

Implementation & Equity 201:

The Path Forward to Complete Streets

Innovation in Complete Streets Infrastructure

Webinar begins at 4:00PM EDT



Smart Growth America
Improving lives by improving communities



National Complete
Streets Coalition

Innovation in Complete Streets Infrastructure

September 27, 2018



Smart Growth America
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Streets Coalition



Seattle Department of Transportation



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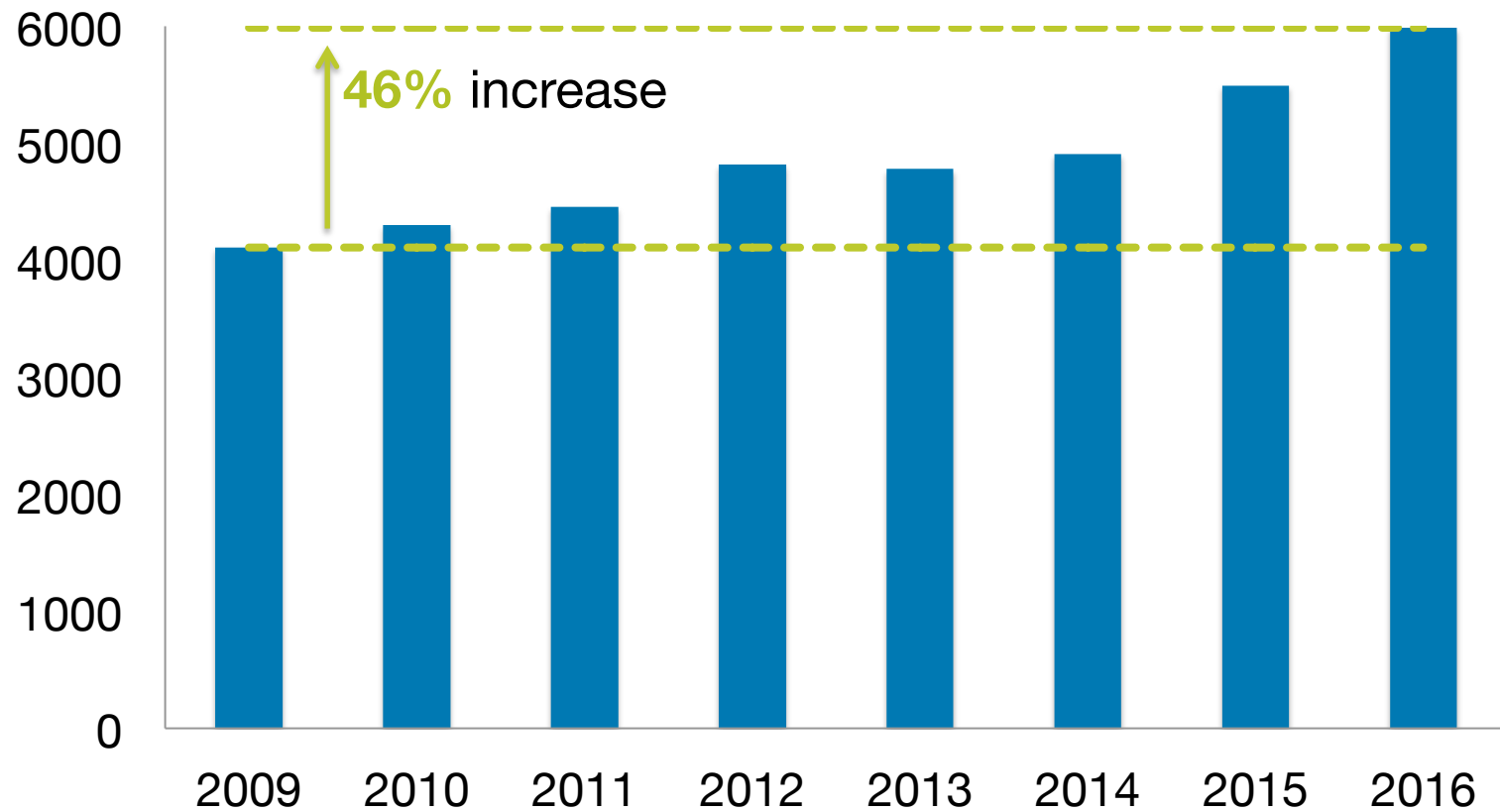


Emiko Atherton

Director

@CompleteStreets

Number of people killed while walking



Data source: FARS



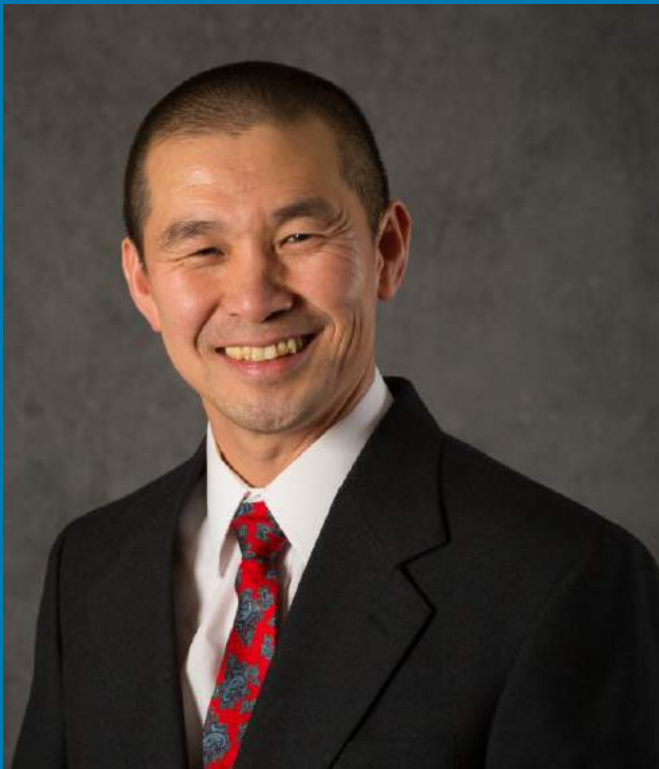
Smart Growth America
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National Complete
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Donate today to support *Dangerous by Design 2018*





Dongho Chang

City Traffic Engineer

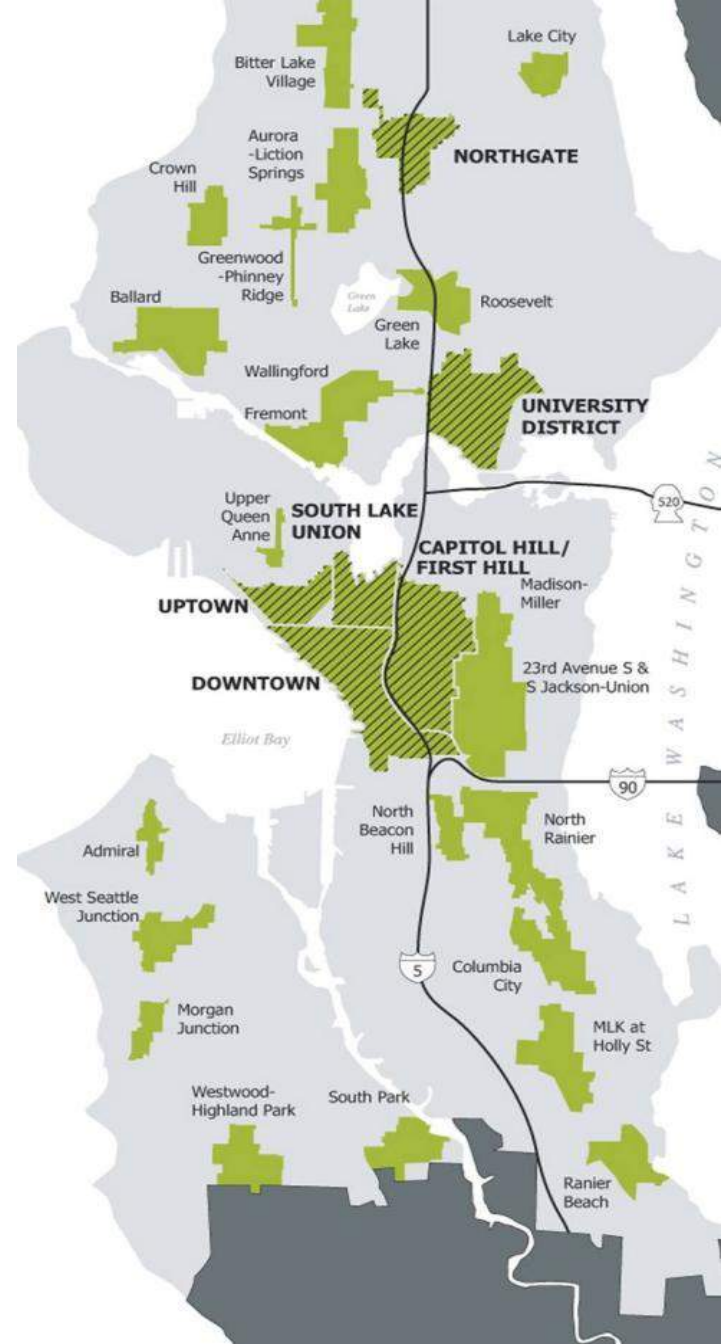
@dongho_chang

Moving Communities Forward



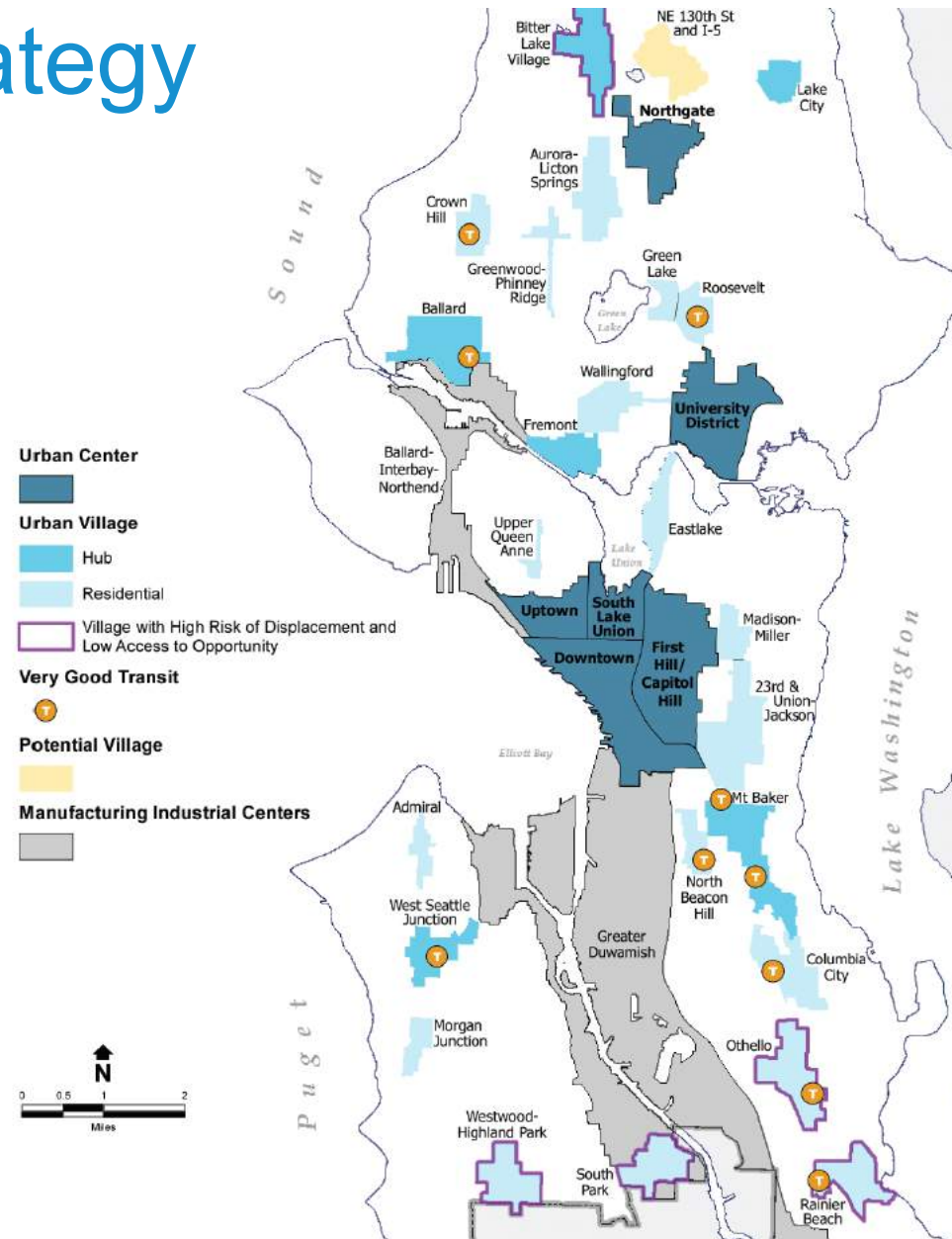
Seattle Background

- **26% of Seattle land area** is in public street right-of-way
- **97.5% of Seattle's population** lives within $\frac{1}{4}$ mile of a transit stop
- Ranks 6th of the 50 largest cities for walkability
- Ranks typically in the top 10 in bicycle commute rates for large US cities
- **Typical arterial roadway width** is 60-66'

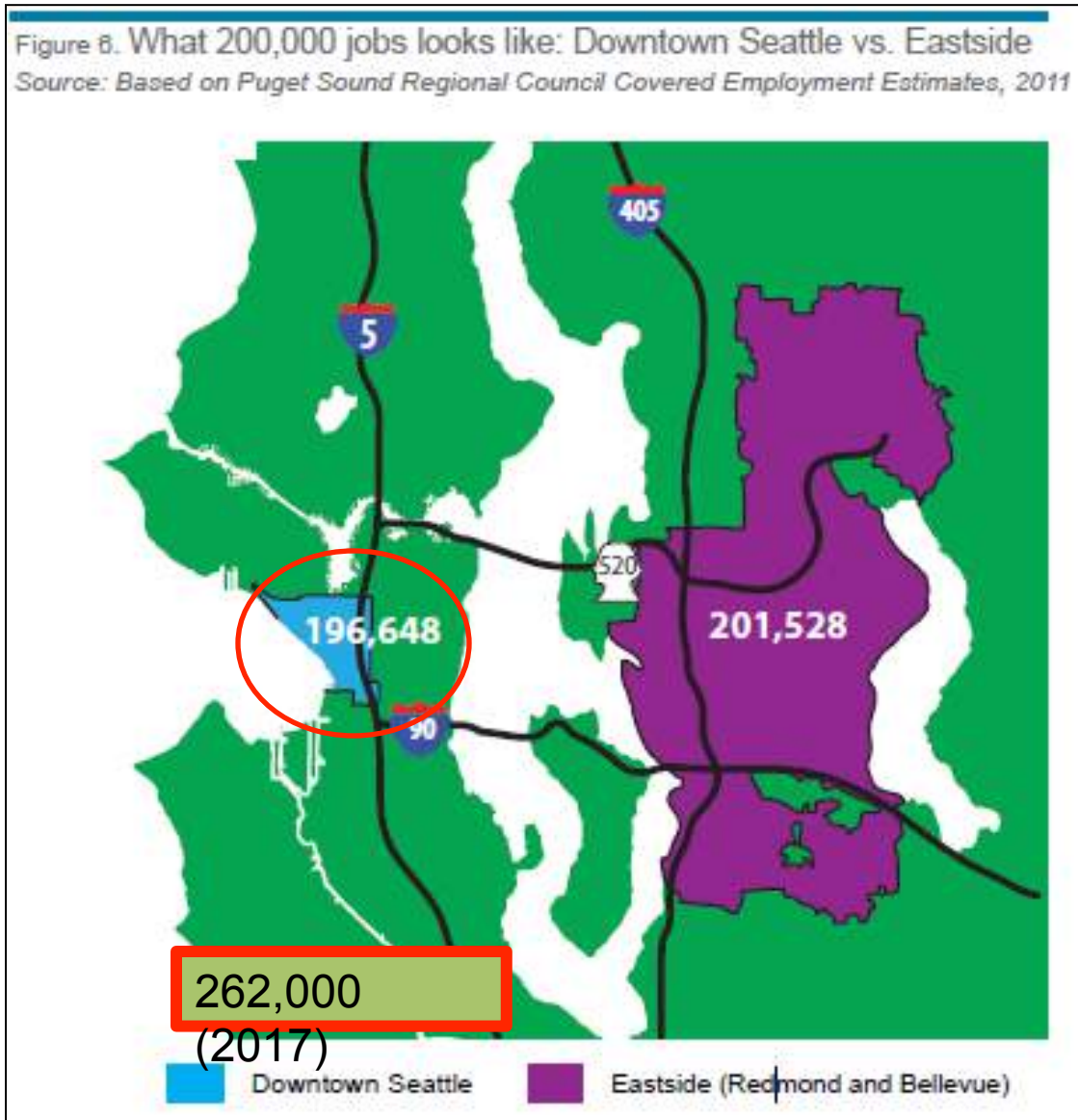


Seattle's Growth Strategy

- Focus growth to more efficiently serve it
 - Urban centers Manufacturing & industrial centers
 - Urban villages
- 80% of city growth in centers/villages since 1994
- Future Comprehensive Plan growth targets 2016-2035
 - 70,000 additional housing units
 - 115,000 additional jobs

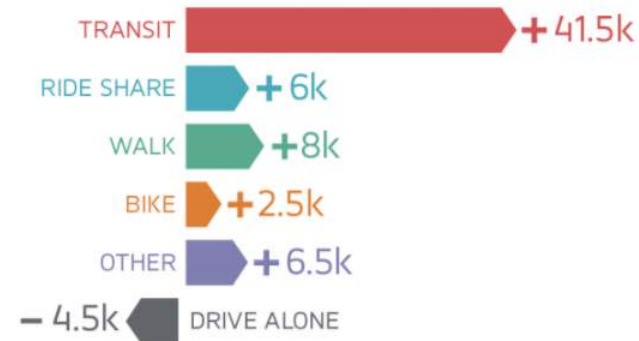


Employment Density

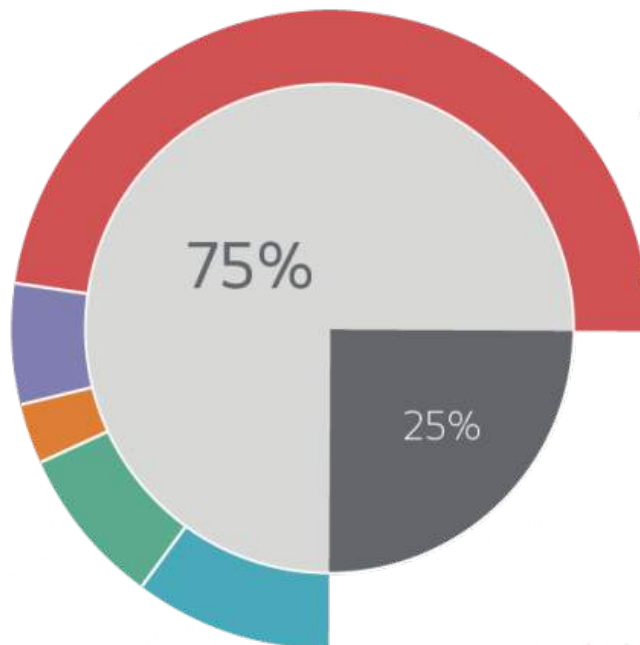
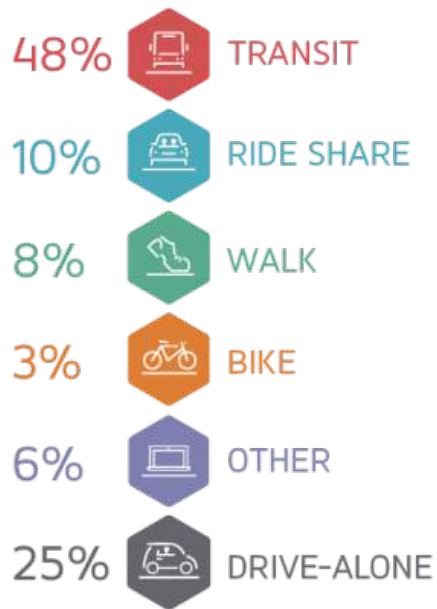


Seattle Transit Utilization

- Since 2010-2017 Downtown added 60,000 new jobs
- -4,500 drop in solo car trips
- 262,000 daily commuters in 2017 – 25.4% drove alone



How Commuters Got Downtown in 2017



Commuters surveyed arrived to work 6-9am

TRANSIT: Includes bus, rail, and walk-on ferry passengers.

RIDESHARE: Includes carpool and vanpool.

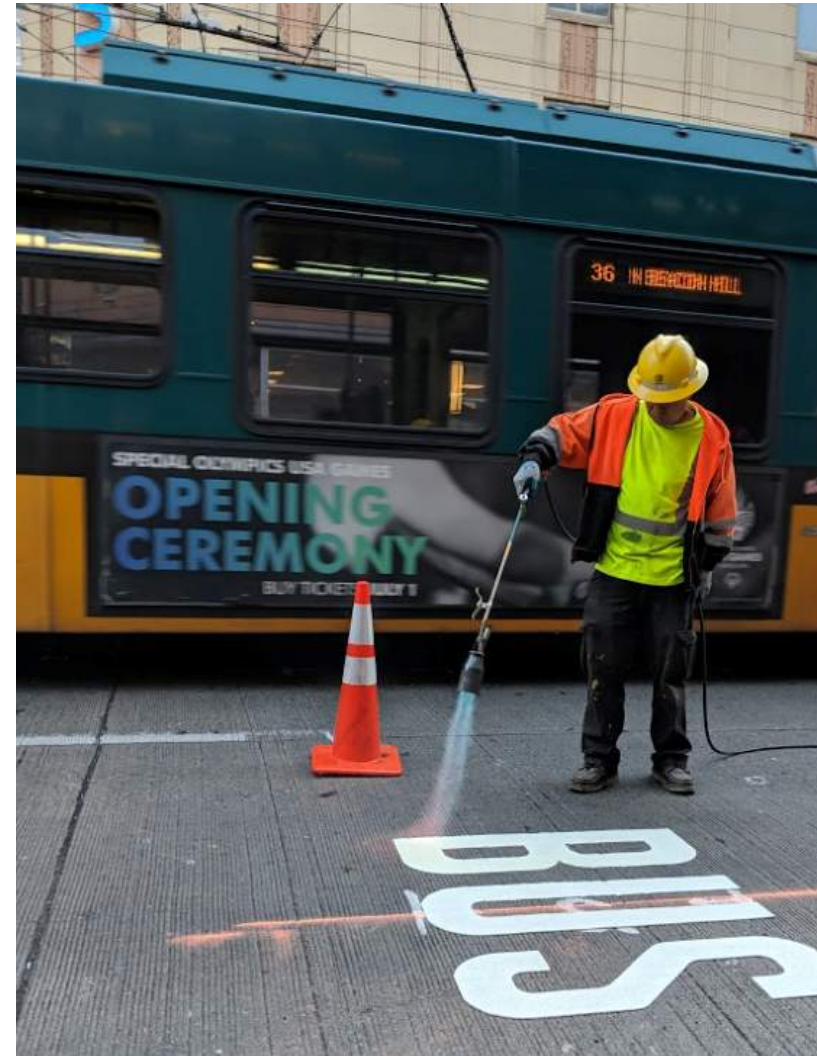
OTHER: Includes telecommute, compressed work week, and other as noted by survey participants.



commute seattle

Small Changes Matter

- Keeping Buses Moving
 - Dedicated Bus Signals
 - Bus Only Lanes
- Rider Access and Safety Improvements
 - Real Time Information Signs
 - Expanded rider waiting areas
 - Upgrades to shelters and lighting



Seattle's 3rd Avenue

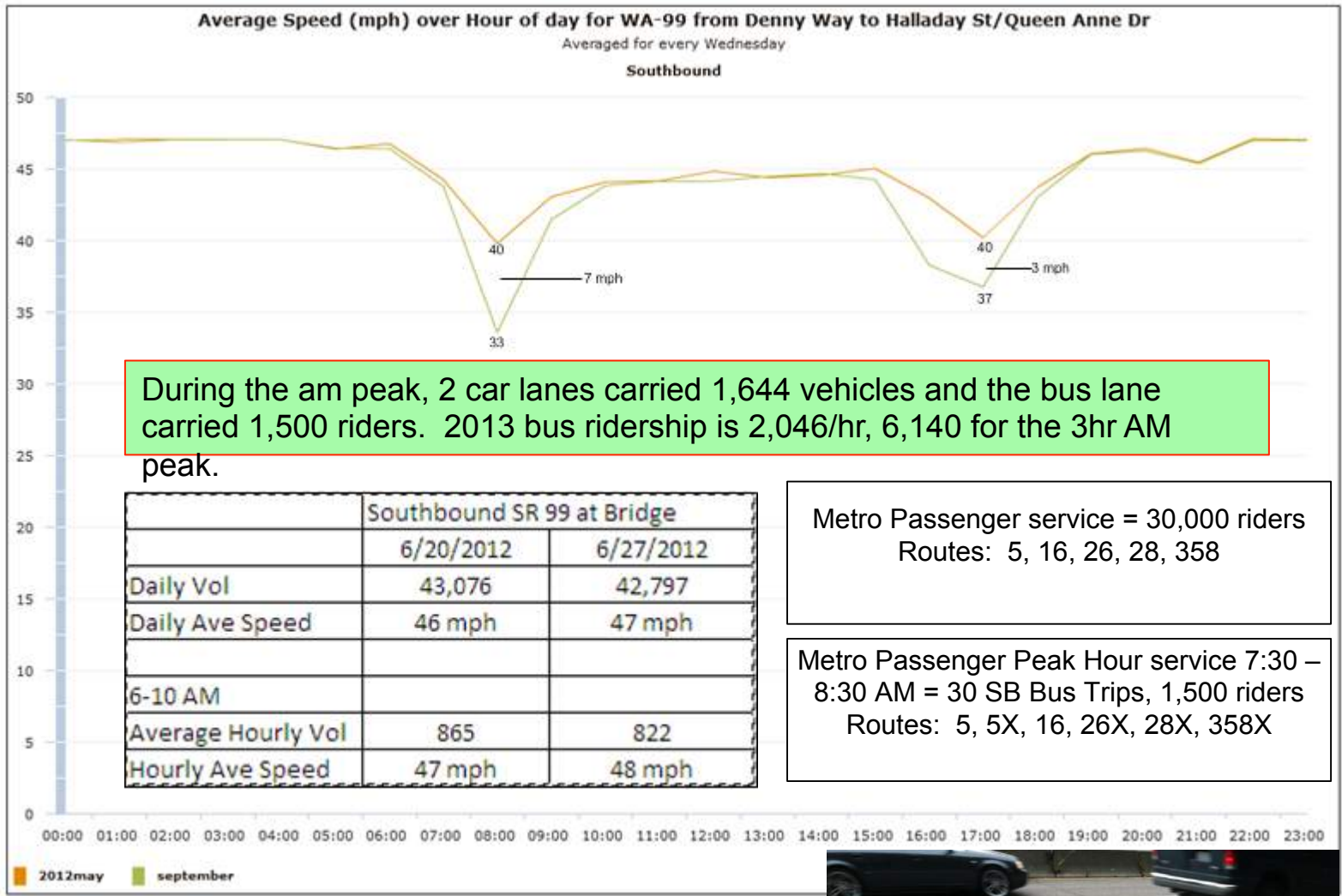
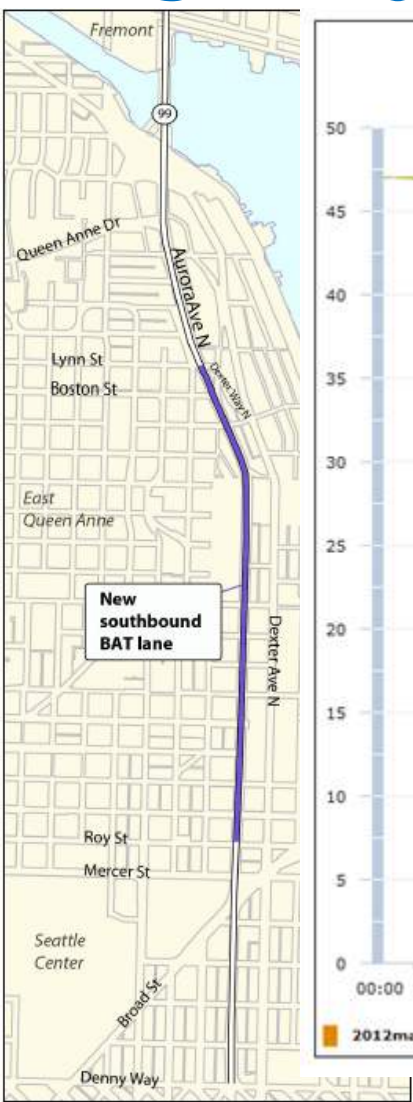


- Bus priority began in 2005, expanded hours in 8/20/2018
- Total weekday ridership on bus routes serving 3rd Avenue = 189,000
- Total daily boardings for stops on 3rd Avenue = 50,800
- Number of routes serving 3rd Avenue = 46
- Weekday daily bus trips = 4,781 (James to Cedar St)
- Peak hour bus trips 5-9, 3-7 = 2,187
- Approx. 274 bus per hour

Aurora Bus Only Lane 6/25/2012



SB Aurora Bus Only Lane 6/25/2012



During the am peak, 2 car lanes carried 1,644 vehicles and the bus lane carried 1,500 riders. 2013 bus ridership is 2,046/hr, 6,140 for the 3hr AM peak.

	Southbound SR 99 at Bridge	
	6/20/2012	6/27/2012
Daily Vol	43,076	42,797
Daily Ave Speed	46 mph	47 mph
6-10 AM		
Average Hourly Vol	865	822
Hourly Ave Speed	47 mph	48 mph

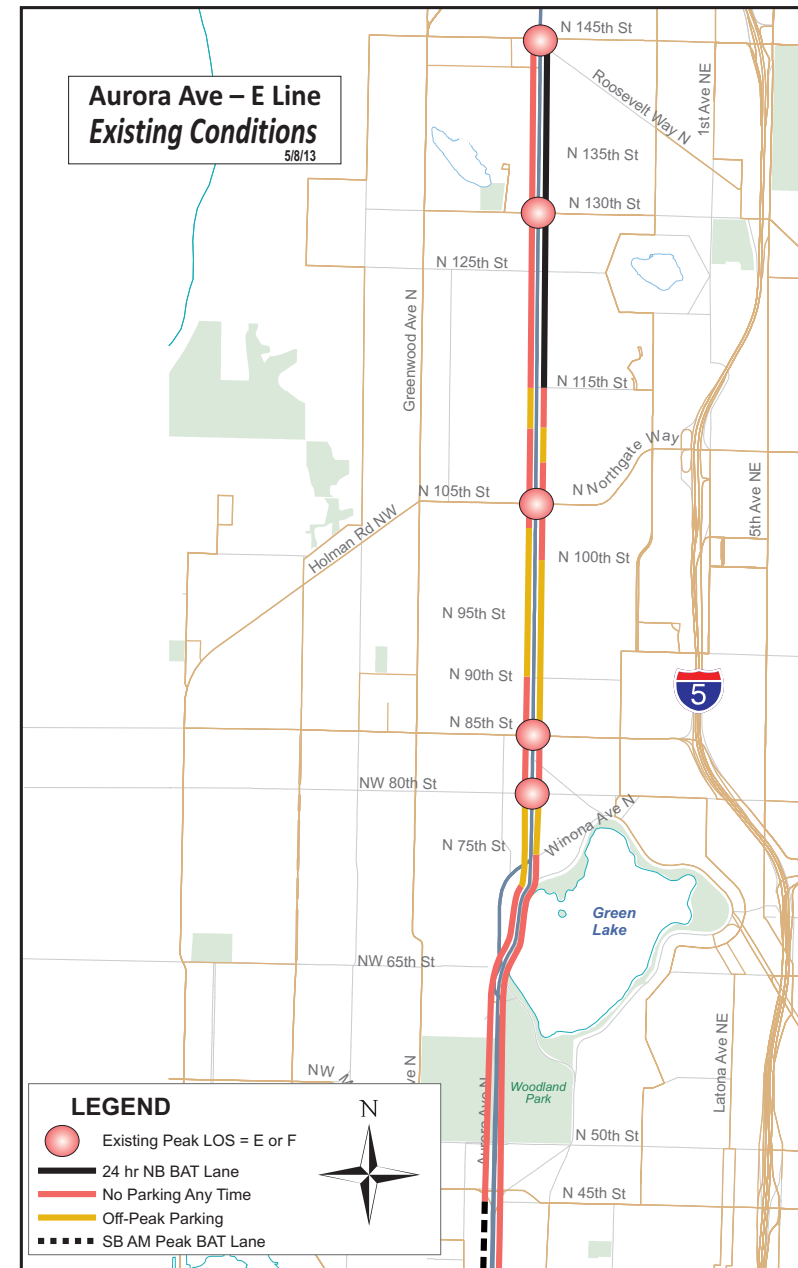
Metro Passenger service = 30,000 riders
 Routes: 5, 16, 26, 28, 358

Metro Passenger Peak Hour service 7:30 – 8:30 AM = 30 SB Bus Trips, 1,500 riders
 Routes: 5, 5X, 16, 26X, 28X, 358X



Rapid Ride E Line –Feb. 2014

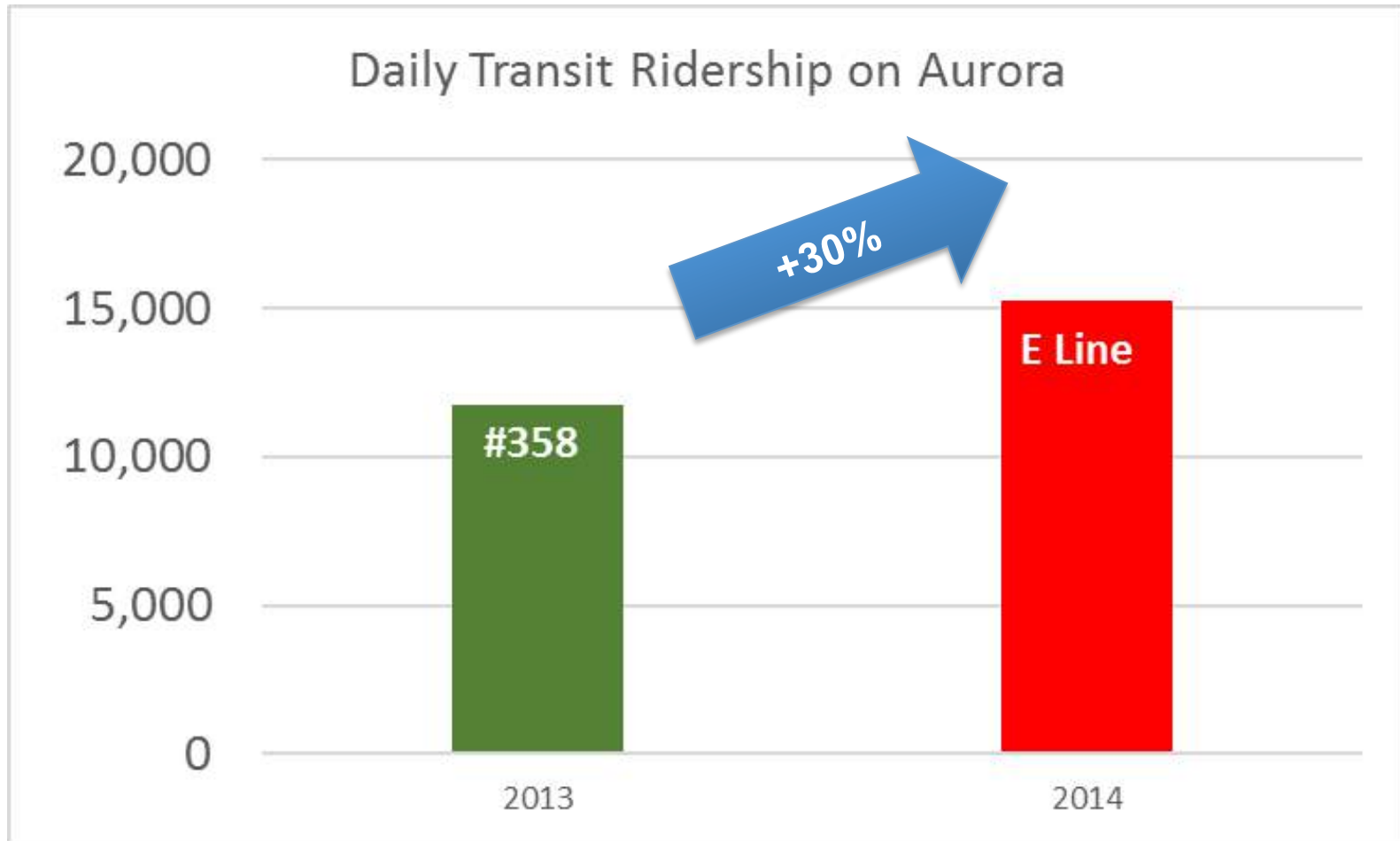
- About 14 miles
- 3 Lanes Peak Direction
- 12,000 daily transit trips #358 – 10-20m frequency
- Existing BAT Lanes: NB north of 115th; SB south of 50th to 38th
- State Highway 99 with strip development
- Parking Allowed near businesses
- BAT Lanes Implemented



Transit Travel Time Results Before/

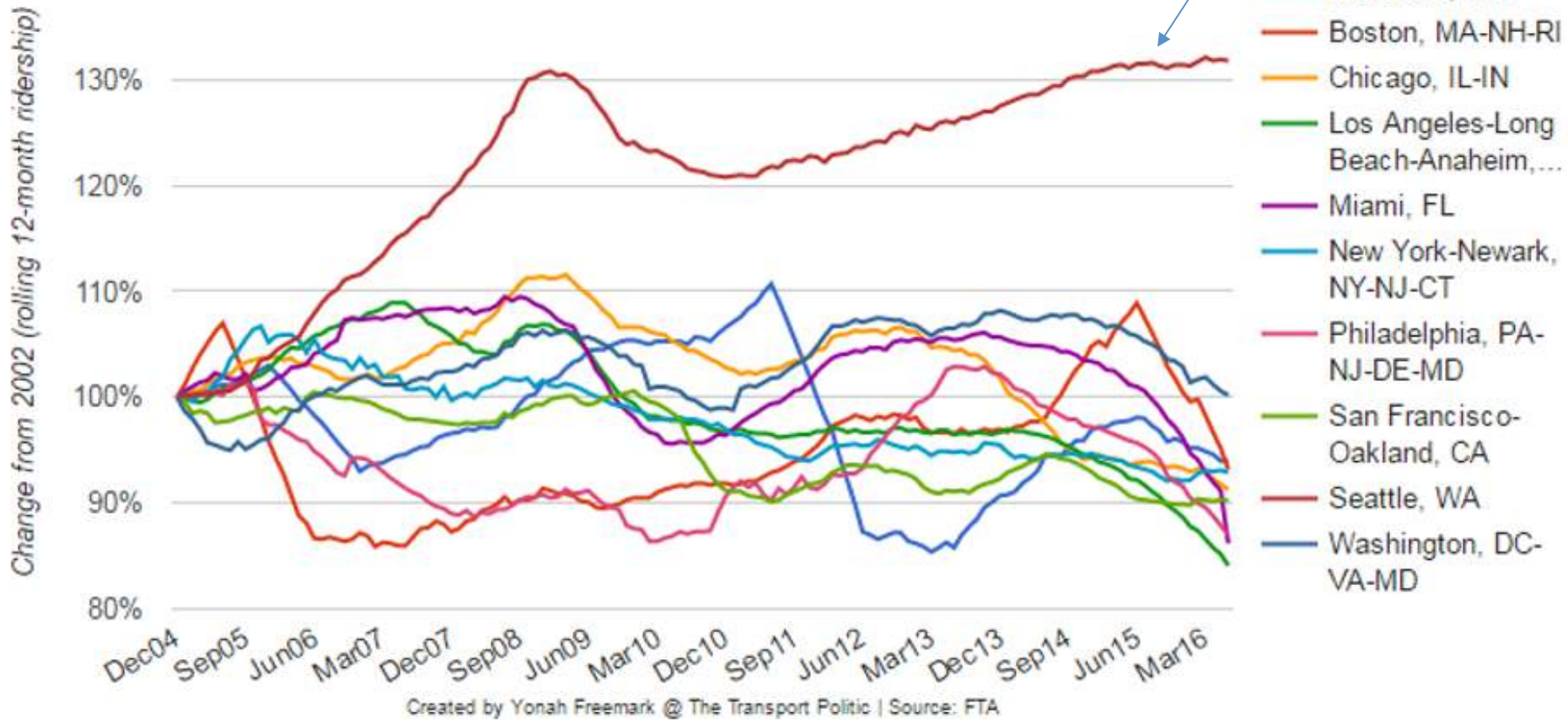
		Minutes Saved		%	
		NB	SB	NB	SB
AM	BAT Lane & Signal Retiming	4.0	5.2	14%	17%
	E Line Improvements	0.1	0.3	0%	1%
	TSP	1.1	1.4	4%	5%
	Total Compared to Baseline	5.2	6.9	19%	22%
MD	BAT Lane & Signal Retiming	6.1	5.9	19%	16%
	E Line Improvements	0.8	2.5	3%	8%
	TSP	0.8	0.4	3%	1%
	Total Compared to Baseline	7.7	8.8	24%	24%
PM	BAT Lane & Signal Retiming	5.9	5.0	18%	14%
	E Line Improvements	1.4	2.6	5%	8%
	TSP	0.5	0.7	2%	3%
	Total Compared to Baseline	7.8	8.2	23%	23%

End Result = More Riders



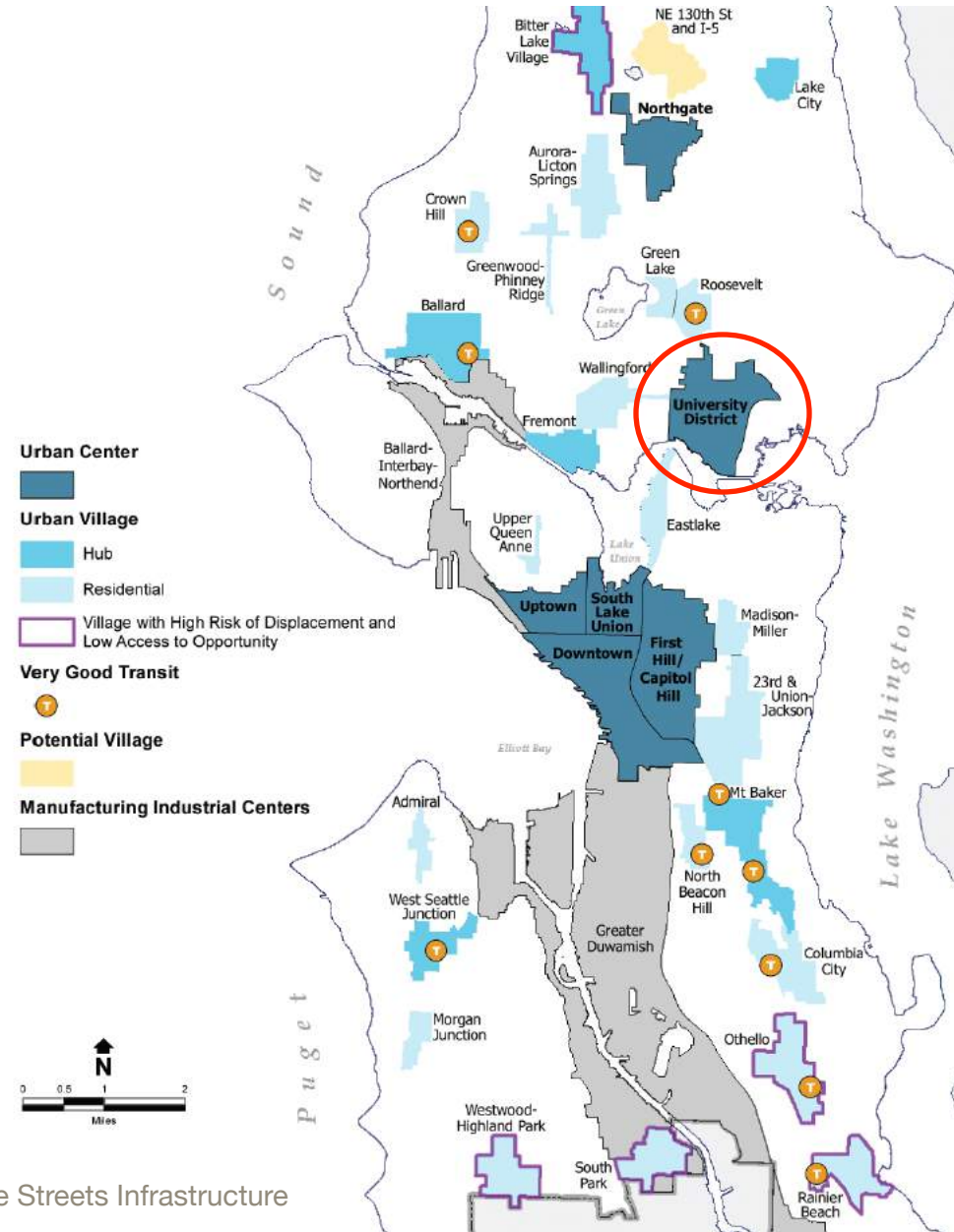
Bus Ridership Comparison

Change in bus ridership in U.S. urbanized areas since 2004



University of Washington Planning

- 6 million square feet of new construction
 - 7,000+ new students employees
- 12% drive alone rate by 2028
- Affordability
 - 450 housing units



Comprehensive Plan Transportation Element key themes



Safe, reliable,
affordable, equitable,
and high quality
travel options



Ensure goods
movement

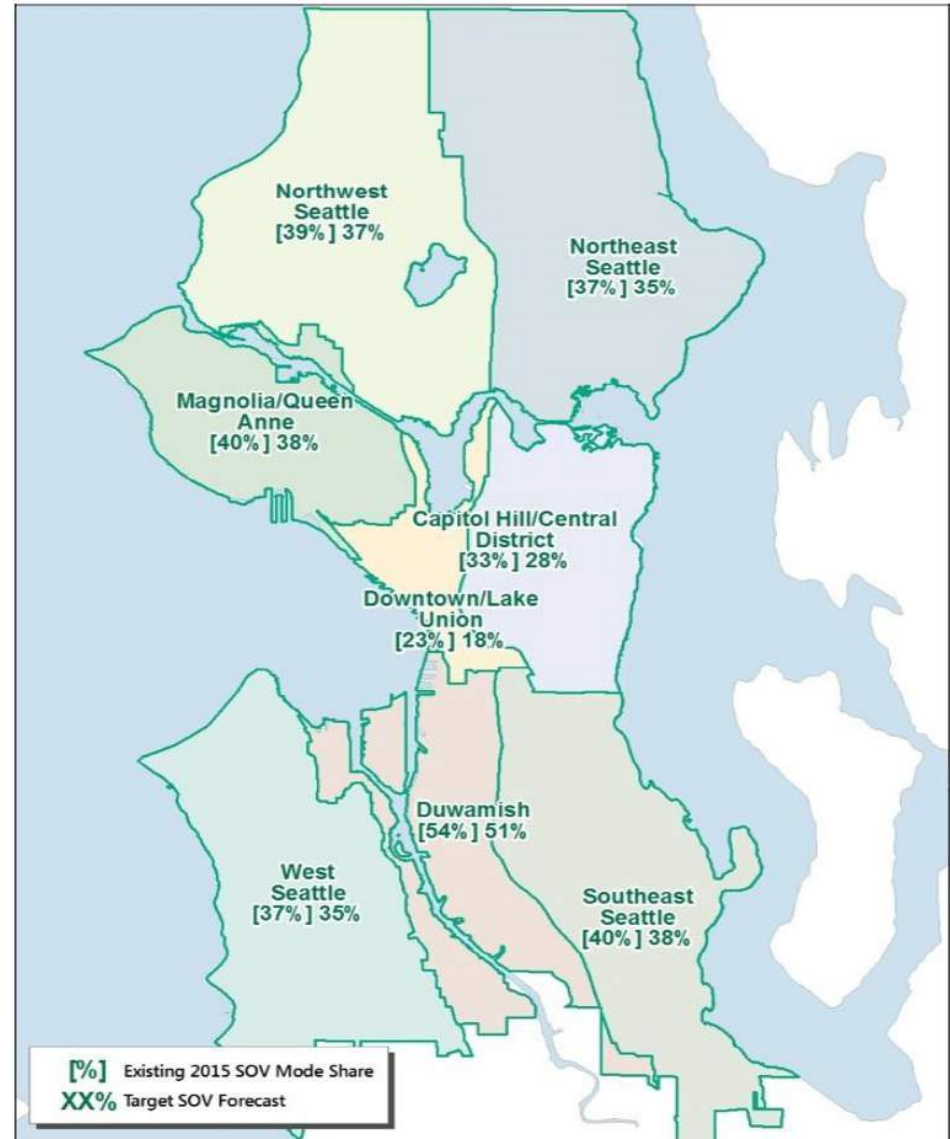
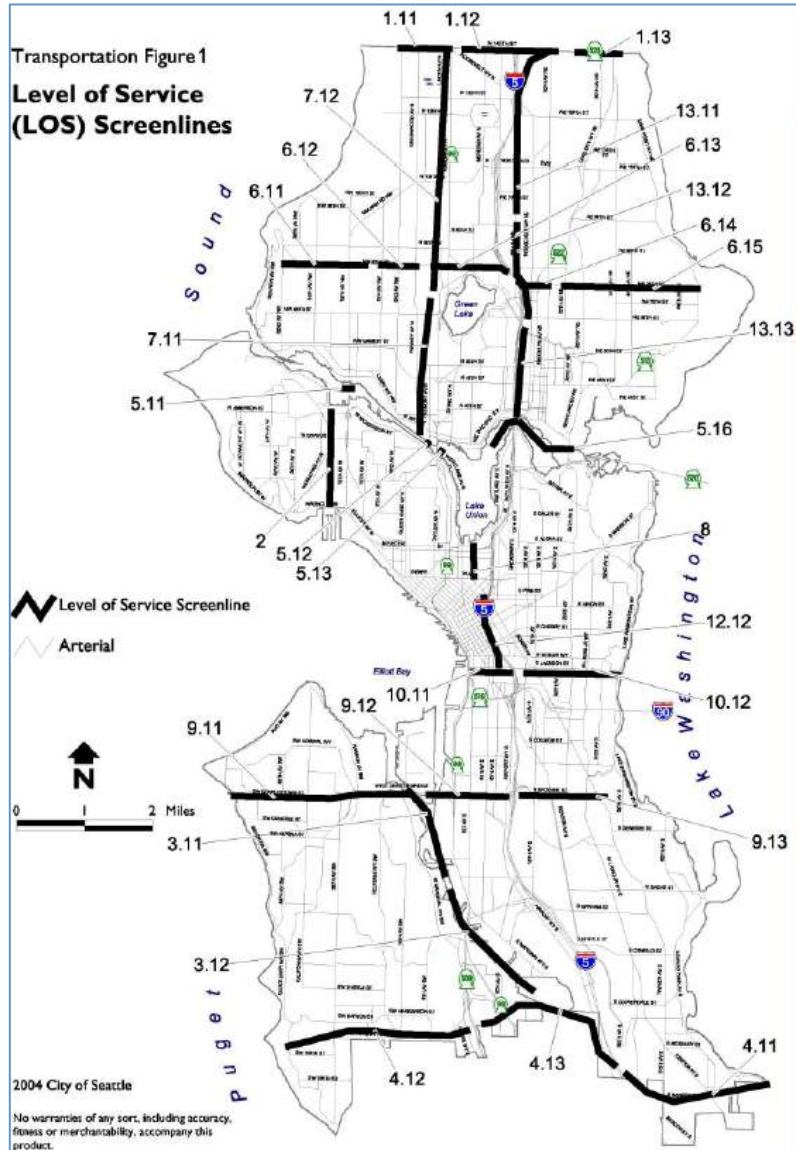


Use right-of-
way for multiple
purposes

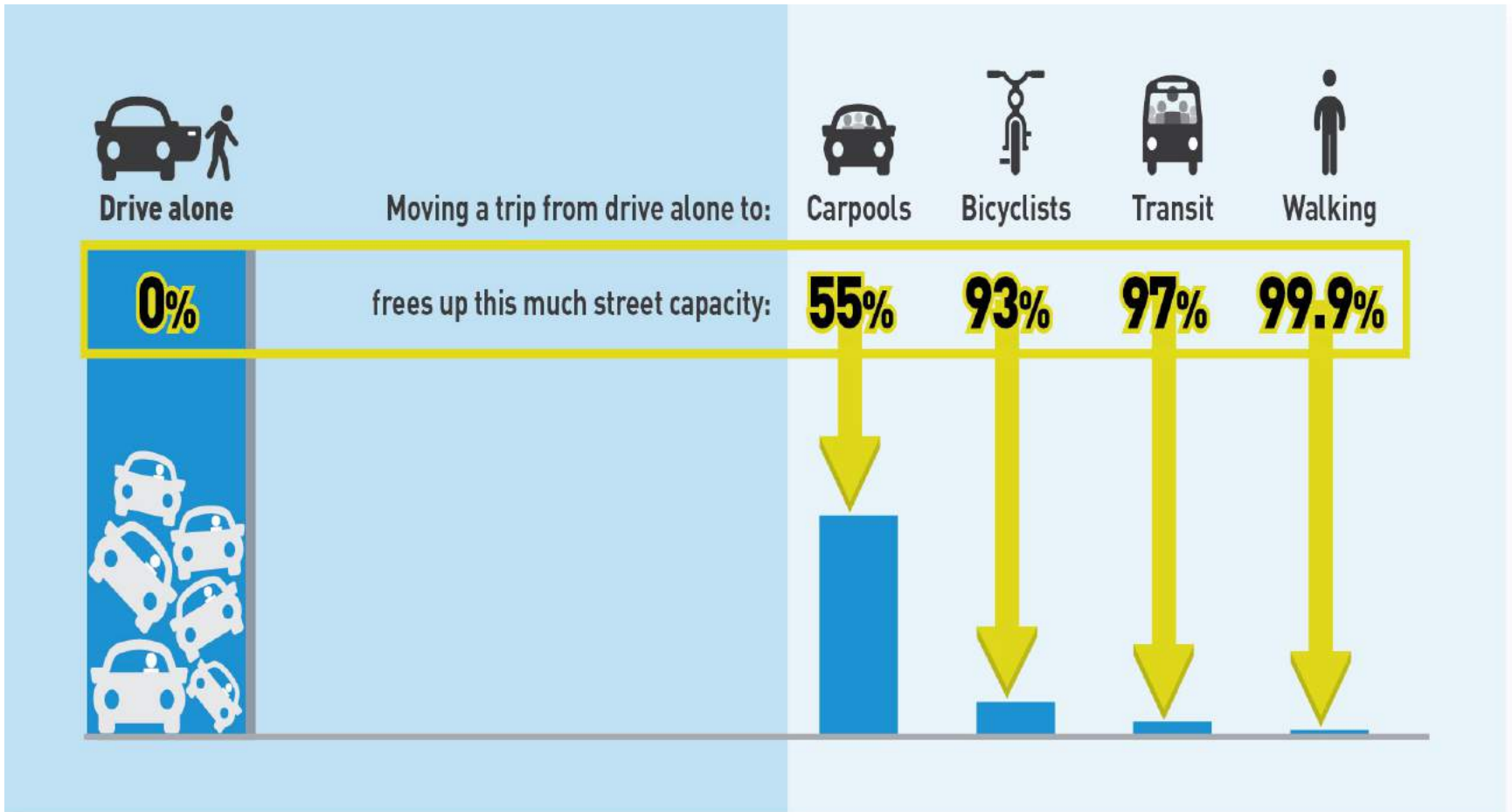
LOS requirements

- State Growth Management Act (GMA) requires:
 - Comprehensive plans to address growth
 - Level-of-service standards (LOS) to gauge transportation system performance
- GMA concurrency: *allow development* if:
 - LOS is met
 - Or commitments are in place to ensure system capacity within 6 years
- Puget Sound Regional Council (MPO)
 - Certifies local comprehensive plan certification
 - Wants *multi-modal* LOS emphasizing people-moving capacity

Level of Service – V/C to Modeshare



Measuring space efficiency

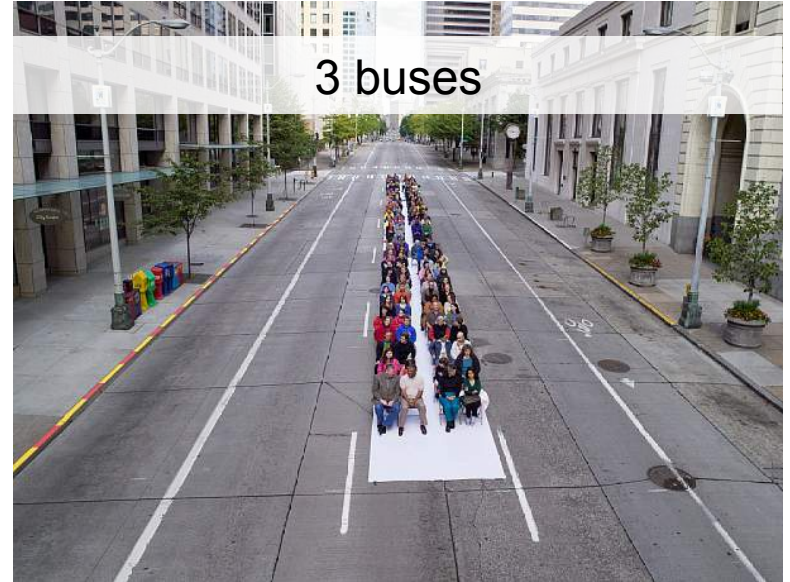


200 People Can Fit in...

177 cars



3 buses



1 light rail train



on their bikes



2nd Avenue in Seattle

Equity in Transportation

Selected equity-related policies Transportation Element:

- Consider the income, age, ability, vehicle ownership patterns of populations throughout the city in developing transportation systems to that all residents, especially those most in need, have access to a wide range of travel options.
- Prioritize transit investments on the basis of ridership demand, service to populations heavily reliant on transit, and opportunities to leverage funding.
- Look for innovative ways to create training, youth employment, and living-wage opportunities for marginalized populations in the construction and major maintenance of transportation facilities.

Mitigation Options- Joint Director's Rule

Auto	
Reduced parking	<p>For projects in locations where a minimum parking requirement applies (see SMC 23.54.015):</p> <p>Limit parking to the minimum number of required spaces listed for a use in Table A, B, or C in SMC 23.54.015.</p> <ul style="list-style-type: none">• Provide no more than the minimum required parking stated in the tables. <p>OR</p> <ul style="list-style-type: none">• In cases where proximity to frequent transit service (FTS) allows for a 50 percent reduction of the minimums stated in Tables A, B, or C in 23.54.015, limit parking to no more than 60 percent of the stated minimums.
	<p>For uses in locations where no minimum parking requirement applies:</p> <p>Limit parking to no more than 60 percent of the minimum number of spaces stated for a use in Table A, B, or C in SMC 23.54.015.</p>

Mitigation Options- Joint Director's Rule

Transit

Bus passes

For Residential Use (as a single use or more than 50 percent of the uses in a mixed-use development)

Building owner pays at least 50 percent of the cost of a transit pass for each residential unit by participating in King County's Multifamily Development ORCA Passport program (or equivalent), for 15 years. Owner must offer a minimum of one pass per residential unit per year.

For Non-Residential Use (as a single use or more than 50 percent of the uses in a mixed-use development)

Building owner pays at least 50 percent of the cost of a transit pass for each employee by participating in King County's ORCA Passport program (or equivalent) for 15 years. An employee is a person who works 20 hours or more per week.

Complete Streets Ordinance 122386

- Enacted in 2007
- Create and maintain safe street for all
- All modes – walking, bicycling, transit, and freight
- Safety as the highest priority
- Maintain mobility – moving people and good efficiently
- Can be achieved through single project or incremental improvements



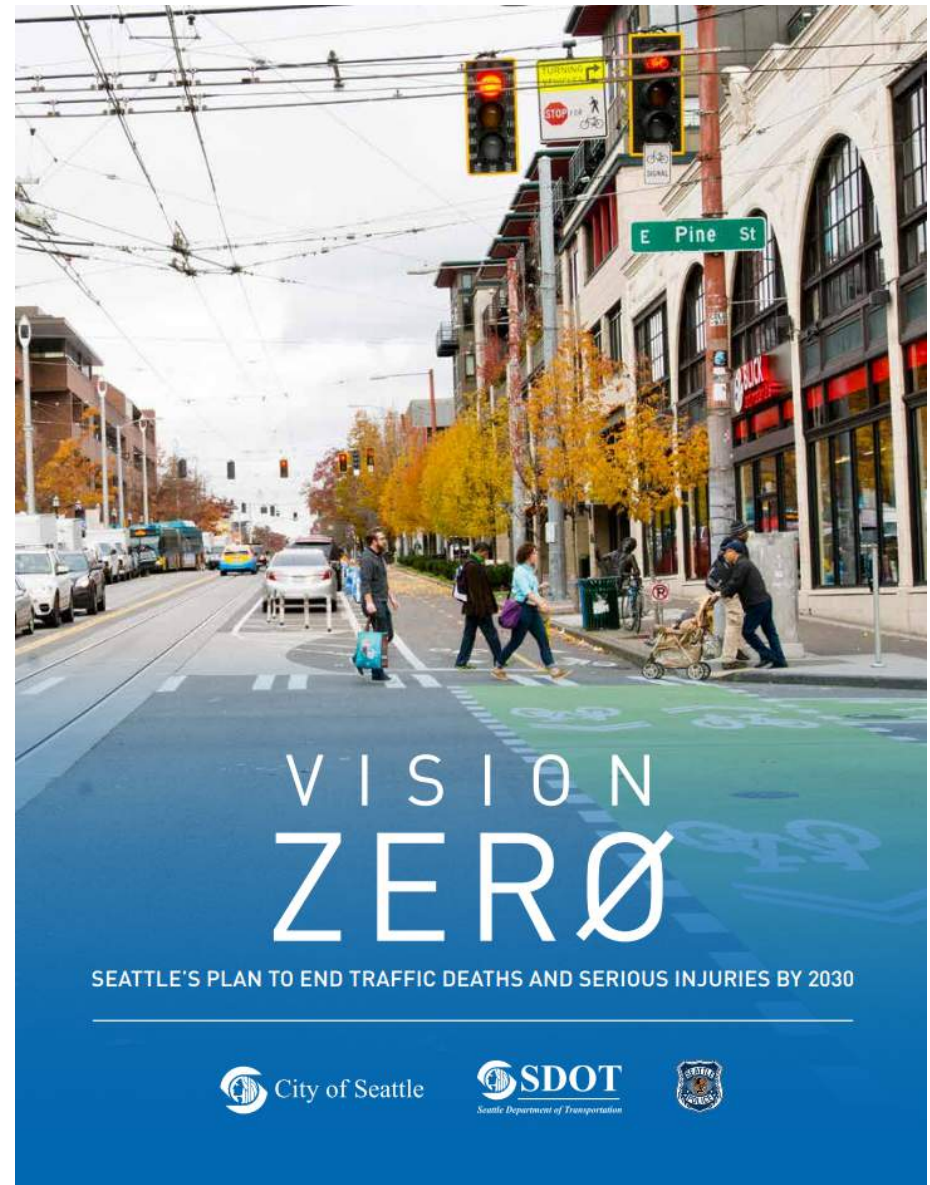
Complete Street Project Checklist

- Channelization- ADT 25K (Road diet)
- Safety- Speed limit, signals, collision reduction (BPSA)
- Maintenance – pavement, sidewalks, trees
- Flex lane – curb space allocation for land use
- Modal plans (Pedestrian/Bicycle/ Transit/Freight)
- Art/green stormwater/tactical/urban forestry



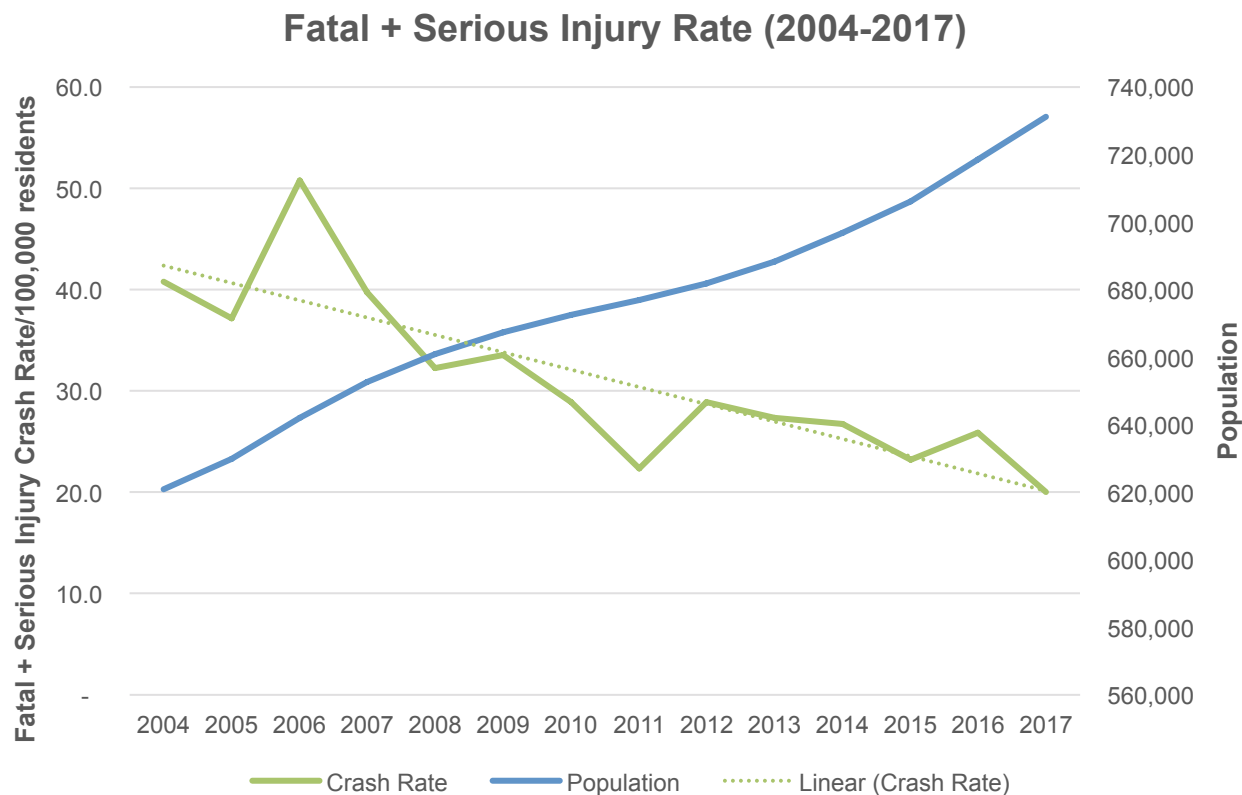
Vision Zero

- End traffic deaths and serious injuries by 2030
- Multi-faceted approach through data driven action and the many E's of Safety:
 - Engineering
 - Education
 - Enforcement
 - Evaluation
 - Equity



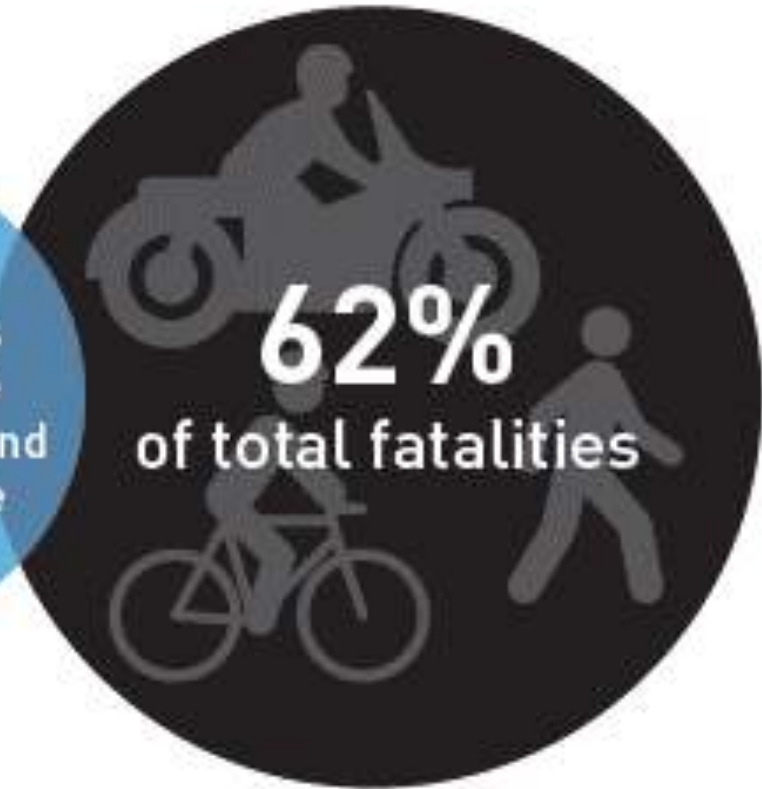
Seattle's Safety Trends

- 13,000 total crashes/year
 - 160 serious injuries
 - 20 deaths
- 17 Fatal in 2017



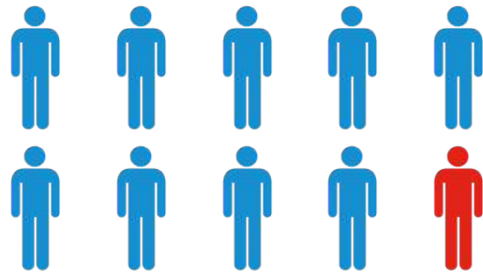
Trends

- 2017-17 fatal crashes
 - 9 pedestrians
 - 3 motorcyclists
 - 2 bicyclists
 - 3 drivers/passengers
- People age 55+ make up 60% of pedestrian deaths (last 3 years)
- Impairment top contributing factor



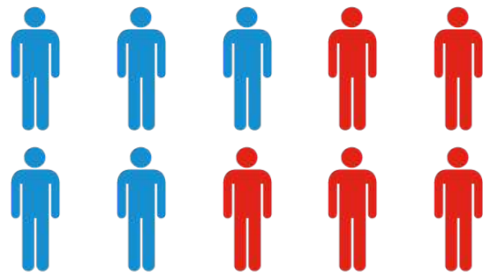
Speed is a Factor in Fatalities and Serious Injuries

20
MPH



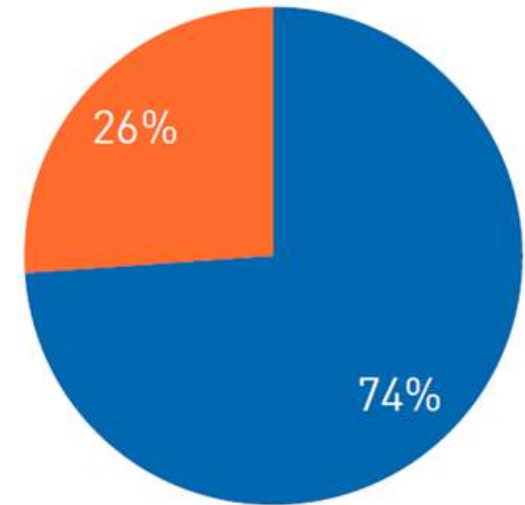
9 out of 10 survive

30
MPH

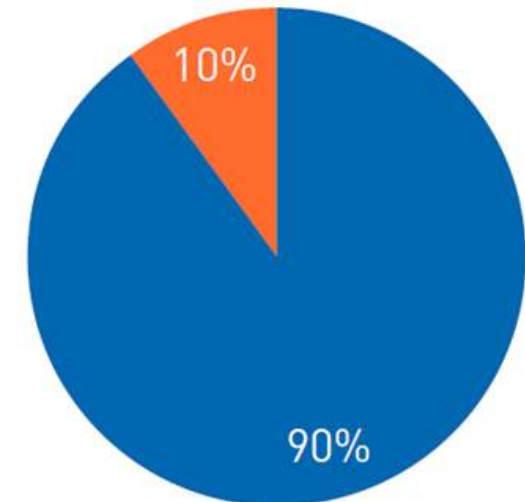


5 out of 10 survive

ALL COLLISIONS



SERIOUS & FATAL COLLISIONS



■ Arterial ■ Non-Arterial

2,400 Miles of Residential Streets are 20 mph



Seattle



- **1,500 Traffic Circles (1,127 inventoried in asset management)**
- **Reduce injury collision by 97%, all collisions by 90%**
- **1,343 Volunteers just for our circles! (1 to 4 volunteers per circle)**
- **Curb/Planter strip gardening – raised structures requires no-fee permit (sand boxes!)**

Traffic calming



Speed humps



Speed cushions

Speed humps

Small investment with high safety yield

	Graham Hill	Highland Park	Olympic Hills
Change in speeding over 25 mph	-79%	-73%	-88%
Change in speeding over 35 mph	-80%	-81%	-91%



Speed humps/cushions/signs/ cameras

	Graham Hill Elementary S Graham Street Speed Humps Installed 2011	Highland Park Elementary 10th Avenue SW Speed Cushions Installed 2012	Olympic Hills Elementary NE 130th Street Speed Humps Installed 2014	Emerson Elementary 60th Ave S Speed Humps Installed 2014	Viewlands Elementary 3rd Ave NW and NW 104th Speed Cushions Installed 2014	Viewlands Elementary 3rd Ave NW and NW 105th Speed Cushions Installed 2014	Broadview Thomson K-8 3rd Ave NW and NW 130th Radar Speed Sign Installed 2014	Broadview Thomson K-8 3rd Ave NW and NW 137th Radar Speed Sign Installed 2014	Rainier View Elementary Beacon Ave S NW/o 57th Ave S Automated Enforcement 2015	Rainier View Elementary Beacon Ave S NW/o 57th Ave S Speed Cushions 2018
85th Percentile Speed Before (MPH)	28.3	29.7	28.7	33.9	32.4	34.3	35.2	35.6	36.6%	36.0%
85th Percentile Speed After (MPH)	23.2	24.2	22.7	21.3	27.3	28.5	35.4	35.1	36.0%	31.2%
	-18%	-19%	-21%	-37%	-16%	-17%	1%	-1%	-2%	-13%
Percent exceeding 25 mph Before	36%	43%	45%	79%	69%	79%	85%	89%	88.5%	79.5%
Percent exceeding 25 mph After	8%	12%	5%	2.2%	28.2%	35.8%	94.1%	94.6%	79.9%	53.8%
	-79%	-73%	-88%	-97%	-59%	-55%	10%	6%	-10%	-32%
Percent exceeding 35 mph Before	1.0%	3.2%	1.1%	10.0%	4.5%	10.5%	16.7%	18.9%	24.3%	20.8%
Percent exceeding 35 mph After	0.2%	0.6%	0.1%	0.0%	1.1%	1.6%	12.2%	15.4%	20.8%	4.7%
	-80%	-81%	-91%	-100%	-76%	-85%	-27%	-19%	-14%	-77%



NE 75th Street- 21,300 ADT

- Designed and implemented in 6 months
- 50% reduction in crashes



20 foot lanes



10.5 foot lanes + bike lanes

	Percent Change in 85 th Percentile Speed	Percent Change in Speeders going over the speed limit	Percent Change in Speeders going 10+ mph over the speed limit
Eastbound	-9%	-64%	-75%
Westbound	-11%	-56%	-79%

Nickerson St: ADT=18,500



Nickerson Case Study

Improving Safety on Nickerson Street

Average Speed of Vehicles was 42 MPH, is now 33 MPH



Speeders
(Percent driving over the speed limit)



Top End Speeders
(Percent driving 10 mph or more over the speed limit)



Improving Safety on Nickerson Street

Change in Number of Collisions on Nickerson
(One-year after rechannelization)



Long-term citywide goal:
a city with zero traffic fatalities and serious injuries

Average Weekday Traffic Volumes

Before	After
18,563	18,364

Measure Twice: Before & After

Data needs	Before Study	After Study (>1 year)
ADT	√	√
Bike and Ped Counts	√	√
Injury collisions	√	√
10+ over the speed limit	√	√
85 th percentile speed	√	√
Transit operations	√	√
Turning vehicle counts	√	√
Parking use	√	√
Side street diversion	√	√
Vehicle classification	√	√
Resident satisfaction	√	√
Business satisfaction	√	√

Lessons learned

- Complete corridors can be a preferred context sensitive approach that may be able to meet multiple community objectives
- Rightsizing works—45 completed examples in Seattle
- Speed reduction—especially for top-end speeders
- Pedestrian and bicycle safety and access encourages more usage
- Low to no reductions in travel times along the corridors
- Difficult to get initial community support—once installed, community support is typically very high

Questions?

<http://www.seattle.gov/transportation>





Fred Dock

Director, Department of
Transportation

@FCDock

Aligning Plans and Policies for Complete Streets

Frederick C. Dock, PE AICP
Transportation Director,
City of Pasadena





What Did We Do?

- **Aligned plans to policies**
 - > Organized around a Complete Streets Framework
- **Aligned metrics to plan/policy objectives**
 - > Adopted VMT in place of LOS to measure Transportation Impact
 - > Introduced metrics for Transit, Bicycle, Walk
- **Aligned project review to plans/policies**
 - > Modified/expanded elements of circulation/access review
- **Aligned program delivery process to plan/policies**
 - > Adopted Street Design Guidelines for Complete Streets
 - > Developed Six-step Complete Streets community involvement program



Why Did We Do It?

At a policy level

- General Plan guiding principle is to be able to circulate without a car
 - > Traffic impact mitigation increased difficulty to walk or bike for short trips
 - > Mitigation added turn lanes, widening streets making crossings more difficult
 - > Wider streets encouraged faster speeds making walking and biking less safe and inhibiting use by the less active
- State mandates for GHG reduction and Complete Streets were being ignored

At a practice level

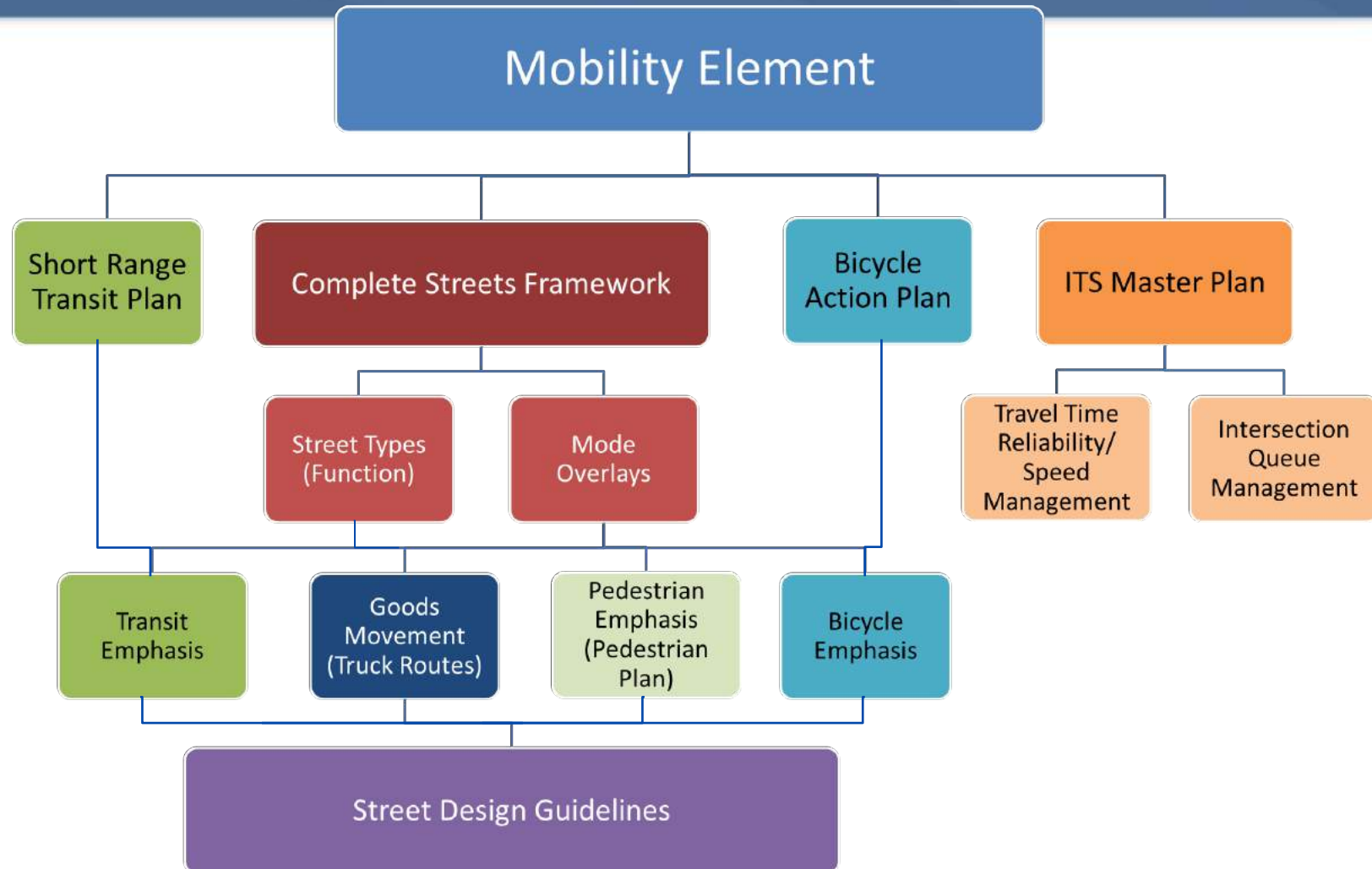
- Traffic impact findings painted a picture of gridlock (that never occurred)
 - > Travel pattern monitoring did not show significant growth in travel times
- Misplaced investment in the street system – system-level ITS investments were undone by traffic impact mitigation
- Bicycle infrastructure was deferred by inability to repurpose traffic lanes or remove curb parking



How Did We Do It?

Aligned Plans to Policy

- Developed a vertically integrated approach to Mobility planning
- Defined outcomes that achieved the Policy goals
- Measured what was important to Policy goals
- Tracked progress

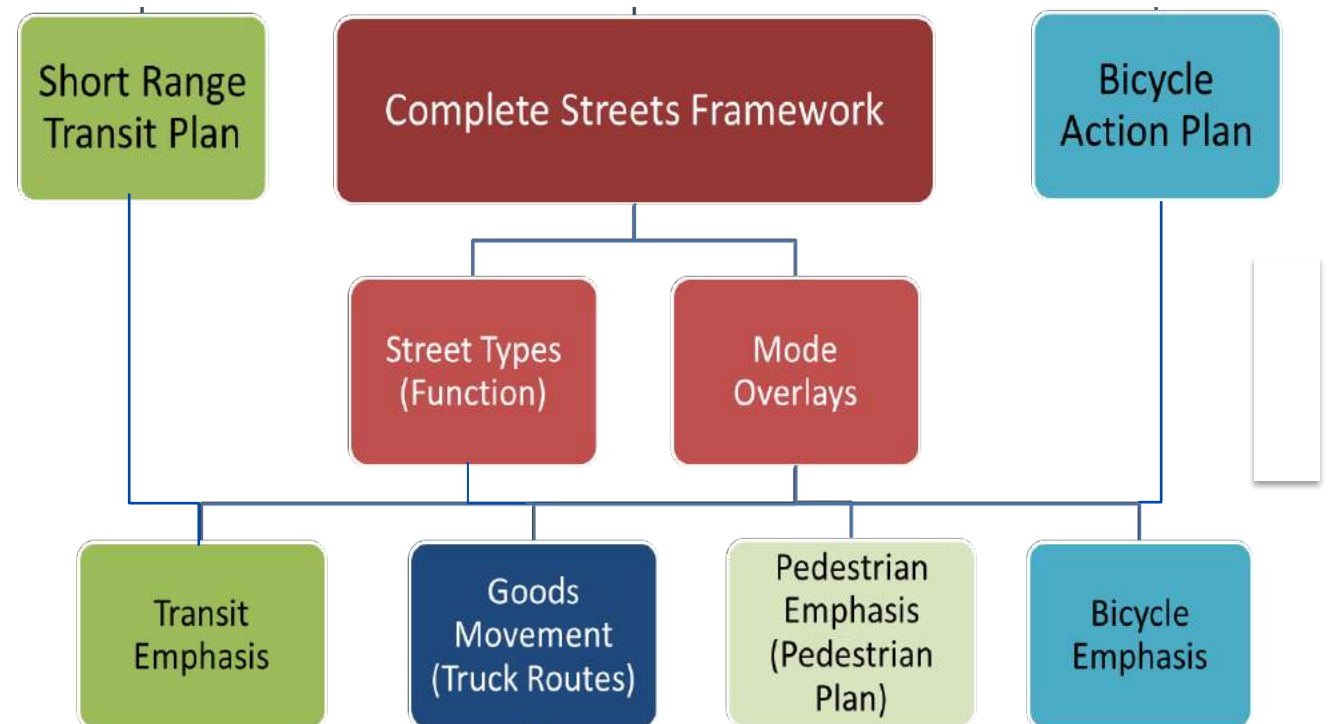




How Did We Do It?

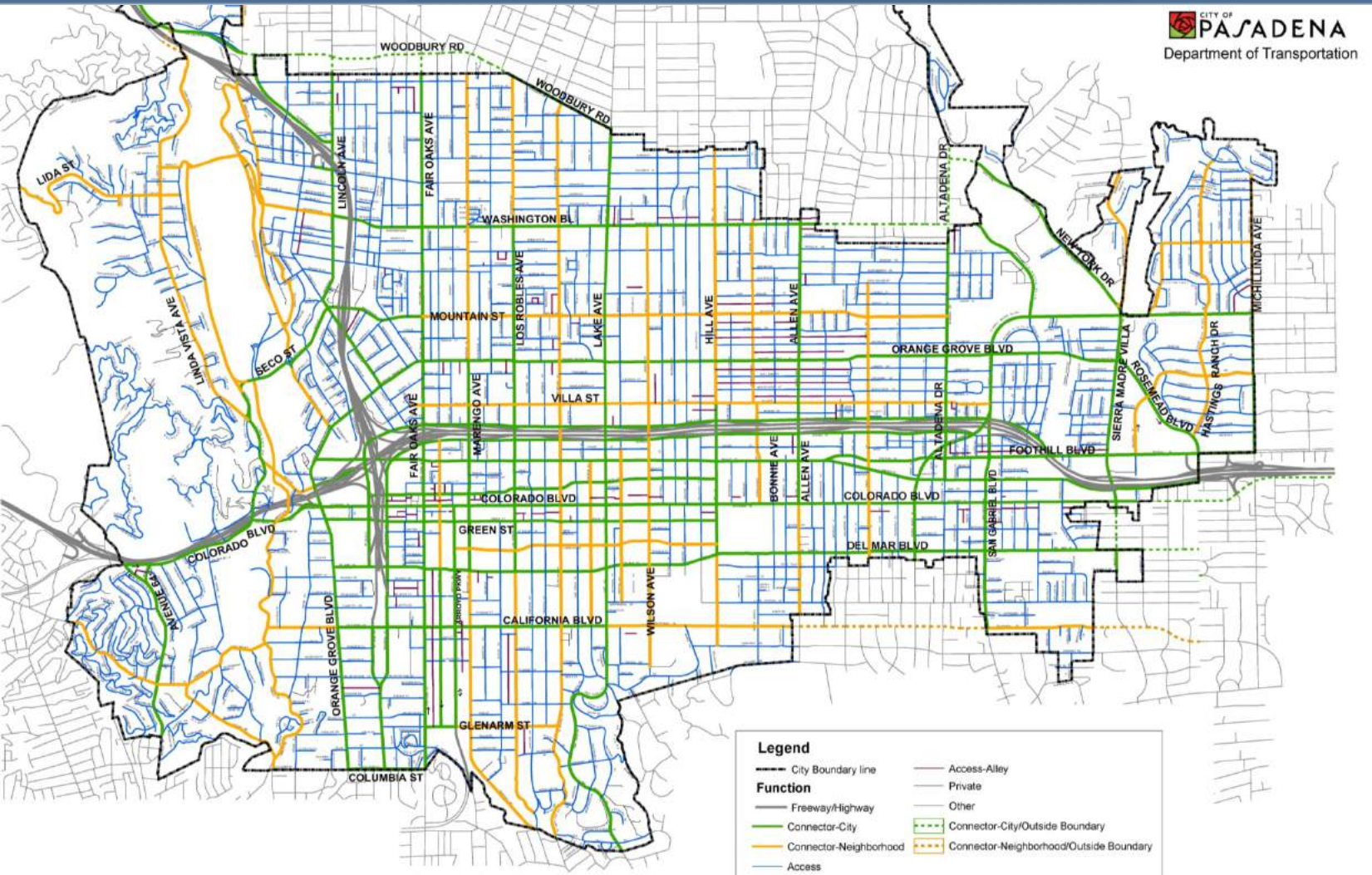
Complete Streets Framework

- Developed a new Street Plan to match policy
 - > Defined purpose and need based on context and function
 - > Set target speeds and cross section
 - > Limited number of lanes
- Tied Context to General Plan Land Use





How Did We Do It?



Street Plan

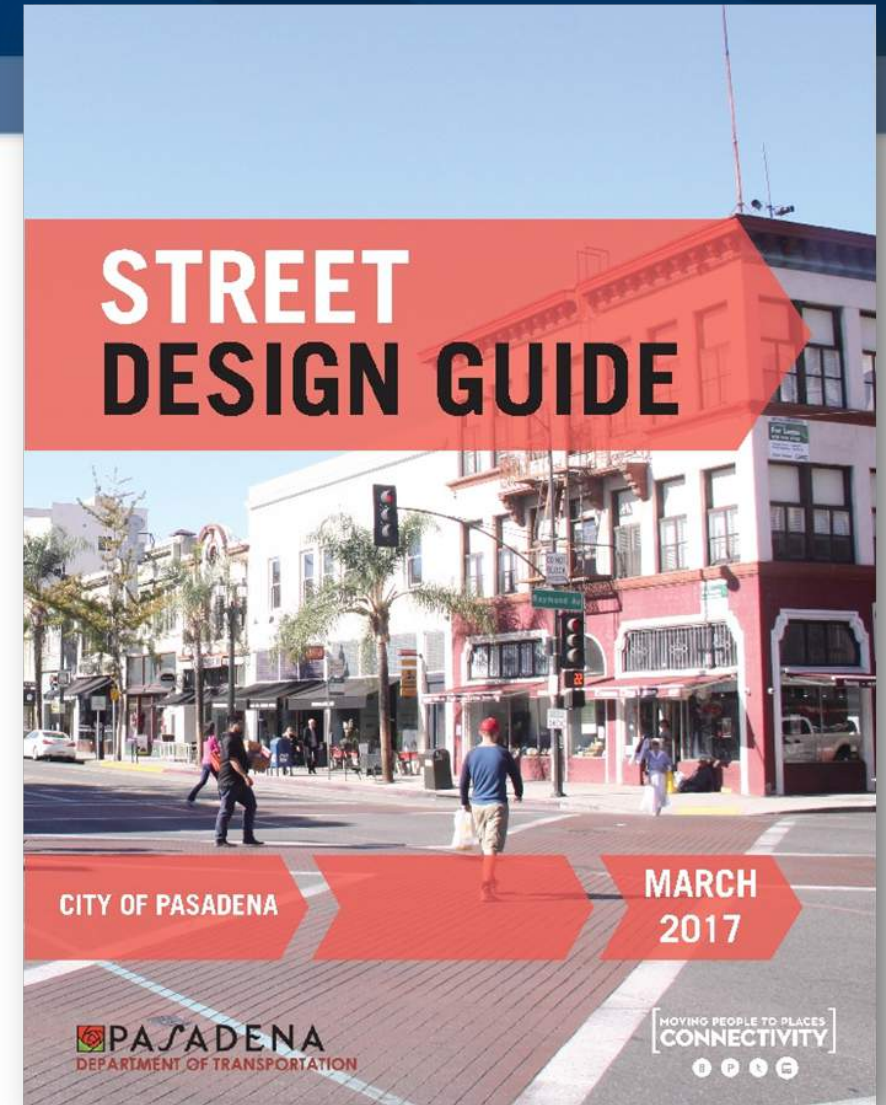
- Redefines Function for urban conditions
 - > Adds detail necessary for Complete Streets
 - > Focuses on City's travel patterns/modes
- Foundation for
 - > Transit Plan
 - > Bicycle Plan
 - > Pedestrian Plan



How Did We Do It?

Street Design Guide: Complete Streets

- Context-Sensitive Solutions approach
 - > Transportation planning
 - > Roadway design
- Supports community objectives
 - > Walkable communities
 - > Mixed land uses
 - > Active transportation facilities
- Works with existing or future context



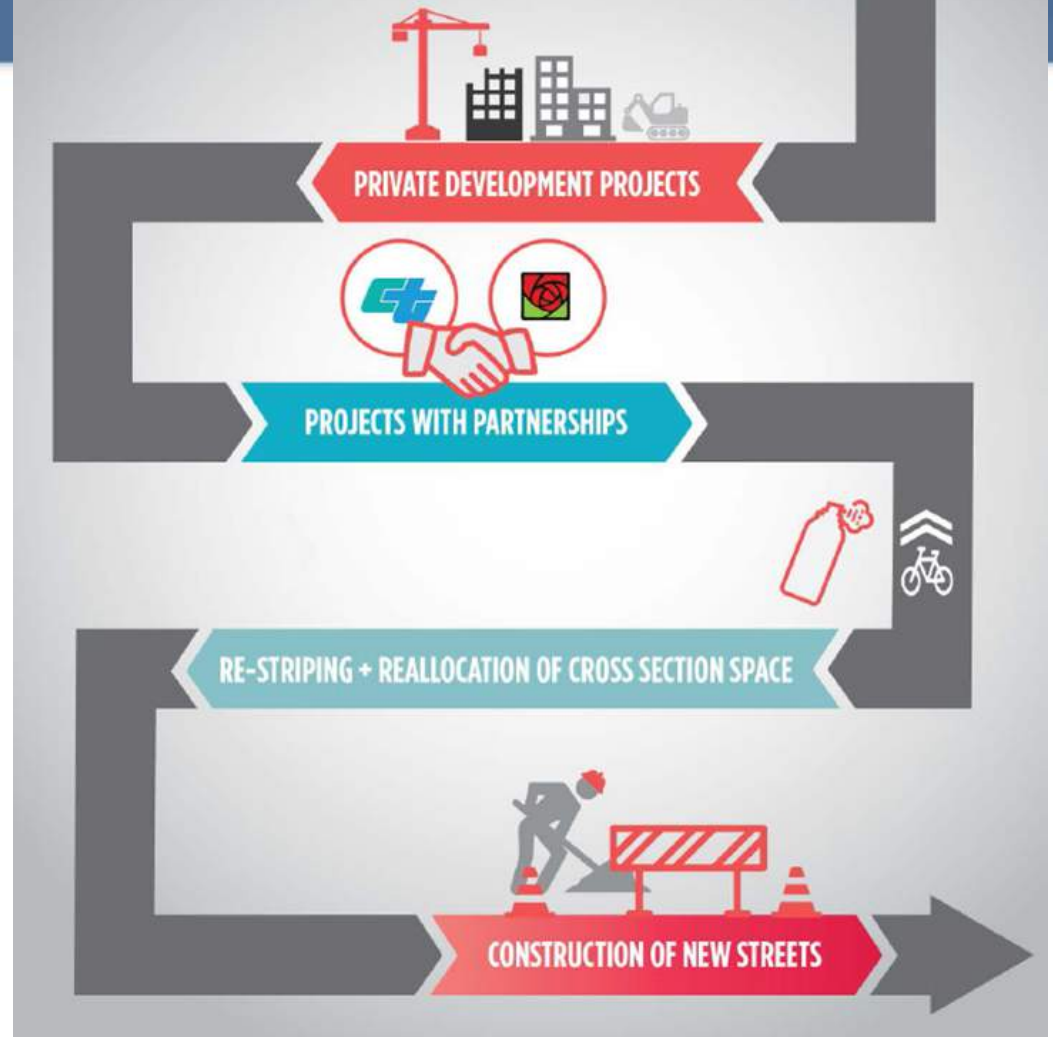


How Did We Do It?

PASADENA STREET DESIGN GUIDE

- Accommodates retrofitting of existing street network
- Functions with development review
 - > Options for enhancing pedestrian space
- Supports incremental investment through synergy with Pavement Management Program
- Provides mode-specific examples of design elements
 - > Transit stops, ped/bike infrastructure

HOW WILL THE STREET DESIGN GUIDE BE USED?



PASADENA

Innovation in Complete Streets Infrastructure



Aligning Metrics and Policies

Decreasing Emphasis

- Evaluating only street operations and traffic volume changes
 - > Individual intersection performance
 - Level of Service
- Mitigating only impacts to auto travel
 - > Adding vehicular capacity via street widening
 - > Minimizing auto delay/LOS

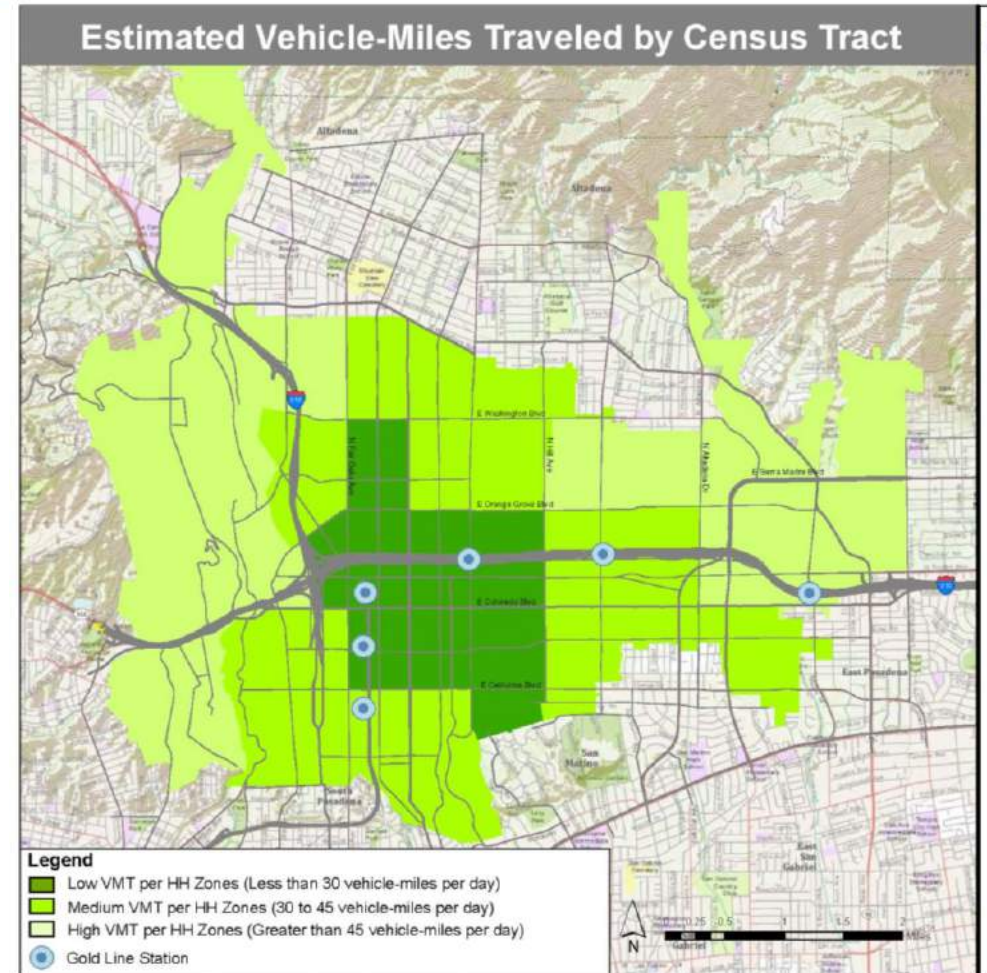
Increasing Emphasis

- Reduce Greenhouse Gas
 - > Vehicle Miles of Travel metrics
- Elevating priorities for transit, pedestrian and bicycle travel
 - > Enhance conditions for vulnerable users
- Network performance
 - > Travel time reliability
 - > Speed management



New Metrics

- Vehicle-Miles Traveled per capita and Vehicle Trips per capita
 - > Service population is residents plus employees
- CEQA Thresholds are existing citywide levels
 - > Adopted in advance of SB 743
Guidance from OPR
- Forecast model designed to work at all levels from General Plan to development review





Metrics for Non-Auto Modes

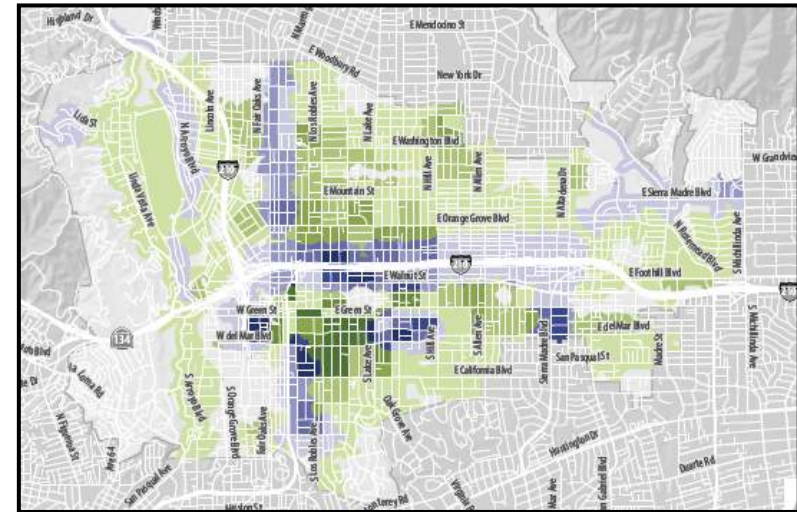
Proximity/Quality of Bicycle Network

- Percent of dwelling units and jobs within a quarter mile of bike lane, path, cycletrack or bicycle boulevard



CEQA Threshold

- Any decrease in percentage of units or employment within a ¼ mile of Level 1 or Level 2 Bike Facility



PASADENA

Innovation in Complete Streets Infrastructure



Metrics for Non-Auto Modes

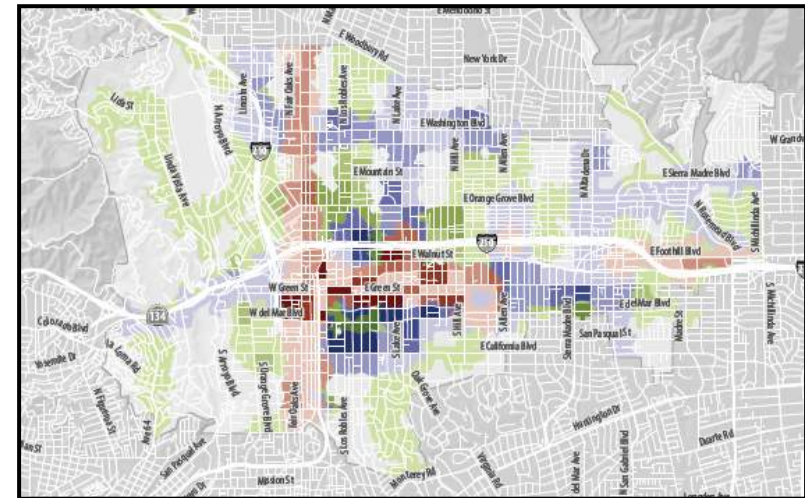
Proximity/Quality of Transit Network

- Percent of jobs located within a quarter mile of frequent transit service (every 15 minutes or less)



CEQA Threshold

- Any decrease in percentage of units or employment within a ¼ mile of Level 1 or Level 2 Transit Facility





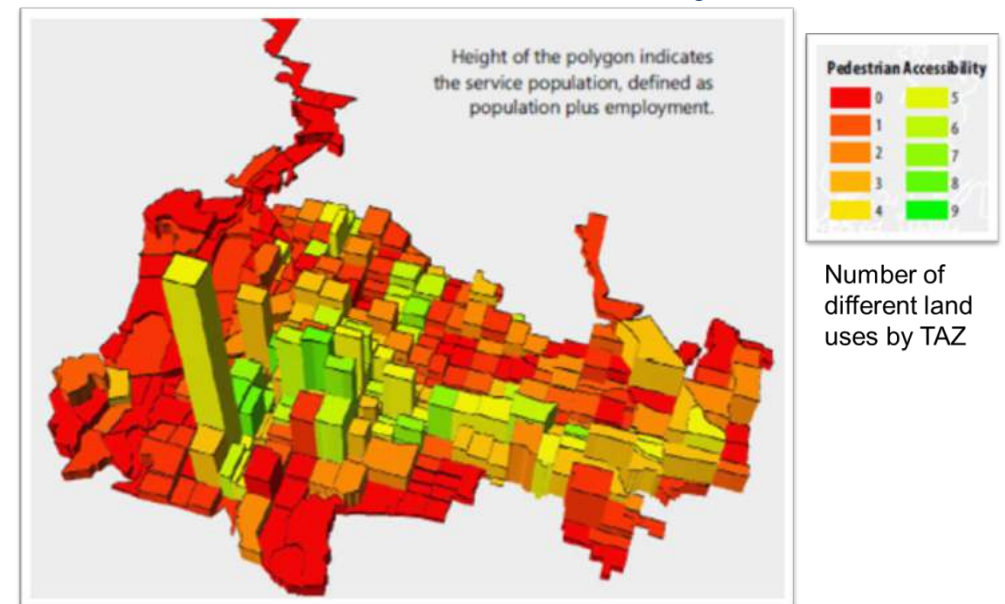
Metrics for Non-Auto Modes

Proximity/Quality of Pedestrian Environment

- The Pedestrian Accessibility Score within each TAZ
- The Pedestrian Accessibility Score uses the mix of destinations and a network-based walk shed
- Measures the number of different land use types (destinations) within a five minute walk

CEQA Threshold

- Any decrease in Citywide Pedestrian Accessibility Score





Impact Analysis Guide

- Hybrid Approach
- CEQA Metrics and Thresholds
 - > VMT, VT, Proximity metrics
- Project Approval Conditions
 - > Auto Level of Service (LOS) uses HCM
 - > Street Segment Analysis limited to residential
 - > Pedestrian Environmental Quality Index (PEQI)
 - > Bicycle Environmental Quality Index (BEQI)
 - > Focused on reducing traffic intrusion in neighborhoods; enhancing ped/bike/transit



TRANSPORTATION IMPACT ANALYSIS CURRENT PRACTICE & GUIDELINES

Prepared by:

**Transportation Complete Streets Division
Department of Transportation**

20150120

PASADENA 14

Innovation in Complete Streets Infrastructure



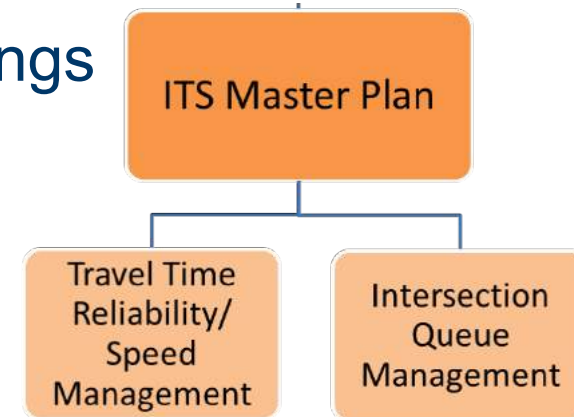
How Did We Do It?

Implementation Programs

- Traffic Reduction and Transportation Impact Fee
- Trip Reduction Ordinance
- Expanded Neighborhood Traffic Management Plans to Complete Streets Program
- Engaged the Public
 - > Complete Street Workshops
 - > Six-step program

Management and Operations Strategies

- Travel time monitoring
 - > Focused on mobility routes
- ATCS for queue/flow management
- Speed Management
- LPI, Scramble crossings
- Protected bike lanes
- Transit signal priority





How's It Working Out?

Short Version

- So Far So Good

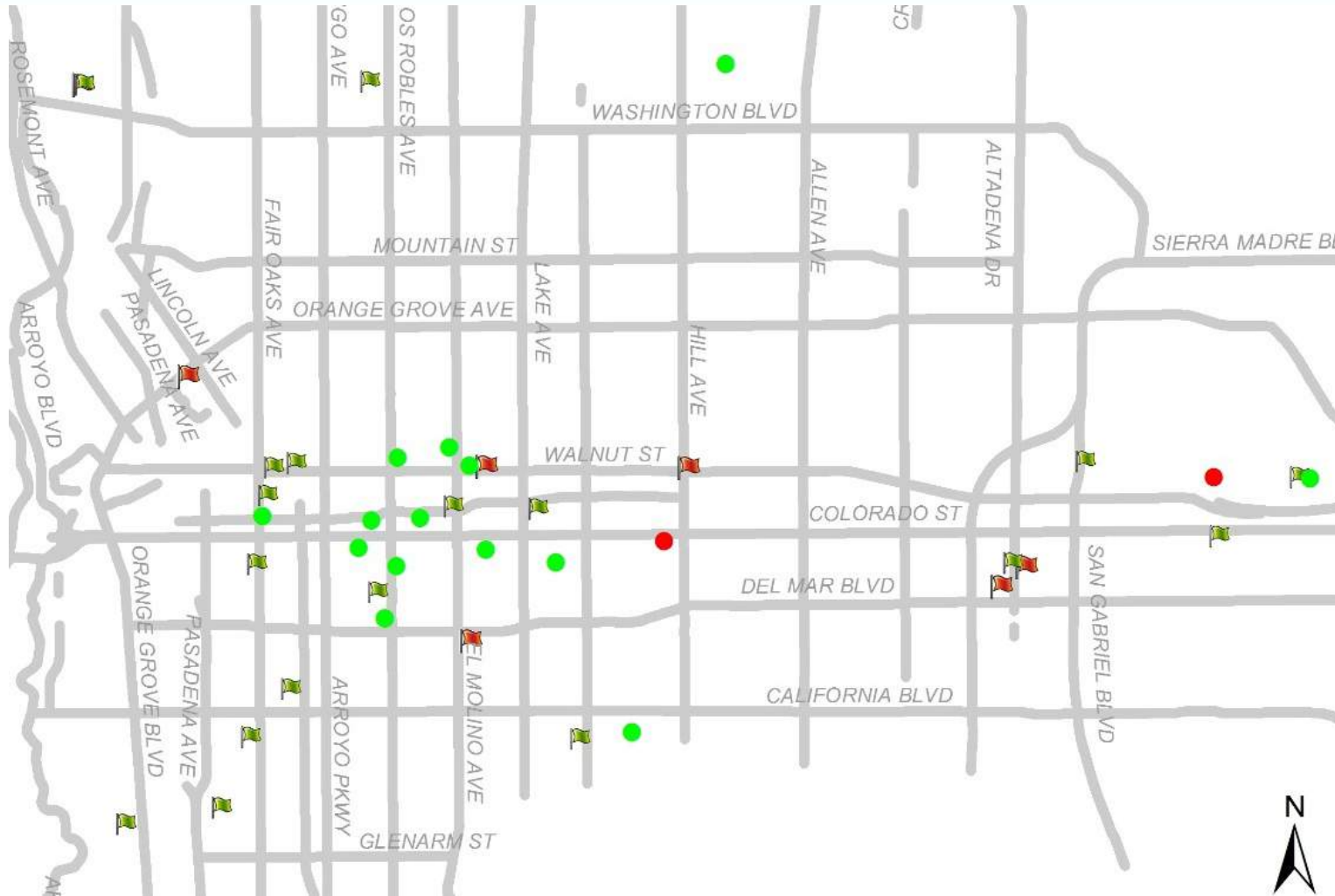


How's It Working Out?

- Metrics are encouraging General Plan compliance
 - > Result is more balanced mixed use development
 - > VMT and VT metrics for CEQA reduces the burden on smaller projects that conform to the General Plan
- Streamlines the CEQA process for conforming urban infill projects
 - > Staff handles most analysis further shortening the process
- Shifts the focus of CEQA analysis away from traffic congestion
 - > Allows for traffic to be considered outside the confines of CEQA
 - > Places more emphasis on system management/measurement



Status of Projects Reviewed Since 2015



- Projects of Community-wide Significance (17)
 - No Unmitigated Impact (3)
 - Mitigation Required (3)
- Other Projects (24)
 - No Unmitigated Impact (18)
 - Mitigation Required (6)
- CEQA Challenges (0)



How's It Working Out?

- **Complete Streets Program works well at a corridor level**
 - > Facilitated workshop approach results in consensus on project elements
 - > Implementation is constrained by lack of funding
 - Currently constructing projects planned five years ago
- **Support for Complete Streets is wavering as more projects move from planning into design**
 - > Road diets are encountering resistance
 - > Necessitating more direct use of facilitated workshop approach
- **Street Design Guide is in use**
 - > Limited application to pavement rehabilitation projects
- **Complete Streets Blueprint in development**
 - > Decision Support System for prioritizing projects and synching with PMP



Challenges

General

- Learning curve can be steep
 - > Unfamiliar to community and decision makers
- Limited mitigation options
 - > VMT is complicated
- People are still concerned with traffic
 - > Persistent perception of growth in traffic congestion despite analytical evidence
 - > Unsupported perception of neighborhood traffic intrusion

Technical

- Model requires regular updating
 - > First update is underway
- Outcomes difficult to predict
 - > Reducing project scale does not always reduce impacts
- VMT mitigation measures are challenging
 - > More research required on quantifying the benefits of TDM measures



More Information

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Smart Growth America
Improving lives by improving communities



National Complete
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