

Appendix 4.4-A

CTPS South Coast Rail Environmental Justice Study

MEMORANDUM**To: South Coast Rail Project Interested Parties****September 4, 2009****From: Ben Dowling, Esq.****Re: South Coast Rail Environmental Justice Study****SUMMARY**

This memo summarizes the results of the environmental justice analysis—an examination of the geographic distribution of benefits and burdens—conducted for the South Coast Rail project. The analysis was conducted using the regional travel demand model and readily available geographic and spatial information. The analysis examines how South Coast Rail proposed build alternatives affect the travel accessibility and mobility of environmental justice communities in Taunton, Fall River and New Bedford. The analysis was based on the future year (2030) travel forecasting done in connection with the South Coast Rail project. This analysis did not examine the effects of improved interconnectivity between the South Coast Rail study area and Providence, although there may be some environmental justice benefits associated with such improved connectivity.

Definition of Environmental Justice Communities

The State Executive Office of Environmental Affairs' (EOEA) definition of environmental justice populations was used in this study. The EOEA considers a population to be an environmental justice population if a Census block group's median annual household income is at or below 65 percent of the statewide median income for Massachusetts, or if twenty-five percent of its residents are members of minorities; or if twenty-five percent of its residents are foreign born, or if twenty-five percent of its residents lack English proficiency.

The regional travel demand forecasting model's transportation analysis zones (TAZ) in the South Coast area, the geographic base for the environmental justice analysis, do not split block groups. In the Boston area there are some misalignments between TAZs and Census block groups, however this did not significantly affect the environmental justice analysis results. For a detailed discussion of the regional travel demand forecasting model please refer to the August 2009 CTPS memorandum titled "Methodology and Assumptions of Central Transportation Planning Staff Regional Travel Demand Modeling."

Modeling Assumptions

It is important to note that the results presented in this memo—like the results of alternatives analyses in many different contexts—are relative. In the case of this environmental justice analysis, the results are relative to a future year no-build/Transportation Systems Management scenario in which the headways of the private bus lines that currently service the South Coast region were improved over their current year counterparts. In transportation planning, it is standard practice to assume that in the absence of future build project implementation, existing transit services, in a future year no-build, should be incrementally improved, to meet the increased demand due to "background" population growth. Such a future year transit network is called a Transportation System Management (TSM) scenario. In this analysis, the private bus headway improvements were included in the future year no-build/TSM because, in the absence of a build alternative implementation, such improvements are expected in order to accommodate regional population growth and concomitant increases in transit demand, over the project study horizon.

In this environmental justice analysis, if a no-build/TSM scenario was not used as the future year no-build, and a true no-build was used in its place, the environmental justice results would tend to improve because, again, the analysis results are relative to a no-build. Using a true no-build instead of a no-build/TSM would create more distance between the build alternatives and the scenario to which they are compared.

It is also important to note that environmental justice analysis results are, of course, influenced by specific aspects of the build alternatives. For a complete description of the build alternatives please refer to the Draft Environmental Impact Report.

ANALYSIS

Accessibility to Jobs

This statistic measures the degree to which a build alternative provides greater access to employment as compared to the no-build/TSM alternative. It measures the change, for environmental and non-environmental justice zones, in the number of basic, retail and service jobs that are within ninety minutes transit time of environmental justice and non-environmental justice zones in Taunton, New Bedford and Fall River. For this analysis the number of jobs available remain constant as between the no-build/TSM and the build alternatives. The analysis accounts for in-vehicle as well as out of vehicle transit travel times. The transit access percentages in Table 1 (below) represent the change between the no-build/TSM and listed build alternatives.

Table 1: Accessibility to Basic, Retail and Service Jobs—Change From No-Build/TSM to Build

	TAUNTON BASIC EMPLOYMENT		TAUNTON RETAIL EMPLOYMENT		TAUNTON SERVICE EMPLOYMENT	
	TRANSIT ACCESS		TRANSIT ACCESS		TRANSIT ACCESS	
	EJ	NonEJ	EJ	NonEJ	EJ	NonEJ
Stoughton Local Electric	61%	41%	69%	48%	223%	84%
Stoughton Local Diesel	46%	35%	51%	39%	135%	63%
Attleboro Local Electric	70%	37%	80%	43%	280%	82%
Attleboro Local Diesel	53%	32%	59%	35%	169%	61%
Stoughton Local Electric--Whittenton	39%	26%	39%	25%	122%	27%
Stoughton Local Diesel--Whittenton	29%	22%	29%	20%	74%	20%
Rapid Bus	-3%	0%	-2%	0%	0%	0%

	FALL RIVER BASIC EMPLOYMENT		FALL RIVER RETAIL EMPLOYMENT		FALL RIVER SERVICE EMPLOYMENT	
	TRANSIT ACCESS		TRANSIT ACCESS		TRANSIT ACCESS	
	EJ	NonEJ	EJ	NonEJ	EJ	NonEJ
Stoughton Local Electric	147%	84%	137%	82%	278%	117%
Stoughton Local Diesel	125%	75%	112%	75%	216%	108%
Attleboro Local Electric	127%	69%	116%	70%	257%	108%
Attleboro Local Diesel	108%	62%	94%	63%	200%	99%
Stoughton Local Electric--Whittenton	117%	69%	103%	68%	199%	104%
Stoughton Local Diesel--Whittenton	99%	62%	84%	62%	155%	96%
Rapid Bus	14%	-1%	27%	7%	100%	50%

	NEW BEDFORD BASIC EMPLOYMENT		NEW BEDFORD RETAIL EMPLOYMENT		NEW BEDFORD SERVICE EMPLOYMENT	
	TRANSIT ACCESS		TRANSIT ACCESS		TRANSIT ACCESS	
	EJ	NonEJ	EJ	NonEJ	EJ	NonEJ
Stoughton Local Electric	11%	4%	13%	6%	39%	5%
Stoughton Local Diesel	1%	0%	0%	3%	11%	1%
Attleboro Local Electric	9%	3%	8%	1%	34%	2%
Attleboro Local Diesel	1%	0%	0%	0%	9%	0%
Stoughton Local Electric--Whittenton	-2%	0%	-4%	1%	4%	-1%
Stoughton Local Diesel--Whittenton	-3%	0%	-5%	0%	1%	-1%
Rapid Bus	0%	-3%	2%	-1%	7%	3%

As TABLE 1 (above) shows, the build alternatives generally provide greater accessibility to jobs than the no-build/TSM alternative. Also, as TABLE 1 shows, environmental justice zones in these three communities generally experience greater accessibility increases as compared with non-environmental justice zones.

The small decreases in employment accessibility in New Bedford are likely due to the differences between the build alternatives and the no-build/TSM alternative in terms of connectivity with the Southeastern Regional Transit Authority (SRTA) local bus network. Unlike existing and proposed improved private bus service to New Bedford and Fall River, build alternative station locations do not terminate at or directly provide for transfers with the SRTA central bus terminals in New Bedford and Fall River. In the case of New Bedford, this factor, in conjunction with the location of TAZs containing EJ populations, results in some slight accessibility decreases.

Accessibility to Universities and Colleges

This statistic in Table 2 (below) measures the degree to which a given build alternative provides greater access to colleges and hospitals as compared to the no-build/TSM alternative. Transit access measures the change in the number of college enrollment slots and hospital beds between the no-build/TSM and the build alternatives within ninety minutes of environmental and non-environmental justice zones in Fall River, New Bedford, and Taunton. For this analysis the number of enrollment slots and hospital beds available remain constant as between the no-build/TSM and the build alternatives. The analysis accounts for in-vehicle as well as out-of-vehicle transit travel times.

Table 2: Accessibility to Colleges, Universities and Hospitals—Change From No-Build/TSM to Build

TAUNTON COLLEGE ENROLLMENT			TAUNTON HOSPITAL BEDS	
	<u>TRANSIT ACCESS</u>		<u>TRANSIT ACCESS</u>	
	EJ	NonEJ	EJ	NonEJ
Stoughton Local Electric	156%	80%	132%	83%
Stoughton Local Diesel	84%	55%	65%	53%
Attleboro Local Electric	248%	92%	178%	77%
Attleboro Local Diesel	134%	62%	88%	49%
Stoughton Local Electric--Whittenton	104%	33%	58%	32%
Stoughton Local Diesel--Whittenton	56%	22%	28%	20%
Rapid Bus	-1%	0%	-2%	-1%

FALL RIVER COLLEGE ENROLLMENT			FALL RIVER HOSPITAL BEDS	
	<u>TRANSIT ACCESS</u>		<u>TRANSIT ACCESS</u>	
	EJ	NonEJ	EJ	NonEJ
Stoughton Local Electric	70%	82%	414%	159%
Stoughton Local Diesel	56%	67%	340%	139%
Attleboro Local Electric	69%	72%	402%	152%
Attleboro Local Diesel	55%	59%	320%	132%
Stoughton Local Electric--Whittenton	53%	62%	338%	139%
Stoughton Local Diesel--Whittenton	42%	50%	277%	120%
Rapid Bus	15%	3%	167%	35%

NEW BEDFORD COLLEGE ENROLLMENT			NEW BEDFORD HOSPITAL BEDS	
	<u>TRANSIT ACCESS</u>		<u>TRANSIT ACCESS</u>	
	EJ	NonEJ	EJ	NonEJ
Stoughton Local Electric	8%	11%	19%	6%
Stoughton Local Diesel	-2%	1%	1%	0%
Attleboro Local Electric	6%	8%	8%	3%
Attleboro Local Diesel	-1%	1%	1%	0%
Stoughton Local Electric--Whittenton	0%	0%	0%	1%
Stoughton Local Diesel--Whittenton	0%	0%	0%	0%
Rapid Bus	2%	0%	6%	4%

A pattern similar to the employment accessibility results emerges with college enrollment and hospital beds. Transit accessibility to colleges and hospitals for these three cities generally increases from the no-build/TSM to build alternatives. Decreases in college enrollment associated with the rapid bus build alternative are due to run time differences with the no-build/TSM. Once again, the slight decreases in college enrollment accessibility in New Bedford are likely due to the differences in local bus service connectivity provided with the no-build/TSM.

Mobility

This statistic is simply un-weighted in-vehicle travel time from the three South Coast communities to a selected TAZ in Boston (the TAZ in which South Station is located). A positive value represents a travel time savings as compared to the no-build/TSM. The statistic is further broken out between environmental justice zones and non-environmental justice zones.

Table 3: Mobility: In-Vehicle Travel Times to Boston—Change From No-Build/TSM to Build

TAUNTON IN-VEHICLE TRAVEL TIME TO BOSTON		
	EJ	NonEJ
Stoughton Local Electric	81%	62%
Stoughton Local Diesel	59%	44%
Attleboro Local Electric	98%	69%
Attleboro Local Diesel	76%	50%
Stoughton Local Electric--Whittenton	63%	43%
Stoughton Local Diesel--Whittenton	44%	30%
Rapid Bus	14%	11%

FALL RIVER IN-VEHICLE TRAVEL TIME TO BOSTON		
	EJ	NonEJ
Stoughton Local Electric	16%	20%
Stoughton Local Diesel	10%	13%
Attleboro Local Electric	17%	21%
Attleboro Local Diesel	11%	14%
Stoughton Local Electric--Whittenton	10%	13%
Stoughton Local Diesel--Whittenton	6%	9%
Rapid Bus	0%	2%

NEW BEDFORD IN-VEHICLE TRAVEL TIME TO BOSTON		
	EJ	NonEJ
Stoughton Local Electric	43%	51%
Stoughton Local Diesel	27%	34%
Attleboro Local Electric	45%	53%
Attleboro Local Diesel	31%	42%
Stoughton Local Electric--Whittenton	26%	32%
Stoughton Local Diesel--Whittenton	20%	22%
Rapid Bus	24%	28%

Table 3 (above) shows that each build alternative, with one exception, offers travel time savings over the no-build/TSM alternative. In some instances, non-environmental justice communities experience slightly greater travel time savings than environmental justice communities. This results from the relative locations of the build stations/stops as compared to the environmental justice and non-environmental justice communities.

South Coast Rail Environmental Justice Zones

