

## **Appendix 5.2-A**

**Economic Development Research Group, Inc.  
Net Change in Households in the South Coast  
Due to Development & Operation of the South  
Coast Rail**



**Proposal/Report for:**

**Massachusetts Executive Office of Transportation**

# **Net Change in Households in the South Coast Due to Development & Operation of the South Coast Rail**

*Prepared for:*



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**August, 7, 2009**

## **Induced Households**

**Purpose.** Estimate the net change in households that are likely to move or stay within the 31 city and town South Coast Rail region (SCR) by 2030 due to new jobs generated by developing and operating the South Coast Rail. This will be done with what is commonly referred to as a “Sketch Planning” approach.

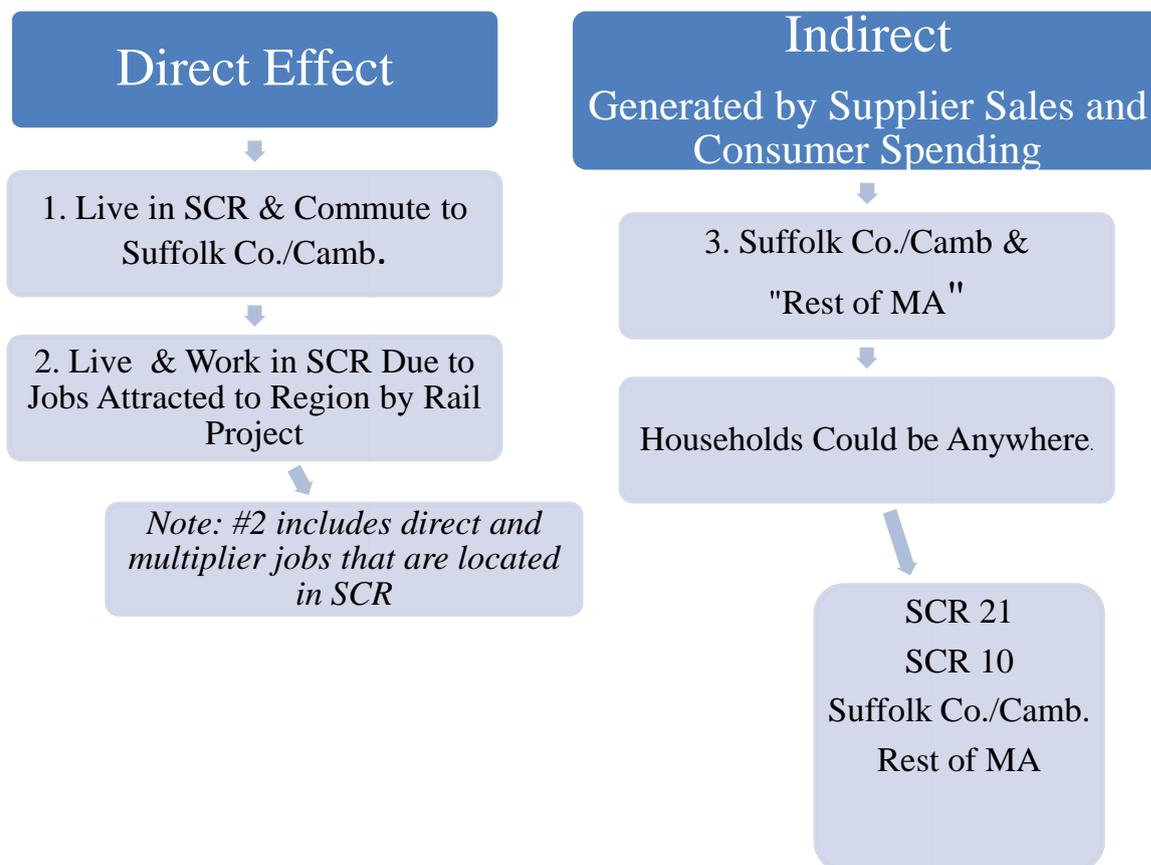
**The Bottom Line.** Operation of the South Coast Rail project as scheduled is expected to induce 1,100 – 1,800 more households within the SCR. The average for all alternatives analyzed is 1,500.

### **Alternatives**

- Stoughton Electric
- Stoughton Diesel
- Attleboro Electric
- Rapid Bus
- Average – Based on the average inputs , not the average results

## Analysis Segmentation Based on New Jobs in 2030 Generated by Operation of SCR

- Analysis includes three methods.



## Method 1

### Direct Jobs in Suffolk County and Cambridge

- New direct jobs in Suffolk County & Cambridge are by definition created by the rail.
- At this level of analysis it is impossible to determine exactly how many of the new jobs will be taken by existing SCR regional residents and how many will be by taken by people who move to the SCR region.
- Actual new households in the SCR will depend on the mix of new jobs in Suffolk County/Cambridge and the labor force match in SCR 21 and SCR10.
- This analysis assumes 50% of new direct jobs created by the presence of the SCR.

Direct Jobs In Suffolk County/ Cambridge		50% are assumed to result in new households in SCR  These new households are assigned to SCR 21 and SCR 10 according to the ratio of new transit trips forecast by CTPS <i>from</i> these two subregions <i>to</i> Suffolk County/Cambridge.  The split is roughly two-thirds from SCR 21 and one-third from SCR 10 per alternative.
SLE	460	
SLD	435	
BRT	269	
ALE	472	
Average	409	

## Method 2

### Attraction of New Households in SCR 21 and SCR 10 Based on Jobs Generated by the SCR in Each Region (p. 1 of 2)

This approach is based on comparing the types of jobs expected to be generated in the South Coast due to SCR with the existing mix of jobs in the region.

1. TREDIS output included expected employment by 2030 in 55 economic sectors for SC 21 and SC 10 generated by SCR operations.
2. Per subregion, each sector was divided by total 2030 employment. The resulting percentages show the concentration of each industry among the new jobs that are expected to be generated by the SCR in SCR 21 and SCR 10.

$$\frac{\text{New Employment Industry}_i}{\text{Total New Employment}} = \% \text{ Concentration for Industry}$$

3. This same operation was performed for current (2006) SCR 21 and SCR 10 employment.
4. The percents of new jobs due to the SCR (#2) were divided by the current concentrations (#3). The result is commonly referred to as a location quotient (or LQ).

$$\frac{\% \text{ Concentration for Industry New Jobs}}{\% \text{ Concentration for Industry Existing Jobs}} = \text{SCR 10 and SCR 21 LQs}$$

Jobs in SCR 21 and SCR 10 (p. 2 of 2)

5. An LQ of 1.0 indicates that the concentration of an industry in the South Coast due to the SCR is the same as its current strength. A higher LQ indicates that this is a relatively new industry (or strengthens a weak industry locally). We assume these industries are likely to attract new households. Interpretation is as follows.

<b>Industry specific household formation in SCR 21 and SCR 10</b>			
<b>LQ</b>		<b>Discussion</b>	<b>Percent of New Jobs that Result in New Households</b>
1	Below 0.8	Current SCR labor force in terms of skills, education and numbers are generally adequate for the new jobs that will be generated in these industries. New household formation will be minimal.	10%
2	Above 1.2	These industries have the potential to transform the SCR economies, and will require education and skills. Therefore significant new household formation should be expected for new workers in these industries.	80%
3	0.8 – 1.2	These industries will be added to the SCR 21 and 10 economies at about the same levels as the current economies of each subregion. In terms of housing formation, a midpoint is assumed between high growth industries (#2) and minimal growth industries (#1)	45%

Method 3 (1 of 2)

Indirect and Induced Jobs in Suffolk County/Cambridge

The potential for new households in SCR was based on 2000 Journey to Work of the US Census (JTW), which shows that the commuting base for Suffolk County and Cambridge includes 1.6% representation from SCR10 and 4.0% from SCR 10.

Total workers in Suffolk County/Cambridge	622,873	
Suffolk/Cambridge workers who live in Suffolk-Cambridge	262,127	
Suffolk/Cambridge workers who commute from outside the region	438,019	
SCR21 commuters to Suffolk County-Cambridge	7,144	1.6%
SCR10 commuters to Suffolk County-Cambridge	17,579	4.0%
<b>Total South Coast</b>	<b>24,723</b>	<b>5.6%</b>

A. JTW Ratios for SCR

**B.** To this percentage we added a “bump” based on the increased 60 minute employee-employer access calculated by CTPS per alternative compared to the base case.

- For SCR 21: Factors of 2.14 -2.25 above JTW
- For SCR 10: Factors of 1.10 – 1.04 above JTW

**C. Multiplying the JTW commuting percents (A) by the increase in access over a 60 minute transit ride (B)** leads to the estimate that new households will be established in South Coast at:

- SCR 21 – 3.5% to 3.7% of indirect/induced jobs located in Suffolk County/ Cambridge
- SCR 10 – 4.1% - 4.2% of indirect/induced jobs located in Suffolk County/ Cambridge

## Method 3 (2 of 2)

### Indirect and Induced Jobs in Rest of Massachusetts

The potential for new households in SCR was based on 2000 Journey to Work of the US Census (JTW), which shows that the commuting base for the Massachusetts excluding the SCR and Suffolk County and Cambridge includes 3.6% representation from the South Coast. This analysis assumes that the establishment of the SCR will not influence new jobs created due to supplier relationships or consumer spending beyond existing patterns. Therefore a flat 3.6% was assumed as the rate of households induced in SCR from the indirect/induced jobs anticipated in the “Rest of Massachusetts.”

## Estimated Total New Households in SCR Region Due to Rail Project

	<b>SLE</b>	<b>SLD</b>	<b>ALE</b>	<b>RB</b>	<b>Average All Alternatives</b>
<b>SCR21</b>					
From Direct New Jobs in Suffolk County/Cambridge	150	140	150	100	140
From Indirect & Induced New Jobs in Suffolk County/Cambridge	10	10	10	10	10
From New Jobs in SCR Region	1,120	1,020	1,160	830	990
From New Jobs in Rest of MA	20	20	20	10	20
<b><i>Subtotal</i></b>	<b>1,300</b>	<b>1,190</b>	<b>1,340</b>	<b>950</b>	<b><i>1,150</i></b>
<b>SCR10</b>					
From Direct New Jobs in Suffolk County/Cambridge	80	70	80	40	70
From Indirect & Induced New Jobs in Suffolk County/Cambridge	10	10	10	10	10
From New Jobs in SCR Region	320	310	340	130	260
From New Jobs in Rest of MA	-	-	-	-	-
<b><i>Subtotal</i></b>	<b><i>420</i></b>	<b><i>400</i></b>	<b><i>440</i></b>	<b><i>170</i></b>	<b><i>350</i></b>
<b>Total</b>	<b>1,720</b>	<b>1,590</b>	<b>1,780</b>	<b>1,130</b>	<b>1,500</b>

Numbers are rounded to the nearest 10.

Columns may not add due to rounding.

Given the “sketch plan” nature of this analysis, the results should be assessed on the basis of orders of magnitude. SLE and ALE alternatives should be considered as equivalent, generating slightly more net households than SLD, which in turn generates more households than RB.