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FINAL

WORKING PAPER #1
SELECTION OF URBAN INFILL STUDY SITES

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Trip Generation Rates for Urban Infill in California

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EXECUTIVE SUMMARY

Institute of Transportation Engineers (ITE) trip generation rates are the primary source for travel demand analysis of new development throughout the United States, and they are relied upon for IGR/CEQA and local agencies' development impact analyses. These rates were intentionally based on surveys of isolated suburban development with little or no pedestrian, bicycle, or transit accessibility, for ease of data collection.

Despite the vast amount of data collected by ITE over the past decades, the existing trip generation rates are not sufficient to guide the approval of proposed developments in urban areas, because the source of the rates do not reflect variations in density, diversity (land use mix), site design and the multimodal transportation systems of our larger metropolitan areas, which are critical factors on travel demand[1]. In addition, the advent of land use typologies such as "urban infill" and "transit-oriented" development in response to Smart Growth policies in California have led to particular challenges and debate when it comes to travel demand analysis.

As an initial step in the measurement of trip generation from urban infill development, it is necessary to arrive at a clear definition of what constitutes "urban infill" and where such development presently exists. It is also necessary to establish criteria to be used in selection of the actual study sites where measurements will be taken. The purposes of this **Working Paper # 1** are, therefore:

1. To recommend a parametric definition for the term 'Urban Infill' and propose a methodology for identifying Urban Infill Areas (UIAs), and

2. To suggest appropriate land use categories, ranges of development densities and other criteria relevant to the selection of study sites.

Working Paper # 1 begins with a general definition of 'Urban Infill' development and the functional attributes of UIAs, followed by a more focused identification of infill land use types. Finally, methods and criteria for the identification and selection of appropriate infill zones and survey sites across the state of California are provided.

The Project Team has a general consensus that the criteria used in defining "Urban Infill Areas" should be applicable to other studies, and should have potential application to future development patterns, i.e., to projected as well as existing urbanized areas. The Project Team suggested an initial set of working criteria for defining UIAs in the Draft version of this Working Paper. The initial criteria were reviewed by the Technical Advisory Committee (TAC) for this study, and refined and finalized in collaboration with the TAC. As agreed upon by the TAC at its December 20th, 2005 teleconference, the following criteria will be used to select study sites:

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[1] Land Use and Site Design – Traveler Response to Transportation System Changes, TRB's Transit Cooperative Research Program (TCRP) Report 95: Chapter 15

1) An Urban Infill Area (UIA) designation may be applied to any site located either:
   a) within a **Central Business District (CBD)**, **Central City, Not Downtown (CND)** or **Suburban Center (SBC) Area**, as defined by the ITE for data collection surveys; or alternatively,
   b) within a **General Urban (T/CZ-4)**, **Urban Center (T/CZ-5)**, or **Urban Core (T/CZ-6) Zone**, as defined in the Proposed Recommended Practice for Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities estimated to be published in February 2006 (Appendix E provides characteristics of these context zones),

   which **also** meets all of the other criteria defined immediately below.

2) The UIA must be within 1/3 mile of a site with an existing or future rail transit station, a ferry terminal served by either a bus or rail transit service, an intersection of at least two major bus routes, or within 300 feet of a bus rapid transit corridor. The transit service shall have maximum scheduled headways of 15 minutes for at least 5 hours per day.

3) The UIA can contain no more than 10 percent Vacant Developable Land. Vacant Developable Land as defined excludes water bodies, public rights-of-way, land designated for conservation and public recreation, and any other land designated by local governments' policies or comprehensive plans as unavailable for development. Parking lots on land designated and/or zoned as developable under current policy qualify as Vacant Developable Land.

4) Where residential land uses comprise at least 60 percent of developed land, average residential density shall be at least 10.0 dwelling units per gross acre of residentially developed land.

5) Where nonresidential land uses comprise at least 60 percent of developed land, average nonresidential density shall be a floor area ratio (FAR) of at least 1.0 and/or an employment density of at least 35.0 per gross acre of nonresidential developed land.

6) Where neither residential nor nonresidential uses comprise more than 60 percent of developed land, both residential and nonresidential uses must meet the density and intensity criteria prescribed above.

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

map layers and data have now been assembled into a functional set covering the State of California, for use with desktop GIS platforms like MapInfo and ArcView, and copies have been made available for use by the Project Team.

Parallel to the identification of the appropriate UIAs, i.e., the 'neighborhoods' or zones within which Urban Infill development conditions pertain, is the need to define appropriate land use types for selecting representative infill sites. The current Study is intended to produce trip generation data for at least ten infill land uses, potentially including apartments, condominiums, office buildings, shopping areas, entertainment sites, restaurants, schools, and other land uses typical of urbanized areas.

The Project Team suggested the land-use selection effort begin with the following criteria:

1) Common urban land use types that are consistent with ITE categories (*Trip Generation* [7th ed.]) and generally reflect a range of uses within residential, office and retail (including entertainment) categories.

2) Land use types for which there is a demand for empirical trip generation data (this would be based on professional knowledge and any information ITE can provide).

3) Land use types for which there is a reasonable propensity for shifting drivers to another mode if the use is located in an urban area. For example, it may be unlikely that patrons would shift from autos to transit or walking if a grocery store is located in an urban area versus a suburban area.

4) Land use types that are considered beneficial to the revitalization of urban areas, but for which current trip generation data may act as a barrier to development approval. These may include types that are considered transit oriented, high density residential, and urban retail uses.

Because parking availability and costs are often of crucial importance to the trips and trip types generated by urban infill sites, consideration in choosing candidate uses was also suggested for those types already represented in ITE's *Parking Generation*.

The Project Team selected a preliminary list of 20 land uses for consideration as appropriate candidates for urban infill trip generation surveys. Preference was given in the initial selection to higher-density residential types, and to nonresidential land uses that are of recurring interest in infill development impact analyses and in application of ITE standards to local transportation demand models. Most, but not all, of the uses in the initial list were among the 91 types represented in the 3rd edition of *Parking Generation.*

In presenting this **Working Paper** for review and comment by the Technical Advisory Committee, the Project Team sought in particular TAC members' discussion and input regarding:

- The suggested definition of UIAs—identifying the requisite attributes of areas from which we will select study sites; and

- The suggested types of land use to study—both in terms of specific site uses and the appropriate priority or weighting of criteria for their selection.

I. INTRODUCTION

As an initial step in the measurement of traffic generation from urban infill development it is necessary to arrive at a clear definition of what constitute "urban infill" development and where such development presently exists. It is also necessary to establish criteria to be used in selection of the actual study sites where measurements will be taken. These are the subjects of this report, **Working Paper #1**.

Working Paper #1 was prepared by Economic & Planning Systems (EPS), in association with Kimley Horn Associates and the Association of Bay Area Governments for review and comment by the Technical Advisory Committee (TAC). Following refinement in response to comments and suggestions, and approval by the TAC, **Working Paper #1** has now been finalized and the Project Team will utilize the agreed-upon definitions and criteria to design and conduct the measurement process.

The purposes of **Working Paper # 1** are:

1) To establish a parametric definition for the term 'Urban Infill' and propose a methodology for identifying UIAs, and

2) To select appropriate land use categories, ranges of development densities and other criteria relevant to the selection of study sites.

The discussion that follows begins with a general definition of 'Urban Infill' development and the functional attributes of UIAs followed by a more focused identification of infill land use types. Finally, methods and criteria for the identification and selection of appropriate infill zones and survey sites across the state of California are provided.

The attached appendices include **Appendix A**, a brief literature review; **Appendix B**, an initial listing of possible locales for urban survey study sites; and **Appendix C**, comprising additional technical background information including a listing of US Census Block Groups in California with high employment and residential densities, a sample parking demand survey form, and a sample of a site characterization checklist. **Appendix D** provides a detailed explanation of the methodology and sources Economic & Planning Systems has applied in a prototype approach to identifying candidate UIAs. Appendix E explains Context Zones, as applied in the Proposed Recommended (ITE) Practice for Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities

URBAN INFILL AREAS: CONCEPTS AND DEFINITIONS

The terms "urban" and "infill" are in common usage throughout the disciplines of land use and transportation planning. Planners have an intuitive grasp of what "urban" means, and the concept of "infill" is widely understood to describe the development of

new homes, commercial sites, and public facilities on vacant or under-utilized land in existing communities. However, "Urban Infill" is often defined in qualitative terms narrowly relevant to studies addressing economic redevelopment of blighted areas, or as a nebulous concept relevant to broad-brush policies aimed at preventing "leapfrog" development or sprawl within urban limit lines.

It is therefore critical that this current study has a clearer and more applicable definition of "Urban Infill" that is both relevant to surveys of trip generation in California's urban areas and parametric, that is, based on site and site context characteristics that are measurable.

Components of a good working definition of "Urban Infill" are provided by ITE 'Area' definitions for data collection surveys and by Smart Growth concepts of Transect/Context Zones, by U.S. Bureau of the Census criteria for the 2000 Census, and in current California and Florida state laws on urban infill and redevelopment. In the selections from these sources cited immediately below, recommended components for further consideration/consolidation are underlined.

The ITE has established five 'Area' types for the purpose of identifying sites' context. As reported in *Parking Generation* (3rd ed.),
http://trafficincident.org/parkgen/datasubmission.asp
The five Area types are:

Central Business District (CBD): This would be the downtown area of a city. Characteristics would include very good transit service, street grid, parking garages, extensive pedestrian sidewalk network, multi-story buildings and a wide range of land uses (including mixed-use sites). Obvious CBDs would be downtown New York, Chicago or San Francisco. CBDs also exist in smaller cities such as downtown areas of Portland, Maine, or Bakersfield, California.

Central City, Not Downtown (CND): This would be the area outside the downtown area of a larger city (typically cities above 250,000 or more in population). These sites typically exhibit greater land use density than suburban sites but are substantially less density than the CBD. The intent of this area designation is for the areas around large central cities such as Seattle, San Francisco, Oakland, Atlanta or Washington, DC—but not large suburban cities which are addressed separately).

Suburban (SUB): Suburban locations are those outside the central city of a metropolitan area. Characteristics would include limited transit services, surface parking, less than complete pedestrian networks, single story buildings and larger groupings of homogeneous land uses. In smaller metropolitan areas (less than 250,000) the area surrounding the CBD could be characterized as suburban.

Suburban Center (SBC): Suburban center areas are those downtown areas of suburbs that have developed CBD characteristics but are not the central city of a metropolitan region. Characteristics can include good transit service, mix of surface and structured parking, connected streets, connected pedestrian network and a mix of land uses. Examples would include the downtown areas of Bellevue, Washington, Las Colinas, Texas or Walnut Creek, California.

Rural (RUR): Areas outside a metropolitan region (any SMSAs) would be considered rural.

Three of the Area types, **CBD, CND,** and **SBC**, are considered "urban" per *Parking Generation* and provide distinctions which are familiar and intuitive to experienced land use and transportation planners. The **CBD**, **CND** and **SBC** Area types can be usefully included among the components of the desired definition of "urban infill" as necessary (but not sufficient) context conditions.

The limitations of the Area types are two-fold. First, they reflect to some degree the traditional, monocentric city form, with employment-generating land uses concentrated primarily in a Central Business District surrounded by concentric rings of decreasing employment densities and proportionally more residential and rural land. Since the 1980's, urban development in many parts of California and across the nation has seen the decline of CBDs, and the emergence of urban and suburban employment centers outside the CBDs, in trends leading to more polycentric and dispersed urban regions.

In response to these trends, transportation and land use planners have reconceived the traditional 'bull's-eye' CBD concept of urban form and concentric Area types into the more flexible Transect Zone or Context Zone concepts. Transect/Context Zones are being introduced into the current development of *Guidelines for Context Sensitive Solutions for the Design of Major Urban Thoroughfares*, a joint project of the Institute of Transportation Engineers and the Congress for the New Urbanism. The final product of this project will be a Recommended Practice published by ITE (See also Appendix E).

Transect/Context Zones are a systematic set of development-intensity-based codes on a sliding scale ranging from the most rural or undeveloped state to the most urban or developed state. The Transect/Context Zone types established by Duany Plater-Zyberk & Company (DBZ) and in common planning usage are:

Natural (T/CZ-1): Approximating or reverting a wilderness condition, including land unsuitable for settlement because of topography, hydrology or vegetation. Typical Land Uses—Natural preserve, recreation and camping. Typical Buildings—Utility infrastructure and camp buildings.

Rural (T/CZ-2): In an open space or cultivated state or sparsely settled. These areas may include woodland, agricultural lands, grasslands and irrigable deserts. Typical Land Uses—Natural reserve, agriculture, recreation and camping.

Typical Buildings: Utility infrastructure, agricultural buildings and farmhouses, migrant worker housing and campgrounds.

Suburban (T/CZ-3): Conventional low-density residential areas, allowing home occupations. Planting is naturalistic with deep setbacks. Blocks may be large and the roads irregular to accommodate natural conditions. Typical Land Uses—Low-density residential and home occupations. Typical Buildings—Houses and outbuildings.

General Urban (T/CZ-4): Denser and primarily residential urban fabric. Mixed-use sites usually confined to corner locations. Characterized by a wide range of building types: single, side yard, and row houses. Setbacks and landscaping are variable. Streets typically define medium-sized blocks. Typical Land Uses—Medium density residential and home occupations; limited commercial and lodging. Typical Buildings—Houses and outbuildings, side yard houses, townhouses, live/work units, corner stores, inns.

Urban Center (T/CZ-5): 'Main Street' land uses, characterized by building types that Accommodate retail, offices, row houses and apartments. Typically has a tight network of streets, with wide sidewalks, steady street tree planting and buildings set close to the frontages. Typical Land Uses—Medium intensity residential and commercial uses, i.e., retail, offices, lodging, civic facilities. Typical Buildings—Townhouses, apartment houses, live-work units, shop front buildings and office buildings, hotels, churches, schools.

Urban Core (T/CZ-6): 'Downtown' land uses, characterized by the tallest buildings, in the greatest variety, and unique civic buildings in particular. It is the least naturalistic zone type; street trees are steadily planted and sometimes absent. Typical Land Uses—High intensity residential and commercial: retail and offices, lodging, civic buildings. Typical Buildings—High- and medium-rise apartment and office buildings, hotels; townhouses, live-work units, shop fronts, churches, civic buildings.

Special Districts (SD): Areas with buildings and building complexes that by their intrinsic function, disposition, or configuration, cannot conform to any of the other six normative Transect Zones types. Single use areas such as heavy industrial, refineries, airports, hospitals and university campuses.

A 'snapshot' of the current application of Transect zones to guide design principles for urban thoroughfares, by the Institute of Transportation Engineers and the Congress for the New Urbanism, is shown in **Table 1**. More detailed explanations and examples of

Table 1
Transect/Context Zone Characteristics
Selection of Urban Infill Study Sites, EPS #14002

Context Zone	Distinguishing Characteristics	General Character	Building Placement	Frontage Types	Typical Building	Type of Public Open Space
T/CZ-1 Natural	Natural landscape	Natural features	Not applicable	Not applicable	Not applicable	Natural open space
T/CZ-2 Rural	Agricultural with scattered development	Agricultural activity and natural features	Very large setbacks	Not applicable	Not applicable	Agricultural and natural
T/CZ-3 Suburban	Single family residential	Detached houses Landscaped yards Low pedestrian activity	Varying front and side yard setbacks	Lawns, porches, fences, landscaping	1 to 2 story Some 3 story	Parks, greenbelts
T/CZ-4 General Urban	Mix of single and moderate density multifamily residential Commercial separated from residential shopping centers, office parks)	Predominantly detached buildings Large landscaped areas Low pedestrian activity	Shallow to medium front and side yard setback Commercial with parking in front	Porches, fences Landscaped buffer areas Parking lots	2 to 3 story Some taller workplace buildings	Parks, greenbelts
T/CZ-5 Urban Center	Mixed-use High-density multifamily residential with retail, workplace, and civic uses at the community or subregional scale	Predominantly attached buildings Landscaping within the public right of way Substantial pedestrian activity	Small or no setbacks Building oriented to street	Stoops, dooryards. Storefronts, Arcaded walkways	3-to-5 story	Parks, plazas and squares
T/CZ-6 Urban Core	Mixed-use Highest-intensity areas in subregion or region, with high-density residential and workplace uses entertainment, civic and cultural uses	Attached buildings forming continuous street wall Landscaping within the public right of way Highest pedestrian and transit activity	Small or no setbacks Building oriented to street, placed at front property line	Stoops, dooryards, forecourts. Storefronts, Arcaded walkways	4+ story Few lower buildings	Parks, plazas and squares
SD Special Districts	Single use areas such as heavy industrial, refineries, airports, hospitals and university campuses, that by their intrinsic function, disposition, or configuration, cannot conform to any of the other six Transect/Context Zone types					

After: 'Table 3.1 Context Zone Characteristics', in *Context Sensitive Solutions in Designing Major Urban Thoroughfares - 3rd Draft,* August 1, 2005 (page 29);
provided by Kimley Horn Associates

the Transect concept in applied land use and thoroughfare planning are provided in *SmartCode v 7.0*, by Duany Plater-Zyberk & Company, June 2005: http://www.dpz.com/pdf/SmartCodeV7.0-6-06-05.pdf.

Three of the Transect/Context Zone types, **General Urban (T/CZ-4)**; **Urban Center (T/CZ-5)**; and **Urban Core (T/CZ-6)**, are considered "urban" per the ITE *Context Sensitive Solutions for the Design of Major Urban Thoroughfares* project described above and can be included among the components of the desired definition of "urban infill" in parallel with or as alternatives to the more traditional **CBD**. **CND** and **SBC** Area types.

A second limitation of the Area types, shared in common with the Transect/Context Zone types, is their primarily qualitative descriptions of urban forms and contexts. Densities and types of development and transit, parking, and pedestrian accessibility and levels or service associated with the Area types and Transect/Context Zones have typically been defined in relative terms, e.g., 'Low-', 'Medium-' and 'High-', rather than with parametric measures such as dwelling units/population/jobs per acre; built space coverage and FARs; or transit service headways. Precedents for more quantitative approaches to defining "urban" areas are available, and will now be discussed.

For the 2000 Census, the Census Bureau classified as "urban" all territory, population, and housing units located within an urbanized area (UA) or an urban cluster (UC). UA and UC boundaries were delineated to encompass densely settled territory, which were defined as aggregates of:

- Core census block groups or blocks that had a Year 2000 population density of at least 1,000 people per square mile, and

- Surrounding census blocks that had a Year 2000 overall density of at least 500 people per square mile. In addition, under certain conditions, less densely settled territory could be included as part of each UA or UC.

http://www.census.gov/geo/www/ua/1ua_2k.html

As further documented in the Federal Register Notice for Urban Area Criteria
http://www.census.gov/geo/www/ua/uafedreg031502.pdf
(Federal Register / Vol. 67, No. 51 / Friday, March 15, 2002 / Notices):

URBAN AREA CRITERIA FOR CENSUS 2000

As a part of the US Census 2000, definitions for UA and UC were developed. The following criteria apply to the 50 states, the District of Columbia, Puerto Rico, American Samoa, Guam, the Northern Mariana Islands, and the Virgin Islands of the United States.

- For Census 2000, a UA consists of contiguous[2], densely settled census block groups[3] (BGs) and census blocks[4] that meet minimum population density requirements, along with adjacent densely settled census blocks that together encompass a population of at least 50,000 people.

- For Census 2000, a UC consists of contiguous, densely settled census BGs and census blocks that meet minimum population density requirements, along with adjacent densely settled census blocks that together encompass a population of at least 2,500 people, but fewer than 50,000 people.

- All criteria based on land area, population, and population density reflect the information contained in the Census Bureau's Topologically Integrated Geographic Encoding and Referencing (TIGER) database (the Census 2000 TIGER/Line file at the time of initial delineation) and the official Census 2000 redistricting data file (the Public Law 94–171 file at the time of initial delineation).

Census 2000 UAs and UCs for the State of California are listed in **Tables 2** and **3**, and shown in **Figure 1.** It can be seen from the tables and in **Figure 1** that some UAs and UCs are located outside of California counties typically as "urban"; however, most of the census-defined urban regions are found in California counties having reached total populations of at least 400,000 in the year 2000.

While UAs and UCs as defined for the Census 2000 counts generally indicate California regions of interest, they are not sufficient definitions of 'Urban Infill' for the intended purposes of this study. First, the use of population density as the sole selective criterion ignores urban nonresidential land uses of equal interest for trip-generation surveys, and does not address the possible impacts of complimentary mixes of adjacent zoning and development on trip generation. Second, there are no considerations of availability or proximity of parking facilities or transit service.

Finally, census UAs and UCs were intentionally defined to be inclusive. Within UA and UC boundaries, the Census Bureau could and did include "green space" and other islands of vacant or only sparsely developed territory, with "jumps" of up to 2.5 miles separating blocks and block groups that met the threshold population densities of 500 to 1,000 persons per square mile. This means that many neighborhoods and sites within

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[2] Contiguity requires at least one point of intersection.

[3] A census block group is a group of census blocks within a census tract whose numbers begin with the same digit; for example, BG 3 within a census tract includes all census blocks numbered from 3000 to 3999.

[4] A census block is an area normally bounded by visible features, such as streets, streams, and railroads, and by nonvisible features, such as the boundary of an incorporated place, minor civil division (MCD), county, or other Census 2000 tabulation entity.

Table 2
Census 2000 Urbanized Areas - California
Selection of Urban Infill Study Sites, EPS #14002

State Code	FIPS Code	Census 2000 Urbanized Area	Population in 2000	Area (sq meters)	Area (sq miles)	Population per sq. mile
06	02683	Antioch	217,591	156,121,048	60.28	3,609.8
06	03574	Atascadero--El Paso de Robles	54,762	79,747,822	30.79	1,778.5
06	04681	Bakersfield	396,125	285,740,955	110.32	3,590.5
06	12754	Camarillo	62,798	55,228,642	21.32	2,945.0
06	16318	Chico	89,221	90,463,755	34.93	2,554.4
06	19504	Concord	552,624	457,017,877	176.45	3,131.8
06	22420	Davis	66,022	35,290,113	13.63	4,845.4
06	26416	El Centro	52,954	42,741,615	16.50	3,208.8
06	28657	Fairfield	112,446	66,862,270	25.82	4,355.7
06	31843	Fresno	554,923	359,030,809	138.62	4,003.1
06	33328	Gilroy--Morgan Hill	84,620	99,185,327	38.30	2,209.6
06	03670	Hanford	69,639	65,966,809	25.47	2,734.2
06	38215	Hemet	117,200	108,290,815	41.81	2,803.1
06	41347	Indio--Cathedral City--Palm Springs	254,856	255,344,357	98.59	2,585.0
06	47611	Lancaster--Palmdale	263,532	234,122,253	90.39	2,915.3
06	50527	Livermore	75,202	54,060,803	20.87	3,602.8
06	50851	Lodi	83,735	60,961,956	23.54	3,557.5
06	51040	Lompoc	55,667	155,667,328	60.10	926.2
06	51445	Los Angeles--Long Beach--Santa Ana	11,789,487	4,319,930,311	1,667.93	7,068.3
06	52984	Madera	58,027	58,572,339	22.61	2,565.9
06	54145	Manteca	51,176	35,247,429	13.61	3,760.4
06	56251	Merced	110,483	93,155,694	35.97	3,071.7
06	57709	Mission Viejo	533,015	354,533,330	136.89	3,893.9
06	58006	Modesto	310,945	222,937,057	86.08	3,612.4
06	61057	Napa	79,867	60,929,170	23.52	3,395.0
06	66673	Oxnard	337,591	196,057,094	75.70	4,459.7
06	68887	Petaluma	59,958	47,840,726	18.47	3,246.0
06	71074	Porterville	60,261	54,639,137	21.10	2,856.5
06	73774	Redding	105,267	182,949,567	70.64	1,490.2
06	75340	Riverside--San Bernardino	1,506,816	1,136,422,783	438.77	3,434.1
06	77068	Sacramento	1,393,498	955,784,543	369.03	3,776.1
06	78310	Salinas	179,173	116,284,529	44.90	3,990.7
06	78661	San Diego	2,674,436	2,026,112,024	782.28	3,418.7
06	78904	San Francisco--Oakland	3,228,605	1,364,031,382	526.65	6,130.4
06	79039	San Jose	1,538,312	673,683,711	260.11	5,914.1
06	79147	San Luis Obispo	53,498	38,415,106	14.83	3,606.9
06	79282	Santa Barbara	196,263	154,823,889	59.78	3,283.2
06	79309	Santa Clarita	170,481	140,721,950	54.33	3,137.7
06	79336	Santa Cruz	157,348	142,196,828	54.90	2,866.0
06	79417	Santa Maria	120,297	92,062,185	35.55	3,384.3
06	79498	Santa Rosa	285,408	264,142,433	101.99	2,798.5
06	80362	Seaside--Monterey--Marina	125,503	105,252,097	40.64	3,088.3
06	82144	Simi Valley	112,345	70,123,206	27.07	4,149.4
06	85087	Stockton	313,392	192,415,050	74.29	4,218.4
06	87004	Temecula--Murrieta	229,810	247,585,114	95.59	2,404.0
06	87490	Thousand Oaks	210,990	223,171,056	86.17	2,448.6
06	88273	Tracy	59,020	33,075,133	12.77	4,621.6
06	89083	Turlock	69,507	48,323,193	18.66	3,725.4
06	89866	Vacaville	90,264	65,598,046	25.33	3,563.9
06	90028	Vallejo	158,967	87,939,538	33.95	4,681.9
06	90541	Victorville--Hesperia--Apple Valley	200,436	321,082,129	123.97	1,616.8
06	90946	Visalia	120,044	103,376,801	39.91	3,007.6
06	92890	Watsonville	66,500	49,512,247	19.12	3,478.6
06	97939	Yuba City	97,645	91,599,143	35.37	2,760.9
06	98020	Yuma, AZ--CA	1,095	3,533,642	1.36	802.6

Sources: U.S. Bureau of the Census, Federal Register Notice November 20, 2002, EPS
http://www.census.gov/geo/www/ua/uaucinfo.html#lists

Table 3
Census 2000 Urban Clusters - California
Selection of Urban Infill Study Sites, EPS #14002

State Code	FIPS Code	Census 2000 Urban Clusters	Population in 2000	Area (sq meters)	Area (sq miles)	Population per sq. mile
06	00523	Adelanto	9,008	9,419,732	3.64	2,476.8
06	01819	Alturas	2,831	5,568,545	2.15	1,316.7
06	02494	Angels City	2,776	5,302,914	2.05	1,355.8
06	02926	Arcata	30,429	49,109,067	18.96	1,604.8
06	03169	Aromas	2,701	11,188,959	4.32	625.2
06	03196	Arroyo Grande--Grover Beach	47,550	47,841,654	18.47	2,574.2
06	03250	Arvin	13,234	10,629,775	4.10	3,224.5
06	04438	Avalon	3,096	3,219,471	1.24	2,490.7
06	04465	Avenal	14,641	6,917,136	2.67	5,482.0
06	05302	Barstow	28,234	39,004,717	15.06	1,874.8
06	05950	Beale AFB	5,112	10,464,053	4.04	1,265.3
06	07435	Bethel Island	2,816	13,765,064	5.31	529.8
06	07516	Big Bear Lake	15,123	31,603,160	12.20	1,239.4
06	07840	Bishop	10,359	19,628,150	7.58	1,366.9
06	08623	Blythe--AZ	11,434	16,860,068	6.51	1,756.5
06	08893	Bonadelle Ranchos-Madera Ranchos	6,249	19,698,898	7.61	821.6
06	09730	Brawley	22,035	14,563,837	5.62	3,918.6
06	11836	Burney	3,239	9,091,092	3.51	922.8
06	12430	Calexico	27,095	15,440,579	5.96	4,544.9
06	12565	California City	7,803	16,801,424	6.49	1,202.9
06	12592	Calipatria	4,095	1,291,602	0.50	8,211.5
06	12646	Calistoga	5,190	6,729,753	2.60	1,997.4
06	12781	Cambria	5,746	8,661,728	3.34	1,718.1
06	13105	Cameron Park	22,066	36,122,122	13.95	1,582.2
06	16696	Chowchilla	7,592	9,893,487	3.82	1,987.5
06	17479	Clearlake	13,873	20,047,341	7.74	1,792.3
06	18181	Cloverdale	7,488	8,087,401	3.12	2,398.0
06	18289	Coalinga	11,724	12,358,842	4.77	2,456.9
06	19342	Colusa	6,066	4,693,428	1.81	3,347.4
06	20044	Corcoran	22,758	14,932,987	5.77	3,947.2
06	20206	Corning	7,671	15,715,378	6.07	1,264.2
06	20584	Cottonwood	4,089	9,737,677	3.76	1,087.6
06	20908	Crescent City	18,812	45,022,944	17.38	1,082.2
06	20989	Crestline	21,531	50,663,833	19.56	1,100.7
06	22987	Delano	39,512	15,360,705	5.93	6,662.2
06	23716	Desert Hot Springs	24,333	30,026,967	11.59	2,098.9
06	24256	Discovery Bay	9,087	8,142,841	3.14	2,890.3
06	24283	Dixon	16,085	11,743,033	4.53	3,547.6
06	24445	Dos Palos	6,327	8,661,531	3.34	1,891.9
06	25579	Earlimart	7,119	5,837,475	2.25	3,158.6
06	26281	Edwards AFB	5,386	20,735,824	8.01	672.7
06	27820	Escalon	6,267	9,842,437	3.80	1,649.1
06	28198	Eureka	43,452	52,637,713	20.32	2,138.0
06	28792	Fairfield Southwest	9,096	10,654,865	4.11	2,211.1
06	29710	Fillmore	13,631	6,035,519	2.33	5,849.4
06	29764	Firebaugh	6,483	7,761,078	3.00	2,163.5
06	30385	Forestville	3,625	8,941,262	3.45	1,050.0
06	30574	Fort Bragg	9,325	13,482,664	5.21	1,791.3
06	30736	Fort Irwin	9,315	220,819,213	85.26	109.3
06	30979	Fortuna	10,483	11,033,854	4.26	2,460.7
06	31492	Frazier Park	3,128	6,757,976	2.61	1,198.8
06	33841	Gonzales	7,695	5,098,755	1.97	3,908.8
06	34597	Grass Valley	34,019	83,899,571	32.39	1,050.2
06	34921	Greenfield	13,220	7,871,005	3.04	4,350.1
06	35677	Gridley	7,512	12,191,498	4.71	1,595.9
06	35839	Guadalupe	5,651	3,709,064	1.43	3,946.0
06	35893	Guerneville	4,990	10,763,923	4.16	1,200.7

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State Code	FIPS Code	Census 2000 Urban Clusters	Population in 2000	Area (sq meters)	Area (sq miles)	Population per sq. mile
06	36055	Gustine	4,681	3,101,647	1.20	3,908.8
06	36271	Half Moon Bay	22,037	28,663,482	11.07	1,991.2
06	38188	Helendale	3,980	5,278,093	2.04	1,953.0
06	39025	Hilmar-Irwin	4,573	6,785,052	2.62	1,745.6
06	39511	Hollister	39,923	24,950,663	9.63	4,144.2
06	39619	Holtville	6,727	8,199,327	3.17	2,124.9
06	40834	Huron	6,306	3,071,540	1.19	5,317.4
06	41104	Incline Village-Crystal Bay, NV--CA	9,056	16,462,996	6.36	1,424.7
06	41509	Ione	7,058	6,742,234	2.60	2,711.3
06	41968	Ivanhoe	4,474	5,199,630	2.01	2,228.5
06	42049	Jackson	6,227	10,263,370	3.96	1,571.4
06	44290	Kelseyville	2,534	2,598,056	1.00	2,526.1
06	44587	Kerman	8,539	3,335,458	1.29	6,630.5
06	45073	King City	12,054	6,774,198	2.62	4,608.6
06	46774	Lake Isabella	3,727	8,925,286	3.45	1,081.5
06	46855	Lake Los Angeles	11,181	17,382,327	6.71	1,666.0
06	46963	Lake of the Pines	6,323	12,955,095	5.00	1,264.1
06	47071	Lakeport	10,883	25,162,589	9.72	1,120.2
06	47233	Lake Wildwood	6,527	16,537,417	6.39	1,022.2
06	49042	Lemoore Station	5,749	5,098,606	1.97	2,920.4
06	49879	Lincoln	10,230	7,471,239	2.88	3,546.3
06	50041	Lindsay	12,644	16,157,966	6.24	2,026.7
06	50473	Live Oak (Sutter County)	6,471	5,598,680	2.16	2,993.5
06	50581	Livingston	11,014	11,300,577	4.36	2,524.3
06	51472	Los Banos	26,036	24,408,913	9.42	2,762.6
06	51931	Lucerne	5,035	7,414,605	2.86	1,758.8
06	52552	McFarland	10,071	10,144,305	3.92	2,571.3
06	53605	Mammoth Lakes	5,800	6,520,662	2.52	2,303.7
06	55927	Mecca	6,589	6,555,740	2.53	2,603.1
06	56170	Mendota	7,870	3,910,671	1.51	5,212.2
06	58276	Mono Vista	10,733	29,636,292	11.44	938.0
06	59437	Morro Bay	26,960	42,342,783	16.35	1,649.1
06	60220	Mount Shasta	5,352	13,927,791	5.38	995.2
06	61435	Needles--AZ	3,987	7,682,871	2.97	1,344.1
06	62569	Newman	7,408	10,983,389	4.24	1,746.9
06	64270	Oakdale	17,946	25,050,664	9.67	1,855.4
06	64432	Oakhurst	2,501	7,646,910	2.95	847.1
06	65377	One Hundred Palms	2,924	6,810,545	2.63	1,112.0
06	65755	Orange Cove	7,720	3,580,913	1.38	5,583.7
06	65836	Orland	7,575	13,948,583	5.39	1,406.5
06	65917	Orosi	12,917	12,447,480	4.81	2,687.7
06	65944	Oroville	34,474	57,433,078	22.17	1,554.6
06	67375	Paradise	35,274	70,389,537	27.18	1,297.9
06	67753	Parlier	11,138	3,676,528	1.42	7,846.3
06	67861	Patterson	12,121	15,315,869	5.91	2,049.7
06	69805	Pixley	2,831	3,901,876	1.51	1,879.2
06	69832	Placerville	27,108	62,483,734	24.13	1,123.6
06	70021	Planada	4,138	2,579,268	1.00	4,155.2
06	71398	Portola	2,626	3,350,372	1.29	2,030.0
06	73288	Ramona	22,954	45,114,125	17.42	1,317.8
06	73315	Rancho Calaveras	4,142	12,507,810	4.83	857.7
06	73342	Rancho Murieta	2,634	4,373,234	1.69	1,560.0
06	73720	Red Bluff	17,633	31,544,651	12.18	1,447.8
06	74044	Reedley--Dinuba	38,662	24,841,550	9.59	4,030.9
06	74449	Richgrove	2,728	3,151,808	1.22	2,241.7
06	74827	Ridgecrest	27,274	43,220,939	16.69	1,634.4
06	75043	Rio Dell	3,763	4,012,704	1.55	2,428.8
06	75097	Rio Vista	4,064	7,160,624	2.76	1,469.9
06	76285	Rosamond	12,077	16,902,241	6.53	1,850.6
06	76717	Running Springs	4,941	7,451,930	2.88	1,717.3
06	77500	St. Helena	6,793	15,077,189	5.82	1,166.9
06	78931	Sanger	20,541	12,035,422	4.65	4,420.4
06	79012	San Joaquin	3,678	4,265,037	1.65	2,233.5
06	79444	Santa Paula	29,070	10,953,006	4.23	6,874.0

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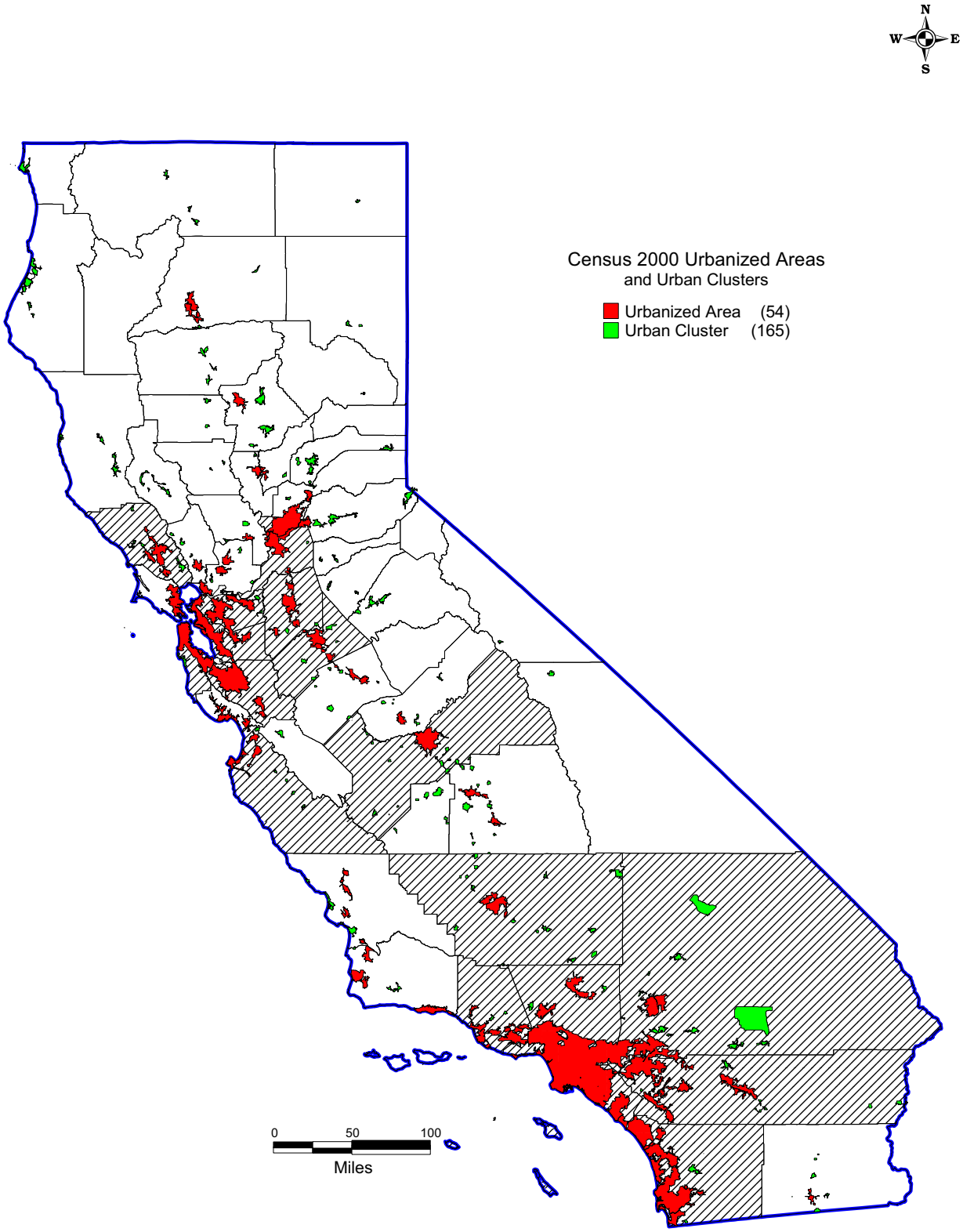
State Code	FIPS Code	Census 2000 Urban Clusters	Population in 2000	Area (sq meters)	Area (sq miles)	Population per sq. mile
06	80551	Selma	34,716	31,661,981	12.22	2,839.8
06	80929	Shafter	13,668	10,460,473	4.04	3,384.2
06	82846	Soledad	11,524	5,948,150	2.30	5,017.9
06	82873	Solvang--Buellton	14,521	26,878,570	10.38	1,399.2
06	83008	Sonoma	31,487	33,093,624	12.78	2,464.2
06	83035	Sonora	14,300	36,750,505	14.19	1,007.8
06	83305	South Lake Tahoe--NV	31,705	47,681,206	18.41	1,722.2
06	85870	Susanville	9,430	11,131,012	4.30	2,194.2
06	86329	Taft	13,302	14,302,810	5.52	2,408.8
06	86869	Tehachapi	12,990	20,797,744	8.03	1,617.7
06	86923	Tehama	3,261	5,831,195	2.25	1,448.4
06	87031	Temescal Valley	4,897	4,236,302	1.64	2,993.9
06	87112	Terra Bella	3,430	3,649,733	1.41	2,434.1
06	87274	Thermal	3,239	6,596,159	2.55	1,271.8
06	88624	Truckee	8,018	23,700,433	9.15	876.2
06	88840	Tulare	47,294	42,512,151	16.41	2,881.3
06	89191	Twentynine Palms	12,496	24,136,412	9.32	1,340.9
06	89218	Twentynine Palms Base	14,090	707,875,475	273.31	51.6
06	89380	Ukiah	28,871	39,710,238	15.33	1,883.0
06	90109	Val Verde	18,752	25,209,301	9.73	1,926.6
06	92161	Wasco	14,986	6,522,215	2.52	5,951.0
06	92539	Waterford	7,016	3,873,893	1.50	4,690.7
06	93538	Weed	2,865	6,380,158	2.46	1,163.0
06	95374	Williams	3,537	2,436,864	0.94	3,759.3
06	95671	Willits	8,053	18,475,908	7.13	1,128.9
06	95725	Willows	7,410	8,244,106	3.18	2,327.9
06	96724	Winters	6,496	7,465,679	2.88	2,253.6
06	96967	Woodlake	6,895	7,228,367	2.79	2,470.5
06	96994	Woodland	49,168	22,552,879	8.71	5,646.5
06	97372	Wrightwood	3,705	3,399,553	1.31	2,822.7
06	97885	Yountville	2,916	4,217,385	1.63	1,790.8
06	97912	Yreka	7,327	13,157,477	5.08	1,442.3
06	97966	Yucca Valley	18,992	46,018,144	17.77	1,068.9

Sources: U.S. Bureau of the Census, Federal Register Notice November 20, 2002, EPS
http://www.census.gov/geo/www/ua/uaucinfo.html#lists

Figure 1:
Census 2000 Urbanized Areas and Urban Clusters - California



Shaded counties had Year 2000 total populations greater than 400,000.

established UAs and UCs, evaluated in isolation, would not be considered as having "urban" levels of development. By simple extension, such neighborhoods and sites would generally not be good prospects for studies of "Urban Infill" trip generation.

Fortunately, recent legislation passed in the states of California and Florida provides several additional concepts and potential criteria for enhancing the definition of "urban" in ways directly relevant to infill development and transportation impacts.

California Senate Bill (SB) 1636 (Figueroa) was sponsored by the Surface Transportation Policy Project and signed in to law on September 12, 2002. California Government Code Section 65088.1 now reads:

> (g) "Infill opportunity zone" means a specific area designated by a city or county, pursuant to subdivision (c) of Section 65088.4, <u>zoned for new compact residential or mixed use development within one-third mile of a site with an existing or future rail transit station, a ferry terminal served by either a bus or rail transit service, an intersection of at least two major bus routes, or within 300 feet of a bus rapid transit corridor, in counties with a population over 400,000. The mixed use development zoning shall consist of three or more land uses that facilitate significant human interaction in close proximity, with residential use as the primary land use supported by other land uses such as office, hotel, health care, hospital, entertainment, restaurant, retail, and service uses. The transit service shall have maximum scheduled headways of 15 minutes for at least 5 hours per day. A qualifying future rail station shall have broken ground on construction of the station and programmed operational funds to provide maximum scheduled headways of 15 minutes for at least 5 hours per day</u>.

The State of Florida has also adopted policy legislation and government codes providing useful criteria for consideration. While the Florida Growth Policy Act's focus on socio-economic blighted areas is too restrictive to the intent of the proposed California trip generation surveys, the requirements for existing public services and infrastructure and proximity to established transit service are relevant:

> Florida 163.2514 Growth Policy Act; definitions (as used in ss. 163.2511-163.2526):
>
> "Local government" means any county or municipality.
>
> (2) "Urban infill and redevelopment area" means an area or areas designated by a local government where:
>
> (a) <u>Public services such as water and wastewater, transportation, schools, and recreation are already available or are scheduled to be provided in an adopted 5-year schedule of capital improvements</u>;

(b) The area, or one or more neighborhoods within the area, suffers from pervasive poverty, unemployment, and general distress as defined by s. 290.0058;

(c) The area exhibits a proportion of properties that are substandard, overcrowded, dilapidated, vacant or abandoned, or functionally obsolete which is higher than the average for the local government;

(d) More than 50 percent of the area is within 1/4 mile of a transit stop, or a sufficient number of such transit stops will be made available concurrent with the designation; and

(e) The area includes or is adjacent to community redevelopment areas, brown fields, enterprise zones, or Main Street programs, or has been designated by the state or Federal Government as an urban redevelopment, revitalization, or infill area under empowerment zone, enterprise community, or Brownfield showcase community programs or similar programs.

In addition, Florida administrative codes supply clear examples for the specification of threshold limits of 'floor' density levels for both residential and nonresidential development appropriate to Urban Infill designations.

VACANT LAND AND DENSITY AND INTENSITY REQUIREMENTS

Florida Administrative Code 9J-5.0055 Section (6) sets forth the following requirements:

If an area is delineated for urban infill development in the comprehensive plan, it must meet the following vacant land and density and intensity requirements:

- The area cannot contain more than 10 percent vacant developable land. This vacant developable land must exclude water bodies, land designated for conservation, public rights-of-way, public recreation and any other land designated in the local government's comprehensive plan as unavailable for development.

- For areas where residential land uses compose at least 60 percent of the developed land, the average residential density shall be at least five dwelling units per acre.

- For areas where nonresidential land uses compose at least 60 percent of the developed land, the average nonresidential density shall be at least a FAR of 1.0 per gross nonresidentially developed acre of land.

- If neither residential nor nonresidential uses compose more than 60 percent of the developed land, both must meet the density and intensity criteria prescribed above.

II. SUGGESTED (PRELIMINARY) URBAN INFILL AREA CRITERIA

The Project Team has a general consensus that the criteria used in defining "Urban Infill Areas" should be quantitative in nature, be applicable to other studies, and have potential application to future development patterns, i.e., to projected as well as existing urbanized areas. , EPS prepared a set of initial working criteria of "Urban Infill Areas" which combined and revised the components indicated above for further discussion and refinement by the Project Team and the Technical Advisory Committee (TAC). The initial criteria were reviewed by the TAC, and refined and finalized in collaboration with its members. As agreed upon by the TAC at its December 20th, 2005 teleconference, the following criteria will be used to select study sites:

1) An Urban Infill Area (UIA) designation may be applied to any site located either:

   a) within a **CBD**, **CND** or **SBC Area**, as defined by the ITE for data collection surveys; or alternatively,

   b) within a **General Urban (T/CZ-4)**, **Urban Center (T/CZ-5)**, or **Urban Core (T/CZ-6) Zone**, as defined in the Proposed Recommended Practice for Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities estimated to be published in February 2006 (Appendix E provides characteristics of these context zones),

   which **<u>also</u>** meets all of the other criteria defined immediately below.

2) The UIA must be within 1/3 mile of a site with an existing or future rail transit station, a ferry terminal served by either a bus or rail transit service, an intersection of at least two major bus routes, or within 300 feet of a bus rapid transit corridor. The transit service shall have maximum scheduled headways of 15 minutes for at least 5 hours per day.

3) The UIA can contain no more than 10 percent Vacant Developable Land. Vacant Developable Land as defined excludes water bodies, public rights-of-way, land designated for conservation and public recreation, and any other land designated by local governments' policies or comprehensive plans as <u>unavailable</u> for development. Parking lots on land designated and/or zoned as developable under current policy qualify as Vacant Developable Land.

4) Where residential land uses comprise at least 60 percent of developed land, average residential density shall be at least 10.0 dwelling units per gross acre of residentially developed land.

5) Where nonresidential land uses comprise at least 60 percent of developed land, average nonresidential density shall be a FAR of at least 1.0 and/or an employment density of at least [35.0] per gross acre of nonresidential developed land.

6) Where neither residential nor nonresidential uses comprise more than [60] percent of developed land, both residential and nonresidential uses must meet the density and intensity criteria prescribed above.

All six criteria are proposed for practical application by this Study's researchers in identifying and documenting UIAs. However, it is possible and even likely that traffic engineers and other practitioners seeking to apply the urban infill trip rates developed during this and other studies will want and need fewer and simpler criteria. UIA Criteria **1** and **2,** which require compliance with widely recognized thresholds for urban development and transit access and levels of service, may be sufficient for many future users and applications. The practical need for the more restrictive UIA Criteria **4** through **6** in future applications will be evaluated as the Study progresses to site selection, survey and analysis.

The final criteria have been made as simple and as clear as possible, to encourage appropriate and accurate application of resulting survey data and derived trip generation rates. At the same time, the final criteria are intended as definitive and unambiguous, to prevent uncertainty in determining whether specific sites do or do not qualify as "urban infill" development.

In collaboration with the TAC, the Project Team may subsequently include or substitute specific qualitative attributes as complements and/or replacements for one or more of the quantitative criteria. As a practical consideration, the Team and the TAC will understand the crucial equilibrium that must be maintained between flexibility and ease of application on the one hand, and the economic and fiscal pressures that can encourage 'gaming behavior' by urban developers, planners and public works directors on the other.

The choice of trip generation rates can determine the approval or non-approval of proposed urban developments, and frequently determine the nature and scale of required mitigations and traffic impact fees. To the extent specific qualitative attributes are not definitive and unambiguous identifiers of UIAs, and there are potential regulatory and economic benefits to developments proposed as "urban infill", there may be understandable economic pressures on prospective developers to 'push the envelope' and equally understandable fiscal and financial pressures on local jurisdictions to 'constrain the envelope'. It is hoped the end products of this current Study will facilitate the creation of a common basis for analysis and modeling by all parties interested in urban infill developments.

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. EPS prototyped a map-based approach to identifying candidate UIAs for this **Working Paper**, using digital map layers and socioeconomic data that are available nationwide from Federal agencies and information centers. The following section presents this approach in summary overview; a more detailed explanation of the methodology and sources is provided as **Appendix D**.

Census 2000 definitions of urbanized areas depend upon 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. Census 2000 Journey-to-Work data, as distributed in the Census Transportation Planning Package (CTPP 2000) Part 2 tables, 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**. 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 proposed Urban Infill Area (UIA) development density threshold criteria.

Using threshold filters to limit Block Group selection to those BGs which had (at the beginning of the year 2000) residential development densities of at least 10 housing units per land acre, **OR**, employment densities of at least 35 jobs per land acre, subsets of 2,325 **OR** 298 BGs (of a possible 22,100 California Block Groups) can be identified, as shown in **Figures 2H and 2E.** If we combine the threshold filters, to select those BGs which have both high-density residential and nonresidential development, with circa 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 BGs is identified, as shown in **Figure 2X.**

A complete listing of these 135 mixed-development Block Groups, including County and Census Place 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**. The furthest column on the right in this table contains hyperlinks to Google Maps. If the reader is viewing this table on a computer with a web browser and an active internet connection, clicking on the hyperlink for any of the BGs in the table will open the browser and show a high-resolution aerial/satellite and road map view of the BG's urban context. Using the Google Maps search tools, the reader can easily 'bring up' many of the land uses being considered for trip-generation analysis.

The adopted density criteria or filter values (Block Groups having 10 or more housing units per land acre or 35 or more jobs per land acre in the year 2000) were chosen in a collaborative effort among Project Team members and the TAC. Many alternative threshold densities are suggested in the planning literature, however.

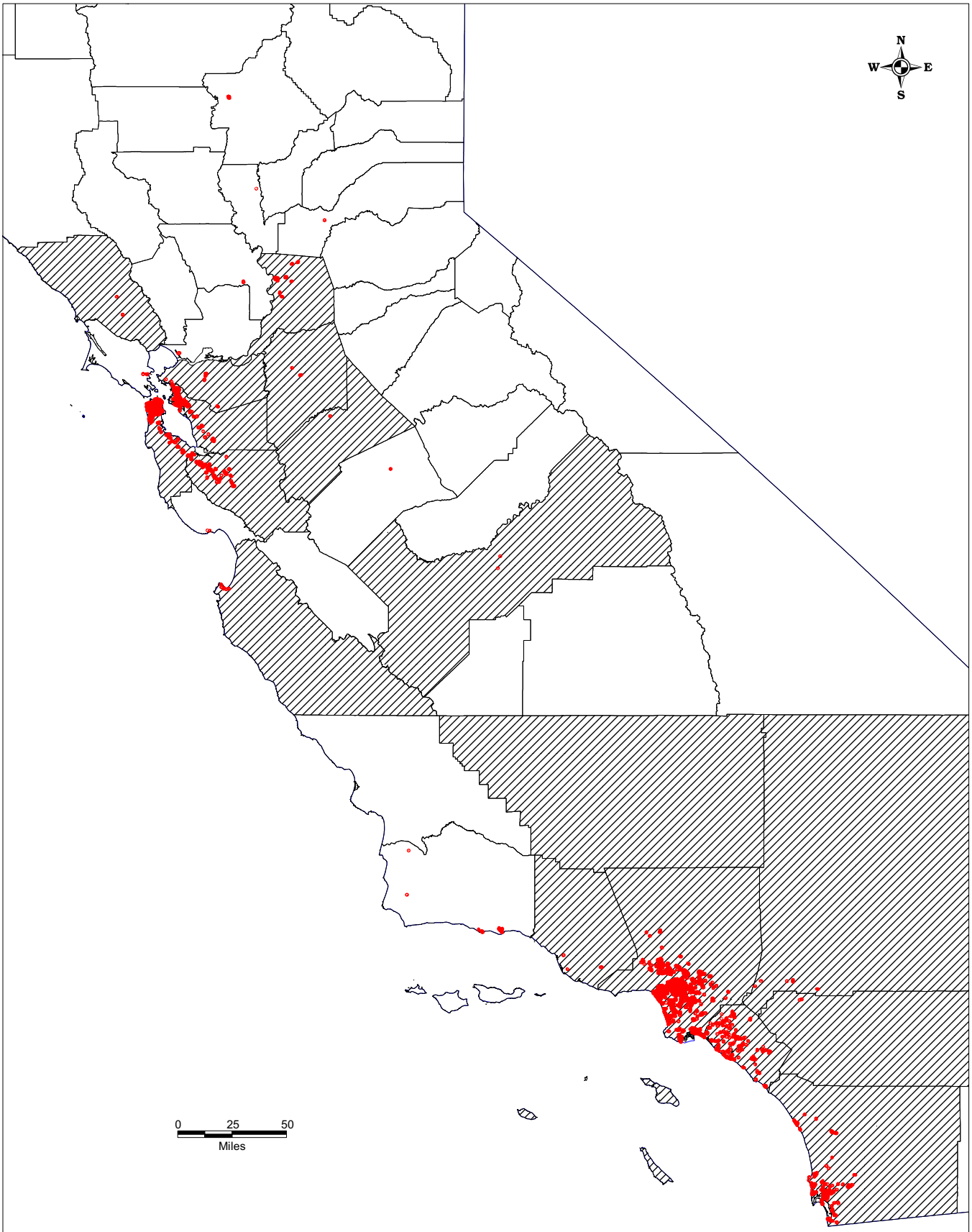
Table 4
Census 2000 Occupation and Industry Categories
Selection of Urban Infill Study Sites, EPS #14002

Occupation Code	Occupation
1	Total Occupation
2	Management
3	Farmers and farm managers
4	Business and financial operations specialists
5	Computer and mathematical
6	Architecture and engineering
7	Life, physical, and social science
8	Community and social service
9	Legal
10	Education, training, and library
11	Arts, design, entertainment, sports, and media
12	Healthcare practitioners and technicians
13	Healthcare support
14	Protective service
15	Food preparation and serving related
16	Building and grounds cleaning and maintenance
17	Personal care and service
18	Sales and related
19	Office and administrative support
20	Farming, fishing, and forestry
21	Construction and excavation
22	Installation, maintenance, and repair
23	Production
24	Transportation and material moving
25	Armed Forces

Industry Code	Industry
1	Total Industry
2	Agriculture, forestry, fishing and hunting, and mining
3	Construction
4	Manufacturing
5	Wholesale trade
6	Retail trade
7	Transportation and warehousing, and utilities
8	Information
9	Finance, insurance, real estate and rental and leasing
10	Professional, scientific, management, administrative, and waste management services
11	Educational, health and social services
12	Arts, entertainment, recreation, accommodation and food services
13	Other services (except public administration)
14	Public administration
15	Armed forces

Source: U.S. Bureau of the Census, CTPP 2000 Documentation

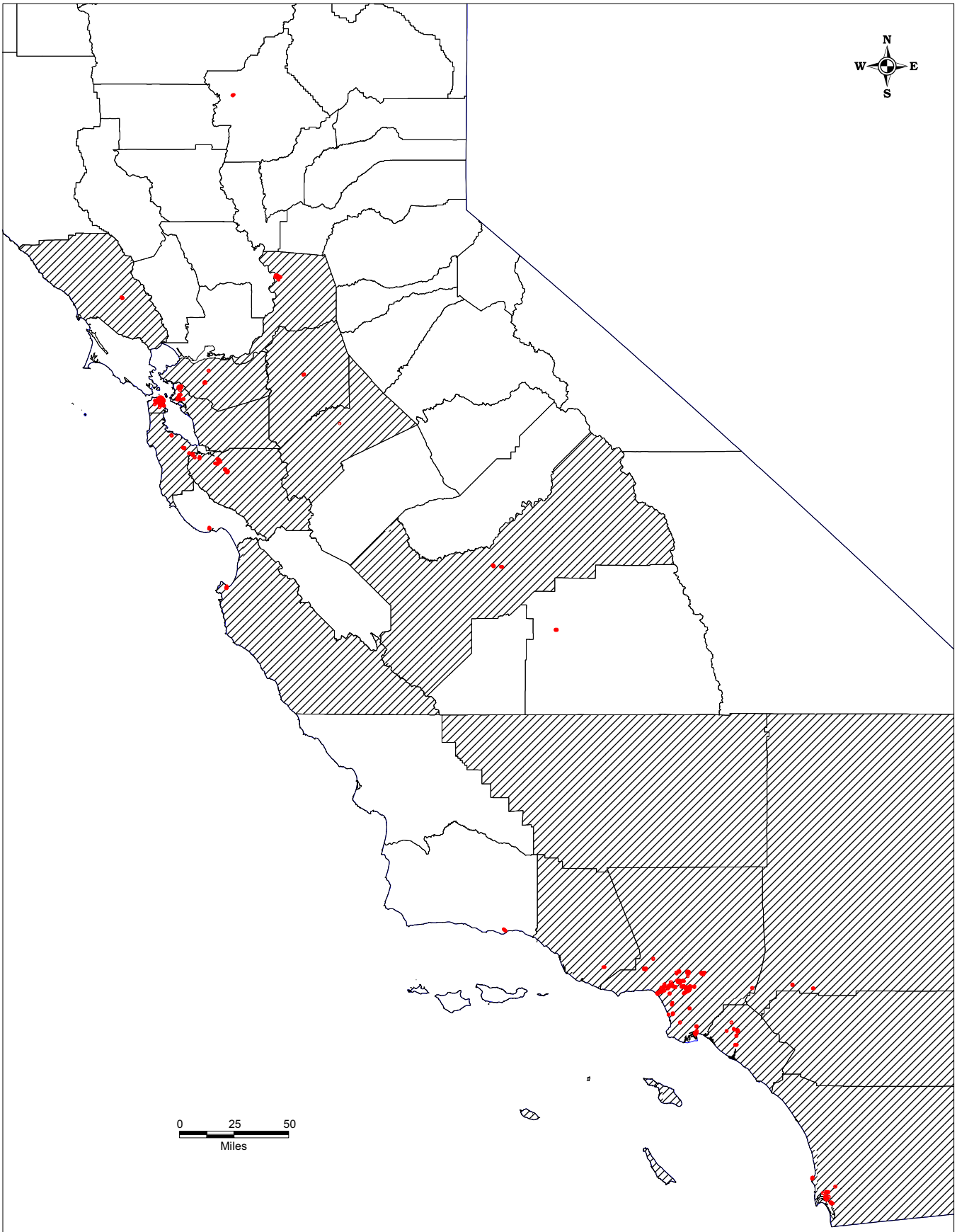
Figure 2H:
Block Groups with High Residential Densities* in 2000



Shaded counties had Year 2000 total populations greater than 400,000.

* Block Groups Shown in Red had Year 2000 DU >= 10 per gross land acre.

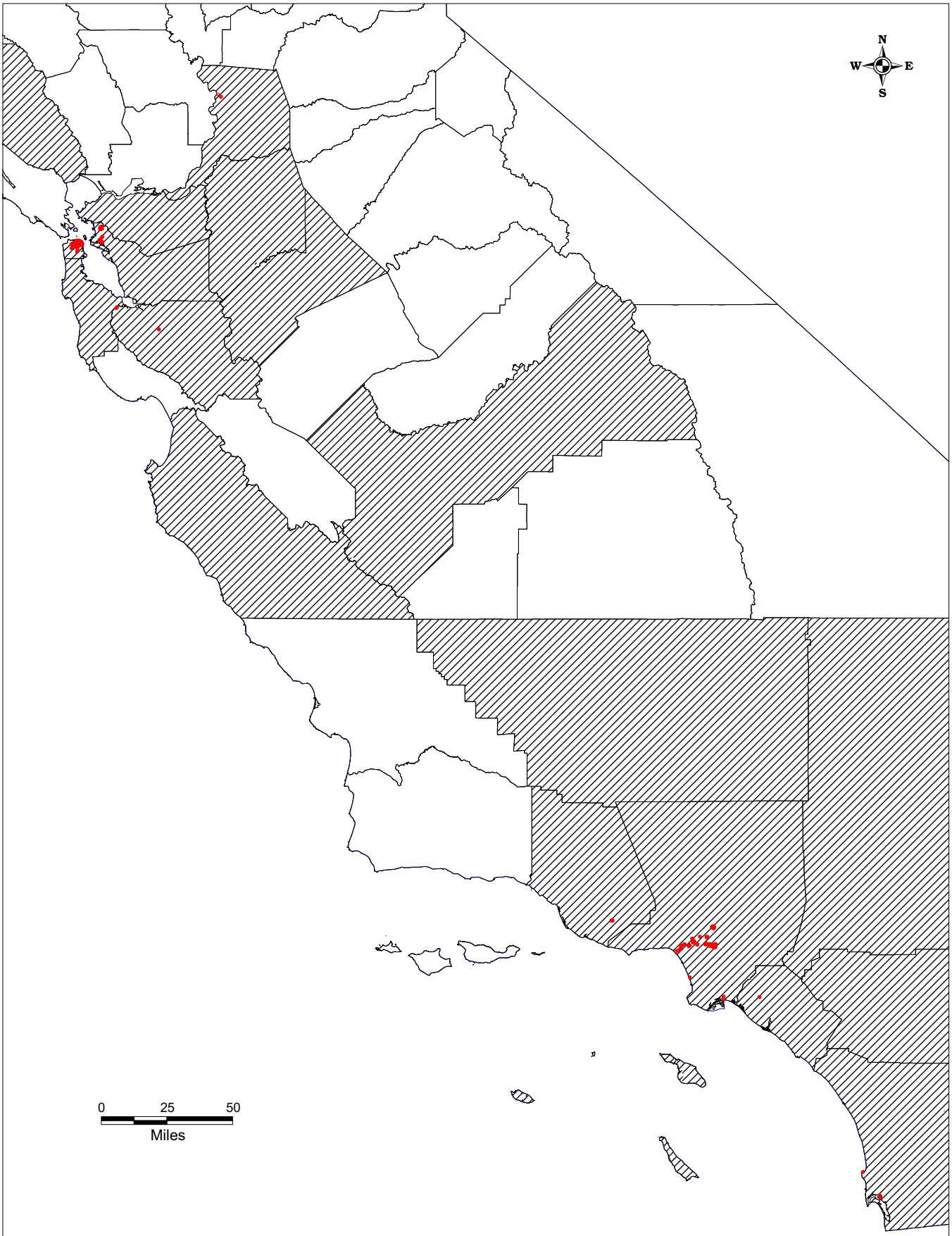
Figure 2E:
Block Groups with High Employment Densities* in 2000



Shaded counties had Year 2000 total populations greater than 400,000.

* Block Groups Shown in Red had Year 2000 Workers >= 35 per gross land acre.

Figure 2X:
Block Groups with both High Residential and Employment Densities* in 2000



Shaded counties had Year 2000 total populations greater than 400,000.

* Block Groups Shown in Red had Year 2000 DU >= 10 per gross land acre & Workers >= 35 per gross land acre.

As a sensitivity test, EPS calculated the number of California 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

Figure 3 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.

The proximity of selected BGs of interest to active transit lines and transit stops/stations can be determined using readily available GIS resources. 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. Fixed-rail transit route and station spatial data for California were obtained from the National Transportation Atlas Databases 2005.

The California bus and rail transit layers described immediately above were combined with the Block Groups in the vicinity of San Francisco and the East Bay selected by the preliminary threshold filters as shown in **Figure 4. Appendix Figures H1 through H5, E1 through E5, and X1 through X5** show the distribution of selected BGs for the San Francisco Bay Area and for the Stockton, Sacramento, Los Angeles, and San Diego areas. The '**H**' figures display the distribution of BGs with 10 or more housing units per gross land acre, the '**E**' figures display the distribution of BGs with 35 or more workers per gross land acre, and the '**X**' figures display the distribution of BGs with **both** 10 or more housing units per gross land acre and 35 or more workers per gross land acre.

Collectively, the Census and other Federal Agency data and GIS components described above and in **Appendix D** can support alternative quantitative criteria for UIA selection.

Figure 3: Sensitivity Test of Development Densities for Potential Urban Infill Surveys - San Francisco/East Bay Focus

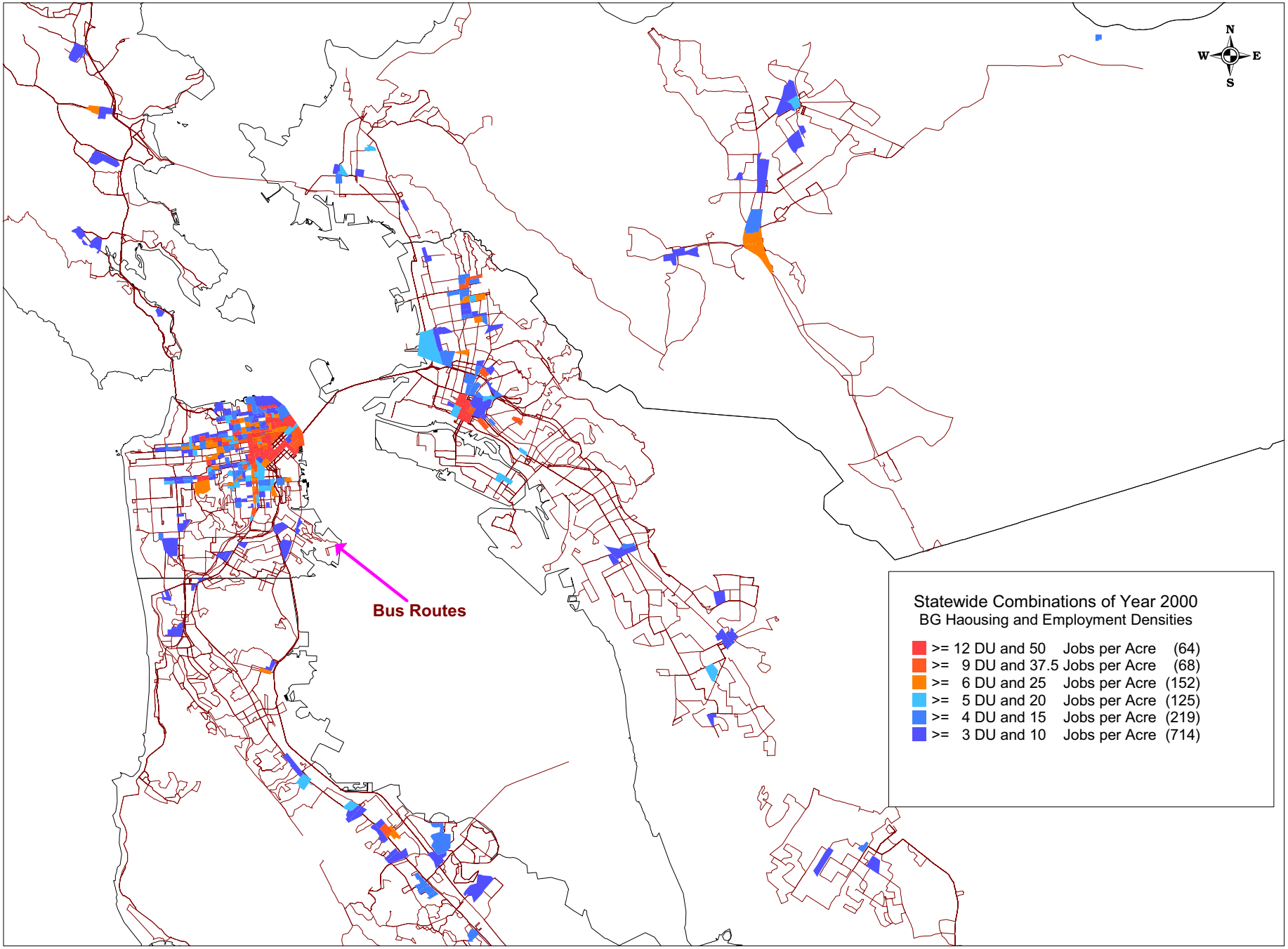
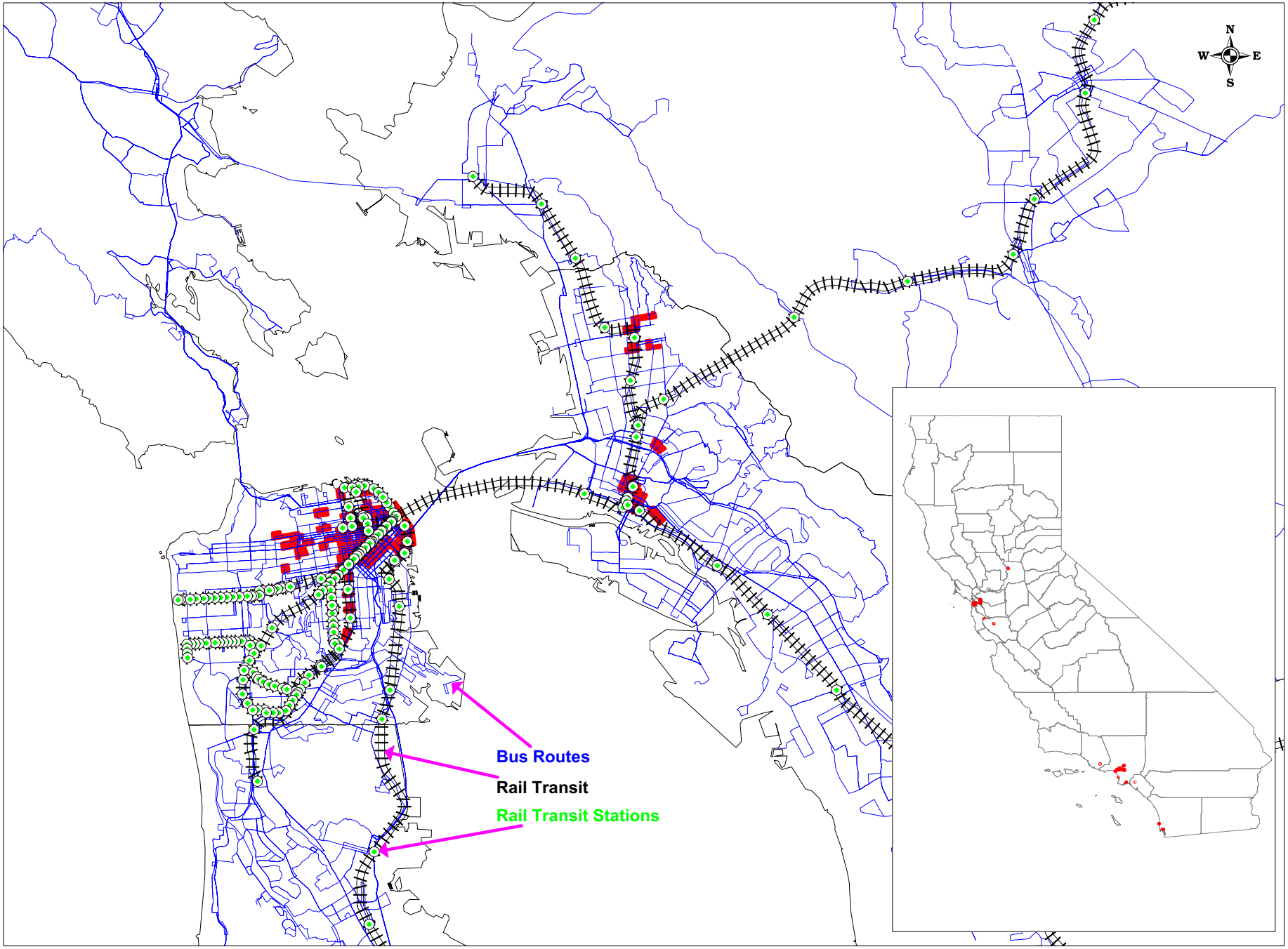


Figure 4: Preliminary Selection* of Block Groups for Potential Urban Infill Surveys - San Francisco/East Bay Focus



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

Economic & Planning Systems, Inc. *P:\14000s\14002abag_infil\Maps\MapInfo\Fig_WRKP_1_04new.wor*

III. RECOMMENDED URBAN INFILL LAND USES

In parallel with the identification of the appropriate small-area 'neighborhoods' or zones within which Urban Infill development conditions pertain, is the need to define appropriate land use types for selecting representative infill sites.

The Project Team began the land-use selection effort with the following criteria::

1) Common urban land use types that are consistent with ITE categories (*Trip Generation* [7th ed.]) and generally reflect a range of uses within residential, office and retail (including entertainment) categories.

2) Land use types for which there is a demand for empirical trip generation data (this would be based on professional knowledge and any information ITE can provide).

3) Land use types for which there is a reasonable propensity for shifting drivers to another mode if the use is located in an urban area. For example, it may be unlikely that patrons would shift from autos to transit or walking if a grocery store is located in an urban area versus a suburban area.

4) Land use types that are considered beneficial to the revitalization of urban areas, but for which current trip generation data may act as a barrier to development approval. These may include types that are considered transit oriented, high-density residential, and urban retail uses.

Because parking availability and costs are often of crucial importance to the trips and trip types generated by urban infill sites, consideration in choosing candidate uses was also suggested for those types already represented in ITE's *Parking Generation* (3rd ed.).

The recent 3rd edition of *Parking Generation* includes data representing 91 of the ITE-defined land uses. These are all indicated in **Table 5**, as line items in bold font.

The Project Team selected a preliminary list of 20 land uses for discussion as appropriate candidates for infill trip generation surveys. Preference was given in the initial selection to higher-density residential types, and to nonresidential land uses that are of recurring interest in infill development impact analyses and in application of ITE standards to local transportation demand models. Most, but not all, of the uses in the initial list were among the 91 types represented in the 3rd edition of *Parking Generation.*

The initial candidates were:

ITE LU Code	ITE Land Use Type
221	Low-Rise Apartment
222	High-Rise Apartment
230	Residential Condominium/Townhouse
310	Hotel
444	Movie Theater with Matinee
445	Multiplex Movie Theater
492	Health/Fitness Club
565	Day Care Center
595	Convention Center
710	General Office Building
720	Medical-Dental Office Building
814	Specialty Retail Center
820	Shopping Center
851	Convenience Market (open 24 hours)
880	Pharmacy/Drugstore without Drive-Through Window
896	Video Rental Store
931	Quality Restaurant.
932	High-Turnover (Sit-Down) Restaurant
934	Fast-Food Restaurant with Drive-Through Window
960	Dry Cleaners

This preliminary list has subsequently been reviewed and discussed with the TAC, and a revised list of ten land uses are now recommended for study. These are, in order by ITE land use code:

ITE LU Code	ITE Land Use Type
223	Mid-Rise Apartment
230	Residential Condominium/Townhouse (midsize)
232	High-Rise Residential Condominium/Townhouse
445	Multiplex Movie Theater
492	Health/Fitness Club
565	Day Care Center
710	General Office Building
820	Shopping Center
850	Supermarket
932	High-Turnover (Sit-Down) Restaurant

Table 5
ITE Land Use Types, with Preliminary Selection of Candidates for Urban Infill Site Surveys
Selection of Urban Infill Study Sites, EPS #14002

ITE Trip Generation (7th ed.) Land Use (LU) Group	ITE LU Code	ITE Land Use Type	Land Use Represented in ITE Parking Generation (3rd ed.)	Preliminary Selection of Candidate LU Types for Urban Infill Site Surveys	Final Candidate Flag
Portand Terminal (Land Uses 000-099)	10	Waterport/Marine Terminal			
Portand Terminal (Land Uses 000-099)	**21**	**Commercial Airport.**	**T**		
Portand Terminal (Land Uses 000-099)	22	General Aviation Airport.			
Portand Terminal (Land Uses 000-099)	30	Truck Terminal.			
Portand Terminal (Land Uses 000-099)	90	Park-and-Ride Lot with Bus Service.			
Portand Terminal (Land Uses 000-099)	**93**	**Light Rail Transit Station with Parking**	**T**		
Industrial/Agricultural (Land Uses 100-199)	**110**	**General Light Industrial.**	**T**		
Industrial/Agricultural (Land Uses 100-199)	120	General Heavy Industrial.			
Industrial/Agricultural (Land Uses 100-199)	**130**	**Industrial Park**	**T**		
Industrial/Agricultural (Land Uses 100-199)	**140**	**Manufacturing**	**T**		
Industrial/Agricultural (Land Uses 100-199)	**150**	**Warehousing**	**T**		
Industrial/Agricultural (Land Uses 100-199)	**151**	**Mini-Warehouse.**	**T**		
Industrial/Agricultural (Land Uses 100-199)	152	High-Cube Warehouse			
Industrial/Agricultural (Land Uses 100-199)	170	Utilities			
Residential (Land Uses 200-299)	**210**	**Single-Family Detached Housing.**	**T**		
Residential (Land Uses 200-299)	220	Apartment			
Residential (Land Uses 200-299)	**221**	**Low-Rise Apartment.**	**T**	**T**	
Residential (Land Uses 200-299)	**222**	**High-Rise Apartment**	**T**	**T**	
Residential (Land Uses 200-299)	223	Mid-Rise Apartment.			T
Residential (Land Uses 200-299)	**224**	**Rental Townhouse.**	**T**		
Residential (Land Uses 200-299)	**230**	**Residential Condominium/Townhouse**	**T**	**T**	**T**
Residential (Land Uses 200-299)	231	Low-Rise Residential Condominium/Townhouse.			
Residential (Land Uses 200-299)	232	High-Rise Residential Condominium/Townhouse			T
Residential (Land Uses 200-299)	233	Luxury Condominium/Townhouse.			
Residential (Land Uses 200-299)	240	Mobile Home Park.			
Residential (Land Uses 200-299)	251	Senior Housing--Detached.			
Residential (Land Uses 200-299)	**252**	**Senior Housing--Attached.**	**T**		
Residential (Land Uses 200-299)	**253**	**Congregate Care Facility.**	**T**		
Residential (Land Uses 200-299)	**254**	**Assisted Living**	**T**		
Residential (Land Uses 200-299)	**255**	**Continuing Care Retirement Community (CCRC)**	**T**		
Residential (Land Uses 200-299)	260	Recreational Homes.			
Residential (Land Uses 200-299)	270	Residential Planned Unit Development (PUD).			
Lodging (Land Uses 300-399)	**310**	**Hotel**	**T**	**T**	
Lodging (Land Uses 300-399)	**311**	**All Suites Hotel.**	**T**		
Lodging (Land Uses 300-399)	**312**	**Business Hotel.**	**T**		
Lodging (Land Uses 300-399)	**320**	**Motel**	**T**		
Lodging (Land Uses 300-399)	**330**	**Resort Hotel.**	**T**		
Recreational (Land Uses 400-499)	**411**	**City Park**	**T**		
Recreational (Land Uses 400-499)	412	County Park			
Recreational (Land Uses 400-499)	413	State Park.			
Recreational (Land Uses 400-499)	**414**	**Water Slide Park.**	**T**		
Recreational (Land Uses 400-499)	415	Beach Park.			
Recreational (Land Uses 400-499)	416	Campground/Recreational Vehicle Park.			
Recreational (Land Uses 400-499)	417	Regional Park			
Recreational (Land Uses 400-499)	418	National Monument			
Recreational (Land Uses 400-499)	**420**	**Marina.**	**T**		
Recreational (Land Uses 400-499)	**430**	**Golf Course**	**T**		
Recreational (Land Uses 400-499)	431	Miniature Golf Course			
Recreational (Land Uses 400-499)	432	Golf Driving Range.			
Recreational (Land Uses 400-499)	433	Batting Cages			
Recreational (Land Uses 400-499)	**435**	**Multipurpose Recreational Facility.**	**T**		
Recreational (Land Uses 400-499)	**437**	**Bowling Alley**	**T**		
Recreational (Land Uses 400-499)	**438**	**Billiard Hall**	**T**		
Recreational (Land Uses 400-499)	**440**	**Adult Cabaret**	**T**		
Recreational (Land Uses 400-499)	**441**	**Live Theater.**	**T**		

Table 5
ITE Land Use Types, with Preliminary Selection of Candidates for Urban Infill Site Surveys
Selection of Urban Infill Study Sites, EPS #14002

ITE Trip Generation (7th ed.) Land Use (LU) Group	ITE LU Code	ITE Land Use Type	Land Use Represented in ITE Parking Generation (3rd ed.)	Preliminary Selection of Candidate LU Types for Urban Infill Site Surveys	Final Candidate Flag
Recreational (Land Uses 400-499)	443	Movie Theater without Matinee			
Recreational (Land Uses 400-499)	**444**	**Movie Theater with Matinee.**	**T**	**T**	
Recreational (Land Uses 400-499)	445	Multiplex Movie Theater		T	T
Recreational (Land Uses 400-499)	452	Horse Racetrack			
Recreational (Land Uses 400-499)	453	Automobile Racetrack.			
Recreational (Land Uses 400-499)	454	Dog Racetrack			
Recreational (Land Uses 400-499)	460	Arena			
Recreational (Land Uses 400-499)	**464**	**Roller Skating Rink**	**T**		
Recreational (Land Uses 400-499)	**465**	**Ice Skating Rink.**	**T**		
Recreational (Land Uses 400-499)	**466**	**Snow Ski Area**	**T**		
Recreational (Land Uses 400-499)	**473**	**Casino/Video Lottery Establishment.**	**T**		
Recreational (Land Uses 400-499)	480	Amusement Park.			
Recreational (Land Uses 400-499)	481	Zoo			
Recreational (Land Uses 400-499)	488	Soccer Complex.			
Recreational (Land Uses 400-499)	**490**	**Tennis Courts**	**T**		
Recreational (Land Uses 400-499)	**491**	**Racquet/Tennis Club**	**T**		
Recreational (Land Uses 400-499)	**492**	**Health/Fitness Club**	**T**	**T**	**T**
Recreational (Land Uses 400-499)	**493**	**Athletic Club**	**T**		
Recreational (Land Uses 400-499)	**495**	**Recreational Community Center**	**T**		
Institutional (Land Uses 500-599)	501	Military Base			
Institutional (Land Uses 500-599)	**520**	**Elementary School**	**T**		
Institutional (Land Uses 500-599)	**522**	**Middle School/Junior High School.**	**T**		
Institutional (Land Uses 500-599)	**525**	**School for the Blind**	**T**		
Institutional (Land Uses 500-599)	**530**	**High School**	**T**		
Institutional (Land Uses 500-599)	534	Private School (K-8).			
Institutional (Land Uses 500-599)	536	Private School (K-12)			
Institutional (Land Uses 500-599)	**540**	**Junior/Community College.**	**T**		
Institutional (Land Uses 500-599)	**550**	**University/College.**	**T**		
Institutional (Land Uses 500-599)	**560**	**Church.**	**T**		
Institutional (Land Uses 500-599)	561	Synagogue			
Institutional (Land Uses 500-599)	**565**	**Day Care Center**	**T**	**T**	**T**
Institutional (Land Uses 500-599)	566	Cemetery.			
Institutional (Land Uses 500-599)	571	Prison.			
Institutional (Land Uses 500-599)	**580**	**Museum**	**T**		
Institutional (Land Uses 500-599)	**590**	**Library**	**T**		
Institutional (Land Uses 500-599)	591	Lodge/Fraternal Organization.			
Institutional (Land Uses 500-599)	**595**	**Convention Center**	**T**	**T**	
Medical (Land Uses 600-699)	**610**	**Hospital.**	**T**		
Medical (Land Uses 600-699)	**612**	**Surgery Center**	**T**		
Medical (Land Uses 600-699)	**620**	**Nursing Home.**	**T**		
Medical (Land Uses 600-699)	**630**	**Clinic.**	**T**		
Medical (Land Uses 600-699)	**640**	**Animal Hospital/Veterinary Clinic**	**T**		
Office (Land Uses 700-799)	**710**	**General Office Building**	**T**	**T**	**T**
Office (Land Uses 700-799)	714	Corporate Headquarters Building			
Office (Land Uses 700-799)	715	Single Tenant Office Building			
Office (Land Uses 700-799)	**720**	**Medical-Dental Office Building.**	**T**	**T**	
Office (Land Uses 700-799)	**730**	**Government Office Building.**	**T**		
Office (Land Uses 700-799)	731	State Motor Vehicles Department			
Office (Land Uses 700-799)	**732**	**United States Post Office**	**T**		
Office (Land Uses 700-799)	**733**	**Government Office Complex**	**T**		
Office (Land Uses 700-799)	735	Judicial Complex			
Office (Land Uses 700-799)	750	Office Park			
Office (Land Uses 700-799)	760	Research and Development Center			
Office (Land Uses 700-799)	770	Business Park			
Retail (Land Uses 800-899)	**812**	**Building Materials and Lumber Store**	**T**		

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ITE Trip Generation (7th ed.) Land Use (LU) Group	ITE LU Code	ITE Land Use Type	Land Use Represented in ITE Parking Generation (3rd ed.)	Preliminary Selection of Candidate LU Types for Urban Infill Site Surveys	Final Candidate Flag
Retail (Land Uses 800-899)	813	Free-Standing Discount Superstore			
Retail (Land Uses 800-899)	814	Specialty Retail Center		T	
Retail (Land Uses 800-899)	**815**	**Free-Standing Discount Store.**	**T**		
Retail (Land Uses 800-899)	**816**	**Hardware/Paint Store.**	**T**		
Retail (Land Uses 800-899)	817	Nursery (Garden Center)			
Retail (Land Uses 800-899)	818	Nursery (Wholesale)			
Retail (Land Uses 800-899)	**820**	**Shopping Center**	**T**	**T**	**T**
Retail (Land Uses 800-899)	823	Factory Outlet Center			
Retail (Land Uses 800-899)	841	New Car Sales			
Retail (Land Uses 800-899)	843	Automobile Parts Sales.			
Retail (Land Uses 800-899)	**848**	**Tire Store.**	**T**		
Retail (Land Uses 800-899)	849	Tire Superstore			
Retail (Land Uses 800-899)	850	Supermarket	T		**T**
Retail (Land Uses 800-899)	**851**	**Convenience Market (Open 24 Hours).**	**T**	**T**	
Retail (Land Uses 800-899)	852	Convenience Market (Open 15-16 Hours)			
Retail (Land Uses 800-899)	853	Convenience Market with Gasoline Pumps.			
Retail (Land Uses 800-899)	**854**	**Discount Supermarket.**	**T**		
Retail (Land Uses 800-899)	**857**	**Discount Club**	**T**		
Retail (Land Uses 800-899)	**859**	**Liquor Store**	**T**		
Retail (Land Uses 800-899)	860	Wholesale Market.			
Retail (Land Uses 800-899)	861	Discount Club			
Retail (Land Uses 800-899)	**861**	**Sporting Goods Superstore**	**T**		
Retail (Land Uses 800-899)	**862**	**Home Improvement Superstore**	**T**		
Retail (Land Uses 800-899)	**863**	**Electronics Superstore.**	**T**		
Retail (Land Uses 800-899)	**864**	**Toy/Children's Superstore**	**T**		
Retail (Land Uses 800-899)	865	Baby Superstore			
Retail (Land Uses 800-899)	**866**	**Pet Supply Store.**	**T**		
Retail (Land Uses 800-899)	**867**	**Office Supply Superstore.**	**T**		
Retail (Land Uses 800-899)	**868**	**Book Superstore**	**T**		
Retail (Land Uses 800-899)	869	Discount Home Furnishing Superstore			
Retail (Land Uses 800-899)	**870**	**Apparel Store**	**T**		
Retail (Land Uses 800-899)	879	Arts and Crafts Store			
Retail (Land Uses 800-899)	**880**	**Pharmacy/Drugstore without Drive-Through Window**	**T**	**T**	
Retail (Land Uses 800-899)	**881**	**Pharmacy/Drugstore with Drive-Through Window.**	**T**		
Retail (Land Uses 800-899)	**890**	**Furniture Store**	**T**		
Retail (Land Uses 800-899)	**892**	**Carpet Store**	**T**		
Retail (Land Uses 800-899)	**896**	**Video Rental Store.**	**T**	**T**	
Services (Land Uses 900-999)	**911**	**Walk-in Bank.**	**T**		
Services (Land Uses 900-999)	**912**	**Drive-in Bank**	**T**		
Services (Land Uses 900-999)	**931**	**Quality Restaurant.**	**T**	**T**	
Services (Land Uses 900-999)	**932**	**High-Turnover (Sit-Down) Restaurant**	**T**	**T**	**T**
Services (Land Uses 900-999)	**933**	**Fast-Food Restaurant without Drive-Through Window**	**T**		
Services (Land Uses 900-999)	**934**	**Fast-Food Restaurant with Drive-Through Window.**	**T**	**T**	
Services (Land Uses 900-999)	935	Fast-Food Restaurant with Drive-Through Window and No Indoor Seating.			
Services (Land Uses 900-999)	936	Drinking Place.			
Services (Land Uses 900-999)	941	Quick Lubrication Vehicle Shop.			
Services (Land Uses 900-999)	942	Automobile Care Center.			
Services (Land Uses 900-999)	943	Automobile Parts and Service Center			
Services (Land Uses 900-999)	944	Gasoline/Service Station.			
Services (Land Uses 900-999)	945	Gasoline/Service Station with Convenience Market.			
Services (Land Uses 900-999)	946	Gasoline/Service Station with Convenience Market and Car Wash			
Services (Land Uses 900-999)	947	Self-Service Car Wash			
Services (Land Uses 900-999)	948	Automated Car Wash.			
Services (Land Uses 900-999)	**960**	**Dry Cleaners**	**T**	**T**	

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ITE Land Use Types, with Preliminary Selection of Candidates for Urban Infill Site Surveys
Selection of Urban Infill Study Sites, EPS #14002

ITE Trip Generation (7th ed.) Land Use (LU) Group	ITE LU Code	ITE Land Use Type	Land Use Represented in ITE Parking Generation (3rd ed.)	Preliminary Selection of Candidate LU Types for Urban Infill Site Surveys	Final Candidate Flag
Total Count			**91**	**20**	**10**
Initial Selection for Review and Comment			**91**	**20**	

Notes: Land Use Classifications from ITE Trip Generation, 7th Ed. and Parking Generation, 3rd Ed.
91 uses represented in Parking Generation, 3rd. Ed. Initial Selection of Candidate Urban Infill Survey Site candidate land uses by EPS; Final Selections made in collaborative effort with Project Team amd TAC.

Sources: ITE Trip Generation (7th ed.) and Parking Generation (3rd ed.); EPS

SUGGESTED (PRELIMINARY) MINIMUM URBAN INFILL SURVEY SITE CRITERIA

The Project Team will need to evaluate and rate specific candidate sites for suitability as representatives of the final selected uses. Review and refinement of specific site selection criteria will be undertaken as part of **Working Paper #2**; to begin the discussion process, however, the following list of minimum criteria has been suggested for all candidate Urban Infill Survey Sites (UISS):

1) The UISS shall be selected on the basis of the ability to obtain accurate trip generation data for the land use under consideration, and to obtain independent variables per ITE trip generation study guidelines.

2) Survey data must be transferable; it is therefore essential that site development characteristics are representative of the land uses to be analyzed. Considerations of transferability pertain to the application of survey data not only to other existing sites, but to new urban infill development.

3) Land uses appropriate for UISS consideration shall be selected as a subset of the uses defined in ITE's *Trip Generation*, 7th ed.

4) The development within the UISS should be mature (at least two years old) and located in a mature development area. Transit service should have been in place for at least two years.

5) There shall be minimal or no on-site construction or adjacent roadway construction at the time of the survey.

6) The UISS shall be at full occupancy (at least 85 percent) and appear to be economically healthy. The precise percent occupancy at survey time is important, and must be recorded.

7) There shall be no potential for "through" trips or other trips within the trip generation counts (such as significant vehicle, transit, truck, or pedestrian trips generated by adjacent sites).

8) The UISS itself shall not be a mixed-use development. This does not preclude selections of study sites located in mixed zoning contexts.

9) The UISS must be capable of isolation for purposes of counting trips (i.e., no shared parking, consolidated driveways, etc). The survey team must develop effective plans for collecting data on prospective UISS with no private parking facilities.

10) Permission shall be obtainable from the owner/manager of the prospective UISS.

This initial list of site criteria was adapted in part from similar site selection criteria suggested by the ITE for the purpose of parking generation studies (see http://www.ite.org/parkgen/datacollection.asp#Site%20Selection).

We note with interest that the above-referenced ITE web site includes the statements "For sites with complex characteristics (TDM, extensive transit use, shared parking, bicycle parking) a separate web-data entry form is being developed (under construction at this time)" and "The web-based data entry form asks questions with pull-down selections about site characteristics that are important for consideration of parking demand (e.g. parking costs, type of surrounding area, etc…)".

We suggest as a follow-on task for the implementation of concepts discussed in this Working Paper that the Project Team discuss with the designated ITE contact, Lisa Fontana Tierney (mailto:lfontana@ite.org) the possibility of including relevant items from the draft ITE complex site criteria in the selection and rating criteria for Urban Infill Survey Sites. As envisioned by the ITE and as applied in site analyses carried out in the United Kingdom (http://www.trics.org/the_system.htm) to maintain the UK-wide TRICS trip generation database, the complex site criteria include both checklist and parametric data entries designed to capture site contextual information (e.g., parking availability and costs, transit accessibility and frequency of service, etc.).

For comparison purposes, we have included the current ITE Basic Site entry form for Parking Demand as **Appendix C Table 2**, and a summary of the TRICS site survey criteria as **Appendix C Table 3.** A complete list of TRICS site, development and trip data collection criteria can be examined at http://www.trics.org/analysis_of_sites.htm# (requires Internet Explorer 4.1 or later).

In advance of the proposed collaboration with ITE, and suggestions on UISS evaluation criteria from the Project Team and the TAC, EPS prepared a brief summary of the literature regarding several elasticity factors that influence travel demand within urban/infill sites. This technical memorandum is attached as **Appendix A**. EPS also prepared an initial short list of possible locales for potential UISS. This list, attached as **Appendix B,** is intended only as a stimulus to further discussion and to point out the potential for selecting UISS in areas which have considerable data available from previous studies.

The preliminary locale listing has a definite bias toward Pedestrian-Oriented- and Transit-Oriented-Development areas, and the field may well be broadened after the Project Team and TAC settle on the current Study's preferred definition of UIAs and selected Land Uses.