:** In addition to the primary public transportation agencies, there are a variety of private and nonprofit transportation providers, including taxis, water taxis, intercity bus operators, independent demand response providers, grassroots volunteer driver programs, and ride-hailing services such as Uber and Lyft.

Most of the Greater Portland region receives some level of public transportation service, even the outlying suburban and rural communities. While the fixed-route system is concentrated in the Portland and coastal areas of the region, there are some routes connecting outlying communities to the urban core. Demand response services like RTP and YCCAC fill the gaps for much of the remaining service area.

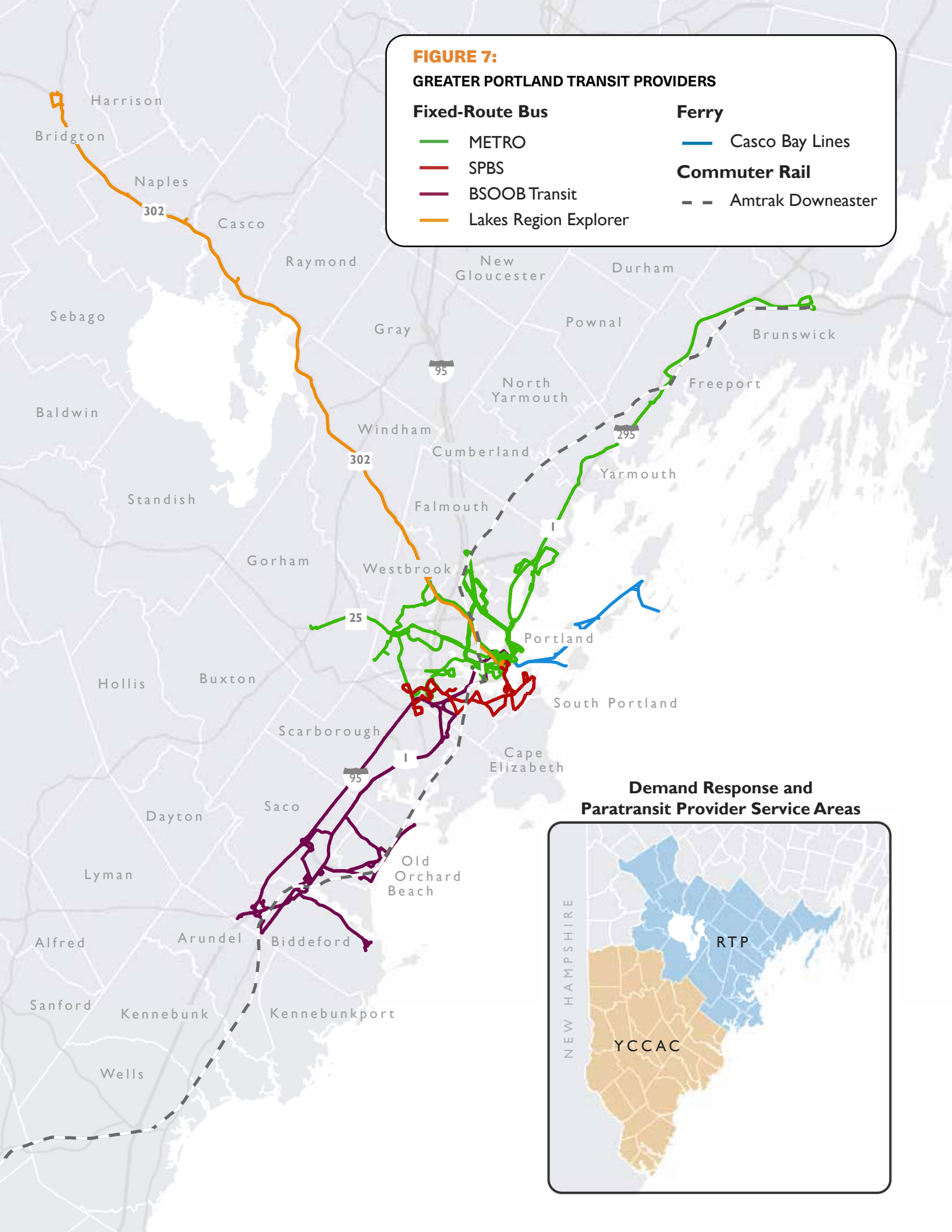


FIGURE 7:
GREATER PORTLAND TRANSIT PROVIDERS
Fixed-Route Bus
METRO
SPBS
BSOOB Transit
Lakes Region Explorer
Ferry
Casco Bay Lines
Commuter Rail
Amtrak Downeaster
Harrison
Bridgton
Naples
302
Casco
Raymond
New Gloucester
Durham
Sebago
Gray
Pownal
Brunswick
95
North Yarmouth
Freeport
Baldwin
Windham
295
Cumberland
302
Yarmouth
Standish
Falmouth
1
Gorham
Westbrook
25
Portland
Hollis
Buxton
South Portland
Scarborough
Cape Elizabeth
1
95
Dayton
Saco
Old Orchard Beach
Lyman
Alfred
Arundel
Biddeford
Sanford
Kennebunk
Kennebunkport
Wells
Demand Response and Paratransit Provider Service Areas
NEW HAMPSHIRE
RTP
YCCAC

Peer Analysis

In order to get an idea for what other similarly sized regions of the country have been able to accomplish, four peer regions were identified:

- Boulder, Colorado
- Bremerton, Washington
- Buffalo, New York
- Burlington, Vermont

Peer region characteristics and innovative or distinctive features are listed in Table 2. All peer regions have multiple transit service providers.

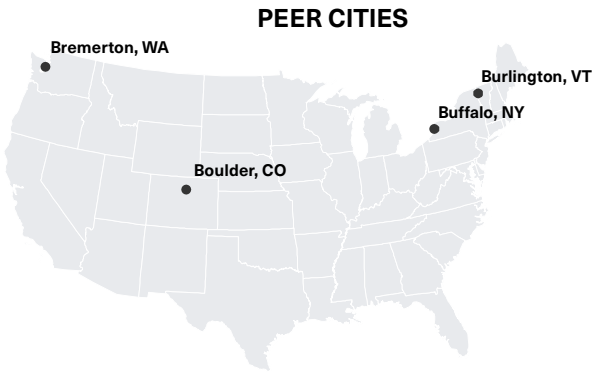


TABLE 2:

PEER REGION CHARACTERISTICS

	Greater Portland, ME	Boulder, CO	Bremerton, WA	Buffalo, NY	Burlington, VT
Multiple Transit Providers	✓	✓	✓	✓	✓
Rail Service	✓			✓	✓
Ferry Service	✓		✓	✓	✓
Regional Population Size	200,000	295,000	200,000	260,000	110,000
Land Area (square miles)	136	726	354	41	160
Older Population	✓				
Growing Population	✓	✓	✓		
Seasonal Population	Tourism, Students	Students	Tourism		Students
Recent Consolidation					✓
Innovative Transit Funding	Transit TIF	Local Sales Tax	Local Sales Tax		
Microtransit		✓			
Mobility Management		✓			
Online Paratransit Scheduling		✓ (Via)	✓	✓	
Emergency Ride Home Program		✓	✓	✓	✓ (State)
TDM Program		✓	✓		
Mobility-as-a-Service					
Mobile Payment/Smartcards	✓	Smart Card	Both	Mobile	
Regional Fare System	Partial	✓	✓		
Universal Transit Pass	✓	✓	✓	✓	✓
Neighborhood Pass Program		✓			
Corporate Pass Program		✓		✓	
Progressive Land Use		Sprawl Cap		Form Based Code	Church Street
Car Share	✓	✓	✓	✓	✓
Bike Share		✓		✓	✓
Smart Growth/Growth Mgt.		✓	✓		✓

Demystifying Transit Terminology

Microtransit	Microtransit is an on-demand transit service that uses multi-passenger vans, shuttles, or buses that can offer fixed routes and schedules, as well as flexible routes and on-demand scheduling. Microtransit can provide real-time dynamic routing, allowing riders to go anywhere in the service zone on-demand, sharing the same vehicles with other people traveling in the same direction.
Mobility-as-a-Service	Mobility-as-a-service (MaaS) integrates various transportation services into a single digital platform that allows users to plan, book, and pay for multiple types of mobility services. The concept assumes payment through a website portal or mobile app. Users can pay as they go or sign up for a monthly (or yearly) subscription. For example, a monthly subscription could entitle a user to unlimited bus trips, a fixed number of taxi service miles, and a fixed number of bike-share rentals. The aim is to shift people away from personally owned vehicles by making it easier to take — and combine — other forms of transportation.
Mobility Management	Mobility Management is a system for providing coordinated transportation services to customers through short-range planning, management activities, and improving coordination among transportation service providers.
Paratransit	The Americans with Disabilities Act (ADA) requires public transit agencies that provide fixed-route service to provide "complementary paratransit" service to people with disabilities who cannot use the fixed-route service because of a disability. Paratransit service (also referred to as "demand response") is door-to-door service that is flexible in scheduling and routing to better accommodate the specific needs of riders. Paratransit services are required within ¾ mile of a bus route or rail station. The Regional Transportation Program (RTP) and York County Community Action Corporation (YCCAC) provide paratransit services in the Greater Portland region.
Neighborhood/ Corporate Pass Programs	Programs where annual transit passes are purchased by neighborhood organizations or corporations to allow unlimited access on local transit systems. Pass programs increase access to transit, lower personal vehicle use, save money, and enhance community relations.
Regional Fare System	In areas served by multiple transit agencies, regional fare systems are a way to standardize fares across agencies to provide more seamless connections and reduce confusion among customers.
TDM Program	Transportation Demand Management (TDM) is a set of strategies, policies, and programs designed to make the most efficient use of the transportation system by shifting trips to a different mode, time, or route instead of expanding capacity. A TDM Program is a framework for implementing TDM strategies, which balance improved travel choice with incentives to reduce automobile travel.
Universal Transit Pass	A program that gives students enrolled in college or university universal access to local transit. Programs are typically funded through fees included in the students' tuition. Because fees are collected from a large participant base, universal transit pass prices are lower than the amount students would otherwise pay for monthly passes or tickets.

System Performance

The AllTransit Performance Score from the Center for Neighborhood Technology is a useful resource to help answer the question, "How well does our public transportation network serve the region?" The comprehensive score looks at connectivity, access to land area and jobs, frequency of service, and the percent of commuters who use transit to travel to work. While availability of service and frequency are important aspects of transit, the connections transit provides to jobs and other economic generators in the region is central. The overall score is useful for understanding the level of service provided regionwide, how this level of service compares to other regions, and how it compares at the local level across municipalities.

Using this tool, Figure 8 shows how the PACTS region compares to our selected peer regions. With an overall performance score of 3.1, the PACTS region lags behind all our similarly sized peer regions. Additionally, our region shows lower figures for several other metrics included in the score, most notably the number of jobs accessible in a 30-minute transit trip, and the percent of commuters who use transit.

At the local level, the municipalities with the highest transit performance score are Portland (6.1), Westbrook (4.5), and South Portland (3.9). The remaining municipalities fall below the PACTS regional score of 3.1.

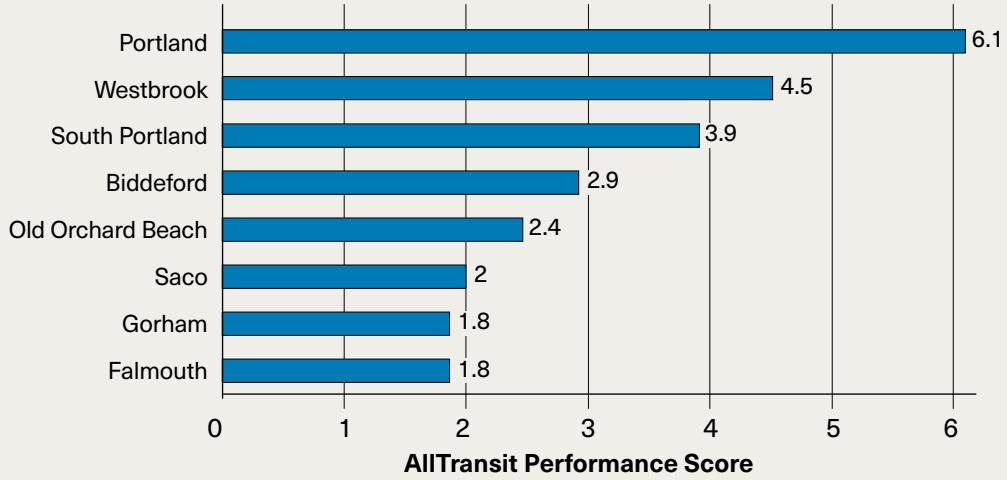
FIGURE 8:

ALLTRANSIT PERFORMANCE SCORE

AllTransit Performance Score by Region

	On Average, Households Have:		
Peers	**AllTransit Performance Score (Out of 10)**	**Jobs Accessible in 30-minute Transit Trip**	**Commuters Who Use Transit**
PACTS Region	3.1	38,195	1.7%
Bremerton, WA	4.5	23,192	10.3%
Burlington, VT	5.8	66,478	5.9%
Buffalo, NY	7.8	151,138	11.8%
Boulder, CO	7.3	101,387	9.0%

AllTransit Performance Score by Municipality



South Portland Bus Service dropping off/picking up riders at the Maine Mall. Photo: GPCOG

Frequency and Hours of Operation

"Frequency is freedom" is a common expression used to describe the importance of frequent service, especially for those who depend on it. Low frequencies and short spans of service are among the main ways public transportation fails to be useful because it means service is not available when people need it.

Tables 3a and 3b summarize each transit provider's current route frequencies and spans of service. The frequencies for each route were generalized based on the average outbound and inbound times for each hour. The graphic is not a timetable showing when a bus/train/ferry will arrive, but rather it indicates the length of time between each service at a given stop. The graphic represents the greatest frequency and span of service for each service provider, although some routes, such as the Casco Bay Lines, operate at different times depending on the season. Additionally, areas in the region that are served by multiple, overlapping routes (for example Congress Street in Portland) will have shorter average wait times than shown in the tables.

Weekday service is inconsistent throughout the region, with most routes running over an hour between each service. Saturday service has moderately longer frequencies than the weekdays but keeps relatively the same span of service. However, it is striking how little service exists on Sundays. On Sunday, service runs at very low frequencies, and only Casco Bay Ferry Lines has service later than 8:00 p.m.

The Greater Portland region's transit performance lags behind our peer regions.

Among the region's providers, Portland Metro provides the most frequent service during the week. However, even these routes decrease significantly on the weekend. Low frequency routes often require travelers to plan extensively or arrive at inconvenient times and create the potential for greater travel disruption. In addition, many people working in retail or restaurants are required to work on both weekend days. A route that does not exist or runs at such infrequent times on weekends is particularly ineffective for these workers.

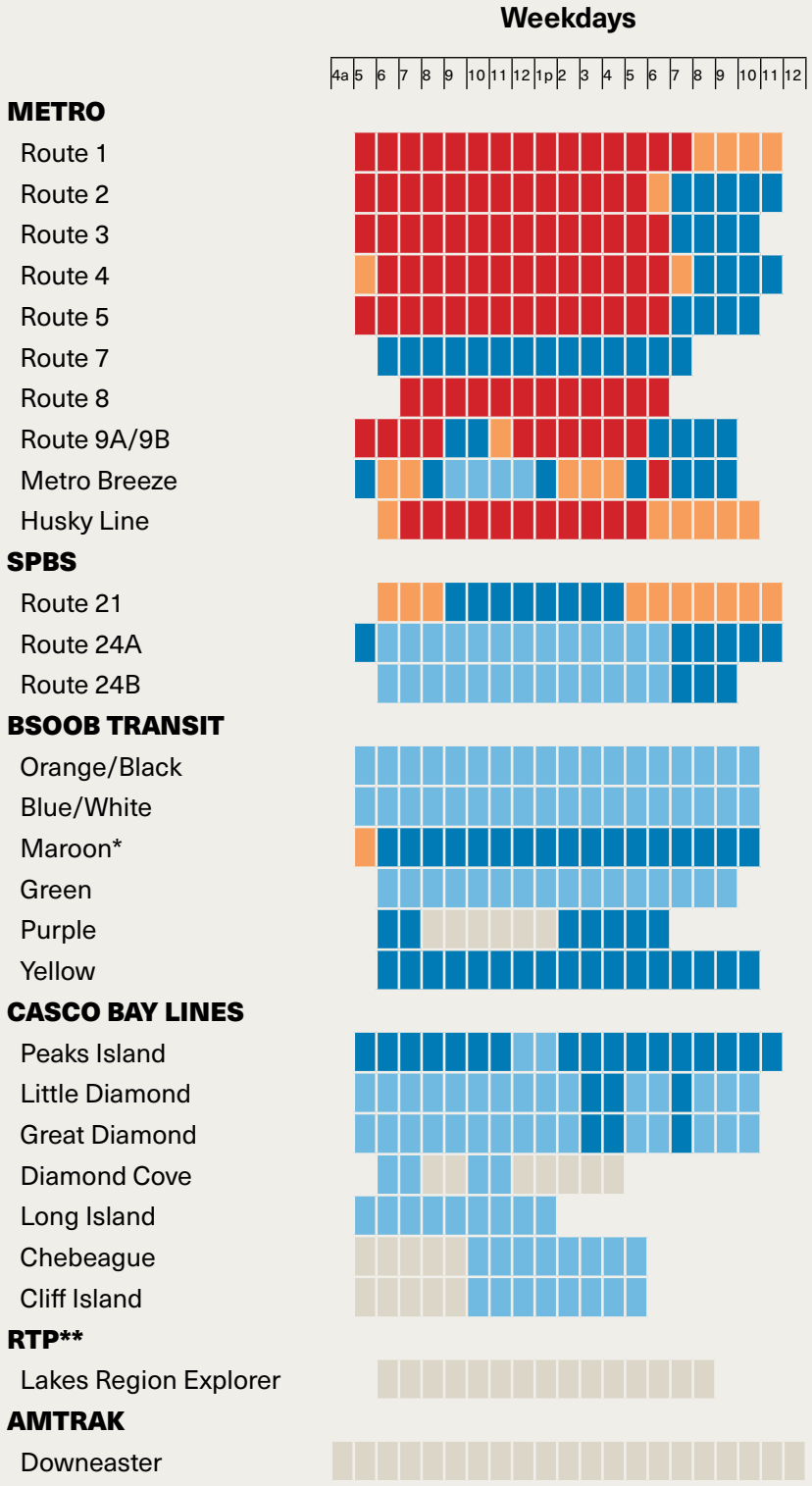
The peer region analysis also suggests Greater Portland's transit agencies have an opportunity to improve frequency and service hours to better match the demands of a 24/7 economy. Several of our peer cities feature 15-to-20-minute frequencies during peak times, begin service earlier in the day, and run later in the evening.

TABLE 3a:

TRANSIT FREQUENCY AND SPAN, WEEKDAYS

Frequency

- 30 minutes or less
- 30 minutes to 1 hour
- 1–2 hours
- 2–3 hours
- Greater than 3 hours



*currently not in operation
**Saturday service only available in summer

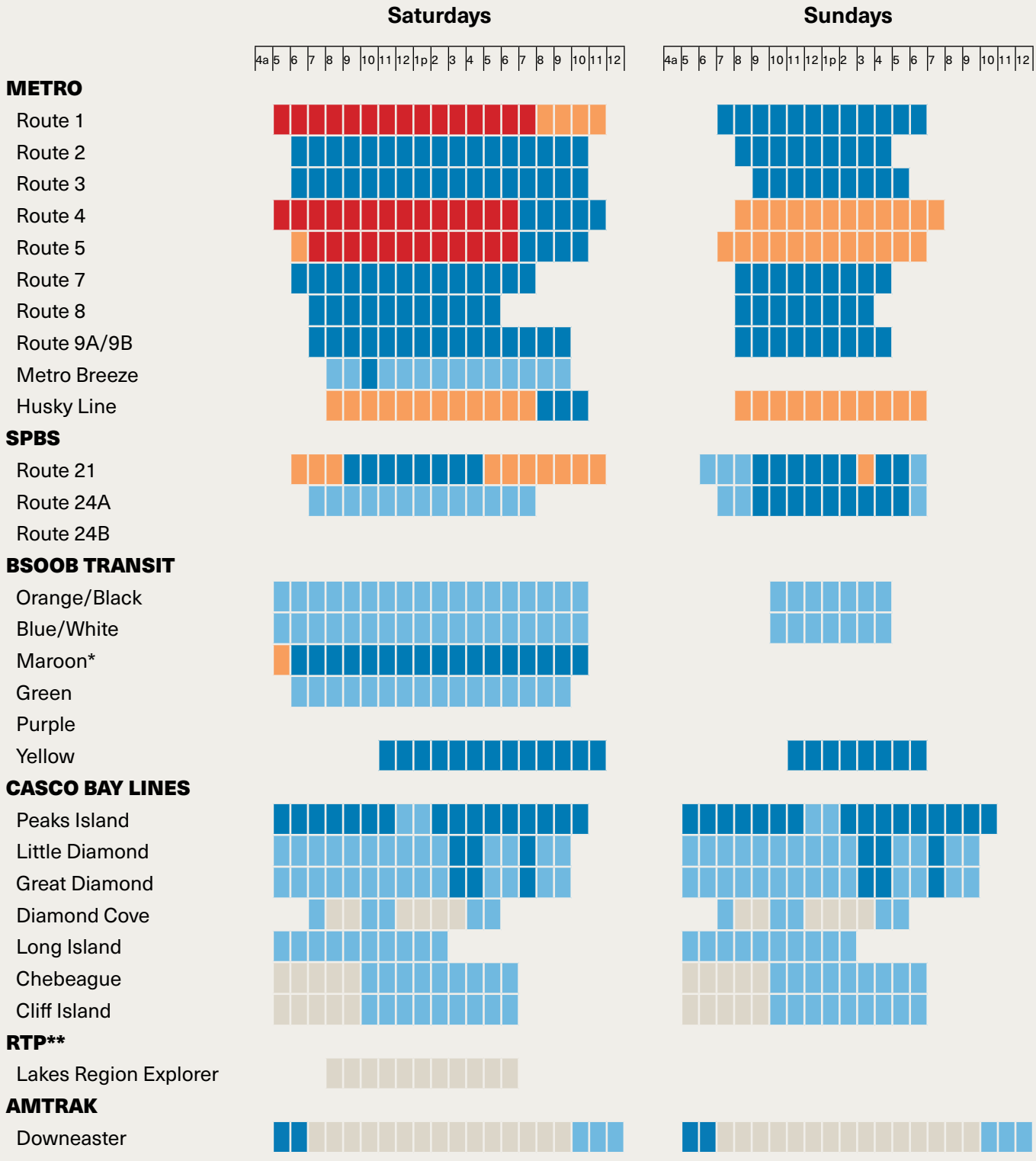
Tables 3a/3b summarize each transit agency's current route frequencies and spans of service. Frequencies were generalized based on the average outbound and inbound times for each hour. The graphic represents the greatest frequency and span of service for each agency, although some services, such as the Casco Bay Lines, operate at different times depending on the season. Additionally, areas in the region that are served by multiple, overlapping routes (for example Congress Street in Portland) will have shorter average wait times than shown in the tables.

Frequency

- 30 minutes or less
- 30 minutes to 1 hour
- 1–2 hours
- 2–3 hours
- Greater than 3 hours

TABLE 3b:

TRANSIT FREQUENCY AND SPAN, WEEKENDS

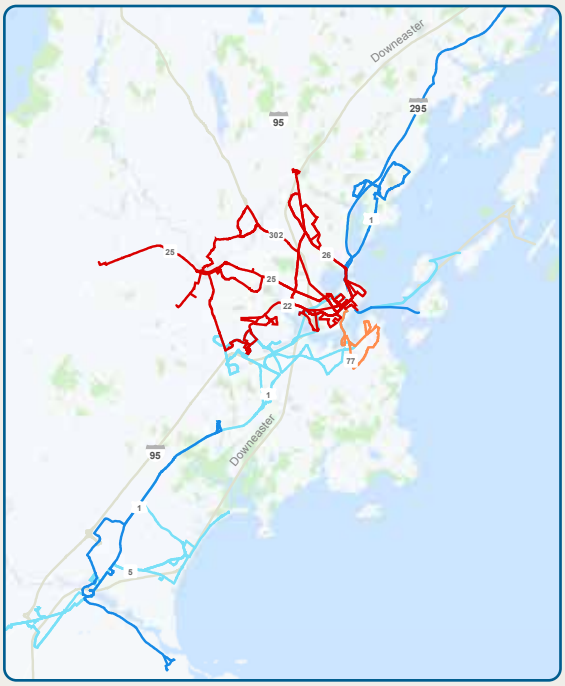


*currently not in operation
**Saturday service only available in summer

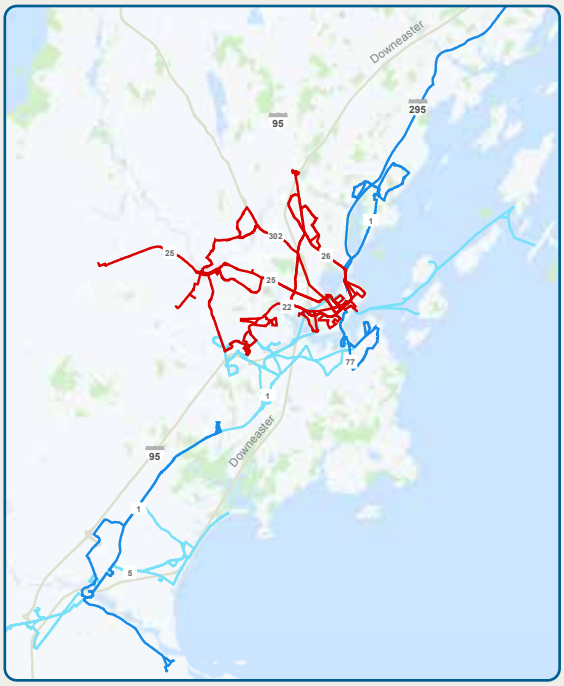
FIGURE 9:

GREATER PORTLAND TRANSIT FREQUENCY

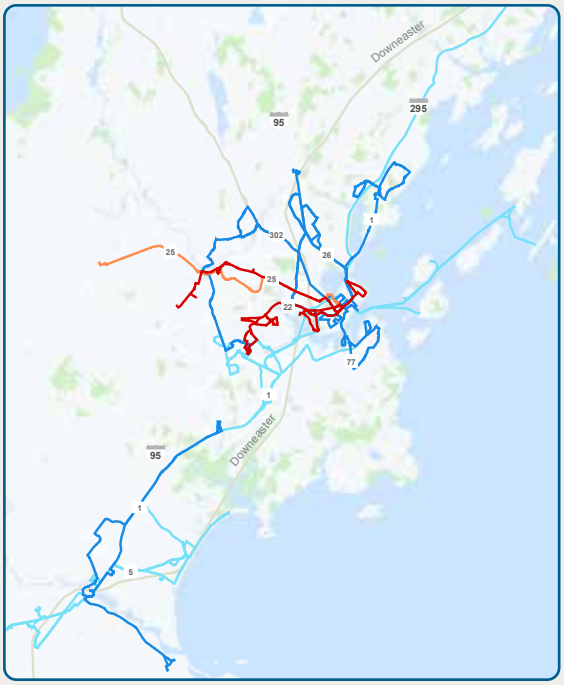
Weekday Morning (8 a.m. – 9 a.m.)



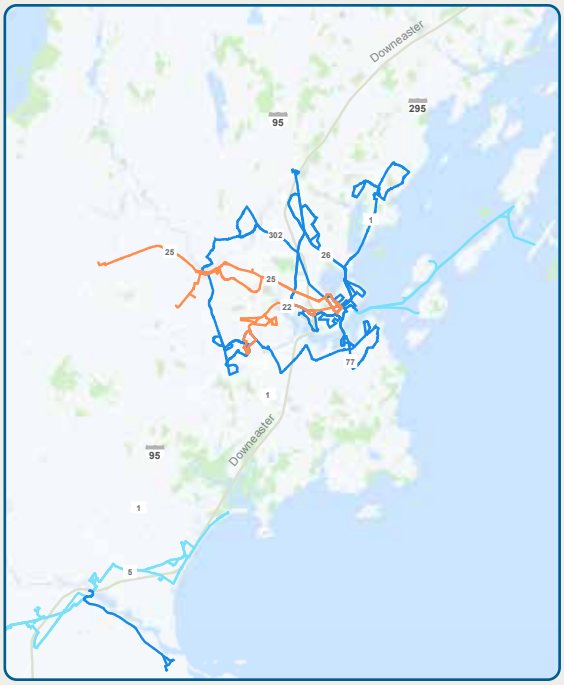
Weekday Afternoon (1 p.m. – 2 p.m.)



Saturday Afternoon (1 p.m. – 2 p.m.)



Sunday Afternoon (1 p.m. – 2 p.m.)

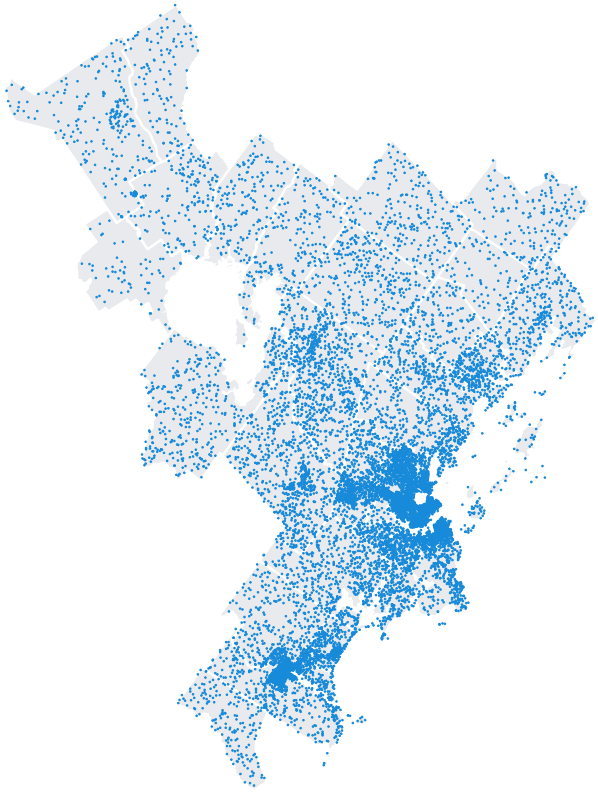


30 minutes or less | 30 minutes to 1 hour | 1–2 hours | 2–3 hours | > 3 hours

FIGURE 10:

POPULATION DENSITY

1 dot = 25 people

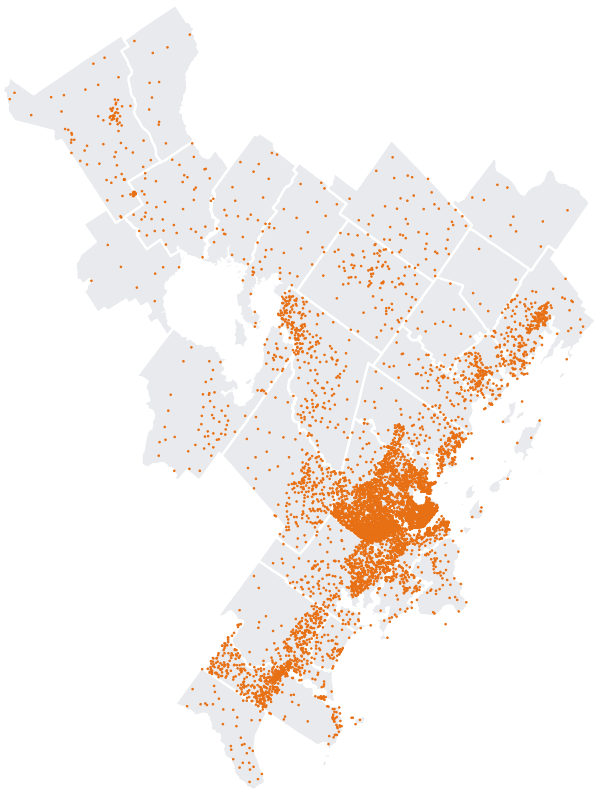


Source: American Community Survey 2014-2018 5yr Estimate
Geography: Census block group

FIGURE 11:

EMPLOYMENT DENSITY

1 dot = 25 jobs



Source: U.S. Census Bureau Longitudinal Employer-Household Dynamics Dataset, 2017
Geography: Census block group

Population and Employment Density

Greater Portland is a growing region with a high quality of life and shared values dedicated to equity, environmental quality, and economic opportunity. In a state with stagnant population growth, the Greater Portland region has shown consistent growth driven by the urban hubs of Portland and Biddeford/Saco. However, even within the Greater Portland region, there is considerable variation in the demographic composition and transportation resources within each community.

As shown in Figure 10, the population of Greater Portland is concentrated in the communities in and around Portland. The Portland peninsula has the highest population density in the region, and there are pockets of residential concentrations in Biddeford/Saco, North Windham, Gorham, and Yarmouth. Employment is even more concentrated in downtown Portland, as shown in Figure 11. There is also a cluster of employment density surrounding the area around the Maine Mall in South Portland, Scarborough, and other smaller areas in Biddeford/Saco, North Windham, and Freeport.

FIGURE 12:

PEOPLE WITH DISABILITIES

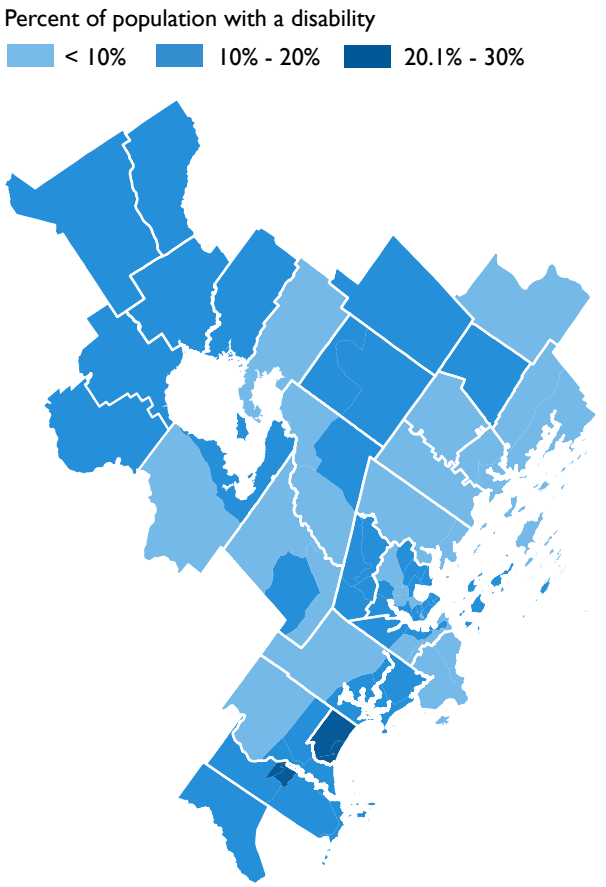
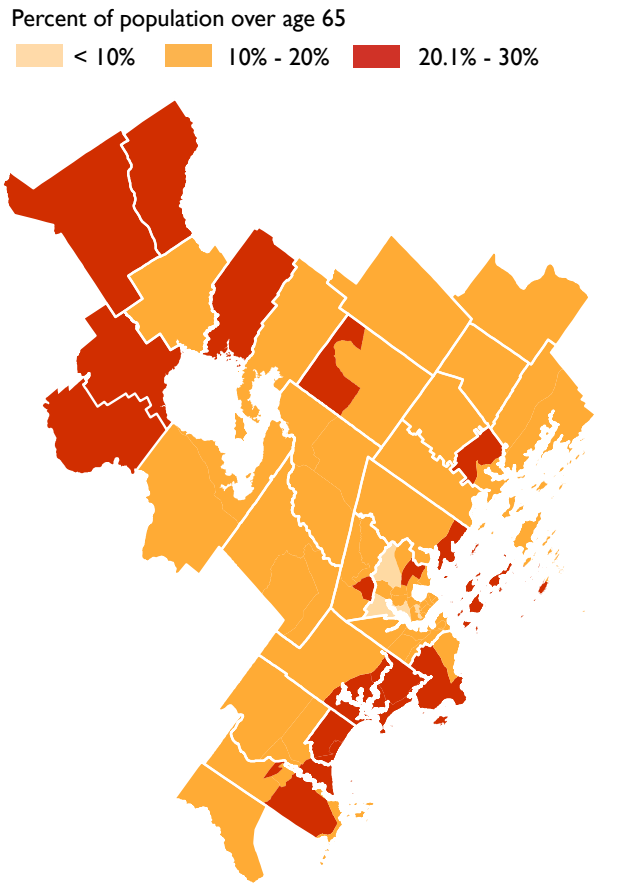


FIGURE 13:

PEOPLE OVER AGE 65



Source: American Community Survey 2014-2018 5yr Estimate | Geography: Census Tract

Transit-Reliant Populations

The population of people with disabilities is spread throughout the region, with high proportions in and around the City of Portland, and similarly high proportions in the northwest section of the region (Figure 12). This is an especially important factor when planning the long-term shape of the system, as people with disabilities tend to be more reliant on public transportation than the general population. This need for public transportation is particularly challenging to serve low-density areas because the trips are long and serve few people, increasing the cost of providing the service.

Populations of older adults are distributed fairly evenly across the region, with higher rates of people over age 65 in the Lakes Region and along the southern coast. (Figure 13). Older adults are also disproportionately reliant on transit primarily due to age-related impairments that prevent driving (macular degeneration, cognitive impairment, etc.). This trend is extremely critical because the percentage of older adults in the region is expected to grow as Baby Boomers continue to age, and many plan to "age in place." As these auto-oriented communities are increasingly populated by people unable to drive, there will be a growing demand for transit service in hard-to-serve communities.

Finally, although not depicted in the maps above, for the region's islanders the ferry system is a true lifeline and the only affordable transportation option. Maintaining a state of good repair is critical for keeping the ferry service running safely.

Access to Public Transportation

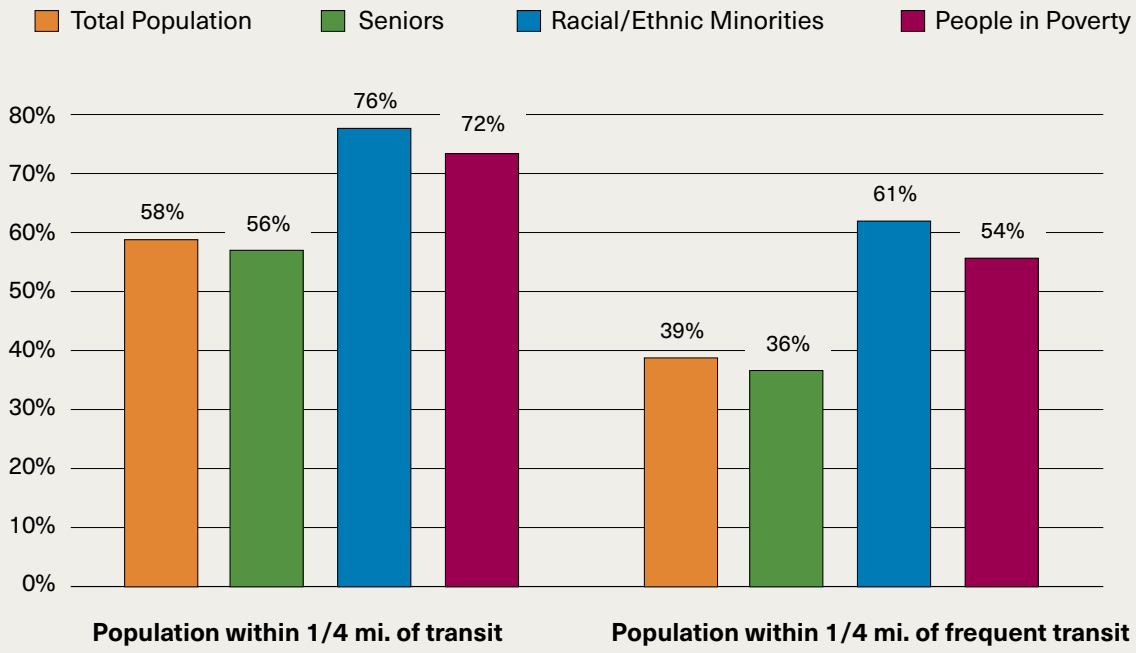
Access to public transportation is a key factor to understanding how well transit is serving the region. The farther people live from transit, the less likely they are to take it. As Figure 14 shows, currently 58 percent of Greater Portland's population has access to public transportation within ¼ mile walking distance, while 39 percent live within ¼ mile walking distance to frequent transit (defined for the purposes of this analysis as 20 minutes or better frequency).

Living within walking distance of public transportation is especially important for population groups historically more likely to depend on it, such as seniors, racial/ethnic minorities, and people in poverty. While the percentage of seniors with access to transit in Greater Portland is on par with that of the region, racial/ethnic minorities and people experiencing poverty are more likely to live within ¼ mile of public transportation. This finding is probably due in part to self-selection, since people who rely on public transportation are more likely to try to find housing near it.

Photo: GPCOG

FIGURE 14:

ACCESS TO PUBLIC TRANSPORTATION



Source: American Community Survey 2014-2018 5yr Estimate

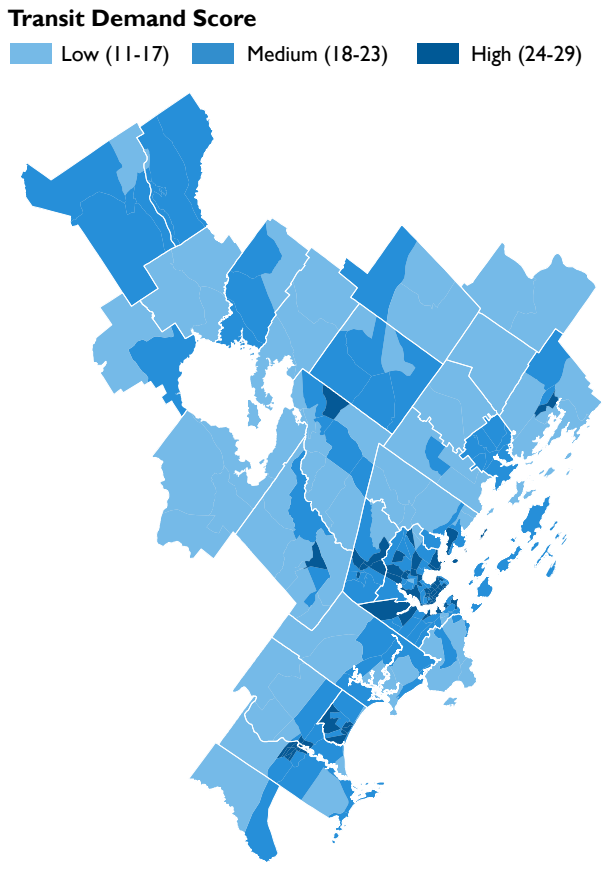
Regionwide Transit Demand

To identify areas in the region with high demand for public transportation — and find potential gaps in service — the project team conducted a transit score analysis. The transit score considers multiple demographic characteristics that influence transit ridership, such as population and job density, the size of youth and senior populations, the percentage of the population living below poverty level, and the percentage of households with limited vehicle access. The project team then combined the above characteristics into a single score and categorized the scores into low, medium, and high transit demand.

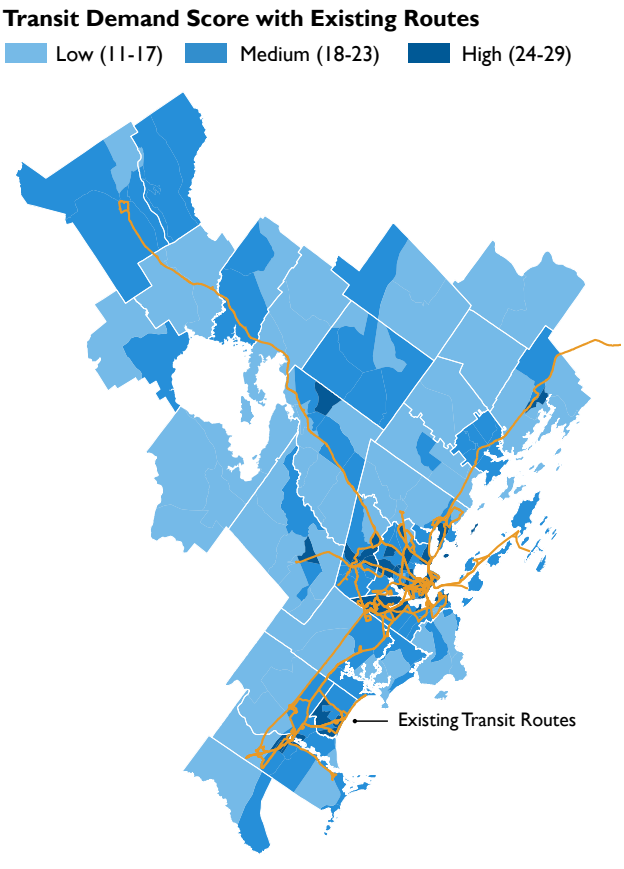
Figure 15 shows the results of the transit score analysis. In addition to the high-demand urban areas around Portland, Biddeford, and Saco, pockets of medium and high demand also exist in the outlying suburban and rural areas of the region. Providing adequate public transportation to these areas will likely require a mix of services from local circulators in areas of high demand, expanded fixed-route transit in areas of medium to high demand, and more flexible approaches for areas with low demand, such as innovative ridesharing options, on-demand van service, or volunteer driver programs.

FIGURE 15:

GREATER PORTLAND TRANSIT DEMAND



Source: American Community Survey 2014-2018 5yr Estimate | Geography: Census Block Group



Source: American Community Survey 2014-2018 5yr Estimate | Geography: Census Block Group

Commuter Patterns

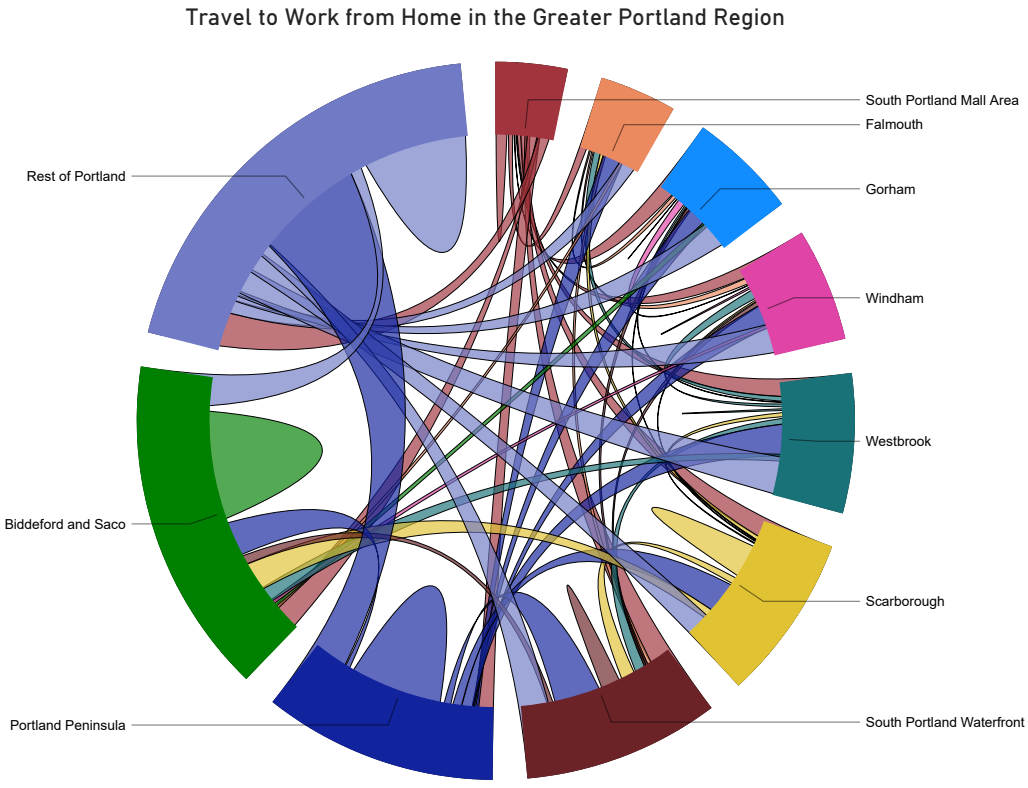
Commuter travel patterns provide another key metric for understanding where to enhance service. Figure 16 shows commuter travel patterns within individual communities and between communities among the largest areas of commuter activity in the region. To provide a more detailed level of analysis, Figure 16 splits or groups some areas into distinct geographies.

The single-color chords within each area show internal circulation patterns, while the chords between communities represent the flow of commuter traffic between different communities. For example, on the Portland Peninsula, there is more internal circulation than connections to other communities. Also, the width of the chord represents the number of commuters leaving the community. For example, the chord connecting Westbrook and Rest of Portland is wider at the Westbrook end. This indicates that a larger proportion of people are commuting from Westbrook to Portland, and a smaller number of people are commuting in the reverse.

The figure shows that the Portland-to-Portland commute flow is the most common in the region (60% of Portland's labor force lives and works in Portland). There is also substantial internal circulation within the Biddeford/Saco communities, Scarborough, and South Portland (between the waterfront and Maine Mall area). Regionally, the most extensive connections are between Portland (off-peninsula to/from the peninsula), Biddeford/Saco, South Portland, Scarborough, and Westbrook, with more commuters traveling into Portland for employment rather than away.

FIGURE 16:

COMMUTER ORIGINS AND DESTINATIONS (TOP 10 AREAS)



6 Planning in the Face of Uncertainty

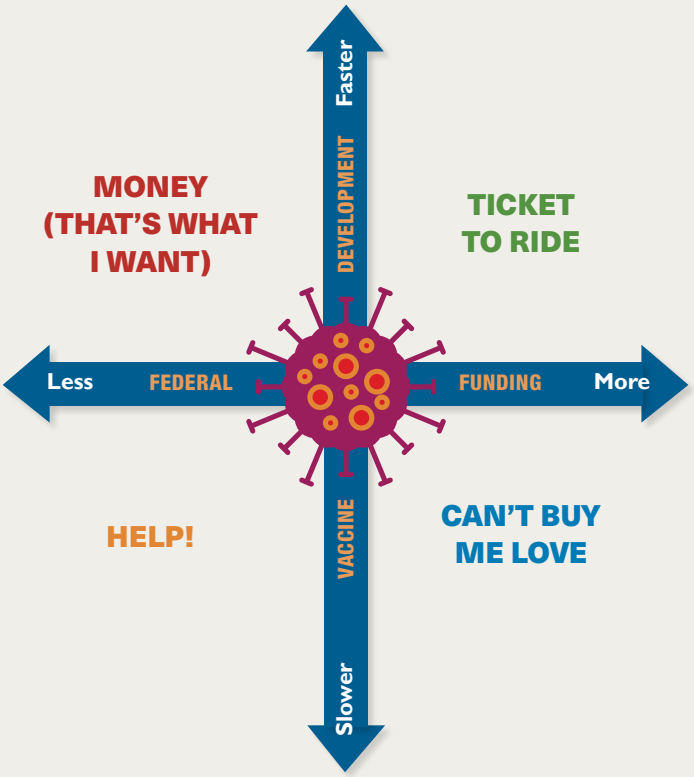
The COVID-19 Pandemic

The task of projecting future conditions based on current trends is always complex. However, the COVID-19 pandemic in 2020 further complicates this work. Midway through the planning process for *Transit Tomorrow*, the region — and the world — were transformed by the outbreak of this novel disease. This profound disruption resulted in stay-at-home orders, social distancing mandates, school and business closures, double-digit unemployment, and deserted roadways and public spaces. Public transportation vehicles ran on reduced schedules, and ridership plummeted as Greater Portland residents sheltered in place and tourism ground to a halt.

Qualitative Scenario Planning

To supplement the scenario planning task described in the next chapter, the project team developed four scenarios (shown in Figure 17) that imagined how the next five to ten years could play out based on uncertainties facing the region in the context of the global pandemic. The four scenarios were based on two key uncertainties: 1) the speed of vaccine development; and 2) the level of federal funding support for transit. The final report for this qualitative exercise, *Imagining Transit Tomorrow,* provided a framework of strategic investments that adequately prepares the region to respond to impacts from the pandemic.

FIGURE 17:
FOUR SCENARIOS



Ticket to Ride: In this future, a vaccine is developed relatively quickly, and federal funding continues to flow to transit agencies in Greater Portland, filling any revenue gaps caused by the pandemic.

Can't Buy Me Love: In this future, a vaccine proves difficult to develop, the public remains skeptical of public transportation, and periodic advisories about social distancing among vulnerable groups remain. However, the federal government continues to fill any funding gaps experienced by transit agencies in the region.

Money (That's What I Want): In this future, the race to find a vaccine is relatively successful, but federal aid surrounding lingering economic damage falls apart. Transit agencies struggle to meet developing demand from the public.

Help!: In this future, the vaccine is slow to be developed and the federal government enacts austerity measures to offset the extraordinary relief funding of 2020. Transit agencies struggle and face service reductions matched by depressed ridership demand.

Photo: NNEPRA

Long-Term Trends

Importantly, this qualitative scenario planning exercise revealed two long-term trends that are unlikely to change due to the impacts of the pandemic:

1. Continued impacts from climate change: Modest reductions in greenhouse gas emissions in 2020 due to the profound travel changes during the pandemic will disappear in 2021. In fact, the pandemic may exacerbate climate harm due to people moving from relatively efficient locations, such as downtown Boston or New York, to auto-dependent suburban or rural areas.
2. The overall aging of the Greater Portland population: Even with marginal in-migration from other states and countries, there will not likely be any sweeping demographic changes, especially in rural areas. The aging Baby Boomers will need more services, including transportation, which puts additional strain on the demand response services provided to suburban and rural areas.

Over a 30-year time horizon, it is unclear what impact, if any, the pandemic will have on the region. While *Imagining Transit Tomorrow* evaluated near and mid-term uncertainties related to the pandemic, it does not alter or discount the quantitative, long-term modeling described in the next chapter. Quantitative planning is still the most effective means of envisioning what the region could look like based on policy decisions guiding transportation, housing, and employment growth over the next three decades.

Imagining Transit Tomorrow Recommendations:

- **ADAPT service** to better serve transit-dependent populations
- **PLAN to deliver** lower levels of service to stretch dollars further
- **DIVERSIFY and expand** local funding to anticipate reduced public funds
- **INVEST in no-touch mobile technology** to protect public health
- **EXPAND digital communications** and marketing to rebuild ridership
- **INVEST in data collection** to make nimbler decisions
- **SUPPORT street spaces** for bike lanes, walking, and outdoor retail and dining in order to keep transit relevant
- **REDOUBLE efforts** to locate housing in walking villages and downtowns to reduce longer term ridership losses
- **IMPLEMENT more efficient rural demand** response options to cost-effectively maintain access

Yarmouth Village. Photo: Dave Cleaveland, Maine Imaging

7 Projecting Forward

EVEN WITH A UNIFIED VISION FOR THE FUTURE, the path to achieving that vision can be winding and uncertain. Numerous factors can interact to play out in ways that are not always intuitive. Understanding the relative impact of choices we make today is a crucial step toward implementing the plan.

Scenario modeling allows us to understand the potential impacts of a range of interrelated decisions. It is intended to explore high-level "What If?" questions, such as, "What if the population increases beyond forecasted levels?" or, "What if all bus routes increased their frequencies?" Outcomes can then be compared between different scenarios and to a baseline, or "Business-As-Usual" (BAU) scenario, to analyze potential changes.

Scenario planning is not intended to predict the future but to provide an understanding of potential outcomes. The value comes in comparing the magnitude, or direction of change. In this regard, scenario planning acts as a linkage between performance measures and the planning process.

Transit Tomorrow Scenarios

For *Transit Tomorrow*, two alternative land use futures and two alternative transportation futures were developed. These alternatives incorporated input from the Project Advisory Committee and GPCOG staff on the region's priorities. In total, eight scenarios were analyzed and compared to the baseline scenario, using the PACTS regional travel demand model to understand changes to the performance of the public transportation system. For this analysis, the region's ferry system was not included, as its routes are not coded into the PACTS model. The following sections describe the land use and transportation scenarios, performance metrics, and final outcomes of the scenario planning analysis.

Scenario modeling allows planners, decision-makers, and other key stakeholders to understand the potential impacts of a range of interrelated decisions.

Land Use Scenarios

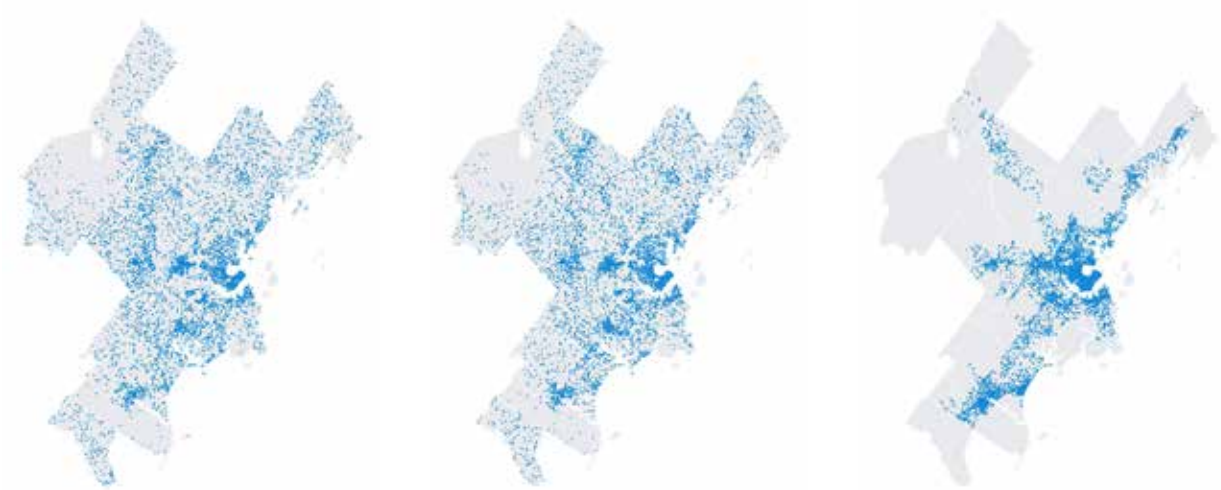
Three land use alternatives were defined based on the distribution of population and employment growth anticipated between the baseline and 2040 in relation to the transportation network. This includes Business-As-Usual (BAU), *Destination 2040*, and Compact Land Use alternatives. These land use alternatives are summarized and shown in the figures below.

FIGURE 18:
FORECASTED POPULATION GROWTH (2014-2040)

Business As Usual (BAU)
Population distribution based on historical trends.

Destination 2040
Population distribution based on Destination 2040 priority corridors and centers.

Compact Land Use
100% of projected population growth occurs within 1-mile of transit routes and priority corridors.



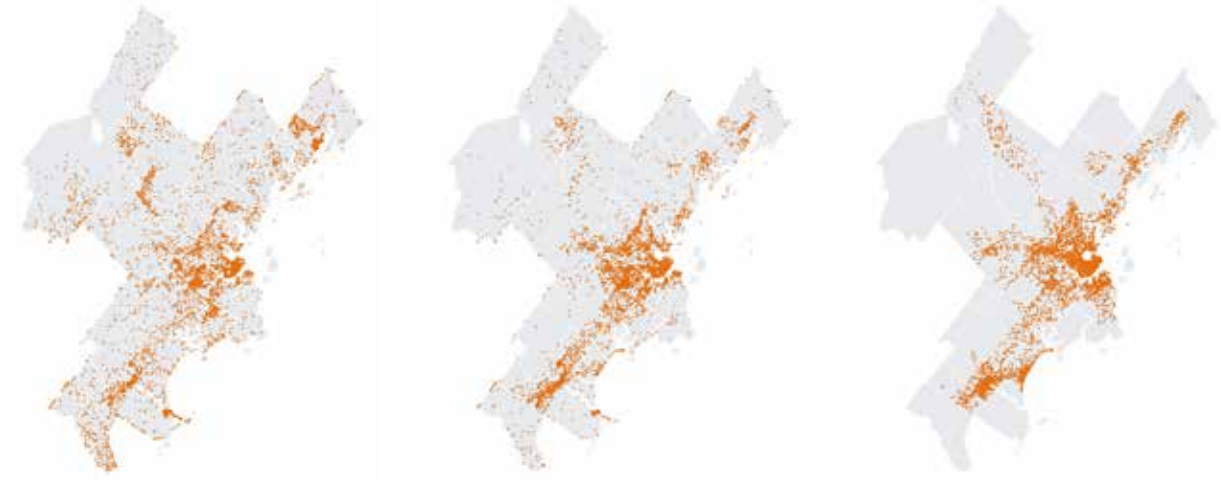
1 dot = 10 people

FIGURE 19:
FORECASTED EMPLOYMENT GROWTH (2014-2040)

Business As Usual (BAU)
Employment distribution based on historical trends.

Destination 2040
Employment distribution based on Destination 2040 priority corridors and centers.

Compact Land Use
100% of projected employment growth occurs within 1-mile of transit routes and priority corridors.



1 dot = 10 jobs

Transit Service Scenarios

Three transportation alternatives were defined for this study. This includes the Business-As-Usual (BAU), Improve Transit Everywhere, and the Targeted Transit Investment alternatives. These alternatives are summarized and shown in the figure below.

FIGURE 20:

TRANSIT SERVICE SCENARIOS

Business As Usual (BAU)

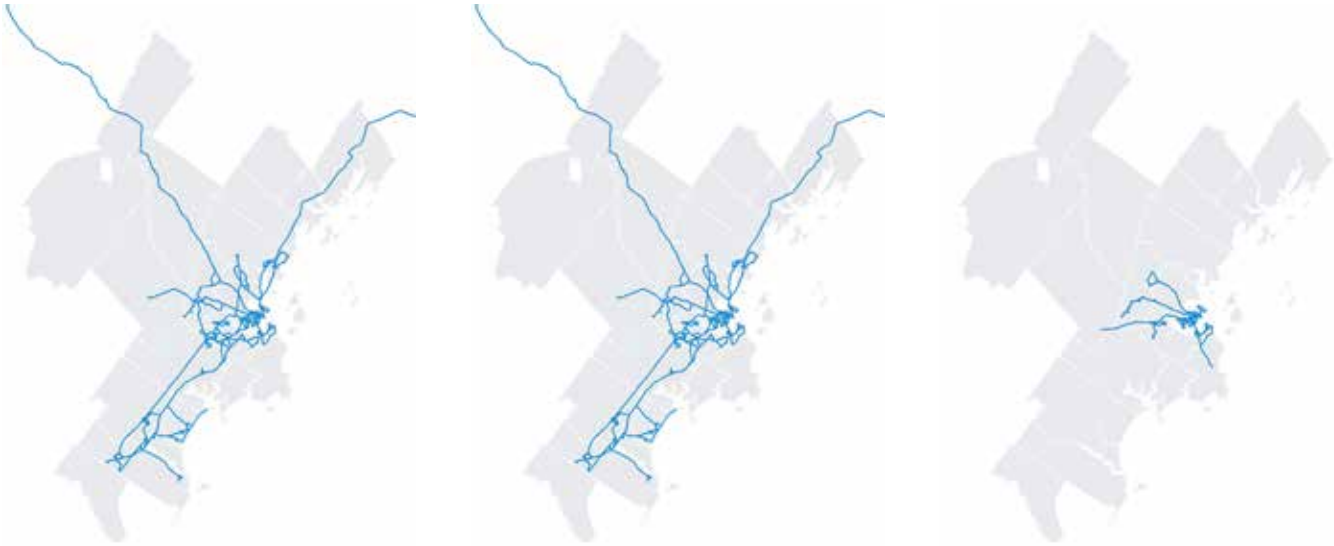
Existing public transportation network.

Improve Transit Everywhere

Increase frequency by 25% on all existing transit routes.

Targeted Transit Investment

Increase frequency by 100+% on 10 selected high-capacity routes. All other routes remain at existing service levels.



Scenario Results

The full findings of this modeling effort can be found in separate appendix material on the project website. Overall, the model found that implementing the Compact Land Use strategy combined with either the Improved Transit Everywhere or Targeted Transit Investment strategies moves the region closer to its vision than any of the other scenarios relative to the Business-As-Usual scenario.

TABLE 4:

COMPACT LAND USE AND EXPANDED TRANSIT SCENARIOS

Performance Metric	Compact & Improved Transit	Compact & Targeted Transit
Transit ridership	▲▲ 18%	▲▲▲ 31%
Vehicle miles traveled (VMT)	▽ -2%	▽ -2%
Greenhouse gas emissions (GHG)	▽ -2%	▽ -2%
Congestion (vehicle hours of delay)	▼▼ -11%	▼▼ -12%
Transit proximity to housing & jobs	▲▲ 12%	▲▲ 13%
Transit accessibility	▲▲▲ 52%	▲▲▲ 66%
Parking demand	▼ -3%	▼ -4%

Amtrak Downeaster in Portland. Photo: NNEPRA

8 Goals & Recommendations

***TRANSIT TOMORROW* PROPOSES** a four-part strategy centered on the overarching goals of: 1. Making transit easier; 2. Creating more frequent connections throughout the region; 3. Embracing rapid transit options (such as bus rapid transit, light rail, and commuter rail) to connect our region's major market centers; and 4. Implementing land use policies that support more development intensity in our urban areas already served by transit.

> *Transit Tomorrow*'s recommendations are ambitious but anchored by the concepts of making hard choices, facing difficult trade-offs head-on, and — where appropriate — acknowledging resource constraints by prioritizing some recommendations over others.

The recommendations developed from these goals were shaped by public input, extensive technical analysis, national industry best practices, and the experiences of peer regions. They also consider the results of the scenario modeling exercise, conducted as part of this planning process, that showed the many benefits of compact land use patterns combined with targeted investments in our public transportation system.

Transit Tomorrow's recommendations are ambitious but anchored by the concepts of making hard choices, facing difficult trade-offs head-on, and — where appropriate — acknowledging resource constraints by prioritizing some recommendations over others. Although *Transit Tomorrow* is a visionary plan, it is worth mentioning that preserving our existing assets, and maintaining a state of good repair, will always remain a critical consideration.

While each recommendation moves the region one step closer to achieving the *Transit Tomorrow* vision, the plan recognizes these improvements cannot happen all at once; *Transit Tomorrow* — and our public transportation system — cannot be all things to all people.

METRO buses at the Elm Street Pulse. Photo: Corey Templeton

Goal 1:

Make Transit Easier

WE WANT TO IMPROVE the transit experience. The Make Transit Easier recommendations focus on creating seamless access to the region's public transportation system for everyone, regardless of age, income, language, race/ethnicity, ability, or geography. This includes services like carpooling/vanpooling and Uber/Lyft, as well as pedestrian and bicycle infrastructure that offer critical connections to the system.

The recommendations call for increased coordination, partnerships, and investments that build the foundation for needed infrastructure and technology. Success will mean the customer experience is universally simple and convenient across all seven of the region's transit providers.

Recommendations

- **Adopt innovative customer service technology:** Provide fare payment, trip planning, and real-time vehicle information in one website and app. This technology would simplify the customer experience and make transit a more convenient choice for riders. Additionally, pursue new technology to enhance communication between paratransit providers and customers.
- **Advance partnerships with businesses and anchor institutions:** Launch a Transportation Management Association that will work with employers to promote transit and transit-supportive initiatives such as rideshares, parking solutions, and walking and biking to reduce congestion and worker costs. Partner with social services to provide reduced fares to low-income households.
- **Enhance first and last mile connections:** Enable more people to use fixed route transit through more welcoming places to wait, better sidewalks, crosswalks, shared use paths, and bike paths, and through partnerships with bike share programs and shared mobility services.
- **Strengthen coordination among providers:** Harness mobility management strategies to engage community partners and provide avenues for better coordination among transportation providers of all modes — including community transportation, volunteer driver programs, and providers of MaineCare-funded transportation.
- **Improve door-to-door options:** Expand and improve options for riders who need door-to-door service due to mobility challenges or geography. Solutions include expanding volunteer driver programs, advancing user-focused improvements to paratransit, and exploring microtransit — small-scale public services that offer flexible routes and on-demand scheduling.

Implementation

Adopt Innovative Customer Service Technology

Emerging technologies are reshaping people's expectations for public transportation. Transit riders want to experience the same kind of customer service features they find when they shop or book reservations online. While many of the region's providers have begun adopting technology like touchless payment and real-time vehicle tracking, these tools are not yet comprehensive or coordinated. As a result, using transit in Greater Portland currently requires referring to a medley of apps, maps, and timetables. Likewise, the region's paratransit agencies currently take reservations only by phone and require 24 hours or more advance notice. Though some people will continue to prefer phone calls, most people now opt for texting and app-based communications. Thus, the service offered to riders should reflect this change in preferences — while maintaining options for those without access to a computer or smartphone.

Over the next 30 years, the rapid pace of technology will require an orientation toward adaptation. Adopting common technology will make it simpler and more convenient for people to plan, book, and pay for their trips. Building a structure that can adapt to innovation will help ensure ongoing efficiency and success.

DiriGo TouchPass system. Photo: GPCOG

Action Steps:

- **Adopt a unified mobility platform:** Launch and continually update a regionally managed web-based portal that includes trip planning, scheduling, fare payment, and real-time notifications for transportation including paratransit, bikeshare, microtransit, and other shared mobility. The platform will have a customer-facing mobile app but be accessible from any device through an internet browser. Recently adopted technology — like the shared electronic fare collection system (DiriGo TouchPass) launched by bus agencies and the real-time vehicle tracking offered by most of the region's agencies — creates a foundation for what will eventually be available. Integrating additional features into a single platform will simplify the customer experience and make transit a more convenient choice. The backdrop of rapid innovations in technology and mobility means the region's platform will need to be adjusted over time to incorporate new services, technologies, and forms of mobility. Developing and maintaining the platform will require adaptability and ongoing communication among stakeholders, along with a commitment to universal design and open data standards.
- **Integrate new technology into paratransit communications:** Pursue technology that enhances communication between paratransit providers and customers. This will include new ways to submit applications, book rides, and to receive reminders and pick-up time notifications. The selected tools will enable automation where appropriate, to allow more frequent communication with riders.

What is a unified mobility platform?

Unified mobility platforms are tailored apps — accessible from multiple devices — that offer customers a single portal for planning, booking, paying for, and tracking their rides.

DASH, the transit agency for Alexandria, Virginia, partnered with Moovel to develop an app where riders can buy tickets, plan a trip, get real-time arrival information, and access service alerts and agency information. Moovel, which bills itself as a "transit engagement platform" has built similar apps for agencies around the U.S. and offers scalable solutions to fit the sizes and needs of cities and organizations.

Louisville, Kentucky's transit service, **TARC**, worked with ZED Digital to develop an app that includes real-time schedules, a multi-modal trip planner (with transit, rideshares, bikes, and scooters) and fare payment. The app enables users to compare the cost and speed of various offerings.

The **Whim** app, currently available in Helsinki, Finland (and a handful of other cities in Asia and Europe), offers monthly subscriptions that include transit access, bike-share rides, taxi rides, rental cars, and scooter rides. Whim, developed by MaaS Global is one of the first "Mobility-as-a-Service" (MaaS) solutions on the market.

What is a TMA?

A Transportation Management Association (TMA) is a nonprofit, member-driven organization that works to reduce congestion and address commuter issues in a defined geographic area. TMA members typically include employers and anchor institutions. TMAs usually start small and gradually increase services over time. They are meant to be flexible, offering a range of services that suit the needs of the focus area. Some TMAs are coordinated by metropolitan planning organizations or other regional agencies.

The **Charles River TMA** in Boston, Massachusetts provides an emergency (or guaranteed) ride home. This means members who use public transportation, bike, walk, or carpool to work can be reimbursed when a personal emergency or unexpected overtime requires them to use a ridesharing app or cab company to get home.

The **Hudson TMA** in New York helps transition travelers to transit by providing discounts on an introductory monthly transit pass. The TMA also has a "Bike Rehab" program where donated bikes are refurbished and provided to commuters who cannot afford to purchase a bike.

The **Westside Transportation Alliance** in Oregon worked with employers in the area to develop a transit benefit fare program for employees. The Alliance also provides ongoing education, resources, and maps to encourage use of alternative transportation options.

Advance Partnerships with Businesses and Anchor Institutions

Achieving this plan's vision will require broad participation and support from a range of sectors. While service improvements can help boost transit ridership, outreach campaigns and educational initiatives are also critical tools for attracting transit riders. At the same time, we need partnerships to address the cost barriers faced by essential workers, individuals with low incomes, and working families. Investing in innovative partnerships will result in cost savings that provide return on investment and boost ridership. Partnerships between transportation-related agencies (such as the transit agencies, PACTS, MaineDOT, the Maine Turnpike Authority, and GO Maine) and large employers and anchor institutions (especially those related to health care, higher education, human services, and housing) can play a vital role in influencing individual travel behavior and reduce financial barriers for those who rely on public transportation.

Action Steps:

- **Establish a Transportation Management Association (TMA):** Develop and launch a regional TMA to implement strategies that support increased use of public transportation. The TMA will conduct community-based social marketing, develop institutional transit pass programs, and support rider incentives. The TMA can also support development and oversight of transportation demand management plans and implement alternative commuting programs and services, like carpools, vanpools, and "emergency ride home" programs.
- **Partner to provide free and low-cost fare:** Establish an initiative that promotes transit ridership by youth, families, and people with low incomes through special passes and bulk discounts. Powered by a partnership composed of social service and housing agencies, private and philanthropic funders, transit providers and GPCOG, the initiative will address transportation access. Likewise, it will seek to boost ridership among children and youth — promoting lifelong transit use. Seattle Washington's Orca Lift — a pilot partnership to automatically provide reduced fares to residents of Seattle Housing Authority buildings — is one promising model. Income verification for passes is done through partner organizations such as cultural centers and shelters.

Enhance First and Last Mile Connections

The ease or difficulty of the first and last mile of the journey can often determine whether people use transit. Whether a trip is from home to school or from the park-and-ride to work, broken sidewalks, poor or non-existent street crossings, and missing curb ramps make accessing transit a challenge — not just for older adults and people with disabilities but also for families pushing strollers and visitors toting luggage. Likewise, when stops lack shelter and a place to sit, using transit can be off-putting or impossible. A pleasant and covered place to sit and wait is especially important to older adults and riders with children. There are also cases when the distance to the stop is too far and a short ride to close the gap is needed. Improving first and last mile connections is a vital step for creating the transit system envisioned in this plan. Providing welcoming stops, safe routes to transit, and "feeder trips" supports current riders and signals to potential riders that transit is convenient and comfortable.

Action Steps:

- **Develop welcoming stops:** Adopt regional goals and funding mechanisms for accessible, family-friendly stops. Design standards will include minimum requirements like seating and additional features for frequently used locations like secure bicycle parking and "smart shelters" with Wi-Fi and real-time arrival information. The Transit Stop Access Project — scheduled for construction in 2021-22 — will offer a head start to this action step by advancing Americans with Disabilities Act (ADA) compliance and adding comfort and convenience elements at up to 120 bus stops. Likewise, the Creative Shelters Project — a partnership between Creative Portland, GPCOG and METRO — provides a model for the use of art and public-private partnerships to raise the profile of existing service and define transit as a welcoming, comfortable space for all.
- **Prioritize walking, biking, and rolling to transit:** Pursue implementation of transit-supportive recommendations in *Getting There From Here: An Active Transportation Plan*. Adopted in 2018, this regional plan calls for better integrating bicycle, pedestrian, and transit improvements into road, bridge, and transit projects. As the plan notes, many improvements to pedestrian and bicycle infrastructure can be implemented during road and utility projects for added efficiency and lower cost. They can also be expedited using low-cost materials during temporary demonstration or pilot projects that enable testing and promoting designs while awaiting funding for permanent installations.
- **Pursue pilots of feeder services:** Partner with "emerging mobility providers" to conduct targeted pilots that provide "feeder trips." Currently, emerging mobility providers — often referred to as microtransit or on demand services — include transportation network companies like Lyft and Uber, and shared mobility services like bike share and scooter-share. But the field will continue to expand and shift. Thus, the pilots will include open discussions about successes and failures and offer a regional peer knowledge exchange.

What is a feeder service?

Feeder services — which provide connections between underserved locations and transit lines — take a variety of different forms depending on traffic volume, from on-demand service resembling paratransit to discounted use of micro-mobility or rideshare services.

Detroit's **Nightshift** program helps to cover the cost of cab fare and Lyft rides for bus riders from 11pm-5am, supporting last-mile connections for commuters. While riding the bus, customers text to request a $7 credit for a journey originating at a bus stop. Any cost over $7 is automatically billed to the rider. The program is funded through a local economic development grant.

Southwest Transit in the outer suburbs of Minneapolis, Minnesota, provides SW Prime — an on-demand, door-to-door service — to connect riders to transit hubs and park and rides. SW Prime is free when riders transfer to or from an express bus.

The “Hope and Friendship” shelter by Ebenezer Akakpo is one of several Creative Bus Shelter Initiative locations. The project was made possible by a National Endowment for the Arts “Our Town” grant award. Photo: Corey Templeton

Strengthen Coordination Among Providers

Achieving the seamless customer experience envisioned by this plan will require better coordination among the region's transportation providers — including not only fixed route providers but also demand response, community-based volunteer driver programs, and providers of MaineCare-funded transportation. Coordinating across services leads to more efficient use of limited resources and sharing of existing community resources. Coordination also enables shared communications, messaging, and training across services — which can improve the public's understanding about how the system works.

In communities where coordination is a priority, people benefit from more extensive service, lower costs, and easier access to transportation. In order to reap the benefits of coordination, formal coordinating mechanisms are needed. Across the U.S., public transportation and demand response providers are increasingly using mobility management programs to maximize their ability to coordinate. Mobility management programs provide the needed capacity and technical support for outcome-driven regional coordination. Likewise, local coordinating boards offer a valuable venue for cross-sector and interagency cooperation and can serve as a catalyst for achieving regional goals.

Action Steps:

- **Establish a mobility management program:** Led by a full time Mobility Manager (housed at GPCOG) the program will provide formal support for improving coordination across providers and modes. The multi-sector orientation of a Mobility Manager also means coordination will be approached in a way that emphasizes engaging the many stakeholders needed to improve transit — from employers and economic development groups to human service agencies to local elected leaders and transit riders. The Make Transit Easier recommendations, and a regional needs assessment, will inform program development for this initiative. The mobility management program will be informed by membership in the Moving Maine Network. This statewide initiative is convening stakeholders across numerous sectors to improve transportation access and to connect mobility management efforts around the state.
- **Convene a local coordination working group:** With convening and facilitation by GPCOG, the Working Group will be a multi-sector group that provides an ongoing venue for pursuing and monitoring coordination across the continuum of public transportation services in the region. The Working Group will advise on implementation of many of the recommendations contained in the Make Transit Easier section.

What is a mobility management program?

A mobility management program improves coordination, efficiency, and performance through a focus on the following key activities:

- **Cultivating partnerships:** Strong relationships are at the core of a mobility management program — including not just transportation providers and planners, but businesses, nonprofits, government agencies, and other community stakeholders.
- **Conducting program evaluation and assessment:** Mobility management tracks outcomes using quantitative and qualitative methods.
- **Facilitating design and implementation of local and regional solutions:** Mobility management brings partners together to develop solutions to fit the community's needs and secure resources to achieve the vision.
- **Expanding low-cost programs:** Mobility management assists with expanding the number of volunteer drivers and transit ambassadors to facilitate access among people with moderate to low mobility levels.
- **Applying universal design principles:** Mobility management seeks to create a transit system that may be accessed, understood and used by people of any age or size or having any physical, sensory, mental health or intellectual ability or disability.

Rider who uses a wheelchair boarding an RTP van. Photo: GPCOG

Improve Door-To-Door Options

Even with a robust public transportation system, some riders simply need door-to-door service — because of mobility challenges or lack of a personal vehicle to reach stops. While transportation network companies (like Uber and Lyft) are expanding transportation options for many, cost, limited geography, and lack of accessible vehicles means they are not the solution for everyone. Likewise, grassroots volunteer driver programs continue to be a flexible and low-cost solution for providing rides, but not every community in the Greater Portland region has access to one.

Many rely on the region's two demand response providers — the York County Community Action Corporation (YCCAC) and the Regional Transportation Program (RTP) — for accessible, door-to-door service. However, the service can be expensive to operate and cumbersome or inconvenient for customers. Service today requires that reservations are made one to three days ahead and offers a 60-minute pickup window. This can make the service difficult to use if travel needs are spontaneous or time is limited.

To enhance door-to-door options in the Greater Portland region, we need to expand community-based volunteer driver programs, improve the user experience of paratransit, and pilot new demand response service models, such as microtransit, for door-to-door rides.

Action Steps:

- **Expand community-based volunteer driver programs:** Partner with state and regional stakeholders to support communities in developing new and expanded volunteer driver programs on the municipal and regional level. The effort will focus on enabling communities to develop locally tailored programs and advance opportunities to share resources and tools. Key players include municipal governments, age-friendly community groups, and the Maine Department of Transportation.
- **Advance user-focused improvements to paratransit:** Develop a strategic plan for improving paratransit in the region including strategies to address frequent rider concerns regarding travel time, the wait time for rides, and the amount of advance reservation time required when booking a ride. YCCAC and RTP share many of the challenges faced by paratransit providers around the country: strict regulations, restricted budgets, and reliance on volunteer drivers. With guidance from the local coordination working group, this initiative will rely on best practices research to develop steps for upgrading technology and operating systems.
- **Pilot new service models for door-to-door rides:** The region's transit agencies will undertake targeted pilot programs of subsidized, on-demand rides designed to service key populations. These microtransit pilots will be designed to serve areas with inadequate service or to address specific door-to-door needs like grocery shopping.

What is microtransit?

Microtransit consists of smaller vehicles, generally running on demand and with flexible routing. It can provide cost-effective service in transit deserts, reduce costs of service in areas with lower ridership, or function as a feeder to fixed-route service.

The city of Norwalk, Connecticut's **Wheels 2 U** program uses microtransit to supplement the public transportation system within a defined service area. Riders use an app to request rides. The service replaces fixed-route service in the evenings when ridership is low. Sharing vehicles with daytime paratransit service reduces costs.

Jersey City, New Jersey offers city-wide microtransit through the company **Via** to provide rides to areas underserved by transit. Top destinations include many transit centers, which suggests the service is supplementing, rather than replacing, the existing transit.

Menlo Park, California offers a free door-to-door **"Shoppers' Shuttle"** a few days a week. A morning shuttle picks up all passengers who have made reservations, then drops them off at various stores and plazas. The shuttle then returns to pick up all passengers after approximately 2 hours shopping time. Since the schedule is flexible, drivers are available to help passengers carry packages or groceries to their door.

Estimated Costs

The estimates in Table 5 below are included to provide a better understanding of what investing in each Make Transit Easier action step might cost. It is important to note, there are numerous grant opportunities available and potential partnerships in the region to support these initiatives.

TABLE 5:

ESTIMATED MAKE TRANSIT EASIER COSTS

RECOMMENDATION	ACTION STEP	ESTIMATED COST	POTENTIAL FUNDING SOURCE
ADOPT INNOVATIVE CUSTOMER SERVICE TECHNOLOGY	**Adopt a unified mobility platform** Launch a regionally managed web-based portal that includes trip planning, scheduling, fare payment, and real-time notifications for transportation.	$500k initial + $50k per year	• FTA discretionary grant programs such as the Accelerating Innovative Mobility Challenge Grant Program and the Mobility for All Pilot Program Grants • FTA Section 5310
	Integrate new technology into paratransit communications Pursue technology that enhances communication between paratransit providers and customers.	$300k initial + 30k per year	
ADVANCE PARTNERSHIPS WITH BUSINESSES AND ANCHOR INSTITUTIONS	**Establish a transportation management association (TMA)** Launch a regional TMA to implement strategies that support increased use of public transit.	$200k initial + $50k per year	• Member dues • Parking revenue • Congestion Mitigation and Air Quality (CMAQ) Improvement Program • Foundation grants • Large institutions • Community organizations
	Partner to provide free and low-cost fare programs Promote transit ridership by youth, families, and people with low incomes through special passes and bulk discounts.	$75k initial + $40k per year	
ENHANCE FIRST AND LAST MILE CONNECTIONS	**Develop welcoming stops** Adopt regional goals and funding mechanisms for accessible, family-friendly transit stops.	$2.6M[1]	• FTA Section 5307 • FTA discretionary grant programs • Private sector partners
	Prioritize walking, biking, and rolling to transit Pursue implementation of transit-supportive recommendations in *"Getting There From Here: An Active Transportation Plan."*	N/A	
	Pursue pilots of feeder services Partner with "emerging mobility providers" to conduct targeted pilots that provide "feeder trips."	$500k per year	
STRENGTHEN COORDINATION AMONG PROVIDERS	**Establish a mobility management program** Establish a mobility management program at GPCOG to provide formal support for improving coordination across providers and modes.	$100k per year	• FTA Sections 5307, 5310 and 5311 • FTA discretionary grant programs • Foundation grants
	Convene a local coordination working group Convene a multi-sector working group to pursue/monitor coordination across public transit services.	N/A (included in $100k above)	
IMPROVE DOOR-TO-DOOR OPTIONS	**Expand community-based volunteer driver programs** Support new and expanded community-based volunteer driver programs.	$75k per year	• Municipalities • Community organizations • Agency partnerships • FTA Section 5310 • FTA discretionary grants • Rural Transportation Assistance Program
	Advance user-focused improvements to paratransit Develop a strategic plan for improving paratransit in the region.	$100k	
	Pilot new service models for door-to-door rides Launch targeted pilot programs of subsidized, on-demand rides designed to service key populations.	$500k per year	

[1]Average investment of $4k per stop for the region's 650 bus stops.

Goal 2:

Create Frequent Connections

WE ENVISION A FUTURE where you can walk out the door knowing that reliable public transit will come soon and take you where you want to go. To meet that high expectation, *Transit Tomorrow* proposes significant frequency and span of service improvements as well as expansion of service to new places. The frequency improvements ensure you will never have to wait long to catch your ride, while the expansion improvements ensure transit will be available in more places. Focusing on frequency and span of service first will allow the transit system to most effectively serve our region's existing urban areas and lay the groundwork for future expansion as demand warrants.

Recommendations

- **Improve frequency and service hours:** The first priority is to target resources to the existing routes already serving our most populated urban areas and areas designated for growth. These routes should increase frequency over time to every 10 minutes for most of the day and every 20 minutes for when demand is lower; service hours should also extend to 6 a.m. to midnight seven days per week.
- **Add local circulator routes:** As demand for transit increases, add six new local circulator routes. These routes, shown in Figure 21, would make frequent stops and loop around our region's major destinations and centers of activity.
- **Create new connections:** To make transit more accessible throughout the region, three new routes are proposed to connect the suburban and rural communities not currently served by transit.

The main factors guiding these recommendations were public input, the peer region transit market comparisons, and an extensive analysis of Greater Portland's transit market. Public input placed an emphasis on improving the frequency of the existing transit service over expanding to new markets. The comparison to peer regions also showed that Greater Portland substantially lags behind other region's transit systems in frequency and span of service. Lastly, the transit market analysis found that while Portland's urban areas are the strongest part of the transit market, pockets of local, unmet demand exist throughout the region.

The first priority is to target resources to the existing routes already serving our most populated urban areas and areas designated for growth.

FIGURE 21:
LOCAL CIRCULATORS AND NEW CONNECTIONS

Figure 21 shows the conceptual locations for where local circulator routes and new connections may be warranted. The first priority of the Create Frequent Connections recommendations, however, is to improve the frequency and service hours of existing service.

The Mill Creek Transit Hub in South Portland. Photo: GPCOG

Implementation

The recommendations described here — primarily oriented to the region's bus network[2] — recognize that level of service exists on a spectrum. Local communities throughout the region should have access to transit that is appropriately scaled to demand, financially sustainable, and sufficient to meet at least the essential needs of the area's residents.

Improving the frequency and span of service of the existing public transportation network as well as expanding service to new places will require significant investment. Within a fixed budget, these represent two competing objectives. Devoting more resources to increasing frequency means less resources available to expand to new places, and vice versa. If we want to do more of one, we need to do less of the other.

In considering this tradeoff there is no right answer. It is a choice based on preferences and values. During the public engagement phase, we learned the overarching sentiment favors increasing frequency of service over expanding to new locations. Key factors behind this response are a strong desire to invest in transit where it is most viable, to support additional growth and development in the region's urban areas, and the fact that much of our existing network is not operating at a frequency convenient enough for many would-be riders.

Prioritizing frequency, however, does not mean every route must have 10-to-20-minute frequency before transit agencies develop new routes. In fact, many transit agencies throughout the country develop a consensus policy on a percentage split of resources between the different goals. There are also opportunities for additional funding described in greater detail in the Sustainable Funding section.

Prioritization

Implementing these recommendations in a carefully coordinated and phased approach will ensure the transit network is efficient and builds to a level of service that allows seamless connections to our region's major destinations. When choices need to be made, however, this plan recommends the following prioritization: 1. Improve the frequency and service hours of the existing transit network; 2. Add local circulator routes within the region's most active centers; and 3. Create new connections to suburban and rural communities.

[2] Opportunities for improving the frequency of the Amtrak Downeaster are outlined in greater detail in the Improve Rapid Transit section. The frequency of ferry service provided by Casco Bay Lines to island communities is a delicate balance between meeting the needs of island residents as well as visitors and tourists. Casco Bay Lines works closely with each community to determine the appropriate schedule for each route. The highest priority for the ferry system is safety and maintaining a state of good repair.

- **Improve frequency and service hours of the existing network**

The areas of the region with current public transportation service that show the strongest potential for increasing frequency and service hour improvements include Portland, South Portland, Westbrook, and Biddeford and Saco. In Portland, the Casco Bay Lines ferry terminal and the Downeaster station (current or future location) stand out as focus areas for more frequent connections.

A new study underway, called *Transit Together*, will develop an implementation plan for a regionally coordinated and integrated transit network, including strategies to make the system more seamless to ride and more efficient to operate.

- **Add local circulator routes in key locations as demand warrants**

The local circulator routes are designed to provide high frequency service within the region's most active centers as well as tie into the proposed rapid transit corridors. For example, someone living in Westbrook could use a local circulator as a convenient way to get around Downtown Westbrook, or they could use it to connect to a rapid transit option to quickly get to Portland.

Table 6, below, shows the areas of the region with the strongest potential for local circulator routes.

TABLE 6:

IDENTIFIED AREAS FOR LOCAL CIRCULATOR ROUTES

Town/City	Area Served	Identified Need
Portland	• Portland Peninsula • Off-Peninsula neighborhoods	Portland is the largest city in the region (and Maine) and a major center of services. In addition to other types of trips, the most common commute pattern in the region is Portland residents commuting to jobs in Portland.
Westbrook, Gorham, Portland	• Main Street Westbrook • Downtown Gorham • Off-Peninsula Portland neighborhoods	Current service is focused on connections between Westbrook, Gorham, and the Portland Peninsula along Routes 25 and 302. There is also demand for service within these outer communities and Portland.
Biddeford – Saco	• Downtown Biddeford • Downtown Saco	Together, the two communities are one of the largest, and fastest growing, urban areas in the region.
Bridgton	• Downtown Bridgton • Bridgton Hospital • Bridgton schools	There is significant internal travel within Bridgton.
Windham	• North Windham • Windham Center • Little Falls	There are a substantial number of jobs in North Windham and a growing residential population.
Scarborough, South Portland	• Route 1 corridor • Oak Hill • The Downs • Maine Mall • Redbank / Brick Hill	Transit service in Scarborough is currently limited. What does exist is mainly focused on regional connections along the Route 1 and I-95 corridors and not internal travel within Scarborough. There is demand for local circulation both within and between Scarborough and South Portland.

The Lakes Region Explorer, operated by RTP, makes round trips on Route 302 between Bridgton and Portland. Photo: GPCOG

- **Create new connections to suburban and rural communities**

The transit market analysis of Greater Portland found potential demand for new fixed-route bus service between the following communities:

- Standish and Gorham (Route 25)
- Bridgton and Windham (Route 302)
- Gray and Portland (Route 26/100)

The routes between Standish-Gorham and Bridgton-Windham would tie into the proposed rapid transit corridors in those areas. Service between Gray and Portland would likely run along Route 26/100 and could potentially connect to Pineland Farms (a large employment and recreation center in Gray/New Gloucester a few miles east of Gray Village).

Action Step:

- **Conduct *Transit Together* study:** The *Transit Together* study will develop an implementation plan for a regionally coordinated and integrated transit network, including strategies to make the system more seamless to ride and more efficient to operate.

Transit Together

Transit Together is a study to examine opportunities for increased strategic partnerships, coordination, and integration among the region's transit system. Broadly, this study consists of four tasks:

1. A regionwide network design to improve the rider experience and bolster the viability of transit as a transportation option in the region
2. An analysis of the feasibility of microtransit to serve low-density or low-ridership areas, allowing fixed-route services to serve high-ridership or high-density areas more efficiently
3. An analysis of opportunities for increased efficiencies in the administrative and organizational functions of the region's transit agencies to maximize the use of available funding sources
4. Identifying and addressing key stakeholder issues and concerns, and establishing shared agreement on implementable action items

Estimated Costs

The costs presented below reflect high-level planning estimates to better understand the level of investment needed to implement the proposed recommendations. The estimates show one-time vehicle costs (these estimates are on the higher end to accommodate the likely use of electric vehicles) and annual operating costs. Other costs, such as labor and additional vehicle storage, are not included here and would need to be considered as well. In developing these figures many assumptions were made. The *Transit Together* study will provide more detailed estimates for these improvements and recommend a prioritized order of implementation.

Frequency Improvements

Table 7, below, shows cost estimates for across-the-board frequency improvements to all the region's bus routes (METRO, SPBS, BSOOB Transit, and the Lakes Region Explorer). For example, if a route has an average frequency of one hour between stops, a 25% improvement would reduce the wait to 45 minutes; a 50% improvement would reduce the wait to 30 minutes; and, a 75% improvement would reduce the wait to 15 minutes. The estimates are based on the costs associated with annual revenue hours of service.

Local Circulator Routes

For the local circulator route estimates, the mode is assumed to be local fixed route bus. Table 8 shows the estimated vehicle and annual operating costs for implementing all six local circulators at varying frequencies seven days a week from 6 a.m. to midnight. This level of service may not be appropriate in every circumstance and should be considered carefully before implementation.

The costs for each local circulator route will vary, however, a general estimate for one circulator (at a frequency of 15 min. peak / 30 min. off peak) would be additional vehicle expenses of $1.8M (the cost for four new vehicles) and annual operating expenses between $1.2M and $1.6M (in addition to other costs associated with the service).

TABLE 7:

ESTIMATED FREQUENCY IMPROVEMENT COSTS

Frequency Improvements	Additional Vehicles	Vehicle Cost	Annual Revenue Hours	Annual Revenue Miles	Annual Operating Cost	Total Cost
25% Improvement	13	$5.8M	50,160	631,458	$5.1M	$10.9M
50% Improvement	26	$11.7M	100,320	1,262,916	$10.3M	$22M
75% Improvement	39	$17.6M	150,480	1,894,374	$15.4M	$33M

Source: AECOM

TABLE 8:

ESTIMATED LOCAL CIRCULATOR ROUTE COSTS

Local Circulator Routes	Additional Vehicles	Vehicle Cost	Annual Operating Cost	Total Cost
Downtown Circulators (15-min. peak / 30-min. off peak)	72	$32.4M	$24.6M	$57M
Downtown Circulators (10-min. peak / 20 min. off peak)	108	$48.6M	$36.8M	$85M

Source: AECOM

Create New Connections

Table 9 provides estimates for the three proposed route connections to outlying suburban and rural communities. The estimates are based on a 30-minute frequency during peak periods and 1-hour frequency during off-peak periods with service seven days a week from 6 a.m. to midnight.

TABLE 9:

ESTIMATED NEW ROUTE CONNECTIONS COSTS

New Route Connections	Additional Vehicles	Vehicle Cost	Annual Operating Cost
Bridgton – North Windham	5	$2.3M	$2.5M
Gorham – Standish	3	$1.4M	$1.0M
Gray – Portland	6	$2.7M	$3.1M

Source: AECOM

Main Street in Bridgton in the fall. While Bridgton is currently served by RTP's Lakes Region Explorer, *Transit Tomorrow* recommends more frequent trips between Bridgton and North Windham to connect to a proposed rapid transit route between North Windham, Portland, and South Portland. Photo: GPCOG

Goal 3:

Improve Rapid Transit

AS OUR REGION CONTINUES TO GROW, developing a network of fast, reliable, high-capacity transit corridors will be crucial to achieve *Transit Tomorrow*'s vision. Rapid transit, whether bus rapid transit (BRT), light rail transit (LRT), or commuter rail, often operate separately from vehicle traffic on their own designated right-of-way and/or have traffic signal priority at intersections. This allows them to swiftly bypass congestion and delays and stay on schedule. A regional rapid transit system would provide the type of fast, regional access generally enjoyed by drivers, but denied to those who are unable to drive or choose not to.

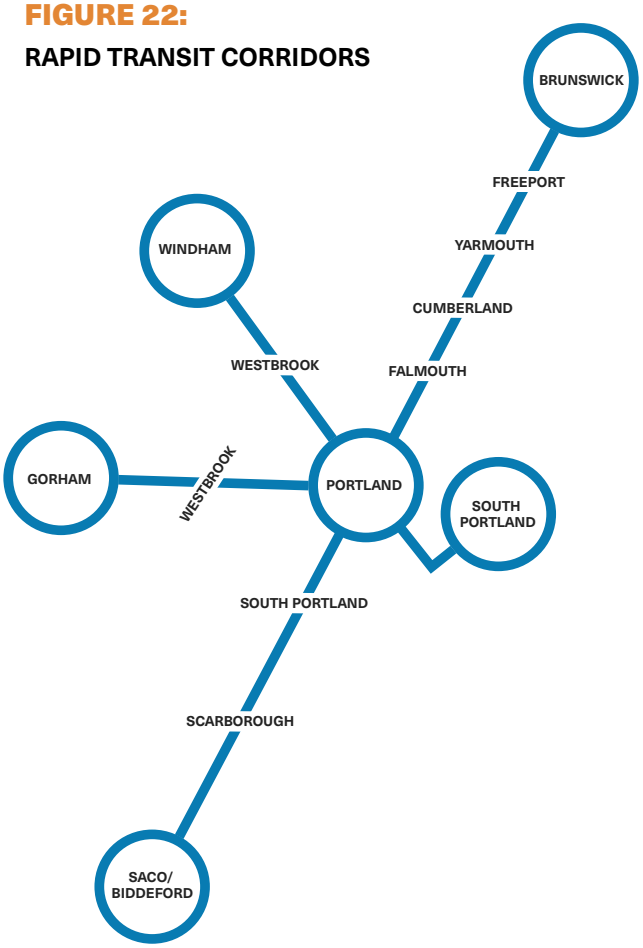
Recommendations

- **Rapid Transit Corridors:** The phased implementation of rapid transit would mark a major transformation in how we move around the region. It would allow us to meet the growing demands placed on our transportation network without building new roads or creating more vehicle traffic. Put simply, if transit is the fastest and most convenient choice, people are more likely to take it.

Our preliminary evaluation shows rapid transit is appropriate for several corridors, to varying degrees, connecting major markets in the region. These corridors, shown conceptually in Figure 22, were identified based on current and projected population, socioeconomic characteristics, existing public transit services, and regional employment and commuting patterns.

FIGURE 22:

RAPID TRANSIT CORRIDORS



What is Rapid Transit?

Rapid transit refers to types of public transportation that are fast, frequent, and can transport many passengers at once. Rapid transit, whether bus or rail-based, typically includes the following key features.

Key features of rapid transit:

- **Dedicated right-of-way** to avoid congestion
- **Off-board fare payment** to speed up boarding/ departing
- **Platform-level boarding**
- **"Show up and go"** frequency
- **Increased hours** of operation to include nights and weekends
- **Ability to transport** many passengers

Determining the specific rapid transit option, or options, for each corridor will require further evaluation. An "alternatives analysis" is the next step for evaluating these options, determining a "locally preferred alternative", and becoming eligible for federal funding opportunities.

Rapid Transit Corridors

Table 10, below, provides greater detail on the existing routes and transit service available within each corridor.

TABLE 10:

POTENTIAL RAPID TRANSIT CORRIDORS

MAJOR MARKET CONNECTIONS	EXISTING ROUTES	EXISTING TRANSIT	COMMUNITIES SERVED
BIDDEFORD – SACO – PORTLAND	• Route 1 • I-95 • Rail Main Line	• BSOOB Transit ZOOM Express • BSOOB Transit Green Line • NNEPRA Downeaster • YCCAC • RTP	• Biddeford • Saco • Scarborough • South Portland • Portland
BRUNSWICK – PORTLAND	• Route 1 • I-295 • Rail Main Line	• METRO BREEZ • METRO Route 7 • NNEPRA Downeaster • RTP	• Brunswick • Freeport • Yarmouth • Cumberland • Falmouth • Portland
GORHAM – WESTBROOK – PORTLAND	• Route 25 • Rail Spur • *Gorham Spur* *(proposed)*	• METRO Husky Line • METRO Route 4 • RTP	• Gorham • Westbrook • Portland
NORTH WINDHAM – PORTLAND – SOUTH PORTLAND	• Route 302 / Forest Avenue • Route 77 • Broadway	• Lakes Region Explorer • METRO Route 2 • SPBS Route 21 • SPBS Route 24A • SPBS Route 24B • RTP	• Windham • Westbrook • Portland • South Portland

Route and Mode Options

For most corridors there are several rapid transit route and mode opportunities. For example, the corridor between Biddeford/Saco and Portland features three major routes: the Maine Turnpike, U.S. Route 1, and the Downeaster rail line. Each route currently features some form of public transportation and could be considered a candidate for rapid transit improvements.

This plan does not endorse a specific route or transit mode for any of the five corridors. The next step is to prepare a more detailed "alternatives analysis" for each corridor. This level of analysis, which is typically required for federal funding, will ultimately determine the most appropriate route and mode choice — or choices — for each market connection. While this plan does not endorse any specific mode, typical rapid transit modes include bus rapid transit, light rail transit, and commuter rail. These modes are described in greater detail on the next few pages.

WHAT IS BUS RAPID TRANSIT (BRT)?

Bus rapid transit (BRT) is an enhanced bus service that operates more like a rail service due to infrastructure investments that make it faster and more reliable. Bus rapid transit often uses dedicated travel lanes so the buses can travel quickly through congested corridors. These dedicated bus lanes can be used exclusively for one or multiple routes. Enhanced bus stations (instead of traditional bus stops) feature real-time arrival information, raised curb heights to make it easier for everyone to get on board, and off-board fare payment. These, and other enhancements, make BRT fast and reliable. Additionally, the implementation and construction costs of BRT are typically lower than rail-based systems.

Photo: Greater Greater Washington

Key Bus Rapid Transit Features

- Physically separated, dedicated bus lanes and stops for faster service where feasible
- Intersection treatments (such as transit signal priority) that prioritize bus movements
- Off-board fare collection to eliminate boarding delays
- Elevated, Americans with Disability Act (ADA) accessible platforms for easy and efficient boarding

Example

The Greater Richmond Transit Company's Pulse BRT Line in Richmond, Virginia launched in 2018. In a city lacking modes other than buses, the Pulse Line is a 7.6-mile route that links exciting downtown services and destinations with businesses and residences beyond the urban core.

WHAT IS LIGHT RAIL TRANSIT (LRT)?

Light rail transit (LRT) is an electric rail-based rapid transit system that has the potential to serve thousands of passengers per hour in each direction. Most light rail systems operate within roadways in mixed traffic although some systems operate separately from vehicle traffic via tunnels, elevated guideways, and exclusive rail corridors. Construction and operating costs for light rail vary widely due to system design and service goals. However, light rail generally requires higher investments and its financial success greatly depends on its location in dense urban areas.

Photo: Chris Caya/WBFO NEWS

Key Light Rail Transit Features

- Typically operate in exclusive rights-of-way within major roadways
- Faster than buses or streetcars due to exclusive rights-of-way and efficiently spaced stations
- Light rail vehicles can be joined together to adjust to demand
- Off-board fare collection to eliminate boarding delays
- Elevated, Americans with Disability Act (ADA) accessible platforms for easy and efficient boarding

Example

Operated by Niagara Frontier Transportation Authority (NFTA), the Metro Rail in Buffalo, New York, was built in 1984 and provides high-capacity service along a 4.6-mile corridor. It connects a campus of the University of Buffalo to the downtown center. In 2017, Governor Andrew Cuomo allocated $5 million to undertake the environmental reviews and preliminary engineering needed to expand the service to other downtown destinations and into adjacent residential neighborhoods.

WHAT IS COMMUTER RAIL?

Commuter rail, also called Heavy Rail Transit (HRT), connects passengers in large metropolitan regions from the central urban core to adjacent commuter towns and suburbs. Many passenger rail lines, like the Amtrak Downeaster, also provide long distance inter-state commuter options connecting major metropolitan centers to each other. Like light rail transit, commuter rail is an electric or diesel rail-based system with multiple, high-capacity rail cars. The main difference between the two rail modes is that commuter rail typically travels much faster (50–80 mph) and does not operate in normal street conditions.

Key Commuter Rail Features

- Operates within a single urban area or intercity with regular station spacing
- Provides all-day bidirectional service with regular frequencies
- Operates at high speeds (50-80 mph) between stations
- Off-board fare collection to eliminate boarding delays
- Elevated, ADA accessible platforms for easy and efficient boarding

Photos: NNEPRA

Example

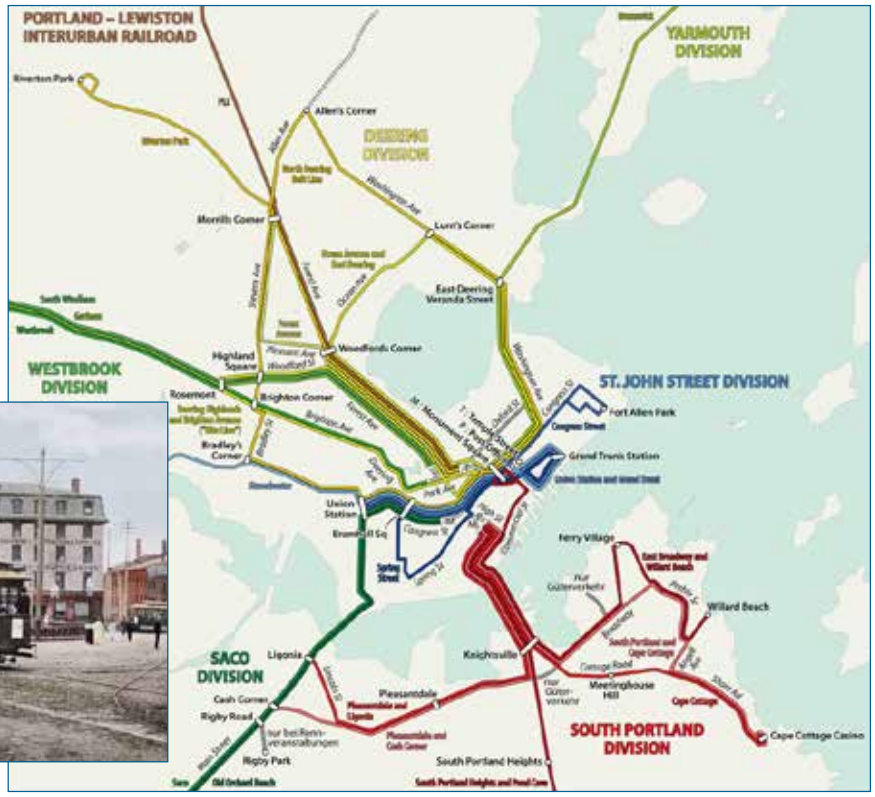
The Northern New England Passenger Rail Authority (NNEPRA) manages the Amtrak Downeaster. Created by the Maine State Legislature in 1995, NNEPRA was established in 2001 to restore passenger rail service between Boston and points within Maine. The multi-state rail service travels north/south along the coast from Boston, Massachusetts to Brunswick, Maine. For residents in Maine, the Downeaster provides an important transit connection to Boston, and other points south. As frequencies increase, the Downeaster is also becoming a convenient option for commuting within Maine.

To provide better service and meet the goals of *Moving Southern Maine Forward* and *Destination 2040*, NNERPA is currently pursuing the following improvements:

- Providing a sixth round trip between Wells and Brunswick.
- Installing Positive Train Control (PTC) a safety system that automatically stops a train before certain accidents related to human error occur. (This improvement is currently funded and will remove the six round trip per day cap).
- Investing in track improvements (such as double track in key locations) to support new service lines and increase frequency and capacity.
- Exploring new locations for the Portland Transportation Center to be closer to Downtown Portland and eliminate a 15–20-minute delay.
- Considering new station locations in West Falmouth and other areas with economic development opportunities.
- Upgrading to Americans with Disabilities Act (ADA) compliant, two-track station platforms where feasible.

Monument Square in Portland was the hub for the Portland Railroad Company's electric streetcar network. Image circa 1910.

Photo: Portland International Jetport



Greater Portland's Electric Railways (1916). Source: Maximilian Dorrbecker

WHAT WE ONCE HAD: A BRIEF HISTORY OF GREATER PORTLAND'S STREETCAR NETWORK

While we envision what we want our public transportation system to look like in the future, it is important to acknowledge the electric streetcar network we once had. The physical remnants of the streetcar network, also called trams or trolleys, are mostly obscured today, but their history provides insights into old land use patterns and priorities that can be embraced again through *Transit Tomorrow*.

The first form of public transportation in Portland were horse-drawn trolley cars operated by the Portland & Forest Avenue Railroad Company (PRR) and chartered by the Maine legislature in 1860. The PRR eventually expanded beyond downtown Portland by undertaking infrastructure projects, like Tukey's Bridge, and embracing innovative technology like electrification. By 1910, the streetcar network provided frequent, affordable, and enjoyable transit for travel between and within communities in the region.

Expansions into rural areas opened land for residential development too, particularly in walking distance of existing villages and downtowns served by the streetcar. New streetcar suburbs flourished along these trolley lines, such as the Oakdale neighborhood and Nason's Corner in Portland or Pleasantdale in South Portland. Companies developed their own trolley amusement parks, like PRR's Riverton Trolley Park in Deering, and seaside resorts, like Portland & Yarmouth Electric Railway's Underwood Springs Park in Falmouth, to attract "leisure" ridership.

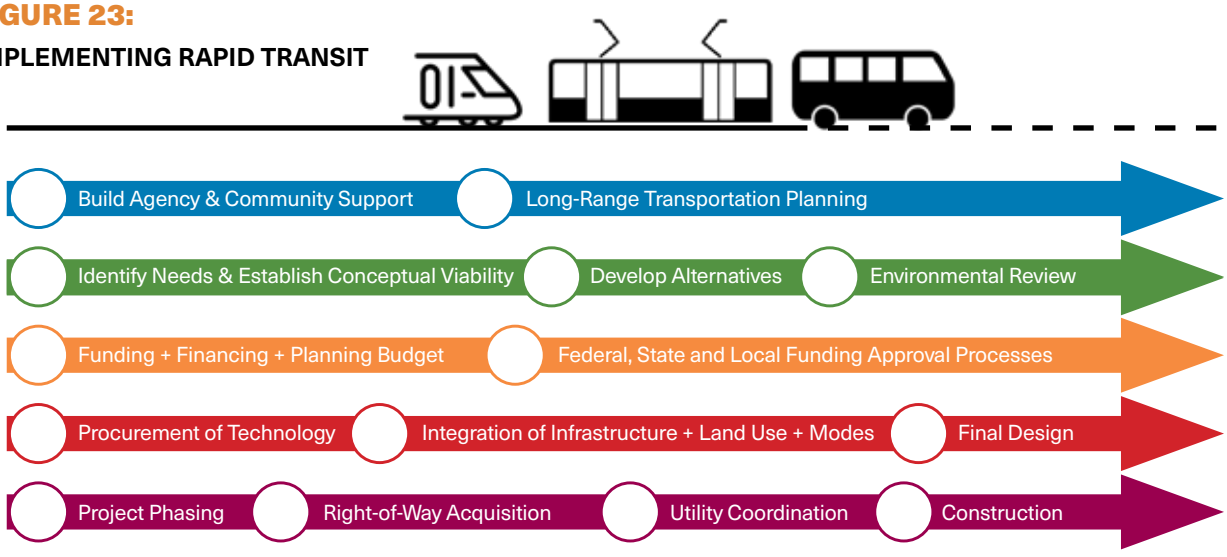
By the 1930s, increasing automobile ownership fueled residential development away from streetcar lines and congested streets, disincentivizing ridership. Replaced by buses, the last trolley car ran on the Union Station-Munjoy Hill Line on Christmas Eve, 1940.

Implementation

As Figure 23 shows, *Transit Tomorrow* is the first in a series of steps needed to implement rapid transit in the Greater Portland region. The typical timeline for implementing a rapid transit project is about five to ten years and usually consists of the following major milestones:

- **Alternatives analysis:** The first step in implementing rapid transit is to undertake an alternatives analysis for each corridor. An alternatives analysis evaluates the different rapid transit options that could address local and regional needs. These studies provide a detailed sense of the demand, opportunities, and challenges for each proposed market connection as well as cost-benefit estimates. The analysis concludes with a "locally preferred alternative", a preferred transportation mode and route that best meets the needs of a corridor. On January 5, 2021, the PACTS Executive Committee approved funding to develop an RFP and associated scope of work for a rapid transit alternatives analysis in the Greater Portland region.
- **Planning team and project development:** This phase includes the project setup, designation of initial funding sources, any statutory approvals required by local law, and the appointment of the planning team and other professionals needed to start the project. Communications and outreach plans typically begin in this stage as well.
- **Funding and financing:** The adoption of a business plan usually precedes the physical design of the infrastructure and technology. In addition to substantial capital costs, the plan must account for sustained sources of funding and revenue for operations, like maintenance.
- **Preliminary design and environmental review:** This stage, required by the National Environmental Policy Act (NEPA), includes preliminary design plans and a robust technical analysis that considers potential social, economic, environmental, and land use impacts. The extent of the environmental review depends on the expected impact to the environment.
- **Final design:** The final design stage ensures the rapid transit plan is integrated with other modes, economic development initiatives, land use and demographic trends. At this time, capital investments are typically procured.
- **Approvals and TIP inclusion:** Approvals and formal agreements are secured from relevant government offices and partnering agencies. This includes inclusion in the long-range transportation plan and Transportation Improvement Program (TIP). The TIP is a four-year, fiscally constrained program of capital investments planned for each metropolitan planning organization based on priorities in the long-range transportation plan.

FIGURE 23:
IMPLEMENTING RAPID TRANSIT



Sources: ITDP BRT Planning Guide, 4th Edition, (2017); ITDP BRT Implementation Guide (2019)

The project team considered a range of factors to evaluate and prioritize the proposed rapid transit corridors. While *Transit Tomorrow* is a long-range public transportation plan, with a 30-year perspective, rapid transit projects can often take 10 or more years to complete. As discussed in greater detail in the implementation section, the next step (in a lengthy series of steps) is to conduct an alternatives analysis for each corridor. An alternatives analysis will evaluate the overall feasibility of rapid transit for each market connection and determine the preferred route and mode choice.

To take the first step in developing a rapid transit opportunity for the region, the project team evaluated and prioritized the major market connections to determine which corridors are most appropriate — and show the most immediate viability — for pursuing an alternatives analysis study in the short term. While *Transit Tomorrow's* 30-year vision is to create rapid transit opportunities for all market connections, some corridors show existing potential for rapid transit while others may need to develop demand over time. The main factors influencing the prioritization are shown below.

Key Considerations for Evaluating Rapid Transit

Corridor length	The length of each market connection is an important factor since it can be used as a proxy for cost and complexity — longer corridors typically lead to higher infrastructure costs and a greater chance of running into right-of-way issues and engineering challenges. For bus rapid transit, this is not always true since buses can mix with traffic for parts of the route that are free from congestion. However, operating costs will always be higher for longer routes regardless of the mode.
Population and employment density	Higher population and employment densities support greater levels of public transportation since there are more potential riders in the same amount of space. The project team developed an approximate ¾ mile buffer for each market connection and used this buffer to tally population and employment statistics.
Existing land use	The project team prepared a map that shows the location of conserved lands, major waterbodies and rivers, and population and employment density by census block group. The project team used the map to evaluate general land use conditions for each market connection.
Commute patterns	Commute-to-work travel patterns between communities is a strong indication of where public transportation can be successful. The project team compiled commute trip data at the community level for each market connection.
Travel to Portland	Since each market connection includes Downtown Portland as a major destination, the project team used the software platform Streetlight Insights to analyze anonymous mobile phone travel data to Downtown Portland for each market connection. This data is based on all trips taken in 2019 (not just commute-to-work trips).
Social equity	Decisions about public transportation disproportionately impact vulnerable population groups that rely on it. The project team prepared a map using the equitable target area (ETA) index developed for the *PACTS Civil Rights Plan*. The ETA index is a composite of the following six data points: the percentage of the population age 65 and over; the percentage of the population living below poverty level; the percentage of households with limited vehicle access; the percentage of the population with limited English proficiency; the percentage of the population with disabilities; and, the percentage of racial/ethnic minorities (each parameter receives equal weighting). The ETAs were then categorized into four levels of ETA concentrations: Very High, High, Medium, and Low.
Major destinations & existing/planned developments	Major existing and planned developments (such as Rock Row in Westbrook, The Downs in Scarborough, or the revitalization of the Mill District in Biddeford and Saco) give an idea of future demand for transit service and potential sources of change to existing travel patterns.
Existing/planned transit service and infrastructure	Each market connection features some level of public transportation service. The project team considered the level of service that currently exists, the infrastructure already in place, and planned improvements.

Table 11, below, shows the results of the analysis.

TABLE 11:

RAPID TRANSIT CORRIDOR CHARACTERISTICS

MARKET CONNECTION	APPROX. LENGTH	POPULATION (PER MILE)[1]	JOBS (PER MILE)[1]	DAILY COMMUTES (PER MILE)[2]	DAILY TRIPS TO DOWNTOWN PORTLAND (PER MILE)[3]	MAJOR DESTINATIONS & EXISTING/PLANNED DEVELOPMENTS
BIDDEFORD – SACO – PORTLAND	17.5	43,813 (2,504)	55,444 (3,168)	29,963 (1,712)	104,031 (5,945)	• Downtown Biddeford/Saco • University of New England • The Downs, Scarborough • Maine Medical Center Scarborough Campus • Portland Downtown
BRUNSWICK – PORTLAND	25.5	30,638 (1,201)	33,470 (1,313)	12,013 (471)	51,906 (2,036)	• Brunswick Downtown • Freeport Downtown • Yarmouth Village • Portland Downtown
GORHAM – WESTBROOK – PORTLAND	11.5	50,554 (4,396)	52,241 (4,543)	9,839 (856)	36,010 (3,131)	• Gorham Village • Westbrook Downtown • Rock Row, Westbrook/ Portland • University of Southern Maine (USM) Campuses • Maine Medical Center (Brighton Ave. Campus) • Portland Downtown
NORTH WINDHAM – PORTLAND – SOUTH PORTLAND	20.5	54,936 (2,680)	51,498 (2,512)	18,605 (908)	53,105 (2,590)	• North Windham Center • USM Portland Campus • Portland Downtown • South Portland Downtown • South Portland Waterfront • SMCC Campus

[1] Total population/jobs based on an approximate ¾ mile buffer developed for each market connection. Sources: American Community Survey 2014-2018 5-year estimates / U.S. Census Bureau 2018 Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics.

[2] The combined total for all commute trips that occur between municipalities along each market connection (totals do not include figures for those who live and work in the same community). Source: U.S. Census Bureau 2018 Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics.

[3] Average weekday daily trips to Downtown Portland for each market connection based on 2019 mobile phone data compiled using Streetlight Insights software. Source: Streetlight Insights.

The following pages show the existing land use (Figure 24) and social equity (Figure 25) maps. The existing land use map shows combined population and employment density for the region along with a graph that illustrates the estimated population and employment density per mile for each market connection. The social equity map shows the PACTS equitable target areas index (described in greater detail on the previous page) as well as a graph that shows the estimated equitable target area category (Very High, High, Medium, Low) per mile for each market connection.

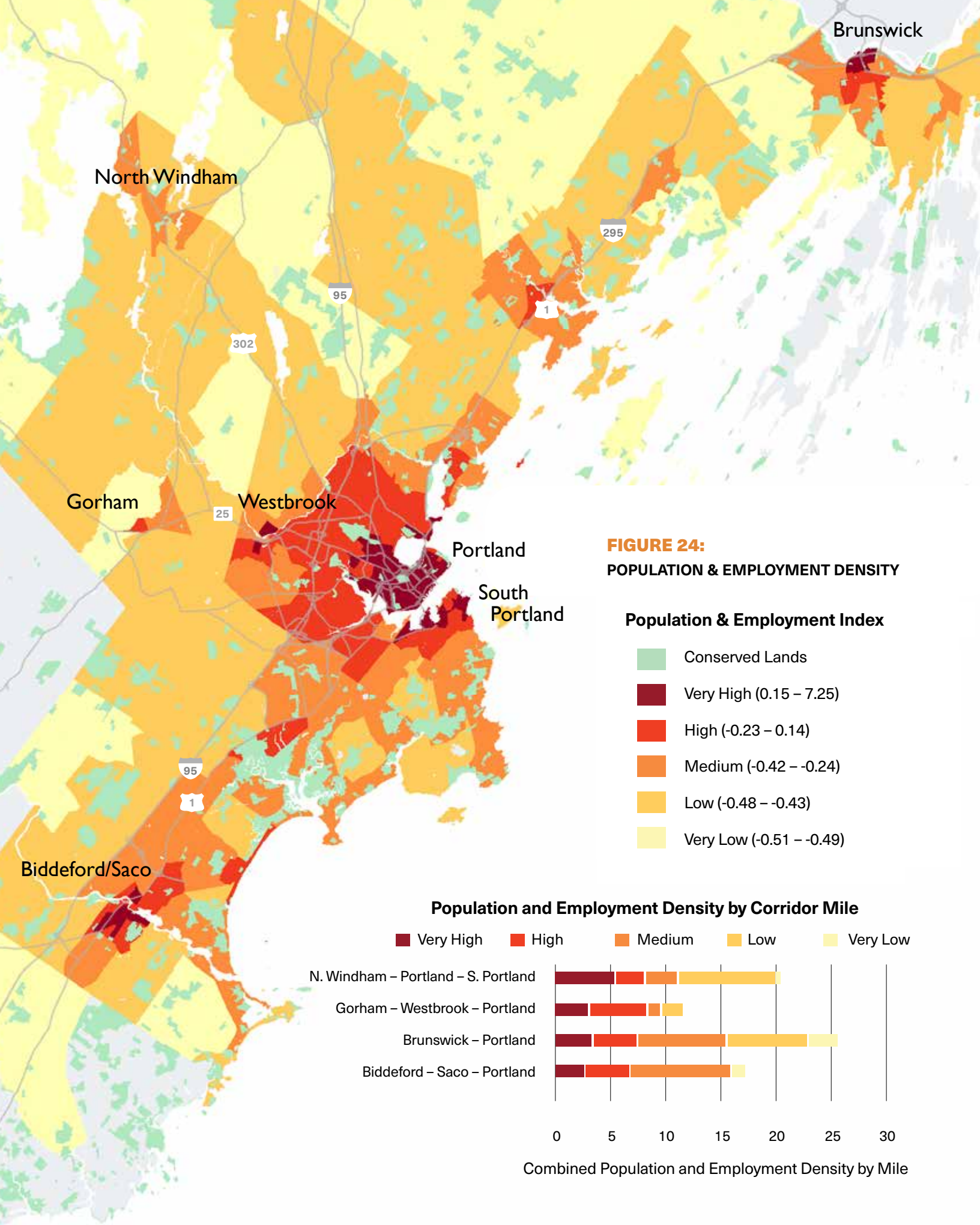


FIGURE 24:
POPULATION & EMPLOYMENT DENSITY

Population & Employment Index

- Conserved Lands
- Very High (0.15 – 7.25)
- High (-0.23 – 0.14)
- Medium (-0.42 – -0.24)
- Low (-0.48 – -0.43)
- Very Low (-0.51 – -0.49)

Population and Employment Density by Corridor Mile

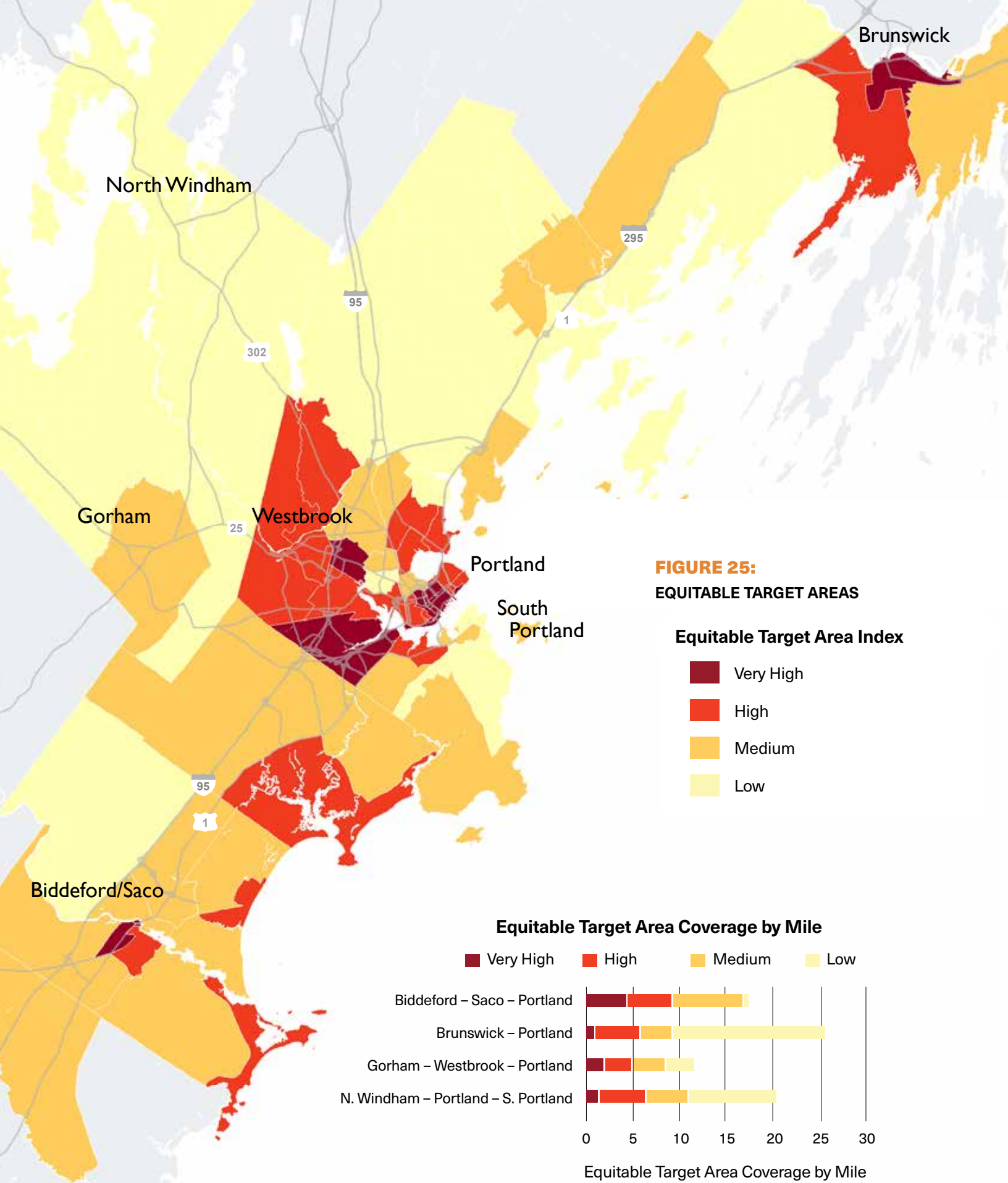


FIGURE 25:

EQUITABLE TARGET AREAS

Equitable Target Area Index

- Very High
- High
- Medium
- Low

Equitable Target Area Coverage by Mile

Top: University of Southern Maine (USM) campus in Gorham. Photo: University of Maine. **Center:** Rock Row is a mixed-use development in Westbrook that is under construction. When all phases are complete it will add thousands more people, jobs, and daily visitors to the area. Images: Waterstone Properties. **Bottom:** Amtrak Downeaster crossing Congress Street in Portland with Maine Medical Center in the background. Photo: NNEPRA.

Prioritization

After evaluating the above information, the project team developed the following tiered prioritization:

Tier 1: Gorham – Westbrook – Portland

The project team concluded the Gorham to Portland market connection is the best candidate for pursuing an alternatives analysis study in the next five years. At roughly 11.5 miles, the Gorham to Portland corridor is relatively short (which helps reduce operating costs and project complexity), but long enough to provide a strong regional benefit. Rapid transit could help alleviate traffic congestion on this active commuting corridor.

The connection ranks very high in total population and jobs within ¾ mile of the corridor, and these figures do not include the new development at Rock Row in Westbrook, which is projected to add thousands more people, jobs, and daily visitors. As Figure 24 shows, from a land use perspective the corridor best fulfills our regional land use goals of encouraging growth and development within our existing urban areas. Additionally, as Figure 25 shows, in terms of providing service to population groups that most rely on it, the corridor passes through some of the highest ranked PACTS equitable target areas (identified in the *PACTS Title VI Plan*) in the region.

The Gorham to Portland corridor also features strong anchor destinations (e.g. University of Southern Maine campuses, Maine Medical Center's Brighton Avenue campus) and natural phasing points, which are key attributes for rapid transit. For example, a first phase could connect Downtown Portland to Downtown Westbrook, while a second phase could extend to Gorham Village.

In terms of existing infrastructure, Route 25 is the primary roadway connection, although the Maine Turnpike Authority has plans to build a 5-mile toll highway which would extend from I-95's Exit 45 in South Portland (Maine Mall) and connect to Route 114 south of Gorham. Additionally, a rail corridor is currently in place between Downtown Portland and Westbrook which creates opportunities for either rail- or bus-based rapid transit. An alternatives analysis would help specify the optimal course of action for future transit service along this corridor.

Tier 2: Biddeford – Saco – Portland

As Table 11 illustrates, from a trip generation standpoint, the Biddeford/Saco to Portland corridor is a significant regional connection in the Greater Portland region. The rapid growth and revitalization occurring in Biddeford and Saco, and The Downs development in Scarborough, only reinforces the future likelihood of this status. Additionally, educational anchor institutions, such as the University of New England (Biddeford and Portland campuses), the University of Southern Maine (Portland campus), and the Roux Institute (Portland campus) provide opportunities for developing core ridership along this corridor.

While the corridor connects the two largest urban areas in the region, at roughly 17.5 miles its length increases both infrastructure and operating costs for rapid transit solutions. The corridor also travels through long stretches of low-to-medium density areas with auto-oriented development patterns not especially well suited to support public transportation.

Presently, both bus and passenger rail service operate along the corridor. The Amtrak Downeaster runs the length of the corridor with three major stops — the Saco Transportation Center, Old Orchard Beach (seasonal), and the Portland Transportation Center. BSOOB Transit also operates an express bus service along I-95 from Biddeford/Saco to Portland, as well as a bus route along Route 1 that makes more frequent stops in each community.

In the next five years, NNEPRA has several major initiatives planned for the Downeaster including track capacity improvements and the installation of Positive Train Control (PTC), which would improve performance, safety, and track utilization. NNEPRA is also exploring the possible relocation of the Portland Transportation Center closer to Downtown Portland.

To the extent that NNEPRA can make these improvements to increase service frequency, the Downeaster could help shift vehicle-based trips to rail-based trips. Considering the timing of the Downeaster improvements it seems sensible to pursue an alternatives analysis after these initiatives and changes are implemented. If the Downeaster can serve as a convenient commuter option between Biddeford/Saco and Portland, enhanced bus service — or bus rapid transit if demand warrants — along Route 1 could potentially fill in the gaps by providing more frequent stops and local coverage.

The Pearl Street Riverfront District, a pedestrian-friendly transit-oriented neighborhood, is one of many development projects currently underway in the rapidly revitalizing Biddeford-Saco Mill District. Rendering: Goody Clancy



Left: Casco Bay Bridge connecting South Portland and Portland. **Center:** Morrill's Corner in Portland. **Right:** Bridges over Presumpscot River in Falmouth (I-295, St. Lawrence & Atlantic rail line, Middle Road). Photos: GPCOG

Tier 3: North Windham – Portland – South Portland

The third tier includes the North Windham to Portland and South Portland to Portland market connections. These corridors are grouped together since they could be combined into a single alternatives analysis. Combining these corridors in a single study would allow for a stronger regional impact (at approximately four miles the South Portland to Portland corridor is quite short) and create more opportunities for implementing improvements in phases. For example, a first phase could be from Morrill's Corner in Portland to Bug Light Park in South Portland. Additional phases could extend north on Route 302 to Riverton, Prides Corner, and North Windham Center.

In fact, the *2018 Portland to South Portland Smart Corridor Plan* evaluated the 6.5-mile corridor from Morrill's Corner in Portland to Bug Light Park in South Portland, utilizing Forest Avenue across the Casco Bay Bridge to Broadway. The 148-page plan provides a detailed strategy for how to improve public transportation along the corridor in the short term and identifies bus rapid transit as a long-term option to build towards.

Additionally, at the time of this writing, the PACTS-funded *Cushing's Point Transportation Study* is currently underway. This study will identify opportunities to improve safety, mobility, and access for all users along the Broadway corridor in South Portland. The study area includes a large, planned mixed-use waterfront development adjacent to Bug Light Park. The study will consider potential solutions to increased traffic associated with the new development, including improvements to transit service along Broadway, as well as the possibility of ferry service connecting the South Portland waterfront to Downtown Portland.

Tier 4: Brunswick – Portland

Like the Biddeford/Saco to Portland corridor, the Brunswick to Portland corridor is a significant regional connection that features a major interstate (I-295), Route 1, and commuter rail. The Amtrak Downeaster runs the length of the corridor with stations in Brunswick, Freeport, and Portland. Additionally, Greater Portland METRO operates the BREEZ and Route 7 bus routes. The BREEZ travels along both I-295 and Route 1 and makes stops in Brunswick, Freeport, Yarmouth, and Portland. The Route 7 bus travels mainly along Route 1 and makes shorter trips between Falmouth and Downtown Portland.

Major destinations for this corridor include Downtown Brunswick (and Bowdoin College), Downtown Freeport, Yarmouth Village, and the many businesses, organizations, and tourist attractions in Downtown Portland.

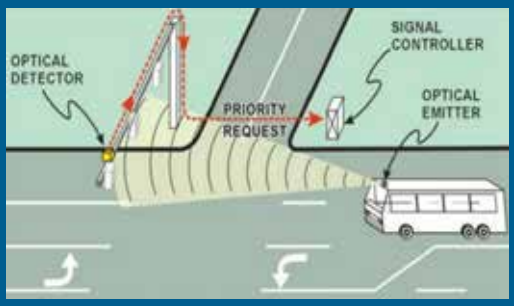
At roughly 25.5 miles, the Brunswick to Portland corridor is the longest of all the market connections, which would likely increase both infrastructure and operating costs for rapid transit solutions. As Figure 24 shows, the corridor also travels through long stretches of low-to-medium density areas; and, as Figure 25 illustrates, there are fewer equitable target areas along the potential rapid transit routes.

The planned improvements to ramp up the frequency of the Amtrak Downeaster, mentioned previously, also apply to the Brunswick to Portland corridor. Investments in relocating the Portland Transportation Center and installing double track would also provide the infrastructure needed up through Yarmouth to support eventual service between Lewiston/Auburn and Portland. Additionally, NNEPRA is considering a new station in West Falmouth.

Action Steps:

- **Conduct alternatives analysis studies:** Begin the process of exploring rapid transit opportunities by conducting an alternatives analysis study for each major market connection with a goal of conducting one study every five years. The first recommended alternatives analysis for the Gorham to Portland market connection can begin immediately. The results of the alternatives analyses will determine the preferred transportation modes and routes for each corridor.
- **Implement infrastructure improvements on major bus corridors:** Actions to improve the frequency and reliability of the bus network can also begin immediately. While full buildout of a bus rapid transit network requires comprehensive street redesign and many years of planning, bus priority treatments, such as transit signal priority and queue jump lanes at intersections, can be pursued in the short term especially on major corridors where multiple routes overlap.
- **Implement Downeaster improvements:** Support infrastructure and operational improvements to the Downeaster that will increase levels of service to and within the Greater Portland region.

What is Transit Signal Priority?



Graphic source: Streetsblog NYC

Transit Signal Priority (TSP) uses technology to modify traffic signal timing when transit vehicles are present. This is done by holding the green lights longer or shortening red lights to improve transit efficiency.

What are Queue Jump Lanes?

Graphic source: National Association of City Transportation Officials (NAACTO)

Queue jump lanes are short bus lanes by traffic signals that enable buses to by-pass waiting traffic. This is combined with transit signal priority or special bus-only signals to allow buses to cut out in front or make easier turns improving transit reliability and travel time.

Photos above. Left: A conceptual rendering of dedicated bus lanes on Forest Avenue in Portland. Image: AECOM **Center:** The HealthLine is a bus rapid transit line run by the Greater Cleveland Regional Transit Authority in Cleveland, Ohio. It began operation in 2008. The HealthLine route travels 6.8 miles and has 59 stations, each equipped with fare card vending machines, 24-hour lighting, and emergency phones. Photo: John Greenfield **Right:** The CTfastrak is a regional bus rapid transit system currently operating between Downtown Hartford and Downtown New Britain in central Connecticut. Operated by Connecticut Transit, it is the first bus rapid transit system in Connecticut and the second in New England after Boston's MBTA Silver Line. The CTfastrak runs on a 9.4-mile dedicated busway which runs on an abandoned railroad right-of-way. Photo: Newflyer504/Wikimedia Commons

Estimated Costs

The costs presented here are high-level planning estimates included to provide a rough, order of magnitude comparison of capital costs (one-time infrastructure costs) between bus rapid transit, light rail transit, and commuter rail opportunities. (For corridors with no rail infrastructure in place, only estimates for bus rapid transit are included). Among other expenses, these estimates omit vehicle and annual operating costs, and are subject to change as investments are further defined and sequenced. Because of inflation and the ongoing cost of the services once implemented, the timing of investments can have a significant impact on total costs. As discussed previously, an alternatives analysis will provide a detailed sense of the opportunities and challenges for each proposed market connection, as well as cost estimates for multiple corridor alternatives and modes.

Bus Rapid Transit

The estimated capital costs for bus rapid transit vary considerably based on the extent to which bus rapid transit treatments are implemented for each corridor. For example, the low range costs, shown in the table below, assume only portions of each corridor would receive bus rapid transit features — dedicated bus-only lanes, traffic signal priority, and queue jump lanes, among other elements. The high range estimates are for full bus rapid transit service. This assumes dedicated bus-only lanes for most — or all — of each corridor along with associated improvements such as specialized vehicles, enhanced stations, and recognizable branding.

TABLE 12:

BUS RAPID TRANSIT ESTIMATED CAPITAL COSTS

Market Connection	Low Range	High Range
Biddeford/Saco – Portland	$7.3M	$330.5M
Brunswick – Portland	$5.6M	$213.2M
Gorham – Portland	$3.3M	$142.9M
North Windham – Portland	$2.5M	$83.5M
South Portland – Portland	$2.4M	$120.6M

Source: AECOM

Commuter Rail

As mentioned previously, the rail infrastructure and stations are currently in place. Increases in frequency, however, need to be coordinated with the movement of freight and meet federal requirements. Much of the corridor is single track and investments in double track infrastructure in some locations might be required to support frequencies of 12 to 14 round trips per day. A mainline train station in Portland is also needed to support additional Downeaster frequencies as well as eventual service between Lewiston/Auburn and Portland.

Table 13 provides high level planning estimates for what these track improvements might cost. For the low range, adding eight miles of double track would support four more trains, or a total of eight daily round trips, between Brunswick and Wells, and would cost roughly $24 million. At the high end, it would cost an estimated $100 million to install double track for the entire length of the corridor between Brunswick and Wells. This level of investment would provide enough capacity to operate 12 to 14 round trips per day.

For the Westbrook to Portland corridor, high level estimates to upgrade track to support new rail service between Downtown Westbrook and a relocated Portland Transportation Center range between $10 million and $25 million (plus the cost of any station facilities not currently in place). Estimates to extend the track to Gorham have not been determined, but because the railroad right-of-way beyond Downtown Westbrook is in disrepair, the costs would likely be considerable.

TABLE 13:

ESTIMATED TRACK IMPROVEMENT COSTS

Market Connection	Low Range	High Range
Brunswick – Wells	$24M	$100M
Westbrook – Portland	$10M	$25M

Source: NNEPRA

TABLE 14:

ESTIMATED STATION COSTS

Possible Station Location	Cost
Portland (new relocated station)	$20M
West Falmouth	$3M

Source: NNEPRA

NNEPRA also has plans to improve existing stations and to potentially build new stations (Table 14). A Portland station with two-track access is needed to support higher frequencies and provide better reliability. As mentioned, NNEPRA is currently exploring options to improve the existing Portland Transportation Center or relocate the station closer to Downtown Portland. NNEPRA estimates a new Portland station would cost up to $20 million depending on configuration and other requirements. NNEPRA is also exploring a new station location in West Falmouth near Exit 53 of I-95.

Photo: NNEPRA

Light Rail Transit

Light rail transit is considerably more expensive than bus rapid transit and commuter rail improvements (note the scale in billions in Table 15). This is because bus rapid transit can take advantage of the existing roadway network and has the flexibility to implement treatments for select portions of each corridor. Similarly — in Greater Portland at least — commuter rail improvements can make use of existing tracks and rights-of-way already in place. Light rail transit, however, requires construction of a separate fixed guideway the entire length of the corridor and, in many cases, extensive electrical work.

The table below provides estimates for the three corridors where light rail transit is thought to be feasible. Along these corridors, light rail transit could potentially run adjacent to existing rail rights-of-way, but new track and infrastructure would still be required. The range of estimates is based on different per-mile corridor costs from recent light rail construction projects — the lower end of the range reflects a corridor with fewer amenities, less elaborate stations, and less technology; the higher end of the range assumes a corridor with more technology and amenities and more elaborate stations.

Utah Transit Authority's TRAX is a light rail system in Salt Lake City. TRAX began operation in 1999 and has 50 stations on three lines and roughly 45-miles of track. Photo: Wikipedia

TABLE 15:

LIGHT RAIL TRANSIT ESTIMATED CAPITAL COSTS

Market Connection	Low Range	High Range
Biddeford/Saco – Port-	$3.8B	$6.3B
Brunswick – Portland	$5.0B	$8.5B
Westbrook – Portland	$0.8B	$1.3B

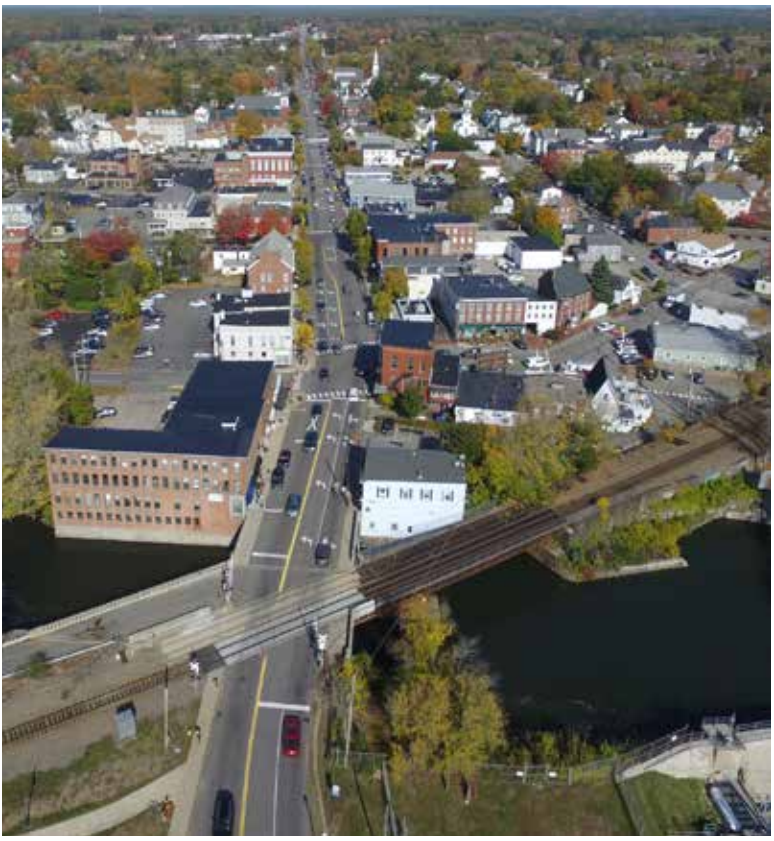
Source: AECOM

Goal 4:

Create Transit-Friendly Places

TO FULLY REALIZE THE IMPROVEMENTS this plan envisions, we will need to sensibly manage where, and how, future growth and development occurs in the region. In the last several decades, much of our region's growth has occurred in suburban and rural areas, away from job centers and services. This sprawling development pattern is difficult, and expensive, to serve by public transportation. For this reason, the main goal of the Create Transit-Friendly Places recommendations is to expand housing choices and jobs within walking distance of our major priority centers and corridors that are most critical for supporting public transportation.

This goal is in keeping with the findings of the scenario planning effort, outlined earlier in the plan. The scenario planning exercise found that compact land use, combined with improving public transportation on targeted corridors, moves the region closer to our vision of sustainable prosperity than any of the other scenarios.



Saco Main Street. Photo: GPCOG

Land use, zoning, and street design decisions occur at the local level and are the building blocks for successful public transportation. However, PACTS (and MaineDOT) can influence these decisions through its policies and through incentives to fund projects that demonstrate the integration of public transportation and land use.

While PACTS has no direct influence over land use, PACTS members do. PACTS member municipalities, as well as cities and towns in the GPCOG region, can adopt transit supportive land use policies. The Create Transit-Friendly Places recommendations identify actions PACTS can take to better align the *Transit Tomorrow* vision with local land use policies.

Recommendations

- **Zone for public transportation:** Work with municipalities to adopt zoning and policy changes that are compatible for higher density, walkable neighborhoods served by public transportation.
- **Target investments to places that support public transportation:** Prioritize funding to places where people already live, work, visit, and use public transportation, and, where surrounding land use and zoning encourage transit-supportive development.
- **Create TOD plans:** Create transit-oriented development (TOD) plans for all priority transit centers. TOD plans identify ways to maximize the amount of residential, business, and leisure space within walking distance of a major public transportation hub.
- **Ensure complete streets:** Adopt a regional complete streets policy—and support municipalities with local policies—to ensure streets are walkable, bikeable, and provide safe access to transit for all users regardless of age or ability.
- **Protect open spaces:** Coordinate with local conservation groups to help protect natural resources and open spaces through conservation planning.

Bicycling on Congress Street in Portland. Photo: Corey Templeton

Implementation

The recommendations above lay the groundwork for transit supportive policy choices and investment decisions. While these recommendations do not bear the same financial burdens as public transportation service improvements, it takes hard work, time, and buy-in from local communities to enact meaningful land use changes. Additionally, the costs in staff time (or consultant fees) to revise land use codes or draft complete streets policies, for example, can be high for municipalities currently struggling to balance budgets amidst a pandemic.

Unfortunately, it is not feasible to provide high quality public transportation on all roads and to all places. *Transit Tomorrow* acknowledges this tradeoff by recommending that PACTS target incentives to priority centers and corridors that play the most critical role in supporting regional land use and public transportation goals. Developing dense, "transit-friendly" places throughout the region creates more opportunities for people to meet their daily needs within a short walking distance and increases the overall convenience and effectiveness of transit.

Zone for Public Transportation

Public transportation and compact development are complementary strategies that move the region toward the goals laid out in *Transit Tomorrow*. Compact development brings people together to build walkable main streets, and critical masses of desirable destinations like restaurants, shops, entertainment districts, and employment centers where highly collaborative industries can flourish. As more people travel to these destinations, there is a need to move people efficiently — which is where transit is needed.

While compact development is not right everywhere, there are many places in the Greater Portland region that are perfectly suited to expand housing choices and job opportunities, but local zoning codes and policies prevent it. The primary intent of this recommendation is to provide PACTS and GPCOG member cities and towns with the information and technical assistance needed to amend zoning codes to allow and encourage higher density, mixed-use, walkable neighborhoods served by public transportation.

Action Steps:

- **Conduct regionwide zoning analysis:** Identify areas in the region where local zoning conflicts with regional land use and public transportation goals.
- **Provide transit supportive land use technical assistance to municipalities:** Develop tools and provide technical support to municipalities to better coordinate local zoning with regional land use and public transportation goals.

Target Investments to Places that Support Public Transportation

The overarching goal for this recommendation is to maximize available funding by targeting resources to places that support the effective use of public transportation. In practice, this means applying two screening criteria to how PACTS scores projects: 1. Targeting investments to places where people already live, work, visit, and use public transportation; and 2. Prioritizing investments to places where local zoning codes and policies encourage high density, walkable neighborhoods served by public transportation.

To a certain extent, PACTS currently targets investments to places where people already live, work, visit, and use public transportation. Since the adoption of *Destination 2040*, the metropolitan transportation plan, PACTS began coordinating its transportation investments with land use planning primarily through the policy of priority centers and corridors. *Destination 2040*'s priority centers and corridors — identified through an extensive public process — are places that have "the most promising opportunities for absorbing future population and job growth." In the current funding framework, projects proposed in these centers, or along these corridors, receive extra points and are more likely to get funded.

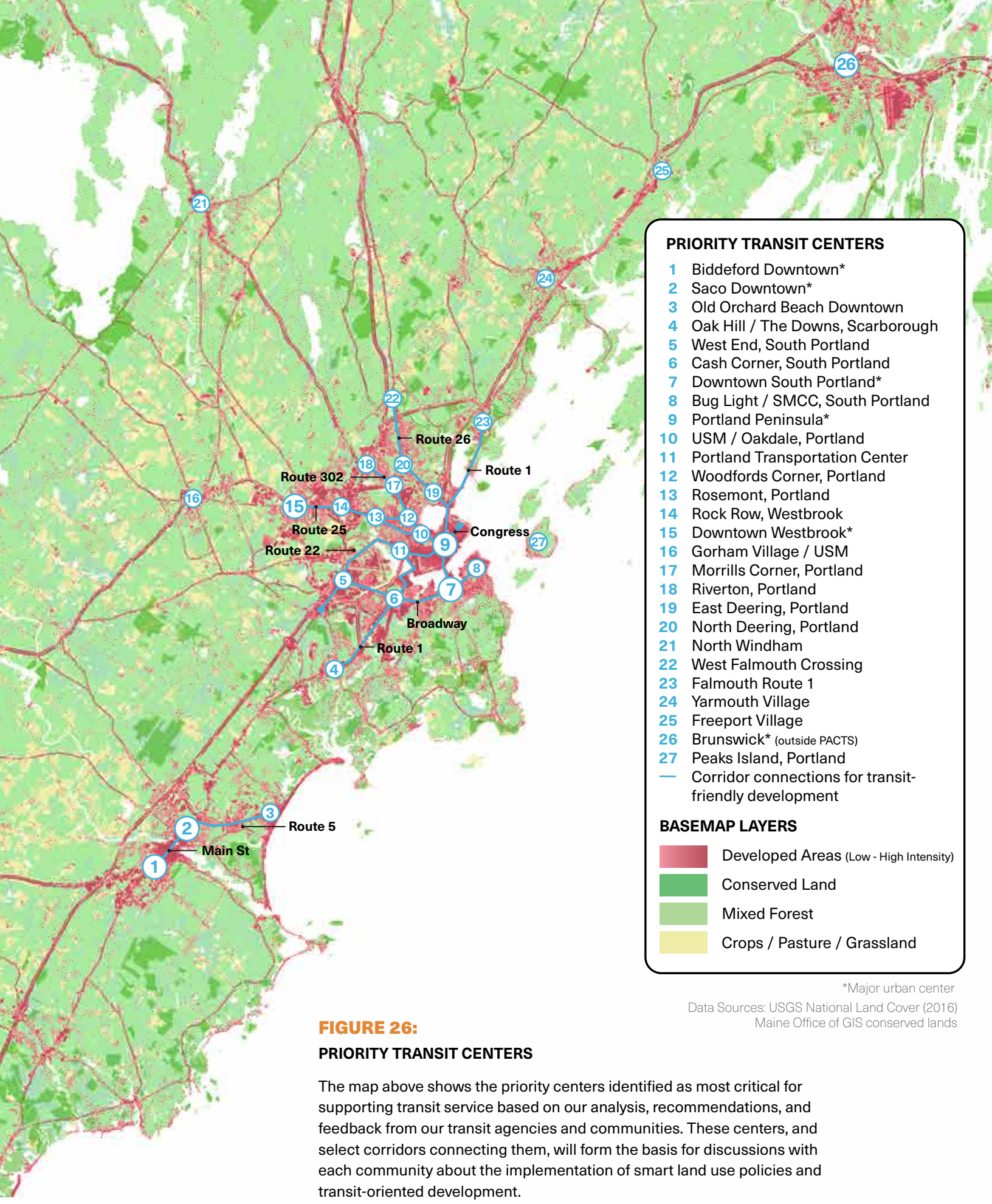
In the update to *Destination 2040*, currently underway in 2021, PACTS will revisit the priority centers and corridors, and consider refining them based on their size, relative importance to the region, the role they play in supporting public transportation, and existing zoning policies, among other potential factors. These added classifications can then be used to focus limited resources to the most appropriate places.

As part of the *Transit Tomorrow* planning process, the project team developed a shortlist of priority centers and corridor connections that are most critical for supporting public transportation. This map, shown in Figure 26 on the next page, will form the basis for future discussions with communities and inform the update to *Destination 2040*.

Action Steps:

- **Review and refine priority centers and corridors:** In the new metropolitan transportation plan, PACTS will review and refine the region's priority centers and corridors. PACTS will consider categorizing the priority centers and corridors based on factors such as size, relative importance to the region, the role they play in supporting public transportation, and existing zoning policies.
- **Target investments to priority transit centers and corridors:** Refine the PACTS funding framework to prioritize transit investments to priority centers, and select corridors connecting them, that are most critical for supporting public transportation.
- **Prioritize places with transit-supportive policies:** Update the PACTS funding framework to prioritize projects in places where zoning (or related transit-supportive policies and commitments) support the effective use of public transportation.

The Oak Hill neighborhood in Scarborough is one of *Transit Tomorrow*'s "priority transit centers." Photo: GPCOG



PRIORITY TRANSIT CENTERS

1 Biddeford Downtown*
2 Saco Downtown*
3 Old Orchard Beach Downtown
4 Oak Hill / The Downs, Scarborough
5 West End, South Portland
6 Cash Corner, South Portland
7 Downtown South Portland*
8 Bug Light / SMCC, South Portland
9 Portland Peninsula*
10 USM / Oakdale, Portland
11 Portland Transportation Center
12 Woodfords Corner, Portland
13 Rosemont, Portland
14 Rock Row, Westbrook
15 Downtown Westbrook*
16 Gorham Village / USM
17 Morrills Corner, Portland
18 Riverton, Portland
19 East Deering, Portland
20 North Deering, Portland
21 North Windham
22 West Falmouth Crossing
23 Falmouth Route 1
24 Yarmouth Village
25 Freeport Village
26 Brunswick* (outside PACTS)
27 Peaks Island, Portland
— Corridor connections for transit-friendly development

BASEMAP LAYERS

Developed Areas (Low - High Intensity)
Conserved Land
Mixed Forest
Crops / Pasture / Grassland

*Major urban center

Data Sources: USGS National Land Cover (2016)
Maine Office of GIS conserved lands

FIGURE 26:

PRIORITY TRANSIT CENTERS

The map above shows the priority centers identified as most critical for supporting transit service based on our analysis, recommendations, and feedback from our transit agencies and communities. These centers, and select corridors connecting them, will form the basis for discussions with each community about the implementation of smart land use policies and transit-oriented development.

Create Transit-Oriented Development Plans

Transit-oriented development, commonly referred to as TOD, is a type of development that maximizes the amount of residential, business, and leisure space within walking distance of a public transit hub. The idea is to create more places in the region where residents can walk to stores, restaurants, and businesses within the neighborhood and use public transportation for longer trips. Transit-oriented development promotes sustainable growth by providing a variety of transportation choices, maximizing the use of space, and reducing dependence on private vehicles.

PACTS is committed to supporting transit-oriented development planning throughout the region. In 2020, PACTS completed the *Maine Mall TOD Concept Plan*. The plan creates a vision for redeveloping the Maine Mall into a compact, livable, mixed-use center that supports and encourages transit. In 2021, PACTS is engaged in a similar TOD planning effort for the Biddeford-Saco Mill District. The intent of this recommendation is to expand this work to more places by continuing to coordinate with municipalities to create transit-oriented development plans for all priority centers, and in some cases short corridor segments, served by public transportation.

Action Steps:

- **Create TOD plans:** Coordinate with municipalities to create transit-oriented development plans for all priority centers, and select corridor segments, served by public transportation in the PACTS region. PACTS will aim to produce three to four plans during each two-year planning cycle.
- **Implement TOD plans:** Municipal members that partner with PACTS to produce TOD plans will take actions to support the implementation of the plans.

Eight Principles of Transit-Oriented Development

1. **WALK:** Develop neighborhoods that promote walking
2. **CYCLE:** Prioritize non-motorized transport networks
3. **CONNECT:** Create dense networks of streets and paths
4. **TRANSIT:** Locate development near high-quality public transportation
5. **MIX:** Plan for mixed-use development
6. **DENSIFY:** Optimize density and transit capacity
7. **COMPACT:** Create regions with short commutes
8. **SHIFT:** Increase mobility by regulating parking and road use

Adapted from the Institute for Transportation and Development Policy's 2017 *TOD Standard* report.

Intersection of Franklin Street and Cumberland Avenue in Portland. Photo: Tom Bell

Ensure Complete Streets

Complete streets is a term that defines a growing national movement to amend transportation policy to emphasize the importance of safe access on the roadways for all users. Instituting a complete streets policy formalizes a community's intent to plan, design, operate, and maintain streets so they are safe not just for vehicles, but also for pedestrians, bicyclists, and public transportation users, regardless of age or ability.

Since most transit users begin or end their trip as a pedestrian, streets that are designed with all users in mind help connect public transportation to the destinations people typically go — work, school, shopping, and home. While many municipalities in Greater Portland recognize the importance of walking, bicycling, and public transportation, at this time only a handful have adopted complete streets policies. The intent of this recommendation is for PACTS to adopt a regionwide complete streets policy to ensure that PACTS-funded projects consider the needs of all users, and, to provide support to municipalities that are interested in adopting their own complete streets policies.

Action Steps:

- **Adopt a PACTS complete streets policy:** Develop and adopt a PACTS complete streets policy to ensure that PACTS-funded projects consider the needs of all users.
- **Provide complete streets technical support to municipalities:** Develop tools and provide technical support to municipalities interested in adopting complete streets policies.

Protect Open Spaces

PACTS is a transportation planning organization. As such, the most effective way for PACTS to influence land use decisions — and minimize the environmental impacts of our transportation system — is by working with municipalities to create bicycle/pedestrian-friendly, transit-rich places that can attract future population and job growth and reduce sprawl.

However, just as PACTS has identified priority centers and corridors for growth and development, there are many local conservation organizations in the region that have identified priority areas for conservation. To avoid potential conflicts, it is important for PACTS to be familiar with where these areas are, to know about the opportunities and issues facing these organizations, and to coordinate transportation investments accordingly. Likewise, it is important for local conservation organizations to be familiar with PACTS' regional land use and public transportation goals.

Action Step:

- **Coordinate with local conservation groups:** Continue to build relationships and coordinate with local conservation organizations by participating in networking events and engaging in regional land use initiatives.

Estimated Costs

As mentioned previously, land use, zoning, and street design decisions occur at the local level and fall outside the immediate control of PACTS (and the region's transit agencies). However, it is important to recognize that the process of revising local land use policies is not easy. It is often time consuming, expensive, and sometimes controversial.

PACTS (and GPCOG) can help municipalities by providing technical support and planning assistance, and by creating incentives to reward municipalities that are creating the right conditions to support public transportation. As shown in the table below, the costs (to PACTS) to accomplish these activities are much lower when compared to other investments recommended in this plan. Additionally, several action steps do not have costs associated with them because they are either incorporated into existing planning initiatives or policy choices.

The Biddeford-Saco mill district is one of the fastest growing urban areas in the region. Photo: Corey Templeton

TABLE 16:

CREATE TRANSIT FRIENDLY PLACES ESTIMATED COSTS

Action Step	Estimated Cost
Conduct regionwide zoning analysis	$50,000 - $75,000
Provide transit supportive land use technical support to municipalities	$25,000 per year
Review and refine priority centers and corridors	N/A
Target investments to priority transit centers and corridors	N/A
Prioritize places with transit supportive zoning	N/A
Create TOD plans	$50,000 - $75,000 per plan
Implement TOD plans	N/A
Adopt a PACTS complete streets policy	$85,000
Provide complete streets support to municipalities	$25,000 per year
Coordinate with local conservation	$10,000 per year

N/A - Not Applicable

9 Implementing the Plan

IMPLEMENTING THE RECOMMENDATIONS — the rapid transit corridors in particular — will be a challenging, long-term endeavor. Consideration must be given to building political and community support, identifying sustainable funding sources, and prioritizing projects for implementation. The strength of the shared regional vision must be the guiding path for the accumulated discrete decisions that will build the future public transportation systems of southern Maine.

Benefits of *Transit Tomorrow*

The suite of recommendations presented in *Transit Tomorrow* are transformational for the region. Improving the region's public transportation system, and access to it, can yield significant social and environmental benefits.

Emissions Reductions

To get a rough estimate of the greenhouse gas (GHG) benefits associated with *Transit Tomorrow*, the project team conducted an emissions comparison between Greater Portland's current public transportation network and the full build out envisioned in *Transit Tomorrow*. For this analysis, the project team used the Transportation Research Board's emissions calculator tool.[3] This Excel-based tool estimates the transit and land use benefits of existing and planned transit projects based on the difference between existing and proposed directional route miles and annual revenue miles of service.

Maine Won't Wait, A Four-Year Plan for Climate Action is Maine's Climate Action Plan. In June 2019, Governor Mills signed LD 1679 into law, to create the Maine Climate Council. The Council — an assembly of scientists, industry leaders, bipartisan local and state officials, and engaged citizens — was charged with developing the four-year Climate Action Plan to put Maine on the path to decrease greenhouse gas emissions by 45% by 2030 and 80% by 2050, and achieve carbon neutrality by 2045.

The increased transit ridership and land use changes envisioned in *Transit Tomorrow* would result in a 25.5 percent reduction in greenhouse gas emissions associated with vehicle travel.

Using the emissions calculator, the project team found the increased transit ridership and land use changes envisioned in *Transit Tomorrow* would result in a 25.5% reduction in greenhouse gas emissions associated with annual vehicle travel — the equivalent greenhouse gas emissions of 92,495 passenger vehicles driven for one year.[4]

In 2019, Governor Mills signed legislation to require the reduction of Maine's greenhouse gas emissions 45% by 2030 and by at least 80% by 2050. The recommendations in *Transit Tomorrow* move the region closer to achieving these goals. Of course, they do not get us all the way there. To meet the ambitious goal of reducing greenhouse gas emissions 45% by 2030, the Greater Portland region will need to embrace the full suite of strategies outlined in *Maine Won't Wait: A Four-Year Plan for Climate Action*, such as transitioning to electric vehicles (including electric transit vehicles), modernizing buildings, reducing carbon emissions in the energy and industrial sectors, and growing Maine's clean energy economy.

[3] The emissions calculator tool accompanies the Transportation Research Board's *"Transit Cooperative Research Program Report 176 "Quantifying Transit's Impact on GHG Emissions and Energy Use – The Land Use Component. (2015)"*

[4] U.S. Environmental Protection Agency (EPA) Greenhouse Gas Equivalencies Calculator. (Greenhouse gas emissions associated with annual vehicle travel will likely decline as electric vehicle adoption becomes more widespread).

Equitable Access

If the 2050 *Transit Tomorrow* network is fully realized, the benefits to residents of Greater Portland — and those who depend on public transportation the most — would be substantial. The table below shows the change in access (defined as the percent of the population living within ¾ mile of a transit route) between the existing transit network and what is envisioned by 2050 in the full build out of *Transit Tomorrow*.

To evaluate accessibility, the project team approximated corridors to reflect rapid transit routes and likely local connections based on development patterns. For the existing transit network, the table shows both the percent of the population living within ¾ mile of transit, as well as the percent of the population living within ¾ mile of frequent transit (average wait times of 20 minutes or less). Since every route in the proposed 2050 *Transit Tomorrow* network is frequent, just one column is shown.

Elm Street Pulse in Portland. Photo: GPCOG

TABLE 17:

***TRANSIT TOMORROW* ACCESS BENEFITS**

	Existing Transit Network		Proposed *Transit Tomorrow*
	Percent of population within ¾ mi. of transit	Percent of population living within ¾ mi. of frequent transit	Percent of population living within ¾ mi. of frequent transit[1]
People age 65 and over	56%	36%	61%
Racial/ethnic minorities	76%	61%	79%
People living in poverty	72%	54%	75%
Zero-vehicle households	87%	68%	88%
Total population	58%	39%	63%

[1] Every route in the 2050 *Transit Tomorrow* network is considered frequent.

As Table 17 illustrates, when just looking at the change between what exists now (regardless of frequency) and what is proposed, the accessibility benefits of the *Transit Tomorrow* network are relatively minor. However, when looking at the accessibility benefits between the frequency of what exists now and that proposed in *Transit Tomorrow*, the improvement is considerable.

Implementation Strategy

Transit Tomorrow is intentionally ambitious and would dramatically improve public transportation in our region. However, these improvements are expensive and cannot happen all at once. The implementation table below outlines our strategy for how to achieve the *Transit Tomorrow* vision, step by step, over the next 30 years.

TABLE 18a:

IMPLEMENTATION TABLE

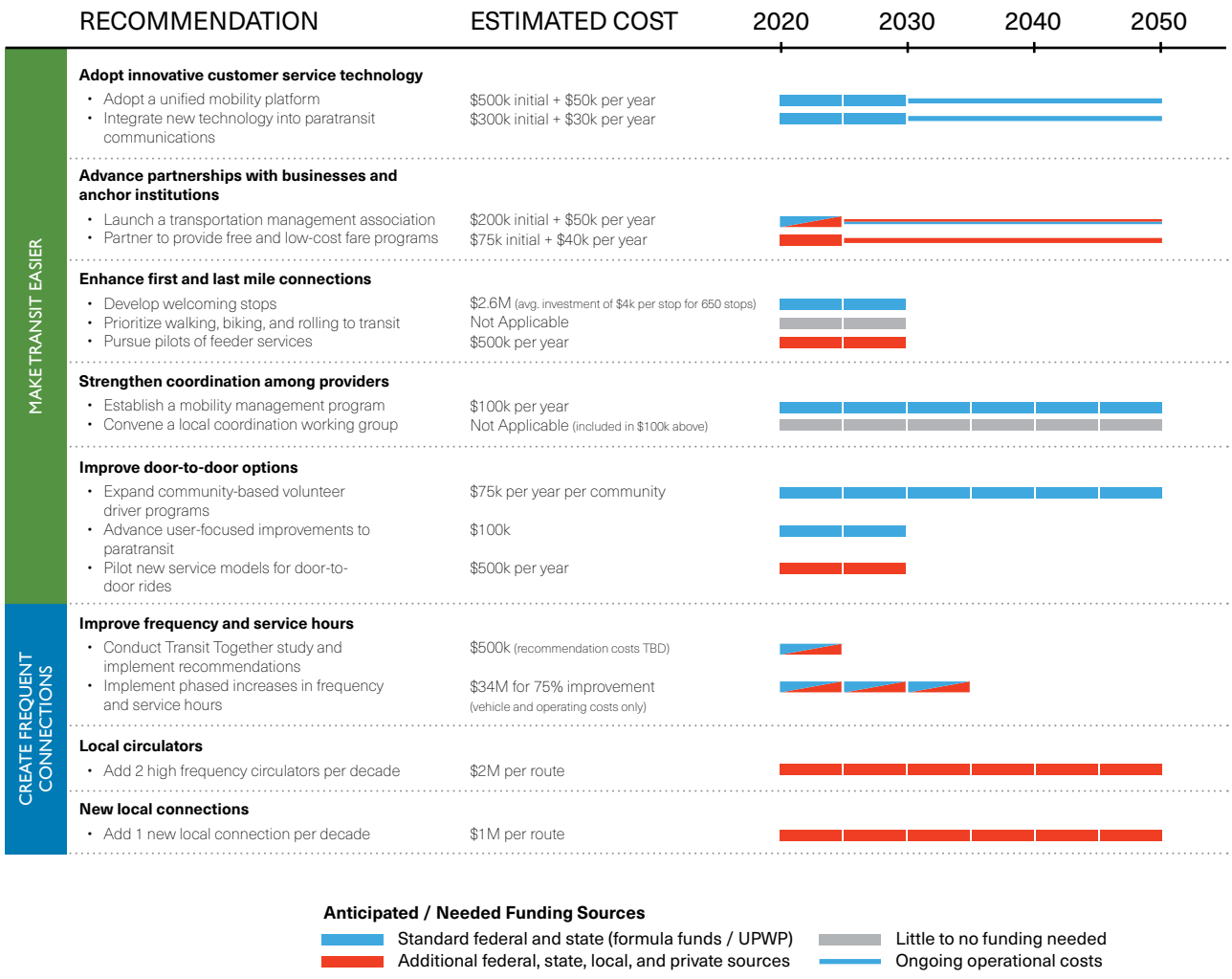
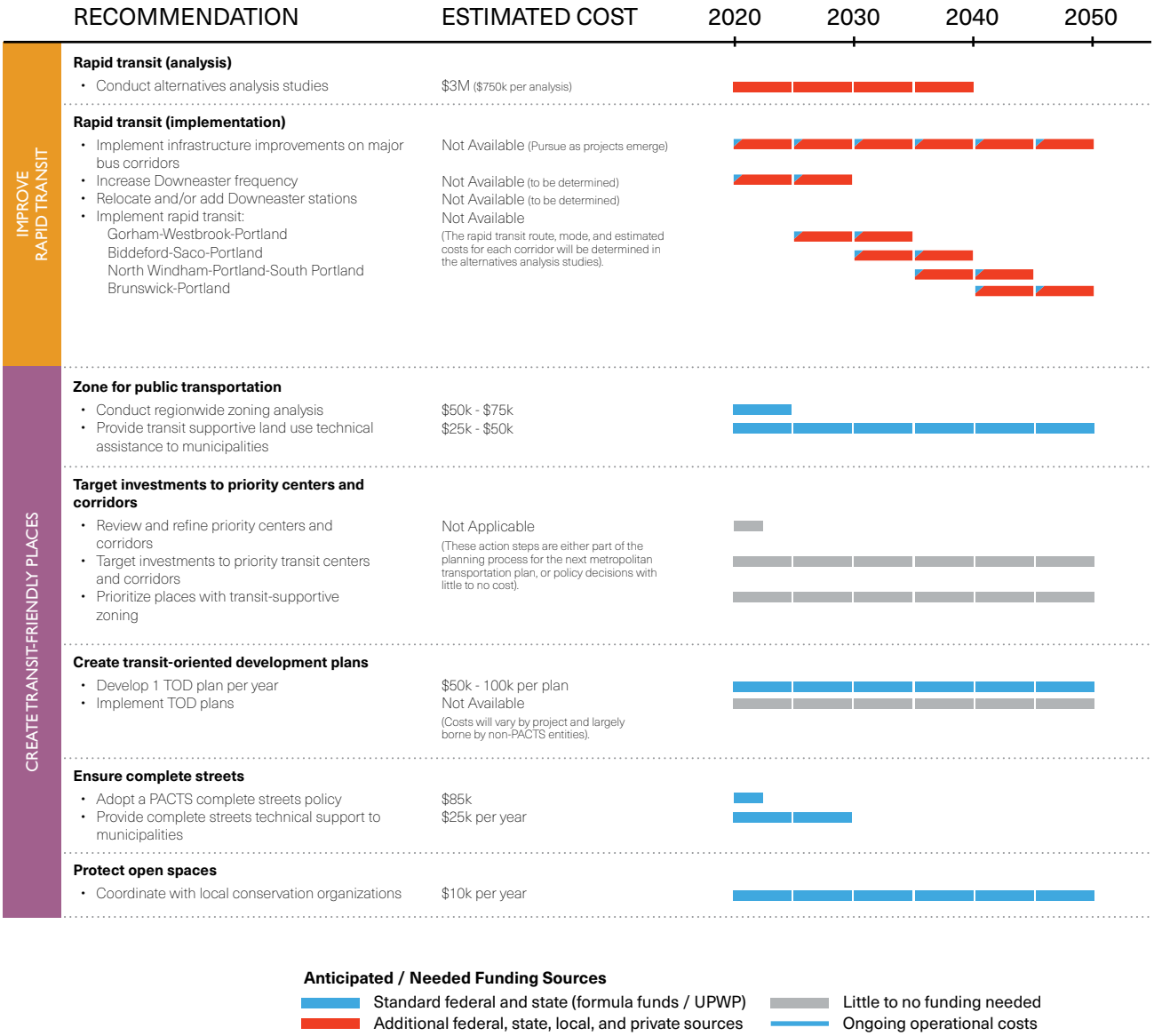


TABLE 18b:

IMPLEMENTATION TABLE



The next step for realizing this vision is to further refine the prioritization of implementation. The region is updating the metropolitan transportation plan, including the definition of priority corridors and centers, and identifying opportunities for agency coordination and integration. Reimagining the public transportation network through *Transit Together* will also require additional feasibility and impact studies in order to assess the need and phasing of implementation.

Transit Tomorrow should be revisited every 10 years to understand the impact of the previous decade. The region is changing rapidly, more detailed studies are being conducted, the short- and long-term impacts of the COVID-19 pandemic are uncertain, and technology is continually advancing, among other trends. Revisiting the plan periodically will ensure the implementation of improvements and solutions are relevant and continue to align with the region's vision and priorities.

Identifying Sustainable Funding

Realizing this bold vision will require steady contributions of new transit funding as well as aggressive pursuit of grants to develop the necessary technology, capital, and infrastructure solutions.

However, pursuing the vision can begin now within existing resources. Some of the Make Transit Easier recommendations are low-cost and can be funded through existing federal formula funds. Likewise, some of the Create Transit-Friendly Places recommendations can be accomplished through the biennial transit and highway planning funds regularly received by PACTS.

In the near term, there are potential partnerships with large employers or other institutional partners to establish Transportation Management Associations, and there may be opportunities to leverage roadway funding through federal Congestion Mitigation and Air Quality (CMAQ)-funded projects to build out transit facilities.

Over the longer term, the Federal Transit Administration (FTA) has competitive grant programs to support the higher-level infrastructure investments needed to implement rapid transit. The FTA's Fixing America's Surface Transportation (FAST) Act, signed into law in December 2015, supports transit funding through fiscal year 2020.[5] With a new federal administration, the reauthorization of this act — and other FTA programs — is of the utmost importance.

Rider boarding BSOOB Transit's Blue Line. Photo: GPCOG

Examples include:

- **BUILD (Better Utilizing Investments to Leverage Development) Grants:** BUILD, formerly known as TIGER, provides competitive discretionary funding for projects with local and regional economic impacts, including transit-oriented development, rapid transit, multimodal projects, etc.
- **Capital Investment Grants (New Starts, Small Starts, Core Capacity):** This discretionary grant program focuses on capital investments in heavy rail, commuter rail, light rail, streetcars, and bus rapid transit. Extensive analysis prior to receipt of a grant agreement and continual evaluation by the FTA are part of these programs' requirements.
- **Grants for Buses and Bus Facilities Program (49 U.S.C. 5339):** These grants are available to states and designated recipients to replace, rehabilitate, and purchase buses and related equipment, and to construct bus-related facilities including technological changes or innovations.
- **Expedited Project Delivery Pilot Program:** Authorized by Section 3005(b) of the FAST Act, this program is aimed at expediting delivery of new fixed guideway capital projects, Small Starts projects, or Core Capacity improvement projects through public-private partnerships and an existing public transportation provider.

It is important to note that as more people ride an enhanced and expanded public transportation network, formula funds will expand for the region, due to the nature of the formula.

While the federal government has typically funded 80% of the cost for transit improvements, covering the mandated 20% local match will require additional revenue. Local and regional partnerships and/or public-private partnerships could contribute to matching federal funds. Other regions with ambitious transit goals have dedicated local streams of funding, such as local option sales taxes, payroll taxes, transit-related tax increment financing (TIF) districts, parking and impact fees, or other sources of local revenue, to match and build upon federal apportionments.

[5] The "Relevant FTA FAST Act Grants" table, provided in the appendix to *Transit Tomorrow* on the project webpage, outlines the current FTA competitive and formula grant programs that may be applicable in implementing *Transit Tomorrow*.

University of Southern Maine students boarding the Husky Line bus in Gorham. Photo: Roger McCord

The Next 30 Years

As the long-range public transportation plan for the Greater Portland region, *Transit Tomorrow* outlines a vision for what we want our transit network to look like by 2050. Of course, it is impossible to know what the next 30 years will bring. If this plan had been written in 1990, it likely would not have predicted the massive influence of the internet, the widespread use of smartphones, or even climate change as a major concern.

If history is any guide the next 30 years will also be full of change. In the time it has taken to develop *Transit Tomorrow* we have experienced a global pandemic (and resulting economic recession), a national reckoning about racial injustice, and a contentious change in federal administration, among other events. The transportation industry also appears to be on the cusp of technological change and disruption.

Pioneering cities around the world are piloting innovations like urban gondolas, high-speed magnetic trains, underground hyperloops, and autonomous aerial transit to help solve their transportation problems. While these innovations may not be right everywhere or take longer to catch on (if at all), other mobility trends are happening right now or on the cusp of widespread adoption, such as teleworking, the recent emergence of micromobility (e-bikes, e-scooters, etc.), the proliferation of on-demand ride-hailing services, connected infrastructure, and the transition to electric and self-driving vehicles to name a few examples.

Whatever happens in the next 30 years, the main goals of *Transit Tomorrow* will likely remain just as relevant as they are today: to help people move as quickly and efficiently as possible throughout the region with the least amount of environmental impact.

Whatever happens in the next 30 years, the main goals of *Transit Tomorrow* will likely remain just as relevant then as they are today: to help people move as quickly and efficiently as possible throughout the region with the least amount of environmental impact. To do this we will need to redouble our efforts to make public transportation easy to use, to offer frequent and fast trips, and to create economically vibrant, highly livable urban neighborhoods that support walking, biking, and the use of transit.

Acronyms and Abbreviations

ADA	Americans with Disability Act
AIM	Accelerating Innovative Mobility
BAU	Business as Usual
BRT	Bus Rapid Transit
BSOOB	Biddeford Saco Old Orchard Beach
BUILD	Better Utilizing Investments to Leverage Development
CBL	Casco Bay Lines
CMAQ	Congestion Mitigation and Air Quality
EPA	Environmental Protection Agency
FAST	Fixing America's Surface Transportation
FTA	Federal Transit Administration
GHG	Greenhouse Gas Emissions
GPCOG	Greater Portland Council of Governments
LRT	Light Rail Transit
MaaS	Mobility-as-a-Service
NNEPRA	Northern New England Passenger Rail Authority
PAC	Project Advisory Committee
PACTS	Portland Area Comprehensive Transportation System
PTC	Portland Transportation Center
RTP	Regional Transportation Program
SPBS	South Portland Bus Service
TCRP	Transit Cooperative Research Program
TDM	Transportation Demand Management
TIP	Transportation Improvement Program
TMA	Transportation Management Association
TNC	Transportation Network Companies
TOD	Transit-Oriented Development
TSP	Transit Signal Priority
USM	University of Southern Maine
VMT	Vehicle Miles Traveled
YCCAC	York County Community Action Corporation

Approved by the PACTS Governing Board on March 2, 2021.

The Portland Area Comprehensive Transportation System (PACTS) is a federal metropolitan planning organization that coordinates transportation planning and investment decisions with the state, municipalities, and public transportation partners. It directs more than $25 million in transportation investments each year.