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Real Estate Economics

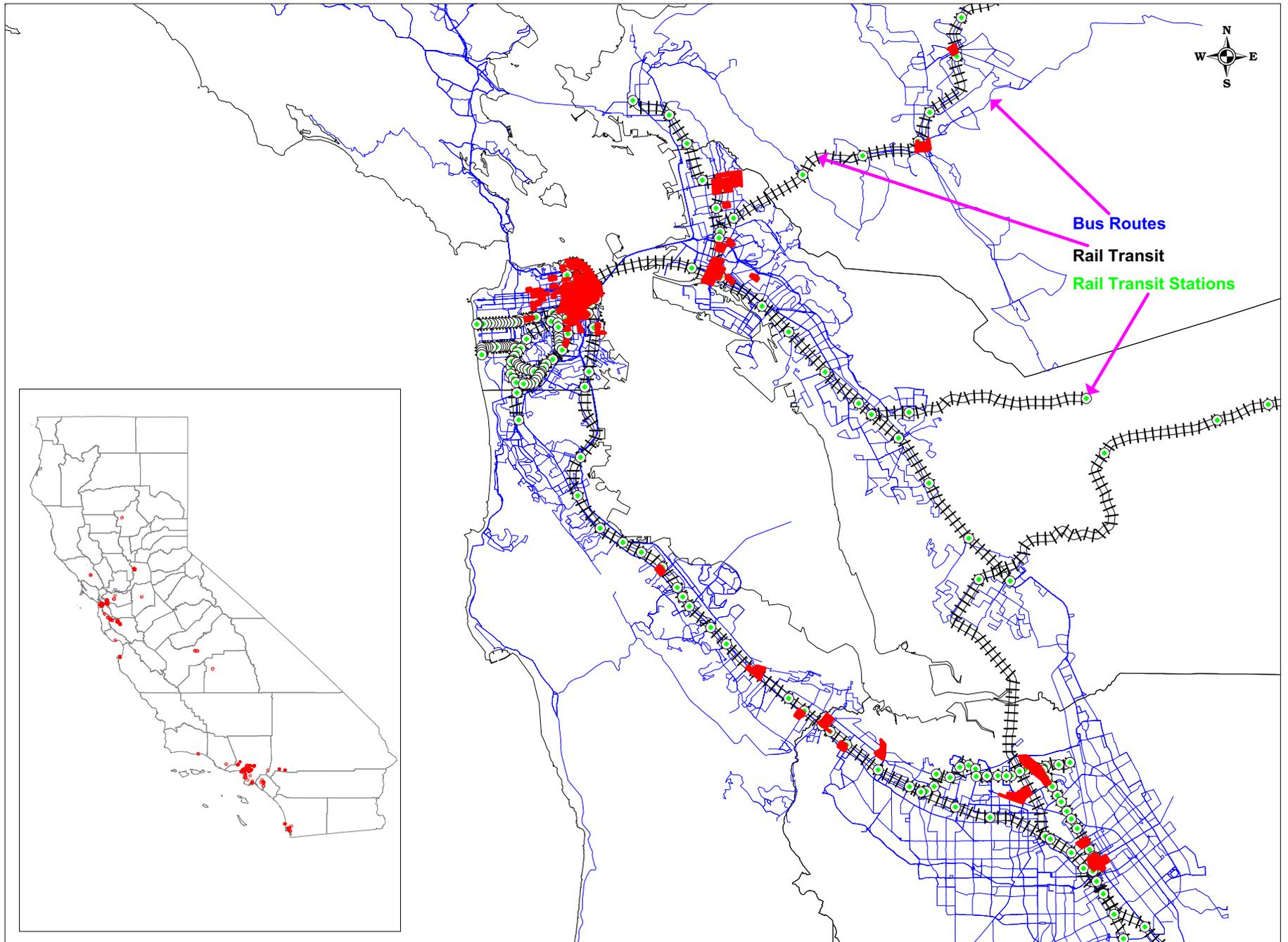
Regional Economics

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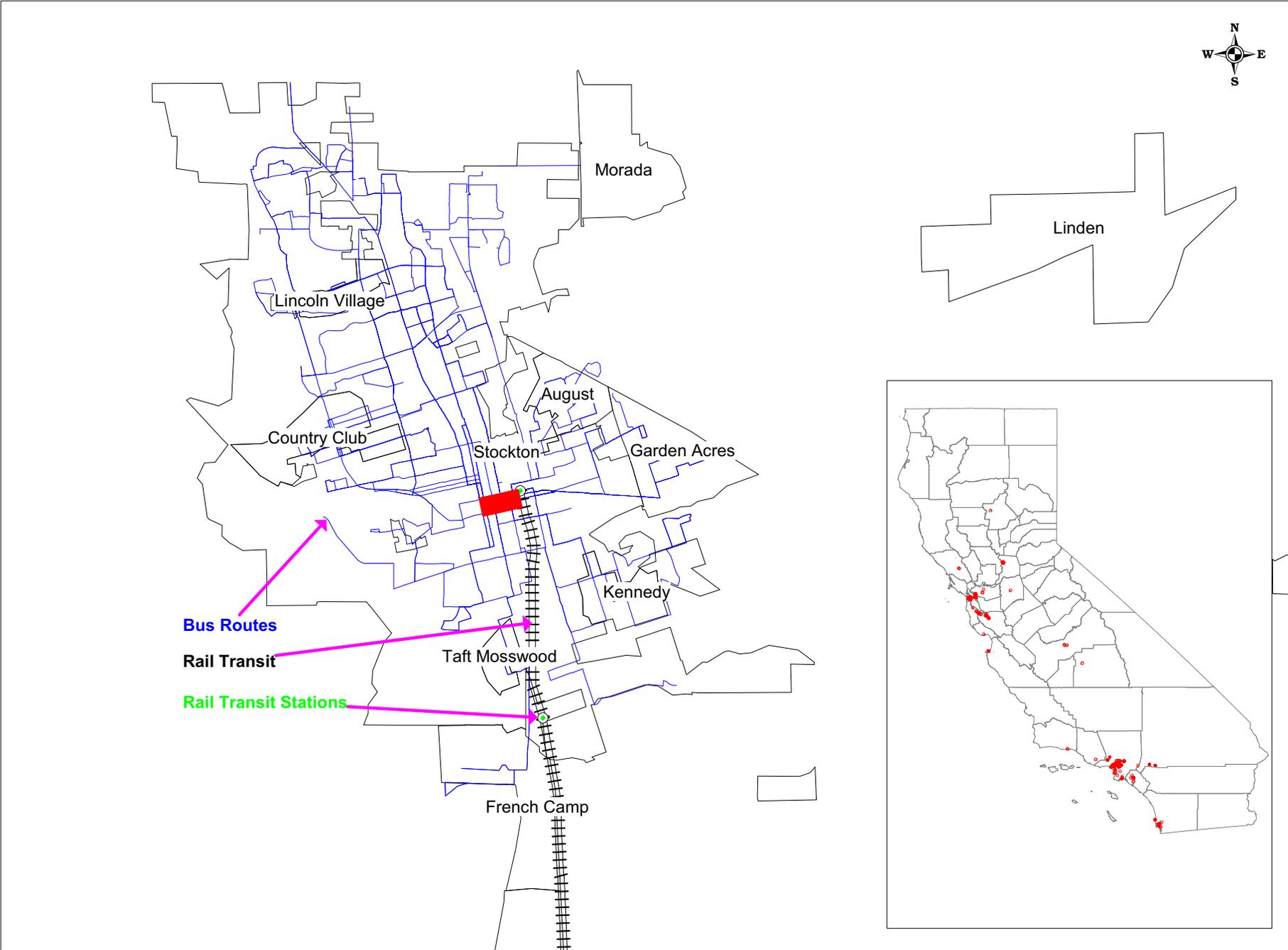
APPENDIX FIGURES E1 THROUGH X5

Appendix Figure E-1: Preliminary Selection* of High Employment-Density Block Groups - San Francisco Bay Area



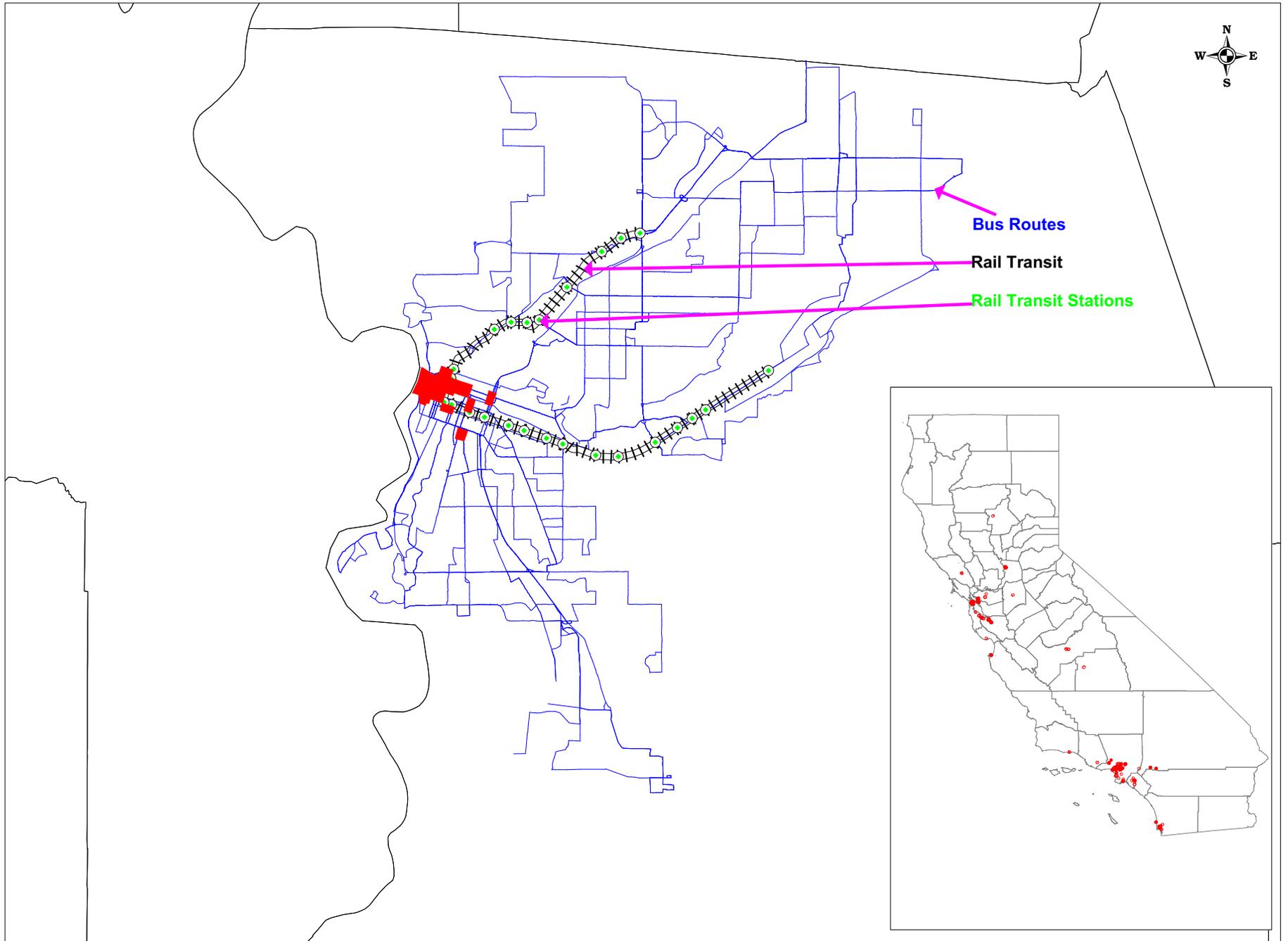
* Block Groups Shown in Red had Year 2000 workers \geq 35 per gross land acre.

Appendix Figure E-2: Preliminary Selection* of High Employment-Density Block Groups - Stockton Area



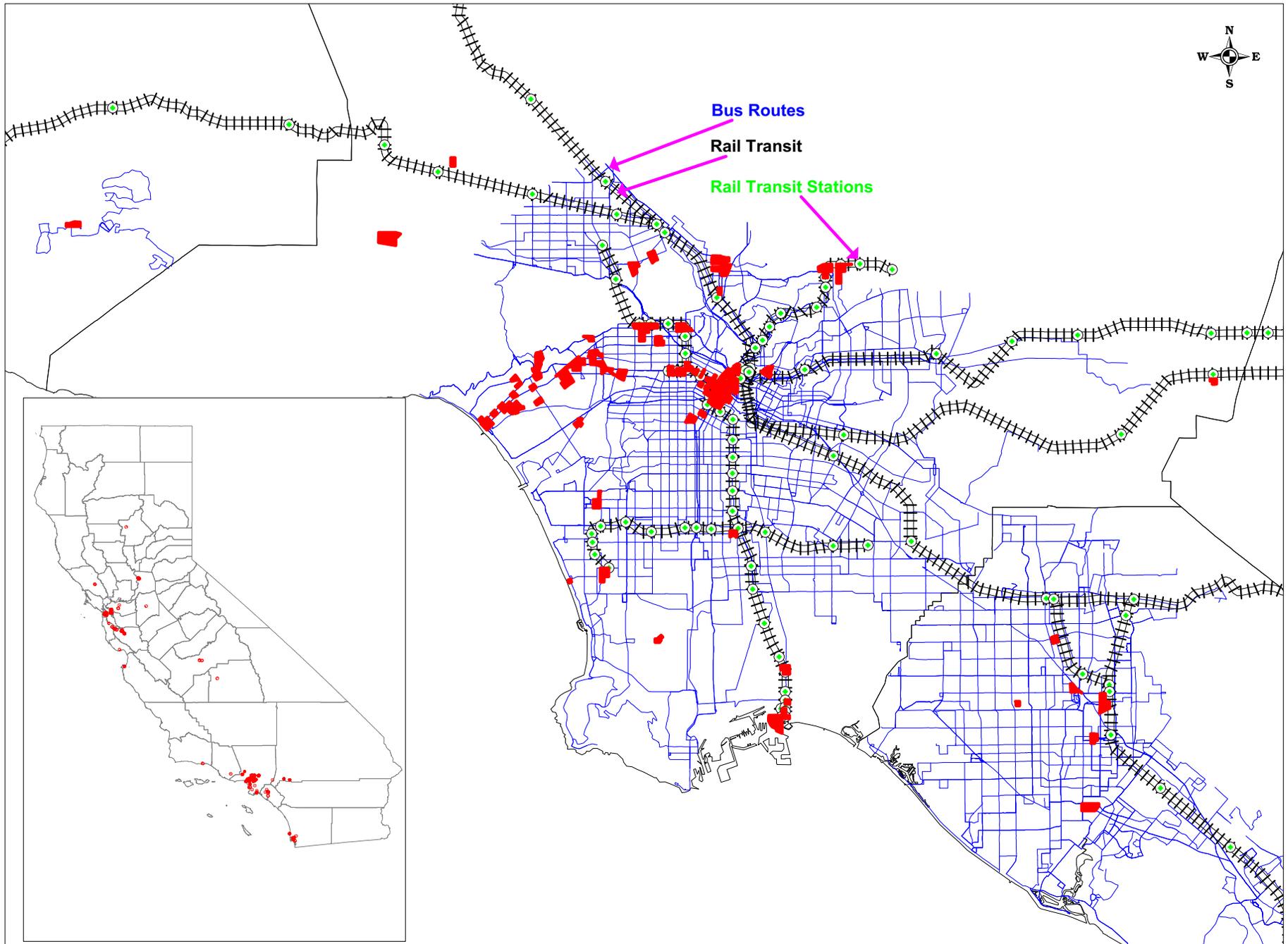
* Block Groups Shown in Red had Year 2000 workers \geq 35 per gross land acre.

Appendix Figure E-3: Preliminary Selection* of High Employment-Density Block Groups - Sacramento



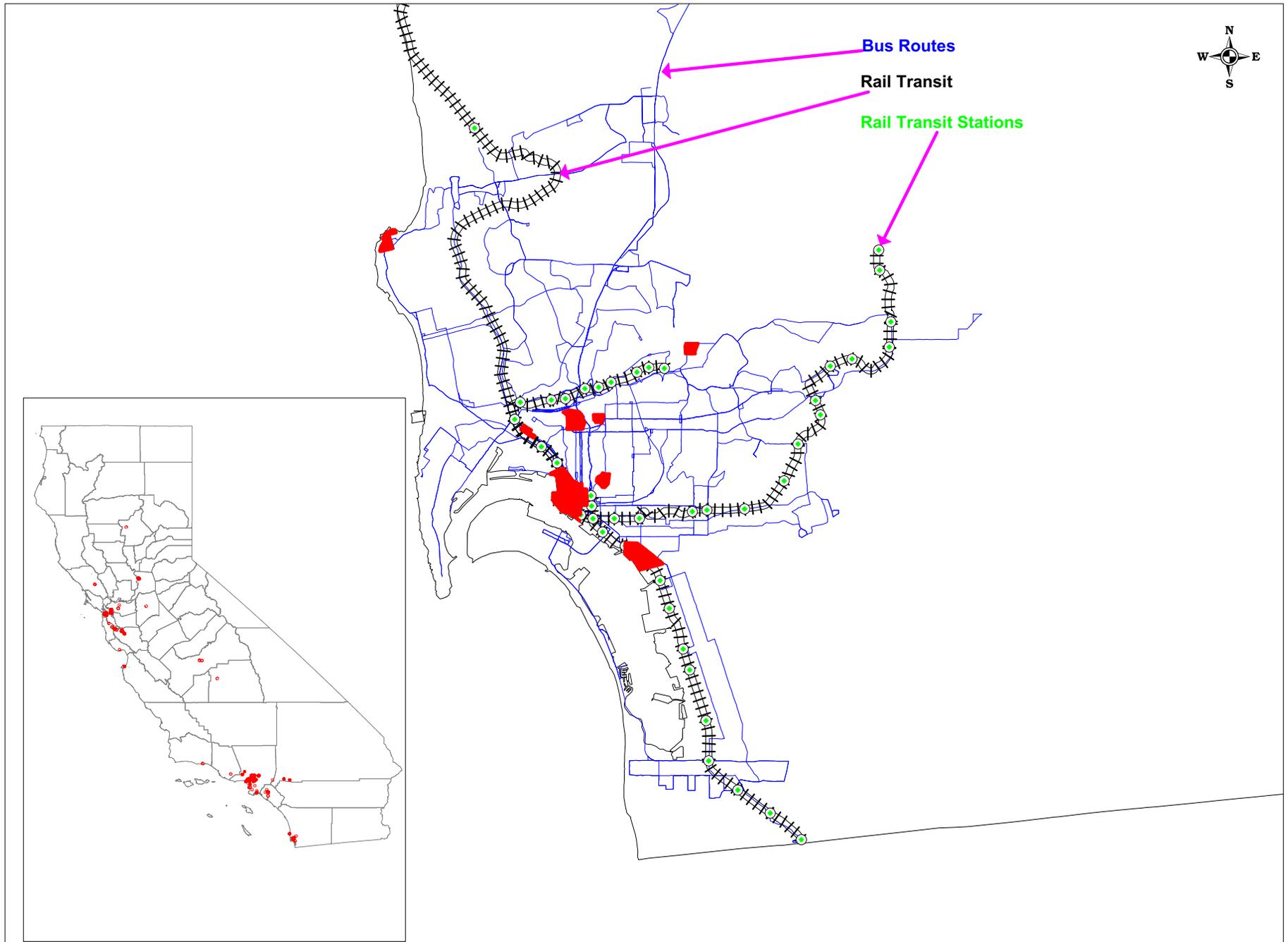
* Block Groups Shown in Red had Year 2000 workers \geq 35 per gross land acre.

Appendix Figure E-4: Preliminary Selection* of High Employment-Density Block Groups - Los Angeles Area



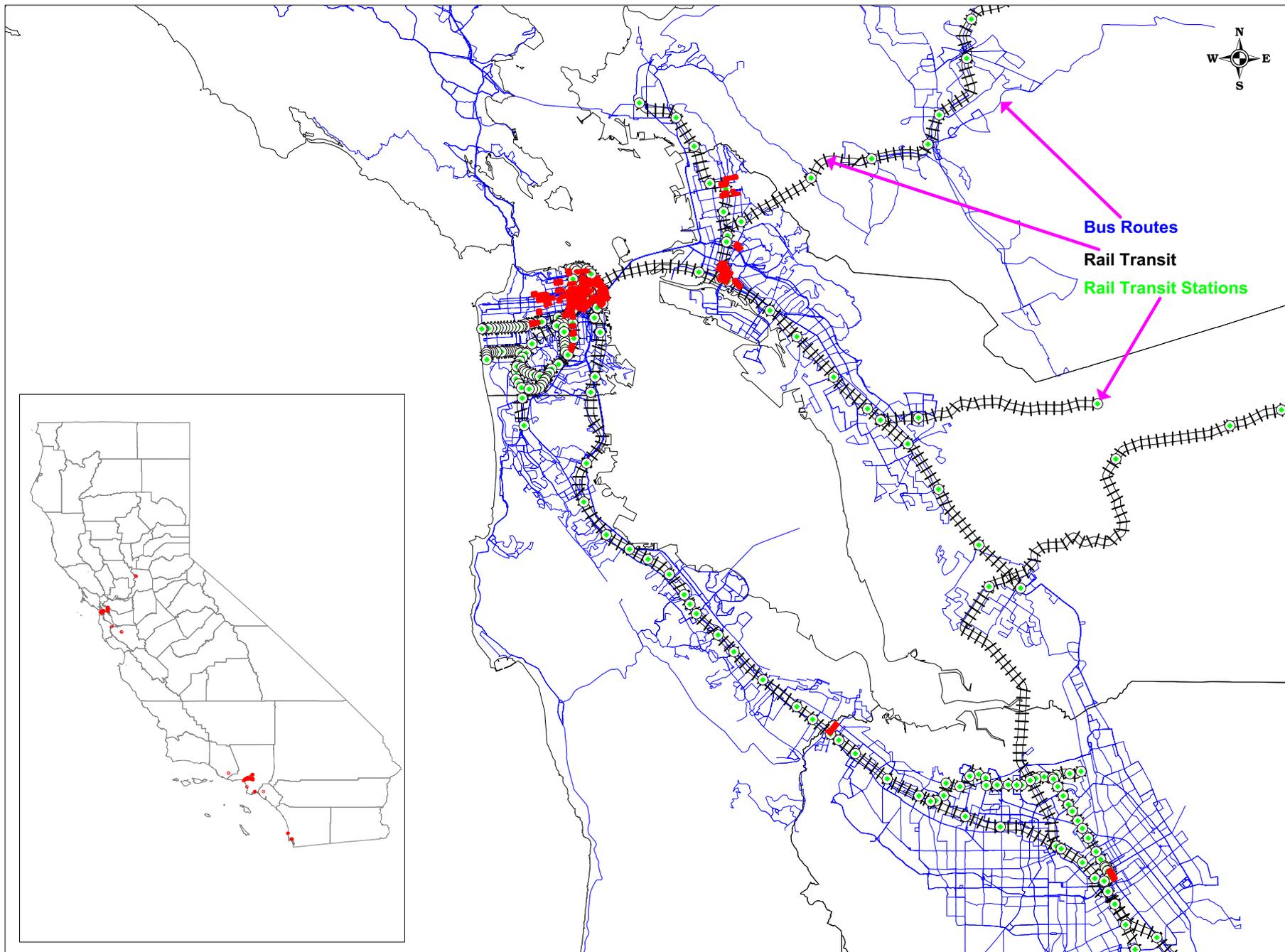
* Block Groups Shown in Red had Year 2000 workers \geq 35 per gross land acre.

Appendix Figure E-5: Preliminary Selection* of High Employment-Density Block Groups - San Diego



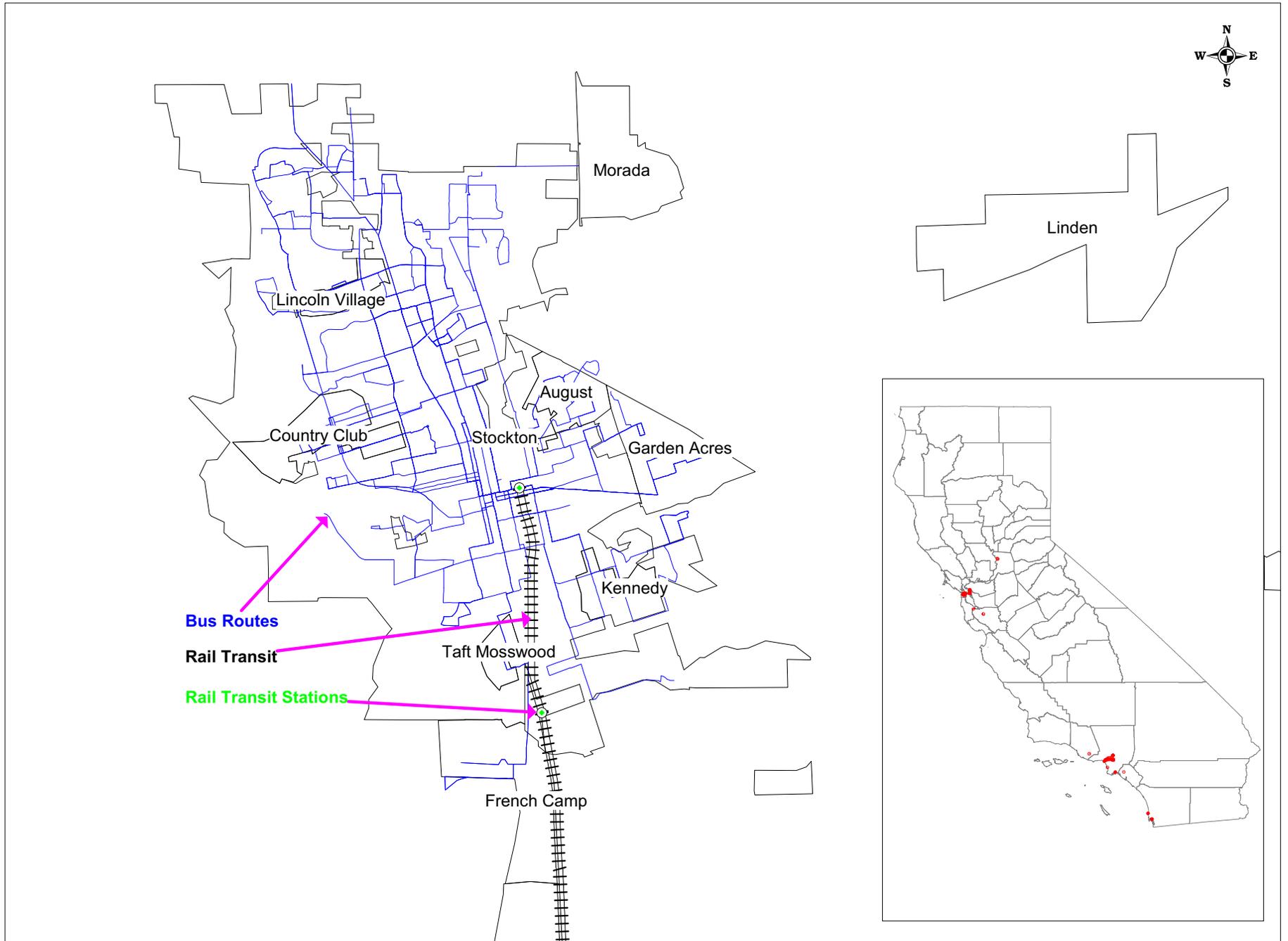
* Block Groups Shown in Red had Year 2000 workers \geq 35 per gross land acre.

Appendix Figure X-1: Preliminary Selection* of High Mixed-Density Block Groups - San Francisco Bay Area



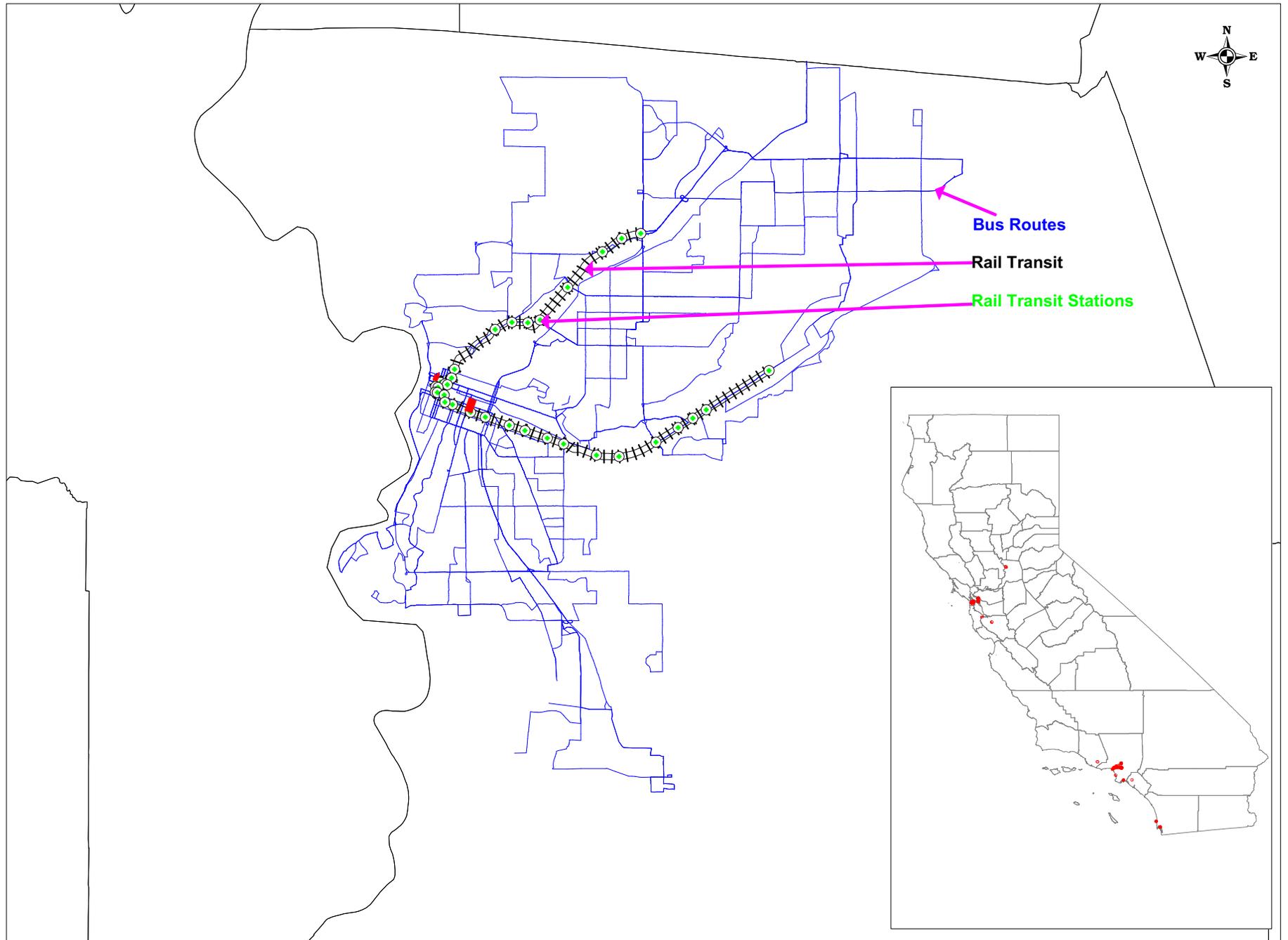
* Block Groups Shown in Red had Year 2000 DU \geq 10 per gross land acre & workers \geq 35 per gross land acre.

Appendix Figure X-2: Preliminary Selection* of High Mixed-Density Block Groups - Stockton Area



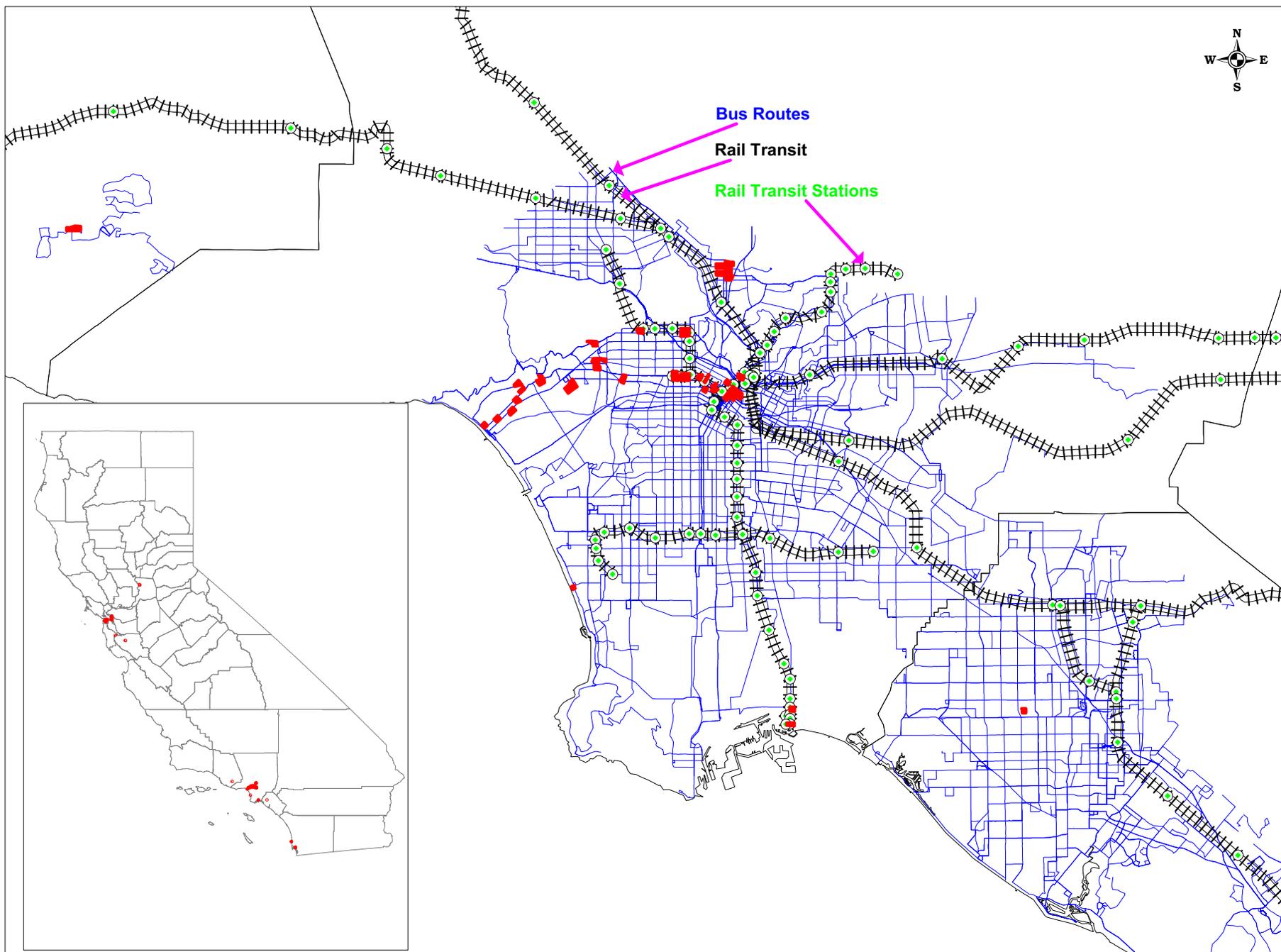
* Block Groups Shown in Red had Year 2000 DU \geq 10 per gross land acre & workers \geq 35 per gross land acre.

Appendix Figure X-3: Preliminary Selection* of High Mixed-Density Block Groups - Sacramento



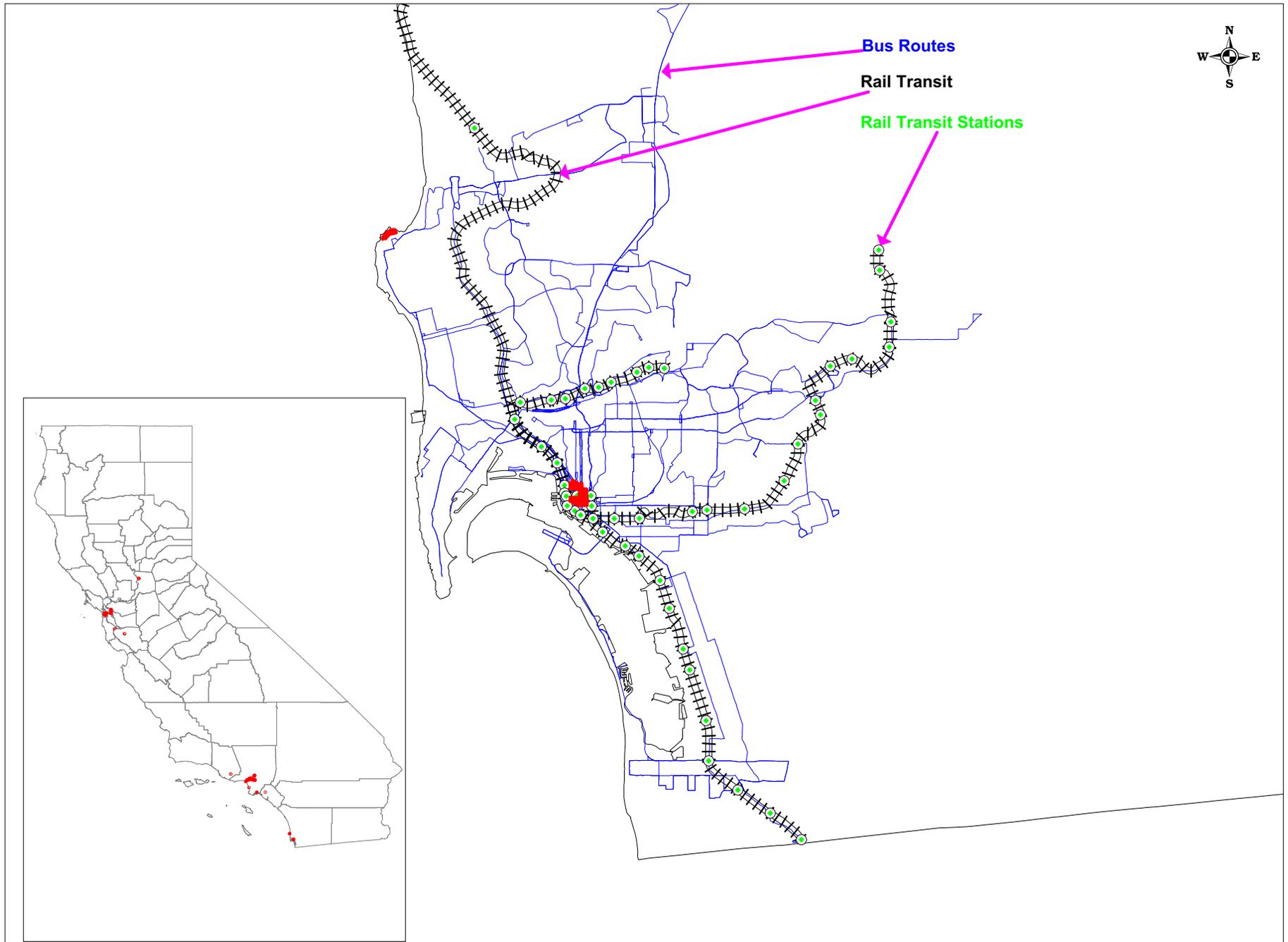
* Block Groups Shown in Red had Year 2000 DU \geq 10 per gross land acre & workers \geq 35 per gross land acre.

Appendix Figure X-4: Preliminary Selection* of High Mixed-Density Block Groups - Los Angeles Area



*** Block Groups Shown in Red had Year 2000 DU \geq 10 per gross land acre & workers \geq 35 per gross land acre.**

Appendix Figure X-5: Preliminary Selection* of High Mixed-Density Block Groups - San Diego



* Block Groups Shown in Red had Year 2000 DU \geq 10 per gross land acre & workers \geq 35 per gross land acre.



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APPENDIX A

LITERATURE REVIEW ON SITE SELECTION CRITERIA

LITERATURE REVIEW ON SITE SELECTION CRITERIA

This Appendix offers a brief summary of the literature regarding several factors that may influence travel demand within urban infill sites. This information was offered to the Team as part of our start-up effort to measure trip generation for specific land uses located in such areas and to provide guidelines for evaluating travel demand and related travel demand management measures. This Appendix introduced and described several candidate criteria at a concept level for the consideration of the Team. The Team amended, edited and refined the list of potential criteria as part of the preparation of **Working Paper #1**.

The literature describing recent studies of trip generation/trip reduction factors and VMT/VT elasticity measures appropriate to urban infill land uses frequently emphasize the importance of characterizing and quantifying sites' external settings (contexts) as well as defining their intrinsic (onsite) attributes. There is much discussion of the development diversity and residential and employment densities and thresholds that distinguish 'urban' and 'infill' contexts from suburban development. There are also many references to transit parking proximity (distance), accessibility, and availability factors that appear to significantly impact trip generation rates for urban and infill uses.

Such contextual measures are being applied in current practice as elasticity factors, to provide reproducible and quantifiable methods for adjusting established ITE trip generation rates to urban high-density development sites, mixed-use sites, and transit- and pedestrian-oriented- development sites. For the new Infill/Trip Generation Study now underway, EPS suggests the Team undertake a systematic translation of selected contextual qualifiers and elasticity measures into appropriate urban infill site selection and evaluation criteria. The choice of appropriate contextual criteria will be guided by relevance, clarity of definition, and ease of measurement/evaluation.

This initial list of proposed criteria were gleaned from the studies identified in the References citations distributed to the Team in hard-copy and CD-ROM format by EPS, and from readings in the Online TDM Encyclopedia, a hypertext resource created and actively maintained by the Victoria Transport Policy Institute of British Columbia, Canada: <http://www.vtppi.org/tdm/>. The Online TDM Encyclopedia draws heavily on U.S. as well as Canadian and international transportation agencies and organizations, assembling and summarizing current and recent research being performed by governmental, private and academic practitioners.

Among the major contextual trip reduction and urban infill elasticity measures that appear repeatedly in the literature are:

- Density
- Clustering of Complimentary Mixed Uses
- Diversity
- Pedestrian-Oriented Design Index
- Parking Accessibility

- Transit Accessibility
- Transit Availability Index

For each of these potential site selection and evaluation criteria, this Appendix provides a concept definition, a formulaic/parametric definition (where available), and quantified ranges and thresholds relevant to the selection and ranking of potential urban infill study site candidates using the proposed criterion.

DENSITY

Definition: Population and/or Jobs within a given area or per unit area.

Formula: [(Population + Employment) per Square Mile]

Relevant Ranges and Thresholds:

URBAN CONTEXT:

- **Urban Area** \geq 10 square miles
- **Population** \geq 50,000 in contiguous urban area
- **Jobs** \geq 50,000 in contiguous urban area
- **Job Density** \geq at least 30-50 per gross acre

AUTOMOTIVE TRAVEL CONTEXT:

- **Jobs accessible by car within 30 minutes drive time** \geq 100,000

TOD/POD CONTEXT:

- **Jobs** \geq 15,000 within 1 to 12 miles of transit center
- **Jobs accessible by transit within 30 minutes commute time** \geq 105,000

SITE-SPECIFIC LAND USE DENSITY THRESHOLDS:

- **Residential SF Attached and Detached Density** =15-24 DU per gross acre
- **Residential MF Density** \geq 24 DU per gross acre
- **Office FAR** \geq .5 FAR
- **Commercial FAR** \geq .35 FAR
- **Urban Commercial Job Density** \geq 30 jobs per gross acre
- **Regional Commercial Job Density** \geq 30 jobs per gross acre

The detailed thresholds and ranges suggested for Density and the other candidate criteria described in this Appendix are open to adjustment and refinement by the Study Team and the TAC. The concept of operationalized, parametric criteria is vital, however, to the Study's purposes in producing new urban infill trip rates acceptable to the ITE while simultaneously establishing a methodology for consistently identifying, characterizing and ranking 'urban' and 'infill' development contexts relevant to trip

generation. Broad definitions of these contexts, such as those typically used in regional planning and listed below, are too subjective and qualitative to capture and quantify crucial factors impacting VMT VT and non-automotive travel options:

Urbanized Area: A U.S. Bureau of Census-designated area of 50,000 or more inhabitants consisting of a central city or two adjacent cities plus surrounding densely settled territory, but excluding the rural portion of cities.

Infill development: In land-use and transit planning, development of vacant parcels in urbanized or suburbanized areas.

CLUSTERING OF COMPLIMENTARY MIXED USES

Definitions: Land use patterns with common destinations located close together, with good pedestrian conditions that create accessible, multi-modal Centers. Alternately, the degree to which two or more complimentary land uses exist within the same Urban Area (typically, within a one-mile radius or one-square-mile grid cell).

Formula: For one operationalized and parametric approach, see *Wrestling Sprawl to the Ground: Defining and Measuring and Elusive Concept*, by George Galster et al. al, Housing Policy Debate Volume 12, Issue 4, pages 681- 717, Fannie Mae Foundation 2001.

http://www.fanniemaefoundation.org/programs/hpd/pdf/HPD_1204_galster.pdf

Relevant Ranges and Thresholds:

TOD/POD CONTEXT:

- Clustering within 'walkable' neighborhoods 0.5 - 1.0 miles in diameter (typical pedestrian catchment area for commercial centers and transit stations), an area of 125 to 500 acres

DIVERSITY

Definition: The ratio of jobs to population in proximity to the site.

Formula: $\{1 - [ABS(b * population - employment) / (b * population + employment)]\}$

where: $b = \text{regional employment} / \text{regional population}$

Relevant Ranges and Thresholds:

- The areas within which local Diversity indices are calculated are recommended to be less than two miles in diameter or less than 2,000 acres in coverage.

Described in *INDEX® 4D METHOD: A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes*, Prepared for the U.S. Environmental Protection Agency by Criterion Planners/Engineers and Fehr & Peers Associates, Technical Memorandum October 2001.

PEDESTRIAN-ORIENTED DESIGN INDEX

Definition: A measure of the pedestrian environment, including street grid density, sidewalk completeness, and route directness.

Formula: $0.0195 * \text{street network density} + 1.18 * \text{sidewalk completeness} + 3.63 * \text{route directness}$.

Where:

0.0195 = coefficient applied to street network density, expressing the relative weighting of this variable relative to the other variables in the Design Index formula,

street network density = length of street in miles/area of neighborhood in square miles

1.18 = coefficient applied to sidewalk completeness, expressing the relative weighting of this variable relative to the other variables in the Design Index formula,

sidewalk completeness = length of sidewalk/length of public street frontage

3.63 = coefficient applied to route directness, expressing the relative weighting of this variable relative to the other variables in the Design Index formula,

route directness = average airline distance to center/average road distance to center

Relevant Ranges and Thresholds:

- **The areas within which local Design indices are calculated are recommended to be less than two miles in diameter or less than 2,000 acres in coverage.**

Described in *INDEX® 4D METHOD: A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes*, *ibid.*.

PARKING ACCESSIBILITY

Definition: Walking distance in feet between destination/origin site and parking.

Formula: [Walking Distance in Feet to Available Parking]

Relevant Ranges and Thresholds:

- **Adjacent/Excellent Accessibility** \leq 100 feet from parking
- **Short Walk/Good Accessibility** $>$ 100 and \leq 800 feet from parking
- **Medium Walk/Fair Accessibility** $>$ 800 and \leq 1,200 feet from parking
- **Long Walk/Poor Accessibility** $>$ 1,200 and \leq 1,600 feet from parking
- **Effectively Non-Accessible** $>$ 1,600 feet from parking

TRANSIT ACCESSIBILITY

Definition: Distance between destination/origin site and nearest transit node(s).

Formula: [Distance to Transit Node(s)]

Relevant Ranges and Thresholds:

- **Short Walk/Good Pedestrian Accessibility** \leq .25 miles from transit.
- **Medium Walk/Fair Pedestrian Accessibility** $>$.25 miles and \leq .5 miles from transit.
- **Long Walk/Poor Pedestrian Accessibility** $>$.5 miles and \leq 1.0 miles from transit.
- **Effectively Non-Accessible By Walking** $>$ 1.0 miles from transit node.
- **Automobile and Bicycle Accessibility** 0 to 12 miles from transit node.

TRANSIT AVAILABILITY

Definition: Transit vehicle seats per hour within $\frac{1}{4}$ -mile ($\frac{1}{2}$ -mile for rail and ferries) of destination/origin site, averaged over 24 hours).

Formula: [Transit vehicle seats per hour within $\frac{1}{4}$ -mile ($\frac{1}{2}$ -mile), averaged over 24 hours]

Relevant Ranges and Thresholds:

- **One Bus** \approx 50 transit seats.

There are more elaborate measures of transit availability, such as the LITA index summarized below, but their complexity/difficulty/expense of calculation may place them beyond appropriate application for the immediate study of selected urban infill sites.

LOCAL INDEX OF TRANSIT AVAILABILITY

Definition: For a census tract or TAZ, the average of standardized scores of each of three transit components: capacity, frequency, and service coverage.

Formula: [Capacity score] + [Frequency score] + [Service Coverage score]

Where:

Capacity = Vehicle Capacity * Route Miles / Total Population

Frequency = Total Daily Transit Vehicles, for transit lines
having at least one stop in tract

Service Coverage = Number of Stops or Stations In Tract,
by transit line / Sq. Mi. of Land Area



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APPENDIX B

POSSIBLE LOCALES FOR URBAN SURVEY STUDY SITES

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Berkeley Bart Station Area, Berkeley, Alameda County

“Emery Station”, Emeryville, Alameda County

Fruitvale Transit Village, Oakland, Alameda County

North Pleasanton Improvement District, Alameda County

Pleasant Hill Bart Station Area, Pleasant Hill, Contra Costa County

7th Street/Metro Center, Los Angeles

Hollywood/Highland, Los Angeles

‘Noho’ (North Hollywood) Arts District, Los Angeles

Pacific Court, Long Beach, Los Angeles

American Plaza, San Diego, San Diego County

Rio Vista West, San Diego, San Diego County

Uptown District, San Diego, San Diego County

Mission Street Corridor, San Francisco County

CityPark/Metro Center Project Area, Foster City, San Mateo County

Moffett Park, Sunnyvale, Santa Clara County

Ohlone-Chynoweth, San Jose, Santa Clara County

Cotati CoHousing Development, Cotati, Sonoma County

Aspen Neighborhood, West Davis, Yolo County



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APPENDIX C

ADDITIONAL TECHNICAL BACKGROUND

Appendix C Table 1
Block Groups with both High Residential and Employment Densities* in 2000
Selection of Urban Infill Study Sites, EPS #14002

STFID	County	Census			Block Group	2000 Total Pop.	2000 Housing Units	2000 Workers (POW)	Land Acres	2000 Pop. / Sq. Mile	2000 Pop. / Acre	2000 HU / Acre	2000 Workers per Acre	Google Maps Link
		Designated Place	CDP Type	Tract										
060014224001	Alameda	Berkeley	city	422400	1	1,457	963	1,870	44.990	20,726.2	32.4	21.4	41.6	060014224001
060014224002	Alameda	Berkeley	city	422400	2	888	514	1,410	30.609	18,566.9	29.0	16.8	46.1	060014224002
060014225001	Alameda	Berkeley	city	422500	1	1,066	619	1,800	40.560	16,820.5	26.3	15.3	44.4	060014225001
060014228002	Alameda	Berkeley	city	422800	2	3,119	373	1,070	30.495	65,458.3	102.3	12.2	35.1	060014228002
060014229002	Alameda	Berkeley	city	422900	2	1,934	1,170	1,815	50.209	24,652.1	38.5	23.3	36.1	060014229002
060014028001	Alameda	Oakland	city	402800	1	1,910	1,356	6,040	93.706	13,045.1	20.4	14.5	64.5	060014028001
060014029002	Alameda	Oakland	city	402900	2	1,286	919	10,460	65.284	12,607.2	19.7	14.1	160.2	060014029002
060014030001	Alameda	Oakland	city	403000	1	1,484	855	6,550	34.756	27,326.1	42.7	24.6	188.5	060014030001
060014030002	Alameda	Oakland	city	403000	2	1,250	696	2,665	48.269	16,573.7	25.9	14.4	55.2	060014030002
060014033002	Alameda	Oakland	city	403300	2	1,536	605	2,860	42.739	23,001.0	35.9	14.2	66.9	060014033002
060014034002	Alameda	Oakland	city	403400	2	1,329	828	1,190	24.491	34,729.1	54.3	33.8	48.6	060014034002
060014034003	Alameda	Oakland	city	403400	3	1,774	1,215	835	18.767	60,496.6	94.5	64.7	44.5	060014034003
060014040002	Alameda	Oakland	city	404000	2	951	564	3,210	53.002	11,483.4	17.9	10.6	60.6	060014040002
060014060003	Alameda	Oakland	city	406000	3	1,866	765	3,160	64.788	18,433.1	28.8	11.8	48.8	060014060003
060377008002	Los Angeles	Beverly Hills	city	700800	2	2,318	1,297	2,700	70.656	20,996.4	32.8	18.4	38.2	060377008002
060373018002	Los Angeles	Glendale	city	301800	2	2,224	951	4,040	83.227	17,102.1	26.7	11.4	48.5	060373018002
060373018004	Los Angeles	Glendale	city	301800	4	2,001	777	3,765	75.384	16,988.2	26.5	10.3	49.9	060373018004
060373019001	Los Angeles	Glendale	city	301900	1	2,165	1,067	2,935	71.460	19,390.0	30.3	14.9	41.1	060373019001
060373019004	Los Angeles	Glendale	city	301900	4	2,132	993	3,320	45.573	29,940.2	46.8	21.8	72.8	060373019004
060373020025	Los Angeles	Glendale	city	302002	5	1,897	995	2,255	39.477	30,753.8	48.1	25.2	57.1	060373020025
060373022013	Los Angeles	Glendale	city	302201	3	1,101	651	2,975	61.745	11,412.1	17.8	10.5	48.2	060373022013
060375761003	Los Angeles	Long Beach	city	576100	3	747	610	4,365	46.945	10,183.9	15.9	13.0	93.0	060375761003
060375763007	Los Angeles	Long Beach	city	576300	7	1,004	459	2,325	44.396	14,473.3	22.6	10.3	52.4	060375763007
060371901003	Los Angeles	Los Angeles	city	190100	3	1,448	803	2,670	55.161	16,800.3	26.3	14.6	48.4	060371901003
060371912011	Los Angeles	Los Angeles	city	191201	1	2,474	920	4,320	79.620	19,886.3	31.1	11.6	54.3	060371912011
060371912012	Los Angeles	Los Angeles	city	191201	2	2,300	906	2,270	60.295	24,413.2	38.1	15.0	37.6	060371912012
060372062002	Los Angeles	Los Angeles	city	206200	2	1,208	738	2,365	64.181	12,045.9	18.8	11.5	36.8	060372062002
060372062003	Los Angeles	Los Angeles	city	206200	3	2,168	473	1,555	43.933	31,582.5	49.3	10.8	35.4	060372062003
060372063003	Los Angeles	Los Angeles	city	206300	3	3,526	1,075	1,790	43.999	51,288.5	80.1	24.4	40.7	060372063003
060372071002	Los Angeles	Los Angeles	city	207100	2	1,404	696	2,475	59.428	15,120.1	23.6	11.7	41.6	060372071002
060372073001	Los Angeles	Los Angeles	city	207300	1	2,860	2,798	17,625	93.325	19,613.1	30.6	30.0	188.9	060372073001
060372073002	Los Angeles	Los Angeles	city	207300	2	879	840	15,225	79.066	7,115.1	11.1	10.6	192.6	060372073002
060372075002	Los Angeles	Los Angeles	city	207500	2	2,018	1,543	1,630	38.998	33,117.6	51.7	39.6	41.8	060372075002
060372087202	Los Angeles	Los Angeles	city	208720	2	757	293	1,490	18.105	26,760.1	41.8	16.2	82.3	060372087202
060372088002	Los Angeles	Los Angeles	city	208800	2	1,072	603	1,170	23.661	28,996.6	45.3	25.5	49.4	060372088002
060372089032	Los Angeles	Los Angeles	city	208903	2	1,547	459	1,090	25.511	38,810.2	60.6	18.0	42.7	060372089032
060372091022	Los Angeles	Los Angeles	city	209102	2	1,516	572	2,640	23.667	40,994.8	64.1	24.2	111.5	060372091022
060372093002	Los Angeles	Los Angeles	city	209300	2	1,248	516	1,655	39.255	20,346.8	31.8	13.1	42.2	060372093002
060372095201	Los Angeles	Los Angeles	city	209520	1	1,731	665	1,240	33.653	32,919.1	51.4	19.8	36.8	060372095201
060372118023	Los Angeles	Los Angeles	city	211802	3	2,710	1,216	1,975	46.750	37,099.5	58.0	26.0	42.2	060372118023
060372121002	Los Angeles	Los Angeles	city	212100	2	1,214	800	5,760	42.013	18,493.4	28.9	19.0	137.1	060372121002
060372123031	Los Angeles	Los Angeles	city	212303	1	3,154	1,101	2,860	37.631	53,641.5	83.8	29.3	76.0	060372123031
060372123041	Los Angeles	Los Angeles	city	212304	1	2,285	861	2,245	50.522	28,945.8	45.2	17.0	44.4	060372123041

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Block Groups with both High Residential and Employment Densities* in 2000
Selection of Urban Infill Study Sites, EPS #14002

STFID	County	Census Designated Place	CDP Type	Block Tract	Block Group	2000 Total Pop.	2000 Housing Units	2000 Workers (POW)	Land Acres	2000 Pop. / Sq. Mile	2000 Pop. / Acre	2000 HU / Acre	2000 Workers per Acre	Google Maps Link
060372124101	Los Angeles	Los Angeles	city	212410	1	1,355	545	3,695	22.021	39,379.8	61.5	24.7	167.8	060372124101
060372125001	Los Angeles	Los Angeles	city	212500	1	1,439	516	2,925	50.518	18,230.4	28.5	10.2	57.9	060372125001
060372149001	Los Angeles	Los Angeles	city	214900	1	2,154	1,523	3,545	78.548	17,550.5	27.4	19.4	45.1	060372149001
060372163002	Los Angeles	Los Angeles	city	216300	2	1,284	683	2,815	60.388	13,608.1	21.3	11.3	46.6	060372163002
060372641012	Los Angeles	Los Angeles	city	264101	2	2,293	1,566	1,885	53.432	27,465.0	42.9	29.3	35.3	060372641012
060372643013	Los Angeles	Los Angeles	city	264301	3	1,613	1,076	3,585	34.973	29,517.5	46.1	30.8	102.5	060372643013
060372653012	Los Angeles	Los Angeles	city	265301	2	278	279	1,830	24.154	7,366.0	11.5	11.6	75.8	060372653012
060372655101	Los Angeles	Los Angeles	city	265510	1	2,868	1,717	13,955	77.383	23,719.9	37.1	22.2	180.3	060372655101
060372674022	Los Angeles	Los Angeles	city	267402	2	2,832	1,581	3,120	53.895	33,629.6	52.5	29.3	57.9	060372674022
060372679001	Los Angeles	Los Angeles	city	267900	1	3,250	2,217	8,030	182.064	11,424.6	17.9	12.2	44.1	060372679001
060376209025	Los Angeles	Manhattan Beach	city	620902	5	347	239	940	19.392	11,452.4	17.9	12.3	48.5	060376209025
060377014003	Los Angeles	Santa Monica	city	701400	3	1,559	1,057	1,865	38.987	25,592.0	40.0	27.1	47.8	060377014003
060377015022	Los Angeles	Santa Monica	city	701502	2	1,316	729	1,960	49.588	16,984.6	26.5	14.7	39.5	060377015022
060377017012	Los Angeles	Santa Monica	city	701701	2	1,291	681	3,560	63.685	12,973.8	20.3	10.7	55.9	060377017012
060377005003	Los Angeles	West Hollywood	city	700500	3	1,580	1,218	3,340	63.245	15,988.6	25.0	19.3	52.8	060377005003
060590887011	Orange	Garden Grove	city	088701	1	1,270	370	1,715	34.151	25,674.2	40.1	10.8	50.2	060590887011
060670007001	Sacramento	Sacramento	city	000700	1	3,347	2,172	2,175	18.246	78,817.5	123.2	12.7	119.2	060670007001
060670013003	Sacramento	Sacramento	city	001300	3	1,215	838	2,135	58.869	13,209.0	20.6	14.2	36.3	060670013003
060730053001	San Diego	San Diego	city	005300	1	739	681	4,150	50.196	9,422.3	14.7	13.6	82.7	060730053001
060730053002	San Diego	San Diego	city	005300	2	1,107	649	4,940	49.430	14,333.1	22.4	13.1	99.9	060730053002
060730053003	San Diego	San Diego	city	005300	3	1,933	545	7,380	41.441	29,852.5	46.6	13.2	178.1	060730053003
060730056001	San Diego	San Diego	city	005600	1	1,045	768	2,295	57.329	11,666.1	18.2	13.4	40.0	060730056001
060730082003	San Diego	San Diego	city	008200	3	547	422	2,165	31.990	10,943.5	17.1	13.2	67.7	060730082003
060750101002	San Francisco	San Francisco	city	010100	2	2,227	1,399	2,955	52.784	27,001.9	42.2	26.5	56.0	060750101002
060750102003	San Francisco	San Francisco	city	010200	3	1,043	787	1,460	30.613	21,804.9	34.1	25.7	47.7	060750102003
060750105002	San Francisco	San Francisco	city	010500	2	1,598	1,409	23,135	87.662	11,666.7	18.2	16.1	263.9	060750105002
060750106002	San Francisco	San Francisco	city	010600	2	1,321	745	1,605	17.471	48,392.4	75.6	42.6	91.9	060750106002
060750106003	San Francisco	San Francisco	city	010600	3	1,497	689	1,215	15.180	63,115.2	98.6	45.4	80.0	060750106003
060750107002	San Francisco	San Francisco	city	010700	2	3,008	1,583	1,140	20.181	95,391.5	149.0	78.4	56.5	060750107002
060750107003	San Francisco	San Francisco	city	010700	3	1,653	923	1,225	14.271	74,131.9	115.8	64.7	85.8	060750107003
060750110001	San Francisco	San Francisco	city	011000	1	868	537	570	15.930	34,872.4	54.5	33.7	35.8	060750110001
060750111001	San Francisco	San Francisco	city	011100	1	2,241	1,208	910	21.587	66,439.1	103.8	56.0	42.2	060750111001
060750111002	San Francisco	San Francisco	city	011100	2	2,280	1,297	915	21.636	67,443.2	105.4	59.9	42.3	060750111002
060750111003	San Francisco	San Francisco	city	011100	3	1,038	532	1,635	15.099	43,998.1	68.7	35.2	108.3	060750111003
060750112003	San Francisco	San Francisco	city	011200	3	829	492	1,160	19.387	27,366.3	42.8	25.4	59.8	060750112003
060750113001	San Francisco	San Francisco	city	011300	1	1,781	695	560	12.210	93,351.7	145.9	56.9	45.9	060750113001
060750113002	San Francisco	San Francisco	city	011300	2	1,483	934	490	13.573	69,928.6	109.3	68.8	36.1	060750113002
060750114001	San Francisco	San Francisco	city	011400	1	1,119	581	470	6.778	105,658.4	165.1	85.7	69.3	060750114001
060750114002	San Francisco	San Francisco	city	011400	2	2,056	1,090	1,205	14.465	90,964.1	142.1	75.4	83.3	060750114002
060750115001	San Francisco	San Francisco	city	011500	1	759	582	14,180	39.419	12,322.9	19.3	14.8	359.7	060750115001
060750117002	San Francisco	San Francisco	city	011700	2	984	734	42,280	72.002	8,746.4	13.7	10.2	587.2	060750117002
060750118001	San Francisco	San Francisco	city	011800	1	1,528	789	3,865	13.663	71,576.2	111.8	57.7	282.9	060750118001
060750119001	San Francisco	San Francisco	city	011900	1	1,620	1,230	1,210	18.670	55,531.5	86.8	65.9	64.8	060750119001

Appendix C Table 1
Block Groups with both High Residential and Employment Densities* in 2000
Selection of Urban Infill Study Sites, EPS #14002

STFID	County	Census			Block Group	2000 Total Pop.	2000 Housing Units	2000 Workers (POW)	Land Acres	2000 Pop. / Sq. Mile	2000 Pop. / Acre	2000 HU / Acre	2000 Workers per Acre	Google Maps Link
		Designated Place	CDP Type	Tract										
060750120001	San Francisco	San Francisco	city	012000	1	1,965	1,516	1,170	15.373	81,806.5	127.8	98.6	76.1	060750120001
060750121001	San Francisco	San Francisco	city	012100	1	2,541	1,886	695	14.875	109,327.5	170.8	126.8	46.7	060750121001
060750121002	San Francisco	San Francisco	city	012100	2	921	619	2,810	15.610	37,760.8	59.0	39.7	180.0	060750121002
060750122003	San Francisco	San Francisco	city	012200	3	2,312	1,363	1,025	22.310	66,324.2	103.6	61.1	45.9	060750122003
060750123001	San Francisco	San Francisco	city	012300	1	3,070	2,622	3,365	22.960	85,576.0	133.7	114.2	146.6	060750123001
060750123002	San Francisco	San Francisco	city	012300	2	3,135	1,829	3,290	22.696	88,405.0	138.1	80.6	145.0	060750123002
060750124002	San Francisco	San Francisco	city	012400	2	2,785	1,350	565	11.705	152,272.4	237.9	115.3	48.3	060750124002
060750124003	San Francisco	San Francisco	city	012400	3	1,220	665	2,075	25.949	30,089.9	47.0	25.6	80.0	060750124003
060750124004	San Francisco	San Francisco	city	012400	4	749	598	10,685	47.971	9,992.7	15.6	12.5	222.7	060750124004
060750124005	San Francisco	San Francisco	city	012400	5	1,567	991	1,270	15.467	64,838.9	101.3	64.1	82.1	060750124005
060750125002	San Francisco	San Francisco	city	012500	2	1,110	958	1,790	14.657	48,466.7	75.7	65.4	122.1	060750125002
060750125003	San Francisco	San Francisco	city	012500	3	2,687	1,169	950	20.724	82,979.5	129.7	56.4	45.8	060750125003
060750130003	San Francisco	San Francisco	city	013000	3	1,031	653	875	22.972	28,724.2	44.9	28.4	38.1	060750130003
060750130004	San Francisco	San Francisco	city	013000	4	975	613	1,045	22.875	27,278.7	42.6	26.8	45.7	060750130004
060750133003	San Francisco	San Francisco	city	013300	3	772	500	930	22.649	21,815.0	34.1	22.1	41.1	060750133003
060750133005	San Francisco	San Francisco	city	013300	5	707	364	1,635	26.200	17,270.4	27.0	13.9	62.4	060750133005
060750135002	San Francisco	San Francisco	city	013500	2	1,381	1,016	3,915	30.994	28,516.7	44.6	32.8	126.3	060750135002
060750151001	San Francisco	San Francisco	city	015100	1	1,626	1,104	1,485	22.333	46,595.9	72.8	49.4	66.5	060750151001
060750151002	San Francisco	San Francisco	city	015100	2	794	680	2,330	21.496	23,640.2	36.9	31.6	108.4	060750151002
060750154001	San Francisco	San Francisco	city	015400	1	732	381	1,415	28.024	16,716.9	26.1	13.6	50.5	060750154001
060750154003	San Francisco	San Francisco	city	015400	3	1,481	789	1,960	53.889	17,588.8	27.5	14.6	36.4	060750154003
060750155001	San Francisco	San Francisco	city	015500	1	1,507	1,115	1,245	30.210	31,925.6	49.9	36.9	41.2	060750155001
060750155003	San Francisco	San Francisco	city	015500	3	807	304	1,940	22.826	22,627.3	35.4	13.3	85.0	060750155003
060750157001	San Francisco	San Francisco	city	015700	1	1,124	638	2,075	59.036	12,185.1	19.0	10.8	35.1	060750157001
060750159002	San Francisco	San Francisco	city	015900	2	2,111	1,203	885	23.103	58,478.3	91.4	52.1	38.3	060750159002
060750160001	San Francisco	San Francisco	city	016000	1	2,026	1,609	2,730	41.060	31,578.9	49.3	39.2	66.5	060750160001
060750162001	San Francisco	San Francisco	city	016200	1	676	451	2,670	29.041	14,897.3	23.3	15.5	91.9	060750162001
060750162002	San Francisco	San Francisco	city	016200	2	896	519	1,970	22.570	25,407.7	39.7	23.0	87.3	060750162002
060750165004	San Francisco	San Francisco	city	016500	4	1,114	482	1,575	23.390	30,481.8	47.6	20.6	67.3	060750165004
060750168001	San Francisco	San Francisco	city	016800	1	816	502	1,345	21.363	24,445.8	38.2	23.5	63.0	060750168001
060750168003	San Francisco	San Francisco	city	016800	3	735	460	885	22.170	21,218.1	33.2	20.7	39.9	060750168003
060750176012	San Francisco	San Francisco	city	017601	2	3,248	1,425	4,750	46.737	44,476.7	69.5	30.5	101.6	060750176012
060750176013	San Francisco	San Francisco	city	017601	3	1,946	1,001	4,545	45.000	27,676.2	43.2	22.2	101.0	060750176013
060750178001	San Francisco	San Francisco	city	017800	1	1,010	799	2,900	25.883	24,974.0	39.0	30.9	112.0	060750178001
060750178002	San Francisco	San Francisco	city	017800	2	1,443	1,049	3,010	26.901	34,330.6	53.6	39.0	111.9	060750178002
060750178003	San Francisco	San Francisco	city	017800	3	2,513	1,040	4,115	77.129	20,852.4	32.6	13.5	53.4	060750178003
060750179011	San Francisco	San Francisco	city	017901	1	1,549	1,130	10,215	95.882	10,339.4	16.2	11.8	106.5	060750179011
060750179012	San Francisco	San Francisco	city	017901	2	2,441	1,419	3,490	75.774	20,617.0	32.2	18.7	46.1	060750179012
060750179013	San Francisco	San Francisco	city	017901	3	1,205	906	13,840	65.364	11,798.6	18.4	13.9	211.7	060750179013
060750201001	San Francisco	San Francisco	city	020100	1	871	513	3,390	48.620	11,465.4	17.9	10.6	69.7	060750201001
060750208001	San Francisco	San Francisco	city	020800	1	1,514	441	890	18.268	53,042.3	82.9	24.1	48.7	060750208001
060750208004	San Francisco	San Francisco	city	020800	4	2,053	747	1,370	28.680	45,813.2	71.6	26.0	47.8	060750208004
060750253004	San Francisco	San Francisco	city	025300	4	1,671	603	1,625	35.427	30,187.3	47.2	17.0	45.9	060750253004
060750301011	San Francisco	San Francisco	city	030101	1	1,390	704	1,195	23.438	37,954.9	59.3	30.0	51.0	060750301011
060750301012	San Francisco	San Francisco	city	030101	2	1,312	595	3,615	25.228	33,283.2	52.0	23.6	143.3	060750301012
060750607003	San Francisco	San Francisco	city	060700	3	333	336	1,790	23.727	8,982.3	14.0	14.2	75.4	060750607003
060855113002	Santa Clara	Palo Alto	city	511300	2	1,375	873	3,150	79.259	11,102.8	17.3	11.0	39.7	060855113002
060855009012	Santa Clara	San Jose	city	500901	2	1,625	912	3,065	82.294	12,637.7	19.7	11.1	37.2	060855009012
061110061002	Ventura	Thousand Oaks	city	006100	2	3,847	1,314	4,670	125.060	19,687.1	30.8	10.5	37.3	061110061002
Totals						218,272	120,244	468,080	5,621.979	24,847.8	38.8	21.4	83.3	
Minima						278	232	470	6.778	7,115.1	11.1	10.2	35.1	

Appendix C Table 1
Block Groups with both High Residential and Employment Densities* in 2000
Selection of Urban Infill Study Sites, EPS #14002

STFID	County	Census Designated Place	CDP Type	Block Tract Group	2000 Total Pop.	2000 Housing Units	2000 Workers (POW)	Land Acres	2000 Pop. / Sq. Mile	2000 Pop. / Acre	2000 HU / Acre	2000 Workers per Acre	Google Maps Link
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Notes: * This listing of 135 Block Groups includes all those that had Housing Densities of at least 10.0 units per Land Acre, **AND** (in combination with) Employment Densities of at least 35.0 workers per Land Acre in the Census year 2000.

Within this selection, individual Block Groups had Housing Densities as high as 15.2 units per Land Acre, and Employment Densities as high as 59.8 workers per Land Acre. For the approximately 22,100 Block Groups defined for the 2000 Census, estimated Year 2000 Housing Densities were as high as 159.37 units per Land Acre; Employment Densities as high as 794.05 workers per Land Acre.

Sources: U.S. Bureau of the Census, Census 2000 Summary Files 1 and 3; Bureau of Transportation Statistics, CTPP 2000 Part 2; EPS

Appendix C Table 2
Selection of Urban Infill Study Sites, EPS #14002



Parking Demand Survey Form

Institute of Transportation Engineers

(fill in all highlighted cells - * are required data)

Land Use Code*

Name of Site

Brief Description of Site

Transit*

Area*

TMP*

City

State Country

Parking Price* \$ Daily Rate \$ Hourly Rate

Site Size*	Units*	Occupancy*	Land Use
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Site Size	Units	Occupancy	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
Site Size	Units	Occupancy	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
Site Size	Units	Occupancy	
<input type="text"/>	<input type="text"/>	<input type="text"/>	

Number of Parking Spaces Provided at Site

Highest Observed Parking Demand for the following hours of the day (hour beginning)*

Date						
Day						
12 Mid						
1:00 AM						
2:00 AM						
3:00 AM						
4:00 AM						
5:00 AM						
6:00 AM						
7:00 AM						
8:00 AM						
9:00 AM						
10:00 AM						
11:00 AM						
12 Noon						
1:00 PM						
2:00 PM						
3:00 PM						
4:00 PM						
5:00 PM						
6:00 PM						
7:00 PM						
8:00 PM						
9:00 PM						
10:00 PM						
11:00 PM						

Person

Phone

Fax

Email

Notes

Organization

Enter data on the web at www.ite.org

Comments to: ite_staff@ite.org

IF not entered on web site, please mail to:

Institute of Transportation Engineers, 1099 14th Street, NW Suite 300 West; Washington, DC 20005-3438

Appendix C Table 3

Each site within the TRICS system contains data within Site, Development and Survey Day sections. Some items of Development data vary according to which land use category sites are located under; most items are shown below.

SITE DETAILS

Bus (or tram) Site Accessibility:	Information regarding site specific bus services, local bus stops, crossing facilities and frequencies of bus services, with a table showing bus destinations, numbers of services per hour and approximate journey times.
Description and address:	Site type identification and full address of the site, including its postcode.
Design Features Encouraging Non-Car Modes:	Comments sections for any relevant information relating to design features at the site which encourage non-car modes, including pedestrians, pedal cycles, public transport and car parking restraint. A set of guidance notes are listed.
Grid Reference:	10-digit Ordnance Survey grid reference of the site.
Location:	Brief description of the type of area that the site is located in (e.g. Edge of Town, Town Centre, Industrial Zone, etc).
Population & Car Ownership:	Ranges for 1 and 5 miles for population, and 5 miles for car ownership (per household).
Public Transport Comments:	Any relevant comments relating to local public transport, its relevance, quality and importance.
Public Transport Provision:	Range based on the number of buses/trains to the site per day, or to within a reasonable walking distance.
Rail Accessibility:	Information regarding local rail stations, pedestrian access to stations, and frequencies of rail services, with a table showing rail destinations, numbers of services per hour and approximate journey times.
Site Comment:	Any relevant comments relating to the site's location, its accesses and the surrounding area.
Use Class:	Alphanumeric 2-digit code representing land use as in the 1998 Use Classes Order.
Walk-in Catchment (500 metres):	The population within 500 metres radius of the site.
Green Travel Plan:	Whether or not the site is associated with a Green Travel Plan.

DEVELOPMENT DETAILS

Bays (civic amenity land use categories):	The total number of recycling/waste bays at the site.
Bedrooms (hotel land use category):	The total number of bedrooms at the site.
Beds (hospital land use categories):	The total number of beds at the site.
Berths (marina land use category):	The total number of boat berths at the site.
Caravans (non-residential caravan park land use category):	Total number of caravans at the site.
Cashcard Facilities (retail land use categories):	A "Yes" or "No" shown to indicate if cashcard facilities are available at the site.
Courts (tennis club land use category):	The total number of tennis courts at the site.
Development Comments:	Any relevant additional information relating to the site's activities and operating hours, employment patterns, the nature of the buildings at the site and its occupants.
Distance to Nearest Similar Site:	The distance (in kilometres) to a site of a similar nature, in size and land use category.
Doctors (GP surgery land use category):	Total number of doctors that work at the site.
Employees (not all land use categories):	The total number of people employed at the site. Within Employment land use categories, this figure is split between Part Time Employees and Full Time Employees.
Filling Bays (petrol filling station land use categories):	The total number of vehicles that can be refuelled at any one time.
Filling Station (retail land use categories):	A "Yes" or "No" shown to indicate if a petrol filling station is located within the site. A "Yes" means that it was included in the survey count.
Gross Floor Area (not all land use categories):	The total floor area of buildings within the site's boundary (including multi-levels), including storage areas. In some land use categories external areas are also included.
Holes (golf course land use categories):	The total number of golf holes at the site.
Households (residential land use categories):	The total number of residential households at the site
Lanes (bowling alley land use category):	The total number of bowling lanes at the site.
Number of Units (not all land use categories):	The number of building units within the site.

Appendix C Table 3

Off-Site Parking Details (not all land use categories):	There are 2 "Yes" or "No" questions within this section. The first question asks if there is off-site parking available close to the site, and the second question asks whether or not this parking was included in the survey counts.
On-Site Parking Details (not all land use categories):	A total number of vehicle parking spaces within the site, with this figure then broken down into Visitor/Customer, Employee, Disabled, OGV Loading Bays, OGV Parking Spaces, Mother & Toddler spaces and Motorcycle spaces. A figure for the number of cycle racks is also given.
Opening Times (not all land use categories):	The operating hours of the site in 24-hour format, shown separately for Monday-Thursday, Friday, Saturday and Sunday.
Open Since:	Year of site opening.
Parking Charges (not all land use categories):	A "Yes" or "No" shown to indicate if there are charges for parking at the site.
Pitches (5-a-side football land use category):	The total number of football pitches at the site.
Pitches (car boot sale land use category):	The total number of pitches for car boot traders at the site.
Pupils/Students (educational land use categories):	The total number of pupils/students registered at the site.
Ranges (driving range land use category):	The total number of driving range bays at the site.
Residential Details (residential land use categories):	Consists of data for bedrooms per household, garages per household, on-street parking per household and unit density.
Residents (nursing home and institutional hostel land use categories):	The total number of residents registered at the site.
Retail Floor Area (retail land use categories):	The total floor area of buildings within the site's boundary that is accessible by the general public. In some land use categories external areas are also included
Rink Size (ice rink land use category):	The area in square metres of the ice at the site.
Seats (multiplex cinema, bingo hall, roadside food and restaurant land use categories):	The total number of seats at the site.
Site Area:	The area of the whole site in hectares, including car parking and other use of space, up to the site's boundary.
Surface Parking (not all land use categories):	A "Yes" represents surface parking, a "No" represents underground or multi-storey parking.
Trade/Site Name:	The official name of the development.
Units (holiday accommodation land use category):	Total number of accommodation units at the site.

SURVEY DAY DETAILS

Car Park Occupancy:	The initial number of vehicles in the site's car park at the time the survey began, and the number remaining as the survey ended.
Cycle, OGV and public service vehicle counts:	Separate hourly count screens throughout the duration of the total vehicles survey for pedal cycles, OGV's (with a percentage split shown between OGV1 and OGV2), and buses. All except pedal cycles are included in the total vehicles count.
Vehicle Occupant, Public Transport User, Pedestrian and Total People Counts	For multi-modal surveys only, separate hourly count screens throughout the duration of the Total Vehicles survey for Vehicle Occupants, Public Transport Users, Pedestrians and Total People.
Survey Date:	Date on which the survey count took place.
Survey Type:	Either "Manual Count" for a manual classified survey or "ATC Survey" for an automatic traffic count (usually 24-hours in duration).
Total Vehicles Count:	Hourly numbers of vehicles arriving at the site, exiting the site, and total vehicle movements, throughout the survey's duration. Also, parking accumulation in the site's car park is shown, the first hourly figure being based on the initial car parking occupancy and the traffic movements for the first hour of the survey.
Vehicle Percentages:	The percentage of the total vehicles count excluding pedal cycles (inbound plus outbound) that consisted of cars (including taxis), motorcycles, light goods vehicles, OGV1 (up to 3 axles), OGV2 (greater than 3 axles), and public service vehicles.
Weather:	Details of weather conditions for the morning and the afternoon on the day of the survey count, taken from a range of possibilities.



Economic &
Planning Systems

Real Estate Economics

Regional Economics

Public Finance

Land Use Policy

APPENDIX D

A GIS APPROACH TO IDENTIFYING CANDIDATE URBAN IMPACT AREAS

A GIS APPROACH TO IDENTIFYING CANDIDATE URBAN IMPACT AREAS (UIAs)

In suggesting quantitative criteria as a functional definition for “Urban Infill Area”, the Study Team was mindful of the need for practical measurements that can be applied to or extracted from data are readily available across the State of California and the United States, and at relatively small-area levels, e.g., the census block group level. EPS prototyped a map-based or GIS approach to identifying candidate UIAs for **Working Paper #1** using digital map layers and socioeconomic data that are available nationwide from Federal agencies and information centers.

Census 2000 definitions of UAs and UCs focus on population density only; this is not an oversight, but a known area of weakness that generated much comment and discussion in the run-up to the publication of the actual census counts. In the end, “The Census Bureau determined that it could not include industrial or commercial areas on the fringes of UAs or UCs because it could not find a consistent national database that identifies such areas, as it found for major airports. Thus, the Census Bureau does not have the capability to specifically identify commercial and industrial areas on a uniform and comprehensive basis.” (Federal Register / Vol. 67, No. 51 / Friday, March 15, 2002 / Notices)

Currently, there is no comprehensive and consistent database of California commercial, industrial, or public service land uses (existing development) available at the parcel or site level. In the absence of such a resource, the employment-by-workplace data collected annually by the Census Bureau for its *County Business Patterns* series and by the California Economic Development Department for its *Labor Market Information* reports could provide workable substitutes, if confidentiality regulations did not restrict those agencies’ ability to release small-area and site information. As is, none of the *County Business Patterns* or *Labor Market Information* data on employment-by-industry or -by-occupation is currently available below the ZIP code level, even as special tabulations.

Census 2000 Journey-to-Work data, however, as distributed in the Census Transportation Planning Package (CTPP 2000) Part 2 tables, do include both employment-by-industry and -by-occupation estimates down to the census Block Group (BG) level for the entire State of California. The CTPP occupational and industrial categories are shown in **Table 4 (Working Paper #1 – main text)**. The CTPP employment data, in combination with population and housing counts and geographic information available from Census 2000 Summary Files 1 and 3 (SF1 and SF3), can be used to identify Block Groups that meet several of UIA Criteria proposed above.

As an example, if we use threshold filters to limit Block Group selection to those BGs which have both residential and nonresidential development, and which had (at the beginning of the year 2000) residential development densities of at least 10 housing units per land acre and employment densities of at least 35 jobs per land acre, a subset of 135

(of a possible 22,100 California Block Groups) is selected, as shown in **Figure 2X (Working Paper #1 – main text)**.

A complete listing of these 135 Block Groups, including County and Urbanized Area of location, land area, Year 2000 population, housing and worker counts and population and employment densities per gross land acre, is provided as **Appendix C Table 1**. As it happens, all but two of the BGs meeting our initial test criteria for density are located in defined Census 2000 Urbanized Areas, and within California counties having more than 400,000 total populations. Alternative threshold densities are suggested in the planning literature, and it is anticipated these test values may be a focus of further discussion and revision.

As a preliminary sensitivity test, EPS calculated the number of BGs meeting the following ranges of combined residential and employment densities:

>= 12 DU	and	>= 50 Jobs per acre	-	64 Block Groups
>= 9 DU	and	>= 37.5 Jobs per acre	-	68 Block Groups
>= 6 DU	and	>= 25 Jobs per acre	-	152 Block Groups
>= 5 DU	and	>= 20 Jobs per acre	-	125 Block Groups
>= 4 DU	and	>= 15 Jobs per acre	-	219 Block Groups
>= 3 DU	and	>= 10 Jobs per acre	-	714 Block Groups

These counts were made mutually exclusive; the first three ranges subdivide the 284 BG test set into 3 subsets with no double-counts of individual Block Groups. It can be seen that lowering the selection threshold to include BGs having at least 5 dwelling units (DU) per acre and at least 20 jobs per acre would increase the match by 125 BGs or by 44%; lowering the threshold to 4+ DU and 15+ jobs per acre would increase the total match to 628 BGs, more than double the count of the initial test. **Figure 3 (Working Paper #1 – main text)** is a thematic map of San Francisco and the nearby North, East, and South Bay areas, displaying by color variation the BGs that meet the six alternatives tabulated above.

One weakness of this proposed filtering/selection approach is a dependency on the geographic boundaries defined for Census 2000 enumeration. It is possible and likely that some localities could be either erroneously included or excluded from selection as a result of the peculiar size and orientation of their Census Blocks, Block Groups and Tracts. A methodological mitigation for this source of potential error is suggested by the Giuliano and Small method for identifying employment centers. Giuliano and Small defined an employment center as a cluster of contiguous zones, each zone having a minimum employment density of D, and together containing total employment of at least E. D and E cutoffs are typically expressed as 'D-E'; for example '10-10' corresponds to D = 10 jobs/acre and E = 10,000 jobs.

An example of this Giuliano and Small method in application is reported in *Not All Sprawl: Evolution of Employment Concentrations in Los Angeles, 1980 – 2000*, February 2005, by Genevieve Giuliano, et. al., School of Policy, Planning and Development, University

of Southern California: http://www.usc.edu/schools/sppd/lusk/research/pdf/wp_2005-1002.pdf.

On first review, the Giuliano and Small method seems extendable to the task of identifying Urban Infill Areas which occupy adjacent Block Groups, but EPS requests review of this idea and of the entire Working Paper #1 before proceeding along that particular path of investigation.

The proximity of selected BGs of interest to active transit lines and transit stops/stations can be determined using readily available Geographic Information System (GIS) resources. Many of these resources may be available to authorized users through the Caltrans GIS Data Library, which maintains an online catalog at <http://www.dot.ca.gov/hq/tsip/TSIPGSC/library/libdatalist.htm>. For this study, however, we feel it is important to propose GIS reference data that are available nationwide, so that the core methodologies are 'portable' and can be applied to other studies in other states.

A map-based or GIS approach to identifying candidate UIAs is consistent with current research such as that described in *Using the Internet to Envision Neighborhoods with Transit-Oriented Development Potential*, a June 2002 publication of the Mineta Transportation Institute and the College of Business at San José State University <http://transweb.sjsu.edu/publications/01-24.pdf> and in the *California Infill Estimation Methodology Project Final Report*, June 30, 2004, describing tools and methods developed by the City of Los Angeles, the County of Los Angeles and the Environment Now Foundation with consultants Terrell Watt and the Solimar Research Group, under Caltrans Contract #07A1466 http://www.solimar.org/pdfs/Infill_Methdology_Final_Report.pdf

EPS obtained digital map layers of California fixed-route bus services from an online site hosted by the Moakley Center Geographics Laboratory of Bridgewater State College, which maintains nationwide bus service databases and route system GIS information in a cooperative project with the Federal Transit Administration (FTA) at <http://geolab.bridgew.edu/docs/busroutes/>. Fixed-rail transit route and station spatial data for California have been obtained from the National Transportation Atlas Databases (NTAD) 2005; this set of nationwide geographic databases is available free of charge from the U.S. Department of Transportation, Bureau of Transportation Statistics at <https://www.bts.gov/pdc/user/products/src/products.xml?p=1978&c=-1>.

The California bus and rail transit layers described immediately above can be combined with the Block Groups selected by the preliminary threshold filters as shown in **Figure 4 (Working Paper #1 – main text)**. The proximity of selected BG centroids to bus routes, rail lines and rail transit stations can be determined either interactively, using GIS 'drag and drop' measurement tools, or programmatically, using Co-ordinate Geometry (CoGo) algorithms.

Figure 4 (Working Paper #1 – main text) shows the distribution of preliminarily chosen BGs in the vicinity of San Francisco and the East Bay; similar maps for the larger San Francisco Bay Area, and for the Stockton, Sacramento, Los Angeles, and San Diego Areas, are provided as **Appendix Figures X1 through X5**. For up-to-date information on transit schedules and headways, individual service operators will need to be contacted as potential Urban Infill Survey Sites (UISS) are evaluated for actual trip-generation work-ups. Preliminary information on route scheduling is available for nearly all major California transit services from the Federal Transit Authority, either from the Moakley Center Geographics Laboratory resource described above or from the Integrated National Transit Database Analysis System (INTDAS), developed as part of the Florida Transit Information System (FTIS) by the Lehman Center of Transportation Research (LCTR) at the Florida International University, at <http://lctr.eng.fiu.edu/Ftis/index.htm>. Summary service statistics for individual California transit agencies are also available from the Federal Transit Administration's National Transit Database (NTD) online at <http://www.ntdprogram.com/NTD/ntdhome.nsf?OpenDatabase>. The NTD summary information is updated annually; reports for 2003 are the most current available.

Collectively, the Census, BTS and FTA data and GIS components described and applied above can support many alternative sets of criteria for Urban Infill Area selection. It is expected that the Project Team will refine the preferred criteria in discussion with members of the Technical Advisory Committee. EPS respectfully recommends that the Team and the TAC give careful consideration to including mixed-use zoning (complimentary proximate development types, but not mixed-use within a single building or on the same site) among the essential components.

This does not mean the acceptance of mixed land uses for any proposed individual study site, but rather the recognition of immediately adjacent residential and nonresidential development as a fundamental aspect of the 'urban' environment, and at the heart of the need for this special study of trip generation in infill areas. This would also be consistent with current California Government Code, as set forth in California Senate Bill (SB) 1636 (Figueroa).



Economic &
Planning Systems

Real Estate Economics

Regional Economics

Public Finance

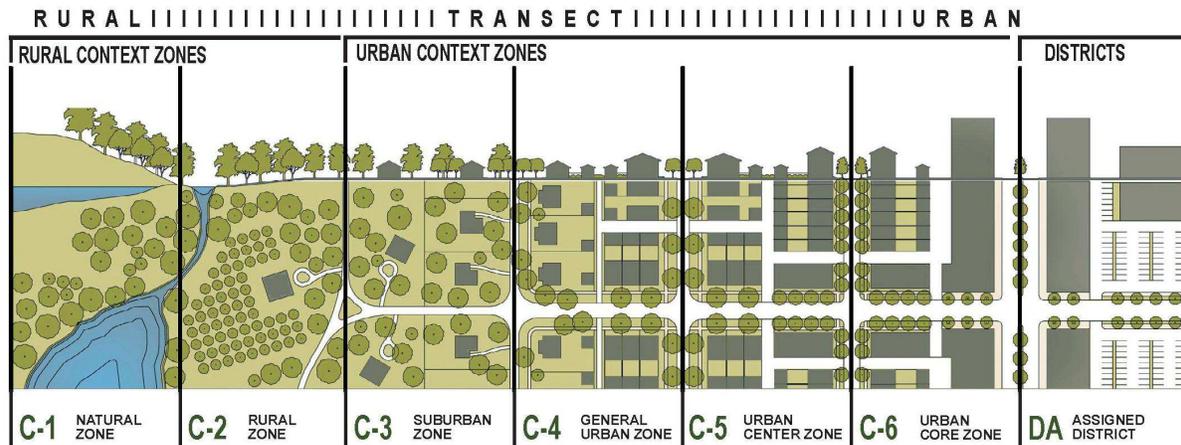
Land Use Policy

APPENDIX E

CONTEXT ZONE CHARACTERISTICS CONTEXT SENSITIVE SOLUTIONS IN DESIGNING MAJOR URBAN THOROUGHFARES FOR WALKABLE COMMUNITIES

ATTACHMENT 3
CONTEXT ZONE CHARACTERISTICS
Context Sensitive Solutions in Designing Major Urban Thoroughfares for
Walkable Communities, Institute of Transportation Engineers Proposed Recommended
Practice (est. February 2006)

A wide variety of factors create context in the urban environment. Every thoroughfare has an immediate physical context created by buildings and activities on adjacent properties, and is also part of a broader context created by the surrounding neighborhood or district. While the elements of context relating to buildings, landscape, land uses, and public facilities can combine in almost infinite varieties, a set of four context zones serve to define urban areas. The four context zones are a subset of a more inclusive system of contexts that can be used to describe the full range of environments from natural to highly urbanized. The figure below illustrates this concept through a diagram. Although the diagram graphically represents context zones as a linear continuum from most natural to most urban, in fact the zones are most frequently found arranged in mosaic-like patterns reflecting the complexity of metropolitan regions.



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Many communities have found that context zones are useful in presenting information to the public. Local illustration of context zone examples can offer useful models that aid stakeholders in expressing their desires to create distinctive parts of their communities.

Selecting a Context Zone

Context is defined by multiple parameters, including land use, density, and design features. The following table presents the full range of context zones, but focuses on the suburban through urban core contexts (C-3 through C-6) representing urban conditions. The “distinguishing characteristics” column in the table, for example, describes the overall relationship between buildings and landscape that contribute to context. In addition to the distinguishing characteristics and general character, four attributes assist the practitioner in identifying a context zone:

- 1) building placement - how buildings are oriented and set back in relation to the thoroughfare,

- 2) frontage type – what part of the site or building fronts onto the thoroughfare,
- 3) typical building height, and
- 4) type of public open space.

Guidelines for identifying and selecting a context zone include:

1. Consider both the existing conditions and the plans for the future, recognizing that thoroughfares often last longer than adjacent buildings.
2. Assess area plans and review general, comprehensive, and specific plans, zoning codes, and community goals and objectives. These often provide detailed guidance on the vision for the area.
3. Compare the area's predominant land use patterns, building types, and land uses to the characteristics presented in the following table.
4. Pay particular attention to residential densities, commercial floor area ratios, and building heights.
5. If an area or corridor has a diversity of characteristics that could fall under multiple context zones, consider dividing the area into two or more context zones.
6. Identify current levels of pedestrian and transit activity, or estimate future levels based on the type, mix, and proximity of land uses. This is a strong indicator of urban context.
7. Consider the area's existing and future characteristics beyond the thoroughfare under design, possibly extending consideration to include entire neighborhoods or districts.

Context Zone Characteristics

	A	B	C	D	E	F	G
	Context Zone	Summary Character	Building Setback/Build To and Frontage	Thoroughfare Network Scale	Building Height	Land Use Mix	Public Open Space Type
1	NATURAL (CZ-1)	Natural	Not Applicable	Regional to State Scale	Not Applicable	Restricted protected natural open space	Natural
2	RURAL (CZ-2)	Agricultural and landscaped, no pedestrians	Large setbacks porch, fence, & work yard	Regional Scale	1 to 2 story with some taller work buildings	Restricted agriculture, limited support residential and commercial	Agricultural
3	SUBURBAN (CZ-3)	Landscaped, few pedestrians, detached buildings widely separated	Deep yard setbacks dominant landscaped character (fence/hedge, yard, & porch)	Predominantly Neighborhood Scale	1 to 2 story with some 3 story	Restricted residential with "at-home" businesses and limited commercial, institutional/civic, and open space	Parks with adjacency to greenbelts
4	GENERAL URBAN (CZ-4)	Urban, pedestrians present, balanced landscape and predominantly detached buildings	Medium yard setbacks balanced landscape and building character (fence/hedge, yard, & porch)	Neighborhood to Regional Scale	2 to 3 story with some 1 story and some above 3 story; and few taller work buildings	Limited medium-density residential with limited mix of other uses typically ground level - institutional/civic, commercial, and open space	Parks
5	URBAN CENTER (CZ-5)	Urban, substantial pedestrian activity, predominantly built with attached buildings with most landscape within the thoroughfare right-of-way	Small or no setback, build to lines common, building character defining street wall (storefront, stoop, & forecourt)	Neighborhood to Regional Scale	3 to 5 story with some lower and few taller buildings	Open higher-density commercial, employment, and residential use with support institutional/civic and open space	Parks, plazas and squares
6	URBAN CORE (CZ-6)	Urban, most pedestrian activity, predominantly built with attached buildings providing a strong sense of enclosure with some landscape within the thoroughfare right-of-way	Small or no setback, build to line at sidewalk/RW, building character defining street wall (storefront, stoop, & forecourt)	Neighborhood to Sector Scale	4+ story with few lower buildings	Open highest-density commercial, employment, and residential use with support institutional/civic and open space	Parks, plazas and squares