



I-93 Transit Investment Study

Public Information Open House

November 27 & 28

Andover, MA & Salem, NH

**New Hampshire Department
of Transportation**

**Massachusetts Executive Office
of Transportation**

Agenda

- Study update
- Objectives
- Transit alternatives refinement
- Land use policy – Transit Oriented Development
- Strategic plan

I-93 Transit Investment Study

Phase 1

- Previous studies
- Existing conditions
- Purpose & need
- Conceptual alternatives

Phase 2

- Evaluation criteria
- Alternatives
- Impacts
- Transit-oriented development
- Land-use policy
- Final Alternatives
- Public meetings

Phase 3

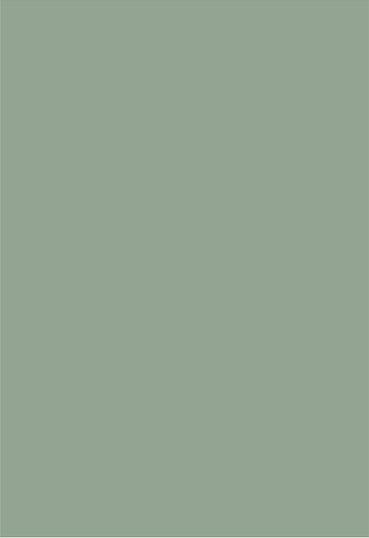
- Strategic implementation plan
- Public meeting

Purpose and Need

- Purpose is to determine long-term transit investment necessary to meet mobility needs along I-93 study corridor.
 - Projected increases in congestion
 - Limited mobility options
 - Environmental impacts of continued rate of growth of vehicular travel
 - Constrained development opportunities
 - Lack of integrated transportation/land use strategy



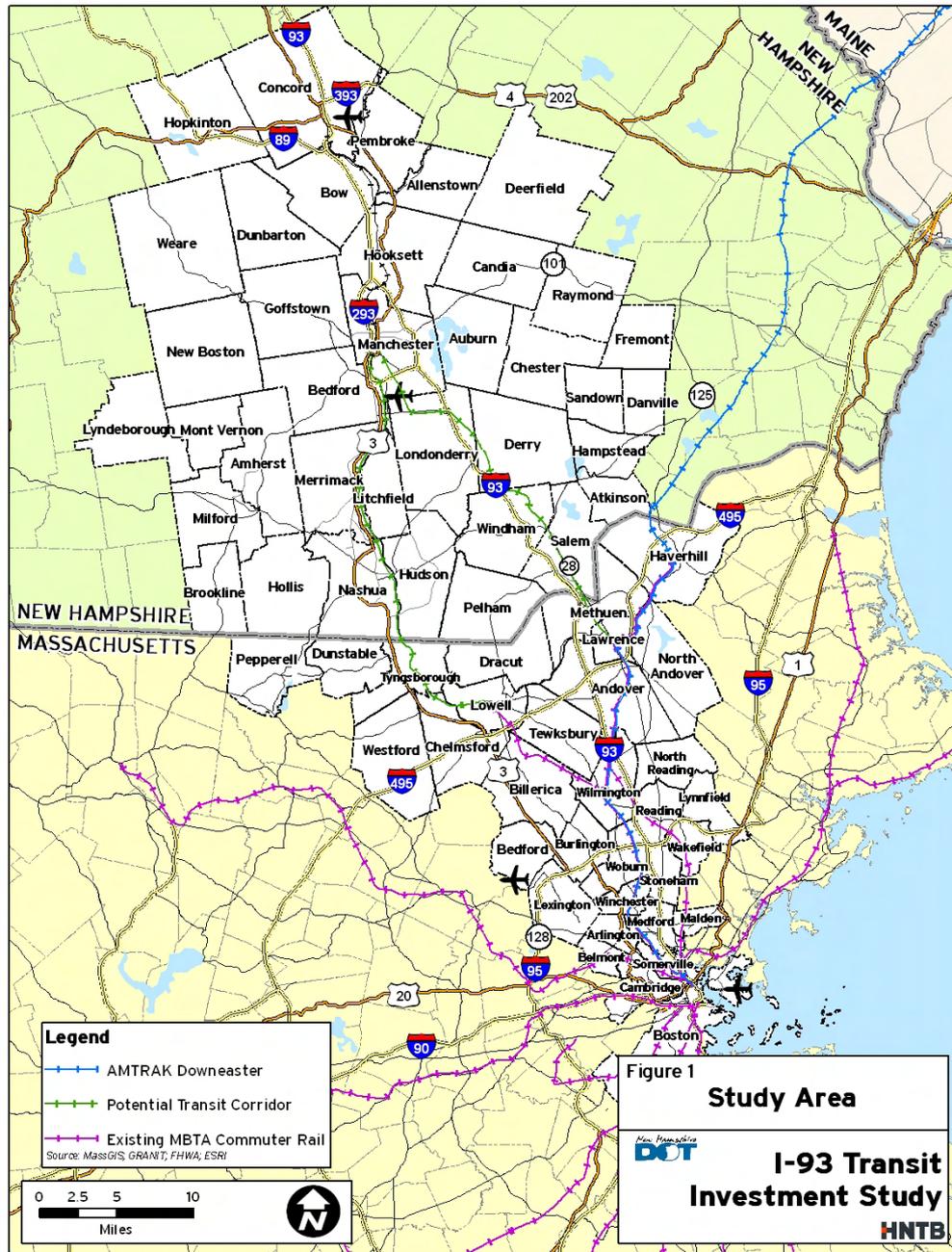
**Study
Goals and
Objectives**



Objectives

- Accommodate growth in longer distance (north-south) travel markets
- Increase mobility options
- Improve economic development opportunities
- Support regional strategies
- Help attain regional environmental objectives

Study Area Map

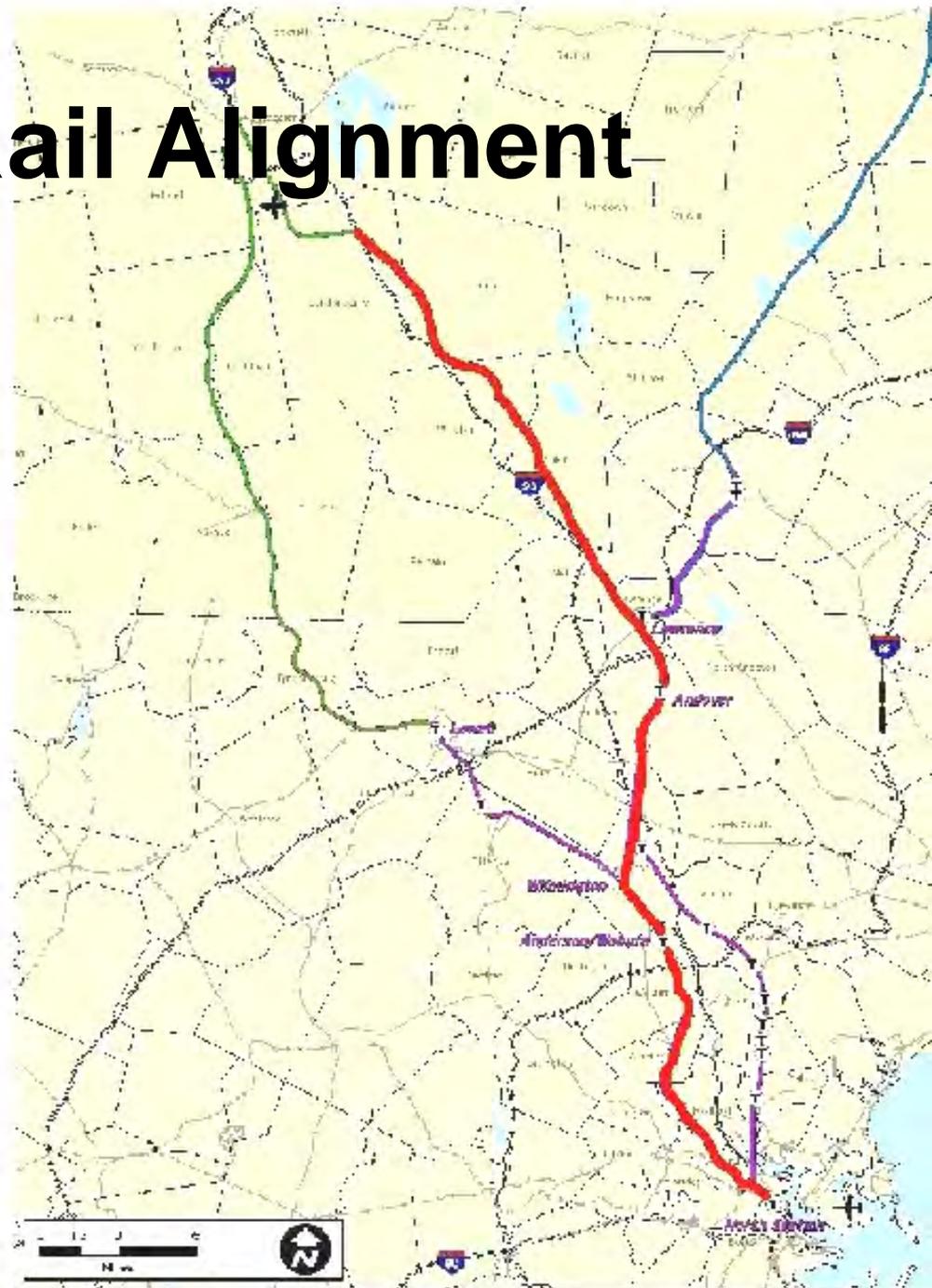


Six Alternatives

- Rail Alternatives
 - Two M&L Alternatives
 - Two I-93 Alternatives
- Bus Alternatives
 - Shoulder Alternative
 - Dedicated Lanes Alternative

About the M&L Rail Alignment

- In NH:
 - M&L Branch
- In MA:
 - Haverhill line
 - Wildcat branch
 - Lowell line
- Five new stations:
 - Exit 5
 - Derry
 - Salem
 - Methuen
 - Lawrence (Essex Street)



M&L Condition Assessment

- Physical Condition
- Legal Status

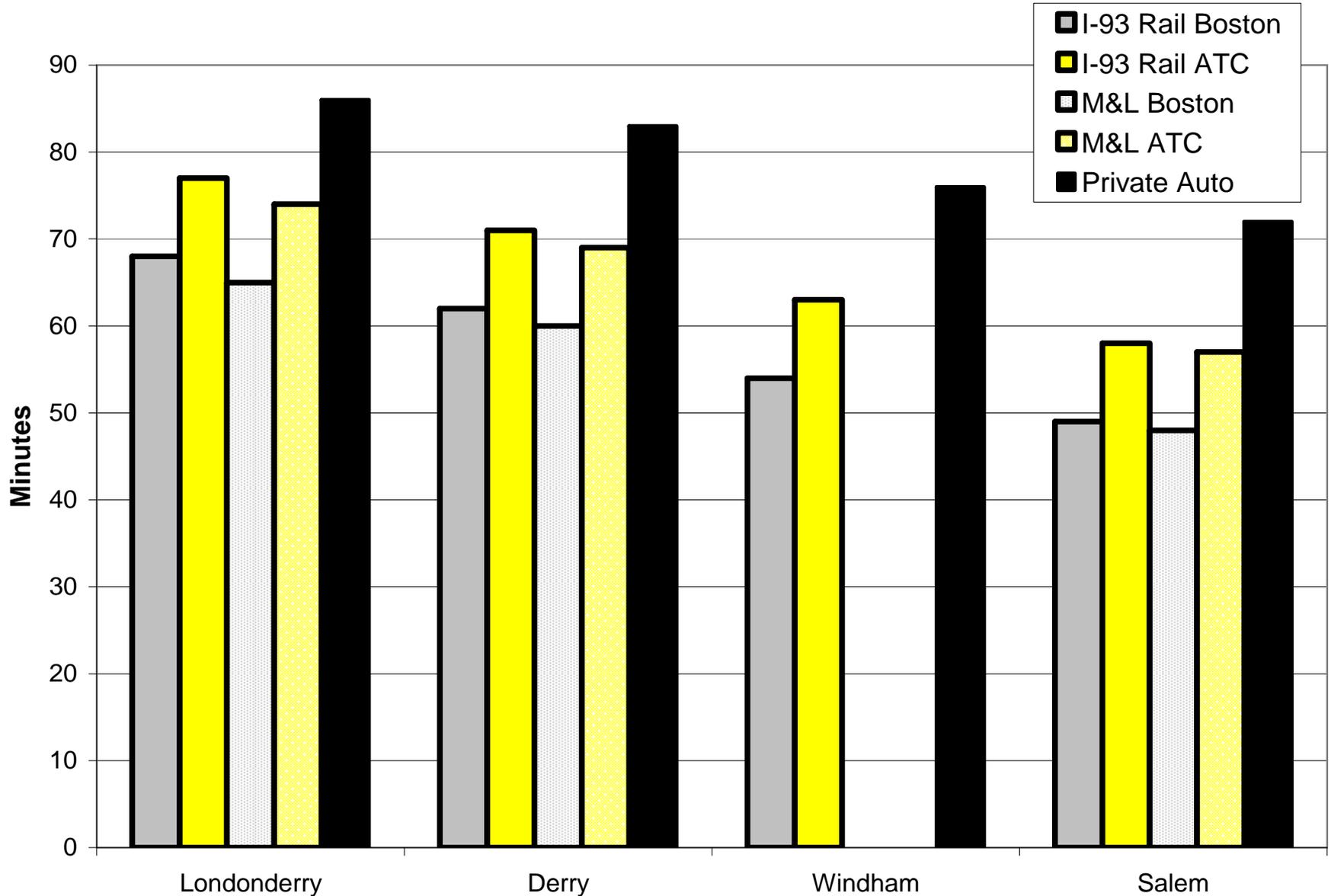


About the I-93 Rail Alignment

- In NH:
 - I-93 Transit Reservation
- In MA:
 - M&L
 - Haverhill Line
 - Wildcat Branch
 - Lowell Line
- Six new stations:
 - Exit 5
 - Exit 4
 - Exit 3
 - Exit 2
 - Methuen
 - Lawrence (Essex Street)



Peak Travel Time to Boston



About the I-93 Shoulder Bus Alternative

- *Routing*
 - Manchester to MA Exit 30
 - Shoulders of I-293 and I-93
 - Exit 30 to Boston
 - Existing HOV Lane
- *Peak buses serve two stations en route to Boston*



About the I-93 Shoulder Bus Alternative

- Nine offline bus terminals:

Route	Peak Headway (min)	Town Center Station	P&R Lot
1	30	Manchester: Canal Street & Granite Street	None
2	15	Manchester Airport	Exit 5
3	15	Derry: Broadway near Railroad Square	Exit 4
4	30	Windham: North Broadway & Lake Street	Exit 3
5	15	Salem: South Broadway at Rockingham Park	Exit 2

Examples of BOS Operations

- Twin Cities, MN
 - 230 miles of shoulders
 - Buses travel at up to 35mph
 - Use of shoulders is by driver discretion
- Ottawa, CAN
 - 12 miles of highway shoulders in Transitway
 - Buses travel at posted speed limit (62mph)
- No serious safety concerns
 - MN experiences 20 annual minor accidents on 271 miles of highway BOS
 - Ottawa has experienced 1 accident over the past 15 years

Minneapolis



Ottawa



About the I-93 Median Busway Alternative

- Five stations:
 - Manchester
 - Exit 5
 - Exit 4
 - Exit 3
 - Exit 2
- *Buses serve all stations*



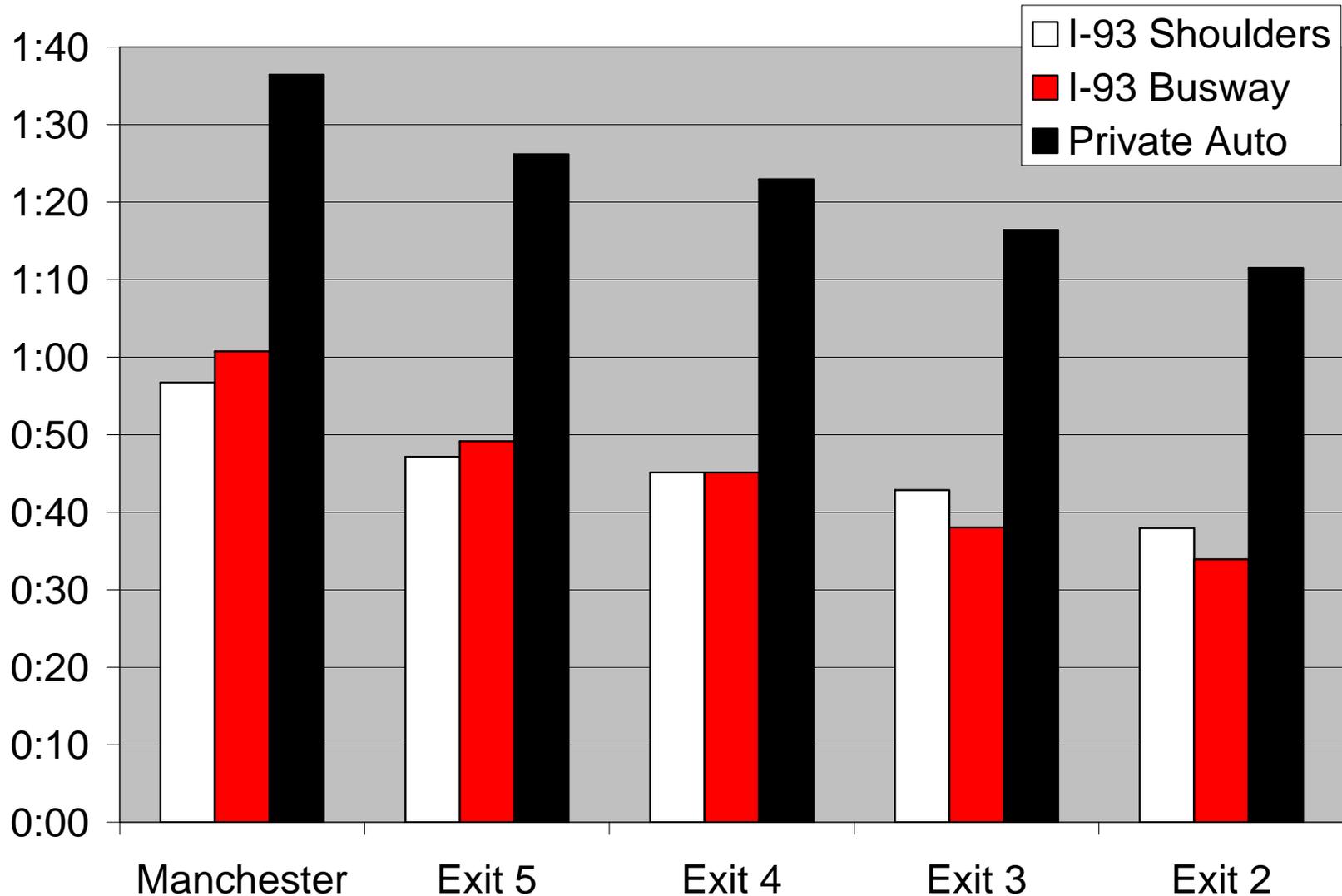
Planned Freeway Bus Station in Seattle Area



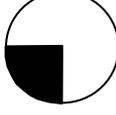
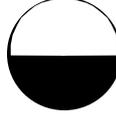
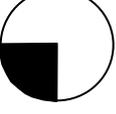
Transmilenio Bus Station Bogota, Colombia



Peak Travel Time to State Street Station



Evaluation Summary

Option	Capital Cost	O&M Cost	Weekday Trips	Environment	Land Use	Fatal Flaws
M&L Boston	\$168	\$9.2	medium			
M&L ATC	\$186	\$7.5	low			
I-93 Rail Boston	\$173	\$9.2	medium			
I-93 Rail ATC	\$194	\$7.5	low			
Shoulder Bus	\$69	\$4.9	medium			
Median Busway	\$166	\$2.7	medium -low			

● = Greatest positive impact

○ = Lowest positive impact

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Seven Truths of I-93 Transit

1. Boston only cost-effective southern terminus.
2. Only M&L has major positive land use/development impact.
3. M&L (exit 5 to Lawrence) physically and legally feasible.

Seven Truths of I-93 Transit

4. Maximum bus ridership effectiveness requires significant travel time savings.
5. Significant travel time savings require busway or shoulder use.
6. Busway effective, but not cost-effective.
7. Rail in I-93 r-o-w effective (ridership not land use) but not cost-effective.

Recommended Alternatives for Detailed Evaluation

- No Build
- TSM/Baseline
- M&L Branch
- I-93 Shoulder Bus

Land Use - TOD

- **Land use and transit-oriented development (TOD)**
 - Existing development near stations
 - Transit-supportive land use policies
 - Future development and ridership

Hillsboro-Beaverton-Portland, OR



Middleton, WI



TOD Tools



- Station Area Zoning
- Mix of Uses
- Development Density and Intensity
- Design Guidelines

Station Area Zoning

- **Best practices:**

- Allow the creation of TOD zones
 - **Base zones:** traditional zoning tool
 - **Overlay zones:** control without complexity
 - **Floating zones:** specific to development



Seattle, WA: McClellan station. Source: http://www.seattle.gov/transportation/ppmp_sap_home.htm

- **National models:**

- **Seattle, WA**
 - Station Area Planning Program
- **Portland, OR**
 - Light Rail Transit Station overlay zones
- **Minneapolis, MN**
 - Hiawatha Corridor light rail transit station areas

Mix of Uses

- **Best practices:**

- Commercial core with residential use
- Mix varies by station type:
 - Regional, district, and developing neighborhood

- **National models:**

- **San Diego, CA**
 - Encourages village greens and plazas
- **Gresham, OR**
 - Creates four zones around each station
- **Seattle, WA**
 - Allows light industrial uses
- **Tacoma, WA**
 - Combines mix of uses with design and engineering guidelines



Central Fountain at the Promenade, Rio Vista West, San Diego.
Source: <http://www.tndwest.com/riovistawest.html>

Development Density and Intensity

- **Best practices:**

- Density is most important in creating ridership
- Mix of residential types
- Employment density is critical

- **National models:**

- **San Diego, CA**
 - Minimum and maximum densities
- **Huntersville, NC**
 - TOD-R and TOD-E districts
- **Denver, CO**
 - Transit mixed-use district



Village at Arapahoe Station, Denver, CO. Source: Transit Oriented Development Status Report, RTA, November 2005.

Design Guidelines

- **Best practices:**

- Good design encourages transit usage
- Advisory
- Soften perceptions of density

- **National models:**

- **Raleigh-Durham, NC**
 - Triangle Transit Authority guidebook
- **San Diego, CA**
 - Transit-Oriented Development Design Guidelines
- **Somerville, MA**
 - Design Review Overlay Districts



Charlotte, NC. Source: Reconnecting America's Center for Transit-Oriented Development "Realizing the Potential: Expanding Housing Opportunities near Transit."

Land Use Analysis: Communities Studied

New Hampshire:

Bedford

Manchester

Derry

Merrimack

Hudson

Nashua

Litchfield

Salem

Londonderry

Windham

Massachusetts:

Andover

Tewksbury

Lawrence

Wilmington

Methuen

Woburn



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Derry, NH

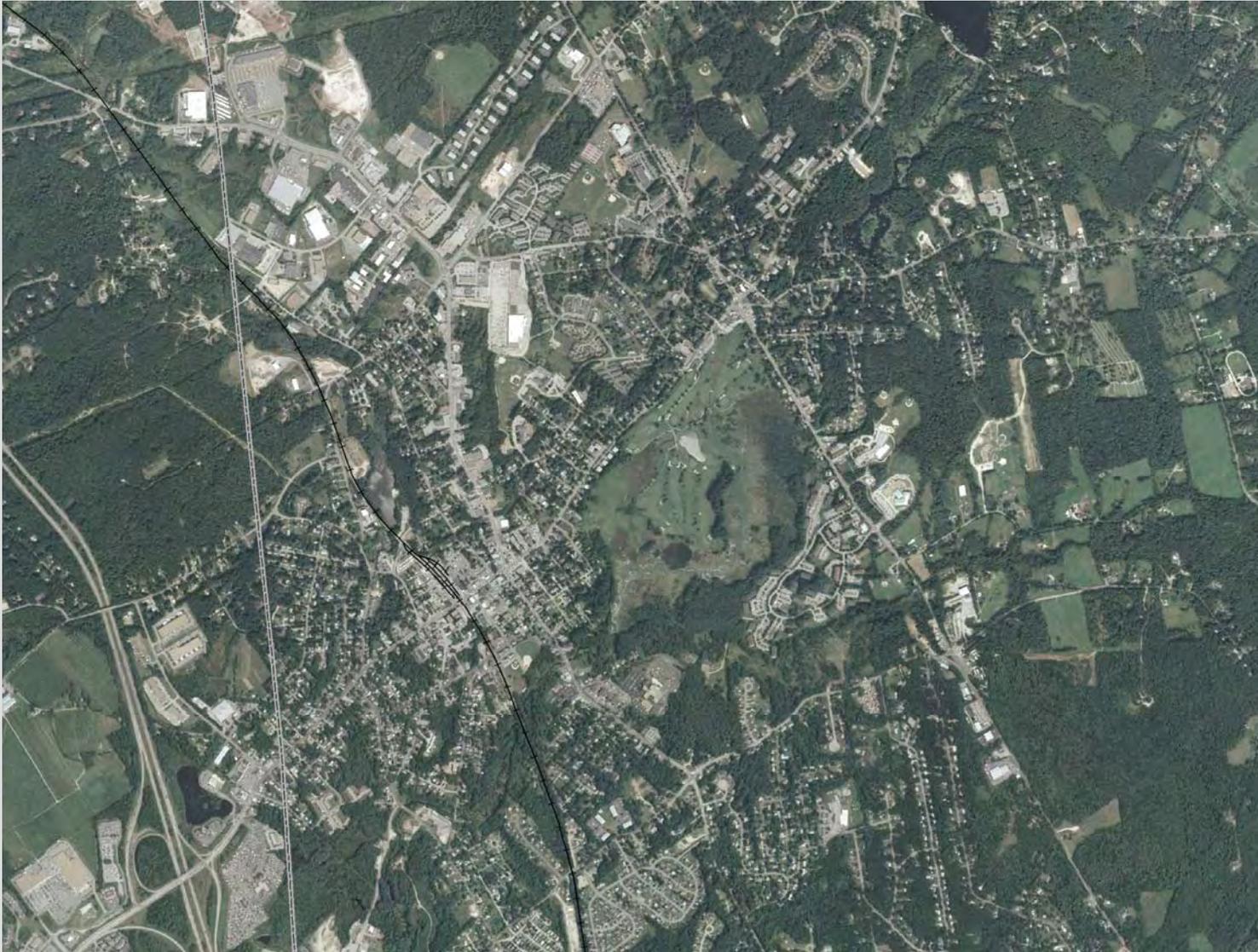
Existing transit-supportive practices:

- New zoning code adopted in 2000: good mix of uses across districts
- Multifamily Residential district: density approaches transit-supportive level

Opportunities:

- Design regulatory and policy incentives to guide development
- Create a TOD overlay to allow increased density

Derry, NH



Salem, NH

Existing transit-supportive practices:

- Density bonus for open space preservation
- Density bonus for senior housing

Opportunities:

- Consider implementing a TOD district
- Reduce parking requirements to encourage pedestrians
- Expand design guidelines beyond Town Center district

Salem, NH

