

# 2MAPS

## Parcel-Level Climate Change Reversal Geospatial Model Enabling Town Workers to live where they Work

### P R E S E N T A T I O N



**HUD Office of Policy Development and Research  
Affordable Housing Research and Technology Division**

**April 7, 2016**

### M E E T I N G   R E C A P

**Boundary Solutions, Inc.**

Mill Valley, California

In Support of

**University of Wisconsin @ Milwaukee**

Department of Architecture and City Planning



# 2MAPS

## Reversing Climate Change by Enabling Town Workers to live where they Work Premise

**What we have here is not a Traffic Gridlock/Carbon Emissions Problem**  
**What we have here is a lack of affordable Housing Problem**

Town Worker\*\* Income has remained flat while that of Knowledge Workers at the Regional, National and International levels continues to climb, forcing rents up. With no protection and no or just token affordable housing, Town Worker are displaced, forced to live far away where they can make rent.

\*\* Police, Fire, Teachers, Retail Clerks and Managers, Restaurant Workers, Bar Tenders, Nurses, Local Government Staff, Bookkeepers, Domestic Workers, Gardeners, Mechanics and all others who perform a service for local town residents that has to be done.

# 2MAPS

**Reversing Climate Change by Enabling Town Workers to live where they Work**

## PROBLEM OVERVIEW

**What we have here is not a Traffic Gridlock/Carbon Emissions Problem**

**What we have here is a Shortage of Affordable Housing Problem**

- **Ignoring the plight of the Town Workers** faced with ever longer commutes can be done by dismissing it as their problem.
- **Ignoring the plight of everyone** forced to spend ever more time in traffic can be done by dismissing it as a nuisance everyone gets used to.
- **Ignoring the 30% contribution of automobile use** to Climate Change however leads to a future **NO ONE WILL BE ABLE TO GET USED TO - -**

**IRREVERSIBLE CLIMATE CHANGE**



# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

## PROBLEM SIZE

**TOP 315 Most Affluent  
USA Counties**

1<sup>st</sup> DECIL

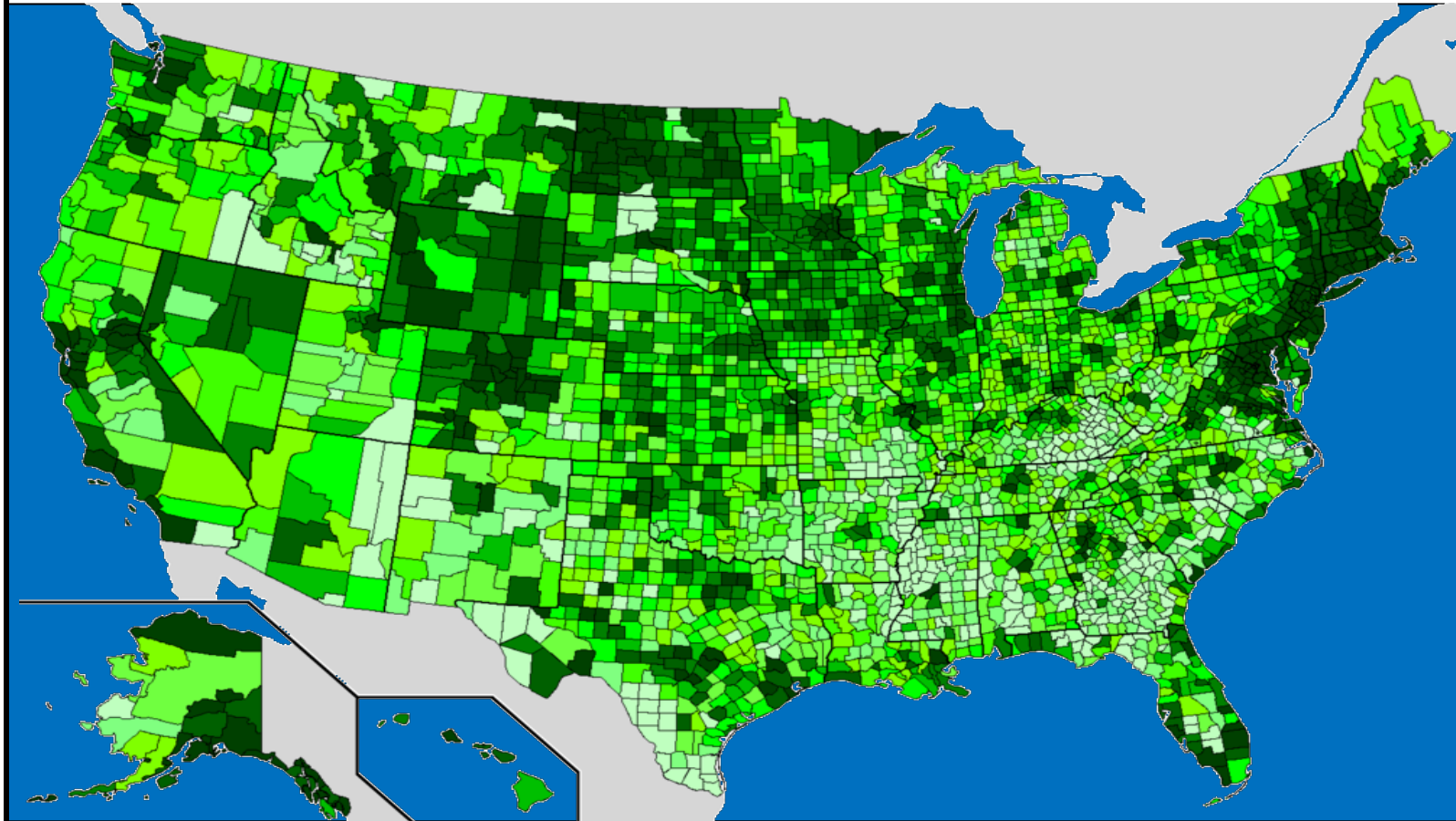
Counties

315

Population:

174,000,000

Median Income: \$30,225 – \$62,500





# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

## Marin County Real Estate Has Been TOO Successful Mill Valley as Sample Case Study

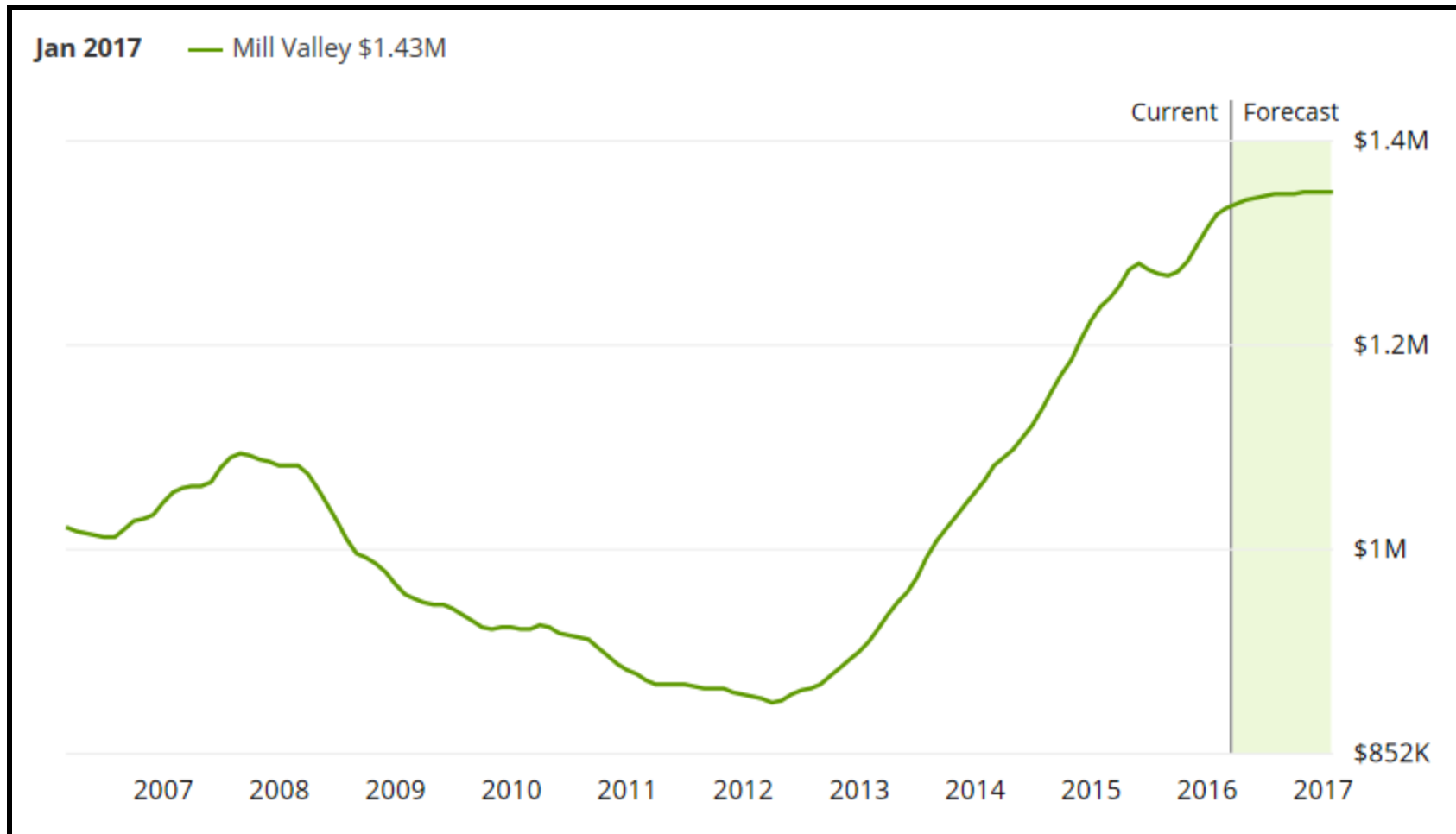
Since the 70's the very income inclusivity that gave **Mill Valley** its desirable 'We're all-in-this-together' Small Town Character has been all but extinguished by the soaring real estate values its desirability has inadvertently caused. While the **population grew by only 6%**, the number of people who BOTH LIVE AND WORK in Mill Valley is now **ONLY 10%**, down from 60%. At the same time, **the traffic on the main road in and out of town grew 78%!** Why? Rapidly rising rents pushed out 2,000 Town Workers, increasing commute trips, and also pushing out basic retail, exploding service trips. Now you cannot even buy a screw driver in Mill Valley causing near everyone to head for the freeway for everything. Mill Valley's roads are broken. Ditto the regional freeway system for the same reason – **SOARING RENTS**



# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

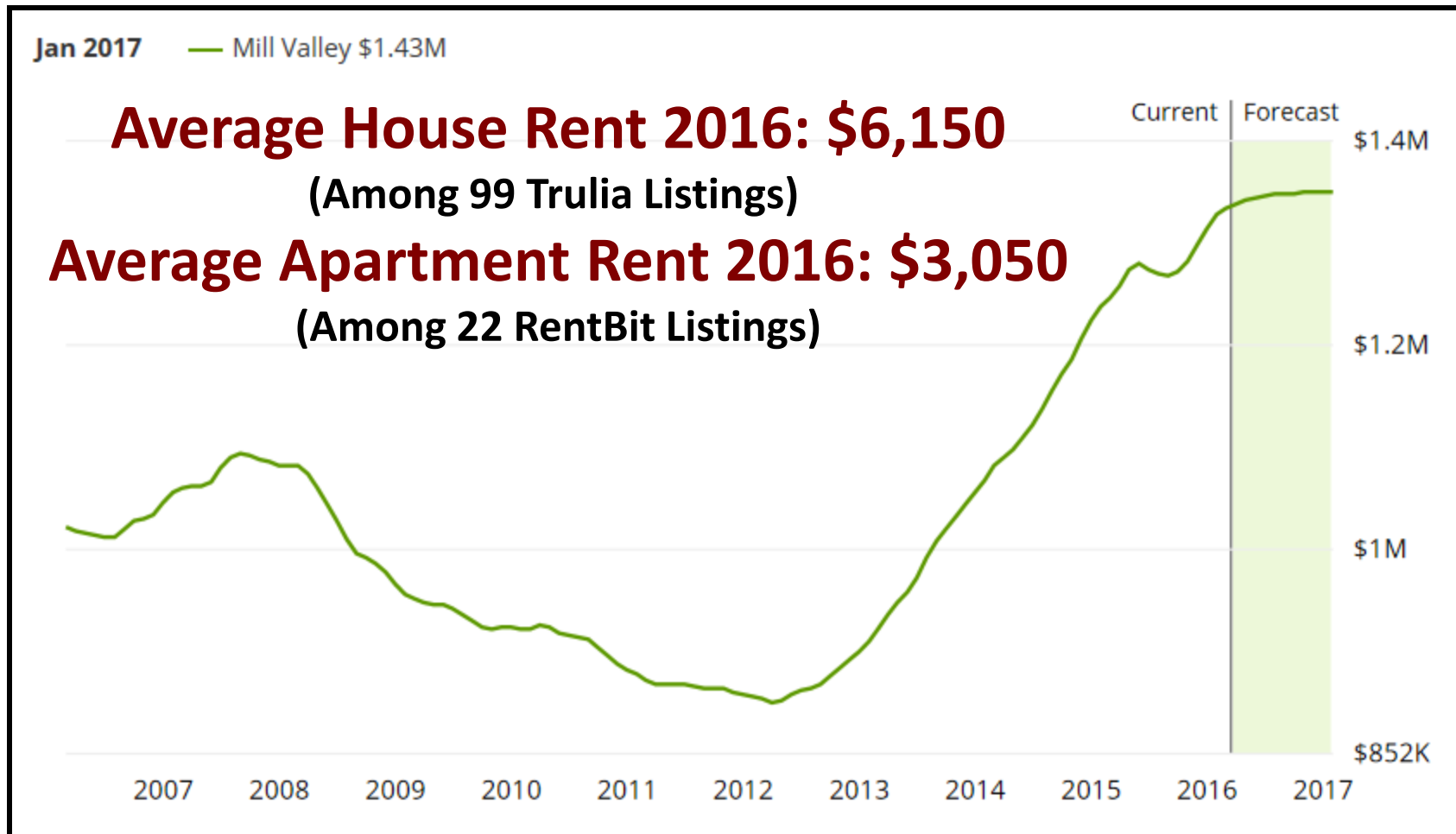
## Median Residential Price Mill Valley



# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

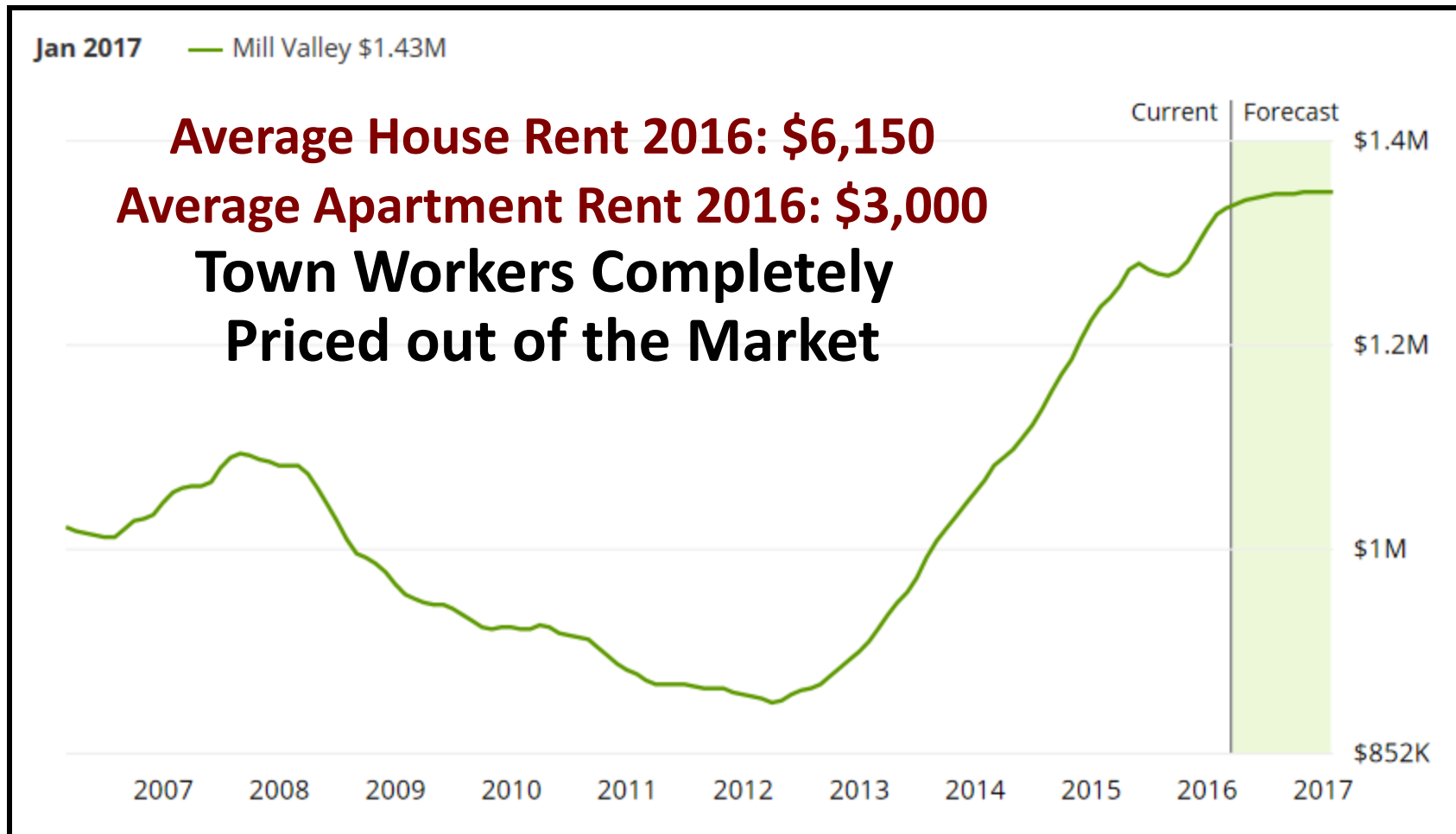
## Median Rental Rates in Mill Valley



# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

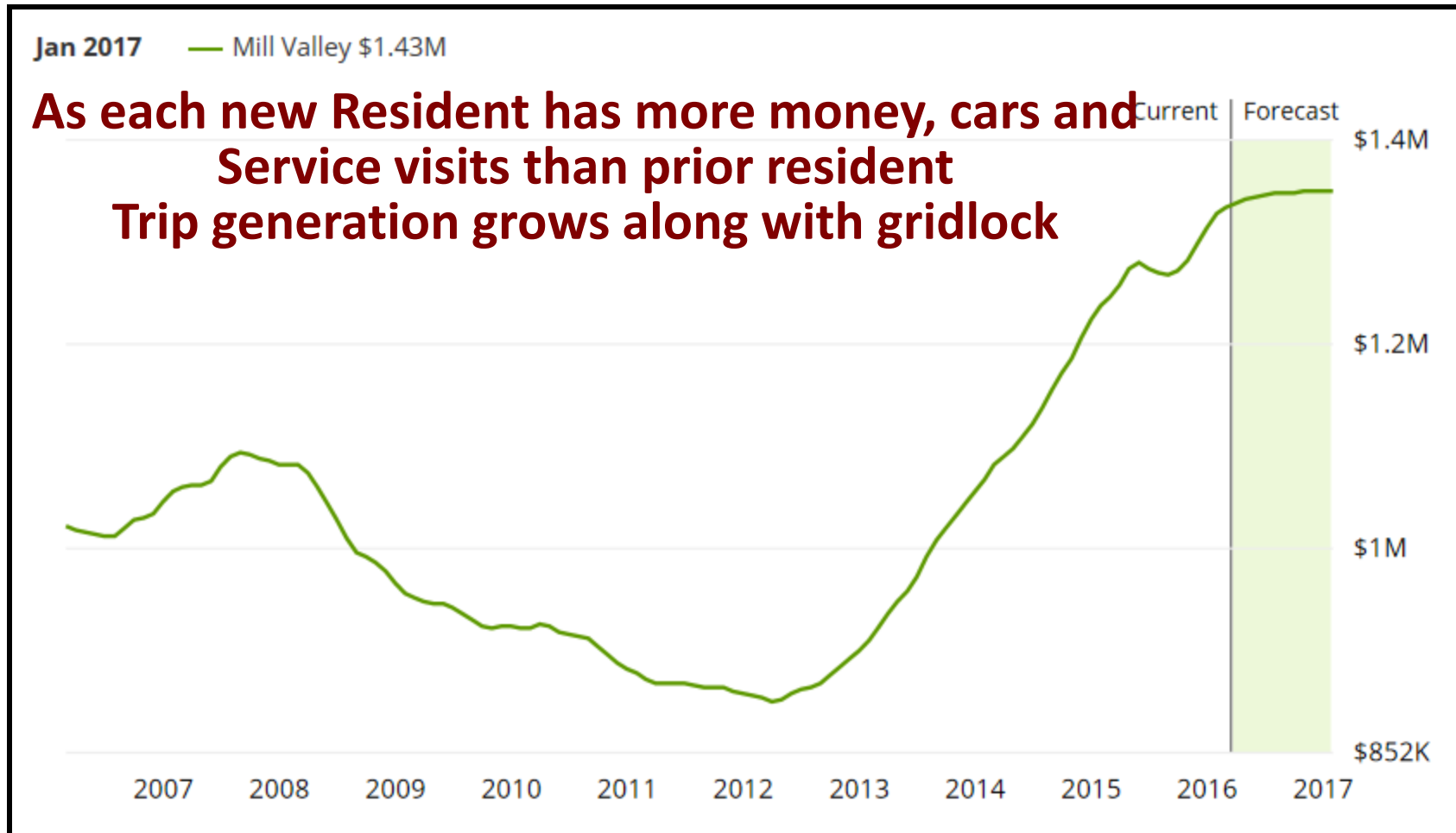
## Median Rental Rates in Mill Valley



# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

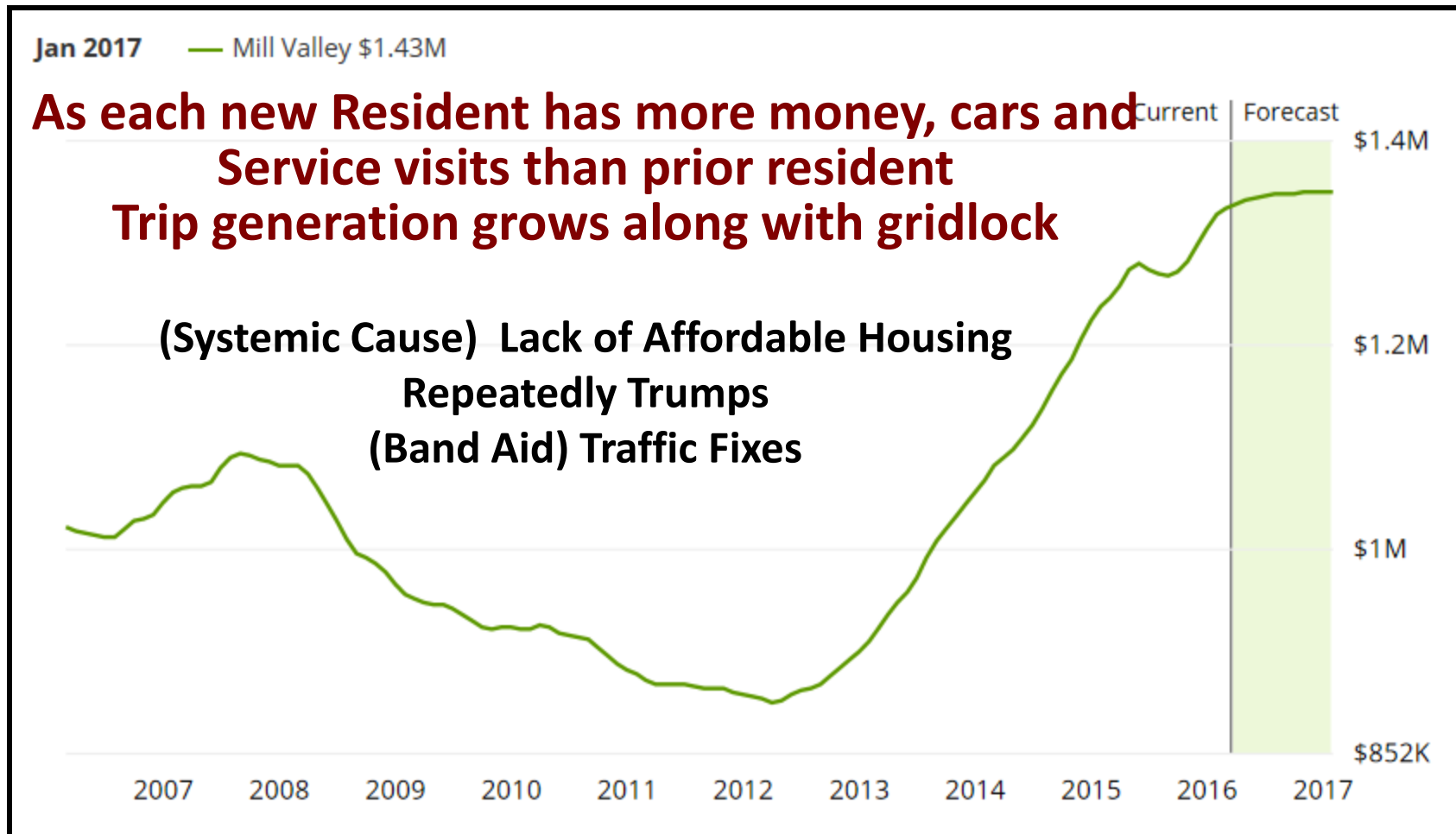
## Median Residential Price Mill Valley



# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

## Median Residential Price Mill Valley



# 2MAPS

## Reversing Climate Change by Enabling Town Workers to live where they Work Permanent Remedy – Adding Town Worker Housing

Worse than lack of Town Worker and retail in the town grid-locking main roads in and out of town, most displaced Town Workers discover that they not only have to relocate in the middle of nowhere to make rent, they cannot even afford to live near a transit stop. Instead of walking to work to do a job that has to be done, they face hour+ commutes, made ever longer as their car causes just enough additional traffic every work day to trigger grid lock at multiple freeway interchanges. This shuts down the Richmond Bridge, 101, and E. Blithedale, wrecking the regional transportation system, not to mention dramatically increasing per capita carbon production. **Marin County already ranks as the highest category of per capita carbon footprint in America.**



# 2MAPS

**Reversing Climate Change by Enabling Town Workers to live where they Work**  
**Permanent Remedy – Adding Town Worker Housing**

**NOT JUST ANYWHERE**

**Just the right places where increased use will melt traffic most**

**WHERE IS THAT?**

**Parcels that are both Highly Walkable and Transit Intensive**





# **2MAPS**

**Reversing Climate Change by Enabling Town Workers to live where they Work**  
**Permanent Remedy – Adding Town Worker Housing**

## **2MAPS**

**Rates every parcel for Traffic Reduction Potential**

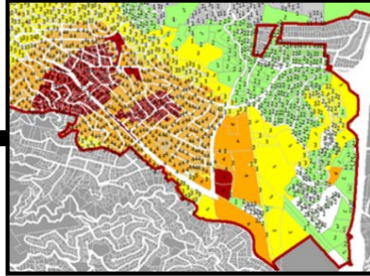
**To Locate Just the Right Places to Assemble**  
**for Adding Town Worker Housing, Retail and Rent Control**



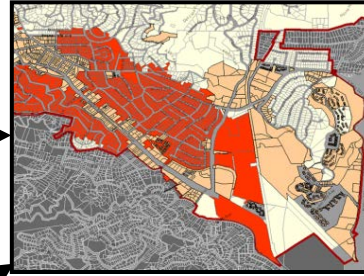
**BUFFERED  
DESTINATION PARCELS**



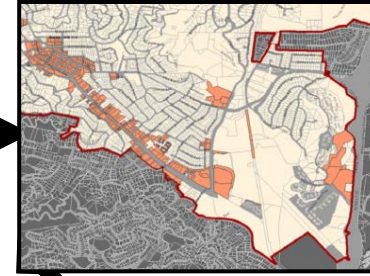
**RELATIVE  
WALK POTENTIAL**



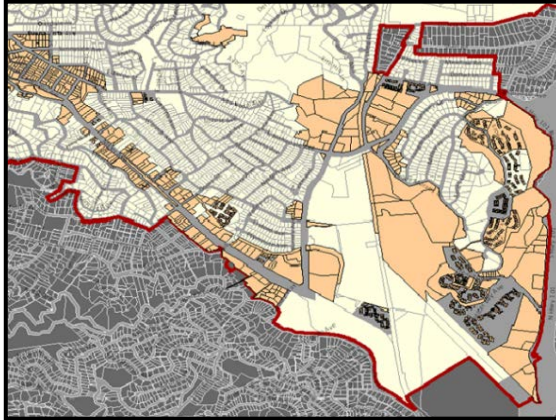
**CANDIDATE PARCELS  
IN HIGH WALK AREA**



**HIGH WALK ZONE**



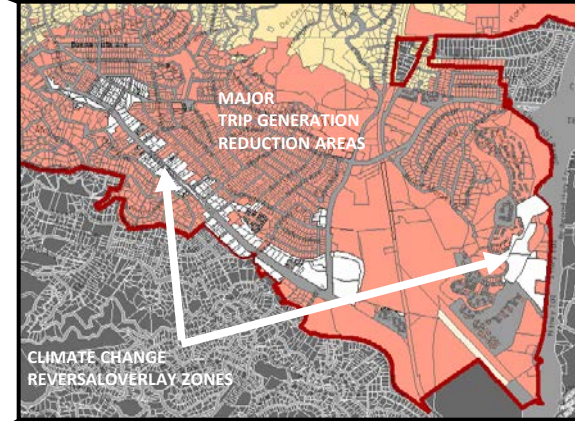
**CANDIDATE DEVELOPMENT PARCELS  
LAND OKAY TO DEVELOP**



# 2MAPS

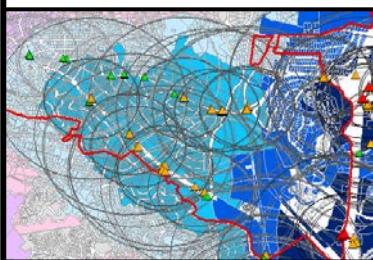
Rates Every Parcel in America for  
**Relative WALK Potential**  
**Relative TRANSIT Intensity**  
WHICH WALK/TRANSIT parcels that are  
**ALSO Developable** are assembled into  
**CLIMATE CHANGE OVERLAYS**  
Locating Town Worker housing, retail and rent control THERE  
will decimate Traffic/Carbon Footprint enough to  
**REVERSE CLIMATE CHANGE**

**CLIMATE CHANGE  
REVERSAL OVERLAY**

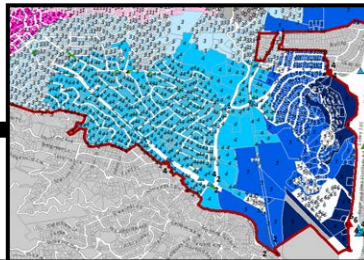


**HIGH WALK/TRANSIT  
Developable Parcels**

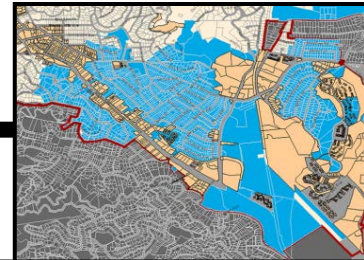
**BUFFERED BUS STOPS  
WITH JOB ACCESS RATINGS**



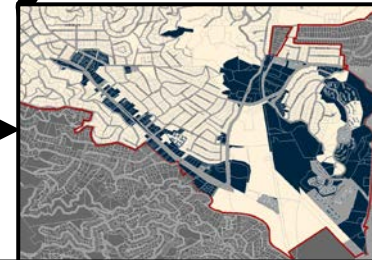
**RELATIVE  
TRANSIT POTENTIAL**



**CANDIDATE PARCELS  
IN HIGH TRANSIT AREA**



**HIGH TRANSIT ZONE**





# PARCEL MAP

Northgate

Fairfax

San Anselmo

101

San Rafael

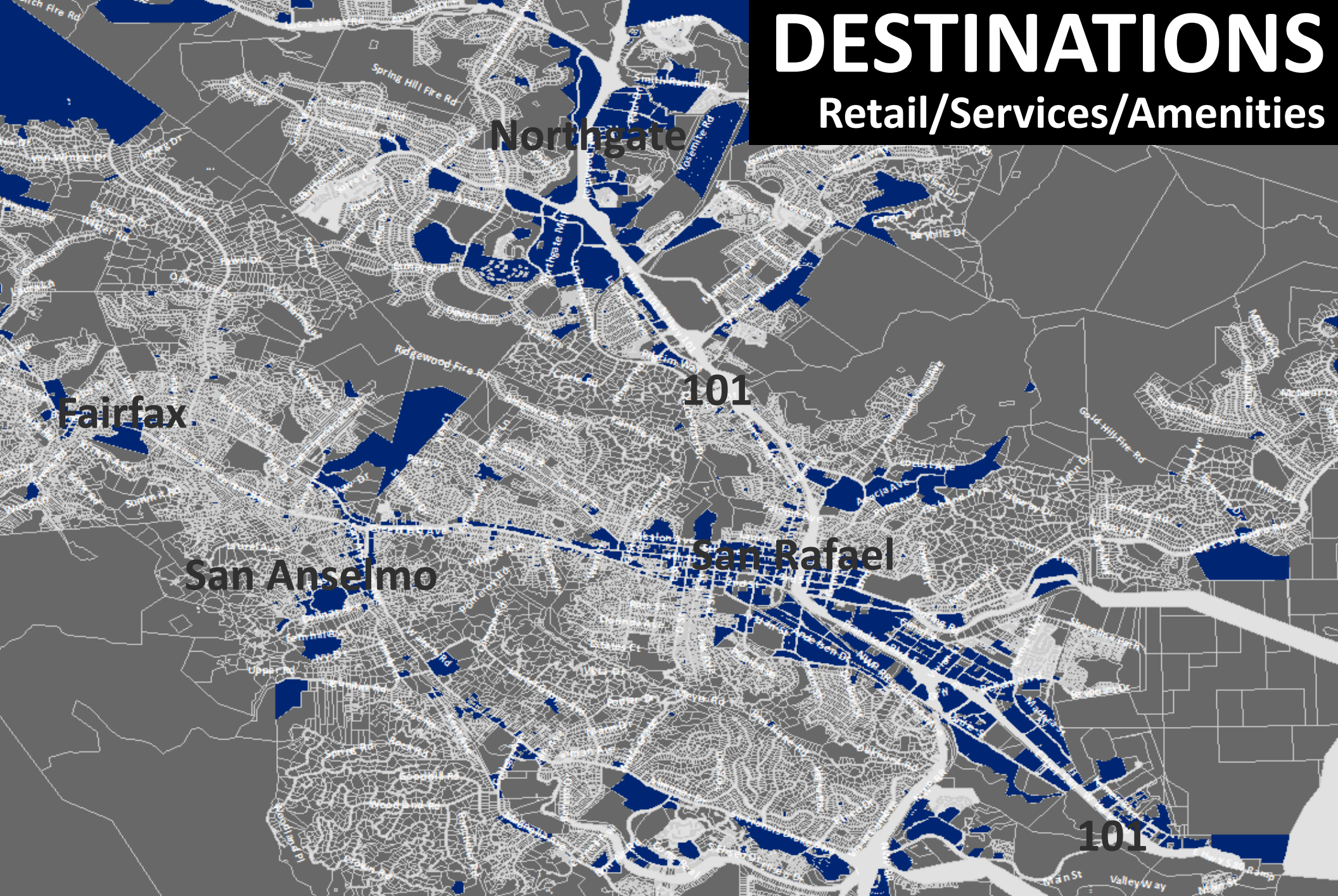
101





# DESTINATIONS

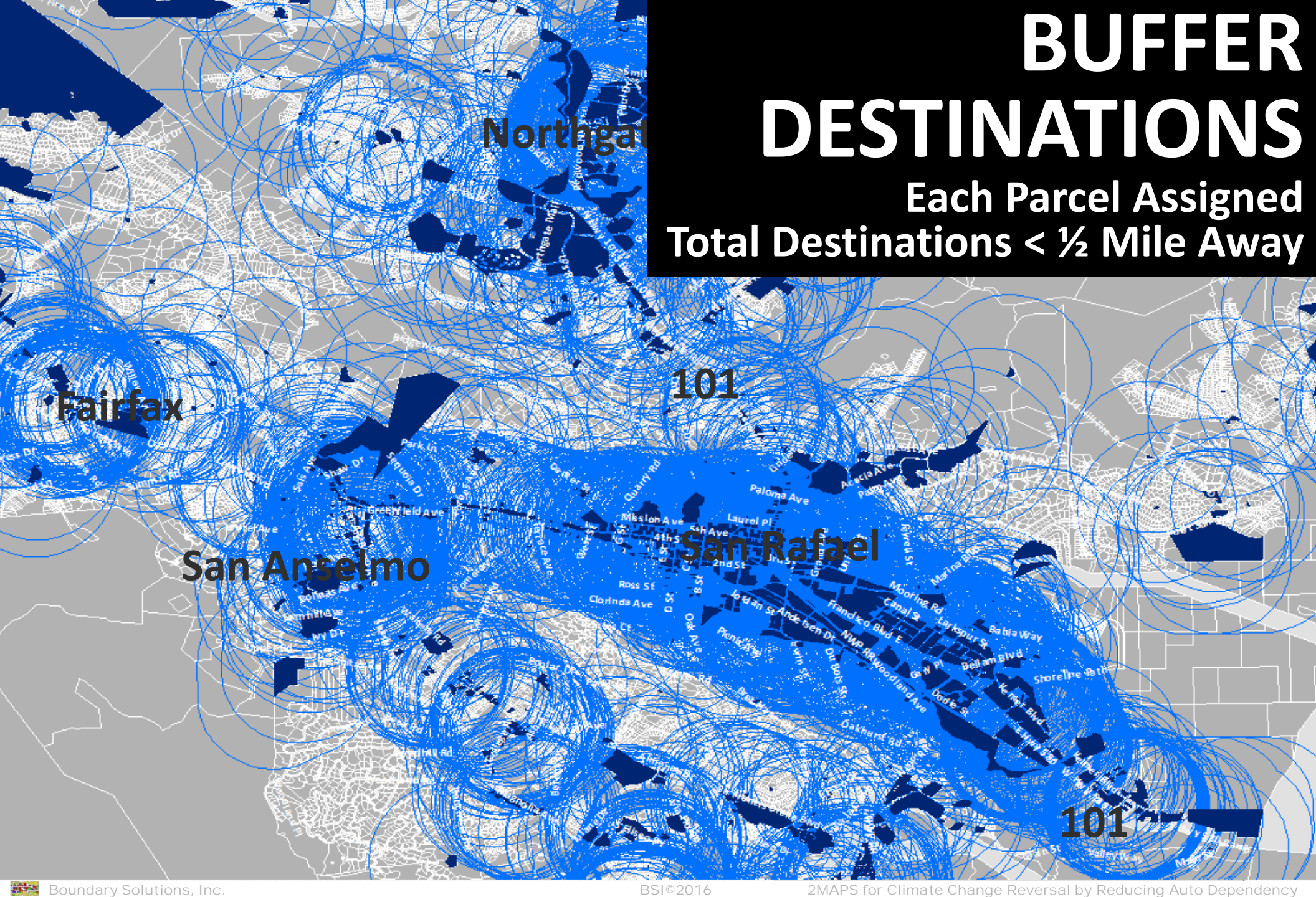
Retail/Services/Amenities





# BUFFER DESTINATIONS

Each Parcel Assigned  
Total Destinations < ½ Mile Away



Northgate

Fairfax

101

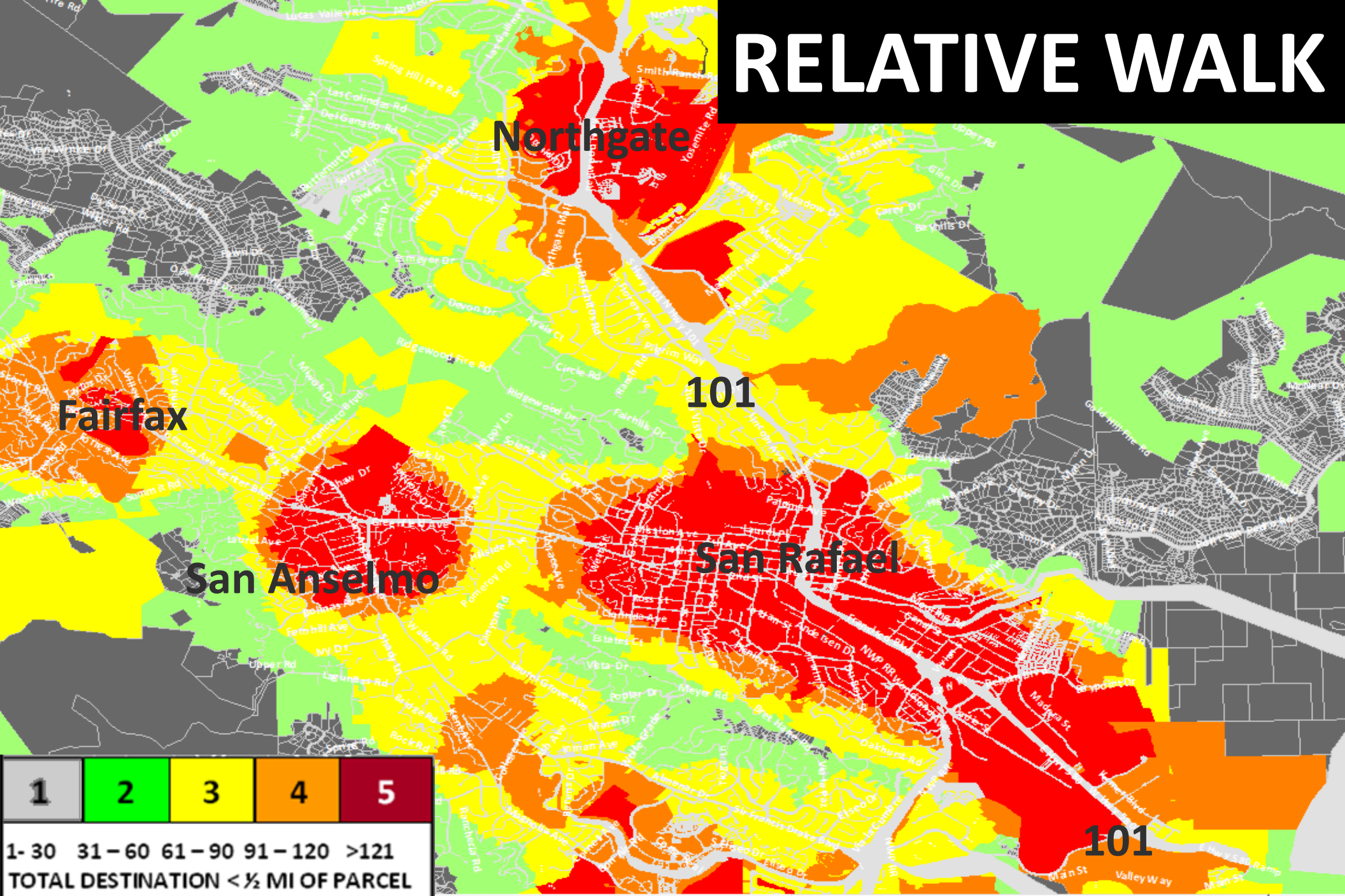
San Anselmo

San Rafael

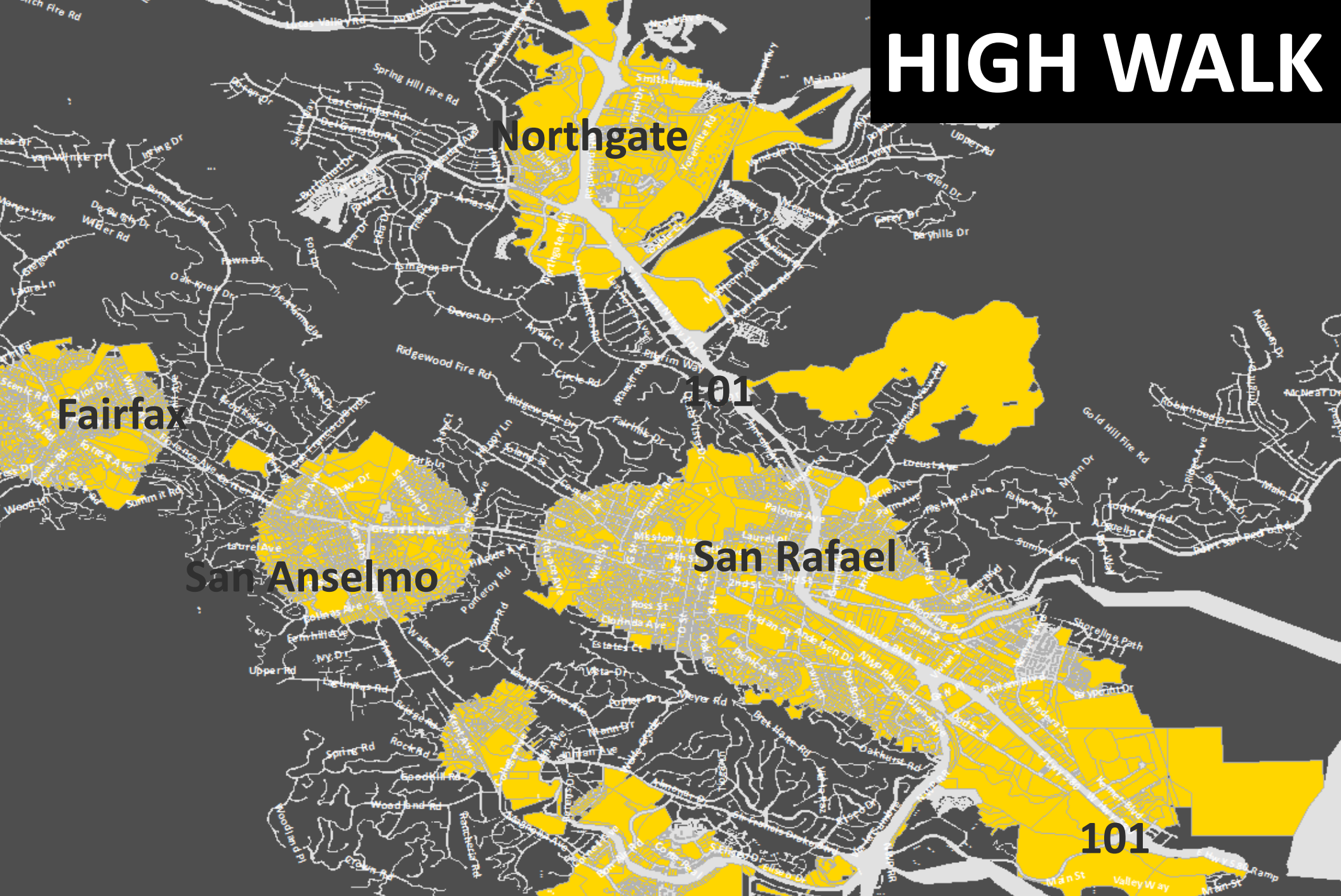
101



# RELATIVE WALK



# HIGH WALK



Northgate

Fairfax

San Anselmo

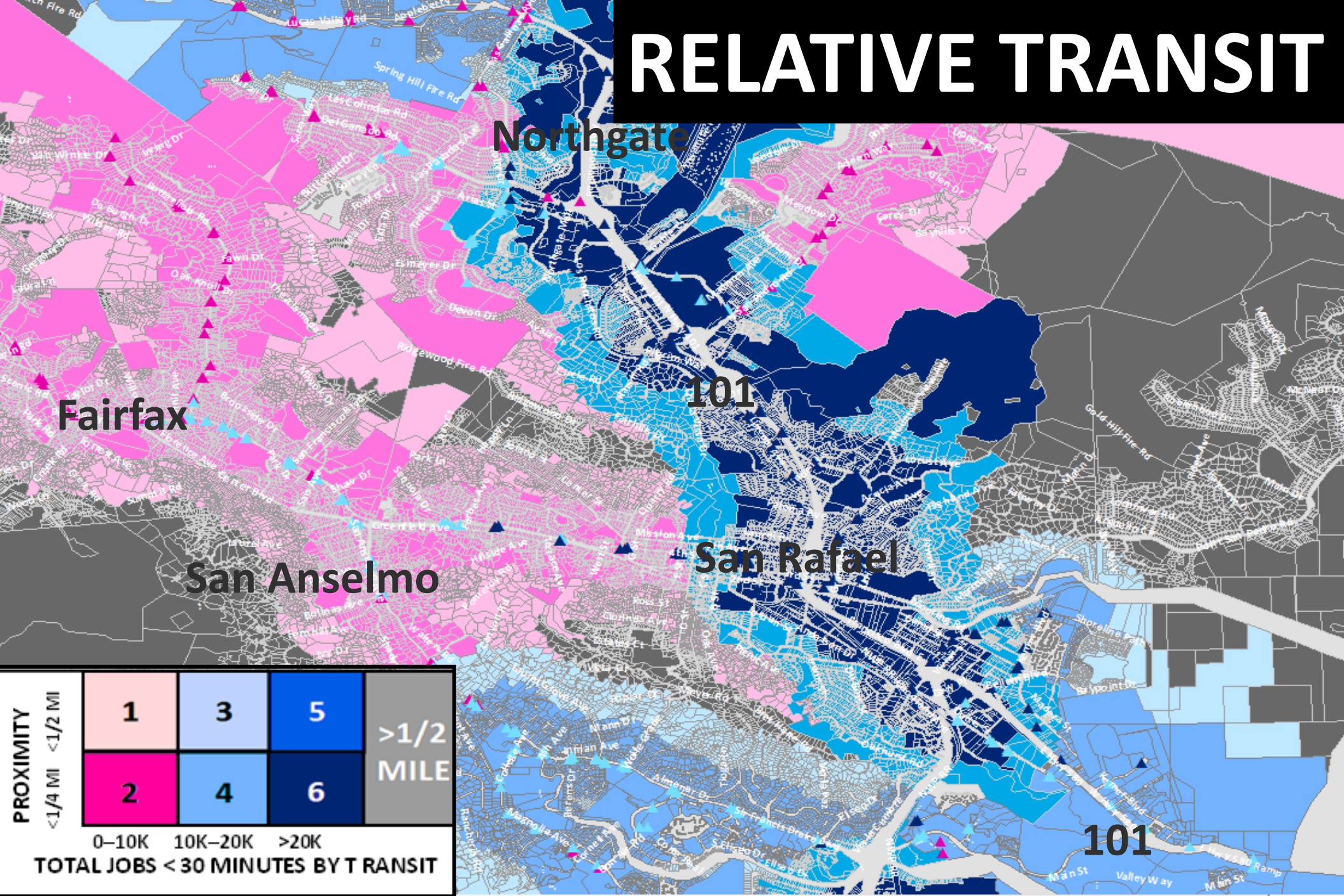
San Rafael

101

101

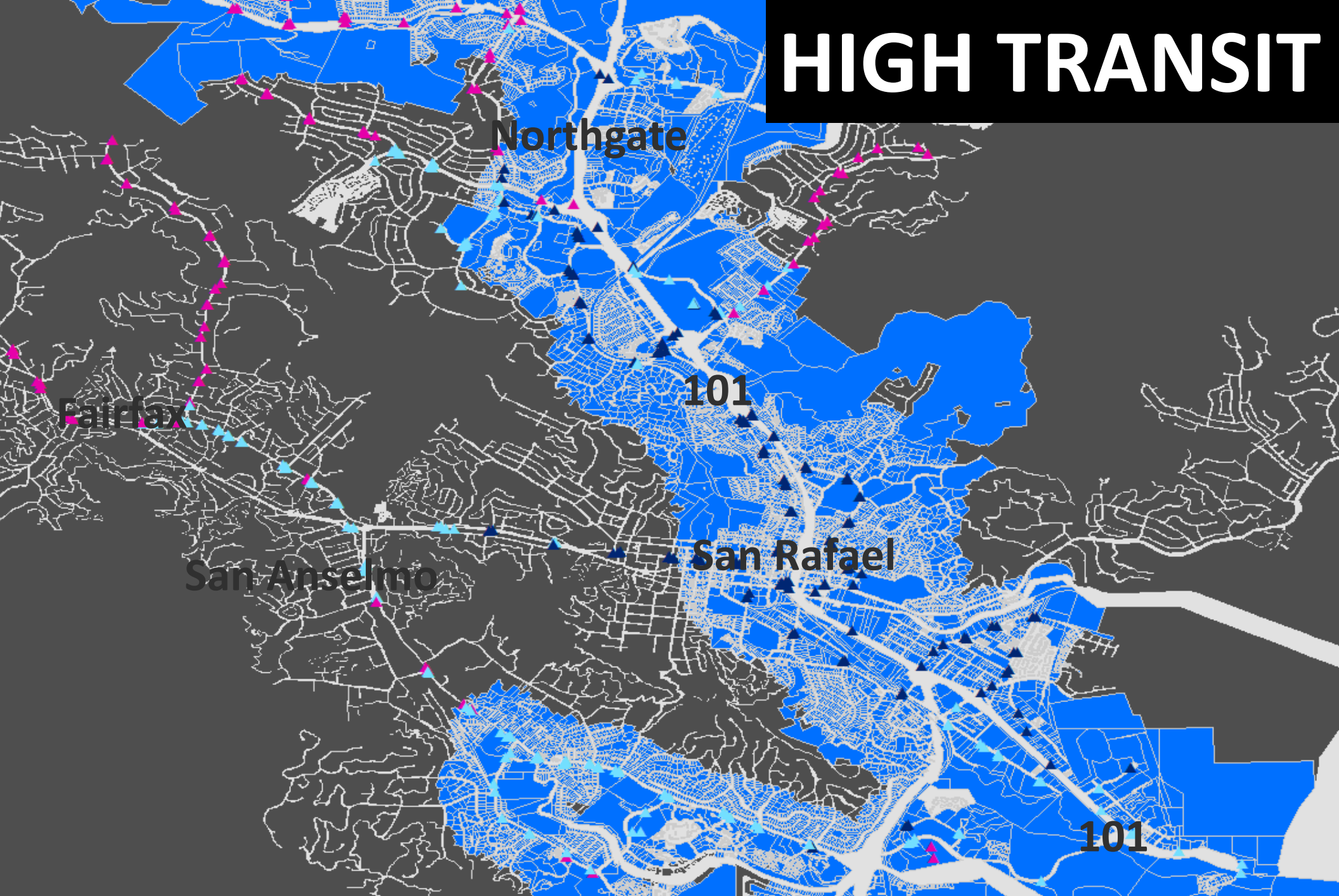


# RELATIVE TRANSIT

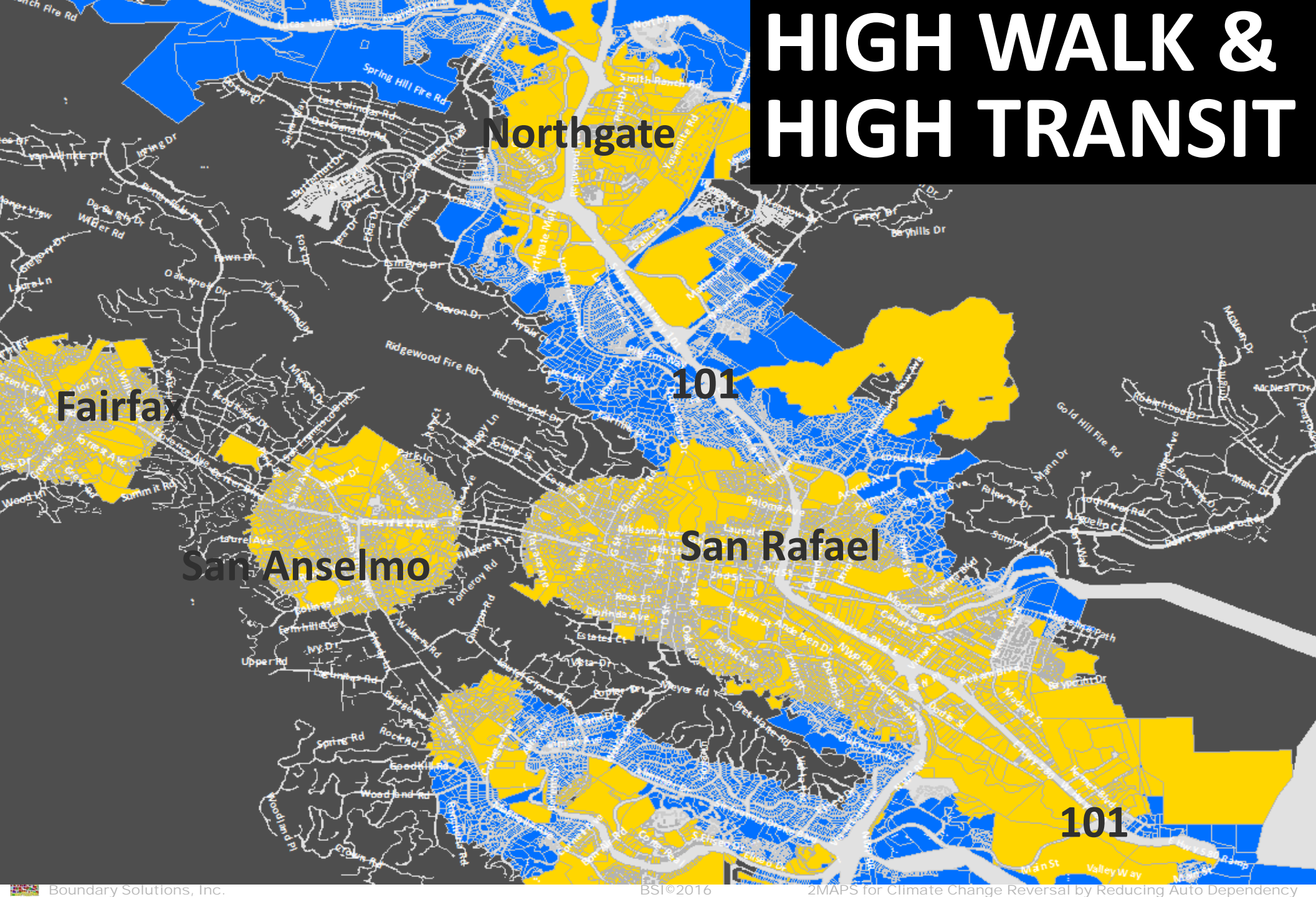




# HIGH TRANSIT



# HIGH WALK & HIGH TRANSIT



Northgate

Fairfax

San Anselmo

101

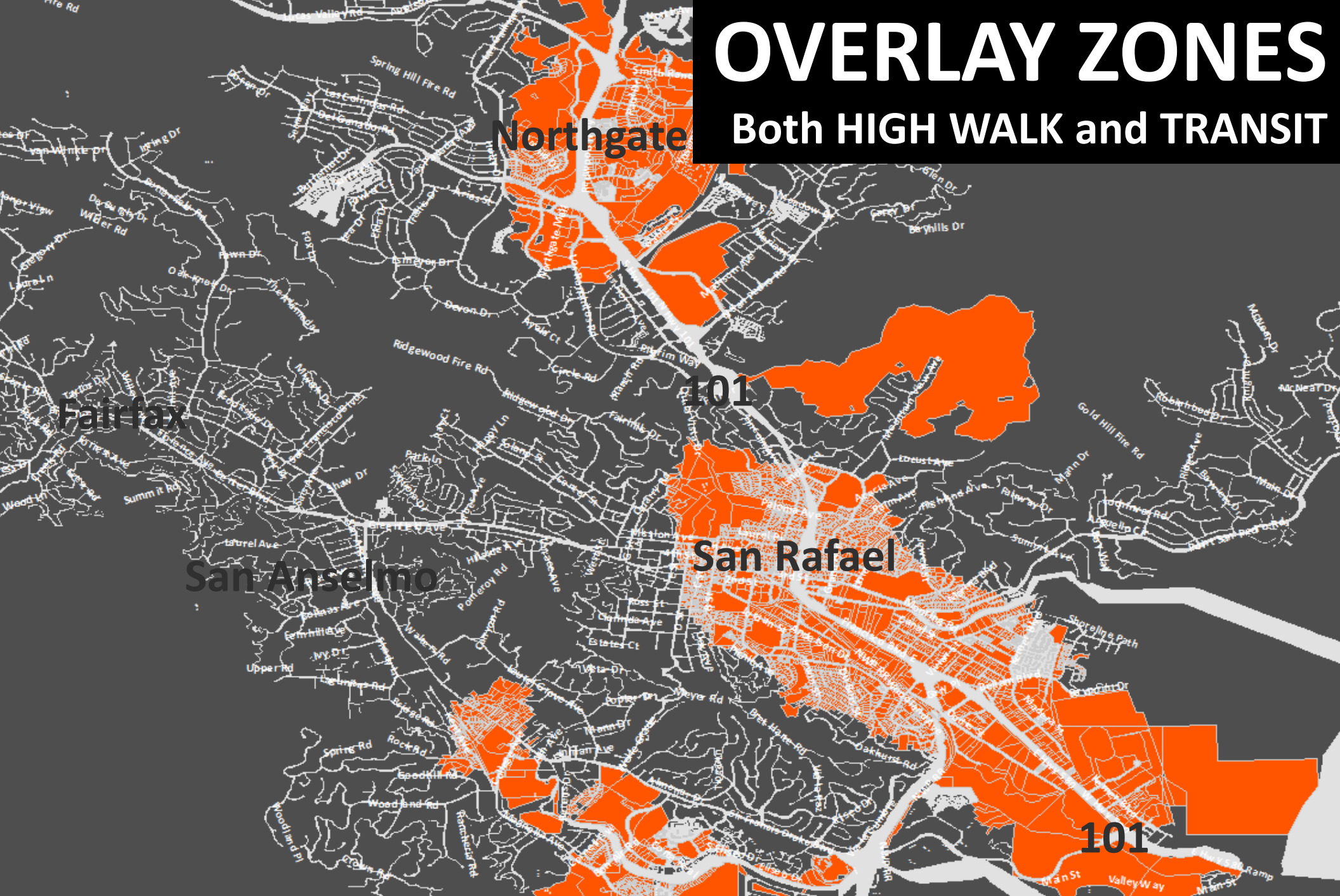
San Rafael

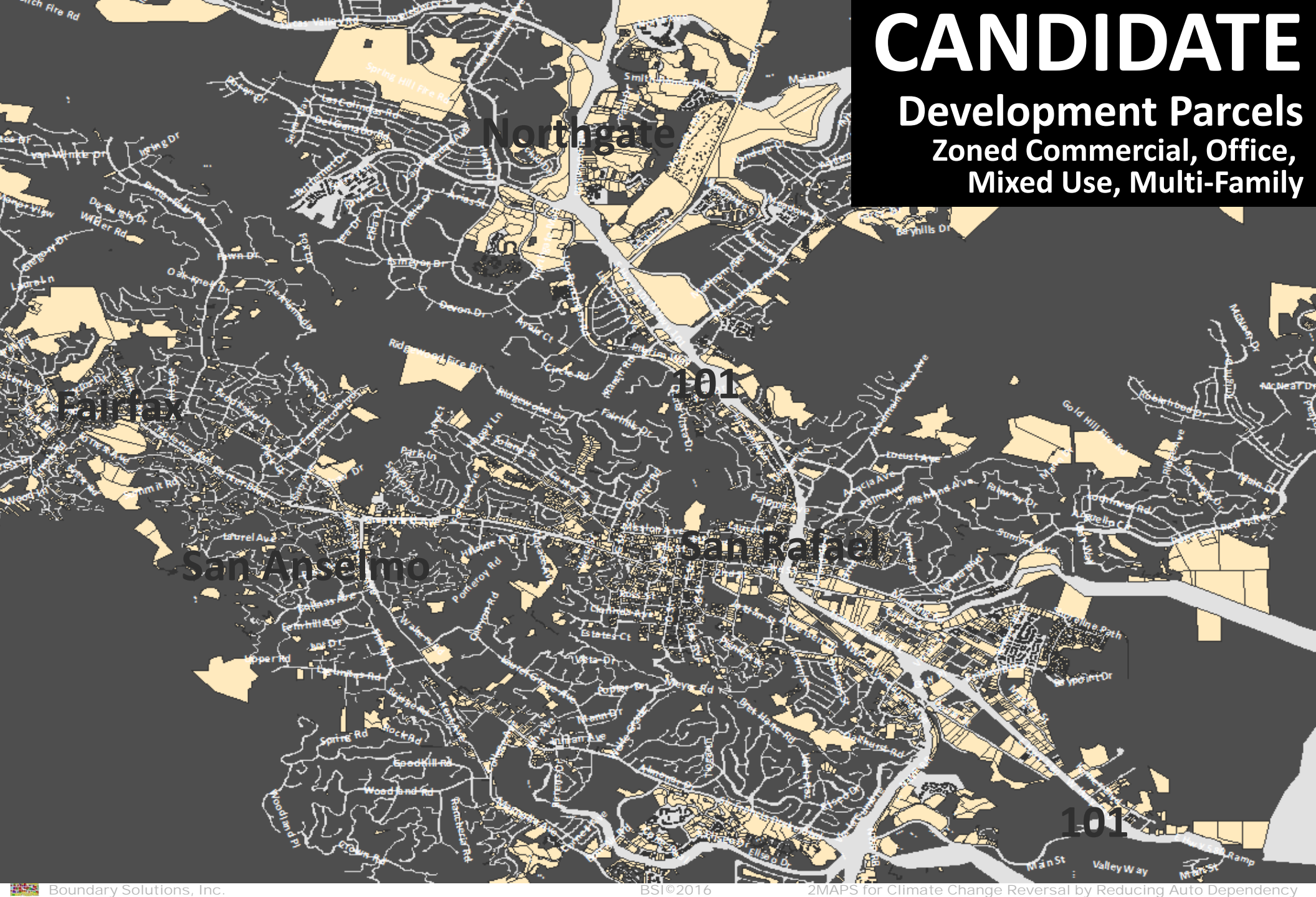
101



# OVERLAY ZONES

## Both HIGH WALK and TRANSIT





# CANDIDATE

Development Parcels  
Zoned Commercial, Office,  
Mixed Use, Multi-Family

Northgate

Fairfax

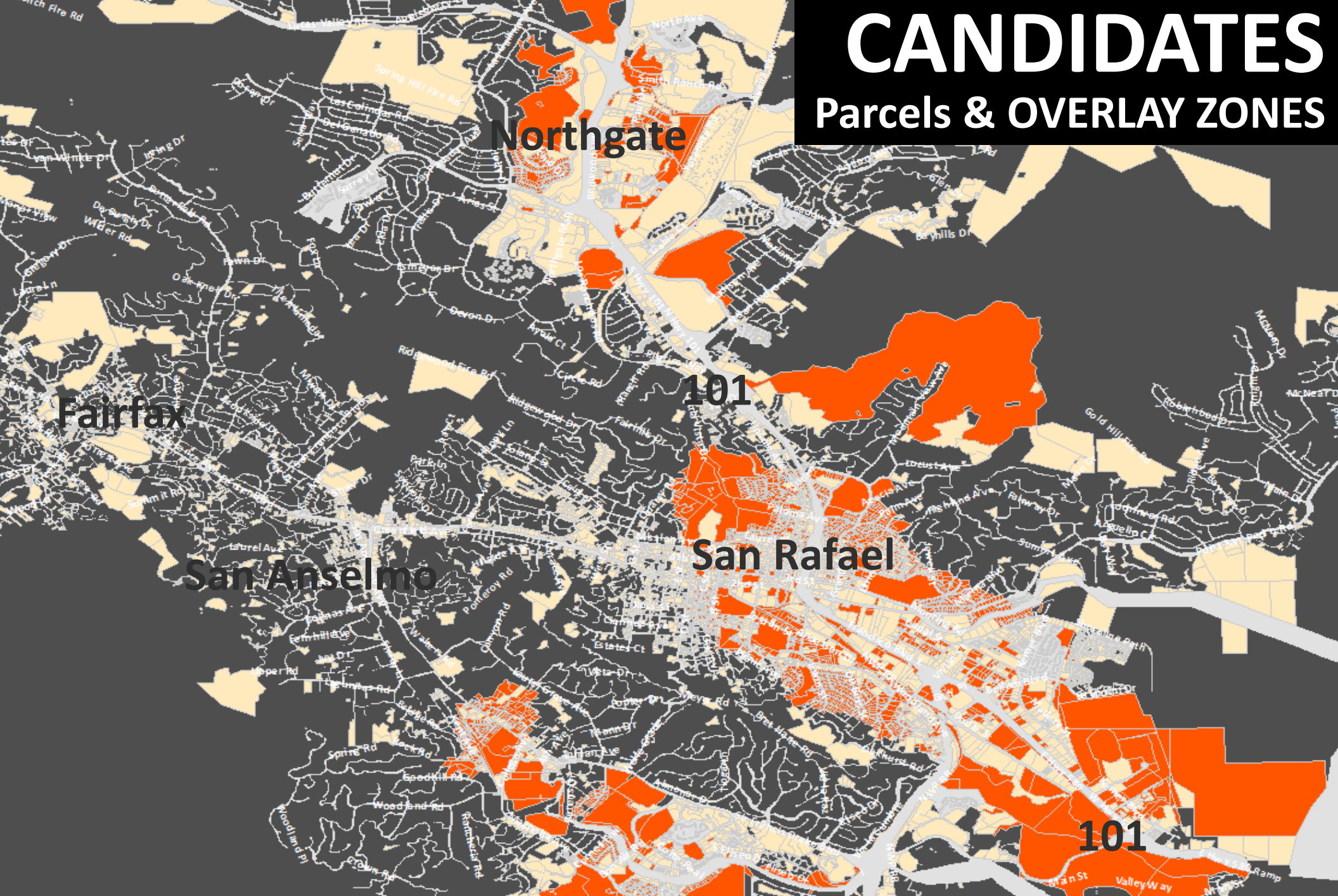
San Anselmo

San Rafael



# CANDIDATES

## Parcels & OVERLAY ZONES



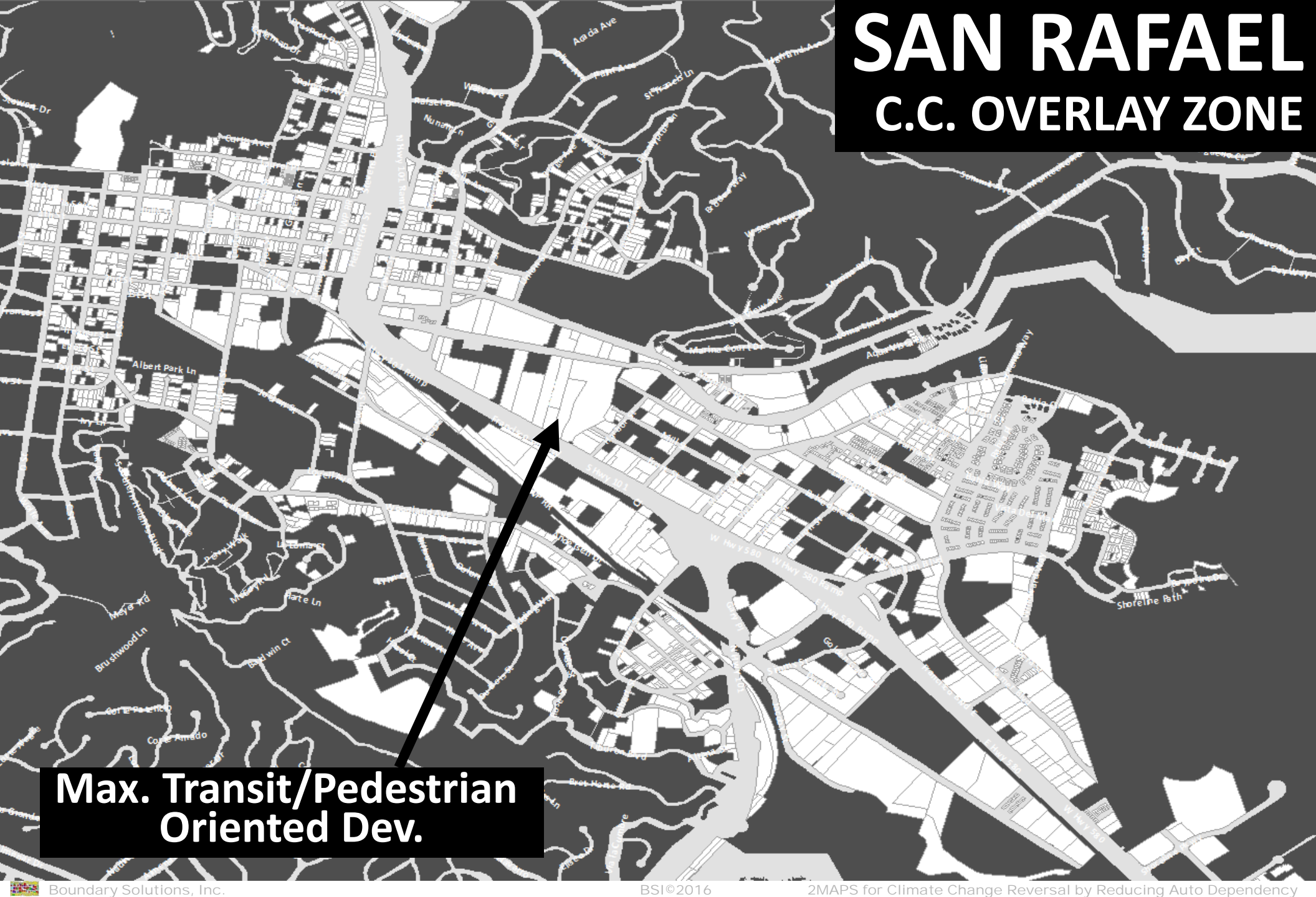
# CLIMATE CHANGE OVERLAY ZONES





# SAN RAFAEL

## C.C. OVERLAY ZONE



**Max. Transit/Pedestrian  
Oriented Dev.**

# NOVATO

## C.C. OVERLAY ZONE

Transit/Pedestrian  
Oriented Dev.

Max. Transit/Pedestrian  
Oriented Dev.





# CORTE MADERA GREENBRE C.C. OVERLAY ZONE



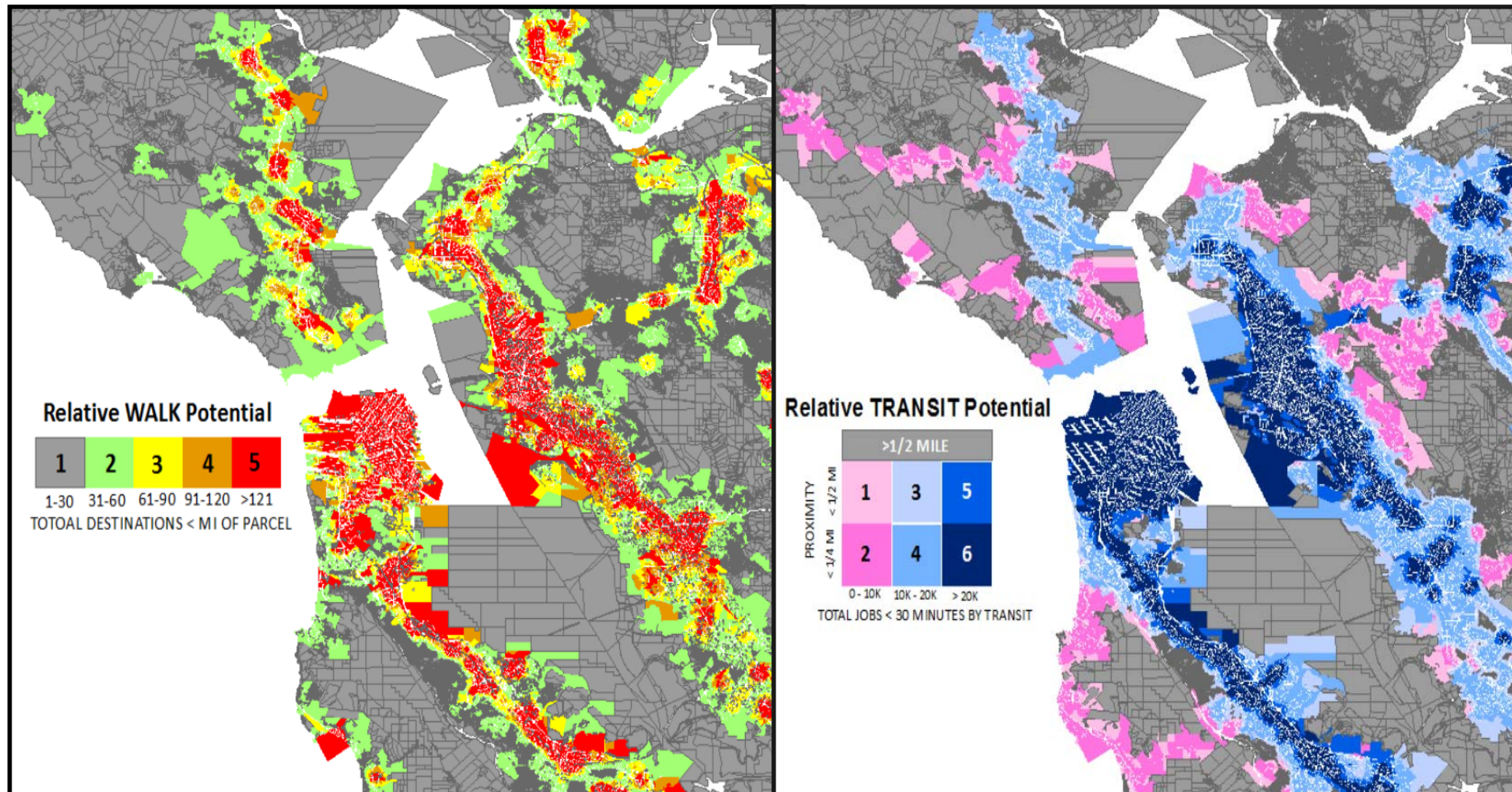
The map shows a residential area with a network of streets. A black arrow points from the bottom-left text box to a specific location on the map, and a white arrow points from the top-right text box to another location. The map is labeled with various street names including Doherty Dr, Industrial Way, and Highway 101.

**Max. Transit/Pedestrian  
Oriented Dev.**

# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

SAN FRANCISCO BAY AREA MAPS PARCEL-LEVEL GEOSPATIAL MODEL



# 2MAPS

**For More Town Workers Living Where they Work  
to Beat Climate Change: Sample Story**

**CASE STUDY: MILL VALLEY**  
**2MAP CLIMATE CHANGE REVERSAL**  
**TRAFFIC/CARBON REDUCTION**  
**GEOSPATIAL MODEL**

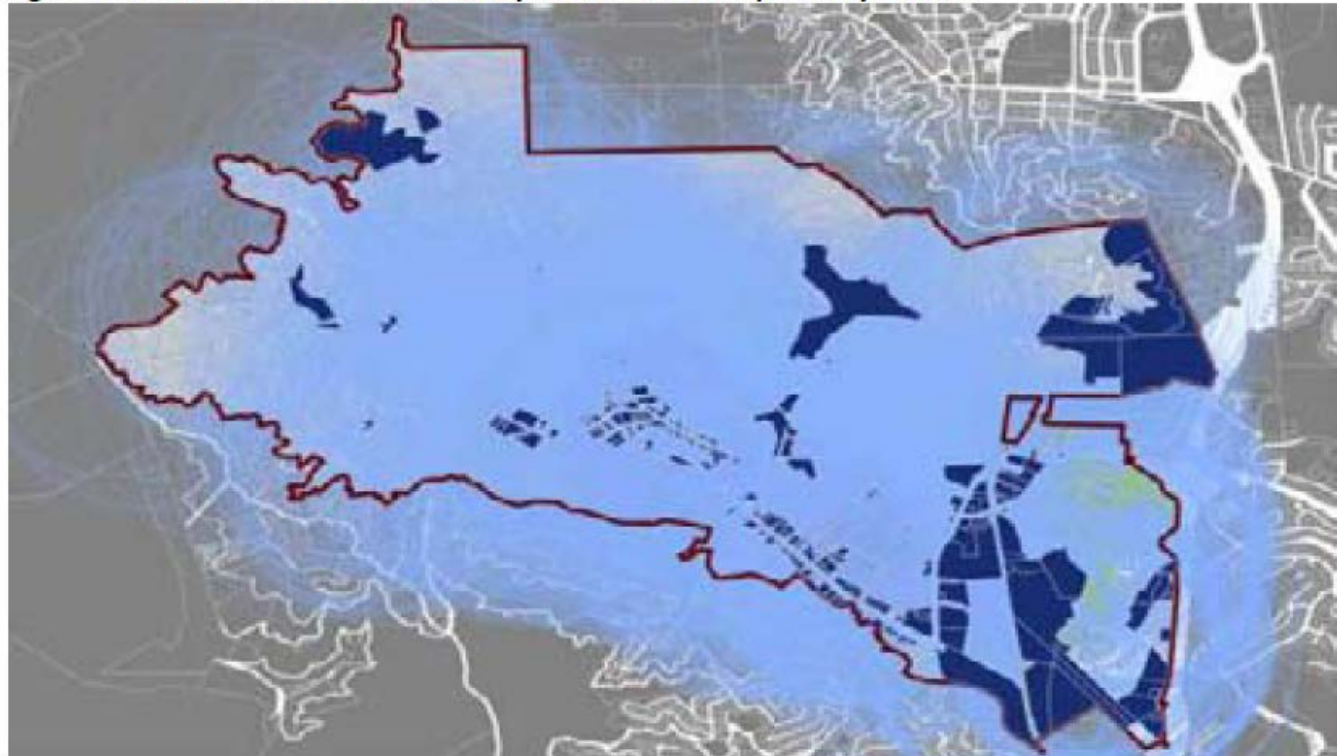




# BUFFERED DESTINATIONS

Relative WALK Score is total Destinations <1/2 Mile  
With each Parcel assigned one of five categories from  
**NOT WALKABLE to HIGHLY WALKABLE**

Figure B.1: Destinations in Mill Valley and Relationship to City Parcels



## Legend



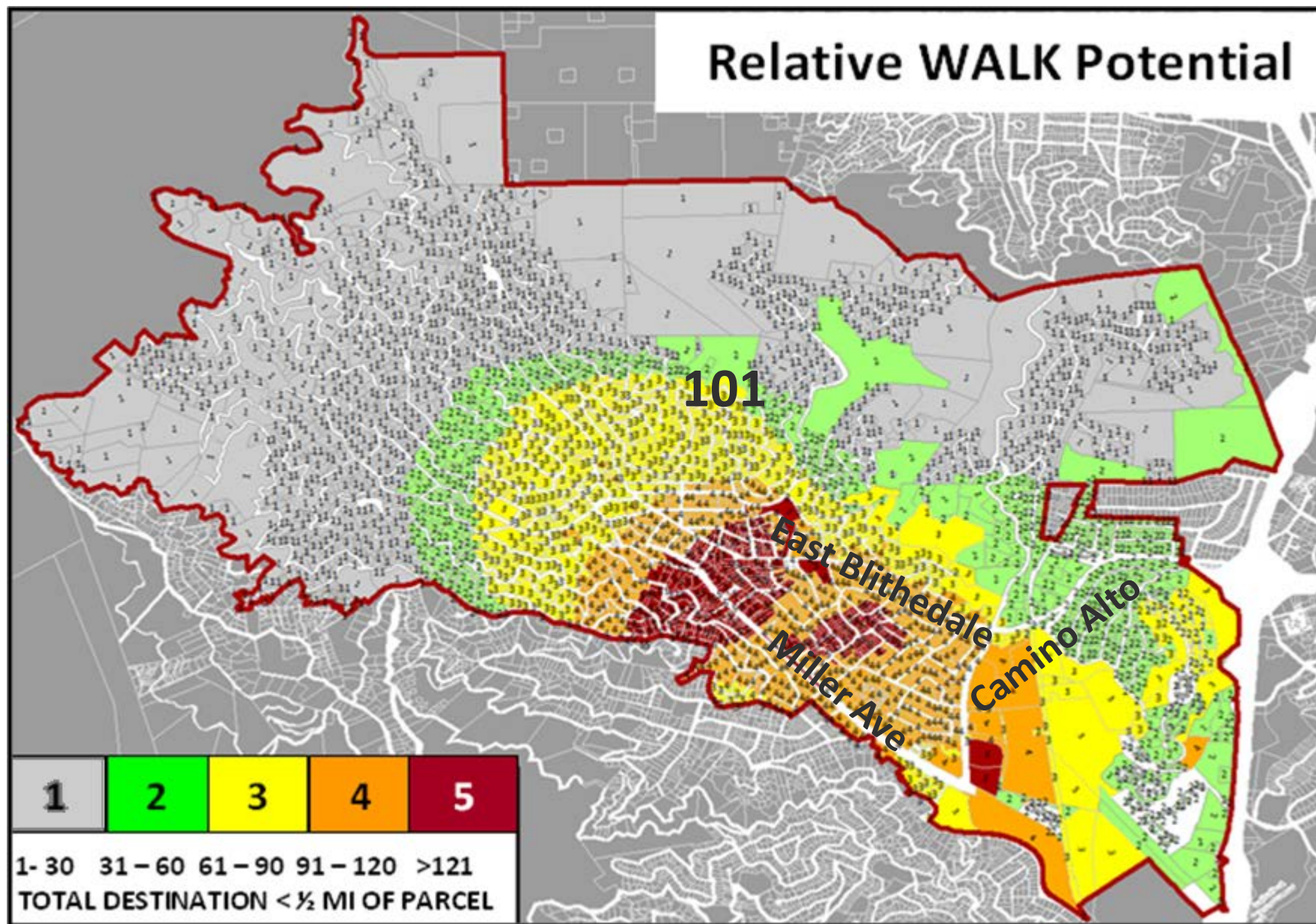
Destinations

Half-mile distance from every parcel in the city

CITY OF MILL VALLEY  
**Housing Element**  
**2015-2040**

Volume II - Appendices  
Adopted May 4, 2015

B. Housing Constraints Analysis  
Page B-43

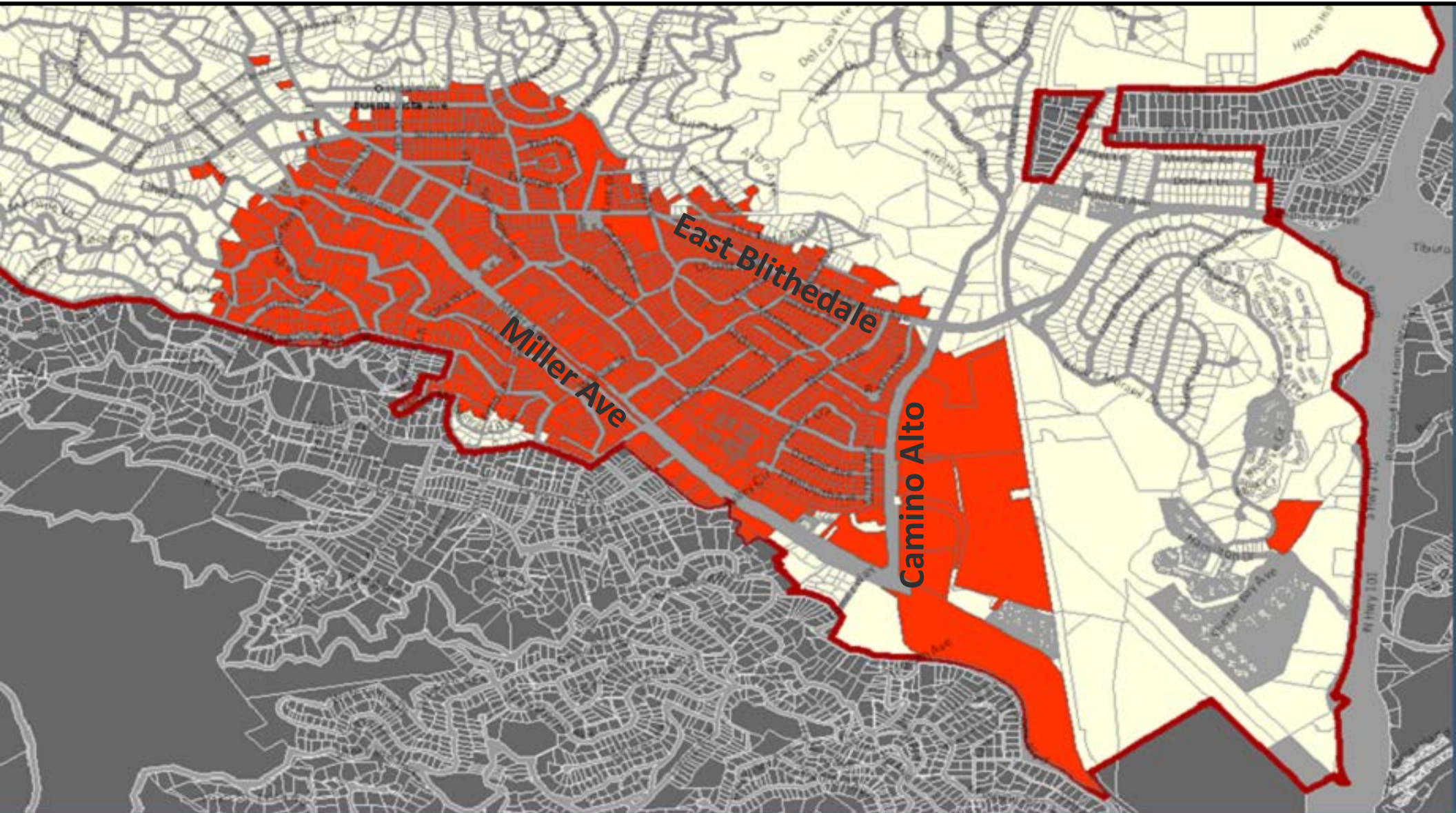


Source: Mill Valley 2040 General Plan



# HIGH WALK POTENTIAL

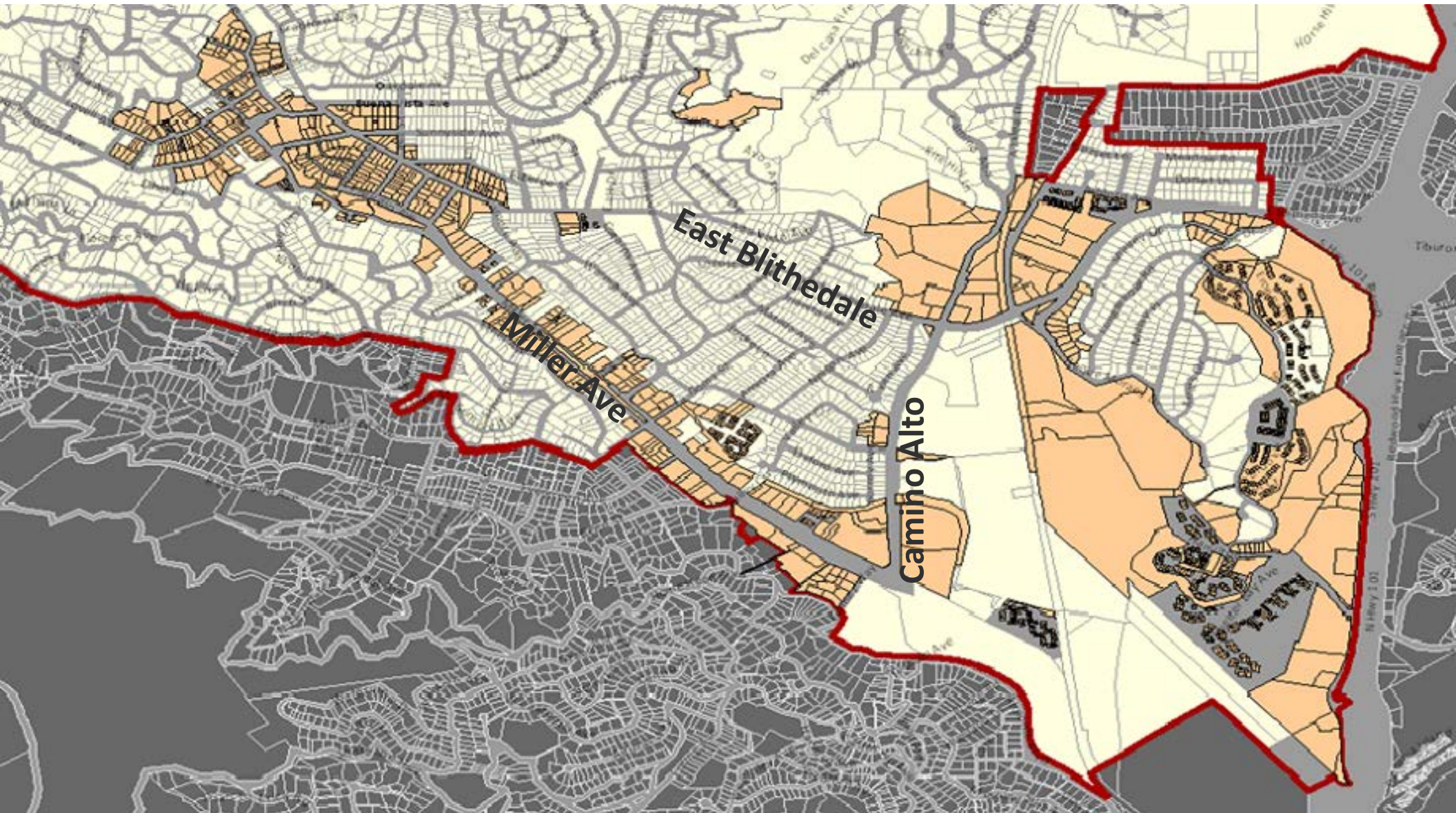
All Parcel in the top 2 Walk Categories are Isolated as HIGH WALK Parcels





# CANDIDATE DEVELOPMENT PARCELS

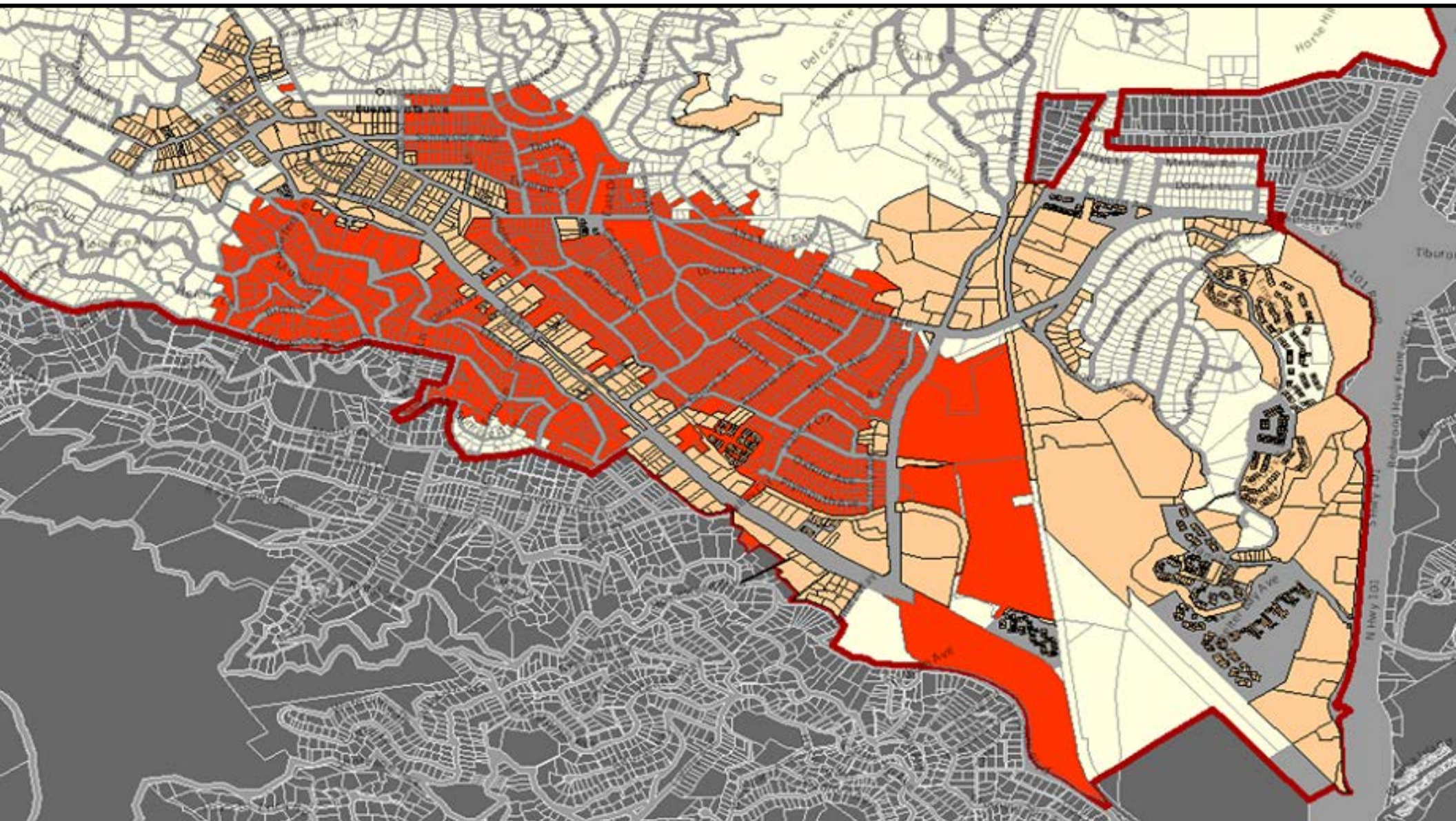
Then all Legally, Environmentally and Politically Compliant Non-Single Family Parcels are identified and made into a Candidate Site 'Footprint'





# INTERSECTION

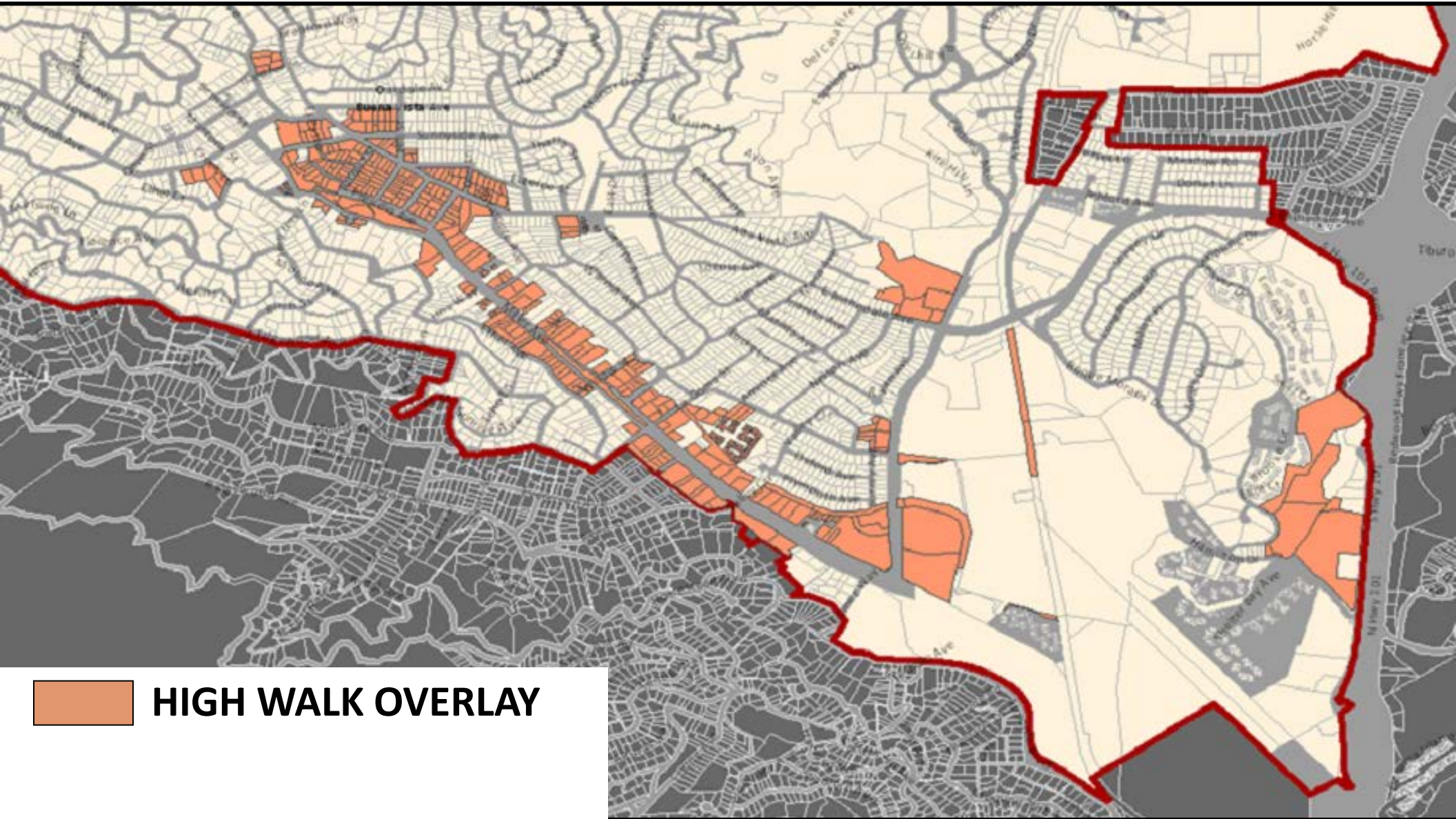
All Candidate Parcels and All HIGH WALK Parcels





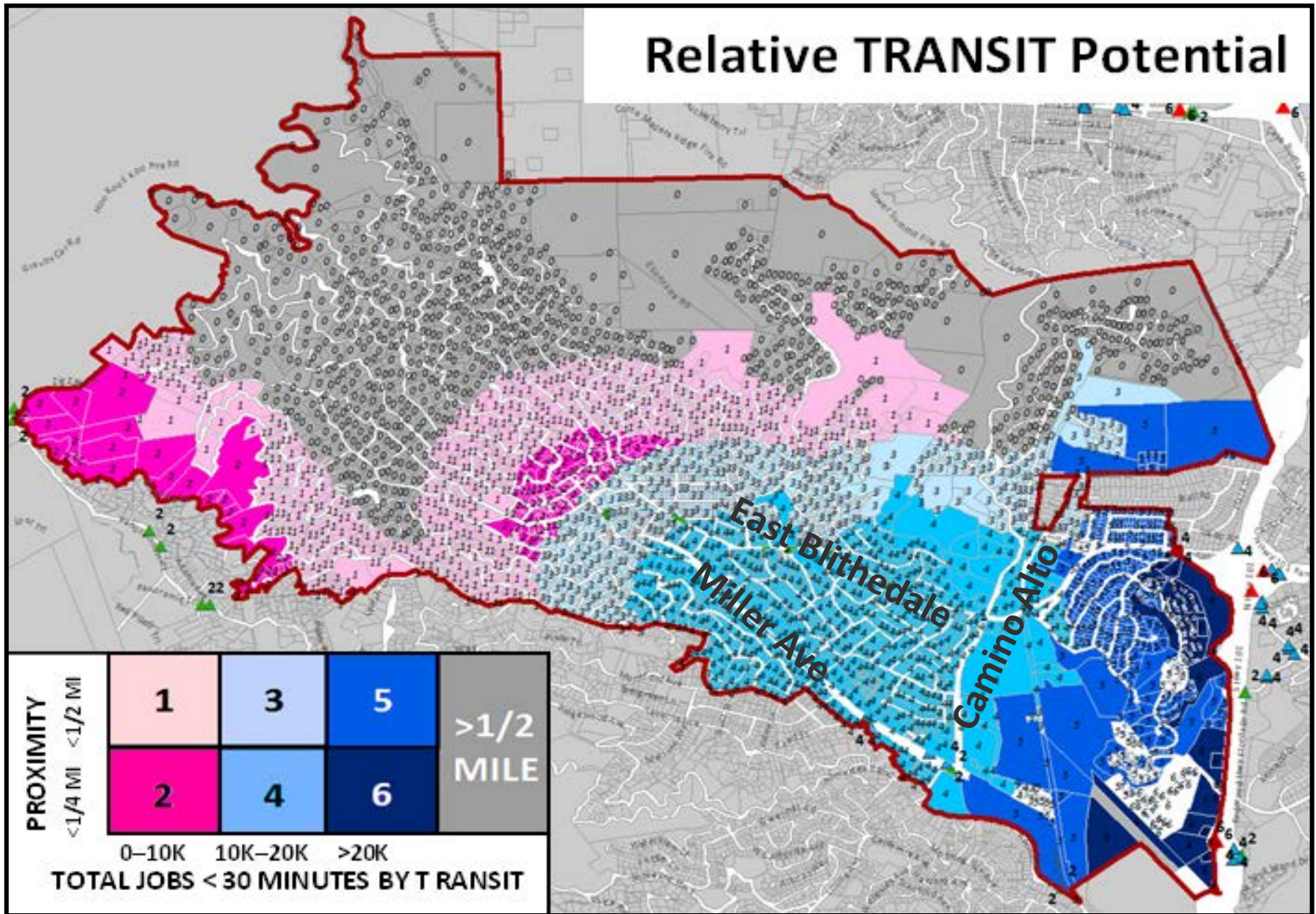
# HIGH WALK POTENTIAL OVERLAY

All CANDIDATE Parcels that are also HIGH WALK Parcels



**HIGH WALK OVERLAY**



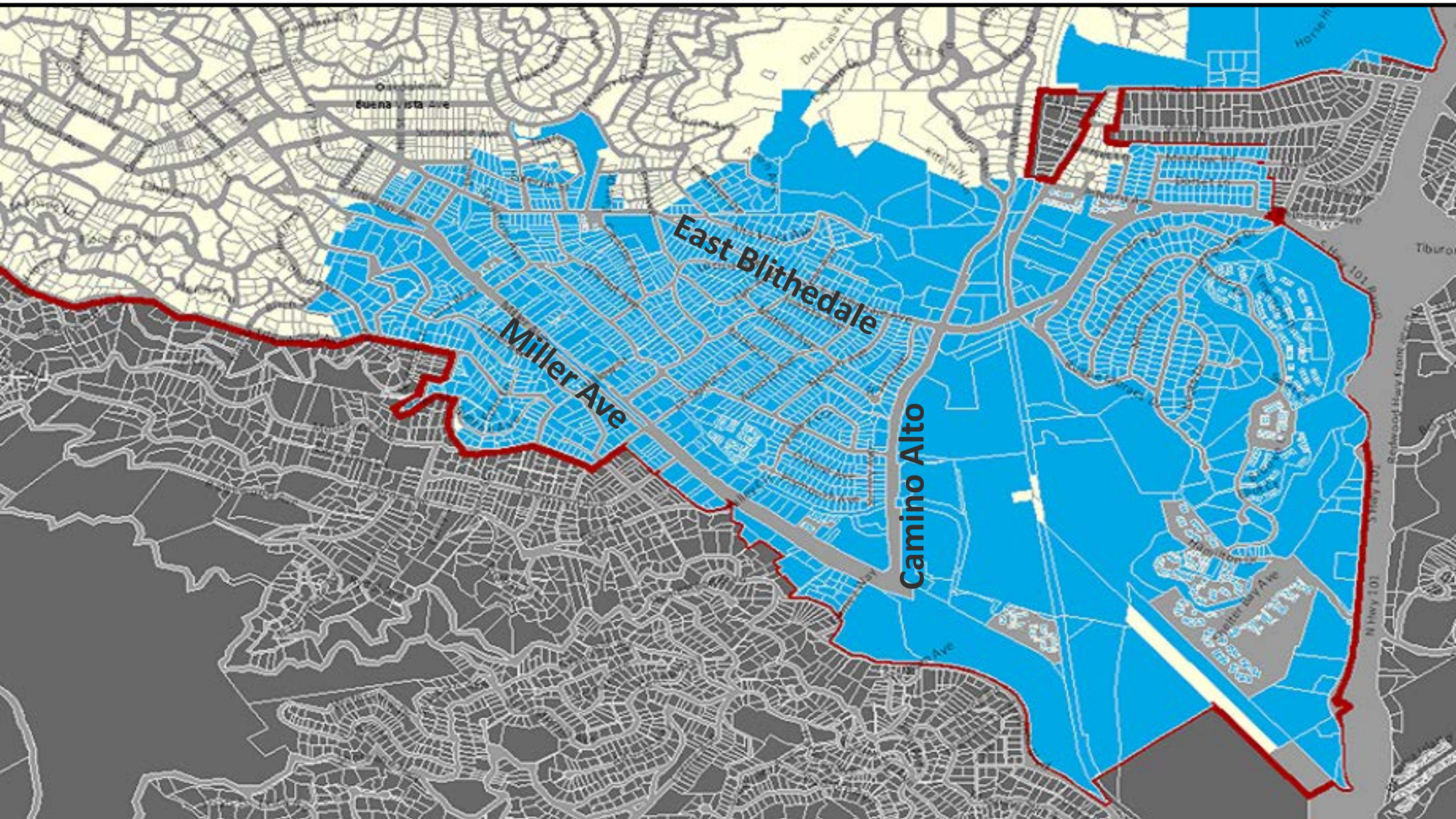


Source: Mill Valley 2040 General Plan; University of Minnesota Accessibility Observatory, Transit Access Across America



# HIGH TRANSIT POTENTIAL

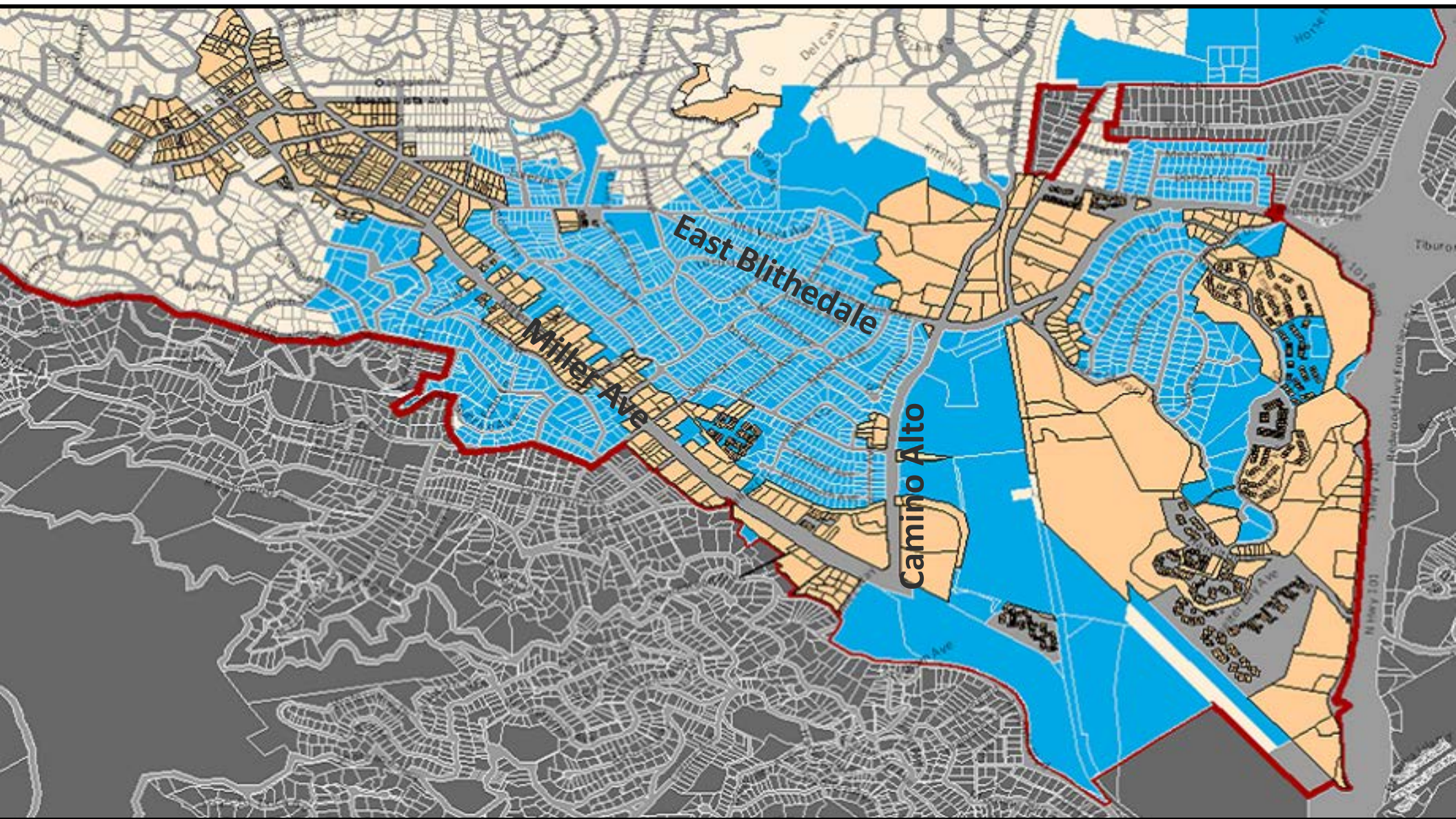
All Parcel in top 4 TRANSIT Categories are Isolated as HIGH TRANSIT Parcels





# INTERSECTION

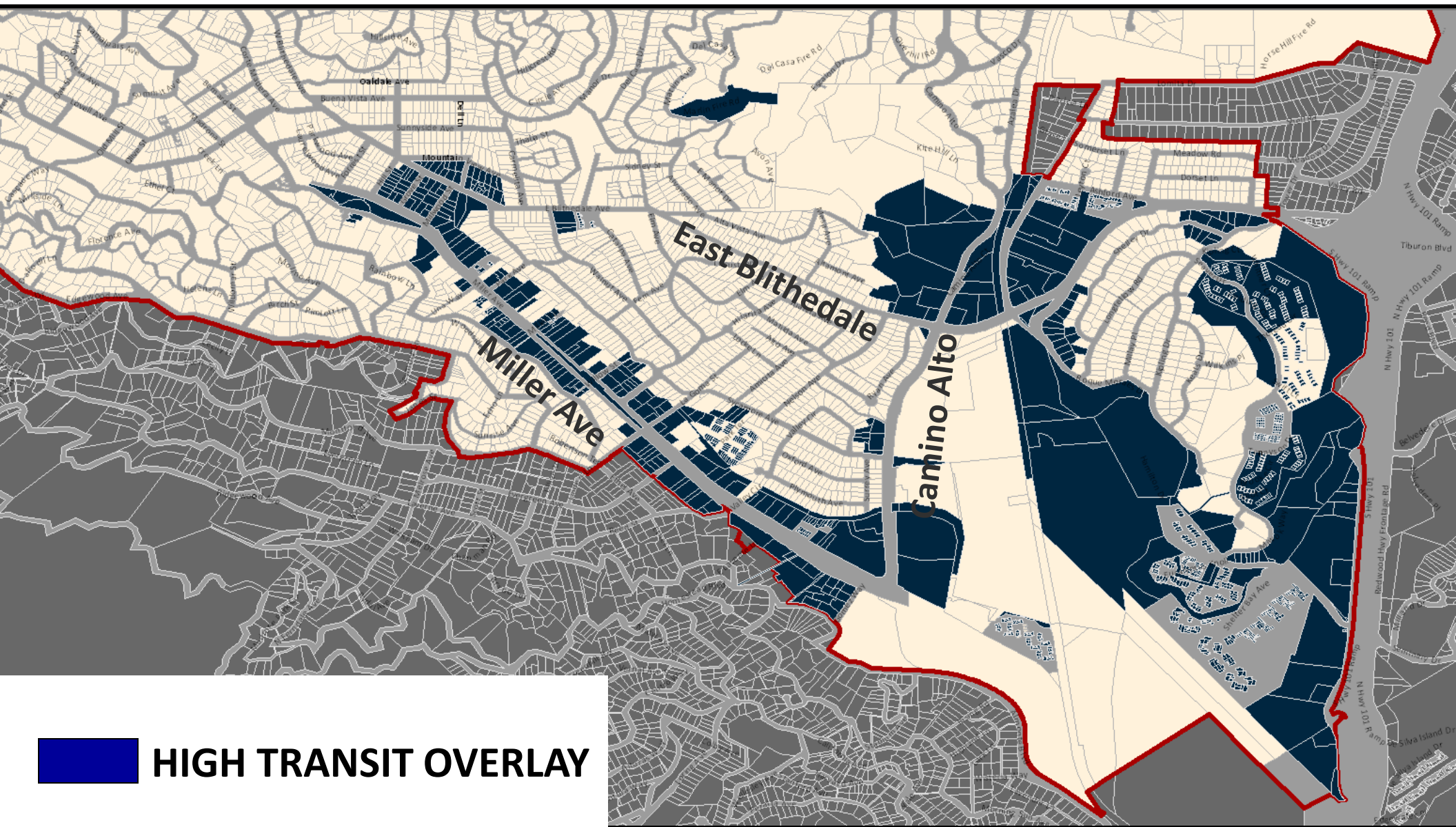
Candidate Development Parcel are intersected with High TRANSIT Parcels ...





# HIGH TRANSIT POTENTIAL CANDIDATE PARCELS

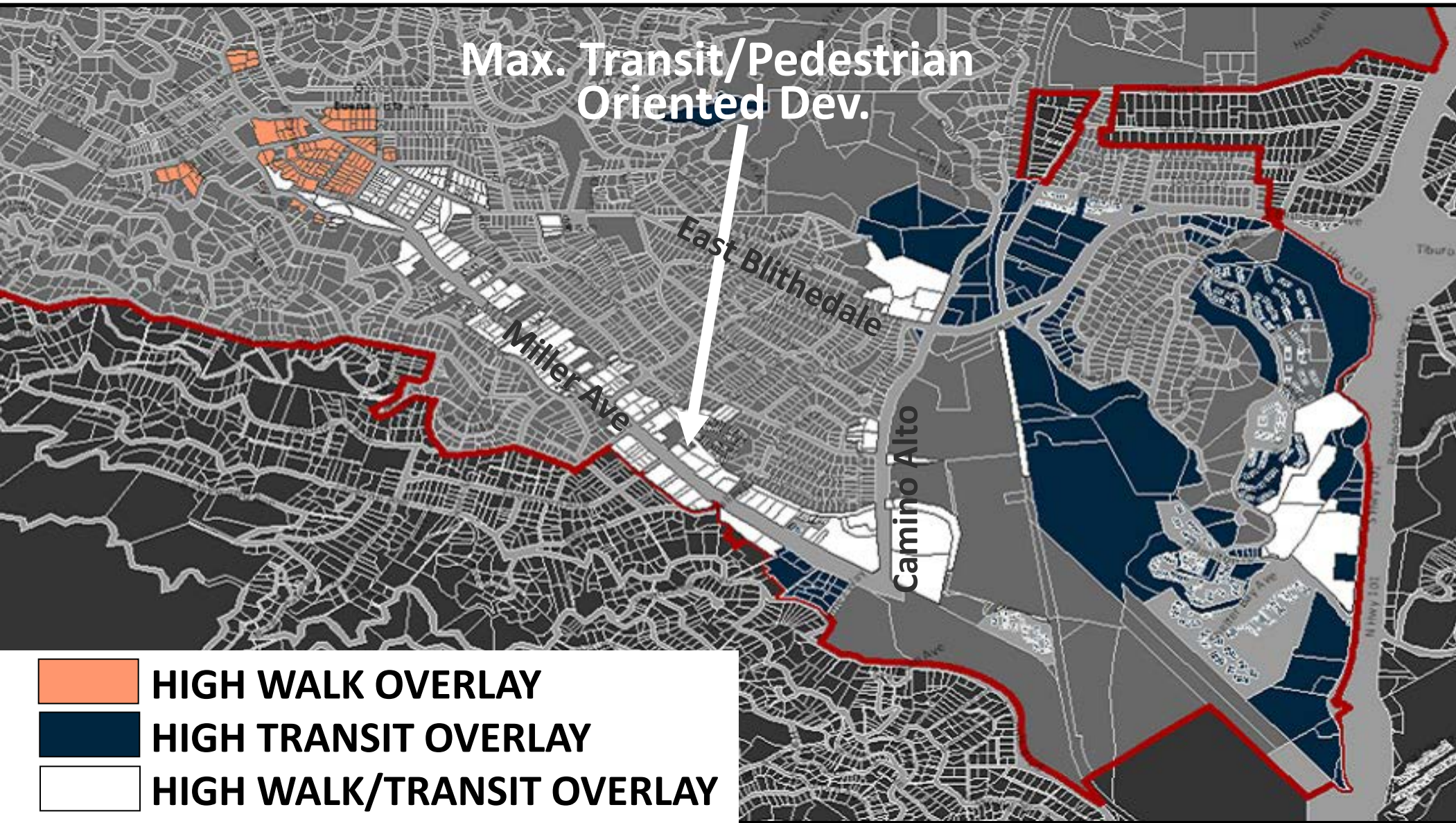
To Identify all HIGH TRANSIT Potential Overlays



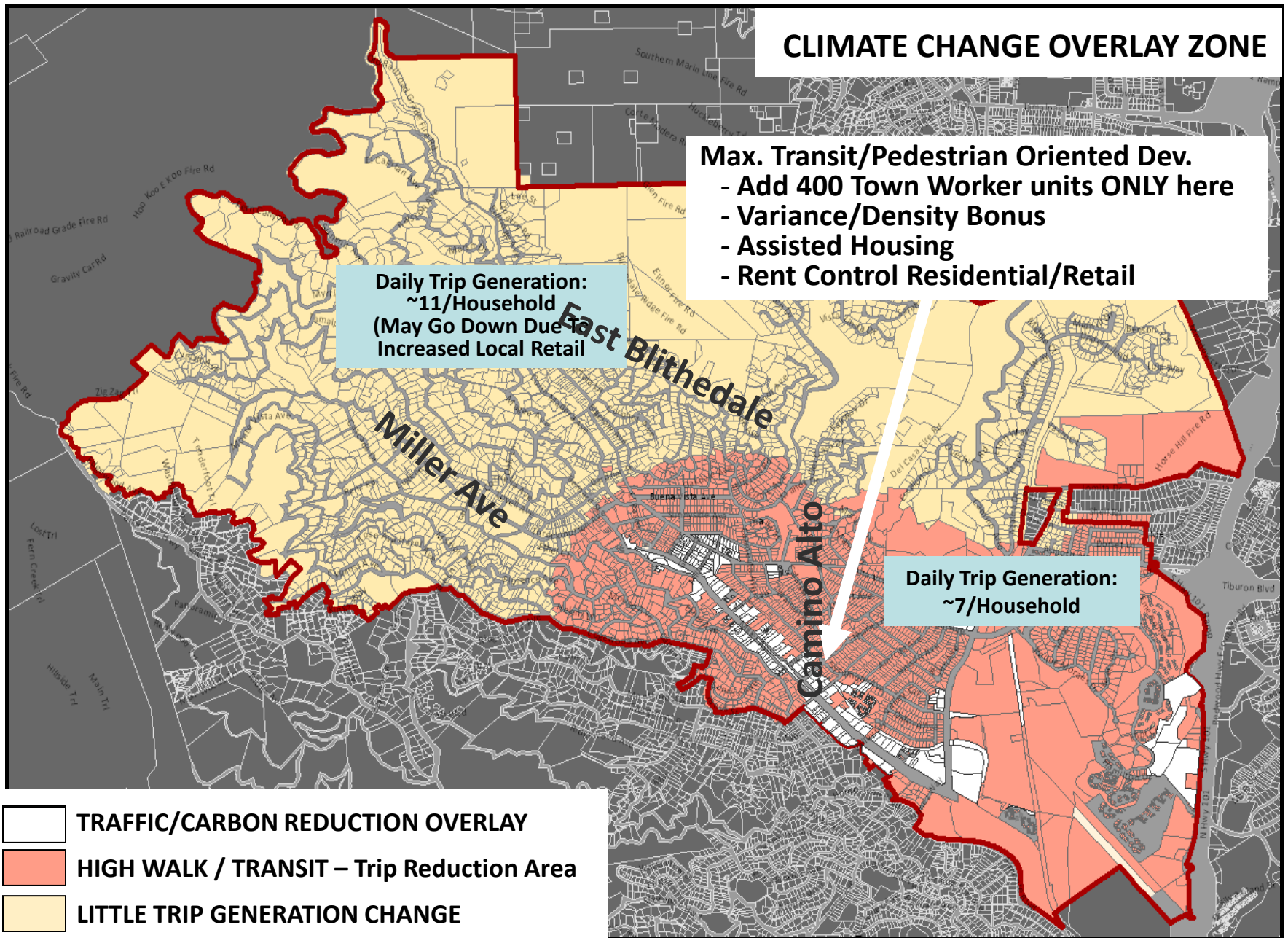


# CLIMATE CHANGE OVERLAY ZONE

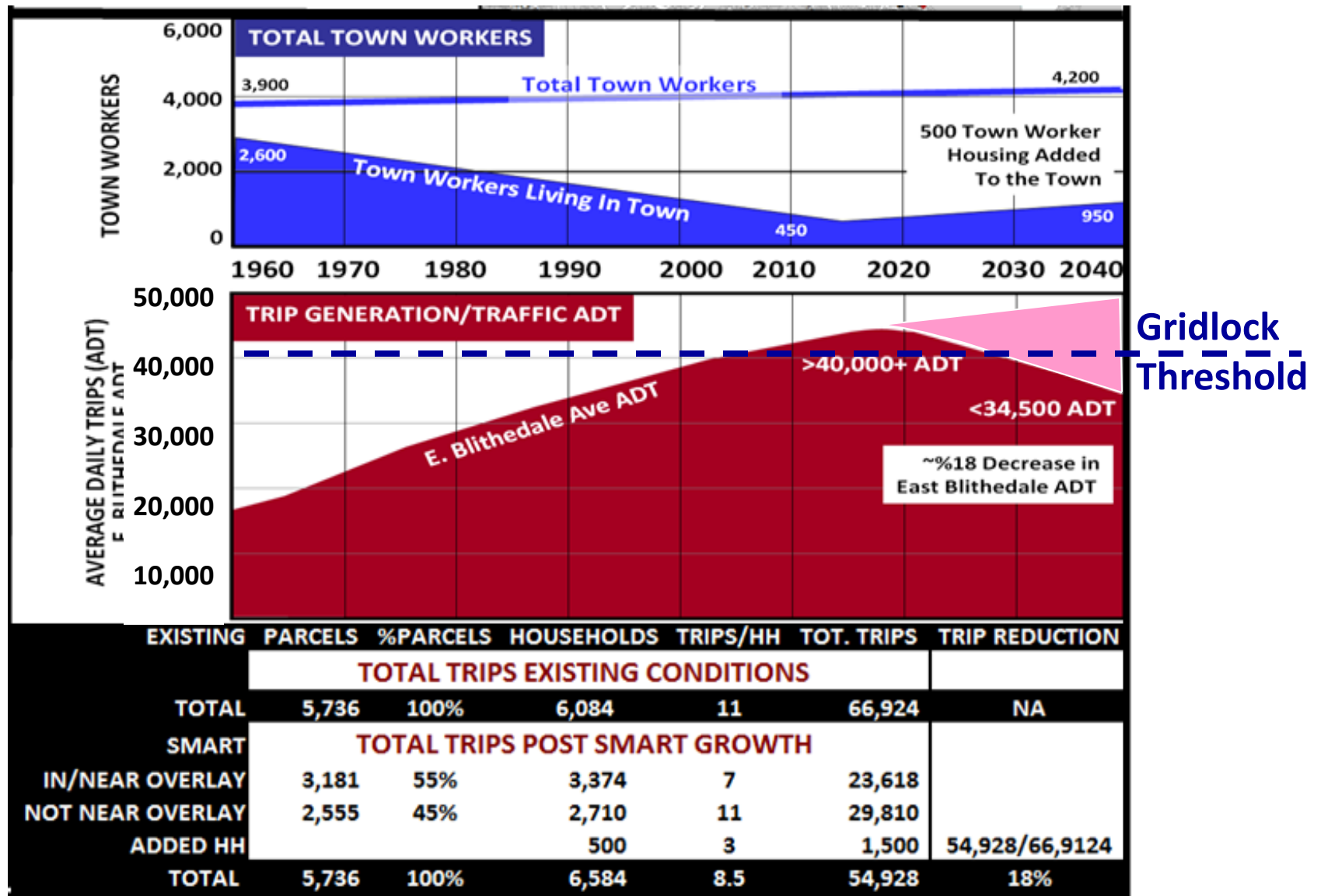
All CANDIDATE Parcels that are also HIGH WALK and HIGH TRANSIT Parcels







# THE PAYOFF – PERMANENT END OF GRIDLOCK

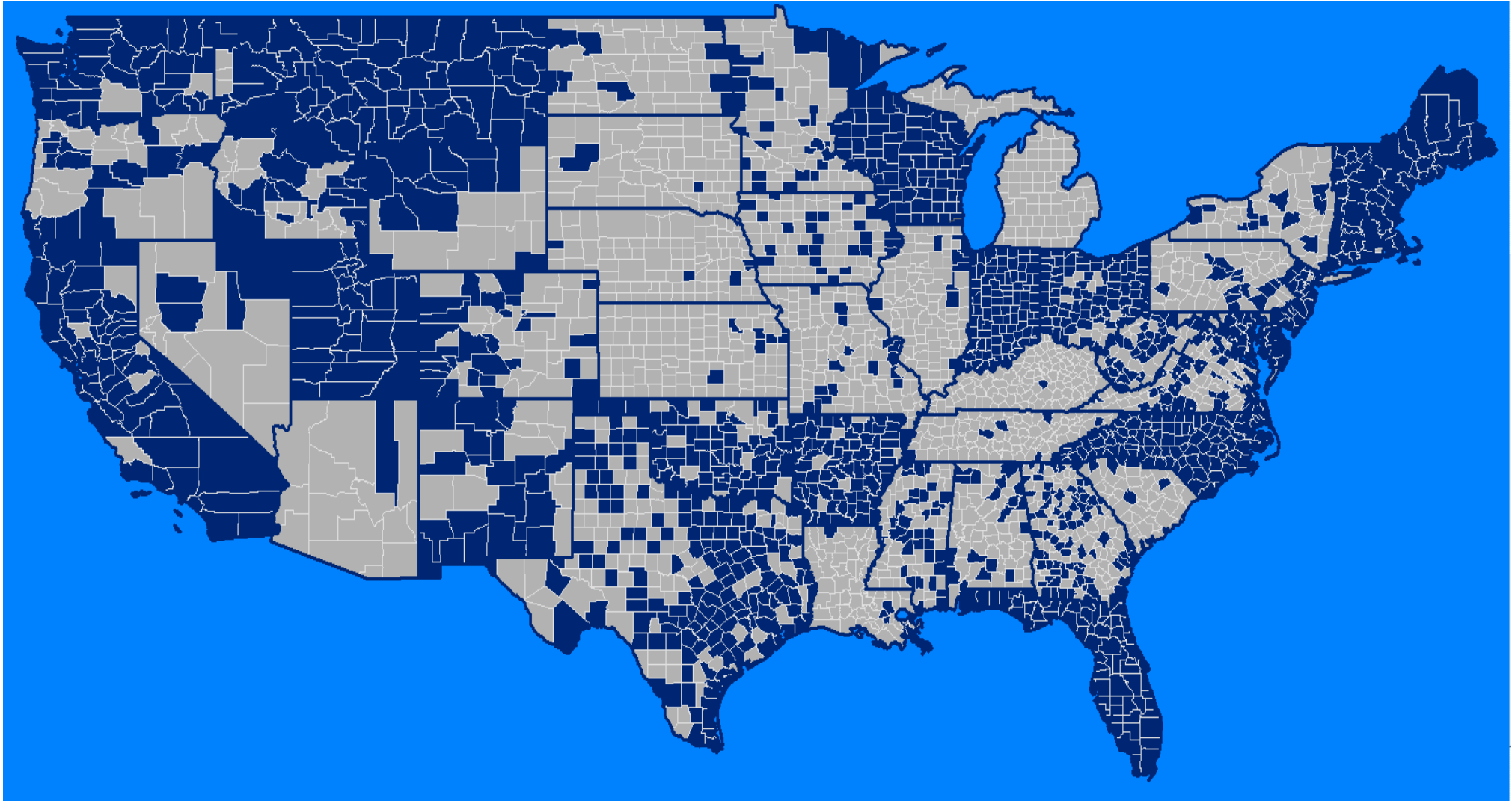




# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

**COVERAGE - - Open Record Counties <\$200**



# 2MAPS

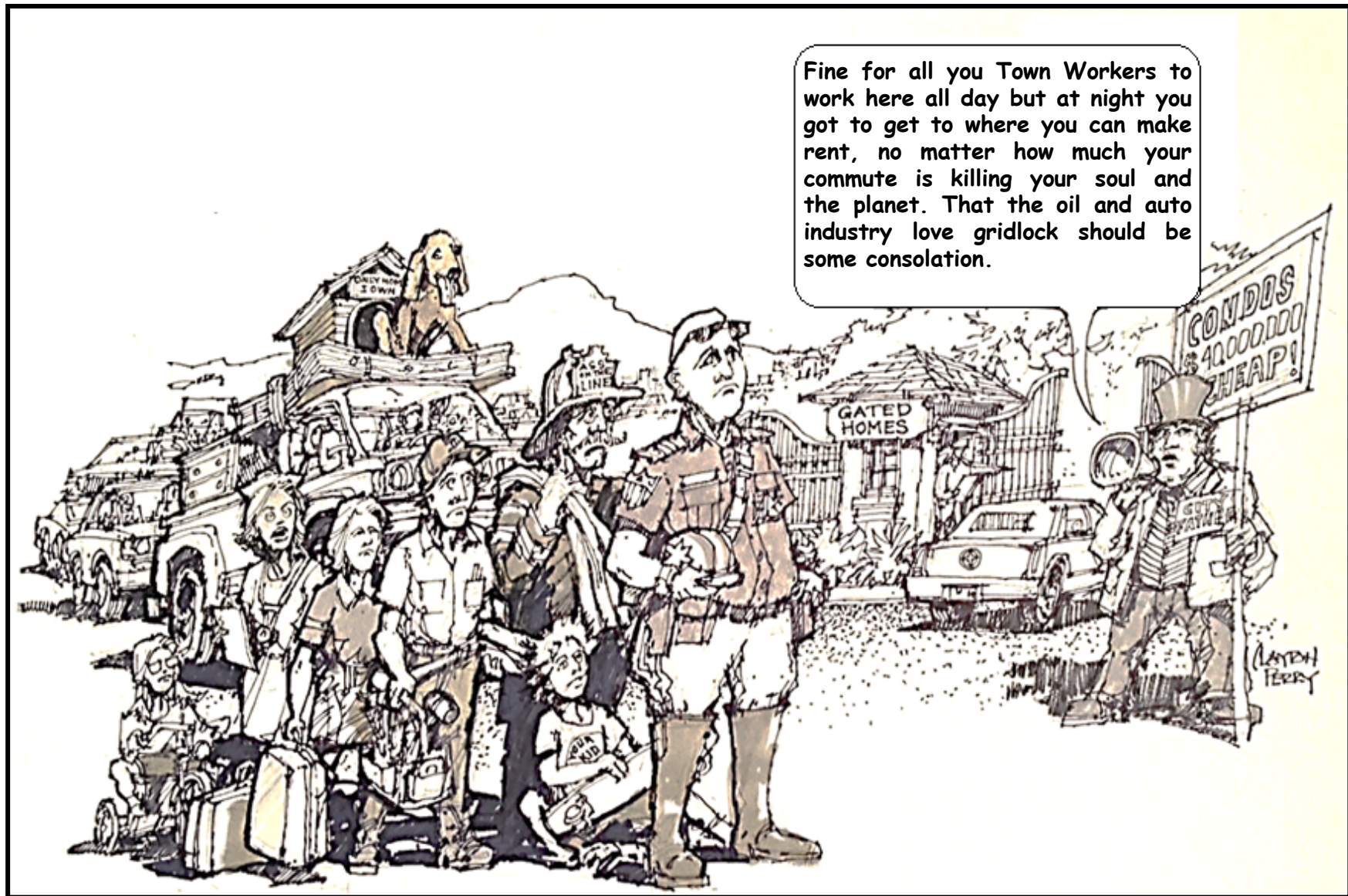
**Reversing Climate Change by Enabling Town Workers to live where they Work**

**Now that we Know Where to Develop  
Next Question is How to Overcome Opposition**

SOURCE: <http://www.hud.gov/offices/cpd/about/conplan/foreclosure/pdf/austincommtrust.pdf>







**\*\*Town Workers** - Police, Fire, Teachers, Retail Clerks and Managers, Restaurant Workers, Bar Tenders, Nurses, Local Government Staff, Bookkeepers, Domestic Workers, Gardeners, Mechanics and all others who perform a service for local town residents that has to be done.

# 2MAPS

**Reversing Climate Change by Enabling Town Workers to live where they Work**

## **Community Land Trust (CTL) Creating Profitable Real Estate Investments**

A Community Land Trust (CLT) functions to increase and protect affordable housing. The CLT is typically a non-profit organization that acquires and retains ownership of the real property and, in effect, sells the improvements via a 99-year ground lease to a homeowner, another non-profit, a cooperative housing corporation, or for-profit entity. CLTs protect housing affordability in perpetuity by ensuring that the housing is made affordable to low- to moderate-income persons upon the sale of a single-family, multi-family, and/or commercial property.

SOURCE: <http://www.hud.gov/offices/cpd/about/conplan/foreclosure/pdf/austincommtrust.pdf>



# **2MAPS**

**Reversing Climate Change by Enabling Town Workers to live where they Work**

## **Community Land Trust (CTL) Creating Profitable Real Estate Investments**

### **Real Estate Professionals Doing WELL**

**Buy overlooked properties low and sell high when added to CLT**

### **By Doing GOOD**

**Being an agent of change so the traffic /carbon footprint  
goes away once historic Town Worker / Town Resident Ratio is restored**



# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

## Remedy: Recruit the local Real Estate Community

### CLT CHARACTERISTICS

**Perpetual Affordability.** The CLT retains an option to repurchase the housing unit(s) located on its land should the owner/lessee choose to sell. The resale price is set by a formula designed to give present low-income homeowners a fair return on their investment

**Perpetual Responsibility.** The CLT, as owner of the land underlying the housing unit(s) and as owner of an option to repurchase the housing unit(s), has a continuing interest in what happens to the buildings and to those who occupy them.

**Community Control.** The CLT is typically a community-based organization, drawing members from its own leaseholders and from residents of its community.



# 2MAPS

Reversing Climate Change by Enabling Town Workers to live where they Work

## Remedy: Recruit the local Real Estate Community

### CLT CHARACTERISTICS

**Balanced Governance.** The board of directors of the CLT model is traditionally composed of three parts,

- 1) One-third leaseholder representation;
- 2) One-third community representation;
- 3) One-third public officials, local funders, nonprofit housing providers or social services Representing the public interest.

**Flexible Development.** The CLT is a community development tool that accommodates a variety of land uses and a diversity of building tenures and types. CLTs construct, acquire, rehabilitate, and resell housing of many kinds, e.g., single-family homes, duplexes, condominiums, cooperatives and single-room occupancies (SROs), apartment buildings.

# 2MAPS

**Reversing Climate Change by Enabling Town Workers to live where they Work**

## **Remedy: Recruit the local Real Estate Community**

### **CLT BENEFITS**

#### **Stewardship: Preserving Scarce Resources**

Through the 99-year ground lease, the CLT preserves affordability for future homeowners. The initial investment in affordable housing units is recycled by the resale restriction contained in 99-year the ground lease.

#### **Mobility: Enhancing the Housing Continuum**

The CLT model provides an additional rung on the housing continuum ladder for low-income households interested in homeownership opportunities.



# 2MAPS

**Reversing Climate Change by Enabling Town Workers to live where they Work**

## **Remedy: Recruit the local Real Estate Community**

### **CLT BENEFITS**

#### **Stability: Supporting Development without Displacement**

The CLT can direct investments in neighborhoods undergoing gentrification with a minimum negative impact. Public funding invested in a CLT benefits low-income households in rapidly appreciating neighborhoods by providing long-term resident renters and homeowners an opportunity to secure affordable home ownership.

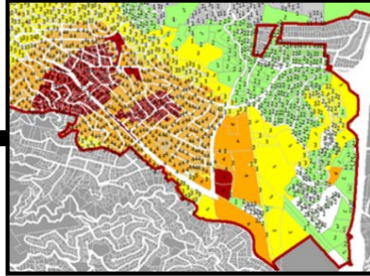
#### **Flexibility: Adapting to Sites, Funds, & Constituencies**

The CLT abandons a one-size-fits all approach to community development and allows for mixed-use land development and a mix of types of housing in scattered-site projects.

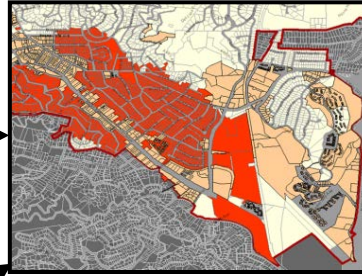
**BUFFERED  
DESTINATION PARCELS**



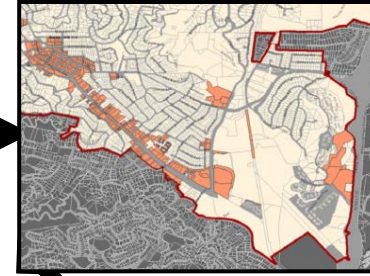
**RELATIVE  
WALK POTENTIAL**



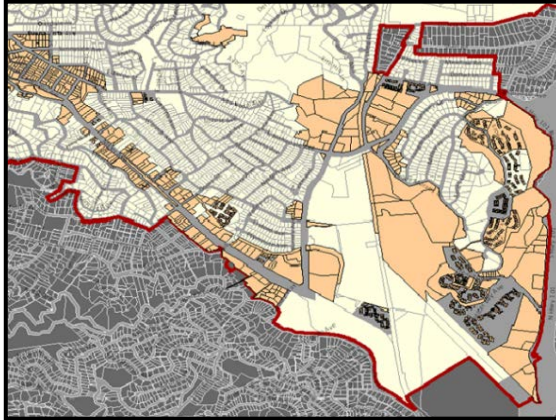
**CANDIDATE PARCELS  
IN HIGH WALK AREA**



**HIGH WALK ZONE**



**CANDIDATE DEVELOPMENT PARCELS  
LAND OKAY TO DEVELOP**



## 2MAPS

**Living Back Together Again or  
How More People Means Less Gridlock**

2MAPS is a spatial algorithm for rating every parcel regarding its

**Relative WALK Potential AND  
Relative TRANSIT Potential Score**

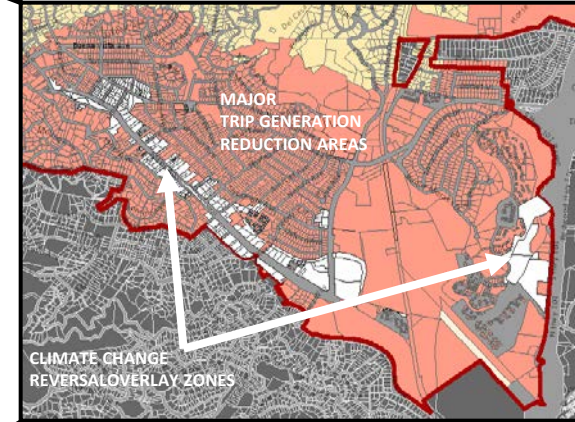
Find all HIGH **WALK&TRANSIT** parcels that are **ALSO  
Developable** to pin point

**CLIMATE CHANGE OVERLAY ZONES**

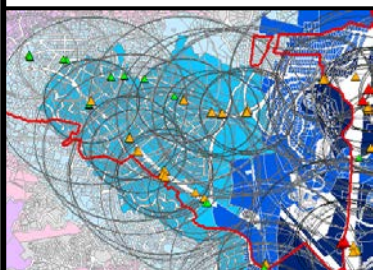
where locating Town Worker housing, retail and rent control  
THERE will decimate Traffic/Carbon Footprint enough to

**REVERSE CLIMATE CHANGE**

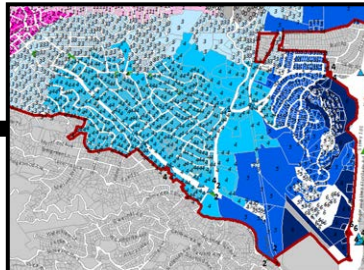
**CLIMATE CHANGE  
REVERSAL OVERLAY**



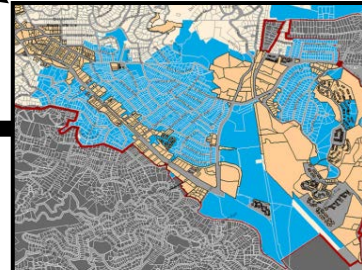
**BUFFERED BUS STOPS  
WITH JOB ACCESS RATINGS**



**RELATIVE  
TRANSIT POTENTIAL**



**CANDIDATE PARCELS  
IN HIGH TRANSIT AREA**



**HIGH TRANSIT ZONE**



**HIGH WALK/TRANSIT  
Developable Parcels**

# 2MAPS

## Parcel-Level Climate Change Reversal Geospatial Model Enabling Town Workers to live where they Work



**U.S. Department of Housing and Urban Development  
Office of Policy Development and Research  
Affordable Housing Research and Technology Division  
April 6, 2016**



**Boundary Solutions, Inc.  
Mill Valley, California**

