

# City of Brisbane Council Workshop

Sustainable Design Speaker Series  
June 15, 2017



# **AGENDA**

**Welcome from Mayor Lori Liu**

**Welcome from Assemblymember Kevin Mullin**

**Introduction to Workshop**

*Andrea Traber, Integral Group*

**Integrating Natural and Urban Systems**

*Josiah Cain, Sherwood Design Engineers*

**Elements of Sustainable Development**

**Zero Net Energy/Carbon Buildings & Technologies**

*Andrea Traber, Integral Group*

**Sustainable Transportation Planning**

*Jessica Alba, Principal, Nelson\Nygaard*

**Role of Housing in Sustainable Development**

*Rick Williams, Van Meter Williams Pollack*

***BREAK!***

**Site Remediation**

*Sarah Sieloff, Center for Creative Land Recycling*

*Markus Niebanck, Amicus Strategic Environmental Consulting*

**Wrap up and Next Steps**





## SUSTAINABILITY FRAMEWORK FOR THE BAYLANDS

FINAL REPORT

Accepted by the City Council on  
November 5, 2015

October 2015

<http://brisbaneca.org/baylands-sustainability-framework>




ONE  
PLANET  
LIVING




 zero carbon

 zero waste

 sustainable transport

 local and sustainable materials

 local and sustainable food

 sustainable water

 natural habitats and wildlife

 culture and heritage

 equity and fair trade

 health and happiness

# Zero Carbon Buildings

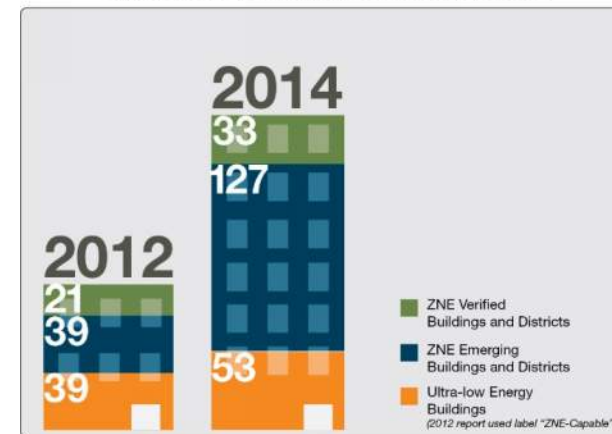
Our vision for the Baylands is that all buildings will be energy efficient and will run completely from locally generated renewable energy.



Zero Net Energy Building Code:

- 2020 Residential
- 2030 Commercial

Number of ZNE Projects from 2012 to 2014



[Kilroy real estate is trying to be the first San Francisco in-fill net zero office building.](#)

# Sustainable Transport

Our Baylands vision is one where the need to travel has been reduced, public transportation is easily accessible, and low and zero carbon modes of transport are provided.



Caltrain's plans for a greener commuting corridor including the plan for blended stations and electrification

# Sustainable Water

Our Baylands vision is that we manage water using best practice standards in water conservation, water efficiency, recycling and surface water management with an integrated system that achieves self-sufficiency, while enhancing wetlands with no damage to the surrounding water environment.



Phipps Conservatory and Botanical Gardens (Pittsburgh, Pennsylvania) has a goal of enhancing wetlands and reducing water use in the buildings.

# Open Space and Habitat

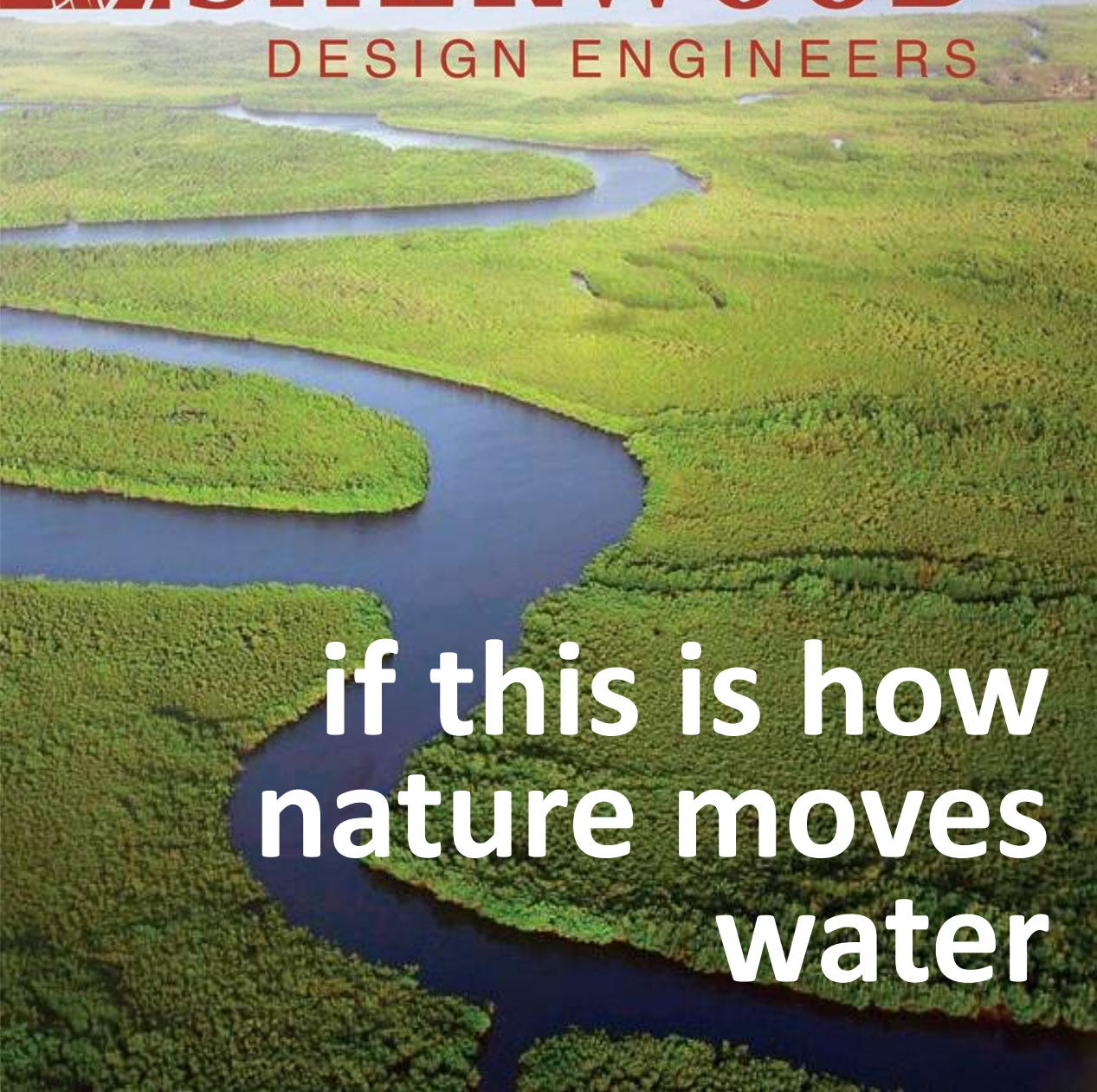
Our Baylands vision includes provisions for significant open space and open areas that enhance biological connectedness and habitat preservation.



San Bruno Mountain, the nation's first Habitat Conservation Plan.



# Integrating Natural and Urban Systems

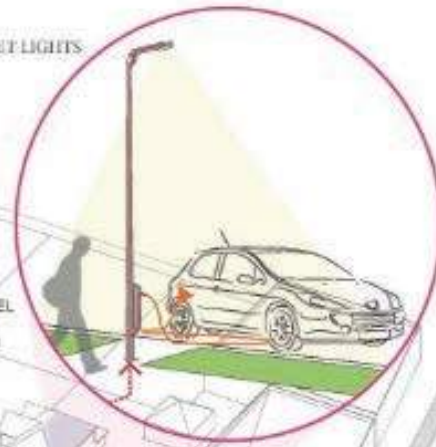
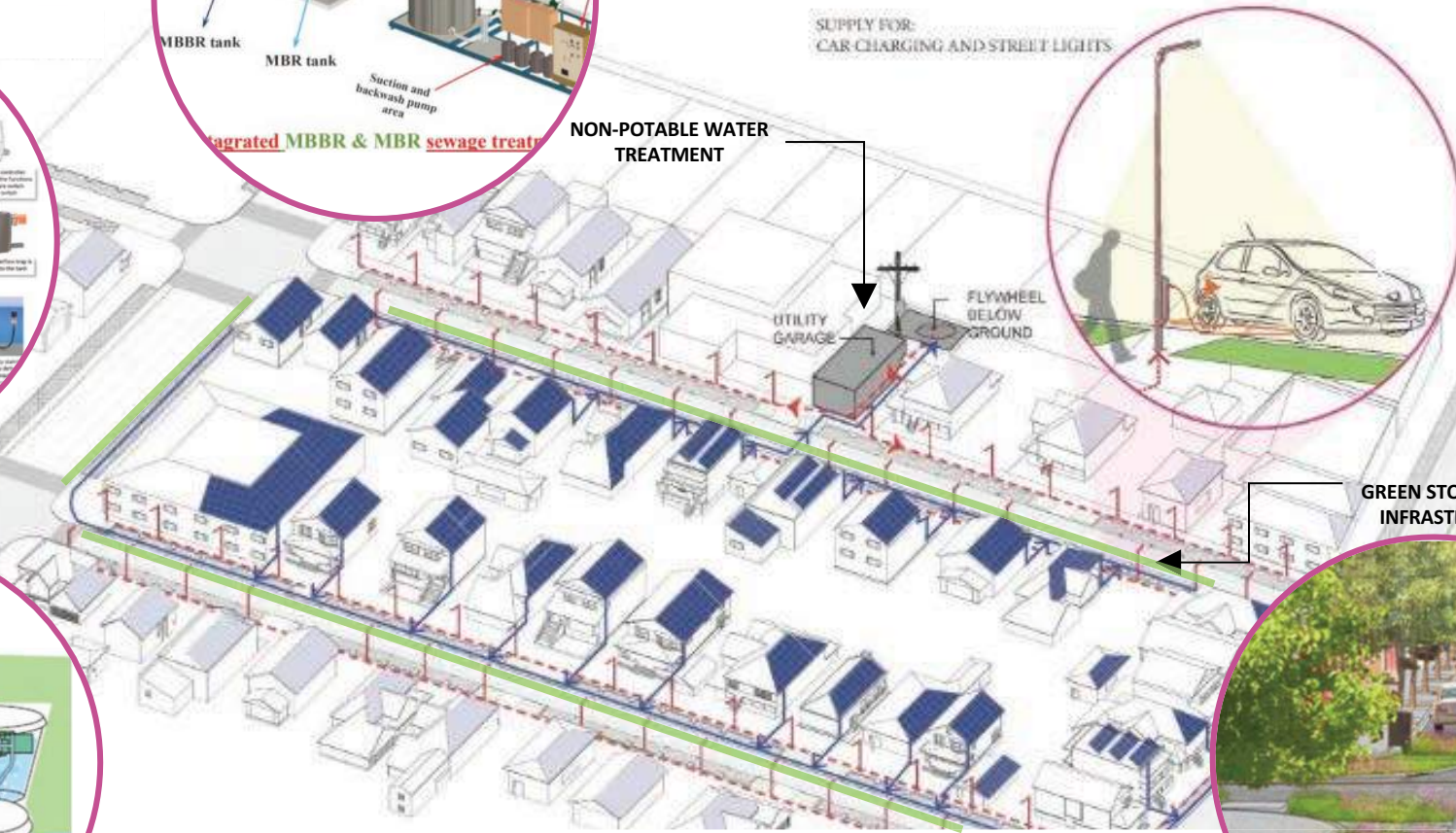
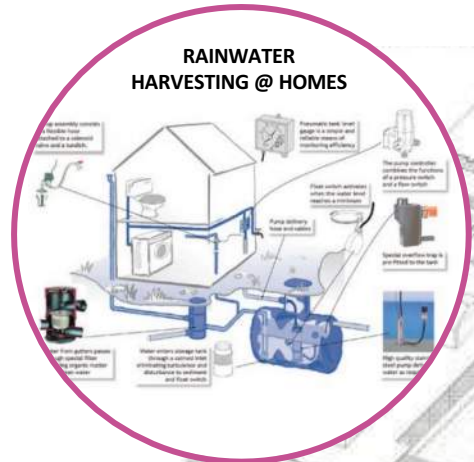


**if this is how  
nature moves  
water**

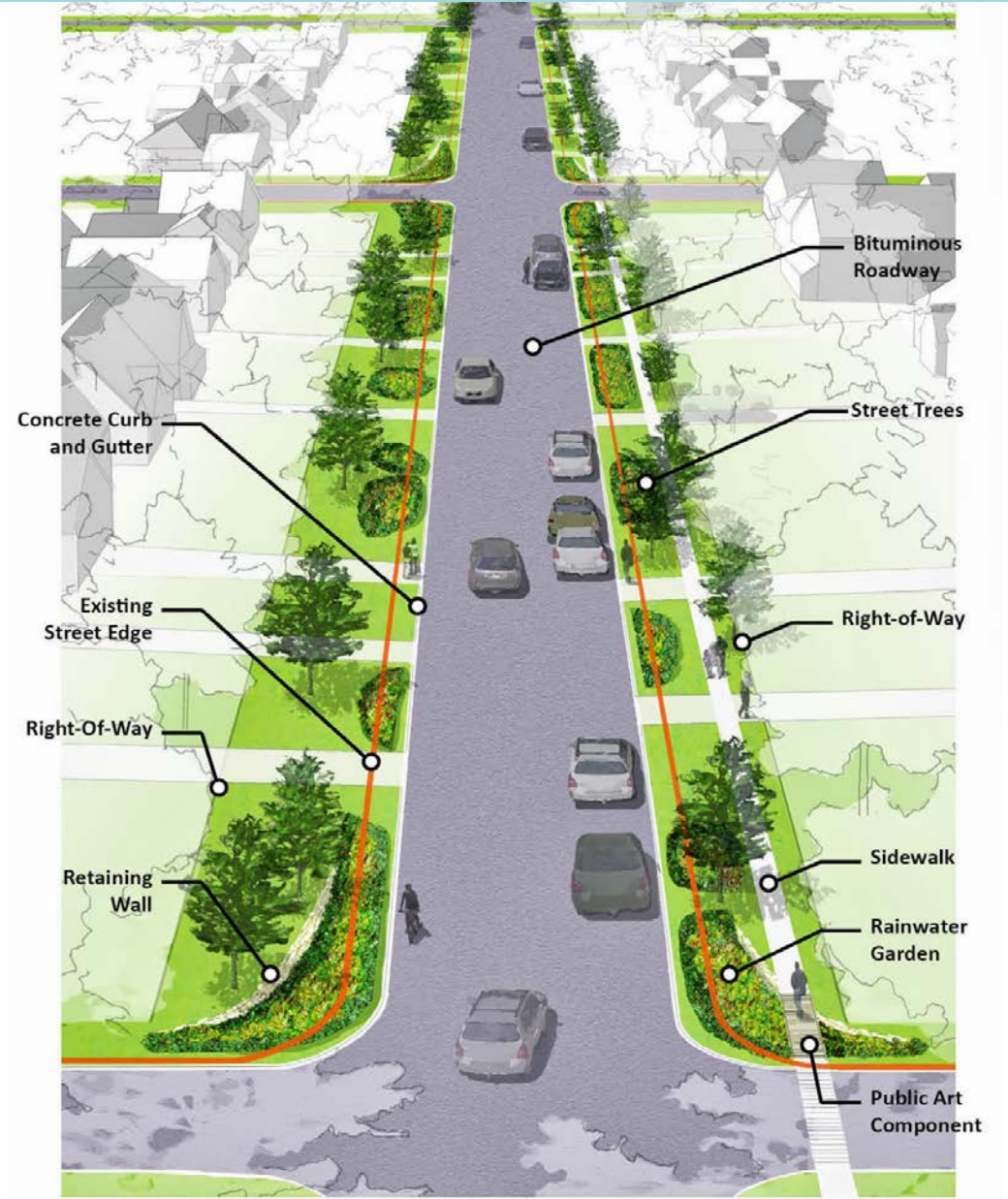
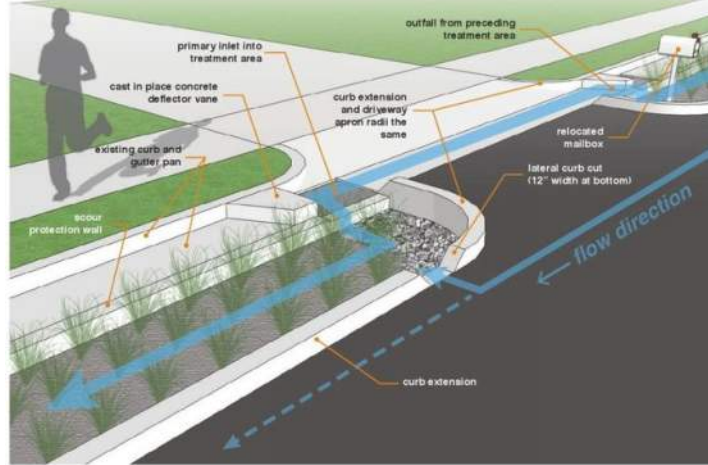


**why do we  
move it this  
way?**

# EcoBlock Schematic

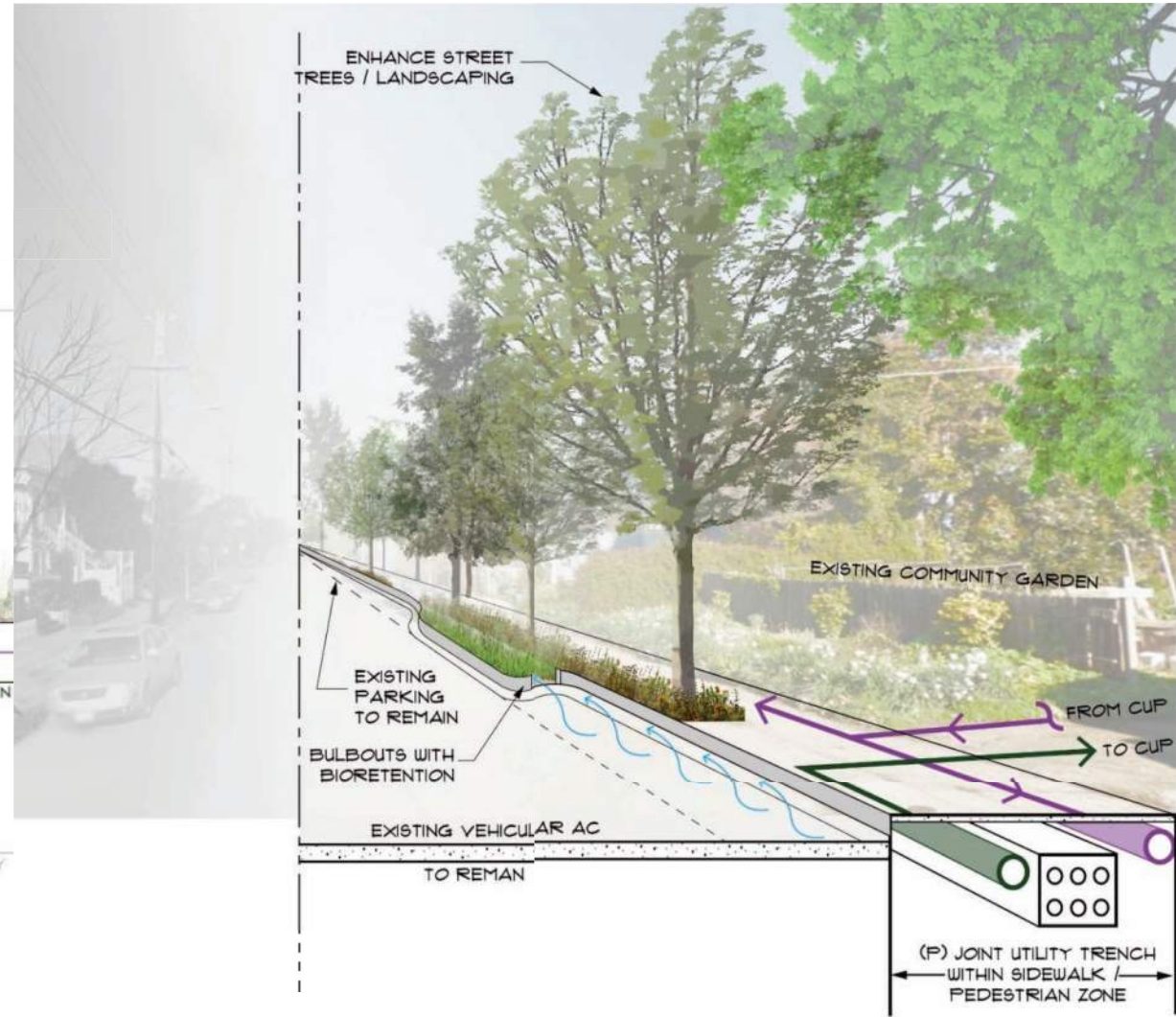
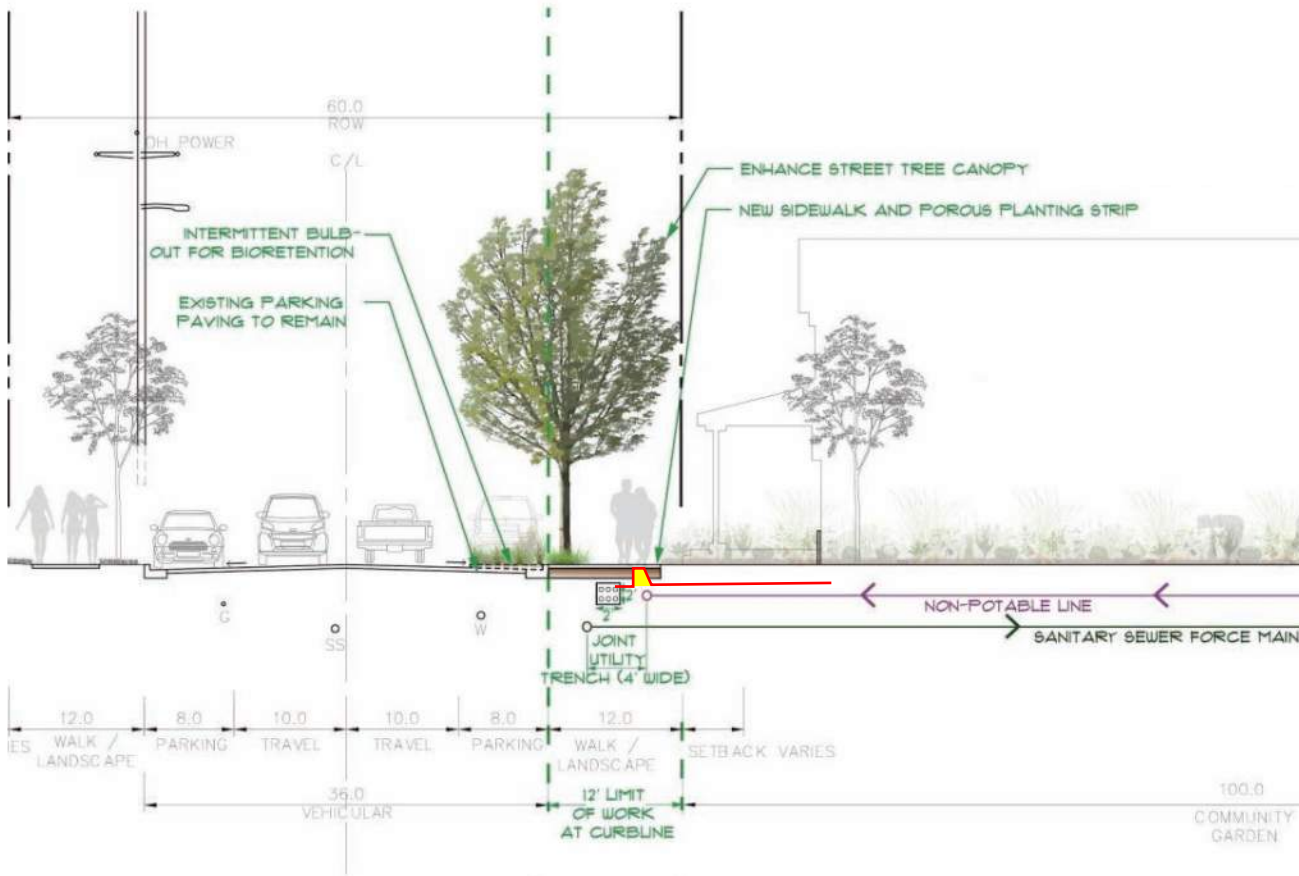


# RESIDENTIAL GREEN STREETS

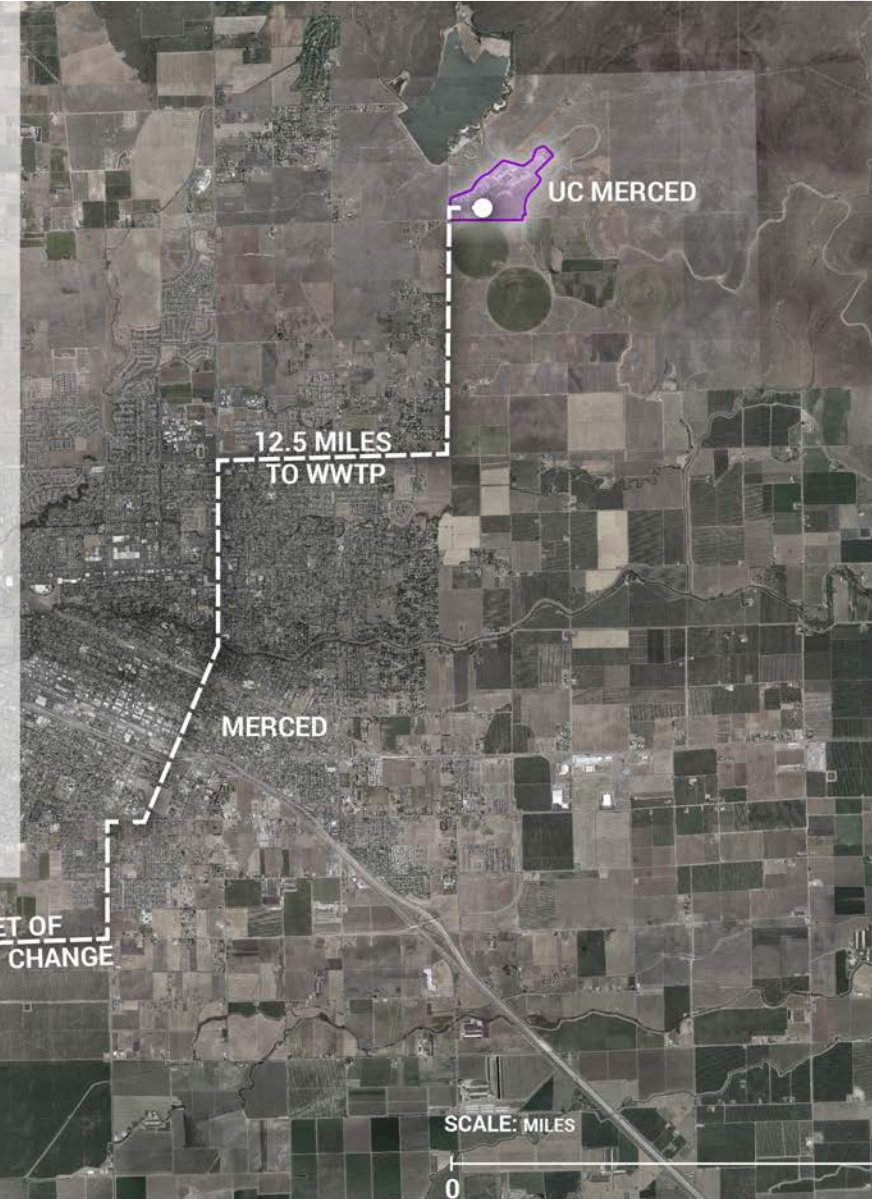
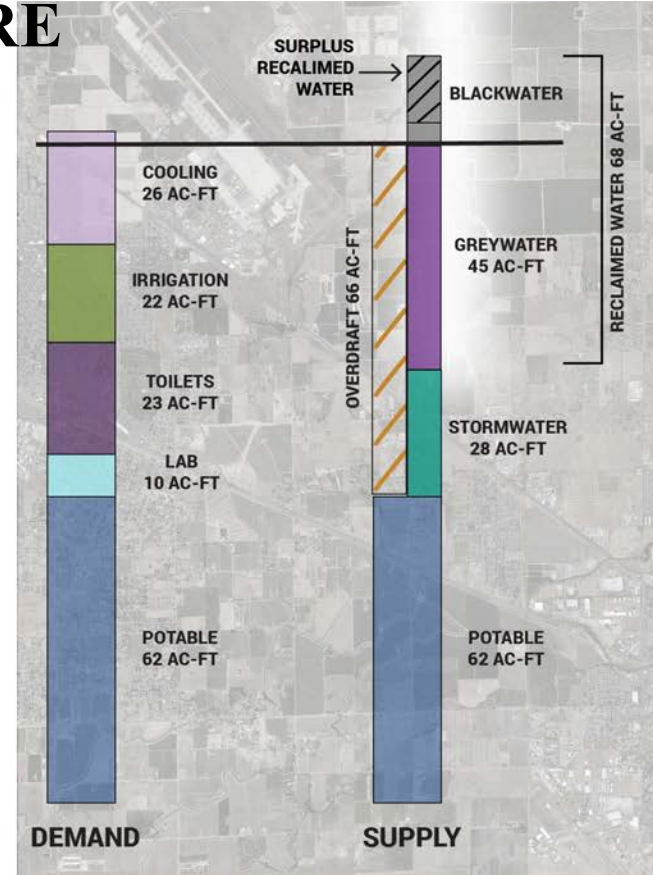


# RESIDENTIAL GREEN STREETS

- New utility corridor under sidewalk: P3 and/or Private Utilidor
- Limited work within traveled roadway: Maintain as Municipal ROW
- Watershed features located in bulb-outs: Parking & Traffic Calming



# REGIONAL INFRASTRUCTURE WATER



DELIVERING THE NET ZERO CAMPUS: EXPANDING SUSTAINABLY AT UC MERCED

# CENTRAL UTILITY PLANTS

## MASTER PLAN / STRATEGIES + VALUES

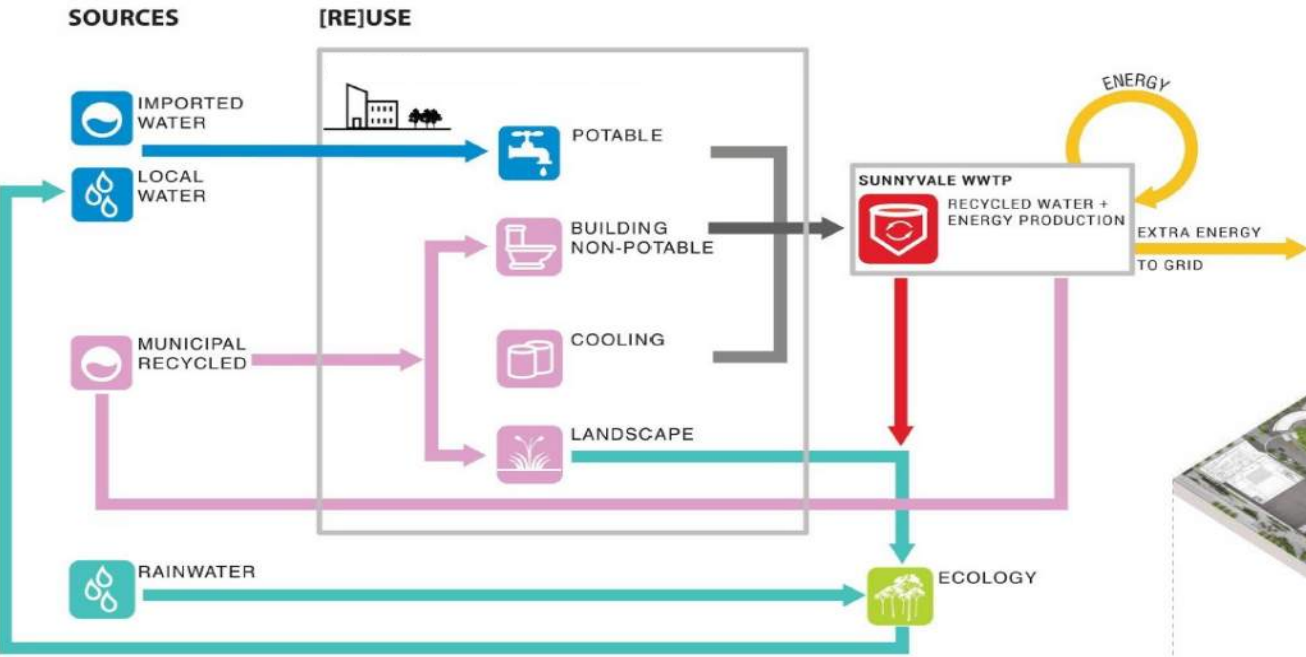


Figure 7: How Much Will Our Water Needs Grow by Century's End?

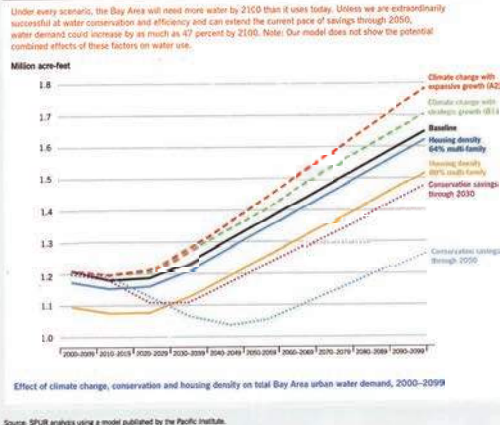
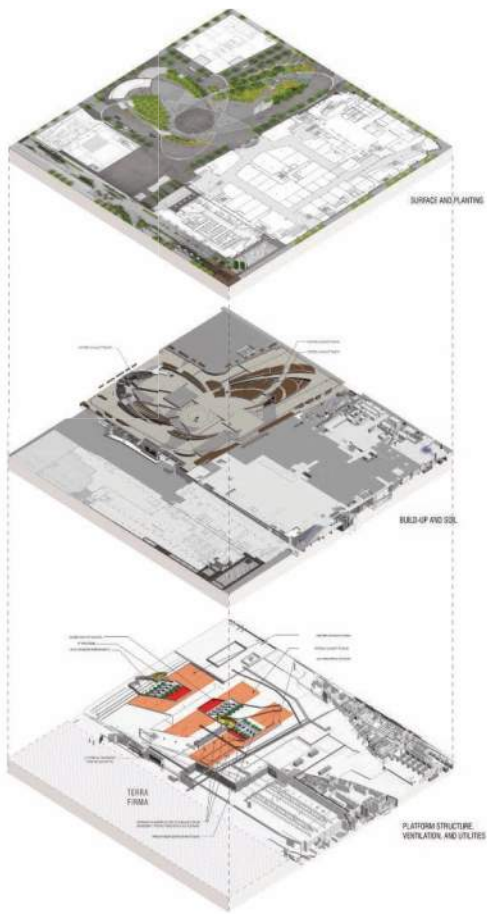
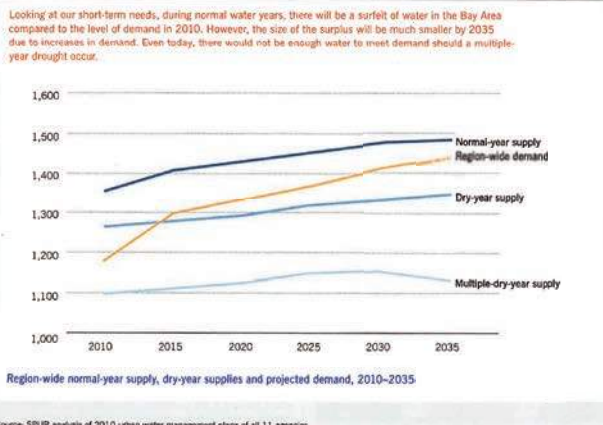
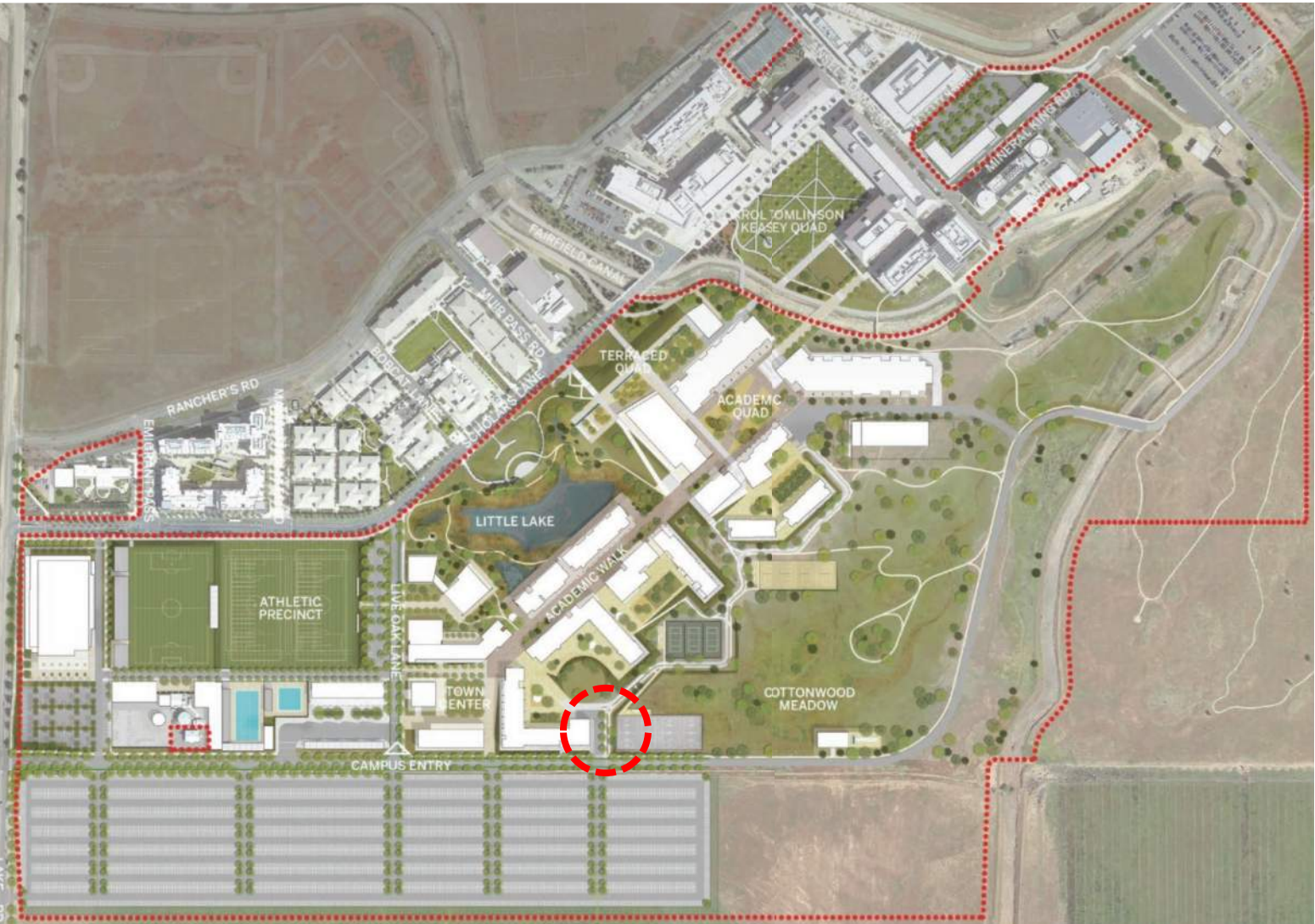


Figure 8: Regional Water Supply vs. Demand



# ADAPTABLE INFRASTRUCTURE PLATFORM

## BOLT ON TECHNOLOGIES



DELIVERING THE NET ZERO CAMPUS: EXPANDING SUSTAINABLY AT UC MERCED



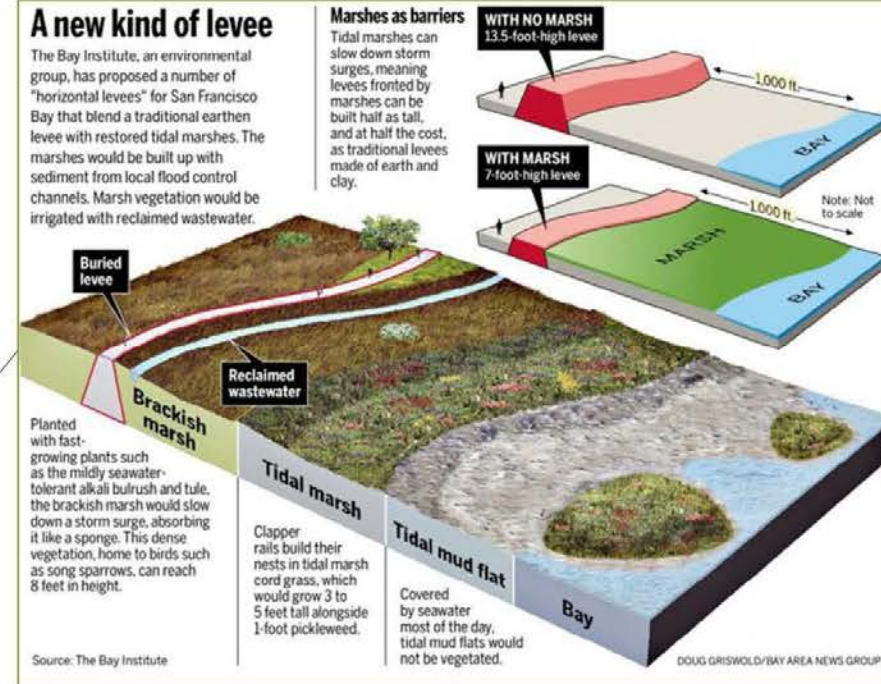
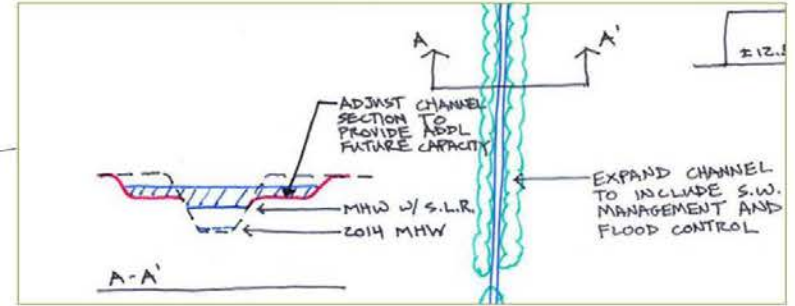


# SEA LEVEL RISE

SILICON VALLEY RISK EVALUATION

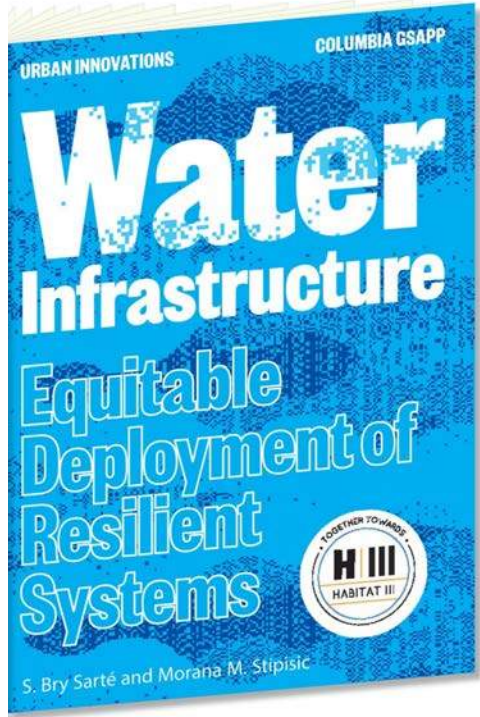
# SEA LEVEL RISE RESPONSE

## Adaptation



# NEW BOOK

## 10 INNOVATIONS...



### Risks

**RISK 1  
SANITATION**



**RISK 5  
AGING  
INFRASTRUCTURE**



**RISK 2  
SLR FLOODS**



**RISK 6  
SOLID WASTE  
POLLUTION**



**RISK 3  
RIVERINE FLOODS**



**RISK 7  
URBAN HARDENING  
& HEATING**

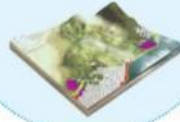


**RISK 4  
DROUGHT**



### Responses

**RESPONSE 1  
ADAPTABILITY**



**RESPONSE 2  
MULTI-FUNCTIONAL  
& CLOSED LOOPS**



**RESPONSE 3  
DISTRICTS**



**RESPONSE 4  
URBAN GREENING  
& COOLING**



### Innovations

**INNOVATION 1**



**INNOVATION 5**



**INNOVATION 8**



**INNOVATION 2**



**INNOVATION 6**



**INNOVATION 9**



**INNOVATION 3**



**INNOVATION 7**



**INNOVATION 10**



**INNOVATION 4**



Elements of Sustainable Development  
*Zero Net Energy/Carbon*  
*Transportation*  
*Housing*

# *Net Zero Energy and Carbon*



**Andrea Traber**  
**[atraber@integralgroup.com](mailto:atraber@integralgroup.com)**

**Senior Principal, Sustainability + Innovation**  
**Integral Group**

# NZE - Achievable. Affordable. Comfortable. Elegant. Integrated. Simple



## IDEAs HQ

10,000 SQFT  
Retrofit  
Office

2007

Passive +  
GSHP +  
Radiant

Market Cost +  
PV Grants

First Certified ILFI  
Net Zero Energy  
Building

## Packard Foundation

49,000 SQFT  
New Build  
Office

2012

Passive +  
DOAS +  
Chilled Beam

Institutional

2012 ENR - Best Green  
Project  
2013 ASHRAE  
Technology Award First  
Place 2013

## Exploratorium

210,000 SQFT  
New Build  
Museum

2013

Baywater Cooling +  
Radiant

Museum +  
PPP \$10m

2014 Honor Award Energy  
+ Sustainability, AIA SF  
Chapter  
2014 ULI  
Global Awards for  
Excellence

## J Craig Venter Institute

45,000 SQFT  
New Build  
Laboratory

2013

DC Vent +  
Chilled Beam

Laboratory

2015 Architizer A+  
Awards –  
Architecture +  
Sustainability Award

## DPR

22,000 SQFT  
Retrofit  
Office

2014

Passive +  
Roof Top Unit

Market Cost

2014 ENR California  
Project of the Year  
2014 ENR California  
Best Green Project

## Indio Way

32,000 SQFT  
Retrofit  
Office

2015

Passive +  
Roof Top Unit

Market Cost

2015 Silicon Valley  
Business Journal  
Best Reuse/Rehab

## Mathilda Avenue

30,000 SQFT  
Retrofit  
Office

2015

Passive +  
Roof Top Unit

Market Cost +  
PV Grants

2015 Silicon Valley  
Business Journal  
Green Project of the  
Year



# Zero Energy Economics

# ACCELERATE

Taking Net Zero Energy from Replication to *Production*

INDIO



2014

SILICON VALLEY BUSINESS JOURNAL BEST REUSE PROJECT AWARD 2014 • ACTERRA SUSTAINABLE BUILT ENVIRONMENT AWARD 2015

MATHILDA



2015

SILICON VALLEY BUSINESS JOURNAL GREEN PROJECT OF THE YEAR 2015

AP + I



2016

SILICON VALLEY BUSINESS JOURNAL GREEN PROJECT OF THE YEAR RUNNER UP 2015

PASTORIA



2017

Trust | Nurture | Inspire



## 435 Indio Financial Analysis

Monthly Rent / SF	\$2.75NNN	Actual		
435 Indio				
<b>Cost Info</b>	Standard	Sustainable		
	Renovation	Renovation	Difference	Per Sq. Ft.
Total A & E Cost	\$260,800	\$337,700	(\$76,900)	
Total Hard Cost	\$2,865,944	\$4,042,458	(\$1,176,514)	
Total Soft Cost	\$426,550	\$410,629	\$15,921	
PV Cost	\$0	\$345,228	(\$345,228)	
<b>Total Cost</b>	<b>\$3,553,294</b>	<b>\$5,136,015</b>	<b>(\$1,582,721)</b>	<b>(\$49.84)</b>
<b>Income Information / Valuation</b>				
Annual rent net of operating expenses	\$847,194	\$1,086,848	\$239,654	
<b>Value of Rent Differential at 7.5% cap rate</b>			<b>\$3,195,387</b>	<b>\$100.61</b>
Rent during first 18 mos. after completion	\$0	\$724,500	\$724,500	<u>\$22.81</u>
<b>Net Additional Value if sold in 18 mos.</b>			<b>\$2,337,166</b>	<b>\$73.59</b>
PG&E and Govt. Rebates	\$0	\$298,764	\$298,764	\$9.41
<b>Additional Value if include rebates</b>			<b>\$2,635,930</b>	<b>\$83.00</b>



## Net Positive Energy | David and Lucile Packard Foundation Headquarters

- **Net Zero Energy (ILFI) Certified, LEED Platinum Certified**
- **Largest project to receive Net Zero certification by the Living Future Institute at the time of certification**
- Natural ventilation
- Thermal energy storage
- Chilled beams
- Dedicated outside air systems
- Fully dimmable lighting
- Circuit-by-circuit power monitoring
- Green roof
- **20% positive energy**



# 2060 Folsom Street | Toward ZNE Multifamily

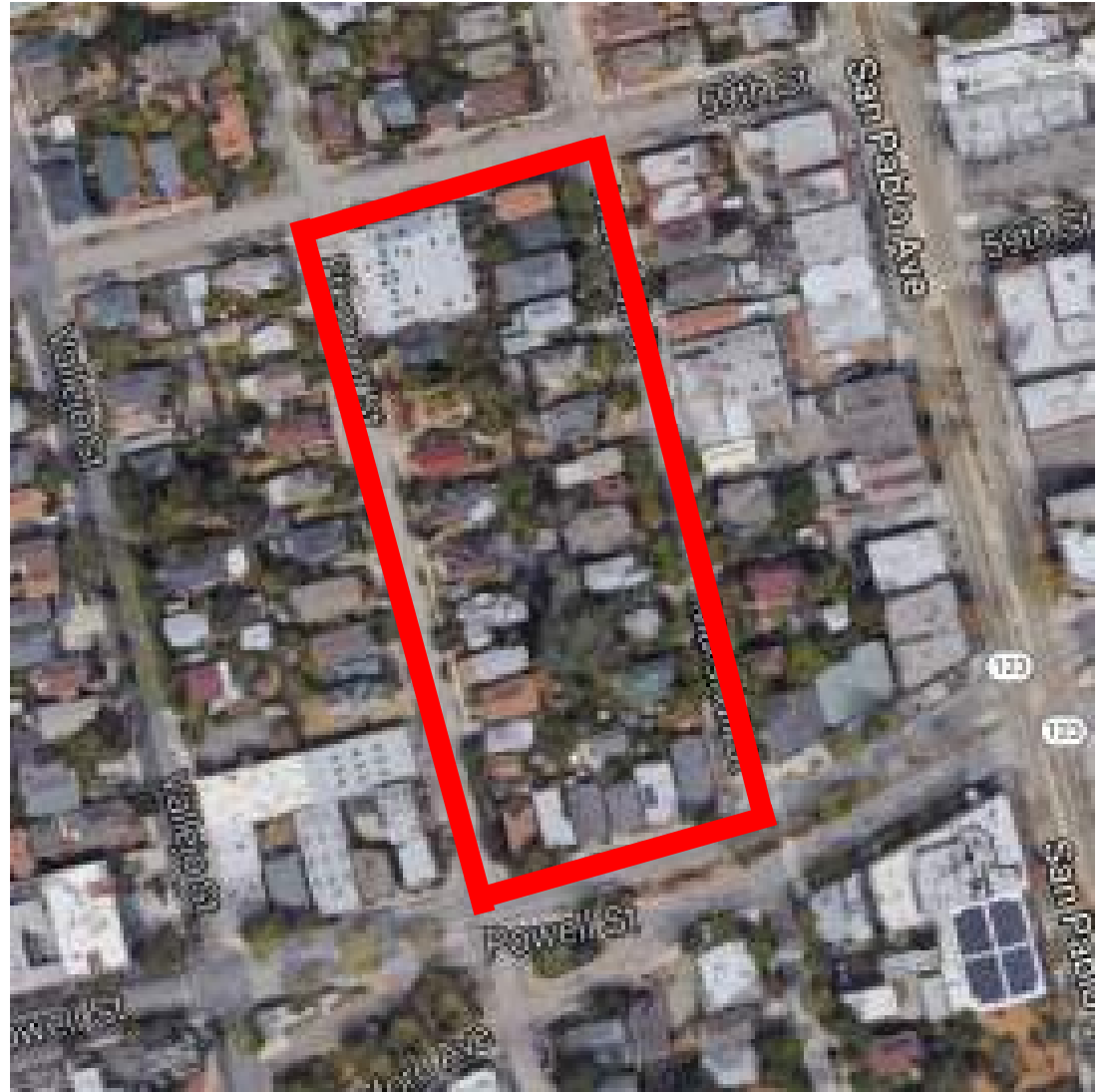


Trust | Nurture | Inspire



## Community Scale | North Oakland EcoBlock

- **Existing Residential Block**
- 28 homes
- 1 apartment
  
- **Block scale can be most efficient**
  
- **EE Retrofits**
  
- **Microgrid, storage**
  
- **Control to optimize energy flow**



## Campus Scale | UCB Global Campus at Richmond Bay

- **Carbon-neutral and Net Zero Targets**
- **Benchmarked future buildings for:**
  - high performance and zero-net energy
  - integrated photovoltaics
  - energy storage
  - combined thermal ambient/fire loop
  - biological wastewater treatment
  - zero net water strategies
  - high performance building technologies





**1 THE CLIMATE IMPERATIVE**

Climate change poses a growing set of risks and challenges to cities.

Combating climate change needs to **start locally**

Buildings generate over 80% of Cambridge's total greenhouse gas emissions.

That is why it is Cambridge's aim to achieve **NET ZERO EMISSIONS** from buildings.

Residents, universities, businesses and the City are collaborating to address the immediacy of the climate imperative.

**2 WHAT IS NET ZERO?**

Net zero annual emissions from buildings.

Efficient design & retrofits, improved operations, and renewable energy supply.

HOUSES CITY HALL OFFICES + LABS UNIVERSITIES

**3 HOW TO ADDRESS CARBON REDUCTION**

There are **3** ways to reduce emissions from buildings:

- EFFICIENT DESIGN & RETROFITS
- IMPROVED OPERATIONS
- RENEWABLE ENERGY SUPPLY



**5 ACTION PLAN**

**IMPROVING EFFICIENCY IN EXISTING BUILDINGS:** Reduce energy use through retrofits and improved operations.

**NET ZERO NEW CONSTRUCTION:** Invest in new construction with low carbon energy.

**RENEWABLE ENERGY:** Invest in low carbon energy.

**NET ZERO CARBON FUND:** Option to invest in a net zero community.

**NET ZERO CAPACITY BUILDINGS:** Industry training and community involvement.

GREENHOUSE GAS REDUCTION STRATEGIES

- State Renewable Energy (20%)
- Net Zero New Buildings (20%)
- Efficient Existing Buildings (50%)

ACHIEVING A NET ZERO CAMBRIDGE WILL REQUIRE COMMITMENT, INNOVATION AND COLLABORATION.

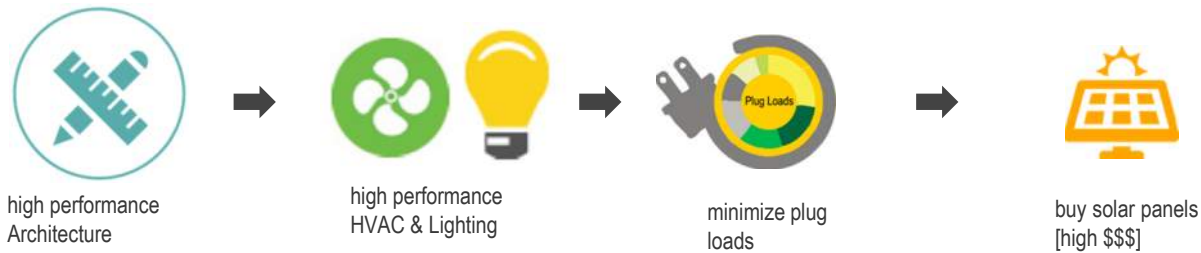
# City Carbon Plans

Cities and major corporations are driving their own carbon reduction agenda – how do you make better informed decisions

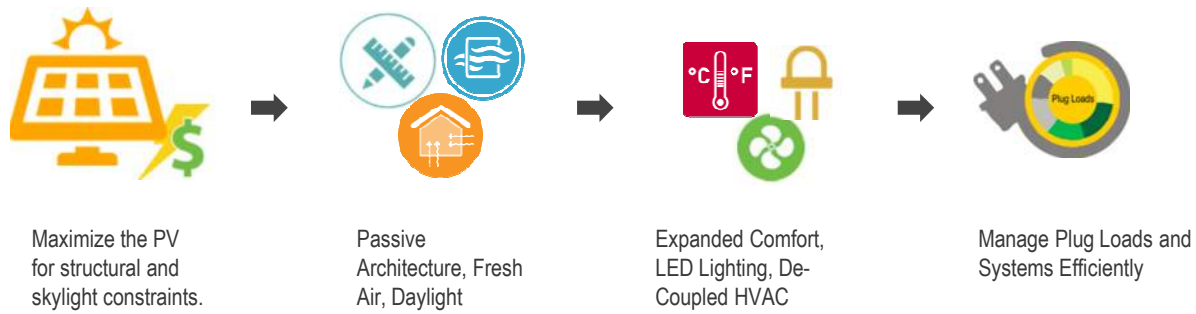


# Getting to Net Zero

## 2008 Net Zero Energy Pathway



## 2016 Net Zero Energy Pathway

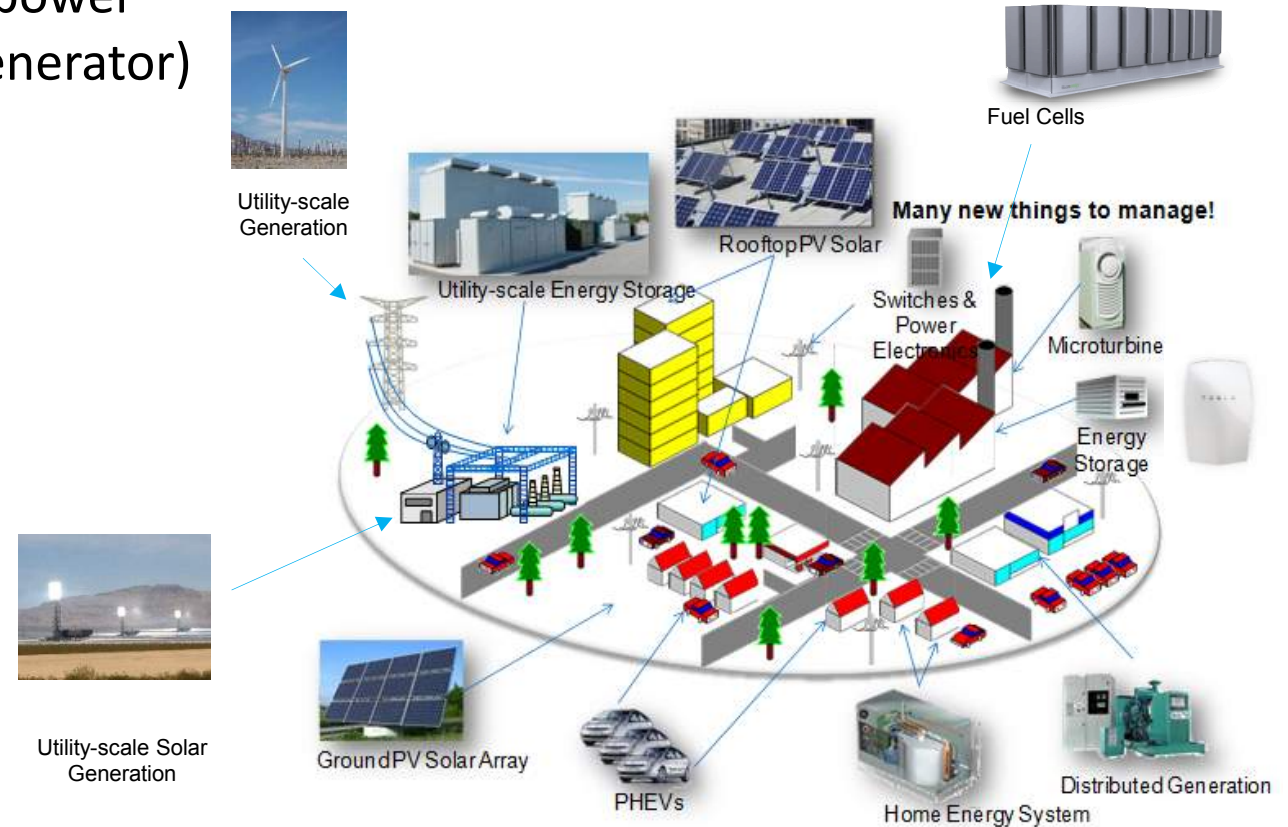


## 2015+ Net Zero Energy Pathway – Community Scale

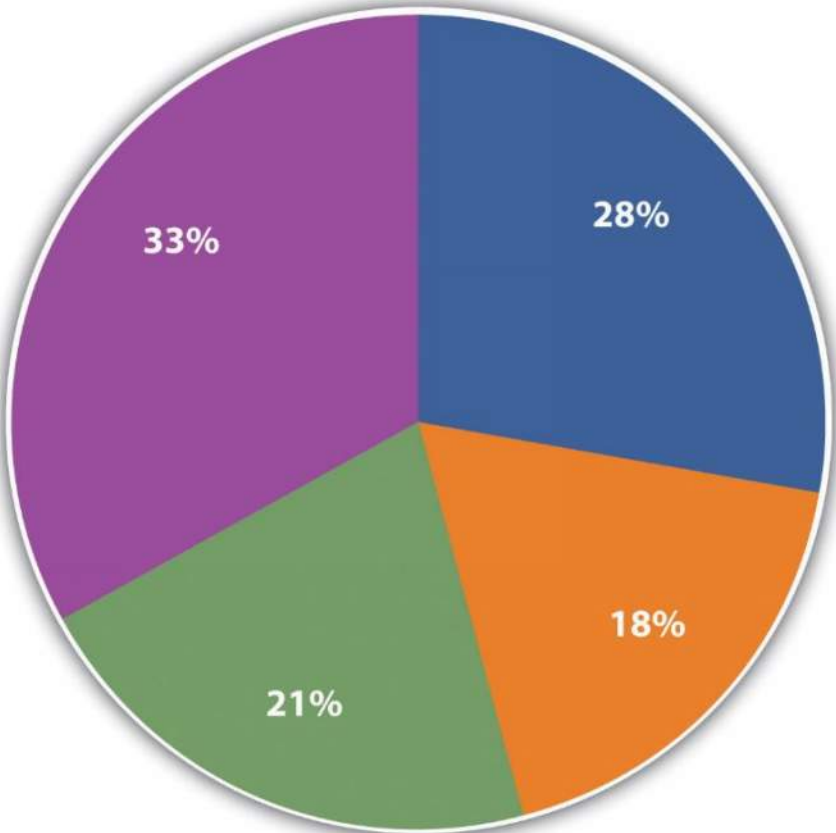


# Microgrids and Mini-Grids

- Peak demand reduction
- Resilience
- Clean standby power (instead of a generator)
- Storage is key



# Electric Vehicles – Energy storage or more grid load?



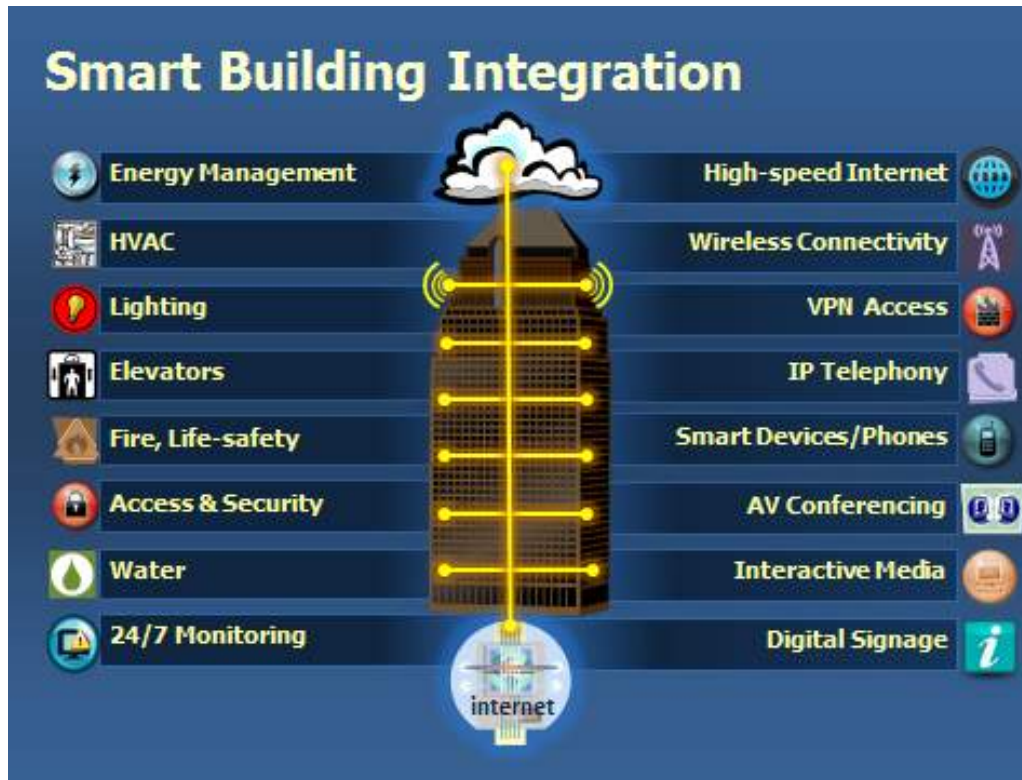
- Industry and manufacturing
- Residential
- Commercial
- Transportation

## Charge stations





# Smart Buildings



Telus Gardens, Vancouver

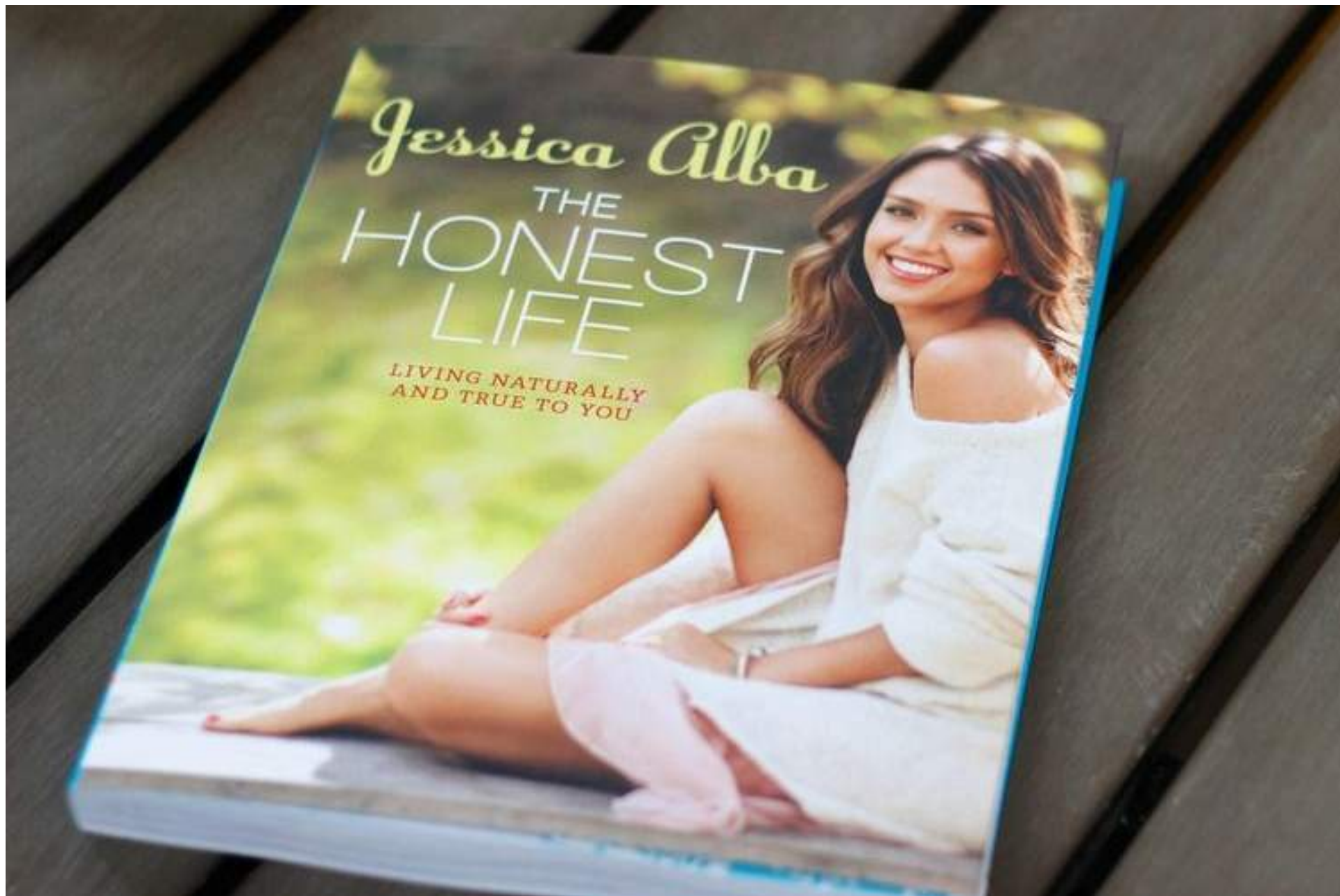
# TRANSPORTATION OPTIONS

Creative Strategies to Meet Growing Demands

JESSICA ALBA

**N** NELSON  
NYGAARD





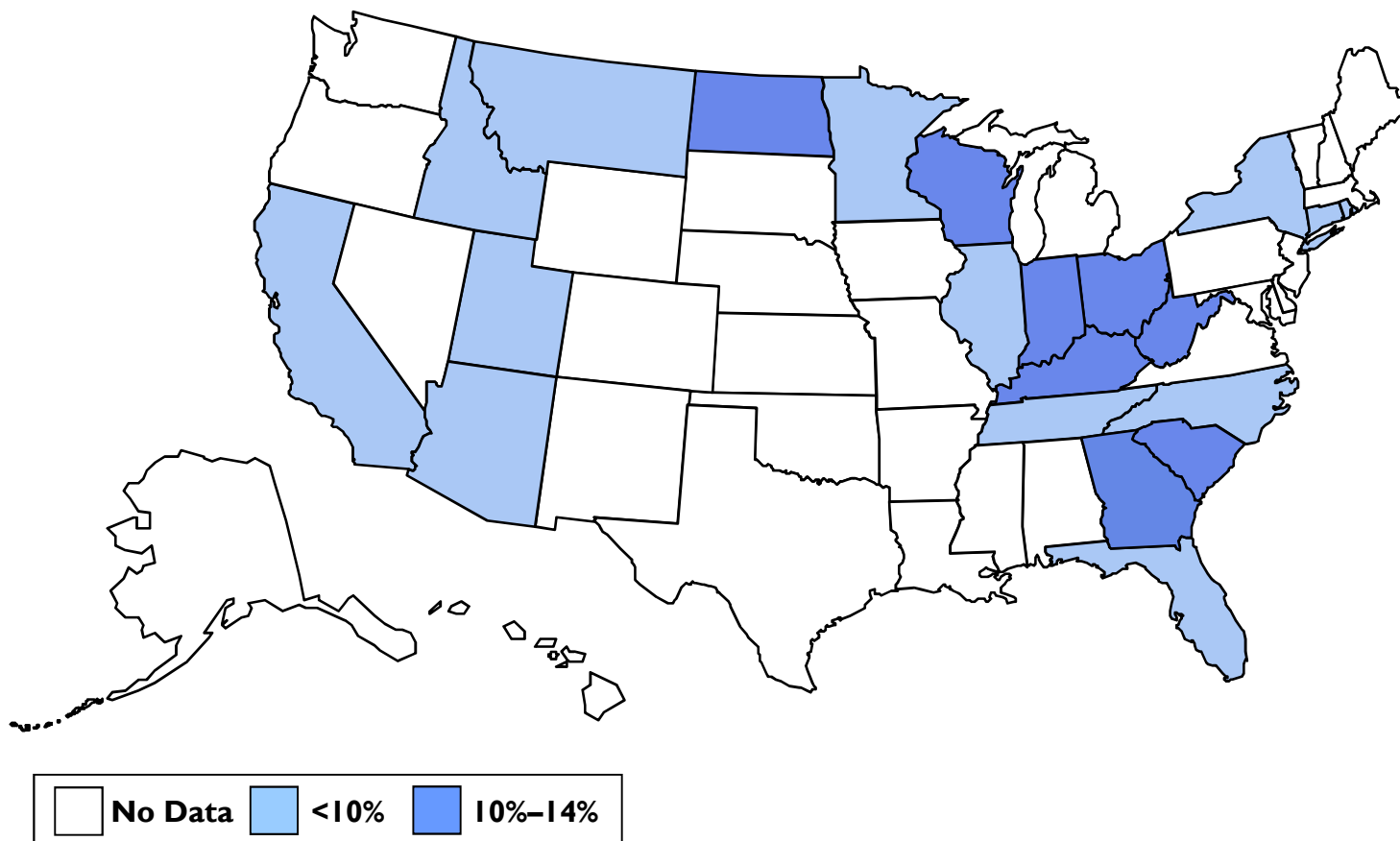
<https://www.honest.com/baby/the-honest-life>

# MOBILITY VS. ACCESSIBILITY



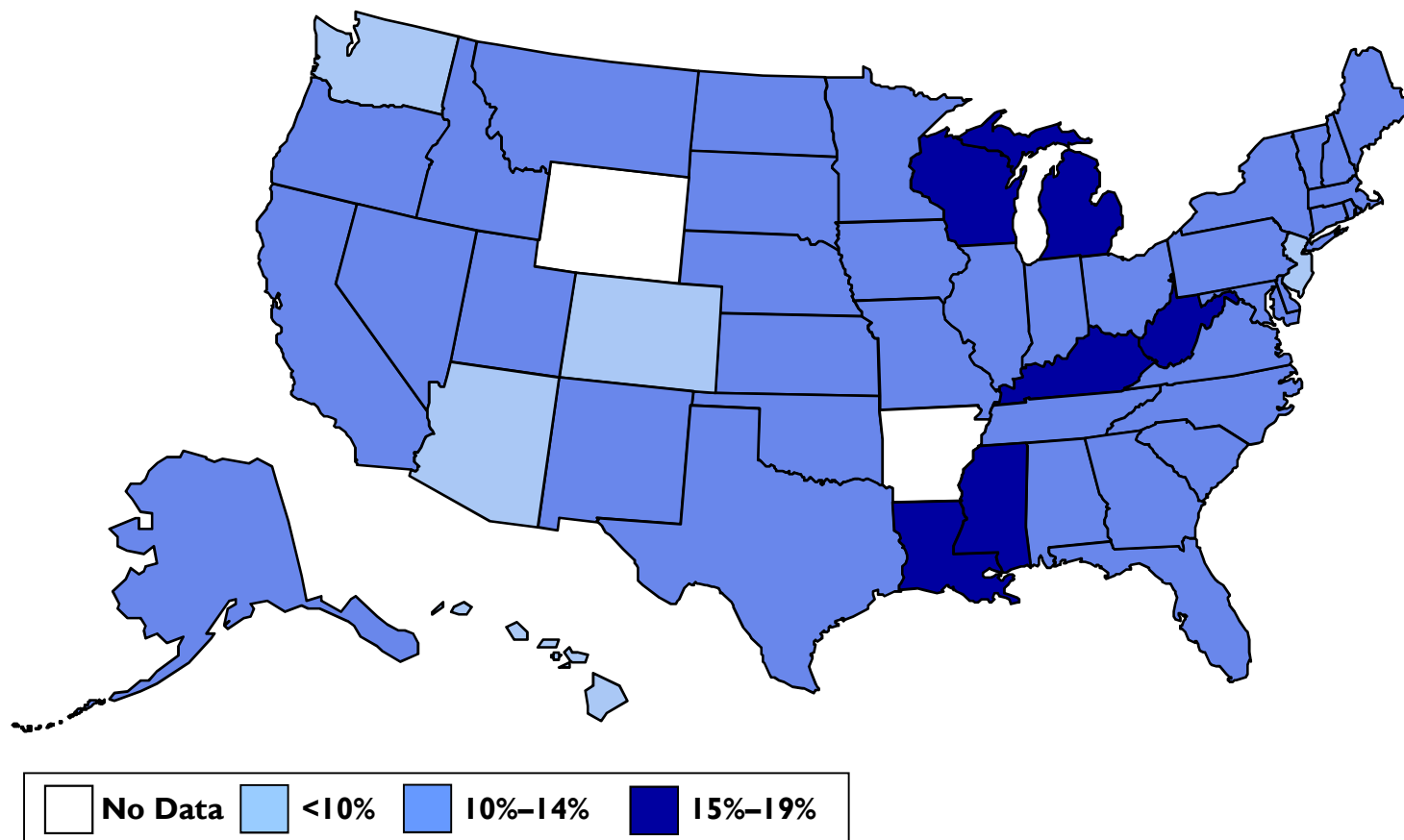
# OBESITY TRENDS AMONG U.S. ADULTS BRFSS, 1985

(\*BMI ≥30, or ~ 30 lbs. overweight for 5' 4" person)



# OBESITY TRENDS AMONG U.S. ADULTS BRFSS, 1992

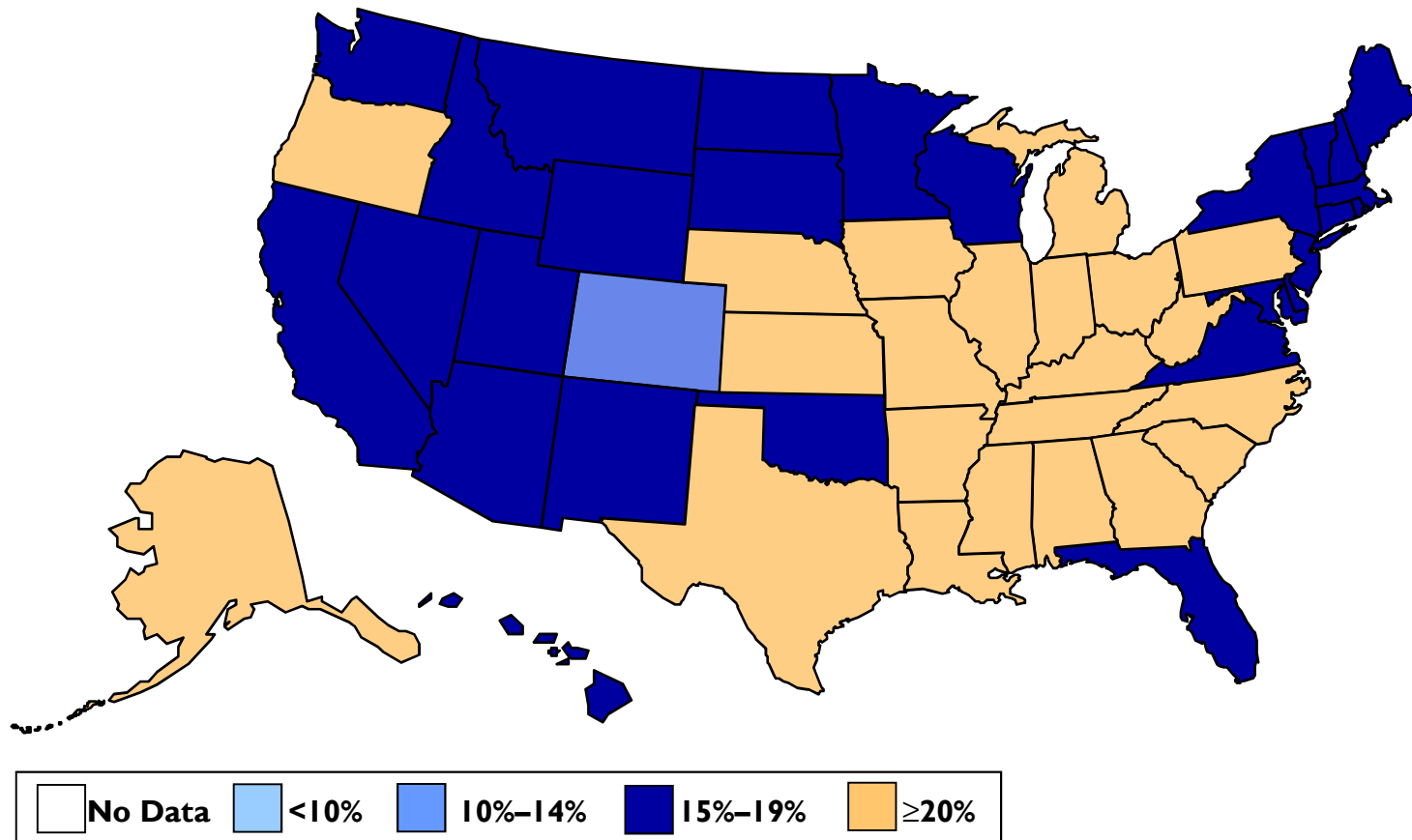
(\*BMI  $\geq 30$ , or ~ 30 lbs. overweight for 5' 4" person)



Source: Behavioral Risk Factor Surveillance System, CDC

# OBESITY TRENDS AMONG U.S. ADULTS BRFSS, 2000

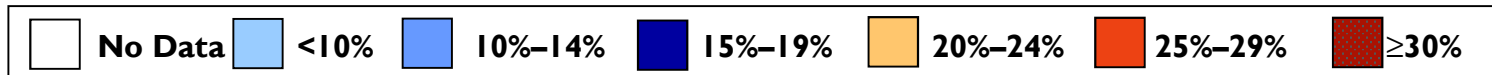
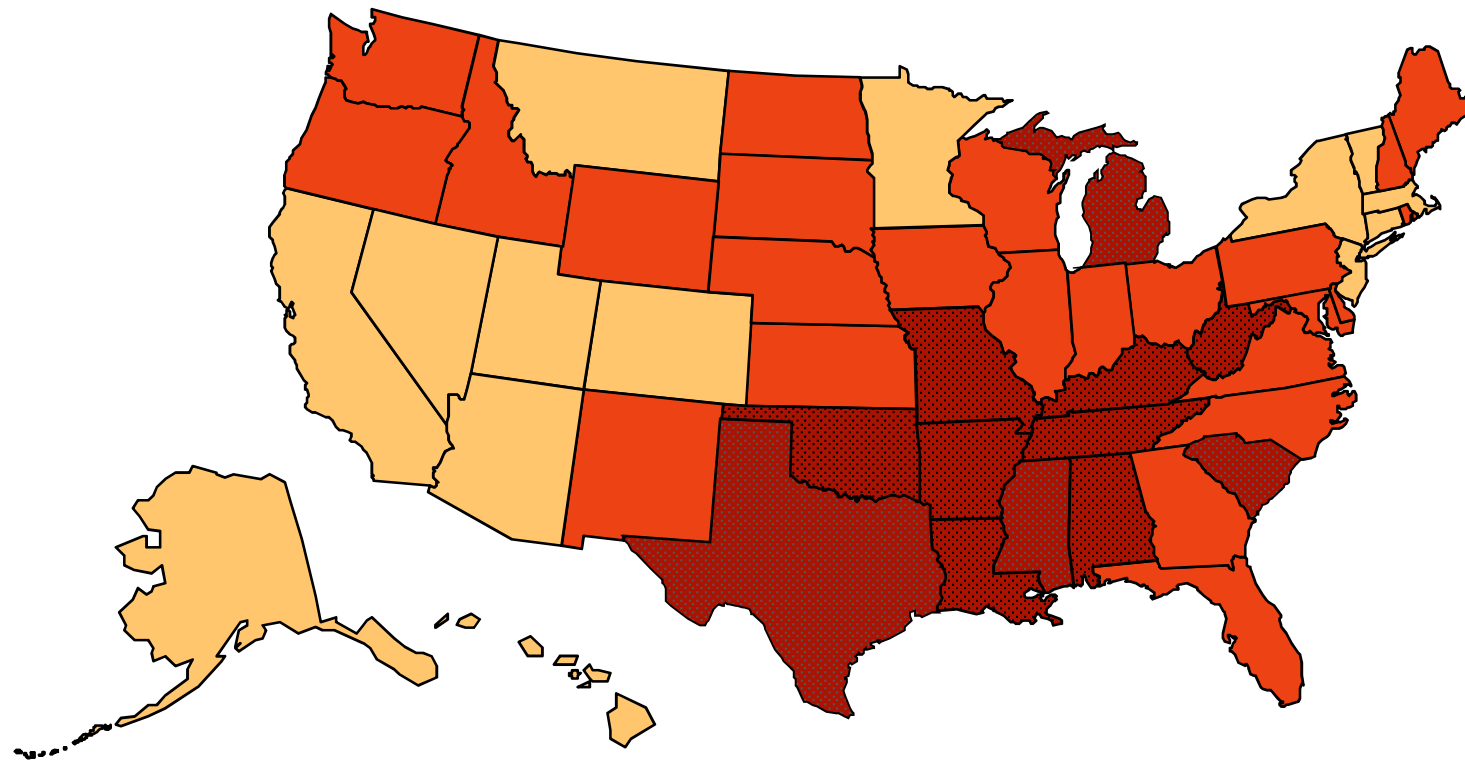
(\*BMI  $\geq 30$ , or ~ 30 lbs. overweight for 5' 4" person)



Source: Behavioral Risk Factor Surveillance System, CDC

# OBESITY TRENDS AMONG U.S. ADULTS BRFSS, 2010

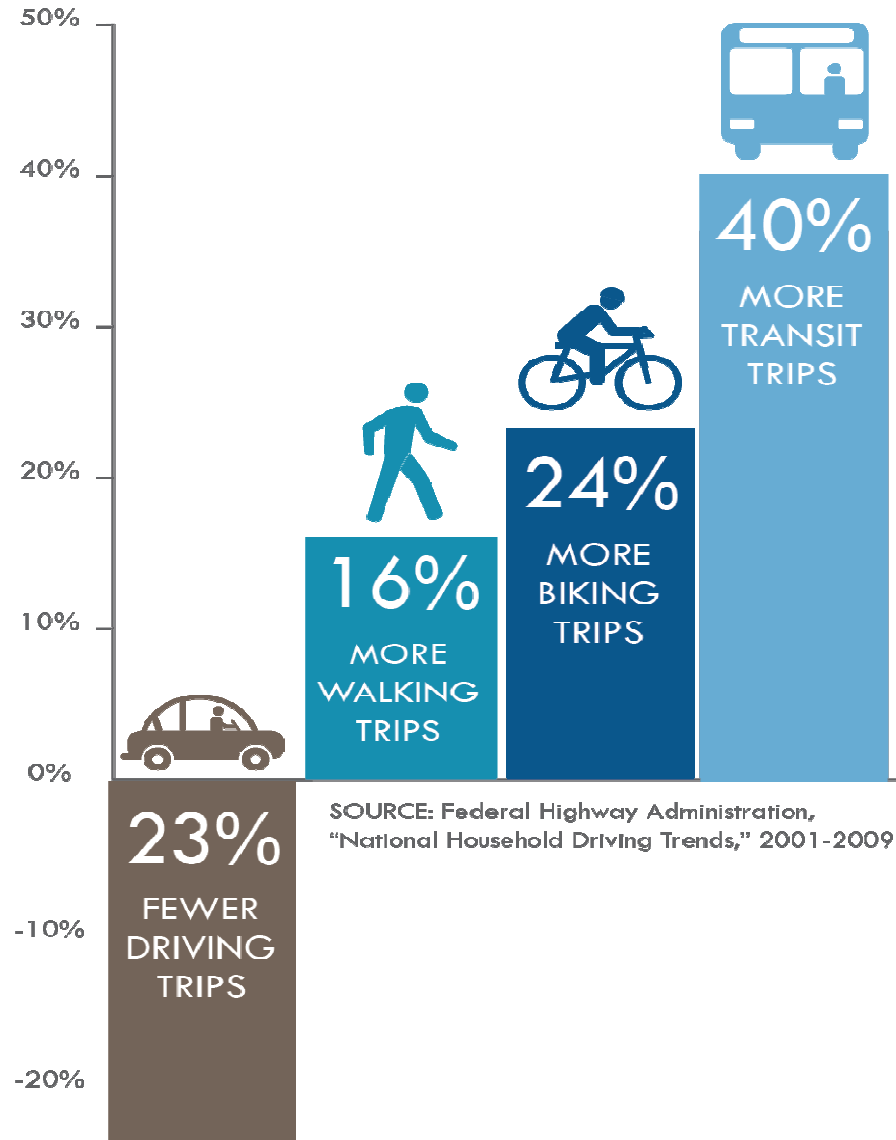
(\*BMI  $\geq 30$ , or ~ 30 lbs. overweight for 5' 4" person)



Source: Behavioral Risk Factor Surveillance System, CDC

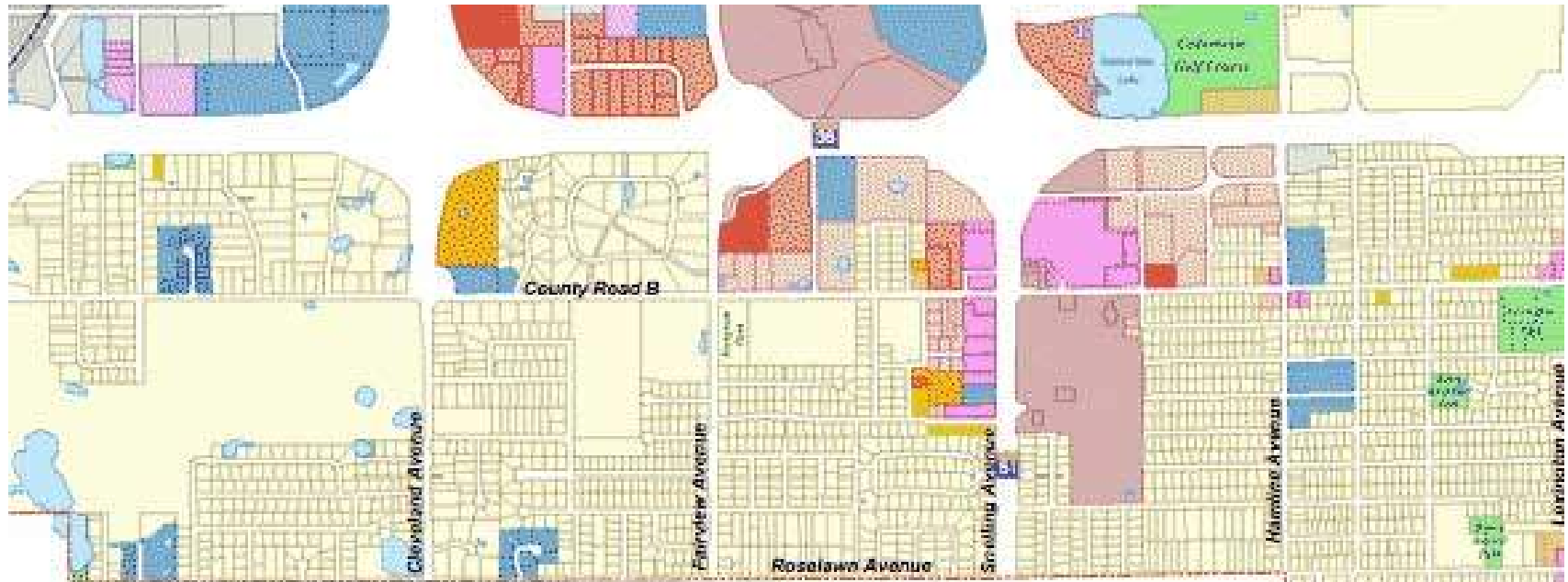


# HOW DO MILLENNIALS TRAVEL?



WHAT BROUGHT US HERE?

# ZONING CODES



## Zoning Map

### Zoning Designations

#### Residential

- R1 - Single Family
- R2 - Two Family
- R3 - General Residence
- R3A - Three to Twenty-Four Family
- R4 - Three and Four Family
- R6 - Townhouse
- R7 - Apartment Park

#### Industrial

- I1 - Light Industrial
- I2 - General Industrial
- IA - Modified General Industrial
- IR - Railroad

#### Business

- B1 - Limited Business
- B1B - Limited Retail
- B2 - Retail Business
- B3 - General Business
- B4 - Retail Office Service
- B6 - Office Park
- BC - Shopping Center

#### Other

- PUD - Planned Unit Development
- POS - Parks and Open Space
- ROW - Right of Way
- Lake

Map reflects subsequent council-approved zoning changes for the period from January 31, 2006 through January 30, 2007. Refer to revised map for details regarding the areas of designated zones. The zoning designations shown on this map must be interpreted by the City's Zoning Code and policies. These zoning designations are subject to change as part of the City's ongoing planning process. See Water Management Overlay District Map for additional boundaries.

**Data Sources and Credits:**  
 \* Ramsey County GIS Base Map (12/07)  
 \* City of Roseville Community Development  
 For further information regarding this City of Roseville Community Development  
 2800 City Center Drive, Roseville MN

Zoning map of a Minneapolis suburb

# MINIMUM PARKING REQUIREMENTS

## FAST FOOD RESTAURANT WITH DRIVE-IN WINDOW (836)

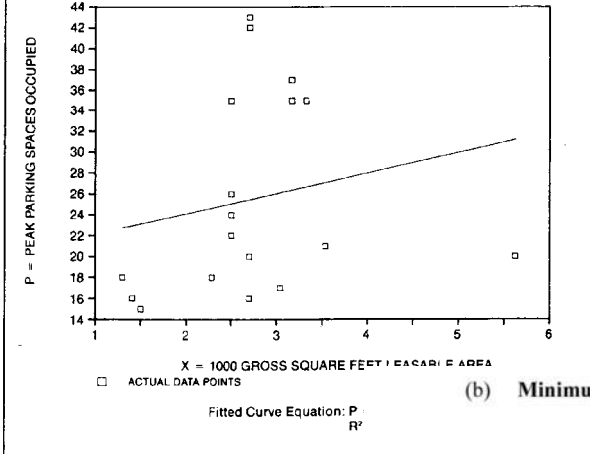
Peak Parking Spaces Occupied vs: 1,000 GROSS SQUARE FEET LEASABLE AREA  
On a: WEEKDAY

### PARKING GENERATION RATES

Average Rate	Range of Rates	Standard Deviation	Number of Studies	Average 1,000 GSF Leasable Area
9.95	3.55-15.92	3.41	18	3

### DATA PLOT AND EQUATION

CAUTION—USE CAREFULLY—LOW R<sup>2</sup>.



(b) Minimum Parking Required.

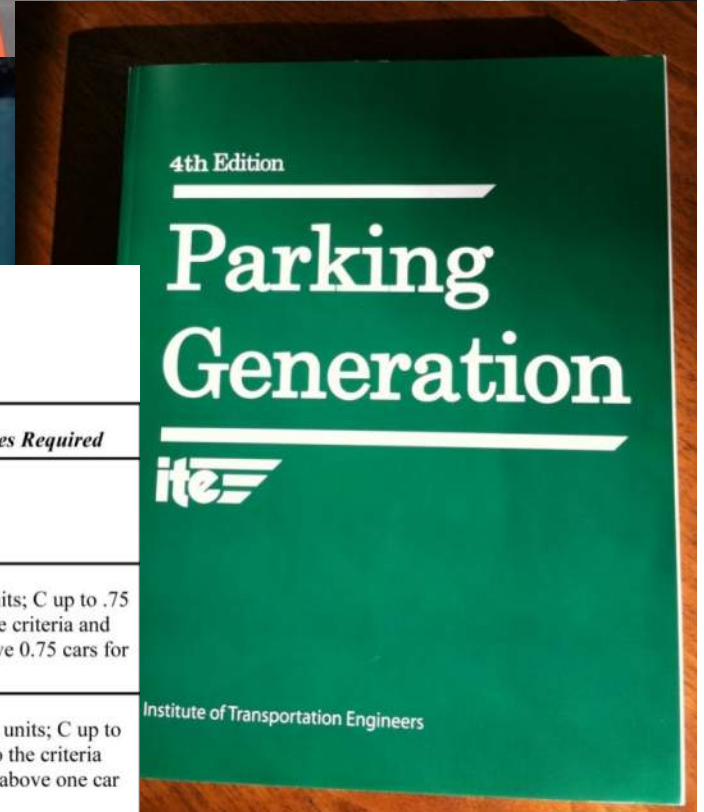
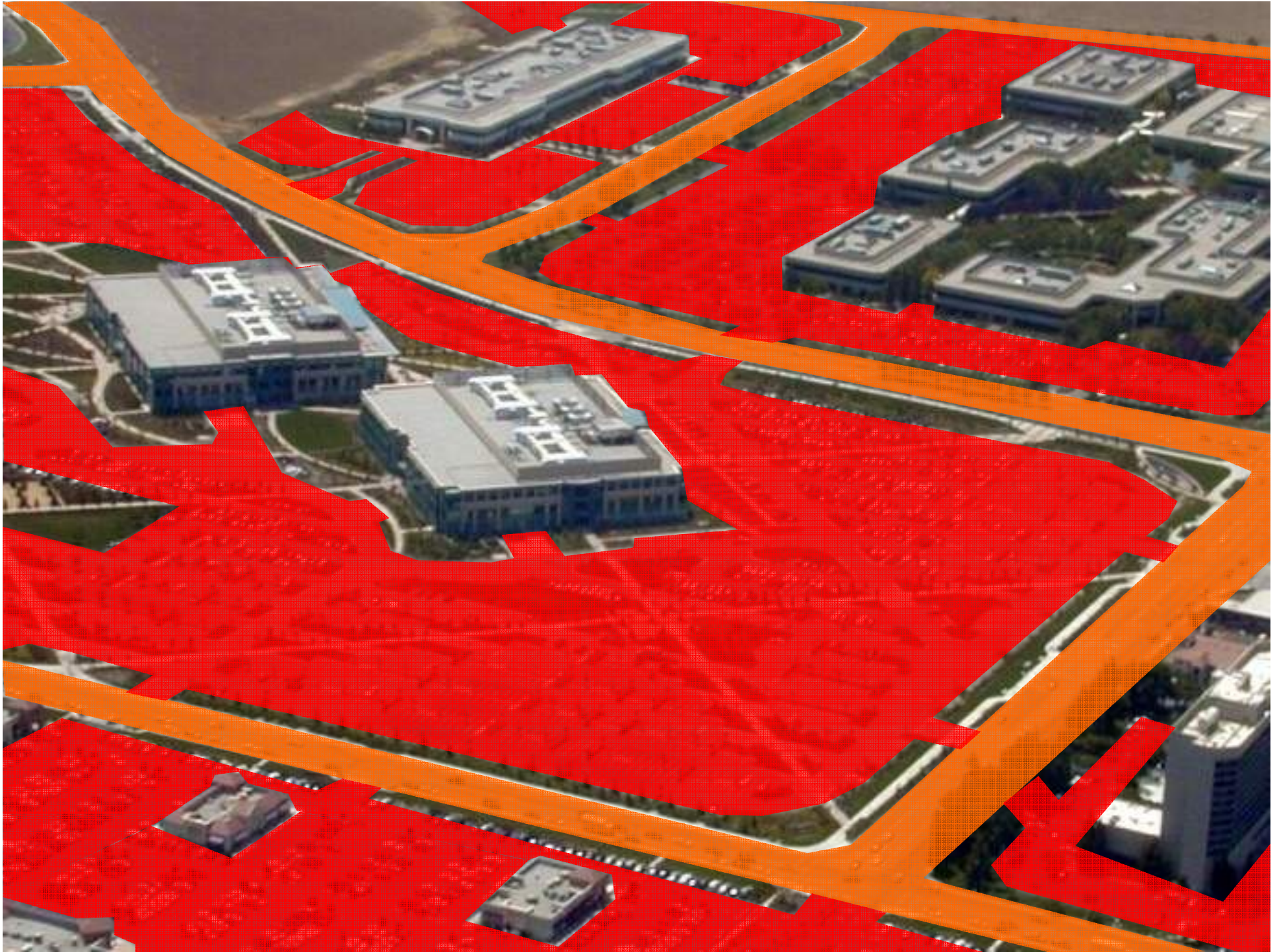


Table 151  
OFF-STREET PARKING SPACES REQUIRED



Use or Activity	Number of Off-Street Parking Spaces Required
Dwelling, except as specified below, and except in the Bernal Heights Special Use District as provided in Section 242	One for each dwelling unit.
Dwelling, in the Broadway and North Beach Neighborhood Commercial Districts and the Chinatown Mixed Use Districts	P up to one car for each two dwelling units; C up to .75 cars for each dwelling unit, subject to the criteria and procedures of Section 151.1(g); NP above 0.75 cars for each dwelling unit.
Dwelling, in the Telegraph Hill - North Beach Residential Special Use District	P up to three cars for each four dwelling units; C up to one car for each dwelling unit, subject to the criteria and procedures of Section 151.1(g); NP above one car for each dwelling unit.



# WHAT'S IMPORTANT DEPENDS UPON PERSPECTIVE



TRAFFIC ENGINEER:

**F**

**A**

ECONOMIST:

**A**

**F**

INDUCED AND LATENT DEMAND

CONGESTION

MORE PEOPLE  
DRIVE



WIDEN  
ROADWAY

FASTER DRIVING



Credits: Bay Area News Group and San Francisco Chronicle



DON'T WE NEED MORE PARKING THOUGH?



## SUBURBAN PARKING STRUCTURE

**\$40,000**

Construction cost per  
space

**\$350-\$500**

Monthly cost per space



# SMART TECHNOLOGY



WHAT DO YOU MEAN TRANSPORTATION  
DEMAND MANAGEMENT?

# WHAT IS TRANSPORTATION DEMAND MANAGEMENT (TDM)?

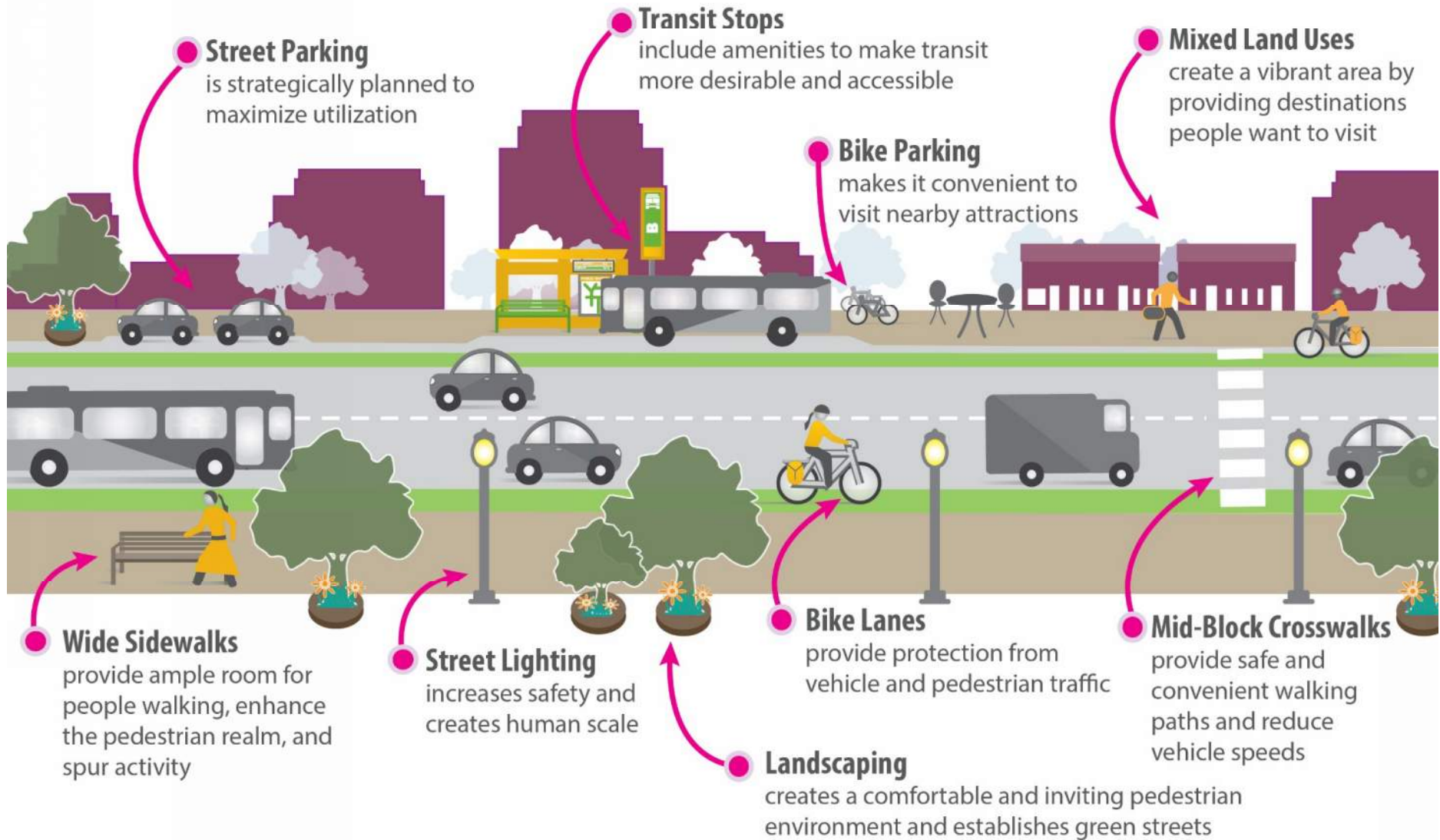
- Providing (more!) transportation options
- Using the resources we have to accommodate the development we want
- Shift time of travel
- Shift mode of travel
- Shift route of travel



STREETS FOR EVERYONE

# Complete Streets

*improve every mode and create better places*

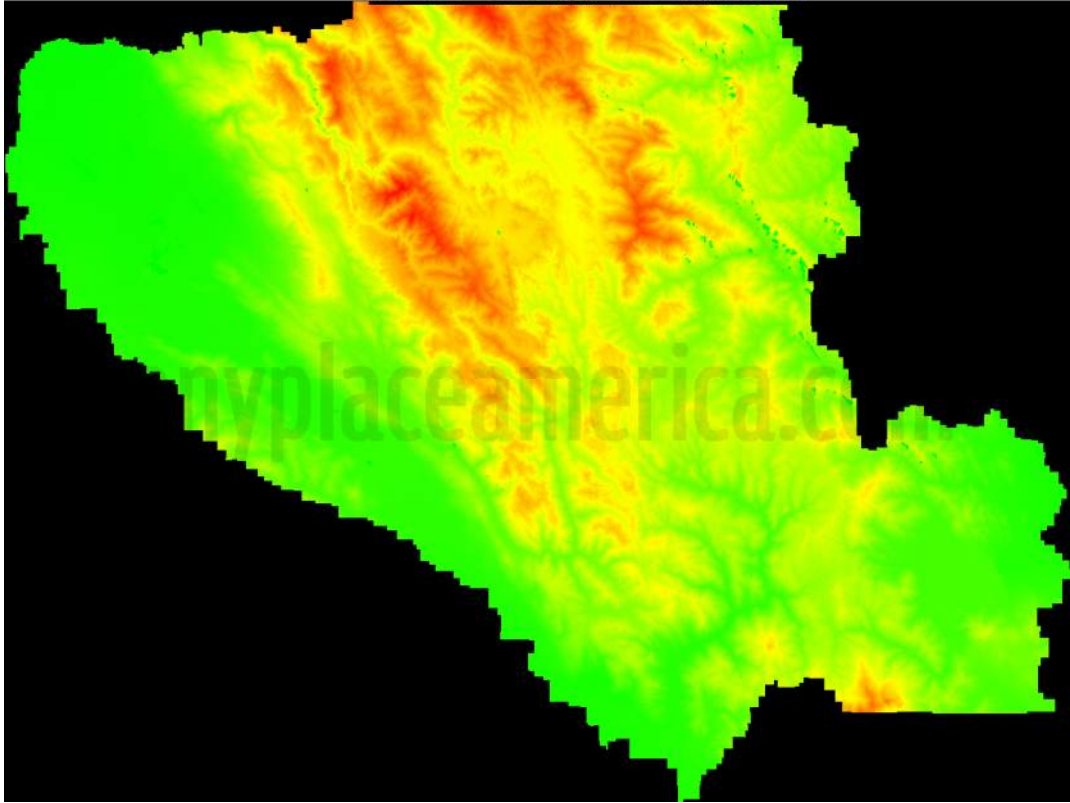
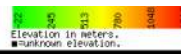






Santa Clara County, California Elevation Map  
Min. Elevation: -22 meters, (-72 feet)  
Max. Elevation: 1316 meters, (4317 feet)

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This map may be freely downloaded and printed for non-commercial purposes. Please contact us before redistributing or republishing this map. Please do not alter or remove text or watermarks. This map was created with Shuttle Radar Topography Mission data. Accuracy cannot be guaranteed.



Credits: anyplaceamerica.com www.electricbike.com, momentummag.com

WHAT ABOUT EMERGING TECHNOLOGY?



## Become a Lyft Carpool Driver

Initially launching in the Bay Area, Carpool will expand with driver interest. Whether you commute in SF or cities across the country, sign up to drive.

Home address

Work address

Email address

Unlock Your Route

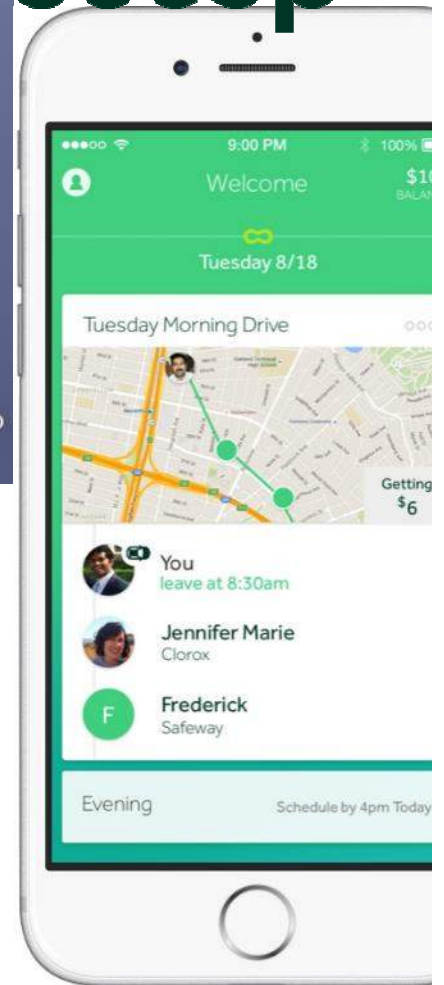
[Carpool Terms](#) [Carpool Privacy](#)



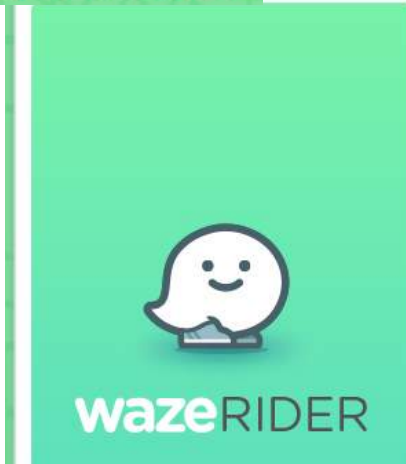
# Fast lane. Easy money.

You drive to work every day. Why not get paid for it? Turn your commute into cash and make up to \$400/mo.

# scoop



## waze CARPOOL



# TRANSPORTATION NETWORK COMPANIES (TNCs)



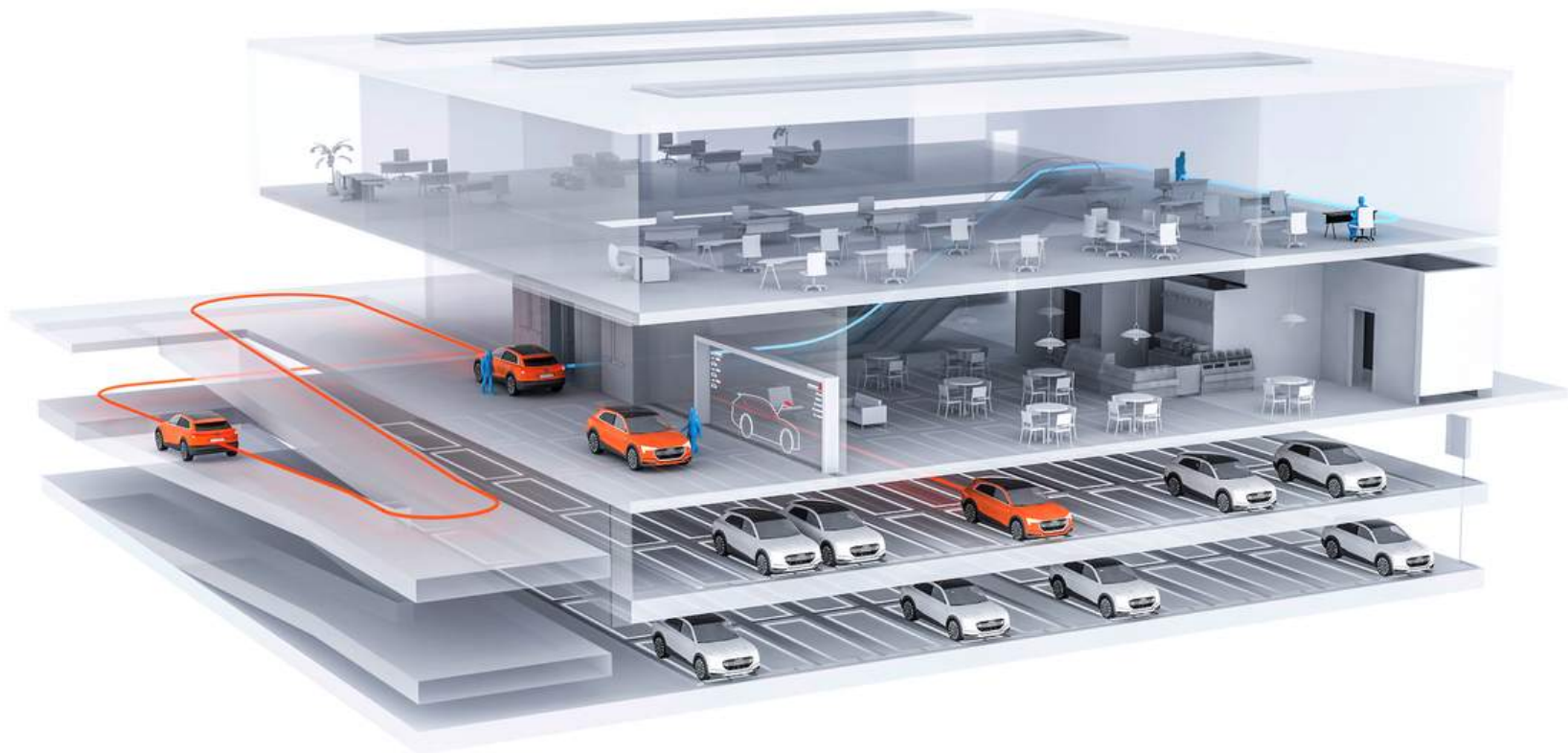
**SafeHer**  
DRIVING WOMEN TOWARDS SAFETY

Sources: [rideshareapps.com](http://rideshareapps.com)  
[safeher.com](http://safeher.com)



Sources (Left to right, top to bottom): [Car and Driver Blog](#), [Popular Science](#), [Mercedes-Benz.com](#), [Recombu.com](#)

# CURB SPACE, DENSER PARKING AND ADAPTABILITY



Source: Audi via Mashable (<http://mashable.com/2015/11/17/audi-parking-boston/#6jcaMm8aukqi>)

# Thank You!

Jessica Alba  
[jalba@nelsonnygaard.com](mailto:jalba@nelsonnygaard.com)





Rick Williams, Partner  
Van Meter Williams Pollack

Housing's Role in Sustainable Development

**VAN METER  
WILLIAMS  
POLLACK** LLP 

# Why Mixed Use ?

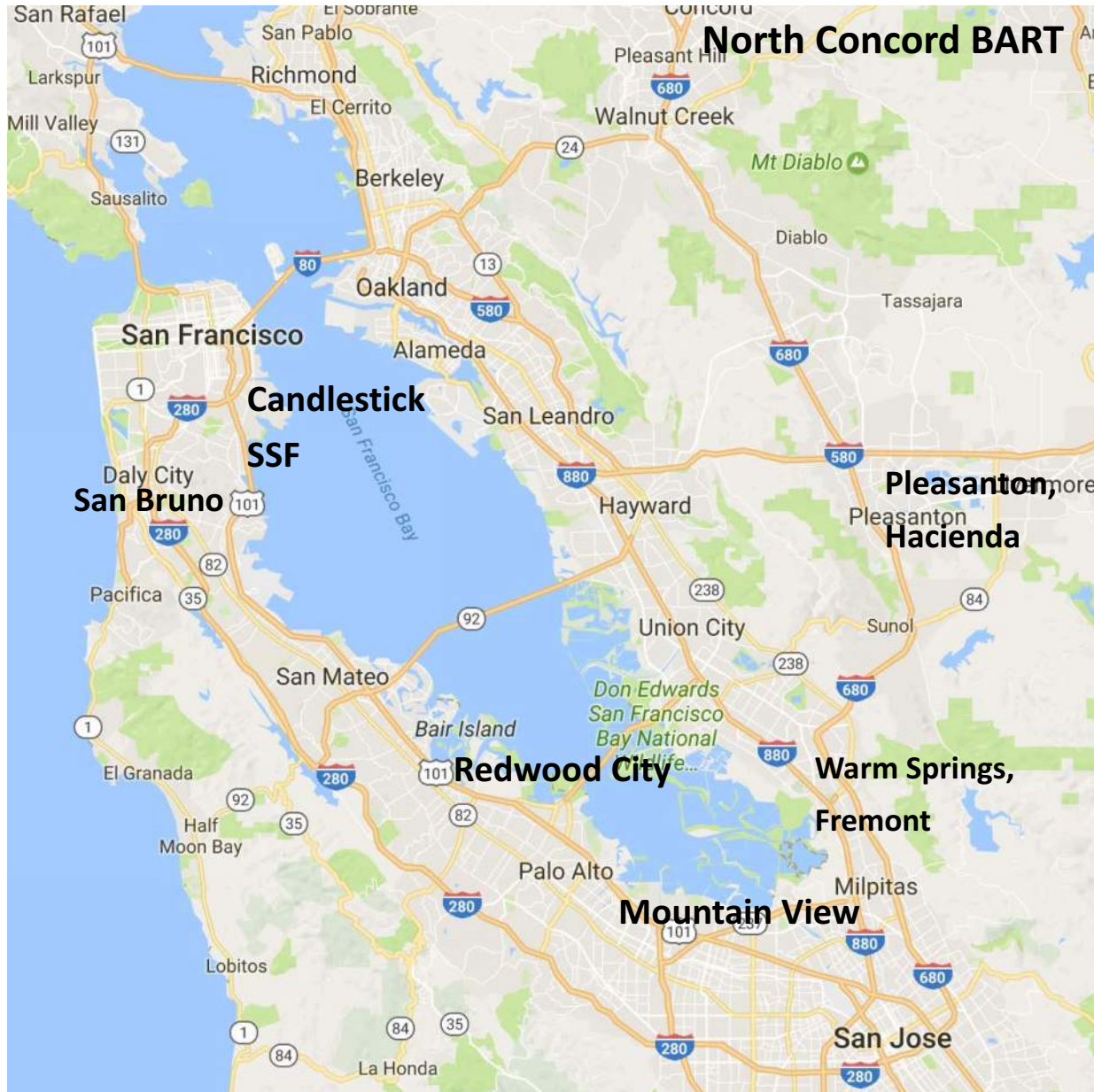
## Why including Housing within your Employment Area ?

- Every City wants to create employment, and provide limited residential
- Today Cities have to compete for employment and specialized technology businesses
- Businesses have to compete for the top employees
- Employees want to work and live in exciting places!
  
- Businesses now want to locate and be in an environment which can attract the top employees.
- The Urban Land Institute (ULI) and many other organizations have realized that the office park and retail malls are becoming a thing of the past. People want to work and live in areas which support them and provide amenities around the clock....

### **To illustrate this here are a few communities Brisbane will be competing with...**

- They have all grappled with this same issue for many years. Some 30 year No Housing Policies!
- If you loose, then you dont get the type of businesses you want and you dont get benefits, only the problems traffic, trucks, etc. with none of the benefits. No one wants that....

# Communities Brisbane is in Competition with.....



- Integrating Mixed Use Housing within Large Office Employment Areas or
- Balancing Housing and Employment
  
- Candlestick Community
- South San Francisco
- San Bruno, Employment Center
- Redwood City Downtown
- North Bayshore, Mountain View
- South Fremont, Innovation District,
- Hacienda Business Park, Pleasanton
- North Concord Community Plan Area

# Candlestick Point and Hunters Point



Note: Towers shown are one example of tower locations (see Section 4.2.2 for more details)

## Employment Area



# Downtown South San Francisco



# SSF Downtown Strategy Plan



# North Bayshore Community Plan , Mountain View

- Integrating Mixed Use Housing within Large Office Employment Area;



# South Fremont / Warm Springs Station

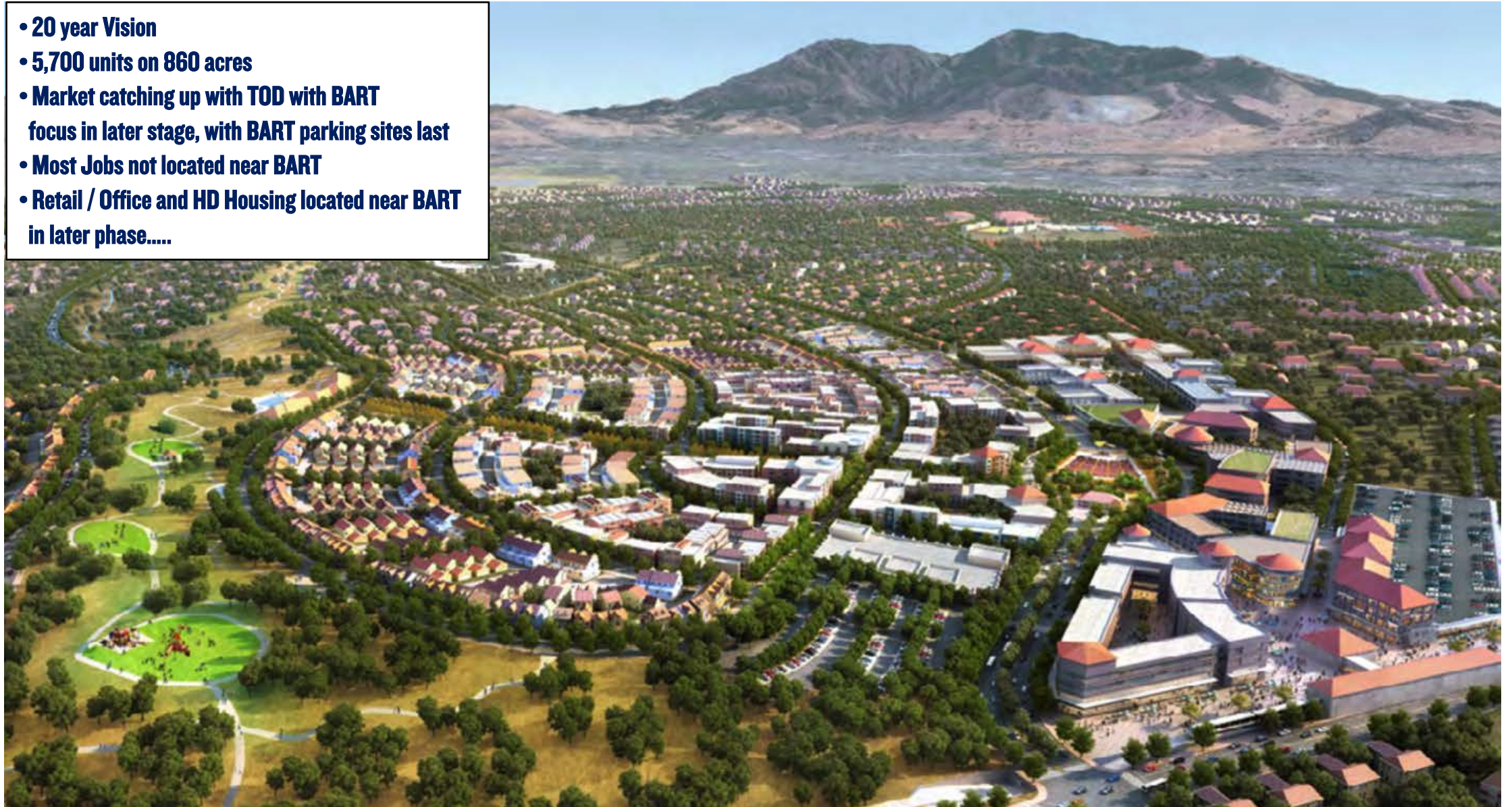
- Major Vision for South Fremont's Future
- Strong Desire for an Employment Focused Community
- Challenge: Not a traditional Tech location
- ULI called for a more mixed community with residential....
- Housing to Jump Start and attract commercial development
- Strong Commitment by City to realize the Vision
- Unique Innovation Branding with Tesla as a center-piece





# North Concord Station / Community

- **20 year Vision**
- **5,700 units on 860 acres**
- **Market catching up with TOD with BART focus in later stage, with BART parking sites last**
- **Most Jobs not located near BART**
- **Retail / Office and HD Housing located near BART in later phase.....**



# Dublin / Pleasanton BART Station: Employment vs Housing:



- Major Housing Community in Dublin through a large Specific Plan.
- Hacienda Business Park adds Housing
- BART had little impact on Hacienda B.P.
- Density not important! (50du/ac.)
- Development of BART property limited by local controls.....



# Why Mixed Use; Lessons learned by Communities

## • North Bayshore, Mountain View

- Enough Housing to have services; 7-10,000 apartments to support a large grocery store,
- Maximizing affordable Housing by encouraging a mix of smaller units and higher densities
- Housing in Employment area would reduce peak period traffic through internal capture and road capacities.
- Community Supported change in policy to reduce stress on existing housing and neighborhoods.

## • Pleasanton:

- Was sued by Housing Advocates and lost in court for not providing enough housing and affordable housing
- Lost control of the process; re-zoned acreage and created DGLs for housing including HD Housing in Hacienda Business Park
- In the end City encourage more rental housing which is helping attract businesses and DGLs and zoning regulations minimized impacts

## • South Fremont/Warm Springs Innovation District

- The Urban Land Institute (ULI) recommended Housing as catalyst to attract desired business
- Concerns over schools dominated; and major landowners/developers paid for new turn-key Elementary School
- Large development agreements set standards for schools, parks, infrastructure, affordable housing

## • North Concord and other BART Stations

- Challenge is to get good % ridership on Transit from Office / Employment Uses/Destinations; too many variables for employees vs residents.
- Residents self-select their living location not their job as often; that's why businesses such as Google have taken over their own transit service

# Summary

## Why Mixed Use ? Final Thoughts

- Each Community has to find their own way within this discussion.....
- Each of these communities had long standing policies (some 30+ years) not to have housing in these areas....
- As much as we would like we cant put our head in the sand, and it will impact you regardless....
- Its better to plan for the growth and get out of it the priorities of your community, not just environmental sustainability which is good! But also services, open spaces, recreation community facilities, schools and shops or stores as desired....
- If you are not competitive, you will get some development; it will just mostly be the poor development, lower quality which cannot provide the types of amenities you want for your community.
- You have a great Opportunity to provide a clear direction for your community which leads you into the next 50+ years !!!!

# Site Remediation

# SITE REMEDIATION

June 14, 2017

Markus Niebanck, Principal,  
Amicus Strategic Environmental Consulting  
Sarah Sieloff, Center for Creative Land Recycling



There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know.

*-Donald Rumsfeld, former Secretary of Defense*





# DE CEUVEL, NORTH AMSTERDAM, NL

“On the former shipyard we have realized one of the most unique urban experiments in Europe. Old houseboats have been placed on heavily polluted soil, the workspaces have been outfitted with clean technologies and it has all been connected by a winding jetty. Around the houseboats phyto-remediating plants work to clean the soil. De Ceuvel is not only a ‘forbidden garden’ which will leave behind cleaner soil, but also a playground for sustainable technologies.”

<http://deceuvel.nl/en>



# Remediation and Redevelopment in Emeryville



## Emeryville's Circumstance and Objective

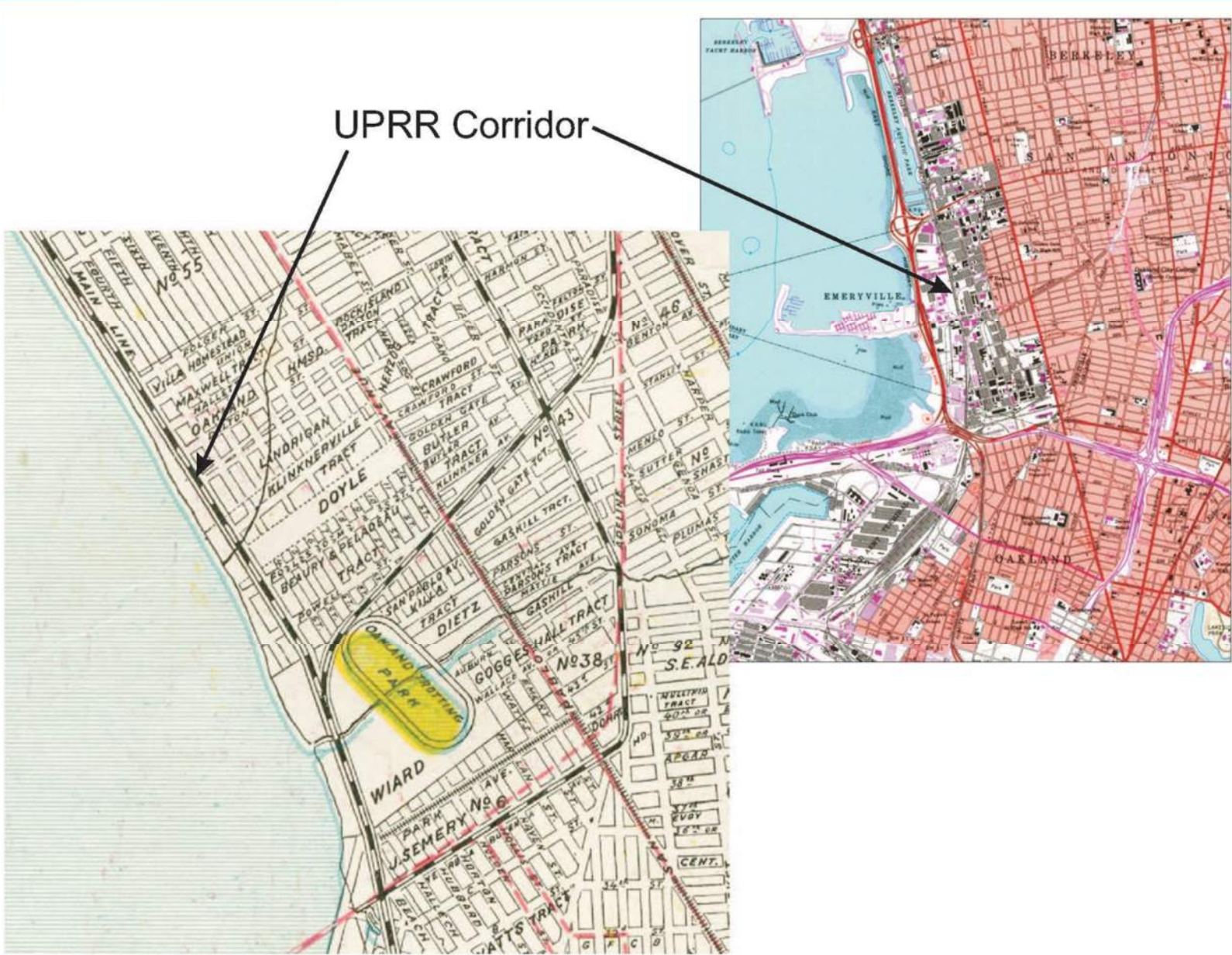
- Industrial relocation and abandonment
- Environmental reputation
- Redevelopment Agency and Polanco
- Connectivity and “placemaking”

## Environmental Priorities and Approach

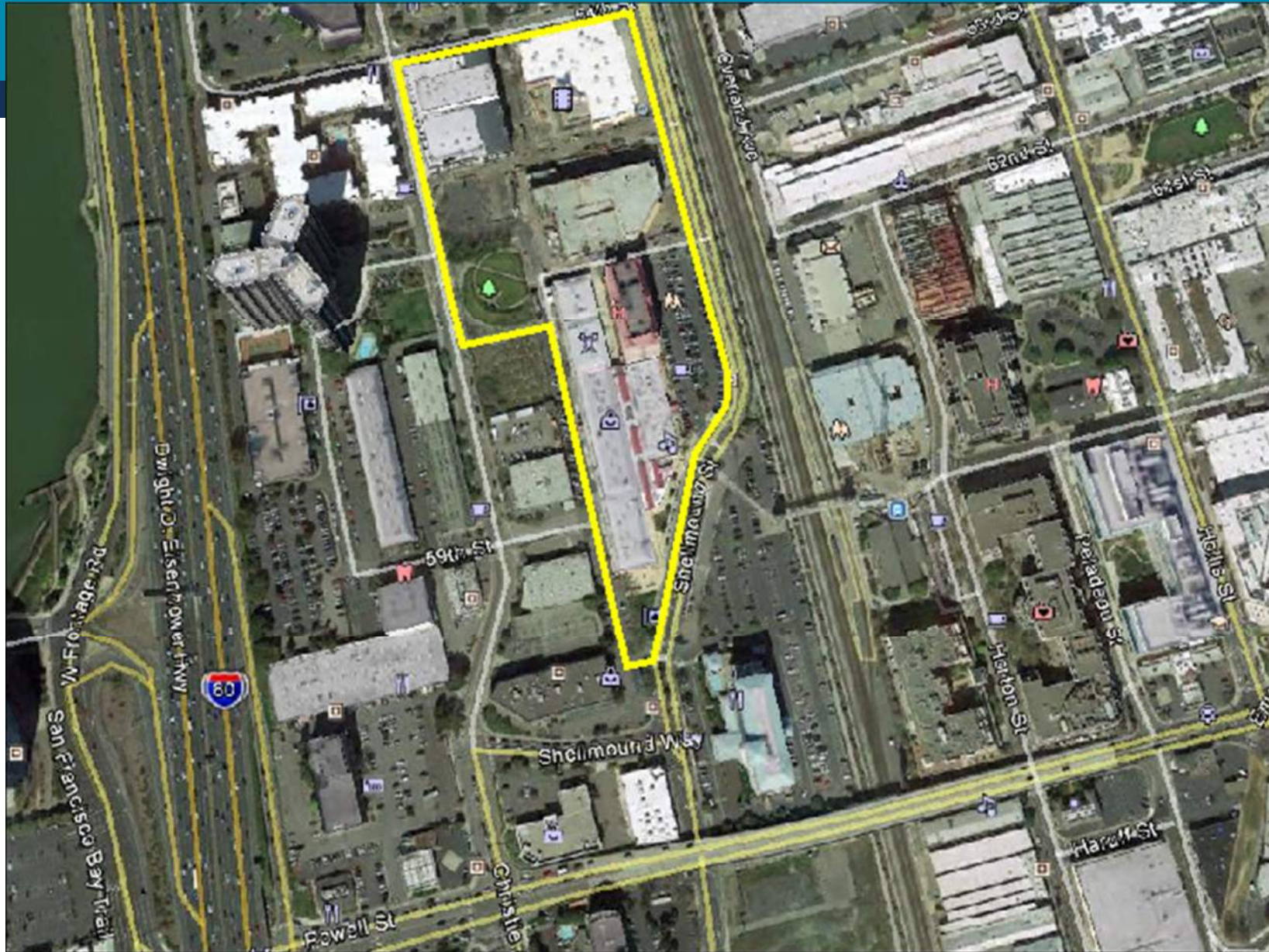
- Reliable and demonstrably safe cleanup
- Regulatory partnership/confidence
- Development-appropriate cleanup standards/remedial goals
- Accommodating in-place solutions when appropriate
- Site tracking in Planning database
- Most new construction and redevelopment for residential, commercial and retail uses is on post-industrial land



# Emeryville Shoreline



# Emeryville Public Market



## Emeryville Shoreline 1944



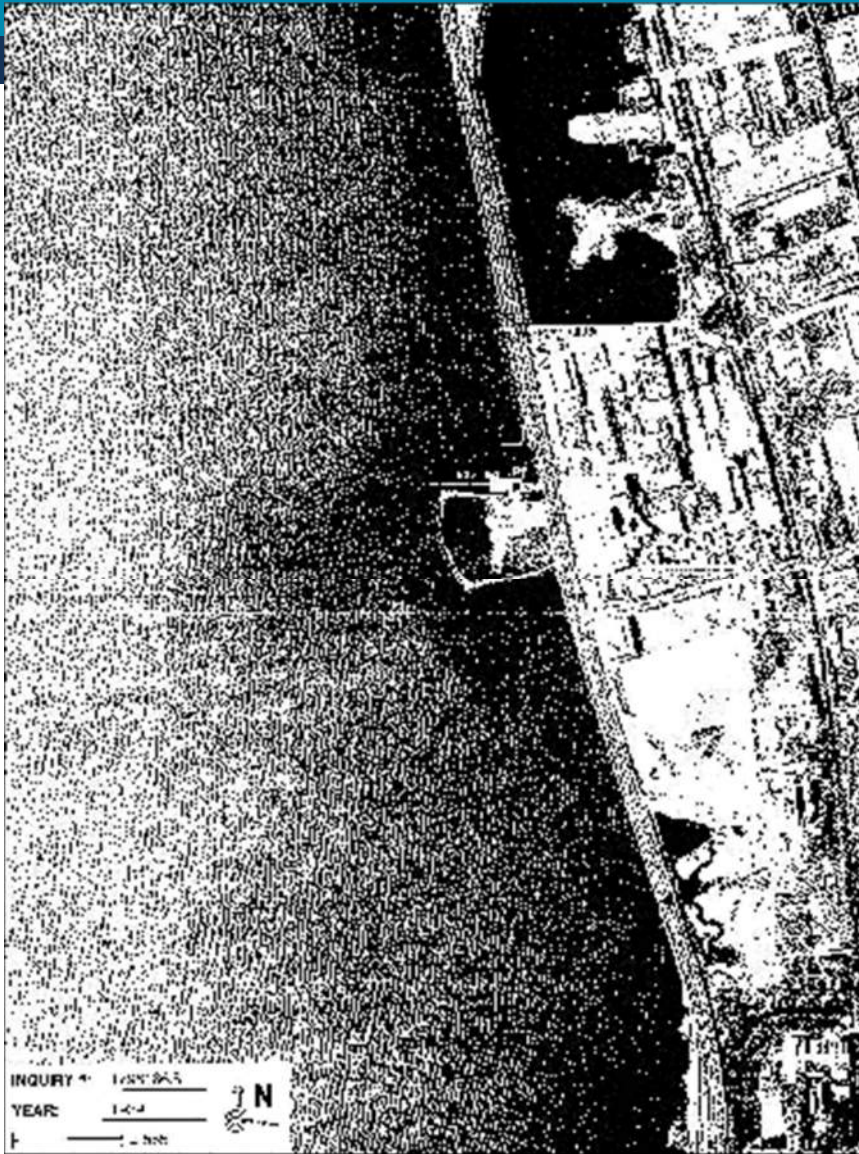
# Emeryville Shoreline 1988



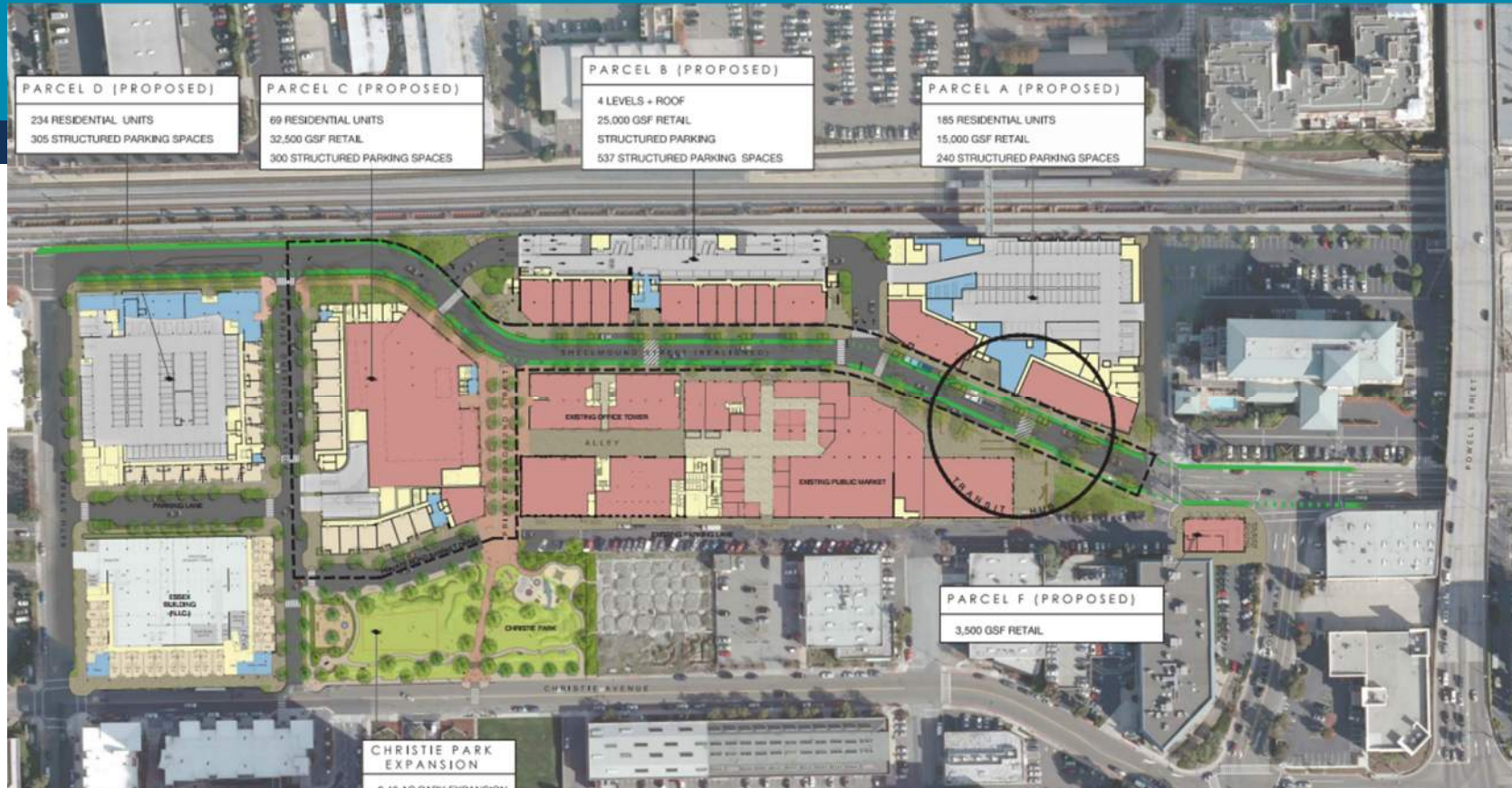
# Emeryville Public Market

1939

1952



# Emeryville Public Market

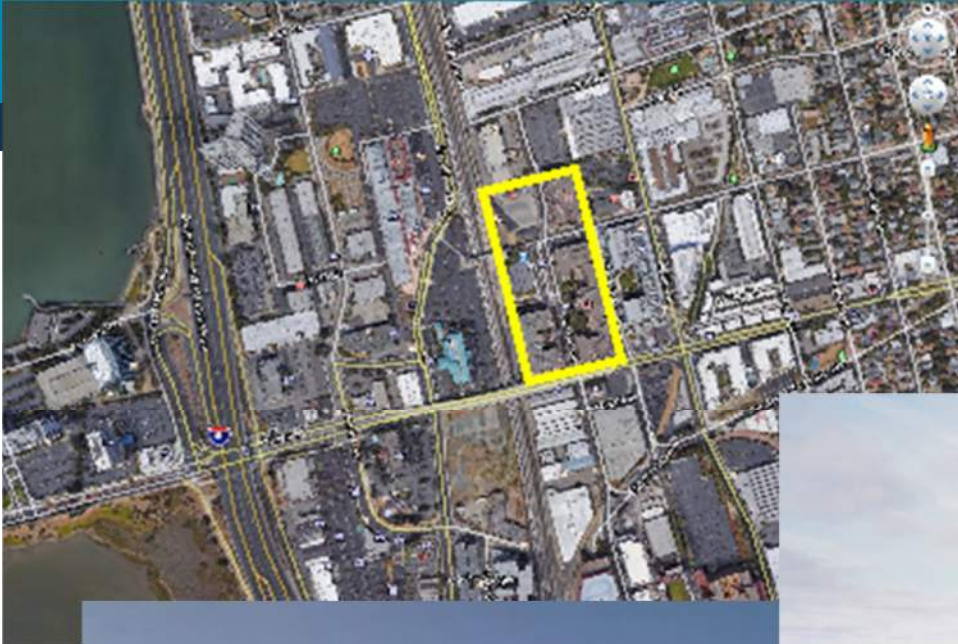


## Environmental Attributes and Mitigation/Management Measures

- Motor fuel, heavy oil, asphalt roofing materials and fabrication by-products, undocumented fill, VOC, metals and methane.
- Property initially redeveloped in late 1980s with office building, movie theater and shops. Comprehensive upgrades, residential, retail and open-space recreational construction under way.
- Removal actions, cap, methane venting system (in residential construction), Deed Restriction\*, Site Management Plan, and monitoring.



# Former Westinghouse Property Redevelopment



# Former Westinghouse Property Redevelopment



## Environmental Attributes and Mitigation/Management Measures

- PCBs, petroleum hydrocarbons, VOC, metals.
- Phases of redevelopment – office and residential (upper story over garage), Amtrak Station, Transit Center (under construction).
- Removal actions, cap, temporary waste consolidation, engineering controls, Deed Restriction, Site Management Plan, and monitoring.