

New Models for Bicycle Friendly Streets

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SFMTA



08 | 23 | 2011 | SPUR
SAN FRANCISCO, CALIFORNIA

Background



- 2nd Highest Density in the U.S.
- 47 square miles
- Mild Climate
- Population ~810,000
- Hilly (steepest hill 31.5%)

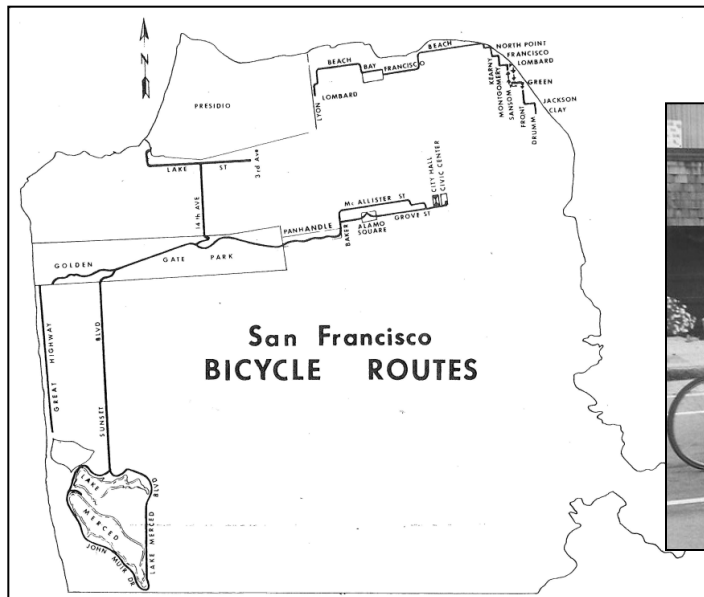


Abridged History of Cycling in SF

Late 1800s – “Boneshakers,” “Good Roads”
movement

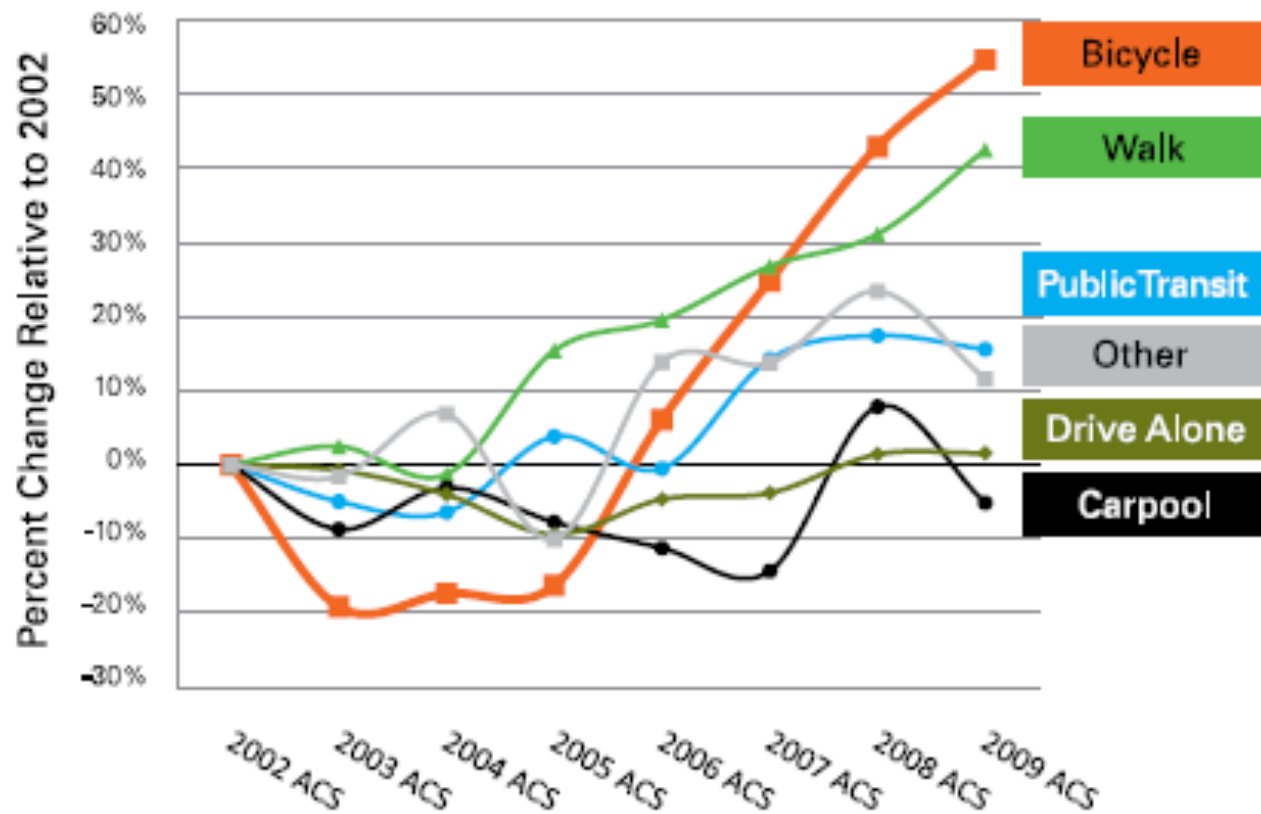
1970s – Earth Day, 1st SF bike lane (Lake Street)

1990s – 1st SF Bicycle Coordinator, Critical Mass, and
Bike Plan, SFBC re-founded and Valencia Street



Recent History (2000-Present)

- 2002-2005 – Bike Plan Update (Supplemental Design Guidelines)
- 2006-2010 – Court injunction and environmental review
- Cycling growth outpaces CA & US; fastest growing mode in SF

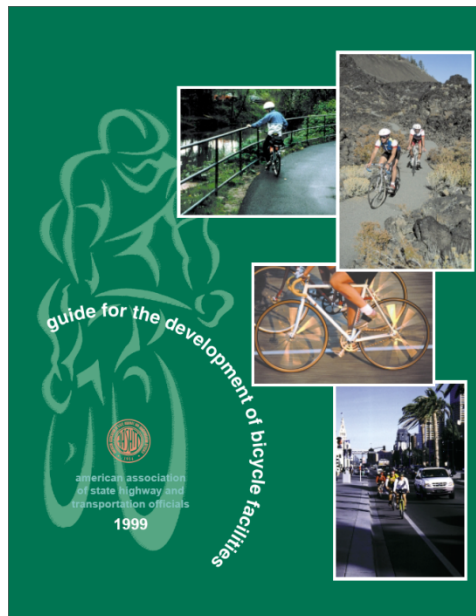


City Goals

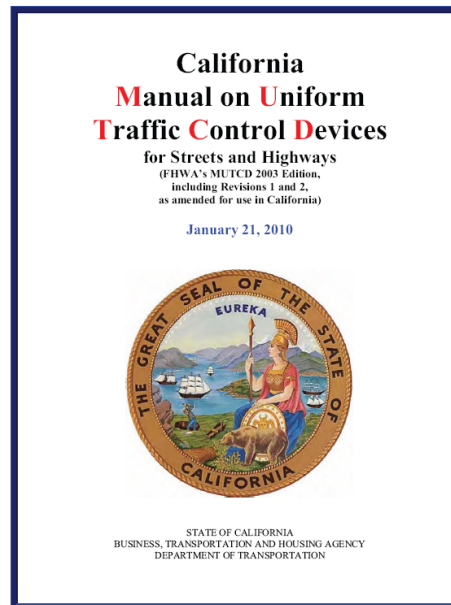
- **Board of Supervisors 2010 Resolution**
 - Goal of 20% of trips by bicycle by 2020
- **Climate Action Plan:**
 - Increase bicycling and walking as alternatives to driving
- **Bicycle Plan Action 1.10**
 - Review international best practices and implement innovative design treatments along the bicycle route network with an appropriate level of analysis and study.
- **Transit First Policy**
 - Bicycling shall be promoted by encouraging safe streets for riding, convenient access to transit, bicycle lanes, and secure bicycle parking.

Design Guidelines – Traditional

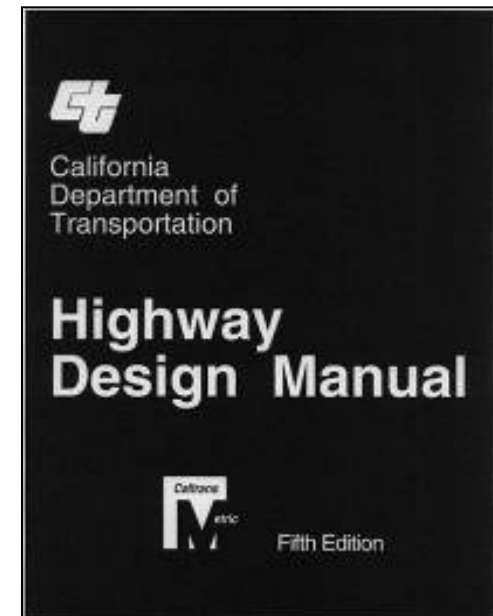
- US and CA standards address generalized situations for bikes
- Facilities that follow adopted standards and guidelines are generally protected from litigation by design immunity



1981



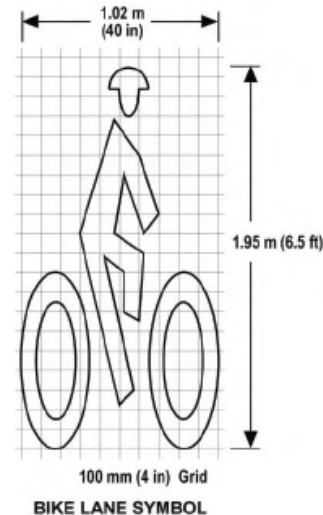
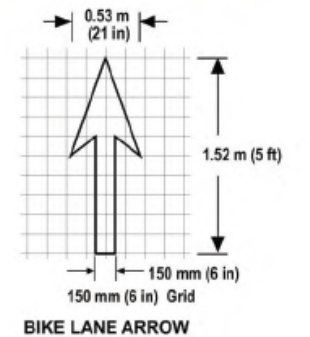
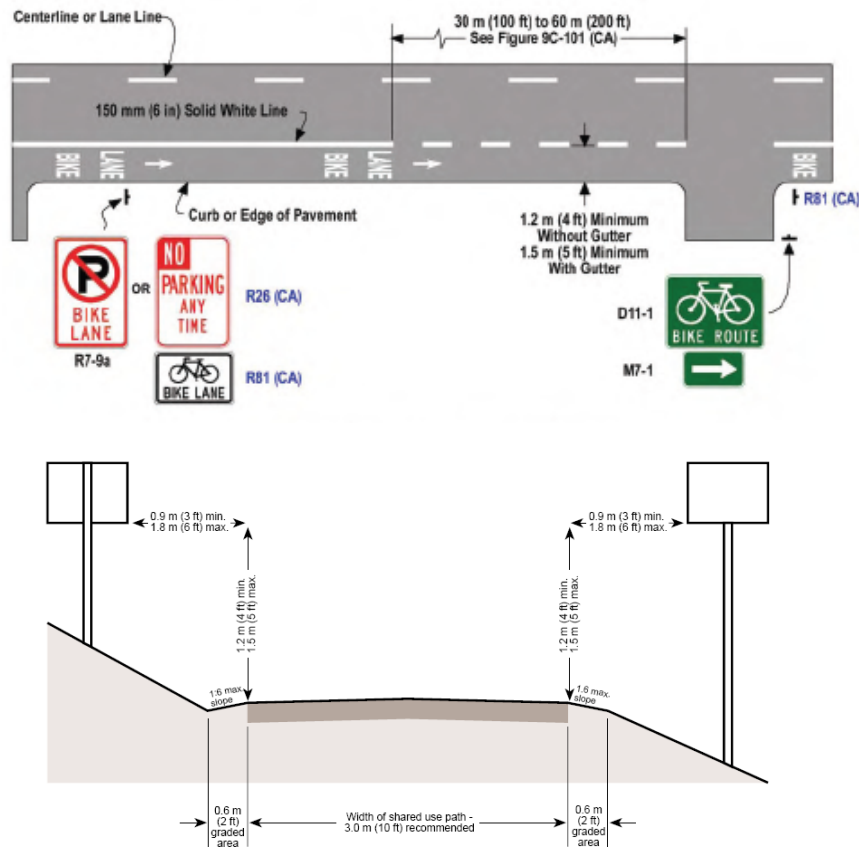
1978



1976

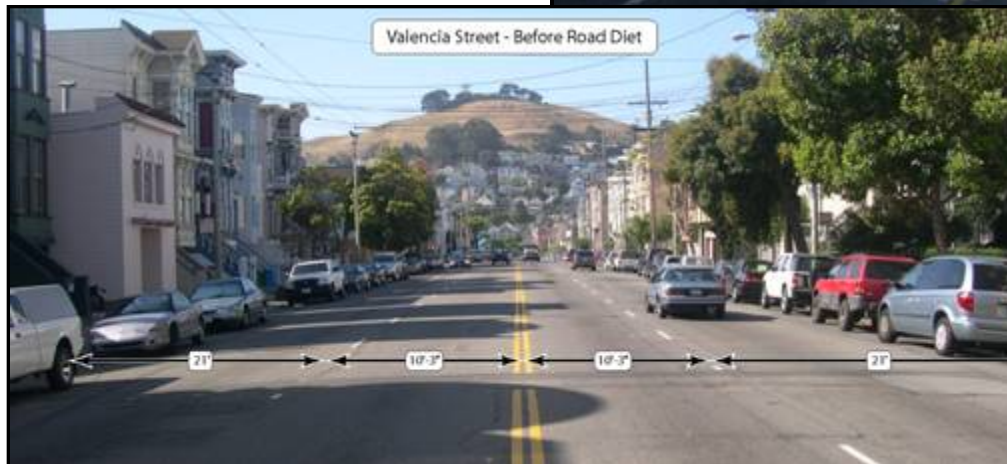
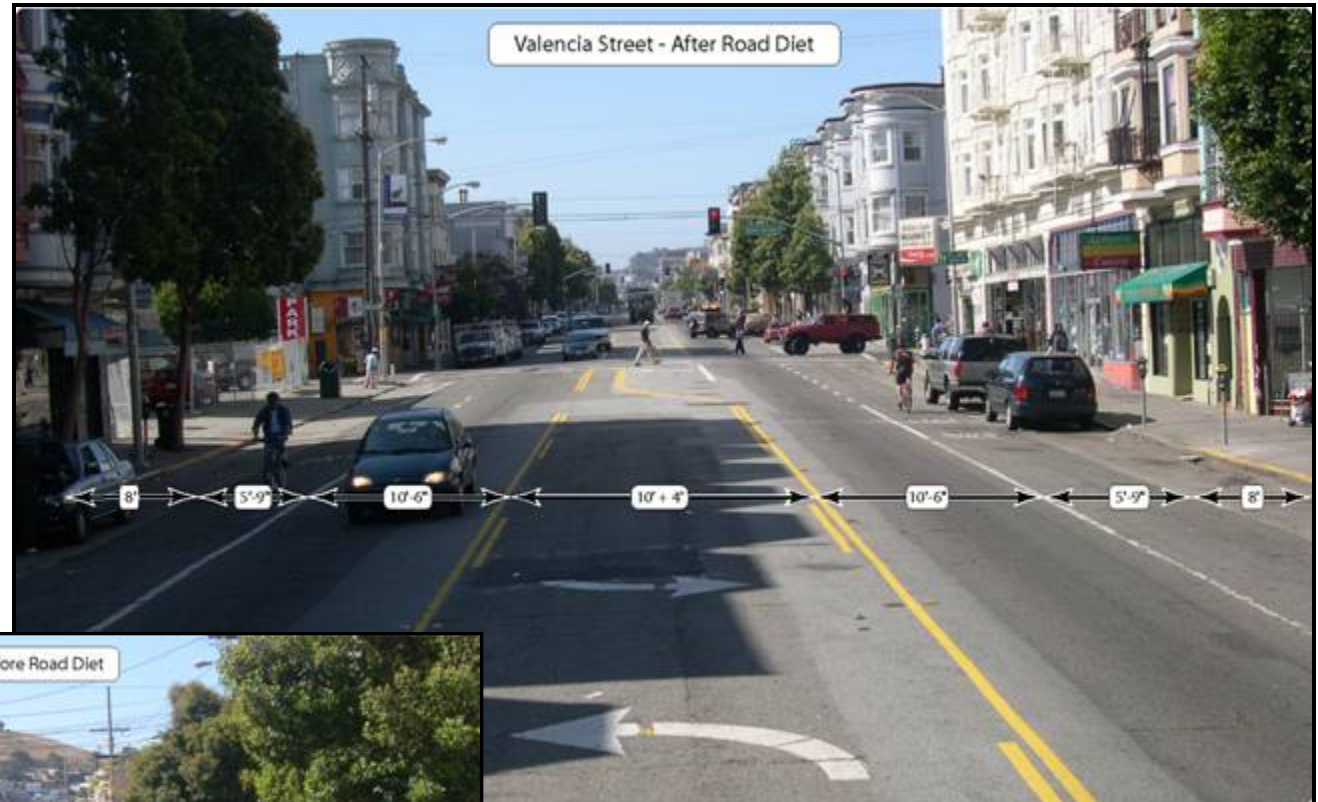
Design Guidelines – Traditional

- Provide standards minimum widths, signage and striping



Valencia Street

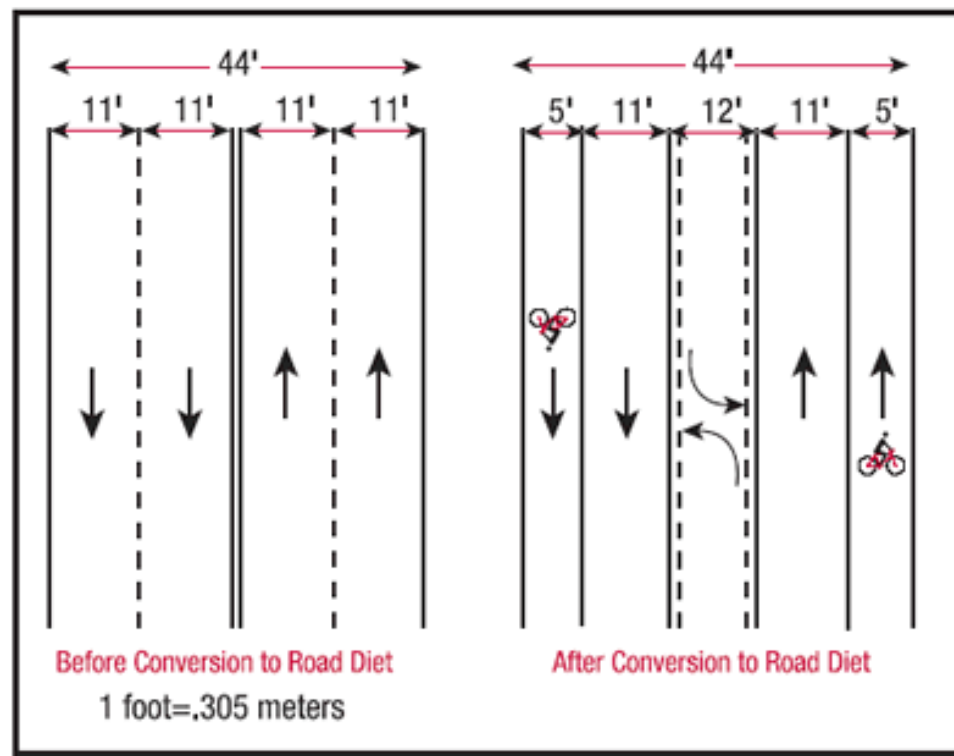
Road Diet in 1999



Road Diets

Excess capacity removed, extra space reallocated for other purposes:

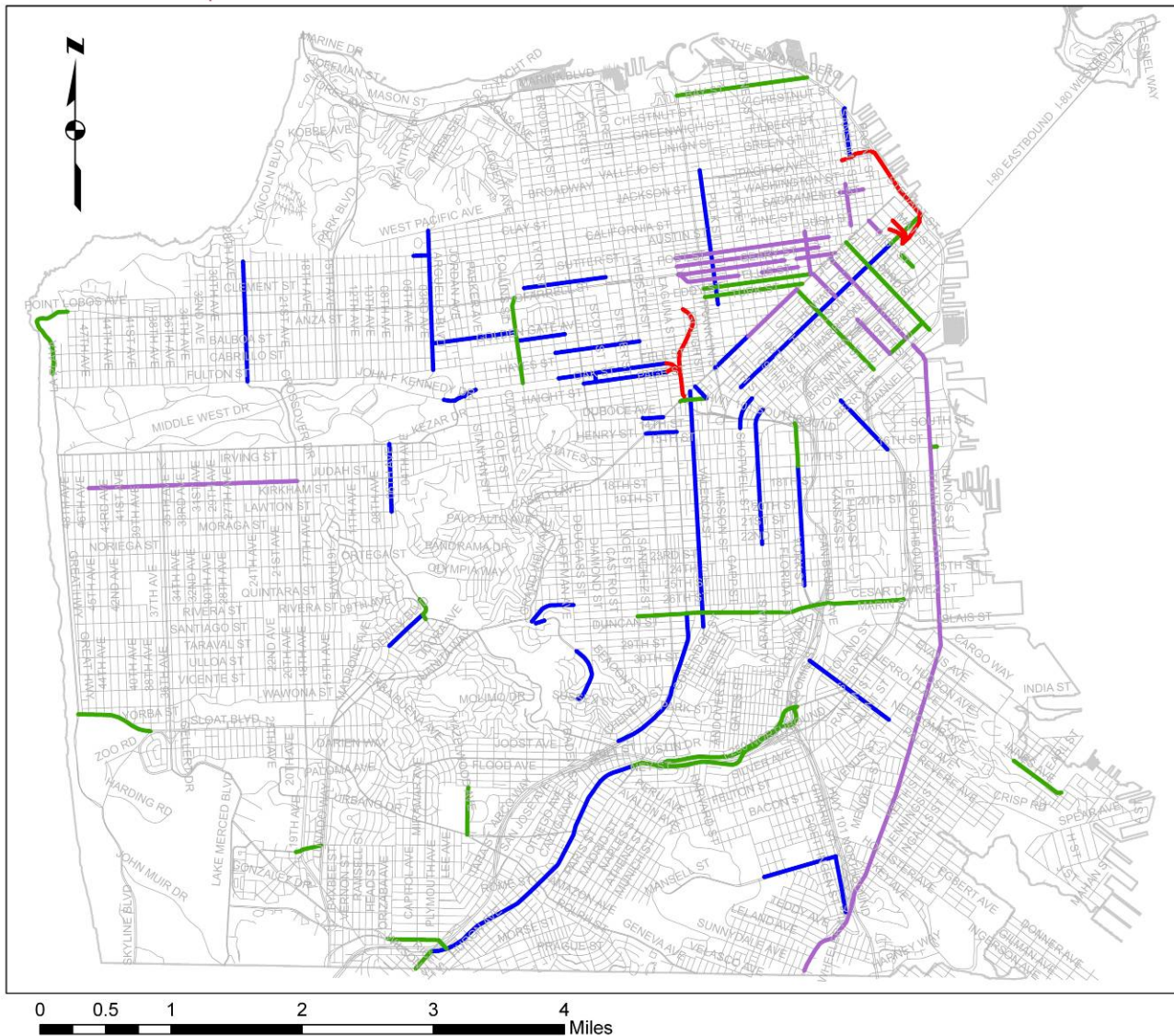
- **Bike Lanes**
- **Wider Sidewalks**
- **Median (raised/ planted or street level/ painted)**



FHWA diagram

San Francisco has done more (40+) than any other North American city

Road Diets



Implemented & Future Road Diets

Streets that have had general traffic lanes reduced in order to promote transit, bikes, pedestrians, and traffic calming since the adoption of the San Francisco Transit First Policy in 1973.

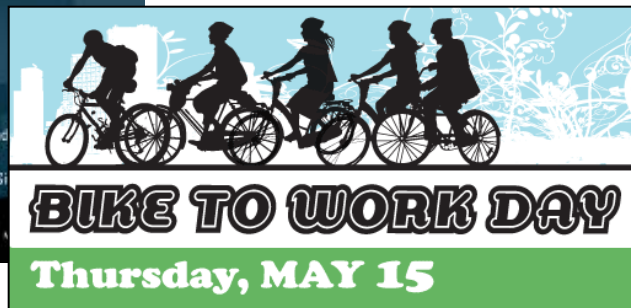
DRAFT

Road Diets

- Removed Elevated Freeway
- Implemented Road Diets
- Implemented Full-Time Transit-Only Lanes
- Future Road Diets

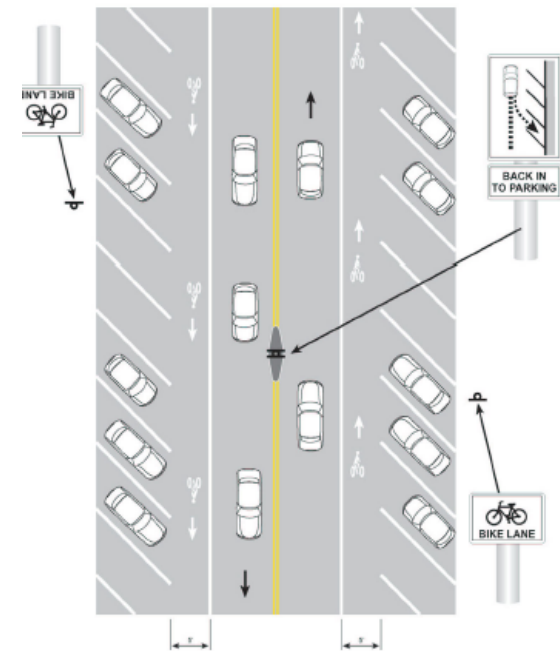
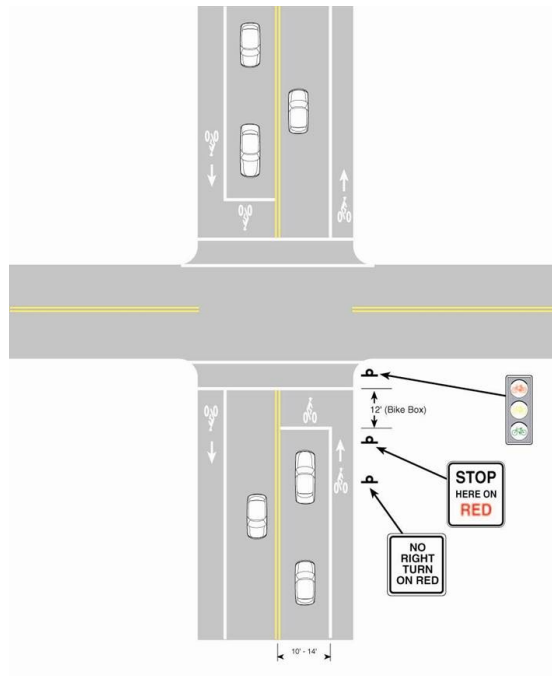
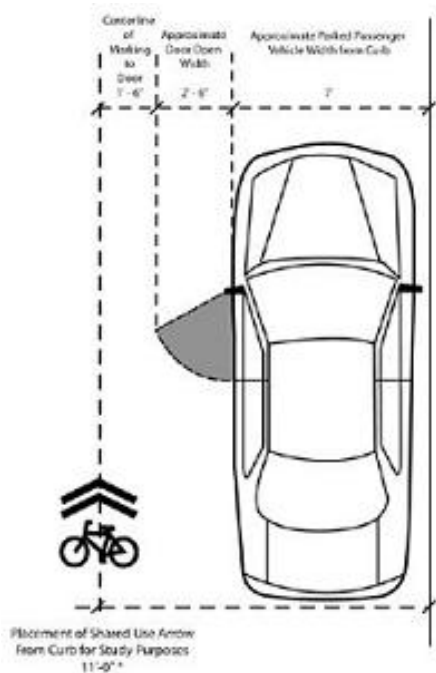
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Education & Outreach



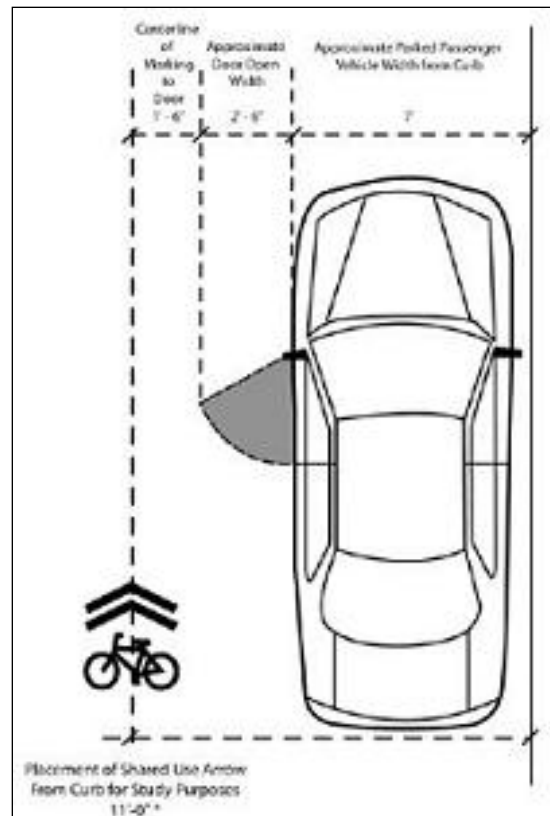
Design Guidelines – Supplemental

- SF Supplemental Design Guidelines (2002-2005 Bike Plan Update)



Shared Lane Markings (sharrows)

“Dooring” collisions, wrong-way riding, sidewalk riding, motorists squeezing cyclists against curb or parked cars

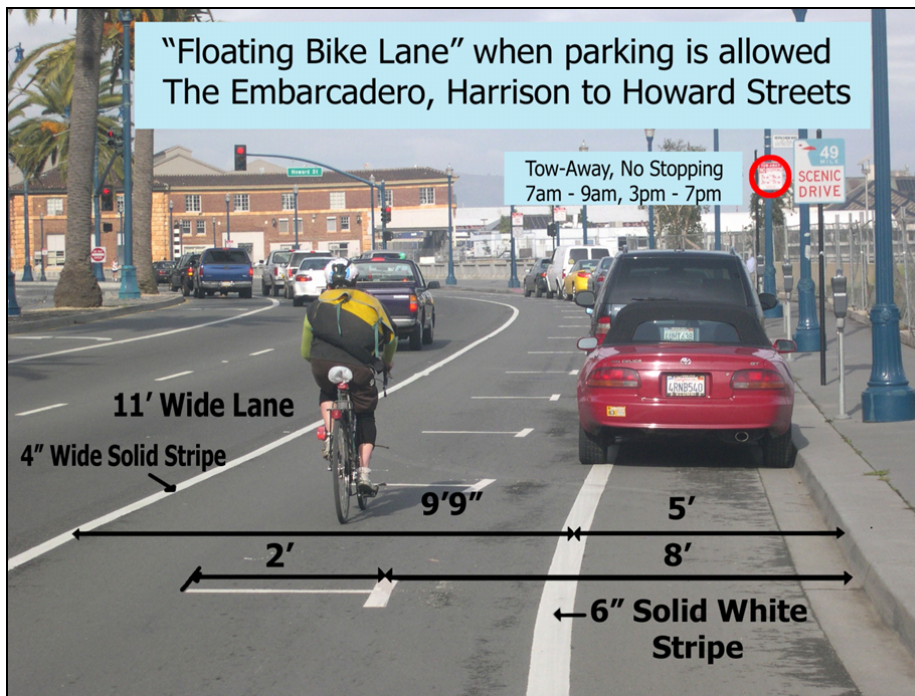


Contraflow Bike Lanes



Floating Bike Lanes

Bike space shifts depending on time of day and number of travel lanes



The Embarcadero

Scott Street Bike Box and Left Turn Lane



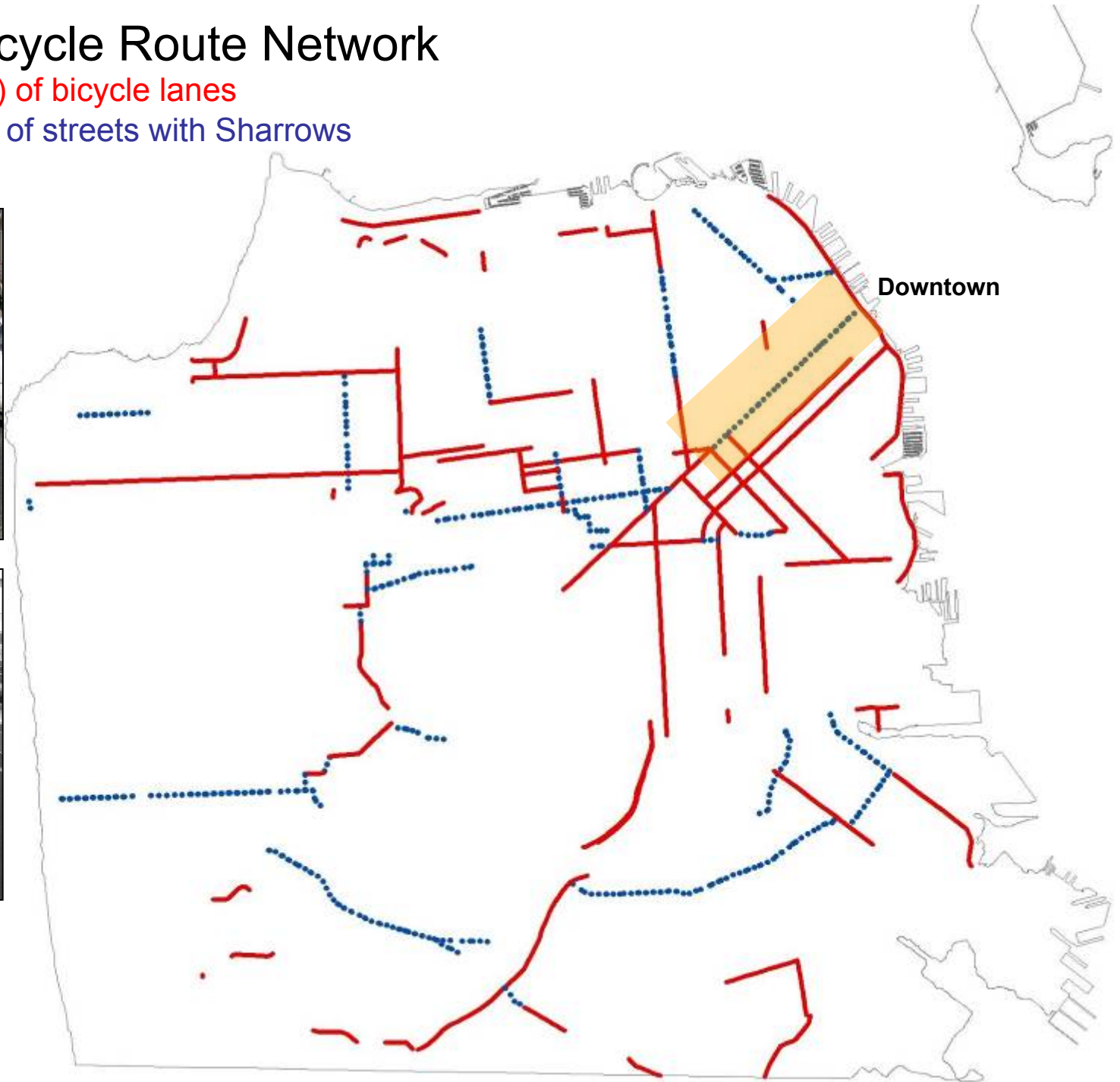
Other Bike Boxes: Market St and 14th/Folsom St

Other Left Turn Lanes: Howard St, 7th St, 16th St, Laguna Honda Blvd

Existing Bicycle Route Network

45 miles (72 km) of bicycle lanes

23 miles (37km) of streets with Sharrows



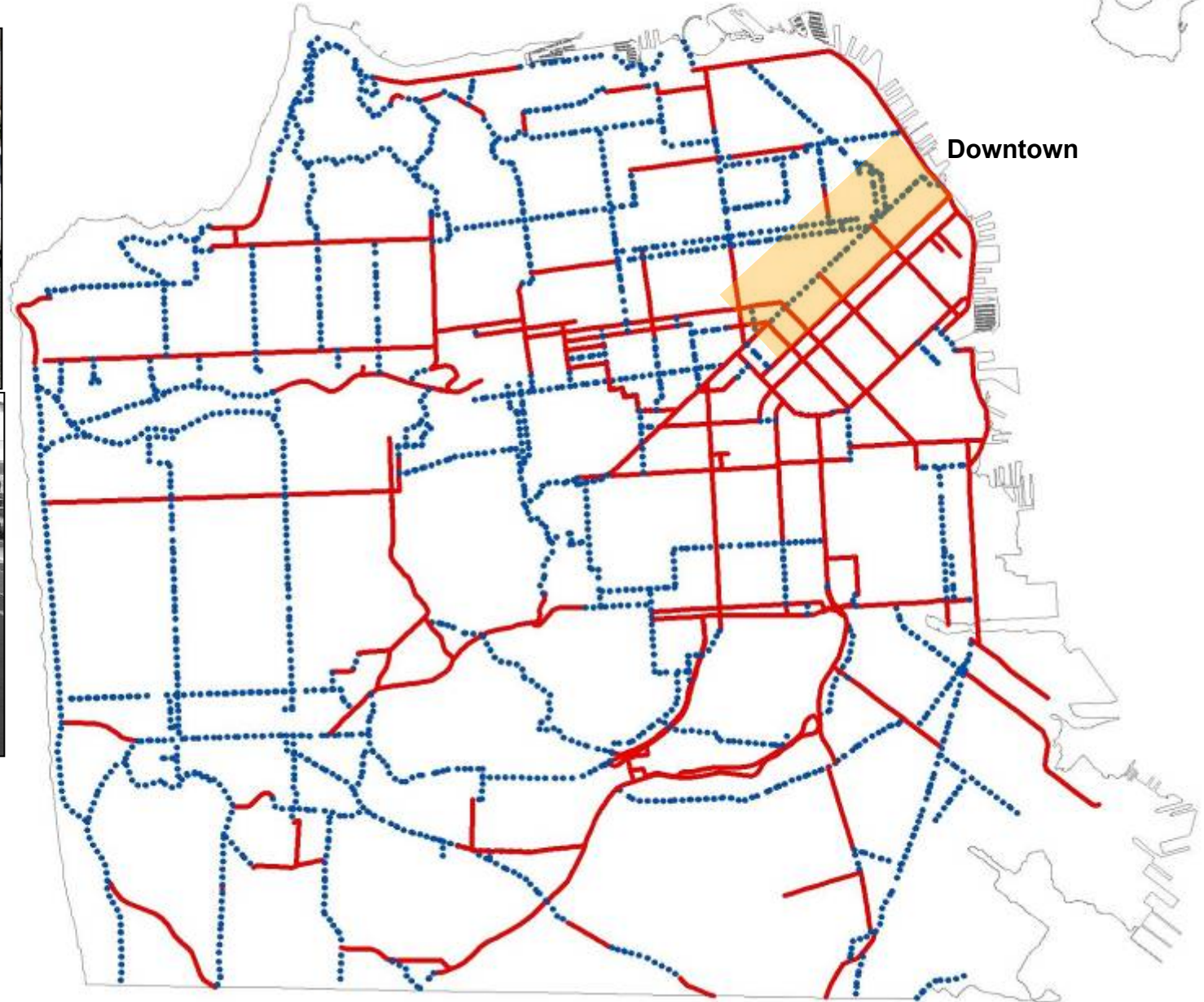
0 0.25 0.5 1 Miles

Data Source: SFMTA
January 28, 2008

Near-Term Projects

Increase to 79 miles (126 km) of bike lanes

Proposed increase to 98 miles (157 km) of streets with Sharrows



0 0.25 0.5 1 Miles

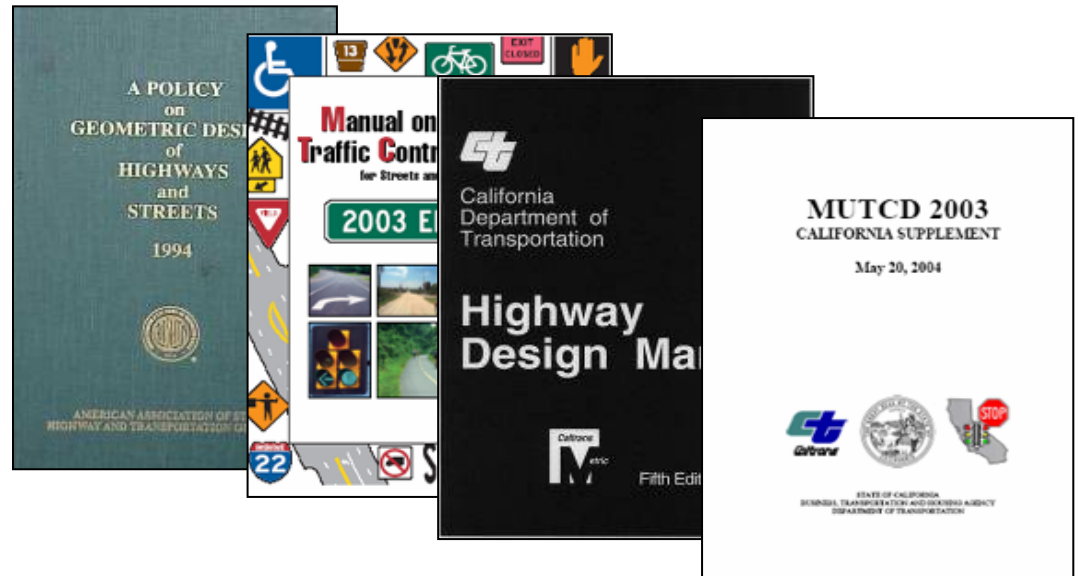
Data Source: SFMTA
January 28, 2008

San Francisco designated a Gold Level Bike Friendly Community by League of American Bicyclists in 2006

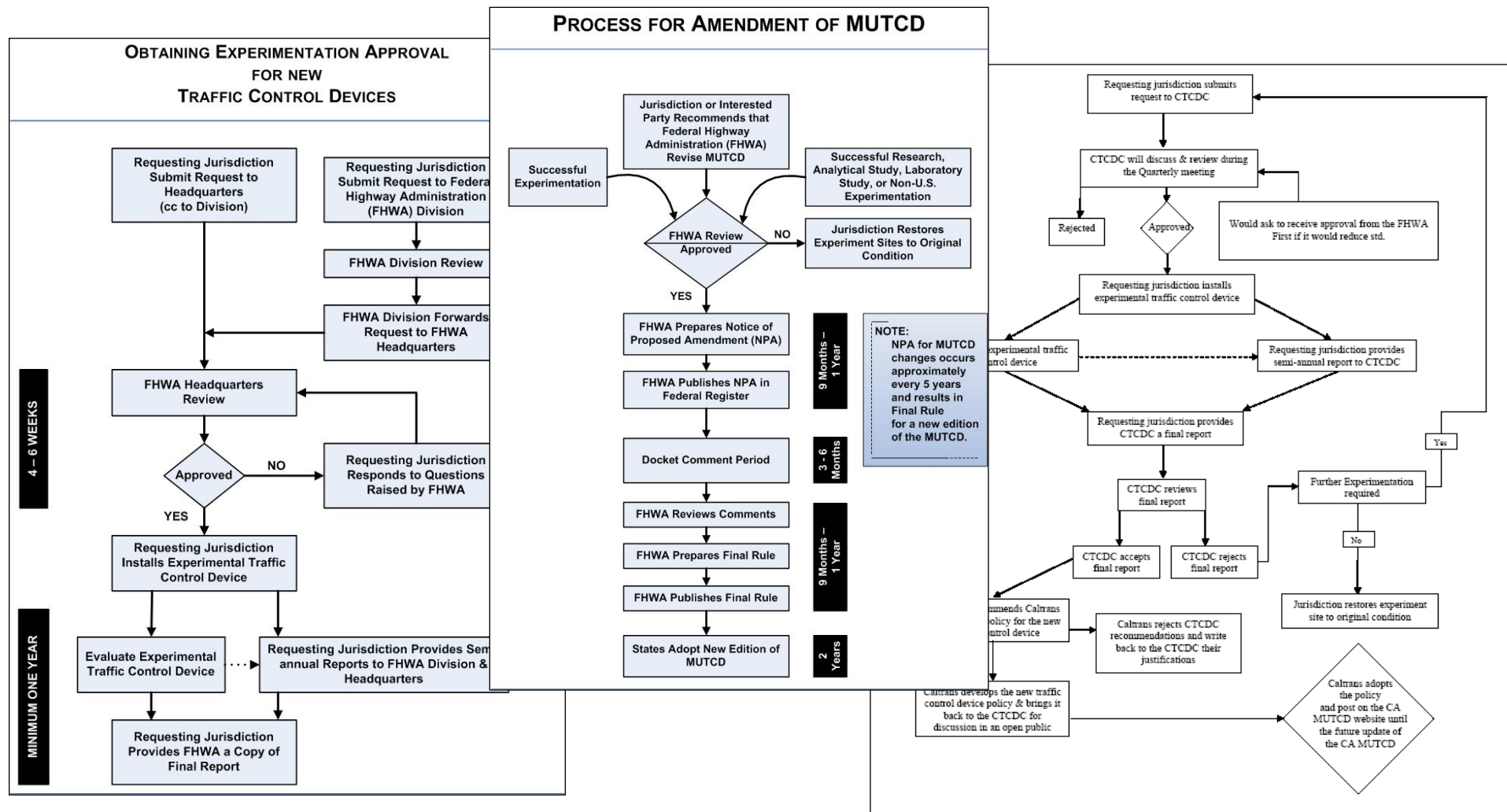


Challenges with Innovating

- Existing road-design standards & guidelines are restrictive by nature
- Plus other challenges:
 - Cumbersome approval process
 - Liability
 - Funding



Traditional Processes for Effecting Change in Standards/Guidelines



New in the 2009 MUTCD



NACTO:

National Association of City Transportation Officials

- **Sharing data and best practices**
- **Communicating between cities and with Federal government**
- **Advocating change in transportation laws, regulations, and financing to enable large cities to better provide the integrated transportation services envisioned by Federal transportation law**



Some NACTO efforts

- **“Cities for Cycling”**

Atlanta

Boston

Baltimore

Chicago

Detroit

Houston

Los Angeles

Minneapolis

New York

Philadelphia

Phoenix

Portland

San Francisco

Seattle

Washington, DC



- **Urban Bikeways Design Guide:
alternative to MUTCD/AASHTO
standards**

Urban Bikeway Design Guide

- ‘Conventional’ bike lanes
- Colored bike lanes
- Buffered bike lanes
- Contra-flow bike lane
- Bike boxes
- Two-stage turn queue boxes
- Intersection crossing markings
- Bike signals
- Bike route signage
- Cycle tracks



Attracting a Different Type of Rider

“Riding a bicycle should not require bravery”

– Roger Geller, Portland Office of Transportation



Source: Portland Office of Transportation - Survey on public attitudes towards cycling

State of Cycling Report identified top 3 barriers to more cycling



- Need for more bike lanes
- Fear of cars
- Fear of crossing major streets

**Bicycle Traffic
Signal at Fell/
Masonic**

Colored Bicycle Facilities

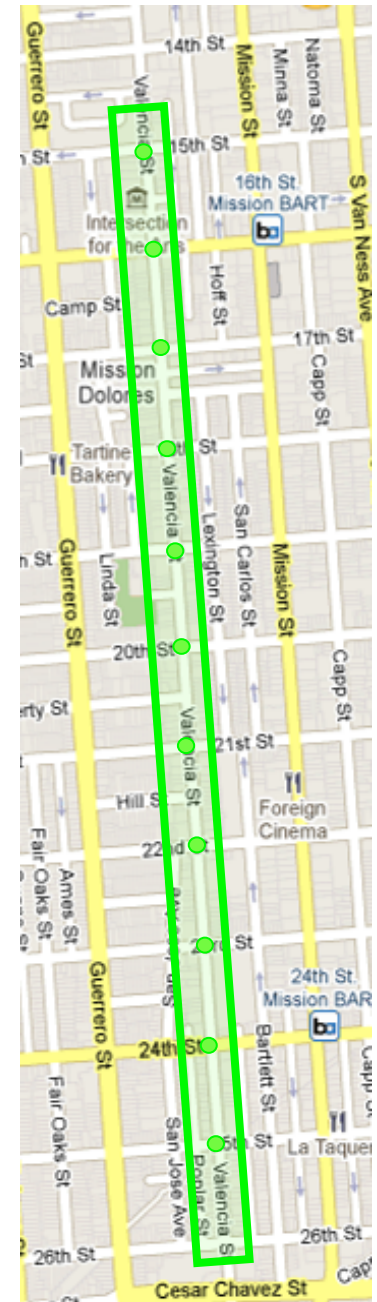


- Higher Visibility
- Marketing/Branding
- However, cost is 5x to 10x cost of regular bike lane/marking



Valencia Green Wave

- Signals timing set to 13 mph progression at 11 intersections
- One of SF's highest-use bicycle corridors (700 cyclists during 1.5 hour count – up from 220)
- Parallel corridors ideal for transit (Mission) and automobile traffic (Guerrero)
- SF's complex grid and topography limit where green waves can be implemented



Pavement to Parks - “Parklets”

Car parking spaces converted to ped/bike uses



A result of improved inter-agency coordination

On-Street Bike Parking/Corrals



**1 car space
=
10 to 12
bike
spaces**

Space is a Limited Resource



Wider Bike Lanes

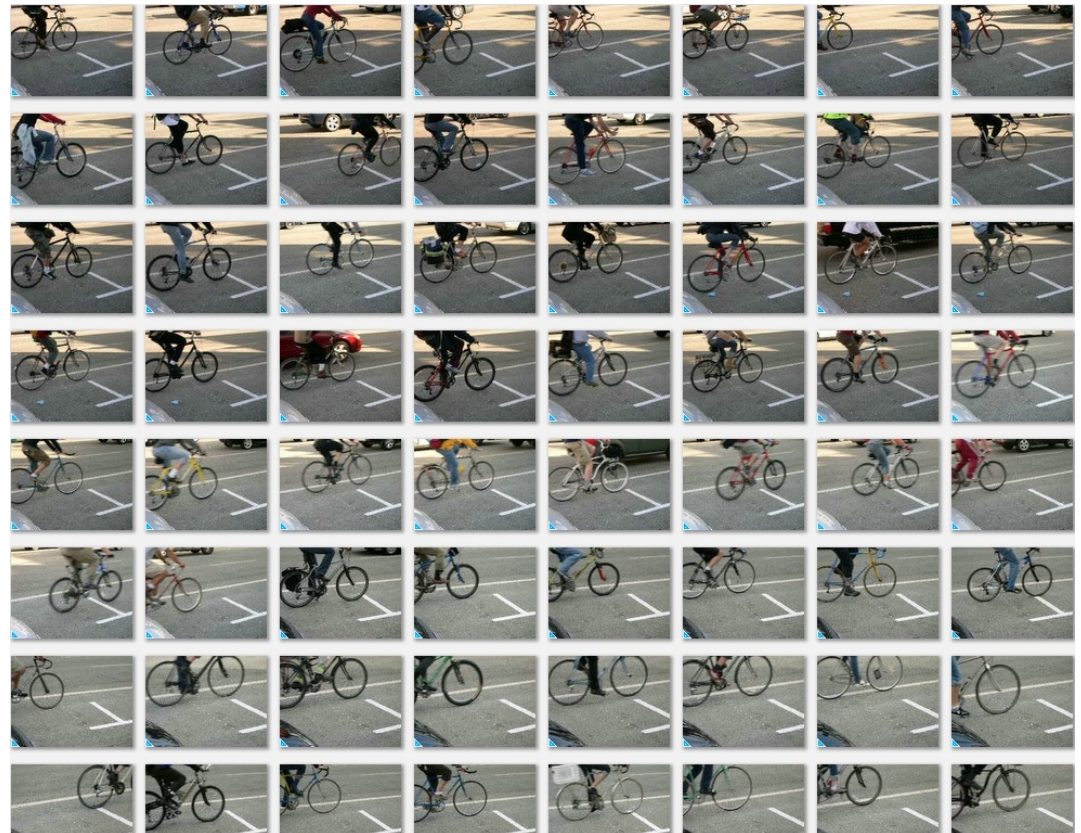


Buffered Bike Lane
Alemany Boulevard



Wider Bike + Parking Lane
Scott Street

Dooring Treatments and Intersection Designs



Cycle Tracks



Separated Bikeways/Cycletracks in SF

Alemany Boulevard



Division Street



Laguna Honda Boulevard



Market Street



Separated bikeway, diversion of traffic, color

JFK Drive

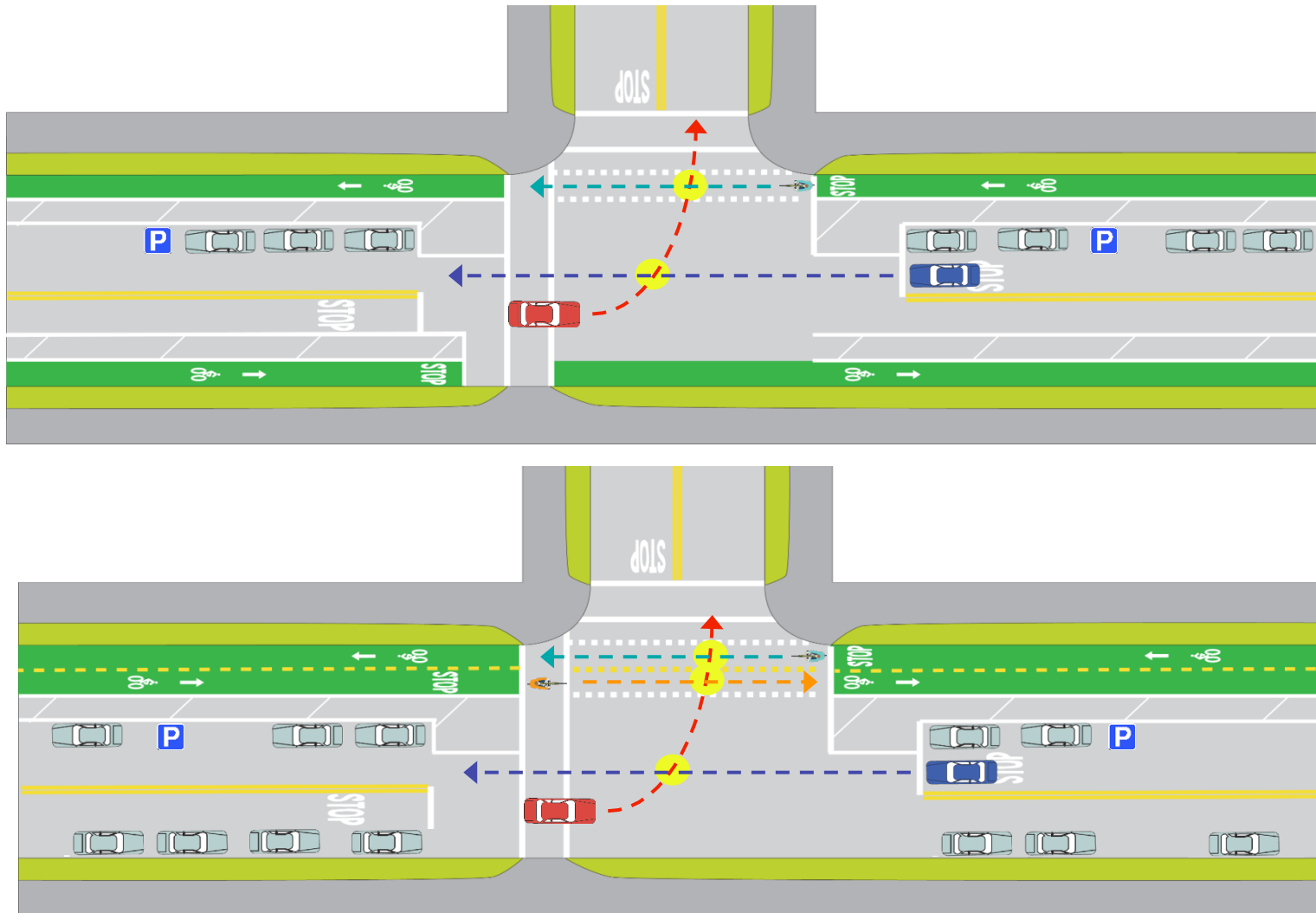
(draft proposals)



Cycle Tracks

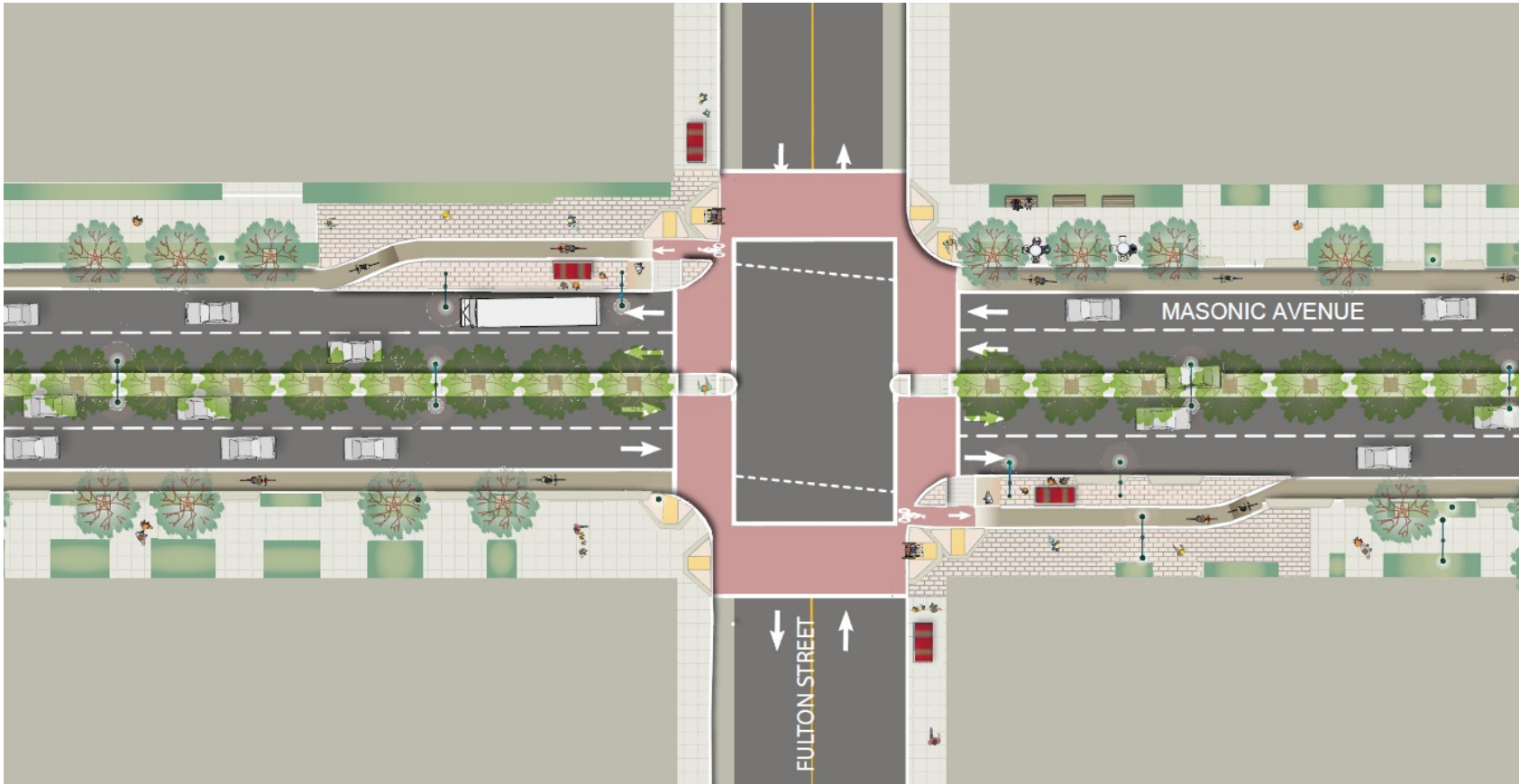
- **On-street exclusive bike facility physically separated from motor traffic**
- Cyclists physically separated from moving vehicles, midblock (+)
- Buffer between bikeway and parking reduces risk of “dooring” (+)
- Vehicles do not have to cross bikeway to park (+)
- Reduced motorists blocking of bike space (+)
- More complex intersections (-)
- Reduced visibility of cyclists for motorists turning into driveways (-)
- Pedestrians must cross cycle track to get to parked vehicles (-)
- Cost (-)
- Maintenance (-)

Intersection Design Challenges



Masonic Avenue

Complete Street and Raised Cycletracks

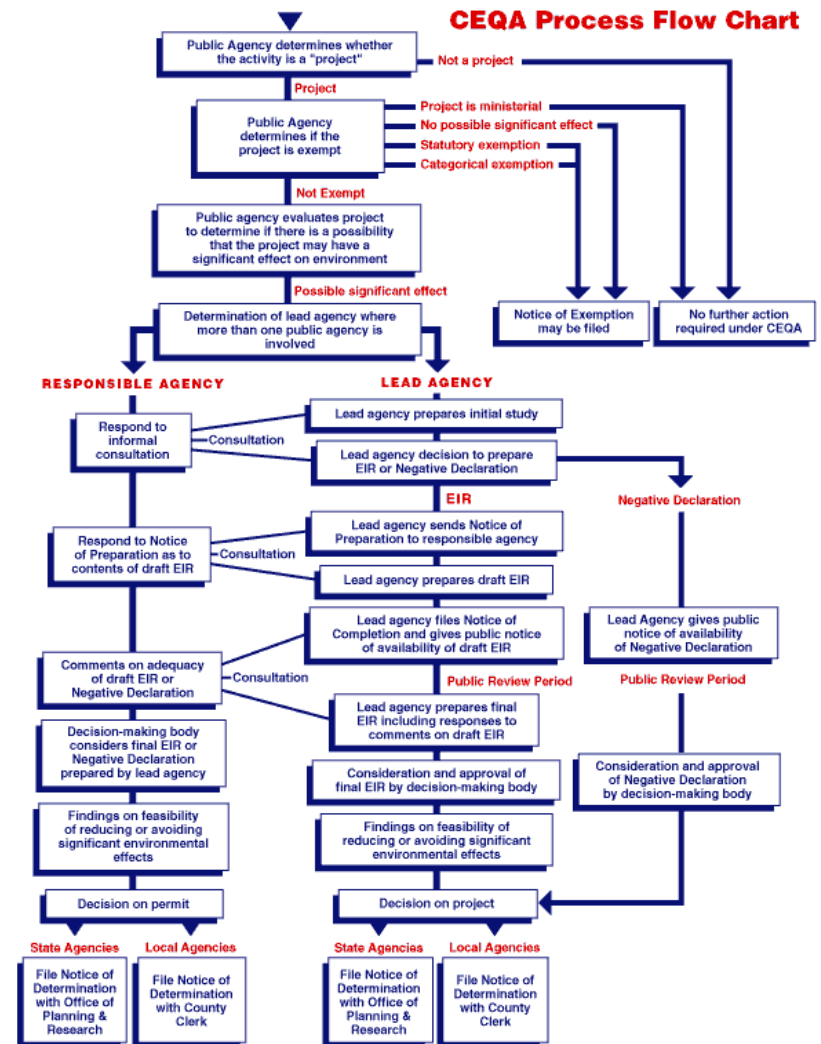


Key Challenge: Cost
\$20 Million to Construct

Challenges: State Environmental Review

California Environmental Quality Act (CEQA):

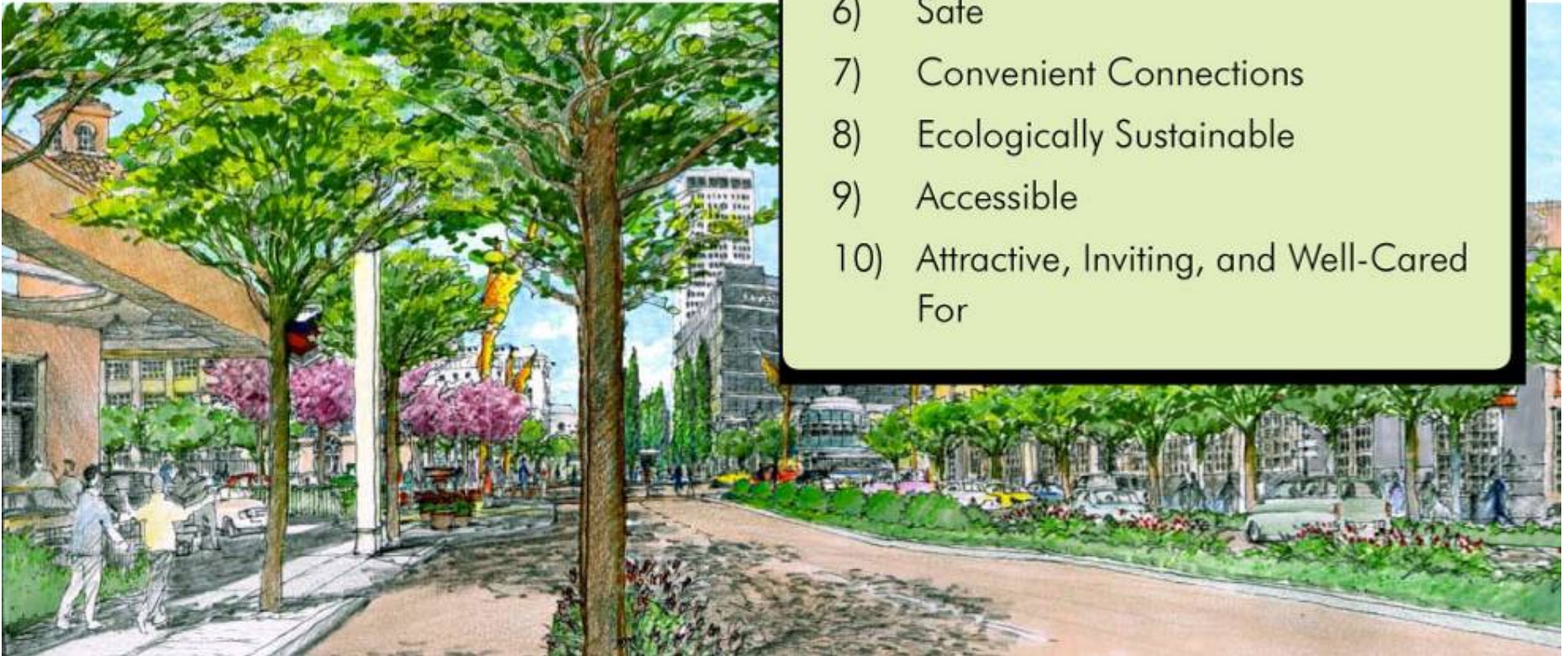
requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.



Streets that are:

- “Complete”
- “Better”
- “Great”

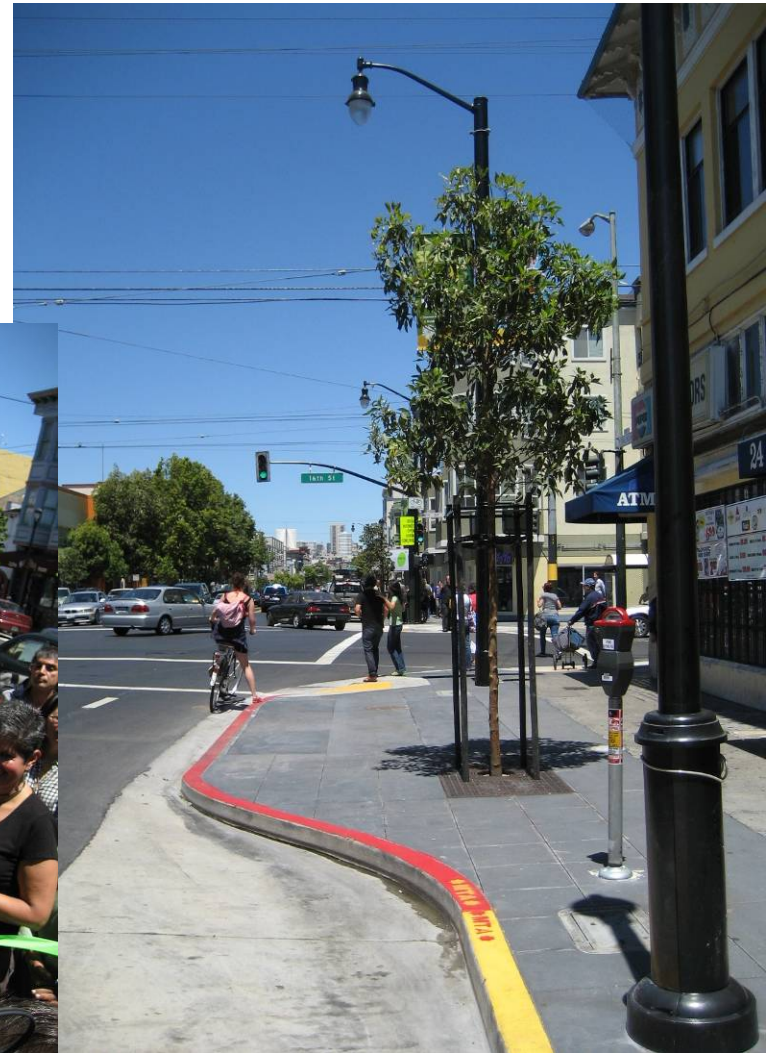
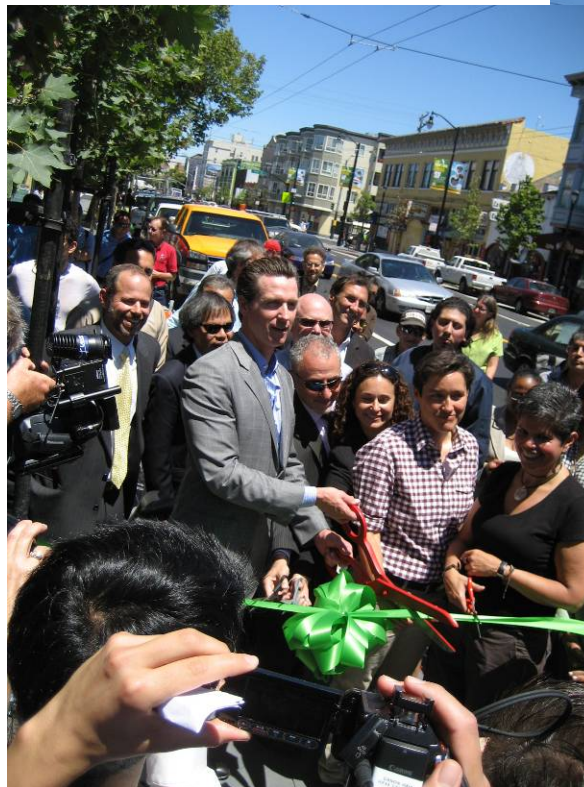
- 1) Memorable
- 2) Supports Diverse Public Life
- 3) Vibrant Places for Commerce
- 4) Promotes Human Use and Comfort
- 5) Promotes Healthy Lifestyles
- 6) Safe
- 7) Convenient Connections
- 8) Ecologically Sustainable
- 9) Accessible
- 10) Attractive, Inviting, and Well-Cared For



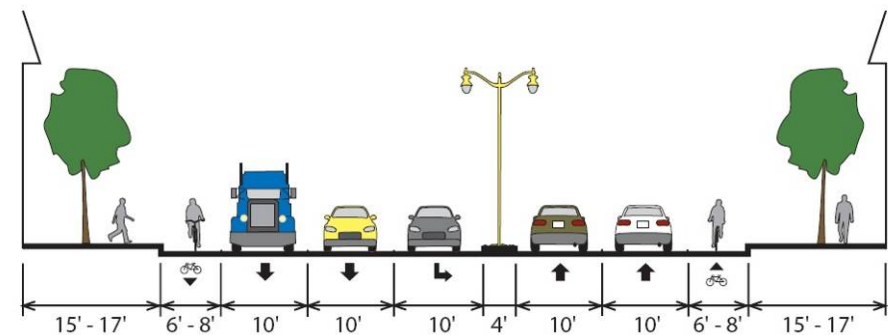
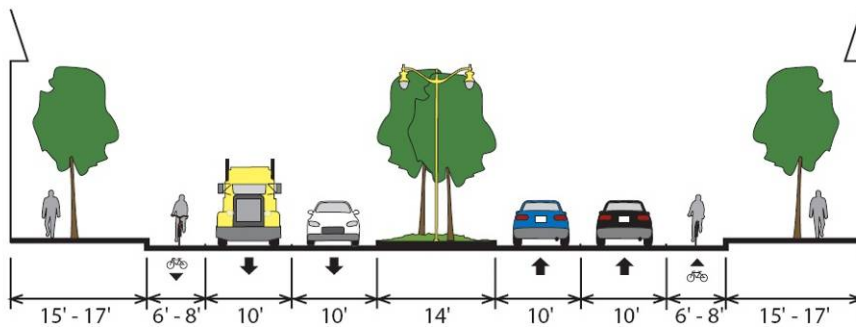
Valencia Street 2010

•Streetscape Project:

- Widened sidewalks
- Bulb outs
- Widened bike lanes
- Street trees
- Decorative lighting
- Public art
- On-street bike parking
- Truck loading zones
- Bi-directional 13 mph
- “Green wave” for safer
steadier traffic speeds

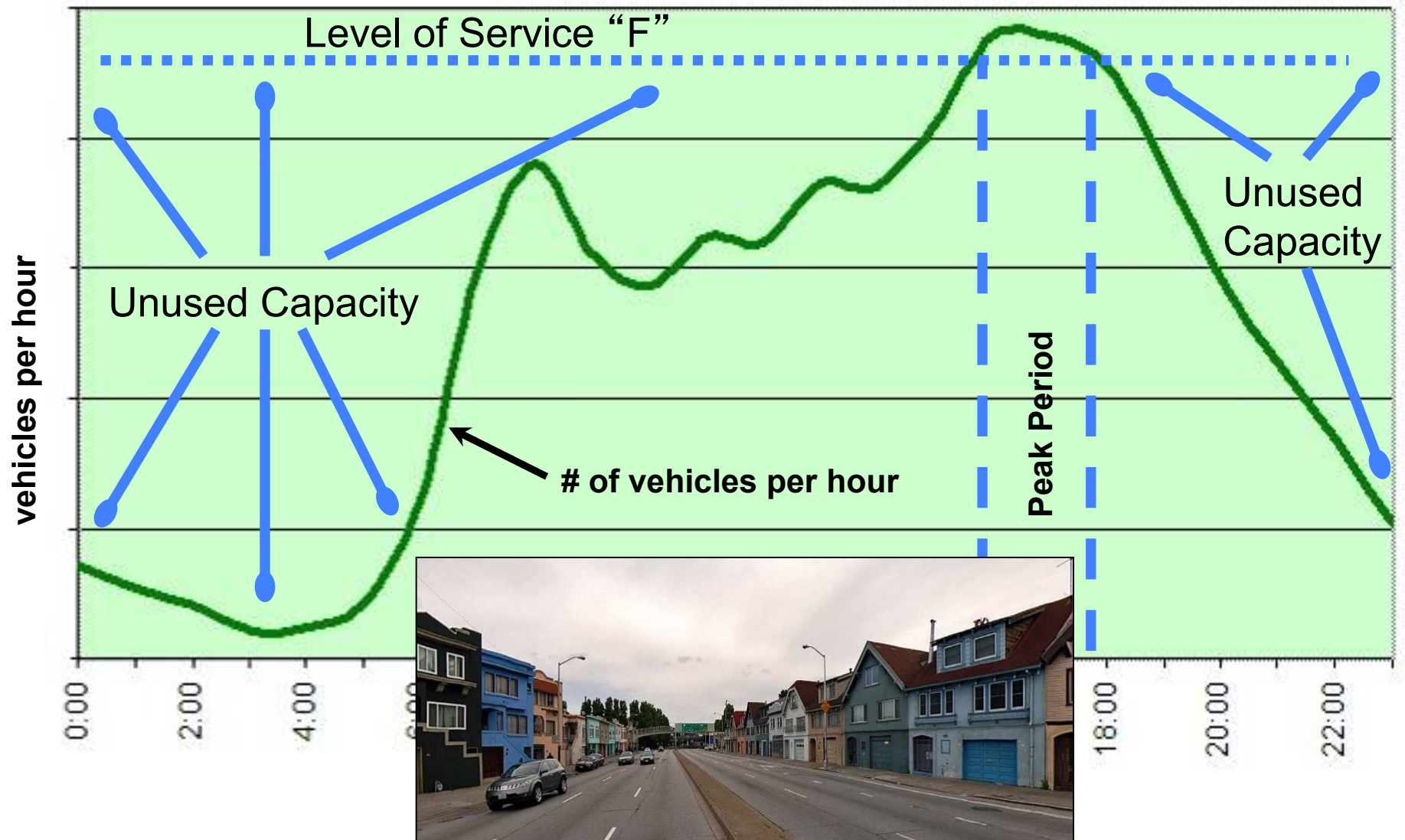


Road Diets – Complete Streets



50,000+veh/day – LOS F accepted

Designing for Peak Motor Vehicle Flow



Bicycle Boulevards/ Neighborhood Greenways



- Combination of Traffic Calming Elements
- For Shared Bicycle Routes and Neighborhood Greenways
- Slower Traffic = More Comfort/Safety for Cycling and Walking

Lower Speed Limits and Prevailing Speeds

**Bike Routes, Home Zones, School Zones, Neighborhood
Arterials**



Recently done or underway:

**Masonic Avenue
Folsom Street
Howard Street
King Street
The Embarcadero
John Muir Drive
Broadway Tunnel**



Bicycle Sharing

Spring 2012

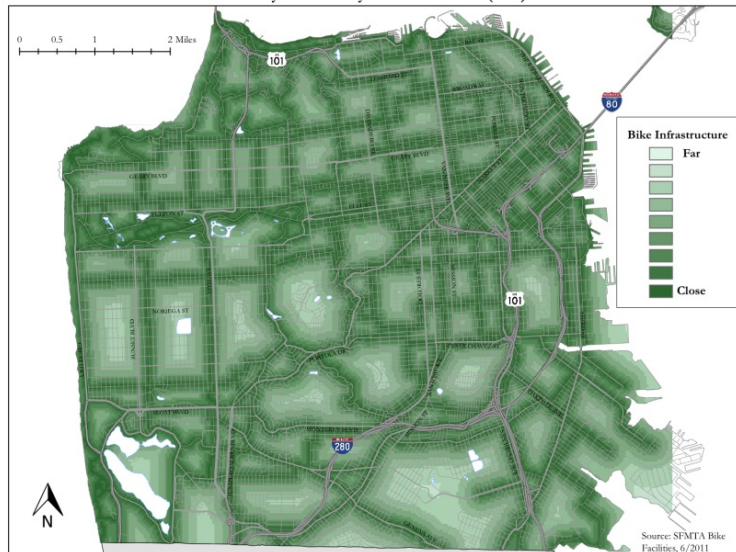


Increased Use of GIS/Mapping

Suitability Factor: Slope

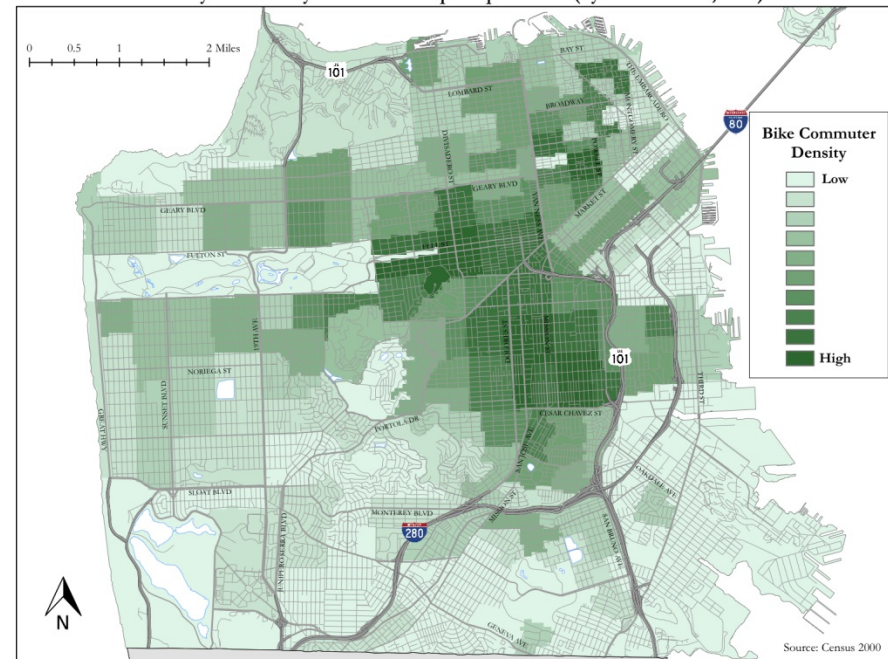


Suitability Factor: Bicycle Infrastructure (2011)



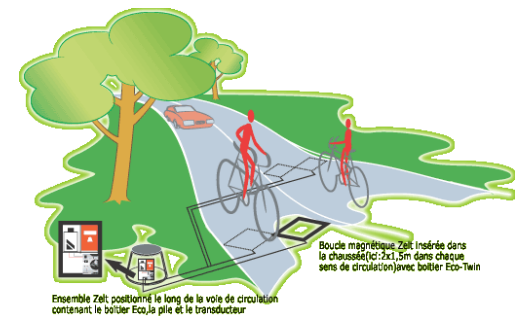
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Suitability Factor: Bicycle Commuters per Square Mile (by Census Tract, 2000)

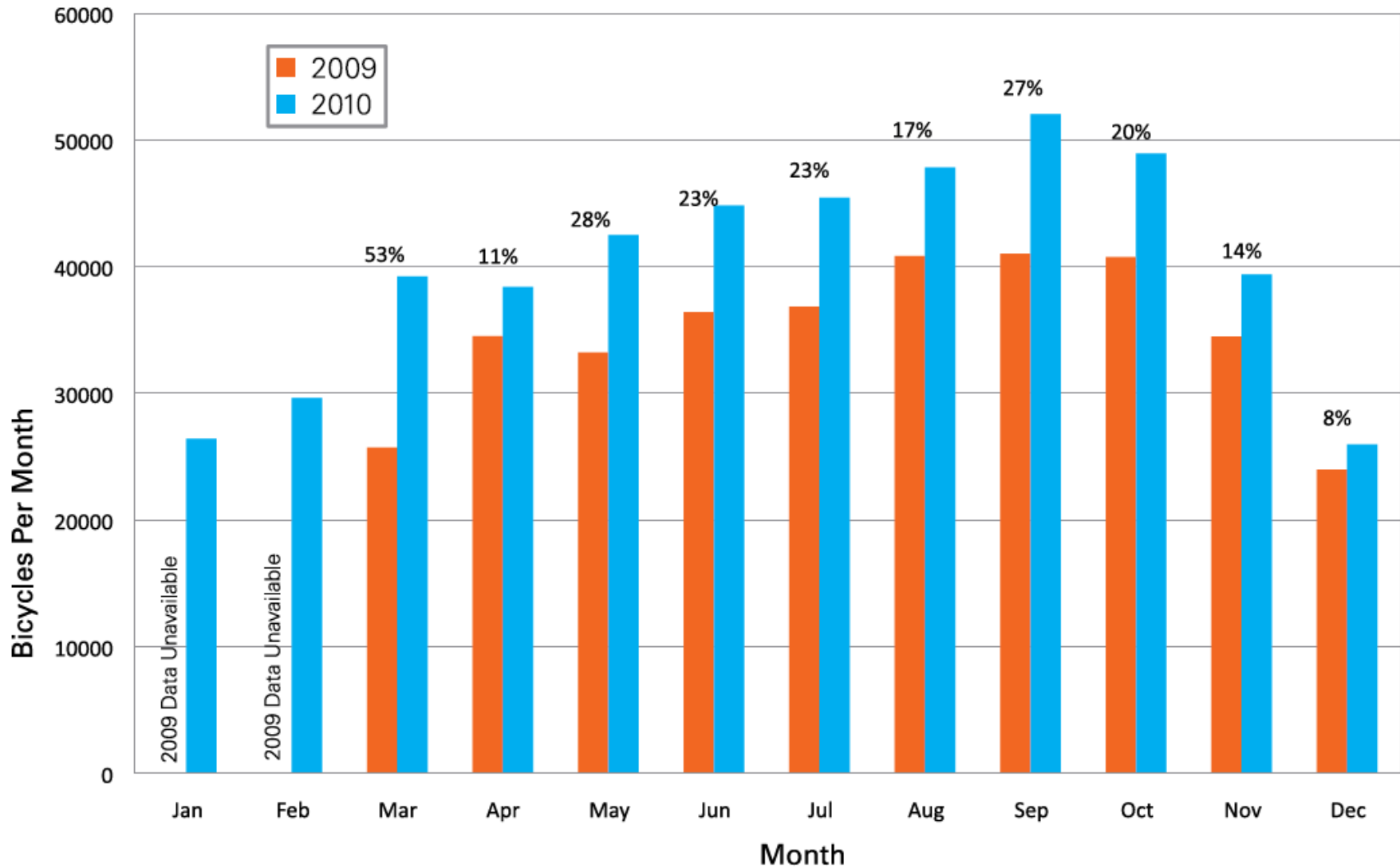


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Automatic Bike Counters



Automated Bike Counters



Sunday Streets

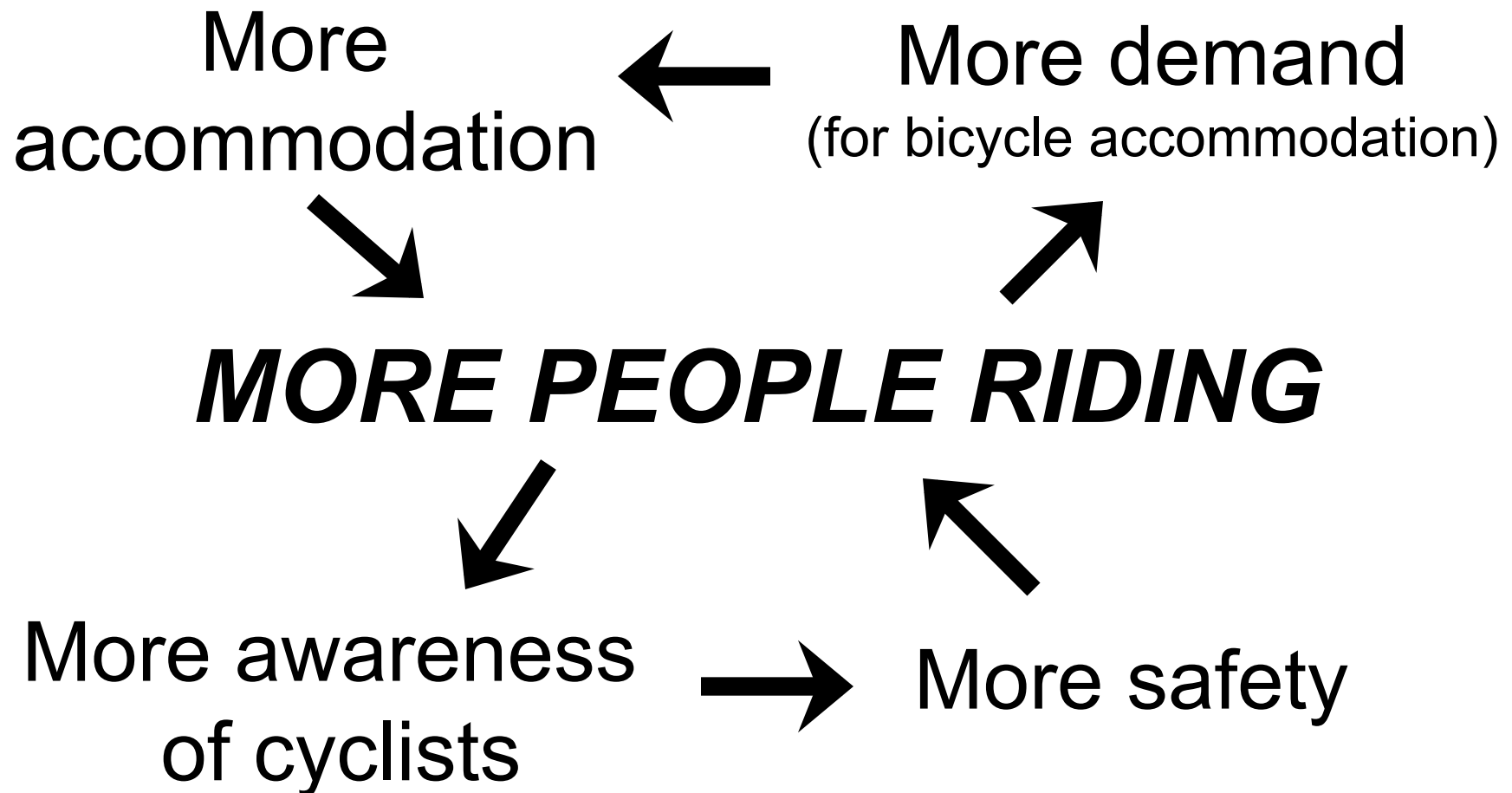


Unique Street Network for a Unique City



Key Goal

Positive Feedback Loop



Thank you!



Q/A...