



## PREFACE

There is a tremendous amount of misinformation about the North/South Rail Link. The truth is that numerous state and federal reports show the MBTA commuter rail system is on the brink of overcrowding causing trains to run late; that much of the subway system is already over capacity causing overcrowding and delays, and that the Massachusetts' highways are some of the most congested in the country.

Some of these same reports cite the need for the North/South Rail Link showing that a connection between North and South Stations will alleviate traffic from commuter rail, subway and highways because it will, according to reports:

- Save commuters 55,236 hours daily,
- Allow 55,000 commuters to take trains instead of driving daily,
- Prevent the emission of 583 tons of carbon dioxide daily.

This brief report answers some of the most basic questions about the North/South Rail Link, including:

1. South Station capacity issues & on-time service.
2. North Station capacity issues & on-time service.
3. Anticipated growth scenarios and the need to alleviate congestion.
4. Environmental benefits of the North/South Rail Link.
5. Why a surface level bus will not solve capacity issues.

So that there should be no question about the validity of any of the information contained within this brief report, it should be understood that all facts and figures are footnoted. A full bibliography of all footnoted studies, statements and reports is included at the end of this report. Only a very few items have been calculated by the Sierra Club and are clearly marked as such.

Commentary is kept to a bare minimum and only inserted where clarification may be needed. Where emphasis (bolding, italicizing, etc.) has been added it is marked as such. All explanatory items are in brackets and italicized as here [*example*].

Copies of all of cited reports are available to the public through the MBTA or can be made available by contacting Jeremy Marin, Associate Regional Representative for the Sierra Club.

**“Once the Greenbush line is operational, South Station will be at or near capacity in terms of accommodating additional commuter rail service. Similarly, North Station is also nearing capacity as a terminus for existing commuter rail lines.”**

**-Governor Romney's 2005 Transportation Plan**

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## **SOUTH STATION WILL SOON BE OVER CAPACITY. TRAINS WILL RUN LATE 25% OF THE TIME.**

*COMMENTARY: Even a cursory examination of MBTA studies, federal studies, statements by the MBTA and Governor Romney clearly show that South Station is near or at capacity. What this means for commuter rail and intercity rail riders in the future is a potentially dramatic increase in train delays and an inability to increase future service.*

### **From Governor Romney's "A Framework for thinking-a plan for action"**

"Once the Greenbush line is operational, South Station will be at or near capacity in terms of accommodating additional commuter rail service. Similarly, North Station is also nearing capacity as a terminus for existing commuter rail lines. Throughout the system, potential expansion of other commuter rail lines and service – beyond the Greenbush line – should consider the expansion needs of these terminus stations."<sup>1</sup>

"Any such expansion of commuter rail service [*such as the Fall River/New Bedford Line*] south of Boston should be coupled with an expansion of the tracks at South Station to add the necessary capacity."<sup>2</sup>

### **From South Station Capacity Analysis**

"One issue of major concern is most certainly the ability of an **already at-capacity South Station** to cope with such growth."<sup>3</sup> [*Emphasis added*]

"...there is little if any room left to introduce any new service to South Station."<sup>4</sup>

"It is certainly clear that a major step needs to be taken in order to expand South Station's current capacity and increase its value as a hub for both the MBTA commuter rail network and Amtrak passenger trains."<sup>5</sup>

"The capacity of the entire south side system is now constrained, particularly at peak load times by the number of available platforms at South Station."  
-South Station Capacity Analysis Report, Page 1

"The number of available platforms is the major constraint on the capacity of the entire south side system. However, the system is also constrained to some extent by:

- The capacity of South Station to handle the current rolling stock and current ridership,...
- The limited capacity of MBTA layover yards serving South Station."<sup>6</sup>

"There is no doubt that the current system is highly congested."<sup>7</sup>

"...there is virtually no spare capacity at South Station during peak periods – especially the evening peak period when there is no spare capacity."<sup>8</sup>

"The completed EIR carried out for the MBTA New Bedford/Fall River Commuter Rail Extension states: 'The addition of Greenbush Line service plus proposed New Bedford/Fall River service while keeping all existing MBTA and imminent future Amtrak services intact creates such congestion during peak hours that it may be difficult or impossible to execute reliable day-to-day operations.'"<sup>9</sup>

"Occupancy charts also indicate that South Station is completely full between 5:00PM and 5:30PM and there is little or no ability to absorb delays, whatever the cause, without creating a cascading delay situation."<sup>10</sup>

### **From North/South Rail Link MIS/DEIR**

“With the anticipated growth in ridership and planned new services, there would be demand under the 2025 No-Build conditions in excess of 49 trains during the AM peak period. This level of demand would likely exceed the effective capacity of the terminal.”<sup>11</sup>

“The No-Build Alternative identifies a number of potential issues to be addressed by the future MBTA commuter rail and rapid transit systems. The total number of commuter rail passengers entering South Station is projected to increase dramatically, potentially affecting the capacity of South Station to accommodate the number of trains needed to carry passengers.”<sup>12</sup>

“As ridership continues to grow, peak period terminal operations are predicted to become more congested. Future service schedules developed by the MBTA based on peak period terminal capacity combined with the projected future fleet could limit daily ridership to approximately 233,400 trips. This “capped” daily ridership represents the number of trips that the system is projected to accommodate based on the number of trains, the available equipment, and the MBTA Service Delivery Policy for commuter rail.”<sup>13</sup>

### **From New Bedford/Fall River Commuter Rail Extension Project**

“The total number of trains in operation in the entire South Station Terminal Area during the morning and evening hour peak periods is nearing capacity.”<sup>14</sup>

“In the future, it will become increasingly important to adhere to a strict schedule in order to utilize the shorter windows of opportunity for a crossover from the low side of the station (Tracks 1-6) across the Fort Point Channel Bridge en route to the Southampton S&I and Readville Yard.”<sup>15</sup>

“The shortage of platform track space in midday, a result of a lack of storage space, contributes to a **potential collapse of the operation in the evening peak**. The MBTA will not be able to quickly fill the station platform tracks in advance of the rush with as many outbound consists as is done at present. At the very beginning of the peak, the station still has platform tracks occupied by trainsets waiting to be sent to the yard for servicing.”<sup>16</sup>

“The number of trains in operation in the South Station Terminal Area during the morning and evening hour peak periods are nearing the limit.”<sup>17</sup>

### **From MBTA GM Mulhern to the MHS Advisory Board**

“Trains must be brought in and out of the station on a precise schedule and in coordination with Amtrak, otherwise there will be service delays.”<sup>18</sup>

“So the lay over of South Station trains is spread out and is running out of capacity.”<sup>19</sup>

“The MBTA has studied potential sites throughout the metropolitan area but has found no site without some serious problem that prevents its use for layovers.”<sup>20</sup>

“South Station, which serves commuters and intercity passengers, is already near capacity. The MBTA expects the commuter rail ridership to continue to increase with the expansion of service to the Southeast and the movement of passengers from automobiles to commuter rail.”

-Statement of MBTA GM Mulhern



## GROWTH SCENARIOS

*COMMENTARY: Continued growth of ridership on both the north and south side systems is expected. State analysts expect that by the year 2025 we will have more than quadrupled ridership over that seen in 1970, putting further strains on the system.*

“Daily ridership has grown significantly on the MBTA commuter rail system from a total of 75,000 in 1990 to approximately 126,800 in 2000, an increase of approximately 69 percent. By 2025, ridership demand is projected to grow to 244,600 [268,750 according to latest data] daily boardings.”<sup>27</sup>

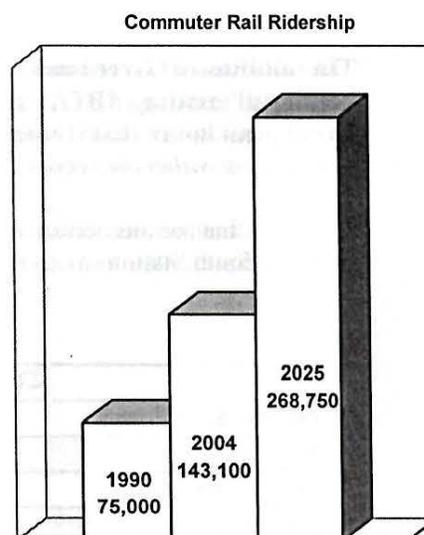
“A single delay, which is almost unavoidable on a daily basis, would disrupt the tightly scheduled Main Line operations and impact operations on all three Old Colony branches.”

- MBTA New Bedford/Fall River Commuter Rail Extension, Page 3-27

“At South Station, the 13 platform tracks currently handle 38 commuter rail trains during the AM peak period. This level of utilization, combined with the intercity service demands, places the terminal near capacity. With the anticipated growth in ridership and planned new services, there would be demand under the 2025 No-Build conditions in excess of 49 trains during the AM peak period. **This level of demand would likely exceed the effective capacity of the terminal.**”<sup>28</sup>

“South Station has seen a 54% increase in daily ridership between 1995 and 2000 alone and is expected to almost double by 2025. The greatest increase in ridership has occurred on the South Side Lines, south side services operate to and from South Station. With the opening of the Old Colony lines ridership growth on the south side is forecasted to grow 168% by 2025. Such high growth numbers obviously compound the urgency when addressing congestion in the current system.”<sup>29</sup>

“One issue of major concern is most certainly the ability of an already at-capacity south [*sic*] Station to handle such growth. **This concern has been echoed by numerous officials at the MBTA and CTPS.** [*Emphasis added*] Ridership numbers in the current CTPS projections clearly show that there has been a dramatic increase in commuter rail service as well as new high-speed inter-city rail coming into South Station. Following this, there is no doubt that an overwhelming public purpose in providing expanded tracks to serve South Station.”<sup>30</sup>



“The [*Fall River/New Bedford Rail*] model revealed that, even with just the four new trains of the Stoughton Alternative [*that introduces the least number of new trains into service*], the South Station Terminal area is nearing capacity during peak periods.”

- New Bedford/Fall River FEIR, Page 6-88

“As model results clearly show, demand for transit will grow substantially over the next twenty-five years. This growth will necessitate additional capacity for both north and south-side commuter rail systems.”<sup>31</sup>

“As ridership continues to grow, [on the commuter rail] peak period terminal operations are predicted to become more congested. Future service schedules developed by the MBTA based on peak period terminal capacity combined with the projected future fleet could limit daily ridership to approximately 233,400 trips. This “capped” daily ridership represents the number of trips that the system is projected to accommodate based on the number of trains, the available equipment, and the MBTA Service Delivery Policy for commuter rail.”<sup>32</sup>[*Emphasis added*]

“The results of the test carried out for the proposed New Bedford/Fall River addition shows that the system will be extremely stressed under even unperturbed conditions (when everything goes as scheduled). Under unperturbed conditions, simulated on-time performance for all South Side trains is in the range of 83 to 95 percent during the peak periods. However, when simulated to reflect service disruptions related to normal daily operation, on-time performance decreases to only 76 percent during the morning peak hour and 73 percent during the evening peak hour – performance statistics that the MBTA could hardly be proud of and a very long way off the minimum performance threshold of 95%!” [*Emphasis is within the report.*]<sup>33</sup>

“The addition of Greenbush Line service plus the proposed New Bedford/Fall River service while keeping all existing MBTA and imminent future Amtrak services intact creates such congestion during peak hours that it may be difficult or impossible to execute reliable day-to-day operations.” [*Emphasis is within the report.*]<sup>34</sup>

“It is clear that serious action needs to be taken now in order to avoid a seemingly dismal future for the ability of South Station to cope with anything close to the projected growth in ridership.”<sup>35</sup>

COMMUTER RAIL RIDERSHIP & PROJECTIONS		
North Side Lines	FY 04 Daily Boardings <sup>36</sup>	2025 No Build Ridership <sup>37</sup>
Rockport	7,800	18,700
Newburyport	10,800	18,750
Haverhill	10,900	18,650
Lowell	11,100	19,300
Fitchburg	9,000	16,550
<b>Total North Side</b>	<b>49,600</b>	<b>91,950</b>
<b>South Side Lines</b>		
Attleboro/Stoughton	28,100	40,800
Framingham/Worcester	18,800	23,650
Needham	9,200	14,740 <sup>38</sup>
Franklin	15,200	37,400
Fairmount	2,400	2,520 <sup>39</sup>
Middleborough/Lakeville	9,800	17,150
Plymouth/Kingston	10,000	17,900
Greenbush	N/A	9,840 <sup>40</sup>
New Bedford/Fall River	N/A	12,800 <sup>41</sup>
<b>Total South Side</b>	<b>93,500</b>	<b>176,800</b>
<b>Total Commuter Rail:</b>	<b>143,100</b>	<b>268,750</b>

## THE RAIL LINK WILL ALLEVIATE STATION CAPACITY ISSUES

*COMMENTARY: Please keep in mind that all of the statements below are taken directly from MBTA state and federal studies. According to these studies the North/South Rail Link will relieve capacity issues at both North and South Stations as well as on the Orange and Green Lines.*

“In the future, both terminals are projected to be either at or over practical peak period capacity. A run-through operation, which either the four-track or two-track Build Alternative presents, would address this terminal capacity issue by allowing for the efficient movement of trains directly through the downtown area.”

- North/South Rail Link MIS/DEIR, Page 2-36

“Both downtown terminals (North and South Stations) are projected to be at or over effective peak period capacity under 2025 No-Build ridership projections. Introduction of the tunnel connection provides a potential solution to terminal capacity issues and provides significant opportunity to enhance system capacity. The capability to provide run-through service in either a four- or two-track tunnel is expected to:

- Provide a significantly greater level of capacity to accommodate peak period train movements than the existing stub-end terminals at North and South stations.
- Reduce non-revenue (“deadhead”) movement of equipment.
- Reduce the number of equipment turns required under congested terminal conditions.
- Achieve maximum ridership growth through efficient use of equipment....
- Four-Tracks provide a significant increase in overall commuter rail system capability. Combined with continued surface terminal operations, the future commuter rail system with a Four-Track tunnel has greater operational flexibility and the ability to absorb continuing increases in commuter rail ridership.”<sup>42</sup>

“The ridership analysis indicates that there is more ridership demand from the north side lines to South Station than from the south side lines to North Station.”

- North/South Rail Link MIS/DEIR, Page ES-20

“In addition, the operation of a four-track tunnel offers ...:

- Four tracks provide a significant increase in overall commuter rail system capability. Combined with continued surface terminal operations, the future commuter rail system with a four track tunnel has greater operational flexibility and the ability to absorb continuing increases in commuter rail ridership;
- Increased equipment utilization adds to the overall operating efficiency and reduces the unit operating cost;
- Operating patterns (such as zone express, skip-stop express, and tandem express) could be maximized to their fullest advantage; and
- Allows for greater operational flexibility particularly in avoiding intercity trains with longer dwell times, thereby increasing operating efficiencies.”<sup>43</sup>

## ENVIRONMENTAL AND TRAFFIC BENEFITS OF THE RAIL LINK

*COMMENTARY: In short, there is no transportation project under consideration in the state that would do more to reduce traffic congestion, increase MBTA ridership, or improve air quality within the state than the North/South Rail Link.*

[The North/South Rail Link] “would result in the largest absolute time savings of any commuter rail project.”<sup>44</sup>

“On a typical weekday, there would be about 1 million fewer vehicle miles traveled on the regional highway system.”  
- North/South Rail Link MIS/DEIS, Page 4-48

[The North/South Rail Link] “would attract the largest numbers of commuter rail riders and new transit users of all commuter rail projects.”<sup>45</sup>

[The North/South Rail Link] “would improve distribution of commuter rail passengers within downtown Boston, open up new possibilities for travel between points on North Side and South Side commuter rail lines, improve efficiency of train operations, and help relieve capacity constraints at the Boston terminals.”<sup>46</sup>

Construction would “reduce the daily regional vehicle miles traveled (VMT) between 308,000 and 362,000 for the Two-Track Build Alternatives, and 955,000 to 1,027,000 for the Four-Track Build Alternatives.”<sup>47</sup>

Table ES-11 Effectiveness Evaluation Summary <sup>48</sup>	
Goal/Measures of Effectiveness	Four-Track Three Station
New commuter rail trips (daily)	82,700
Change in rapid transit trips	-44,300
<b>Diversions from auto (daily)</b>	<b>55,217</b>
<b>Reduction in regional vehicle miles traveled daily (VMT)</b>	<b>1,026,600</b>
Change in regional air emissions in kg/day (CTPS model)	
VOC (Volatile Organic Compounds)	-1,272
CO (Carbon Monoxide)	-16,894
NO <sub>x</sub> (Nitrogen Oxides)	-1,475
<b>Travel Time Savings (hrs/day)</b>	<b>55,236</b>

*COMMENTARY: Pulling from the data above, the North/South Rail Link would:*

- Take 55,000 cars off the road every day
- Reduce VMTs by 1 million miles daily
- Save commuters 55,000 hours daily
- Prevent the emission of 583 tons of (the greenhouse gas) carbon dioxide daily.

## THE RAIL LINK ALLEVIATES SUBWAY CONGESTION PROBLEMS

*COMMENTARY: In addition to capacity issues at North and South Stations, the majority of the subway system is over capacity. MBTA studies show that the North/South Rail Link would help alleviate congestion in the subways as well.*

“These [subway] capacity constraints

“Under the No-Build Alternative, demand exceeds capacity for peak load points on each of the transit lines....”

-North/South Rail Link MIS/DEIR, *Ridership Forecasting and Methodology Report*. Pg. 3-27

present difficulties for the ability of the system to accommodate growth in demand. The ridership estimates conducted for the North South Rail Link indicate that the rapid transit demand would decrease as a result of the build alternatives.”<sup>49</sup>

“There would be a significant reduction in subway trips as more people would be able to reach their final destinations by one-seat ride.”<sup>50</sup>

“The impact of the connector is clearly seen in the projected ridership for the rapid transit system. ... the ridership on the rapid transit system would experience a net reduction of approximately 44,300 trips when compared to the no-build alternative. Most destinations of the commuter rail passengers are concentrated in the financial district of downtown Boston.”<sup>51</sup>

“The four-track, three-station Build Alternative option is projected to bring both the Red Line and the Orange Line down within their capacity limits, and alleviate some of the congestion for the Green Line heading into Boylston Station.”

- North/South Rail Link MIS/DEIR, *Ridership Forecasting and Methodology Report*. Pg. 3-27

“In the Four Track/Three Station Build Alternative, they [commuters] are likely to stay on the commuter rail, alight at Central Station and walk to their final destination. This results in a net reduction of roughly 44,000 trips on the MBTA rapid transit system.”<sup>52</sup>

“A rail link tunnel would have the largest impact on the Orange Line,.... By reducing passenger volumes at peak load points, future capacity constraints on the Orange Line could be alleviated by the construction of a rail link.”<sup>53</sup>

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**Table 3.2-6 Volume and Capacity Information for Future Rapid Transit System**

	Rapid Transit Line						
	Blue	Red		Orange		Green	
	South	North	South	North	South	West	East
Peak period capacity (passengers/peak period)	21,375	36,000	36,000	23,400	23,400	25,385	25,385
<b>2020 No-Build Peak Period Volumes</b>							
Peak load point	Aquarium	Charles	S. Station	Haymarket	State St.	Copley	Boylston
Peak load volume	13,400	16,500	21,500	16,350	15,200	23,500	19,200
Volume as a percentage of capacity:	122%	70%	100%	107%	75%	120%	110%
<b>2020 4-Track/3-Station Peak Period Volumes</b>							
Peak load point	Aquarium	Charles	S. Station	Haymarket	State St.	Copley	Boylston
Peak load volume	25,600	24,250	35,000	22,800	13,750	29,600	25,500
Volume as a percentage of capacity:	120%	67%	97%	97%	59%	117%	100%
<b>2020 4-Track/2-Station Peak Period Volumes</b>							
Peak load point	Aquarium	Charles	S. Station	Haymarket	State St.	Copley	Boylston
Peak load volume	25,850	24,500	35,450	23,100	13,900	29,800	26,000
Volume as a percentage of capacity:	121%	68%	98%	99%	59%	117%	102%

## **BUS WILL NOT SOLVE THE LACK OF CAPACITY PROBLEM**

*COMMENTARY: Some have suggested that a bus between North and South Stations would provide an equally beneficial service for less money. The truth is, according to state and federal reports, that the bus option would not increase ridership significantly, would not reduce air pollution at all, and would cost more per new rider than building the Rail Link.*

“The three different TSM Alternative options—a downtown shuttle bus, a surface artery route, and an Orange Line shuttle—are not projected to substantially alter transit use patterns in the regional study area. The downtown shuttle buses are expected to increase daily commuter rail trips by about 0.01 percent and to decrease subway trips by about 2.5 percent.”

- North/South Rail Link MIS/DEIR, Page 4-46

“The three different TSM Alternative options—a downtown shuttle bus, a surface artery route, and an Orange Line shuttle—are not projected to substantially alter transit use patterns in the regional study area. The downtown shuttle buses are expected to increase daily commuter rail trips by about 0.01 percent and to decrease subway trips by about 2.5 percent.”<sup>55</sup>

“Therefore, none of the TSM alternatives are that effective in removing vehicle trips from the regional highway system.”<sup>56</sup>

“As can be seen from the summary of reduction in air pollutant emissions presented in Tables ES-10 and 11 (See Item 17), the TSM [bus] Alternatives do not result in any reduction in air pollutant emissions.”<sup>57</sup>

“The cost effectiveness indices (cost per new transit trip) range from:

- Between \$6.83 and \$148.50 for the TSM bus alternatives to
- Between \$28.68 and \$55.43 for the Build Alternative, and
- \$140.70 for the TSM Orange Line Alternative.”<sup>58</sup>

Table 6.3-5

Effectiveness Evaluation Summary

Goal/Measures of Effectiveness	TSM Alternatives (2020)				Build Alternative (2025)					
	No-Build Alternative	Downtown Bus Shuttle	Surface Artery Bus Shuttle	Expanded Orange Line Service	South Bay Two Track Two Station	South Bay Two Track Three Station	Back Bay Two Track Two Station	Back Bay Two Track Three Station	Four Track Two Station	Four Track Three Station
<b>Goal 1: Preserve and Upgrade the Existing Rail System and Reduce Congestion on Existing Services and Facilities</b>										
1. New transit trips (daily)	N/A	40	860	580	19,000	21,500	19,500	22,000	50,800	54,350
2. Increase in new transit trips (%)	N/A	-----Less than 0.1%-----			1.4%	1.6%	1.5%	1.7%	3.9%	4.1%
3. New commuter rail trips (daily)	N/A	990	1,940	465	23,600	27,100	29,350	40,200	69,900	82,700
4. Increase in daily commuter rail trips (%)	N/A	0.6%	1.2%	0.3%	9.6%	11.1%	12.0%	16.4%	20.8%	33.8%
5. New intercity rail ridership (daily) <sup>1</sup>	0	0	0	0	1,948	1,948	1,948	1,948	1,948	1,948
6. Increase in daily intercity rail riders	N/A	0	0	0	10.4%	10.4%	10.4%	10.4%	10.4%	10.4%
7. Change in rapid transit trips	N/A	-17,600	-8,300	+3,040 <sup>2</sup>	-31,500	-33,500	-32,500	-41,000	-55,800	-44,300
8. Diversions from auto (daily) (includes 867 from intercity rail)	N/A	40	860	580	19,867	22,367	20,367	22,867	51,667	55,217
9. Diversions from air (daily)	N/A	0	0	0	128	128	128	128	128	128
10. Peak hour station rail capacity	---Demand may exceed capacity---				-----Run through service provides sufficient capacity-----					
<b>Goal 2: Provide Increased Opportunities for Multimodal Connections</b>										
11. Daily regional transit mode share	7.59	7.60	7.60	7.60	7.54	7.56	7.55	7.56	7.72	7.75
12. Increase in non-CBD station rail ridership (suburb - suburb trips)	N/A	610	610	610	3,150	3,100	3,200	3,000	6,000	5,600
13. Increase in regional rail/intermodal interfaces	N/A	Low	Low	Low	Med	High	Med	High	Med	High
<b>Goal 3: Maximize Use of the Existing and Programmed Transportation Infrastructure and Investments</b>										
14. Cost per new transit trip (2002 \$)	N/A	\$148.50	\$6.83	\$140.72	\$55.21	\$55.43	\$54.87	\$56.03	\$28.68	\$30.90
15. Change in CBD commuter rail station ridership	N/A	380	380	380	19,860	23,350	21,950	37,250	63,050	75,550
<b>Goal 4: Maximize Environmental and Economic Benefits</b>										
16. Reduction in regional vehicle miles traveled daily (VMT)	N/A	0	0	0	308,180	350,665	318,045	361,900	955,300	1,026,600
17. Change in regional air emissions in kg/day (CTPS model)										
VOC	N/A	0	0	0	-371	-431	-395	-442	-1,198	-1,272
CO	N/A	0	0	0	-4,895	-5,694	-5,252	-5,854	-15,971	-16,894
NOx	N/A	0	0	0	-438	-500	-461	-523	-1,376	-1,475
18. Travel Time Savings (hrs per day)	N/A	Not estimated	2,629	802	28,112	29,287	35,694	37,363	48,267	55,236

<sup>1</sup> Assumes 34 intercity trains per day. Ridership presented for 2020.

<sup>2</sup> Includes trips on the Expanded Orange Line Service TSM Alternative also.

COMMENTARY: As the chart above<sup>59</sup> shows, neither of the bus options will be effective and will, in the end, cost more per new transit trip than the (grossly overestimated per rider cost of the) North/South Rail Link.

## REFERENCES

**North/South Rail Link MIS/DEIR**, June 2003. Prepared by the MBTA in partnership with the National Railroad Passenger Corporation and the Massachusetts Executive Office of Transportation and Construction. Project consultants include Vanasse Hangen Brustlin, Inc., DMJM + Harris, Inc., URS Corporation, CTPS.

**South Station Capacity Analysis Report**, 2001- Prepared for US Postal Service by CB Richard Ellis/Whittier Partners

**New Bedford/Fall River Commuter Rail Extension Project FEIR**, April 2002. Prepared by VHB/Vanasse Hangen Brustlin, Inc.

**New Bedford/Fall River Commuter Rail Extension Project South Station Operational Analysis Report**, April 1999, Prepared for MBTA by VHB/Vanasse Hangren Brustlin, Inc. In Association With Systra Consulting, Inc.

**Statements of MBTA General Manager Michael Mulhern** to the Metropolitan Highway System Advisory Board, April 9, 2003.

**North/South Rail Link Ridership Forecasting and Methodology Report**, is part of the North/South Rail Link MIS/DEIR, Appendix D, part 2.

**Governor Romney's Transportation Plan, "A Framework for thinking-a plan for action"**, prepared by MA Executive Office of Transportation, Office of Transportation Planning, March 10, 2005.

## ENDNOTES

- <sup>1</sup> Governor Romney's Transportation Plan "A framework for thinking-a plan for action", Page 27
- <sup>2</sup> Governor Romney's Transportation Plan "A framework for thinking-a plan for action", Page 260
- <sup>3</sup> South Station Capacity Analysis Report, Page 1
- <sup>4</sup> South Station Capacity Analysis Report, Page 1
- <sup>5</sup> South Station Capacity Analysis Report, Page 1
- <sup>6</sup> South Station Capacity Analysis Report, Page 5
- <sup>7</sup> South Station Capacity Analysis Report, Page 5
- <sup>8</sup> South Station Capacity Analysis Report, Page 7
- <sup>9</sup> South Station Capacity Analysis Report, Page 1
- <sup>10</sup> South Station Capacity Analysis Report, Page 8
- <sup>11</sup> North/South Rail Link MIS/DEIR, Page 4-15
- <sup>12</sup> North/South Rail Link MIS/DEIR, Page ES-17
- <sup>13</sup> North/South Rail Link MIS/DEIR, Page 1-14
- <sup>14</sup> New Bedford/Fall River Commuter Rail Extension Project FEIR, Page 1
- <sup>15</sup> New Bedford/Fall River Commuter Rail Extension Project FEIR, Page 2
- <sup>16</sup> New Bedford/Fall River Commuter Rail Extension Project FEIR, Page 13
- <sup>17</sup> New Bedford/Fall River Commuter Rail Extension Project FEIR, Page 15
- <sup>18</sup> Statements of MBTA GM Mulhern
- <sup>19</sup> Statements of MBTA GM Mulhern
- <sup>20</sup> Statements of MBTA GM Mulhern
- <sup>21</sup> North/South Rail Link MIS/DEIR, Page 1-15
- <sup>22</sup> Governor Romney's Transportation Plan, "A framework for thinking-a plan for action", Page 27
- <sup>23</sup> North/South Rail Link MIS/DEIR, Page ES-13

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- <sup>24</sup> “Ridership” [www.mbta.com/insidethet/taag\\_ridership.asp](http://www.mbta.com/insidethet/taag_ridership.asp), accessed 5.11.2005
- <sup>25</sup> Memo from CTPS to MBTA Planning Department dated December 24, 2002, Page 15, Table 3
- <sup>26</sup> North/South Rail Link MIS/DEIR, Page ES-5
- <sup>27</sup> North/South Rail Link MIS/DEIR, Pages ES-5 & 1-14
- <sup>28</sup> North/South Rail Link MIS/DEIR, Pages 4-14 & 4-15
- <sup>29</sup> South Station Capacity Analysis Report, Page 1
- <sup>30</sup> South Station Capacity Analysis Report, Page 5
- <sup>31</sup> South Station Capacity Analysis Report, Page 3
- <sup>32</sup> North/South Rail Link MIS/DEIS, Page 1-14
- <sup>33</sup> South Station Capacity Analysis Report, Page 7
- <sup>34</sup> South Station Capacity Analysis Report, Page 7
- <sup>35</sup> South Station Capacity Analysis Report, Page 10
- <sup>36</sup> “Ridership” [www.mbta.com/insidethet/taag\\_ridership.asp](http://www.mbta.com/insidethet/taag_ridership.asp), accessed 5.11.2005
- <sup>37</sup> Unless otherwise noted figures come from Vanasse Hangen Brustlin, Inc./Frederic R. Harris, Inc. Memo to MBTA Planning Department dated January 3, 2003, Attachment 2.
- <sup>38</sup> Figure is the 2025 “constrained parking” projection from CTPS, *Commuter Rail and Rapid Transit Parking and Ridership Demand Forecasts*, January 2002.
- <sup>39</sup> Projected 2025 ridership for Fairmount line was not part of the VHB/Harris study. The number above is the 2025 “constrained parking” projection from CTPS *Commuter Rail and Rapid Transit Parking and Ridership Demand Forecasts*, January 2002.
- <sup>40</sup> Figure is 2025 “constrained parking” projection from CTPS *Commuter Rail and Rapid Transit Parking and Ridership Demand Forecasts*, January 2002.
- <sup>41</sup> Projected 2025 ridership for Fall River/New Bedford line was not part of the VHB/Harris study. The figure shown comes from CTPS to MBTA Planning Department, December 24, 2002.
- <sup>42</sup> North/South Rail Link MIS/DEIR, Page ES-13
- <sup>43</sup> North/South Rail Link MIS/DEIS, Page 2-43
- <sup>44</sup> Program for Mass Transportation, Page 5C-111
- <sup>45</sup> Program for Mass Transportation, Page 5C-111
- <sup>46</sup> Program for Mass Transportation, Page 5C-111
- <sup>47</sup> North/South Rail Link MIS/DEIR Page ES-19
- <sup>48</sup> All data pulled from chart within North/South Rail Link MIS/DEIR, Page ES-33
- <sup>49</sup> North/South Rail Link MIS/DEIR, Page 4-20
- <sup>50</sup> North/South Rail Link MIS/DEIR, Appendix D, page 1
- <sup>51</sup> North/South Rail Link MIS/DEIR, Appendix D, page 7
- <sup>52</sup> North/South Rail Link MIS/DEIR, Page 4-48
- <sup>53</sup> North/South Rail Link MIS/DEIR, Page ES-20
- <sup>54</sup> Chart “Volume and Capacity Information for Future Rapid Transit System” from North/South Rail Link MIS/DEIR, Appendix D, Part 2, *Ridership Forecasting and Methodology Report*. Page 3-27
- <sup>55</sup> North/South Rail Link MIS/DEIR, Page 4-47
- <sup>56</sup> North/South Rail Link MIS/DEIR, Page ES-18
- <sup>57</sup> North/South Rail Link MIS/DEIR, Page ES-31
- <sup>58</sup> North/South Rail Link MIS/DEIR, Page 6-60
- <sup>59</sup> Chart from North/South Rail Link MIS/DEIR, Page 6-55

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