

Bus Rapid Transit & Light Rail Transit



Executive Summary



Technical Memorandum

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Prepared for
PACTS Policy and Transit Committees

Prepared by
**Greater Portland Council of Governments
Southern Maine Regional Planning Commission**

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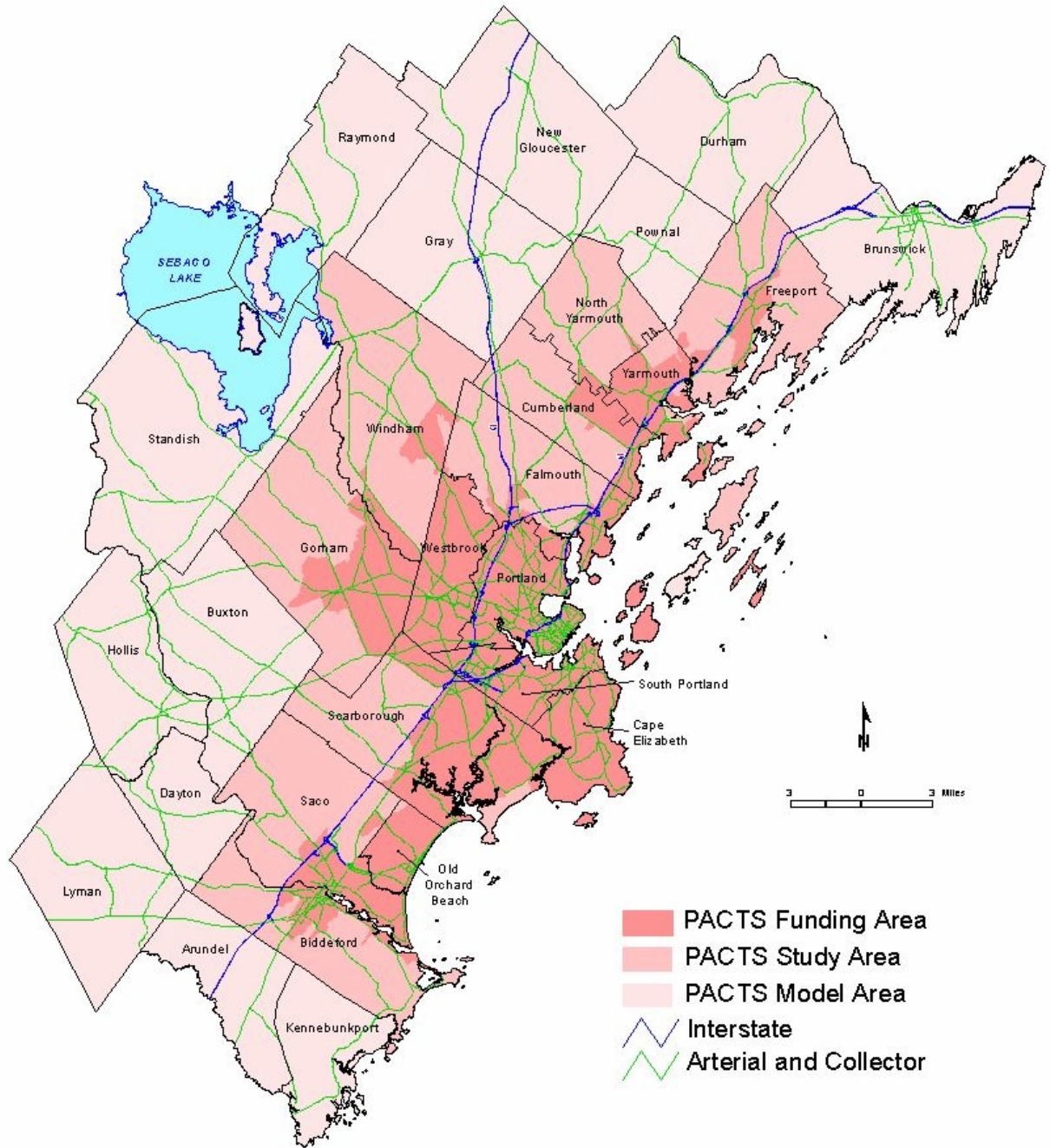
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Executive Summary

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PACTS Funding, Study and Model Areas



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Executive Summary

Introduction

The purpose of the BRT/LRT Study to assess the feasibility of implementing Bus Rapid Transit (BRT) and Light Rail Transit (LRT) technologies in the Greater Portland Area. The study also focused on ways to significantly improve overall public transit service and interconnectivity in the region. The Staff Team consisted of GPCOG, SMRPC and PACTS Staff. The Advisory Committee was chaired by Jeff Monroe and participants included representatives from public and private transportation operators, NNEPRA, MaineDOT and several Portland area citizens. To download a copy of the full report, visit www.gpcog.org.

Definitions

Light Rail Transit is a mode of metropolitan transportation that employs light rail transit cars (commonly known as light rail vehicles, streetcars, or trolleys) that operate on rails in streets in mixed traffic, in semi-exclusive rights-of-way, in exclusive rights-of-way, in subways or on aerial structures. Single or multiple-car consists are able to board and discharge passengers at station platforms or at street, track or car-floor level. Grade crossings with light rail transit can occur at intersections or at mid-block locations, including public and private driveways. (Federal Transit Administration and Lightrail.com)

Bus Rapid Transit - "Think rail – use buses." A rapid mode of transportation that can combine the quality of rail transit and the flexibility of buses, using exclusive lanes on arterials or separate rights-of-way. BRT offers substantially reduced travel times relative to existing transit bus services through the use of traffic signal priority and limited stops with reduced dwell times. (Federal Transit Administration)

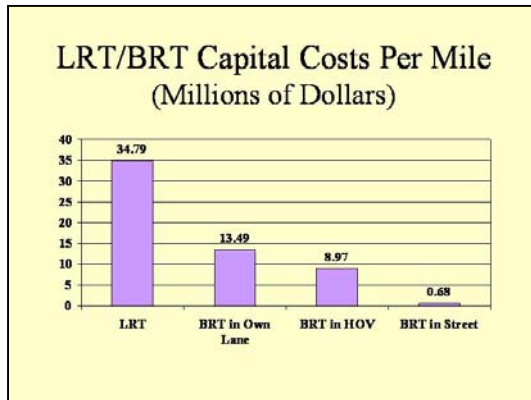
Present Conditions and Existing Services

According to Journey to Work data from the 2000 U.S. Census, over 37,000 people commute to Portland each weekday. The largest source of the influx is from the south, which corroborates earlier studies and the impetus for creating the ZOOM. Existing services include fixed route transit services (METRO, South Portland Bus Service, ShuttleBus, Portland Explorer), demand-response providers (RTP, YCCAC, ITN), two local ferry services serving Casco Bay islands, intercity rail, bus and van providers (Concord, Downeaster, Mermaid, Vermont), the State Vanpool and Carpool Program (GO Maine), and a University Shuttle Service (operated by VIP Tour and Charter).

Past Studies / Recommendations

A brief look at the literature reveals 15 studies completed over the last decade that support the concepts of commuter or rapid transit for the Greater Portland area. To view brief descriptions of these studies, go to Chapter III of the full report.

Comparison of Costs by Transit Service Type



Although there are many other factors that a Metropolitan area should consider, the U.S. General Accounting Office has done a great deal of research comparing the two systems and has found that BRT services tend to have significantly lower capital costs while delivering comparable mobility and greater flexibility.

Bus Rapid Transit – Seven Major Components

Throughout the literature there are seven primary elements identified as part of a successful Bus Rapid Transit service. The seven components are:

- **Running ways** – optimize the use of dedicated rights of way, priority lanes and queue jumping to give buses a competitive advantage on congested streets.
- **Stations** – provide inter-connected services and amenities for waiting passengers in clean and comfortable facilities.
- **Vehicles** – use clean fueled, distinctive, low floor buses, appropriately sized.
- **Services** - emphasize flexibility to maximize peak hour demands
- **Route Structure** – coordinate with service schedule and include suburban commuter routes at peak periods
- **Fare Collection** – keep it simple to keep things moving: pre-paid passes and cards, free fares are best.
- **Intelligent Transportation Systems (ITS)** - include automatic vehicle location (AVL) systems, electronic fare collection, automatic passenger counting and traffic signal pre-emption.

Examples of Management Models and Other BRT Models

Staff researched eight different systems based on their use of BRT, demographic similarities with Portland or a unique management approach.



1. Massachusetts Bay Transportation Authority (MBTA)

Created in 1947 the MBTA was one of the first combined regional transportation planning and operating agencies in the U.S., currently governed by a seven-member

board. The Authority is now operating Phase one of a three-phased BRT project called the Silverline. Phase one is a 2.3 mile stretch of arterial roadway, traveling along Washington Street between Dudley Square and Downtown.

2. Buffalo, New York

Buffalo has a population of 292,648 and transit service in the area is operated by the Niagara Frontier Transportation Authority (NFTA). Also known as METRO, the authority is governed by 11 commissioners. Many of the transit services are oriented toward moving people in and out of the downtown Buffalo area.

3. Chittenden County, VT

Chittenden County had a population of 146,571 in 2000, and is home to the University of Vermont with a student population of around 10,000. BRT and ITS Plans include Dedicated transit lanes, Signal priority, Queue jumping and Route scheduling software.

4. Hartford, Connecticut

CT Transit is owned by Connecticut DOT. Serving the greater Hartford region CT operates 30 Local and 12 Express bus routes for 26 municipalities in the Hartford-New Haven-Stamford area. There are several BRT routes in development, including two Busways to Hartford from New Britain and Manchester and the Griffin Busway from Hartford to Bloomfield.

5. Minneapolis – St. Paul

These two Midwestern cities have a combined population of about 2.6 million, and the transit system in the area is called MetroTransit. Comprised of a 16-member Board plus an “at-large” Chair, MetroTransit is governed by the Metropolitan Council which includes the regional planning agency and the MPO. Plans include the development of a light rail line to connect the downtown area with the Mall of America and the airport.

6. Missoula, Montana

Missoula has a population of 56,968 and is located in the western part of the state near the Idaho border. It is home to the University of Montana, which has a student population of about 13,000. The system known as the Mountain Line has 12 bus routes and a downtown circulator trolley route. The Urban Transportation District is governed by a seven-member volunteer board appointed by the City and the County.

7. New Jersey Transit

NJ Transit is the nation’s largest statewide public transportation system providing bus, rail and light rail to over 752,000 daily passengers or nearly 223 million per year. NJ Transit purchased bus companies from 1980 to 85. It acquired rail operations in 1983 when Conrail ceased providing service. The seven-member board is appointed by the Governor. Two 14-member Transit Advisory Committees also help guide policy.

8. Portland, Oregon -TriMet

TriMet operates bus and light rail lines in the Portland, Oregon area which has a population of 653,813. TriMet operates many bus routes, with 16 of those being “Frequent Service Lines”. While not referred to as BRT lines, these 16 bus routes have several characteristics of BRT, including Traffic signal priority, Curb extensions and Bus

only lanes. TriMet board members are appointed by the Governor and represent seven geographic districts for four year terms.

Preconditions for Successful Transit Projects

There are several elements that when applied, increase the chances of success when developing or enhancing transit services and stations. These include:

Transit Oriented Development¹

- *Appropriate Land Use* – mixed use with lots of activity
- *Increased Density* – jobs, retail, recreation and habitation
- *Pedestrian Connections* – short, continuous, direct and convenient
- *Good Urban Design* – pedestrian oriented, interesting, attractive
- *Compact Development* – access to multiple destinations in short distance
- *Optimum Parking* – behind buildings, small lots or structured, bike parking
- *Attractive Destination* – landmarks, gateways, views

Marketing

Increase the base ridership by providing superlative service that is fast, safe, frequent, comfortable, direct and on-time. Add discretionary riders by offering the same while appealing to issues that are important to them such as environment, health, social equity and energy security.

Public Education

If marketing is about conveying ideas and changing behaviors then education is the means for putting those ideas into practice. Another important target group is young people, and there are programs in place to help educate them about transportation choices.

Frequency

One of the fundamental principles of BRT is increased frequency. The goal is to have buses passing by so often that a schedule becomes irrelevant. However, even a modest increase in frequency can have a dramatic effect on ridership. Tolerance for waiting diminishes rapidly as the amount of time between buses increases.

Equipment Condition

If the buses are well maintained, clean and attractive, people will be more likely to use them.

Fare Collection

The best fare structure in terms of ridership is one that is invisible. The important thing is that the experience of boarding the bus is seamless and hassle free, and as much as possible fare-free.

Transit Policies

In order for land use, parking or other transit supportive strategies to be effective they need to be backed up by policies that direct development and investment appropriately.

Public / Private Partnerships

Supplementing public funds with private funds helps both operation of transit service and construction of transit facilities.

¹ *Transit Oriented Development, Best Practices Handbook*, January 2004, The City of Calgary Land Use Planning and Policy

Status of State and Federal Programs

FTA New Starts

The Federal Transit Administration's (FTA) Capital Investment Grants & Loans program, also known as Section 5309, includes New Starts which is the Federal government's primary financial resource for supporting the planning and development of fixed transit "guideway" capital investments greater than \$25 million.

FTA Urban Formula Program

The second important funding source for BRT and LRT services are the grants that are allocated to urbanized areas, also called Section 5307. For urbanized areas like Portland that have populations between 50,000 and 199,999, the areas receive funds based on their population and density.

Key Recommendations (Complete list of recommendations at end of document)

Bus Transit

1. Conduct Phase II (implementation) study of seven key corridors for potential implementation of BRT.
4. Expand or establish Park & Ride facilities and connecting bus service.
5. Implement elements of BRT incrementally into the existing system.
7. Evaluate and expand where appropriate bus services between Portland, Freeport, Brunswick, Rockland, Lewiston and Augusta as a precursor for future rail operations.
8. Establish a regional transit authority and coordinate transit operations.
10. Complete METRO Pulse improvements.

Rail Transit

- 1a. Establish a commuter rail network on the Downeaster route with additional stops such as South Berwick, North Berwick, Kennebunk, Biddeford, Scarborough and South Portland.
- 1b. Support passenger rail service from Portland to Brunswick
- 1d. Purchase the Portland-Westbrook section of the Mountain Division to be developed into a Light Rail or BRT corridor
2. Evaluate extending the Maine Narrow Gauge Railroad service to Hadlock Field.

Funding

- 1-3. Increase parking fees with the proceeds used for the operating costs of transit.
4. Consider changes in taxation to fund transit operations and capital
5. Facilitate public/private partnerships that match federal funds

Parking

1. Provide tax incentives to property owners who provide Park & Ride space outside of the City. Relieve liability issues through a lease agreement with the municipality or MaineDOT.
5. Establish a regular ferry service between Portland and South Portland with connecting bus service.

CONCEPTS AND RECOMMENDATIONS

The Committee offers the following recommendations organized into two tiers. The first are well-supported and reasonable solutions that should be acted upon and implemented in the short term. Others, marked with an (L), are longer-term solutions that will take more time or require further study. Overall, the Committee recommends developing a Comprehensive Transit Plan for the region that would include many of the suggestions made here.

Transit

1. Conduct Phase II (implementation) study of the following corridors for potential implementation of BRT. All of these routes have been recommended by previous studies. A higher level of inquiry should examine node and corridor population densities and land uses, available roadway space in the corridor and traffic volumes. Possible models could include: Hartford-Manchester/Vernon Bus Rapid Transit Feasibility Study - Wilbur Smith Associates, with Fitzgerald-Halliday, Inc. for the Connecticut Department of Transportation, and Griffin Busway Feasibility Study - Wilbur Smith Associates for the Capital Region Council of Governments, Connecticut.
 - I-295/Route 1 Falmouth/Yarmouth/Freeport/Brunswick/South Portland/Cape Elizabeth/Scarborough – Coastal System
 - Route 1/Maine Turnpike Intercity Shuttle to Biddeford/Saco (currently served by ZOOM) extend to Sanford and Wells
 - Route 1/Tri-Town Service in Biddeford/Saco/Old Orchard Beach
 - Route 22/Congress Street to Buxton/Hollis
 - Route 25/Brighton Ave. to Westbrook/Gorham/Standish
 - Route 302/Forest Ave. to North Windham
 - Route 26/Washington Ave. to I-95/Gray
2. Communities should adopt policies for inclusion in their Comprehensive Plans to utilize High Occupancy Vehicle and Emergency Vehicle Corridors on highways and major arterials that can also be used by bus rapid transit. Studies should be undertaken to determine where these lanes will make the most impact and then be implemented.
3. In conjunction with #2, eliminate on-street parking on specific major arterials to allow for BRT lanes, transit stops, queue jumping or other transit related infrastructure.
4. Work with MainedOT and Maine Turnpike Authority to identify locations to expand or establish Park & Ride facilities and connecting bus service outside the City of Portland including South Portland, Scarborough, Exit 42, Cape Elizabeth, Exit 45, Maine Mall, Jetport, Rand Road, Exit 10, Falmouth Route 1, Cumberland, Yarmouth, Windham, Gorham, Buxton, Gray, New Gloucester & Lewiston/Auburn. Review HNTB study.

5. Look for appropriate ways to implement BRT technologies into the overall transit system that provide a significant advantage such as signal priority, electronic fare payment, separate or HOV running ways in congested corridors, easy access stations and buses and higher frequency service.
6. Add more express commuter bus routes where appropriate and expand the ZOOM brand identity for such services.
7. The State should evaluate and expand where appropriate bus services between Portland, Freeport, Brunswick, Rockland, Lewiston and Augusta as a precursor for future rail operations, and develop intermodal facilities.
8. Services should operate under a cohesive regional management system, perhaps using the franchise model in New Jersey. Equipment should have a unified appearance while maintaining a unique identity for routes and special services (such as BRT).
 - Beginning with inclusion of all current providers, a regional transit authority should be established with the ability to receive and raise funds, and with separate bonding authority. This authority (possibly the **Southern Maine Authority for Regional Transit**) would derive an economy of scale and eventually govern all transit operators and operations within the region.
 - One image should be established, shared, and maintained for all transit services operating in the Southern Maine region.
 - All transit services should pool advertising resources and develop a common theme for transit in the area.
 - All transit should operate under a unified communications system.
 - Work should begin on providing unified fare collection for all transit services.
 - Work should begin on the location and funding of consolidated regional transit maintenance facilities capable of providing maintenance for all services in the Greater Portland area.
 - The transit system needs to be enhanced through marketing, better frequency and improved equipment to attract new riders and justify implementation of these recommendations.
9. All transit services should interconnect at several centralized locations or hubs, where practical, and connect point-to-point demand where indicated.
10. Complete proposed improvements to the METRO Pulse, with funding already approved by PACTS, to create a more spacious and attractive waiting and boarding area including interconnectivity with the Monument Square shelter.

11. Coordinate transit operations to facilitate fast, convenient transfers.
12. Remove any restrictions regarding transfers between services.
13. Make transit competitive by providing service that is fast, safe, frequent, comfortable, direct and on time.
14. Work with communities to develop Comprehensive Plans and policies that encourage new development with walkable access in existing transit corridors. Examples include: increased densities that facilitate transit-oriented development, promotion of new development either where transit already exists or that creates new service.
15. Encourage those municipalities that have transit to use it for high school transportation.
16. Promote current discounts for seniors and persons with disabilities.
17. MaineDOT should build on its *Explore Maine* and *An Analysis of Transit Provision in Maine* to develop a strategic transit plan that combines, where appropriate, the needs of resident commuters with those of visitors.
18. All transit providers should frequently review their routes, schedules, and customer base with an eye towards new or modified routes to serve new customers. For example, METRO Route 1 service could include Commercial Street. The "Congress Street" buses could operate in a loop that continues to include most, if not all, of the existing route. Two buses would have to travel in opposite directions, ideally with scheduled rendezvous at the Pulse and Casco Bay Lines.

Rail

- 1) (L) The State and municipalities should maintain rights of way and utilize existing rail corridors for local passenger commuter rail.
 - a) Establish a commuter rail network on the Downeaster route with additional stops such as Cummings (South Berwick), North Berwick, Kennebunk, Biddeford, Scarborough and South Portland.
 - b) Evaluate the option of providing service East of Portland on the Guilford line to Yarmouth, Freeport, Brunswick, North Brunswick/NAS and Bath.
 - c) Beginning at a Park & Ride lot on Presumpscot Street, utilize the Saint Lawrence & Atlantic line with stops in Falmouth and Yarmouth, eventually continuing to Pineland and Auburn. This will allow commuter rail to be established in this corridor long before the connection through Bayside and across Back Cove is constructed.
 - d) Purchase the Portland-Westbrook section of the Mountain Division to be developed into a Light Rail or BRT corridor

- Begin service at Little Falls/Route 202, and possibly include Sebago Lake Station/Route 35 as a stop.
 - Construct a 1,000 space Park & Ride lot (expandable to 5,000 spaces) at Little Falls.
 - Stops at new Westbrook transfer station, Cumberland Center, Deering Junction, the Jetport and Portland Transportation Center.
 - Continue on to Commercial Street to the IMT and Ocean Gate.
 - Cross over Franklin Arterial to possible commuter rail station in Bayside and/or back to PTC.
 - This could allow for a Transit Oriented Development at IMT on West Commercial Street.
 - Maintain ROW and track for eventual service to New Hampshire.
2. (L) The Committee supports inclusion in the Portland Peninsula Passenger Transportation Study an effort to extend the Maine Narrow Gauge Railroad service to Hadlock Field. As envisioned by MNGRR proponents, this link would use the Union Branch Corridor to complete Phase I of a three-phase program to form a peninsula circulator. Phase II would extend track from the current end of track at Franklin Street to the Veterans Bridge (Commercial Street and St. John Street) using Commercial Street and the old railroad right of way extending from the Casco Bay Bridge to Veterans Bridge. Phase III would connect Phase I (Hadlock Field) with Phase II (Veterans Bridge) on an as yet to be determined right of way. The proponents further suggest that light rail or BRT should be able to parallel the narrow gauge railroad. The Committee strongly recommends that any development of Narrow Gauge rail not preempt a rail right-of-way's ultimate use for mass passenger transportation.
 3. Integrate light rail or BRT in the form of a peninsula circulator that works with or parallels the narrow gauge railroad.
 4. (L) Use new technology with historic looking rail cars to create a sense of ambiance and charm as appropriate.

Funding

1. To promote the use of transit to and on the Portland Peninsula, parking prices should be raised and the proceeds used for the operating costs of transit.
2. (L) Any new municipal parking facility should be required to transfer all revenues (less maintenance and operations) to a dedicated fund which can only be utilized for transit operations and improvements. This could be accomplished through cooperation with the proposed **Southern Maine Authority for Regional Transit (SMART)**.

3. (L) A fee system should be established (possibly a tax) on all privately owned parking facilities that are not dedicated transit-parking facilities. This fee would be placed into a dedicated transit fund.
4. (L) Further ideas for revenue for transit:
 - Increase Vehicle Registration fees using the proceeds to fund transit
 - Increase the Driver's License renewal fee and dedicate it to fund transit
 - Increase the Vehicle Inspection fee to fund transit
 - Establish a Mortgage reporting tax
 - Create a development tax
 - Implement Peak hour tolls for SOVs on turnpike
 - Establish a Tire tax
 - Change Maine tax law to allow for local option taxes dedicated to transit
 - Establish a Car rental tax
 - Make changes to the State Constitution that would allow highway fuel taxes to be used for funding transit
 - Assess Turnpike tolls and EZPass revenue to help fund transit
5. (L) Financial incentives for private transit operators
 - Fuel tax reductions based on miles of fixed route service
 - No tolls for privately operated routes that carry commuters or for public transit on toll roads
 - Facilitate public/private partnerships that match federal funds

Parking

1. (L) Provide tax incentives to property owners who provide Park & Ride space outside of the City. Relieve liability issues through a lease agreement with the municipality or MaineDOT.
2. It is the responsibility of municipalities to build Park & Ride facilities for the convenience of their residents to use transit.
3. Municipalities should develop parking policies that help promote the use of transit.
4. Municipalities should also encourage development that is consistent with Park & Ride Policies.
5. (L) To help ease the parking demand in the City of Portland, to provide another alternative mode of transportation in both cities, and to alleviate congestion and delays on the Casco Bay Bridge, there should be a regular commuter passenger ferry service established between Portland and South Portland. Bus service should connect at all stops on the ferry route.