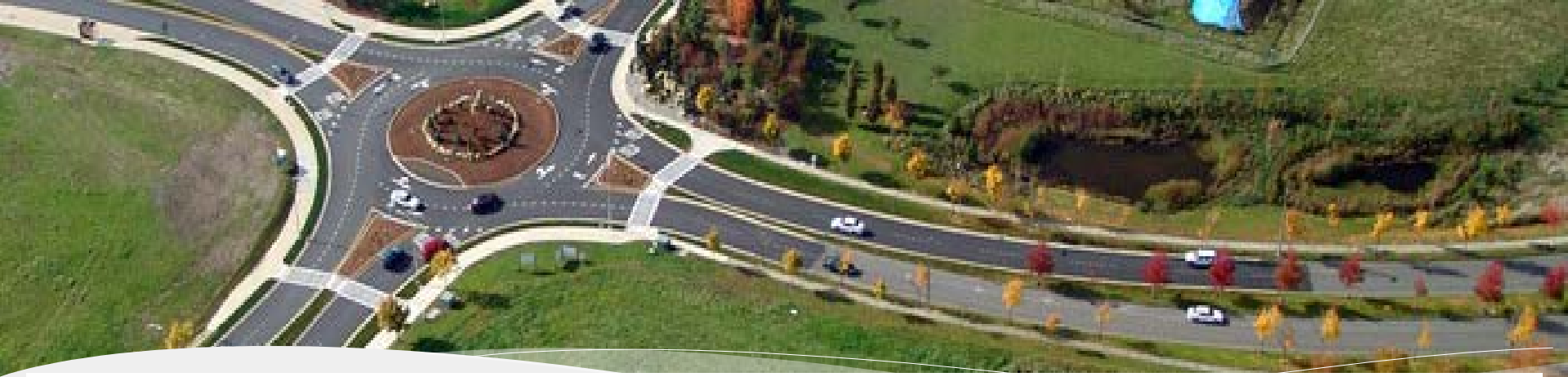


WORKING TOGETHER TO SUPPORT TRANSPORTATION EFFICIENT COMMUNITIES

Department of Commerce
Innovation is in our nature.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Washington State Department of Health

Washington State Department of Transportation

Integrated Transportation and Land Use Planning in Bellingham, WA

September 10, 2015

City of Bellingham Public Works

Bellingham's Integrated Multimodal Transportation and Land Use Planning

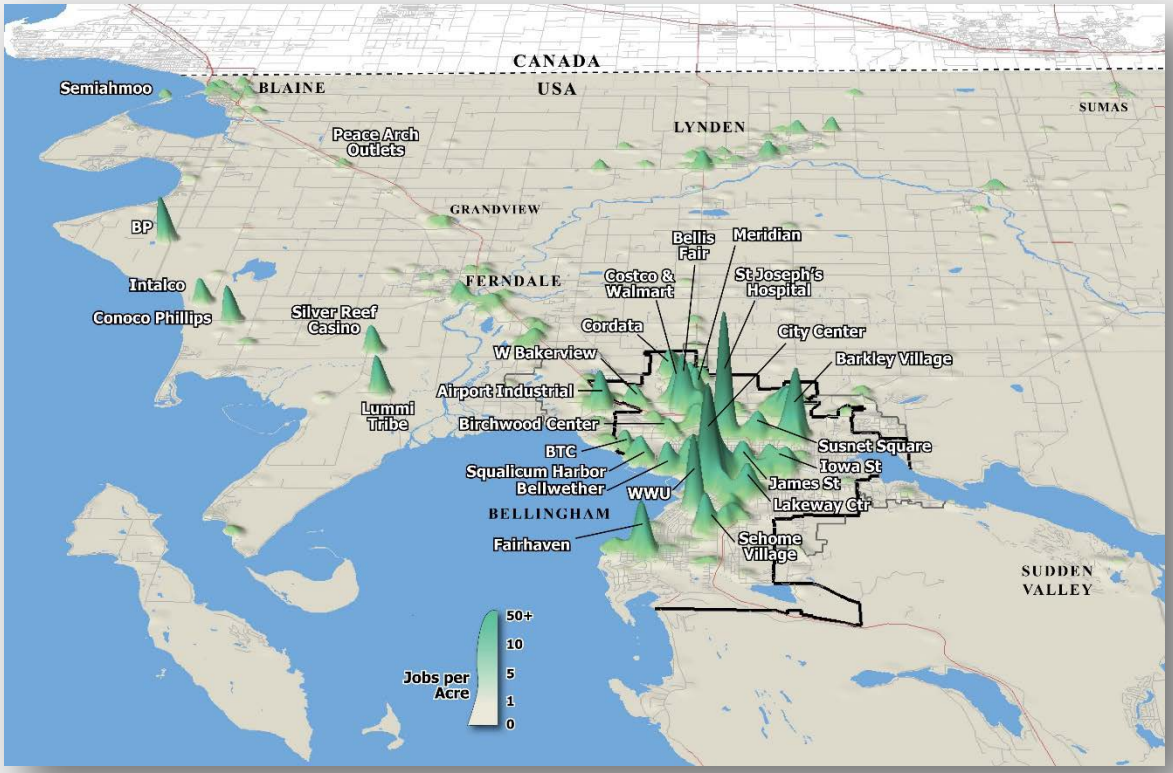
- Introduction to Bellingham
- Integrating Land Use & Transportation Goals
- You Get What You Measure
- Developing Measures to Get What You Want
- What's Next?

Bellingham, WA

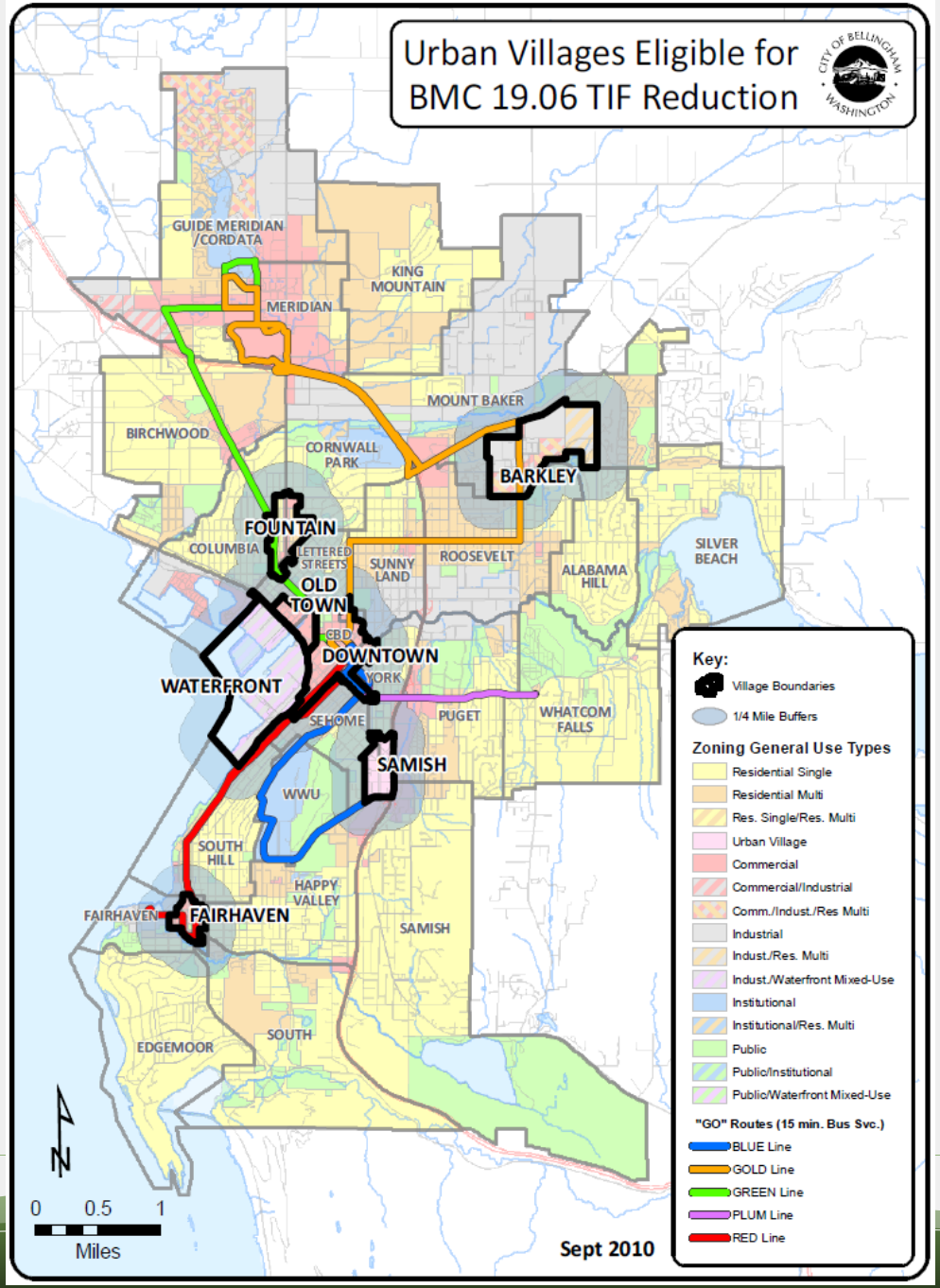
- 90 miles north of Seattle
- 60 miles south of Vancouver, BC, Canada
- Urban area ~ 95,000 residents
- College Town: WWU,WCC,BTC
- Outdoor Recreation Center

Bellingham is the regional center

(Employment, Shopping, Education, Medical Services, etc.)



2010 Employment Density

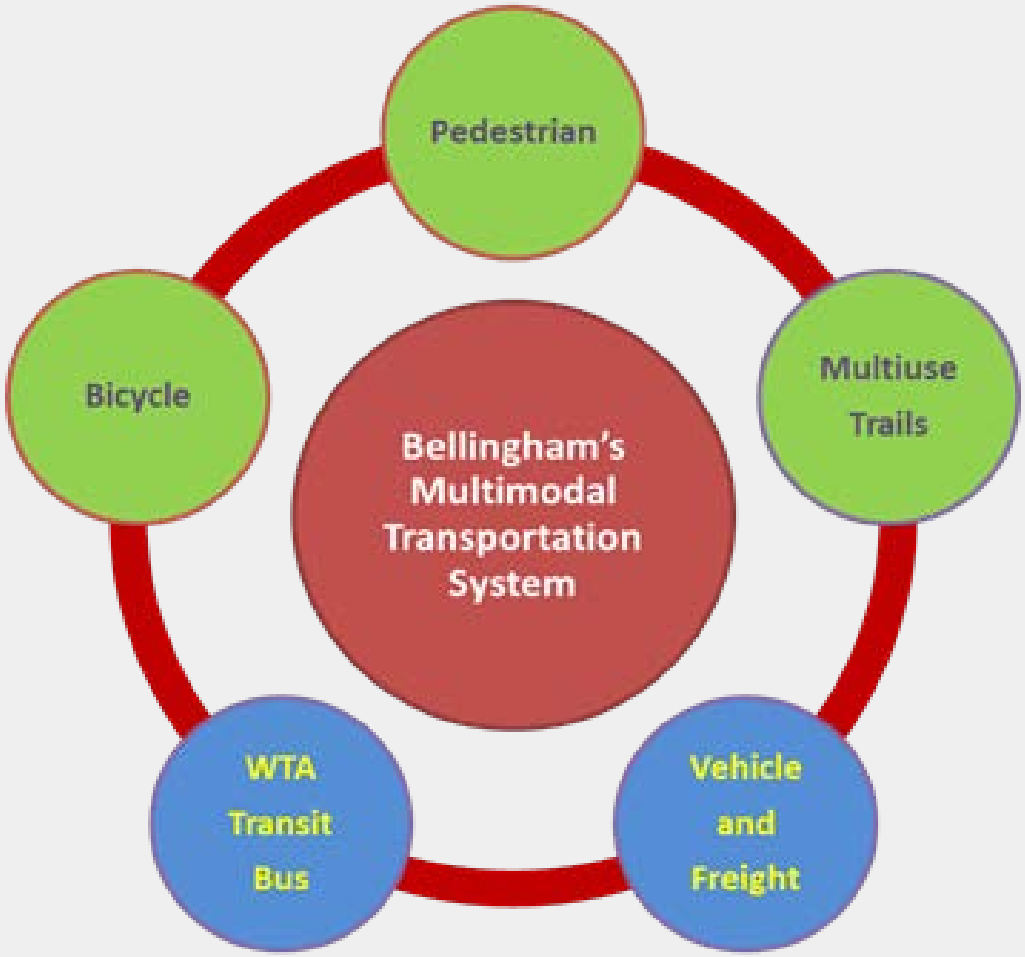


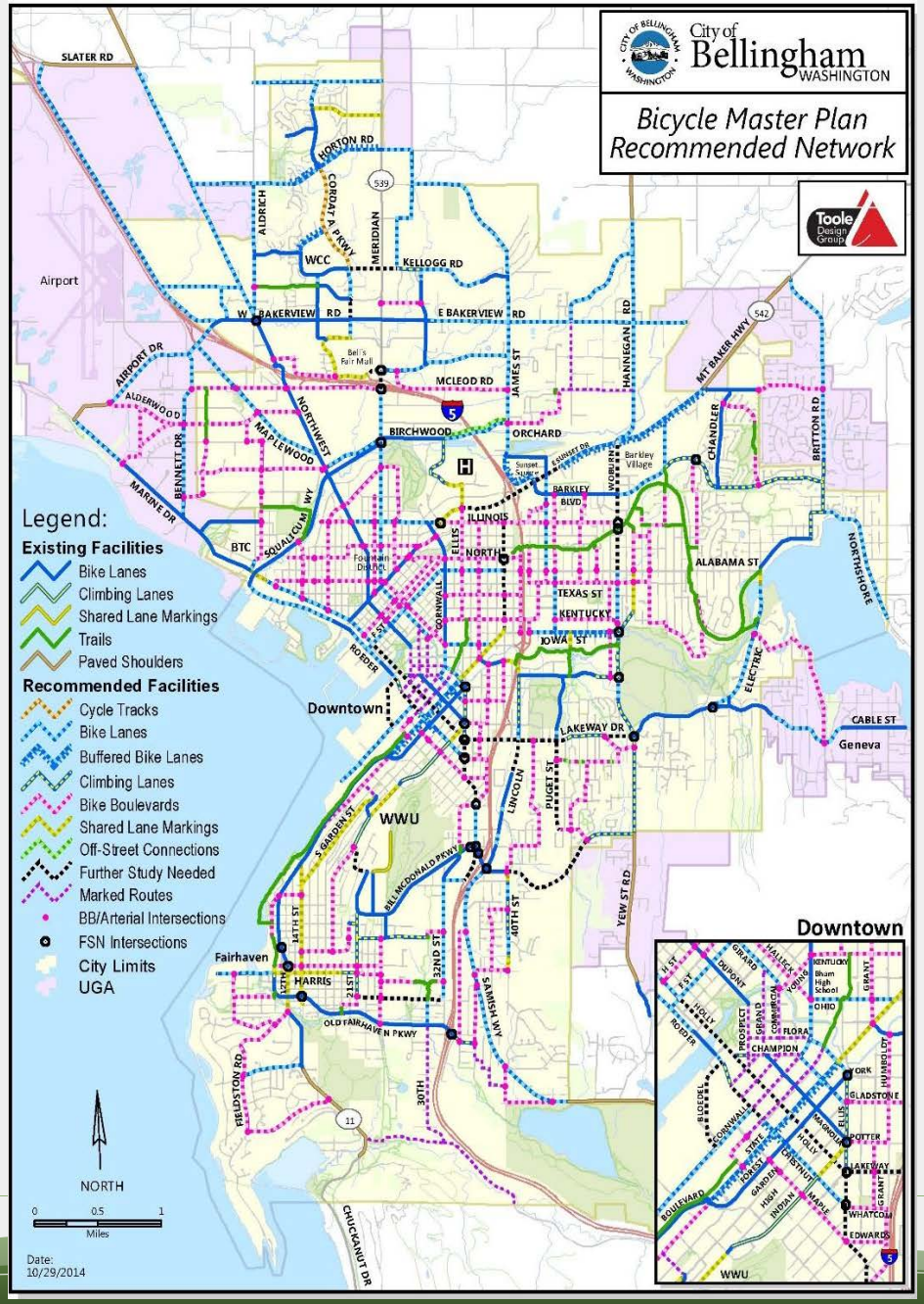
Land Use Goals

- **Prioritize Infill Over Sprawl**
- **Several master-planned mixed use "Urban Villages"**
- **All well-connected with**

✓ **High-frequency (15 min) transit**
✓ **ADA Pedestrian Sidewalks**
✓ **Marked Arterial Bike Lanes**
✓ **Multi-use "Greenways" Trails**
✓ **Multimodal Arterial Streets**

Bellingham's "Complete Network" Approach to Transportation Planning





Non-Motorized Plans

Pedestrian Master Plan (2012)

- 266-mile pedestrian network
- ~ 170 miles (64%) complete
- Identifies sidewalk needs
- Prioritizes improvements

Bicycle Master Plan (2014)

- 160-mile bicycle network
- ~ 35 miles (22%) complete
- Identifies bicycle facility needs
- Prioritizes improvements

Multiuse Greenways Trails

- Extensive citywide trail system
- 65 existing trail miles
- 37 miles in multimodal T-Con

Recommended BMP Network Summary

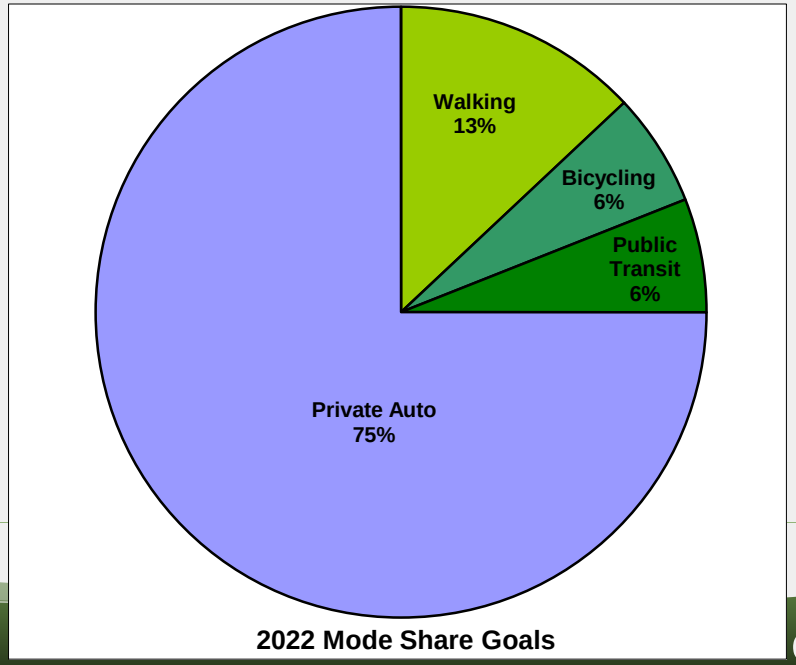
Facility Type	Existing Network Miles	Percent	Complete Network (Existing + Recommended)	Percent
Bike Lanes	31.9	82%	73.7	44%
Buffered Bike Lanes	0.0	0%	4.0	2%
Shared Lane Markings	0.4	1%	7.3	4%
Climbing Lane	0.7	2%	8.6	5%
Bicycle Boulevard	0.0	0%	52.1	31%
Paved Shoulder	5.7	15%	5.7	3%
Cycle Track	0.0	0%	0.8	<1%
Further Study	0.0	0%	9.4	6%
Marked Route	0.0	0%	7.8	5%
TOTAL	**38.7**	**100%**	**169.4**	**100%**

Bellingham's Transportation Mode Share & Goals

Mode	2008-2012[1]	2015[2]	2022[2]
Pedestrian	8.2%	11%	13%
Bicycle	4.1%	6%	6%
Transit Bus	5.8%	4%	6%
Automobile	75.9%	80%	75%
Work at Home	5.0%	~	~

Notes: (1) 2008-2012 American Community Survey (U.S. Census) data
(2) Bellingham Comprehensive Plan Transportation Element

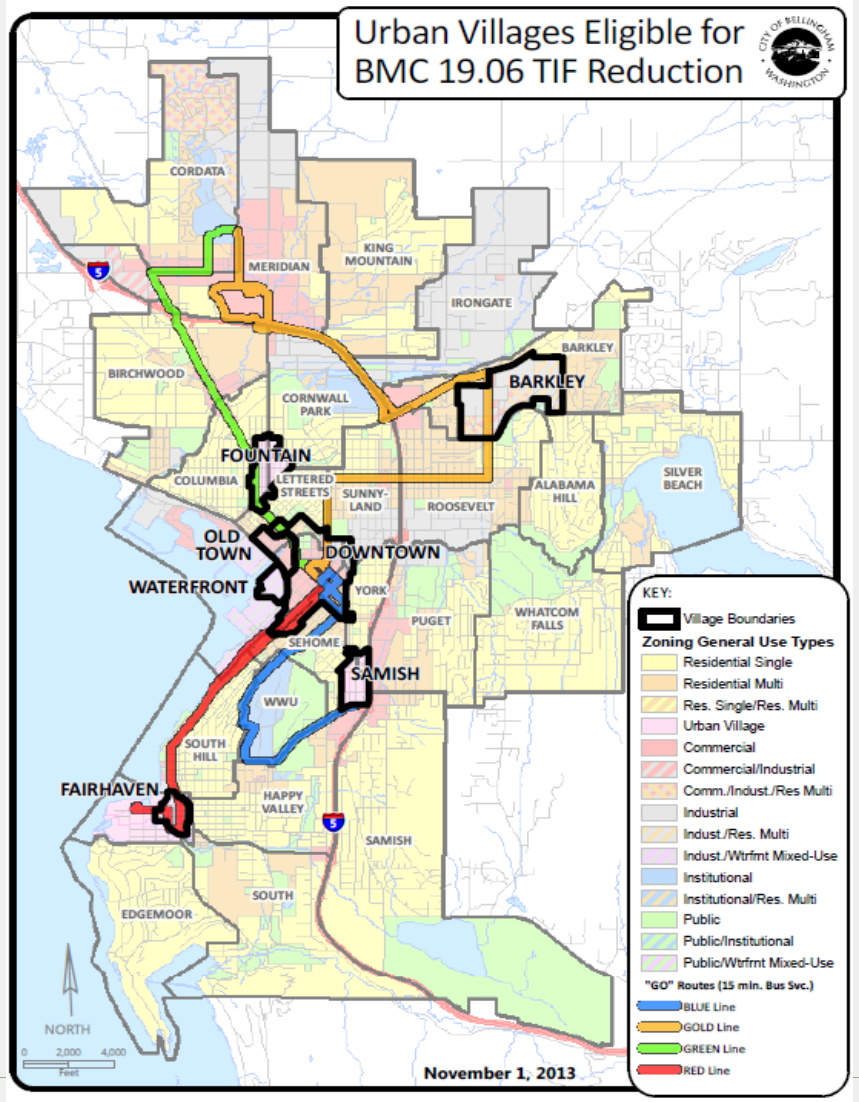
- **According to ACS, Bellingham has almost achieved mode share goals for 2022 in 2006 Comp Plan**
- **Comp Plan to be updated in 2016**
- **Will establish new 20-year mode share goals for 2016 - 2036**



Whatcom Transportation Authority (WTA)

Transit Service in Bellingham

- 30 fixed routes, 4 high-frequency routes
- 7 days/week, limited service Sat, Sun, eves
- 2002 – 2014: WTA ridership increased 86%
- 2008: highest annual ridership increase U.S.
- 2014: 4.97 million fixed route boardings, or 17,000 fixed route boardings/weekday
- WTA plays a major role transporting students and employees to and from
  - Western Washington University (WWU)
  - Whatcom Community College (WCC)
  - Bellingham Technical College BTC), and
  - Bellingham middle and high schools
- WWU students voted to fund bus passes for every student through tuition costs
- 2014: WWU students comprised 38% of WTA's overall fixed route ridership



You Get What You Measure

(Inadequate Metrics = Inadequate Outcomes)

- **Key Concepts**
  - **Washington Comprehensive Plan and Concurrency Requirements**
  - **Traditional LOS Standards & Perspectives**
  - **Common Outcomes Resulting from Inadequate Tools & Metrics**

Washington Growth Management Act (GMA) Requirements

"Comprehensive plan shall be an internally consistent document and all elements shall be consistent with the future land use map."

"The transportation element shall implement, and be consistent with, the land use element."

"Cities must adopt and enforce [transportation concurrency] ordinances to prohibit development causing the level of service on local arterials to decline below adopted [LOS] standards"

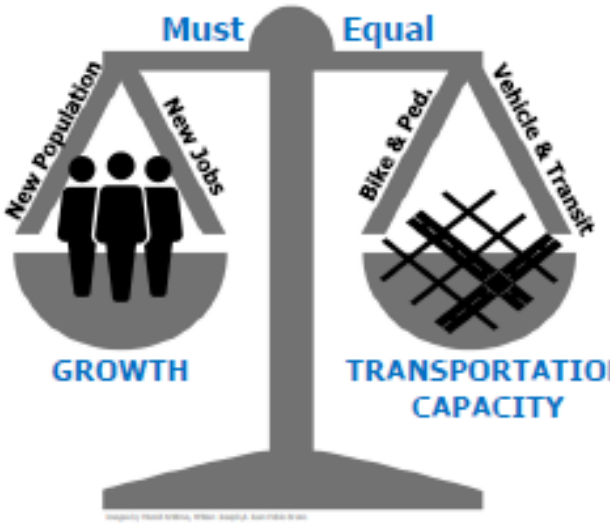
So ….. If land use element calls for infill, then transportation system and LOS standards should be designed to allow infill ….. rather than prevent it.

Sounds pretty simple so far ….. *right?*

What is “Transportation Concurrency?”

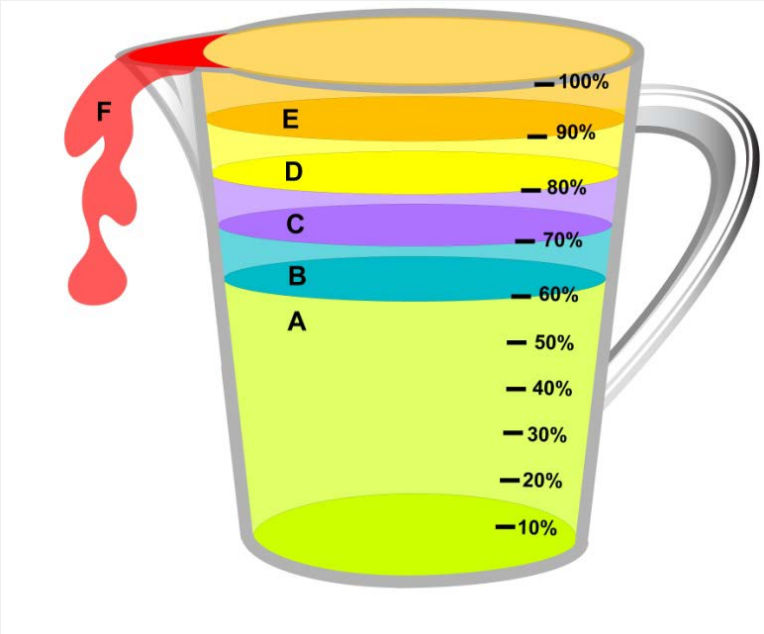
- **Also known as “Adequate Facilities Ordinances”**
- **Concept: Infrastructure must keep up with and be adequate to serve the level of planned growth**
- **Key: define “Adequate”**
- **Need to balance priorities**
- **Measuring “levels of service”**
- **Every community is different and should have LOS measures that reflect their own priorities**

Transportation Concurrency:
Growth management requires transportation systems to be adequate to serve planned growth. Transportation concurrency links land use plans with transportation and capital improvement plans, providing a tool for effectively managing the growth of our community.

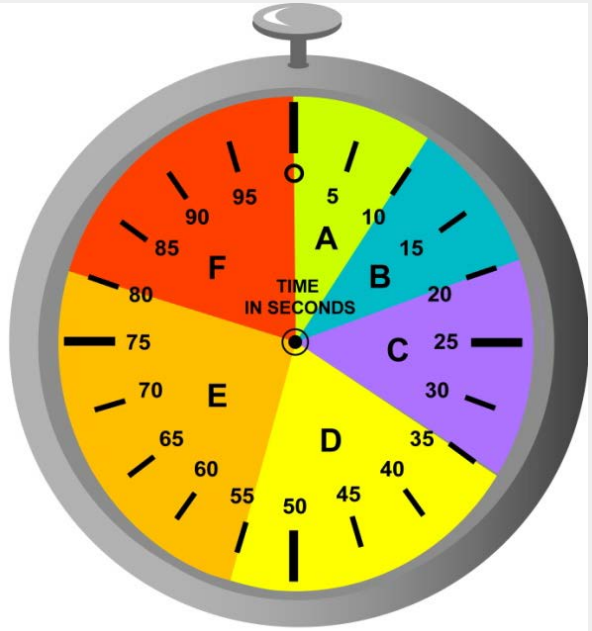


Traditional Highway Capacity Manual Level of Service (LOS) Measures

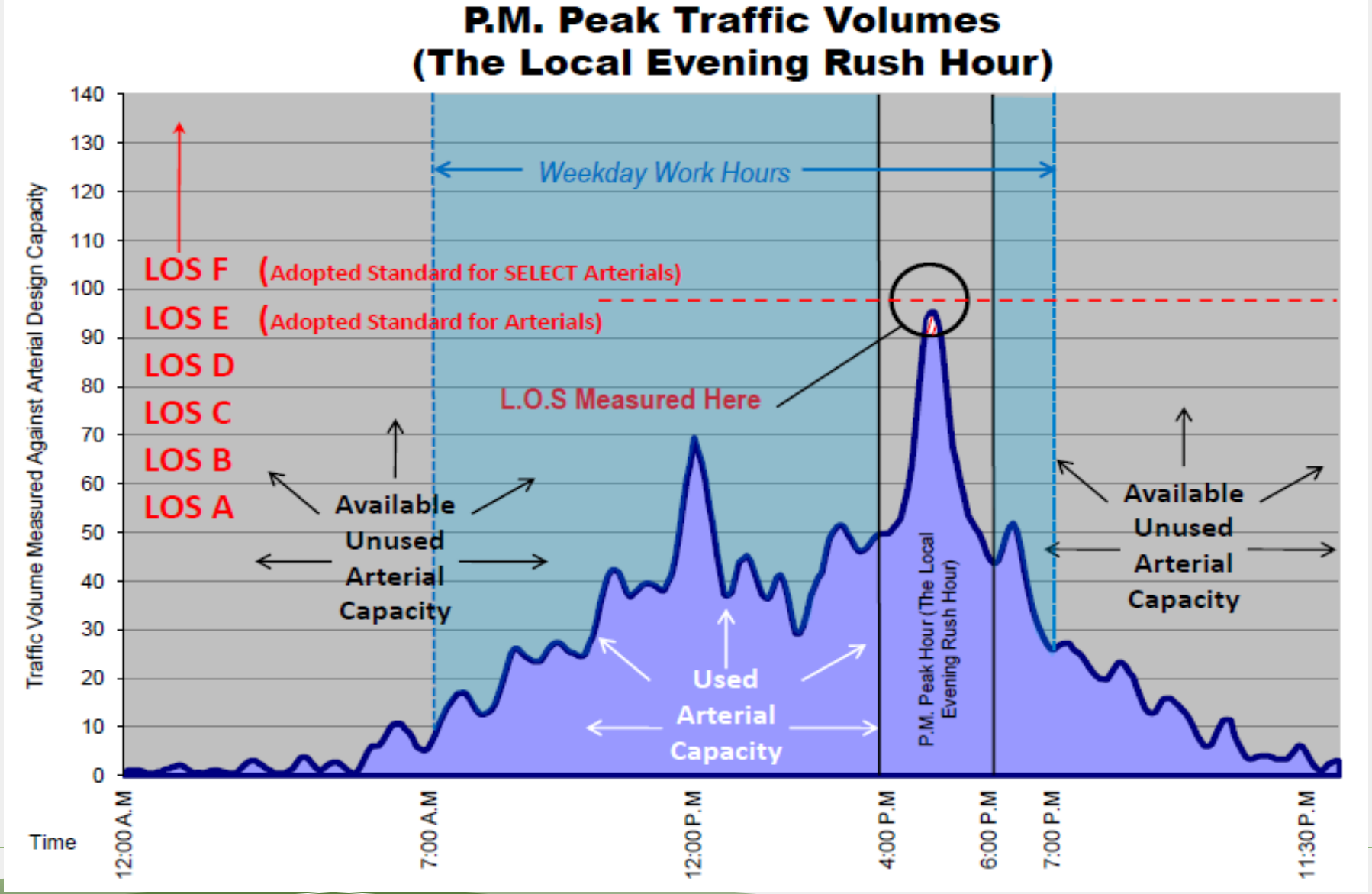
Roadway Segment
Volume-to-Capacity (v/c)
[Traffic vs Throughput]



Intersection Delay
(seconds) per Vehicle
[Driver Inconvenience]



Traditional HCM LOS is Auto-centric and Temporal



Terminology of Metrics: Inverse Values = Public Confusion

Public Experience: Grade Report Cards | **LOS** | **Traffic Engineering Demand vs. Supply**

Academic Achievement	Value Assigned	Transportation Capacity
90–100%	A	50–60%
80–90%	B	60–70%
70–80%	C	70–80%
60–70%	D	80–90%
N/A	E	90–100%
< 60%	F	>100%

Highway Capacity Manual letter value LOS classifications and inaccurate terminology, such as "failure," contribute to public confusion and controversy

Controversy: LOS + Traffic Congestion = OMG!

2005-2007 Bellingham news headlines fueled public controversy over City proposed Transportation Concurrency policy approach to allow p.m. peak hour LOS "F" (v/c 1.01+) at 12 intersections

"City policy would lead to severe traffic congestion"

- Sunday, June 5, 2005, Bellingham Herald Opinion

"City wrong to allow traffic woes to fester"

- Sunday, May 7, 2006, Bellingham Herald Opinion

"Bellingham maddeningly illogical on growth, traffic"

- Sunday, June 10, 2007, Bellingham Herald Opinion

Traditional LOS & GMA Concurrency Approach

- **GMA Goals:** **"compact urban infill" … "discourage urban sprawl" … "encourage multi-modal" … "maximize benefit, minimize cost"**
- **Common Approach:** **Static LOS standards based on a mode-limited measure (v/c or delay) from national manual (HCM) that is not registered to local community's land use and transportation goals, or ability to fund**
- **Common Implementation:** **Develop, deny, or mitigate (add vehicle capacity);** ***2007: Bellingham imposed development moratorium due to LOS violation***
- **Common Result:** **Road & intersection widening, expansive urban sprawl, land-intensive and auto-oriented transportation system**

……. ***Common results don't achieve the GMA goal.***

"Insanity: doing the same thing over and over again, but expecting different results"

– attributed to Albert Einstein

Perpetual Accommodation of Auto Convenience at the Cost of Other Modes and Land Use Goals

The Need to Change Perspectives

- **Traditional Transportation Planning:**

  Maximize vehicle thru-put; minimize vehicle delay; LOS F = "failure"
  Outcome = measure & mitigate (widen) for vehicle "needs" only

- **Public/Community Misunderstanding:**

  Planners should strive for misperceived "excellence" – LOS A, B or C

  Outcome = wasted tax dollars, under-utilized roads, auto-dominance

- **Anti-Growth Community Groups:**

  "Planning to Fail is Failing to Plan" *(Bham Group "Responsible Development")*

  Outcome = deny compact infill, *more* urban sprawl, *more* traffic

- **21st Century Transportation Planning:**

  Balance & integrate transportation system improvements according to

  land use context and mobility needs of PEOPLE, not just cars

  Outcome = Inclusive system of ped, bike, transit, and vehicle networks, maximize land use efficiency, affordable 24/7 transportation system.

  Trade-off: Expect peak hour urban traffic congestion as NORMAL

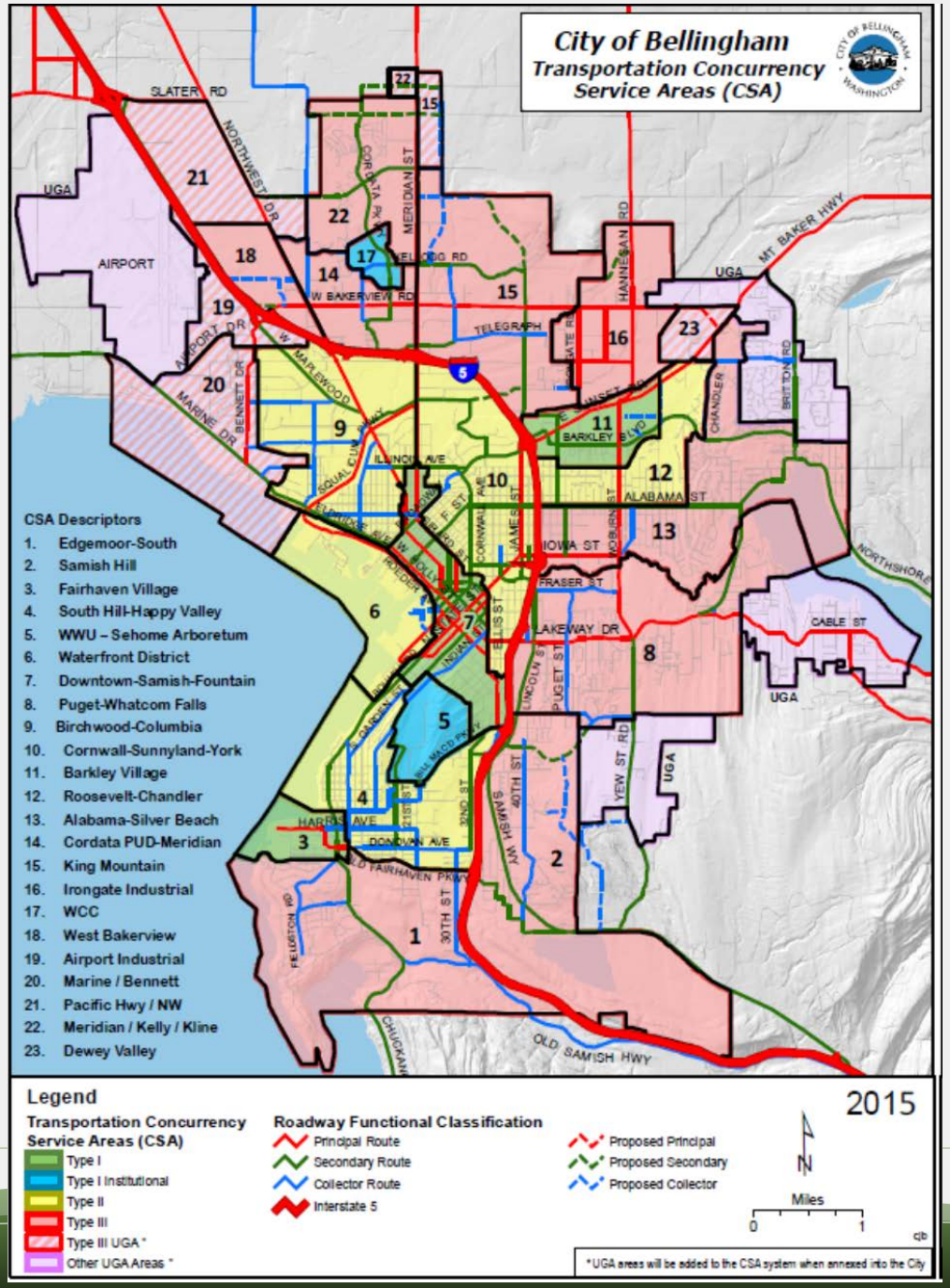
Measures to Get What You Want

- **Key Concepts**
  - **Regulatory Tools & GMA**
  - **Basic Assumptions About “Growth”**
  - **Bellingham’s Multimodal Measurements**
  - **Land Use Typology & “Policy Dials”**
  - **Annual Concurrency Status Reports**

Creating Multimodal Concurrency Measurements

- **2008 – transpogroup consultants help City study 15 alternative methods, develop preferred alternative, & implement Jan 1, 2009**
- **"Plan-based" - Concurrency Service Areas (CSA) *["Mobility Sheds"]***
  Variable typology & weighting factors based on land use context
- **Pedestrian = % completeness of network in Pedestrian Master Plan**
- **Bicycle = % completeness of network in Bicycle Master Plan**
- **Multiuse Trails = % completeness relative to Ped & Bike networks**
- **Transit = WTA seated 2-way capacity, frequency, & ridership counts**
- **Vehicles = pm peak 2-way arterial volume-to-capacity (v/c) – HCM LOS**

LOS now 1 of 5 measurements instead of traditional auto-only v/c LOS



Concurrency Service Areas (CSA)

"Mobility-Sheds"
based on land use context

3 Urban Village (Type 1) Green
Higher density mixed use urban

2 Urban Institutional (Type 1A)
Western Washington University
Whatcom Community College

5 Transition (Type 2) Yellow
Moderate density neighborhoods

7 Suburban (Type 3) Red
Lower density neighborhoods
Auto-centric commercial (north)

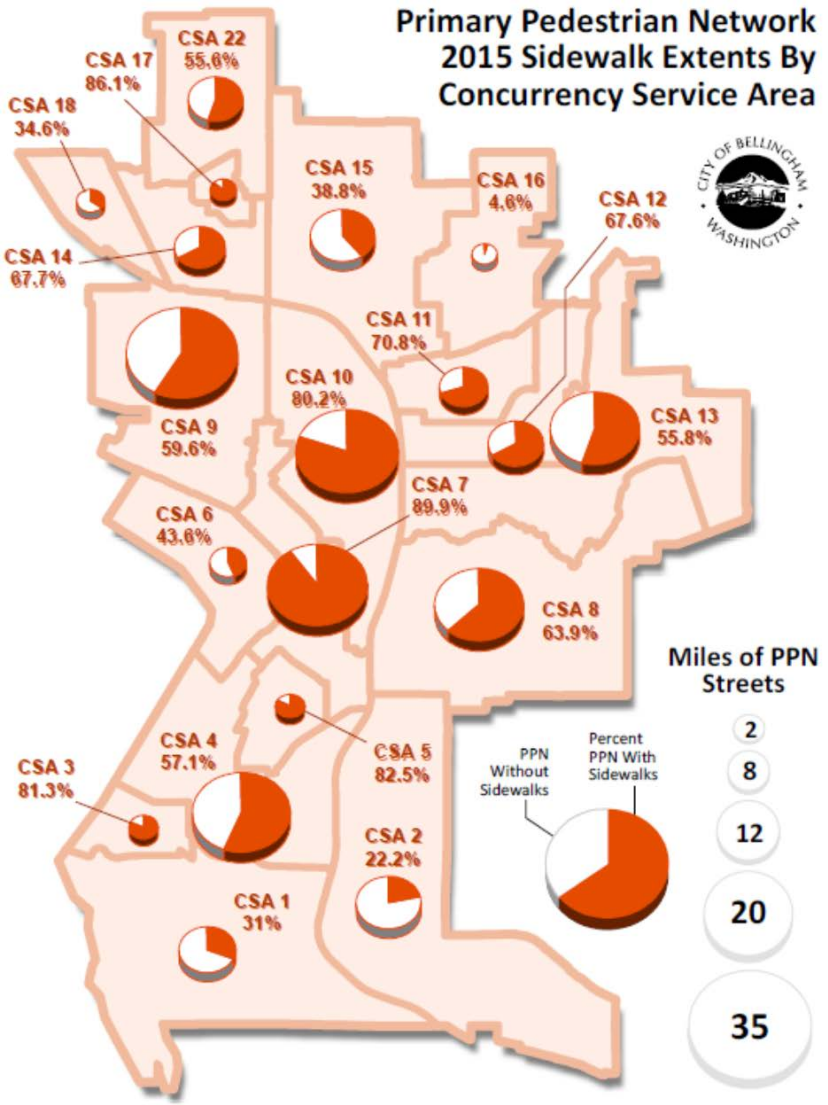
"Policy Dials"

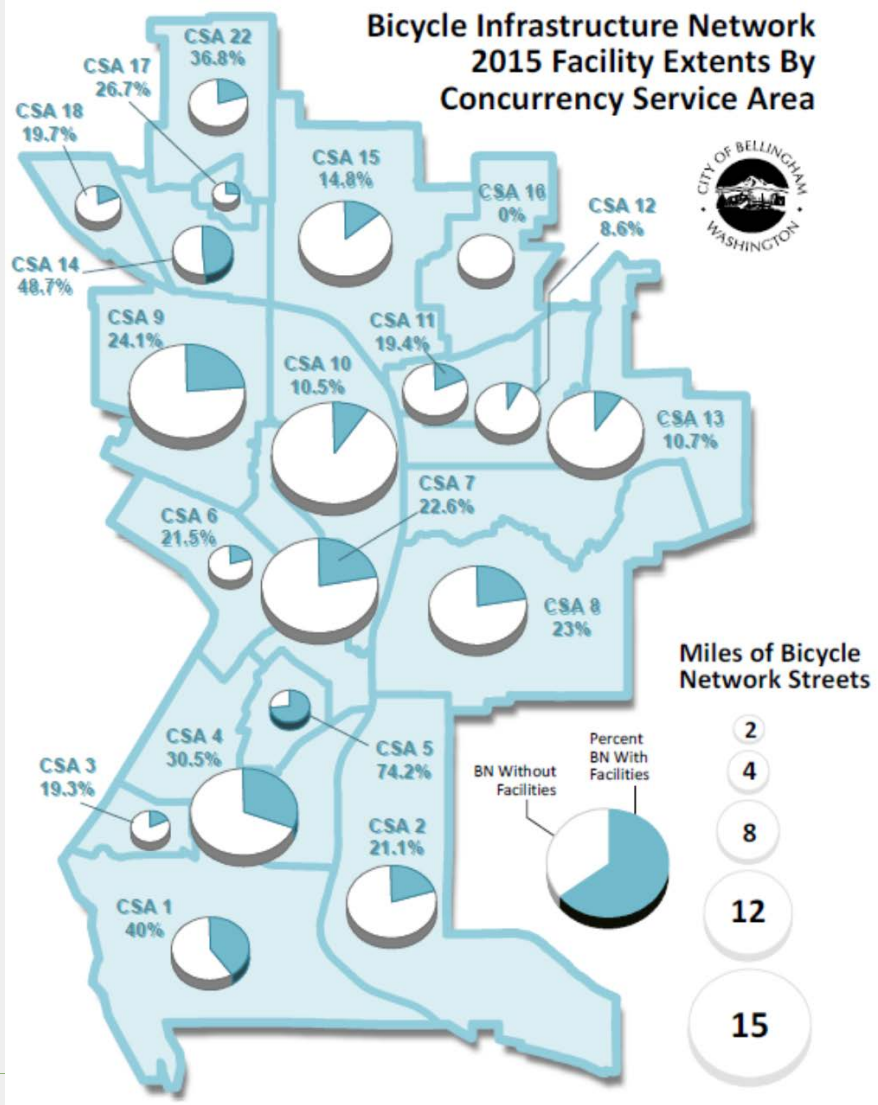
Mode Weight Factors

Based on Land Use Typology

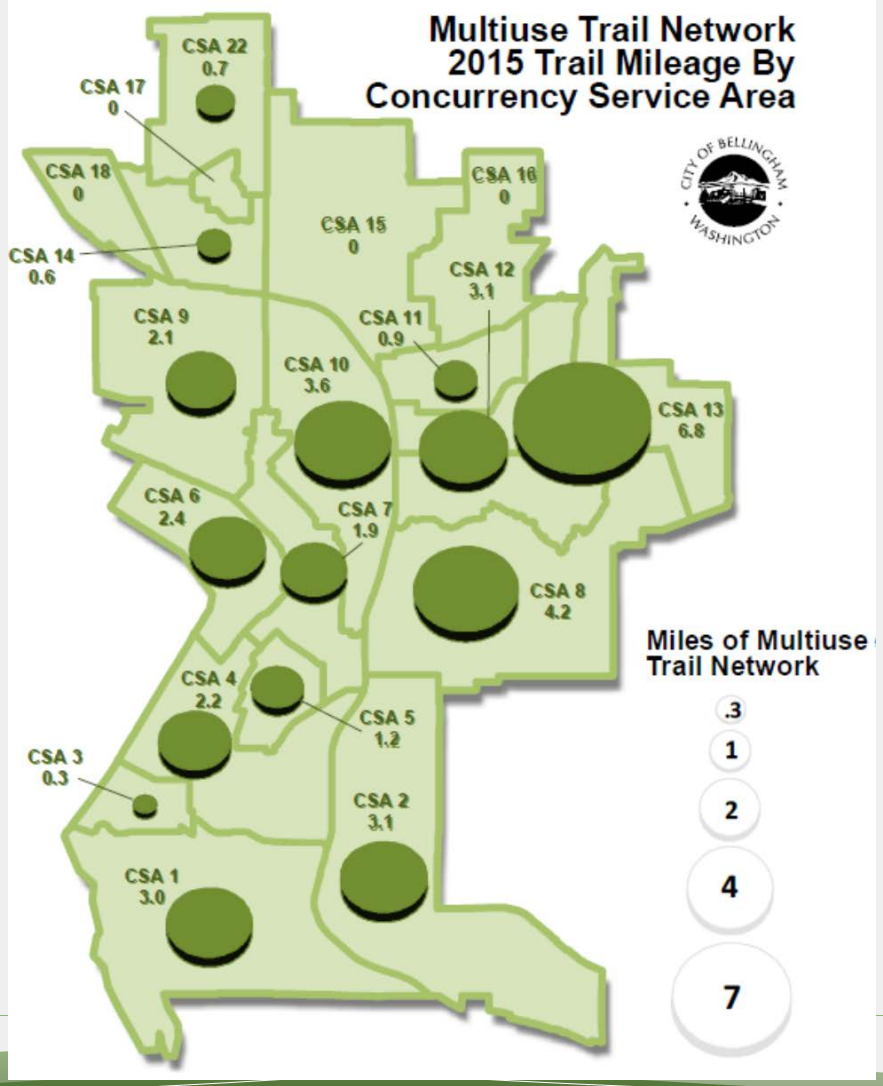
	Transportation Concurrency Service Areas		
Mode	Type 1[1]	Type 2[2]	Type 3[3]
Motorized			
Auto			
Mode weight factor[4]	0.70	0.80	0.90
Transit			
Mode weight factor[5]	1.00	1.00	0.80
Non-Motorized			
Pedestrian Percent threshold for minimum system complete[6]	50%	50%	50%
Person trip credit for 1% greater than minimum threshold[7]	20	20	20
Mode weight factor[8]	1.00	0.90	0.80
Bicycle Percent threshold for minimum system complete	50%	50%	50%
Person trip credit for 1% greater than threshold	20	20	20
Mode weight factor[9]	1.00	0.90	0.80
Multi-Use Trails[10] Person trip credit for 1% greater than threshold[11]	10	10	10
Mode weight factor[12]	1.00	0.90	0.80

Pedestrian & Bicycle Network Completeness by CSA





Multiuse Trail Completeness by CSA
(as part of the Pedestrian & Bicycle Network)



Multi-Use Trails include:

1.) Off-street multiuse trails used for **incidental** transportation purpose, **safe alternative to arterial streets**

2.) Paved or crushed rock surface trails with adequate drainage and **smooth surface for safe travel by cyclists**

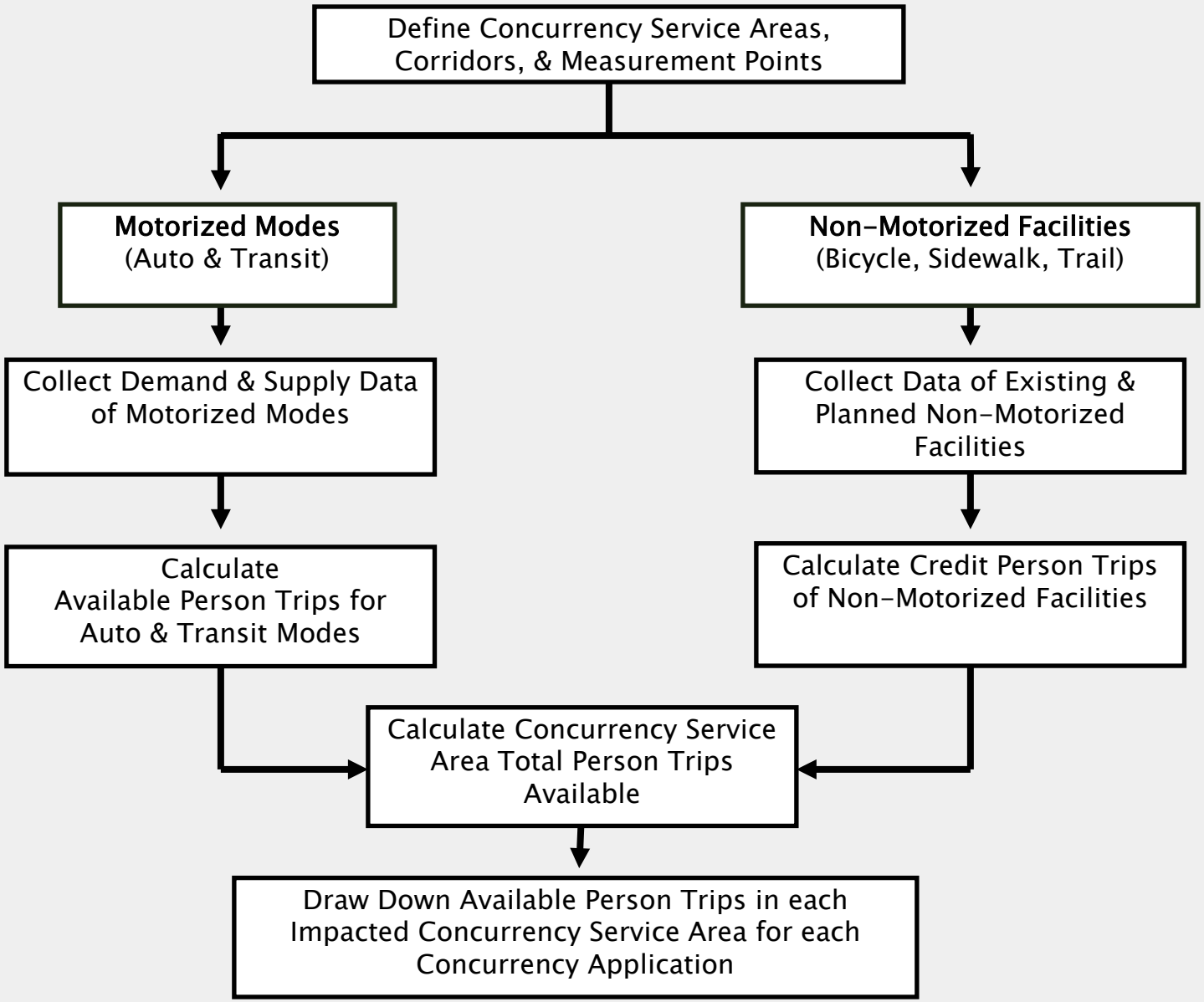
3.) Trails **at least 6- to 8-feet wide** for safe two-way passage of cyclists and pedestrians

4.) Trails with **slopes/grades of generally less than 5% average**

Annual Calculation

Person Trips Available by Concurrency Service Area

(PTA/CSA)



Transportation Report on Annual Mobility

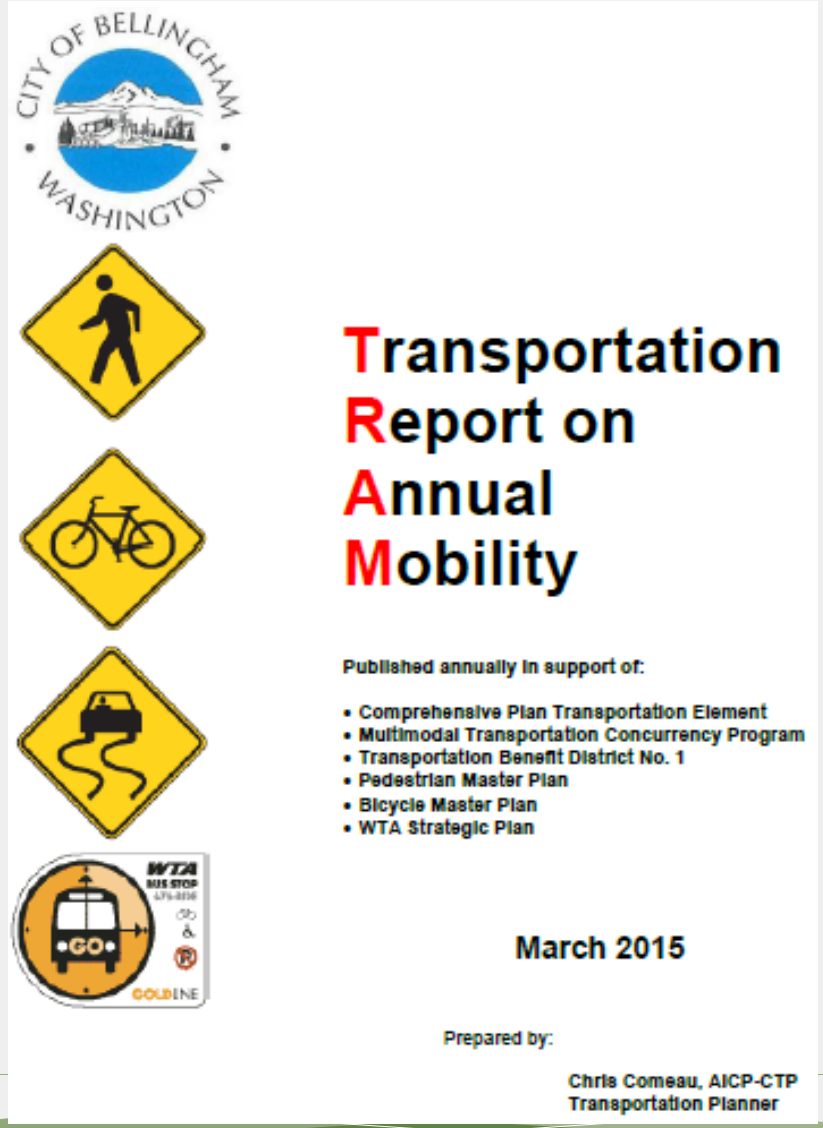
Analogy: Checking Account

- CSA balance of PTA
- Developments = withdrawal of PTA
- Capital projects = deposit of PTA
- Maintain positive CSA balance and all is well
- Exceed CSA balance, mitigate/add PTA

Table 2.1. Person Trips Available (PTA) by Concurrency Service Area (CSA) in 2015

	Sidewalks[1]		Multiuse Trails		Bicycle Facilities[2]		WTA[3]	Auto[3]	2015
	%	Credit	%	Credit	%	Credit	Transit	Arterial	Net
CSA	Comp	PTA	Comp	PTA	Comp	PTA	PTA	PTA	PTA[4]
1. Edgemoor-South	31%	0	39%	390	39.6%	0	53	975	1,401
2. Samish Hill	22.2%	0	31%	310	21.1%	0	21	2,367	2,697
3. Fairhaven Urban Village	81.3%	620	13%	130	19.3%	0	201	1,276	2,153
4. South Hill-Happy Valley	57.1%	126	16%	160	30.5%	0	127	1,611	1,915
5. WWU	82.5%	660	50%	500	74.2%	480	748	307	2,691
6. Waterfront District[5]	43.6%	0	86%	860	21.5%	0	0	880	1,740
7. Urban Core (4 Villages)	89.9%	800	12%	120	22%	0	1,088	6,952	8,282
8. Puget-Whatcom Falls	63.9%	224	37%	370	23%	0	309	3,599	3,947
9. Birchwood-Columbia	59.6%	180	14%	140	24.1%	0	305	2,071	2,576
10. Cornwall-Sunnyland-York	80.2%	540	20%	200	10.5%	0	375	3,257	4,022
11. Barkley Urban Village	70.8%	420	16.0%	160	19.4%	0	329	3,565	2,287
12. Roosevelt-Chandler	67.6%	324	55%	550	8.6%	0	394	1,098	2,356
13. Alabama-Silver Beach	55.8%	96	61%	610	10.7%	0	74	2,551	3,323
14. Cordata South	67.7%	288	12%	120	48.7%	0	820	7,294	7,117
15. King Mountain	38.8%	0	0%	0	14.8%	0	20	2,412	1,179
16. Irongate Industrial	4.6%	0	0%	0	0%	0	0	3,529	3,192
17. WCC	86.1%	576	0%	0	26.7%	0	435	2,300	3,311
18. West Bakerview	34.6%	0	0%	0	19.7%	0	122	2,093	737
19. UGA: Airport Industrial	1.7%	0	0%	0	0%	0	0	748	748
20. UGA: Marine-Bennett	0.8%	0	25%	250	0%	0	0	1,683	1,933
21. UGA: Pacific Hwy Industrial	0%	0	0%	0	0%	0	0	1,334	1,334
22. Cordata North	55.6%	96	15%	150	21.3%	0	75	4,410	4,650
23. UGA: East Bakerview	0.0%	0	0%	0	100.0%	800	0	1,721	2,521
Citywide									65,891

Many Benefits of Annual Reporting



Transportation
Report on
Annual
Mobility

Published annually in support of:

- Comprehensive Plan Transportation Element
- Multimodal Transportation Concurrency Program
- Transportation Benefit District No. 1
- Pedestrian Master Plan
- Bicycle Master Plan
- WTA Strategic Plan

March 2015

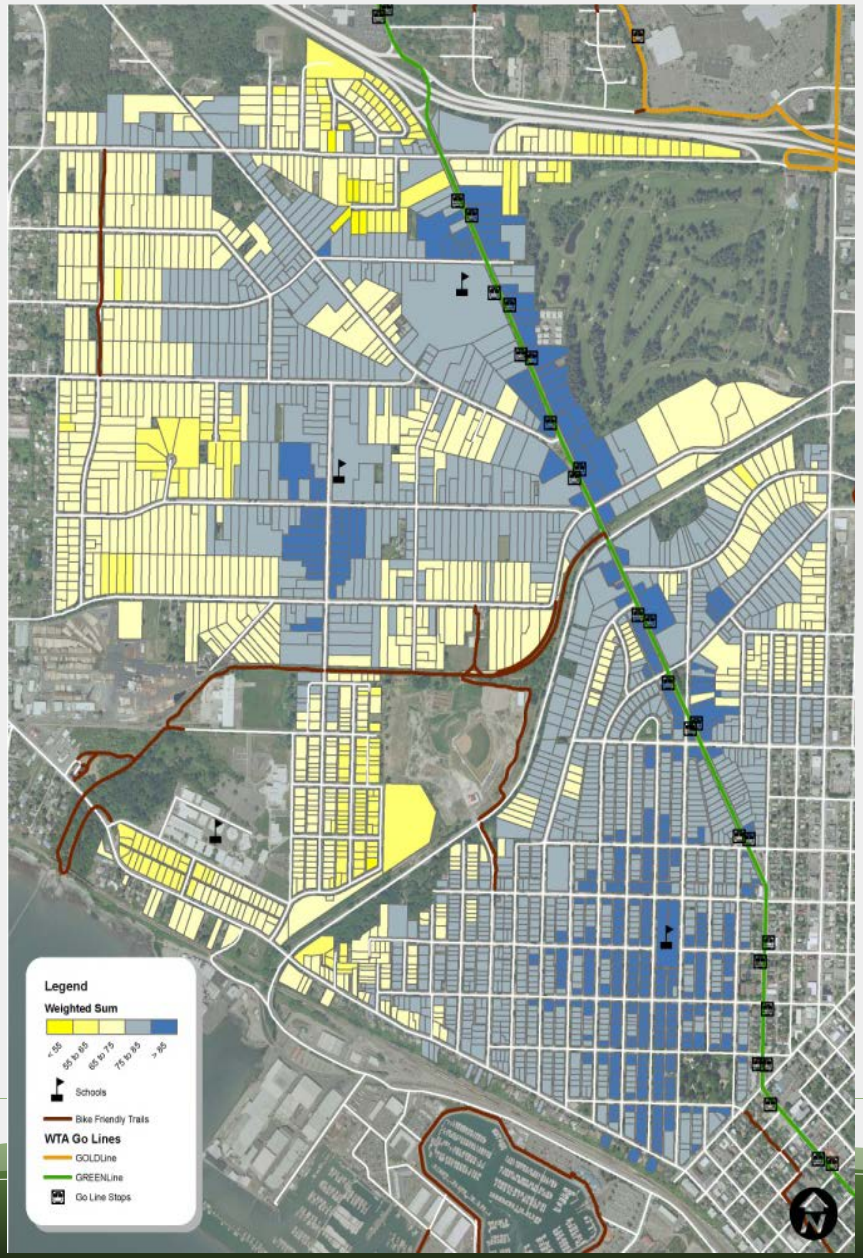
Prepared by:

Chris Comeau, AICP-CTP
Transportation Planner

- ✓ GMA concurrency compliance
- ✓ 'Over horizon' look at city-wide system
- ✓ Informs electeds, developers, and public
- ✓ Informs 6-Year TIP capital improvements
- ✓ Simplifies development review process
- ✓ Mitigation for sidewalk & bike facilities
- ✓ Implement Pedestrian & Bicycle Plans
- ✓ Implement Land & Transportation goals
- ✓ Recommend program enhancements

http://www.cob.org/documents/pw/transportation/2015-tram.pdf

What's Next? Connectivity Metrics

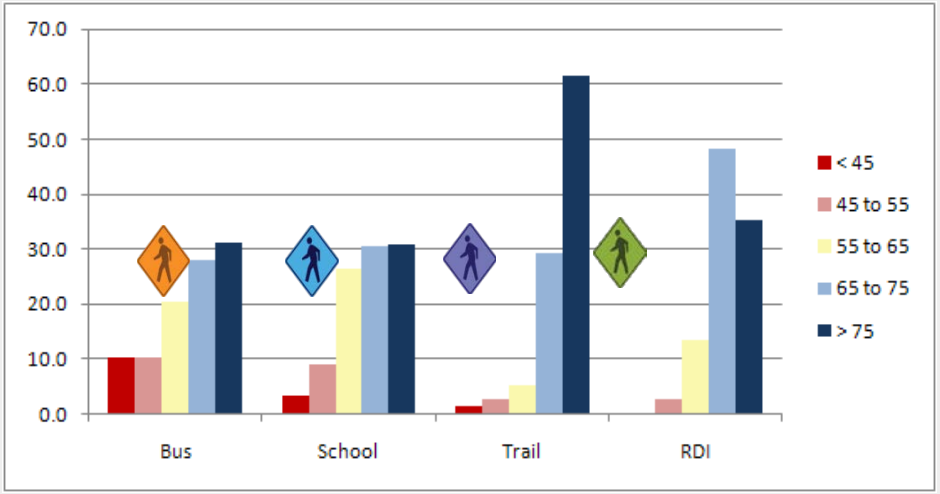


transpogroup ViaCity

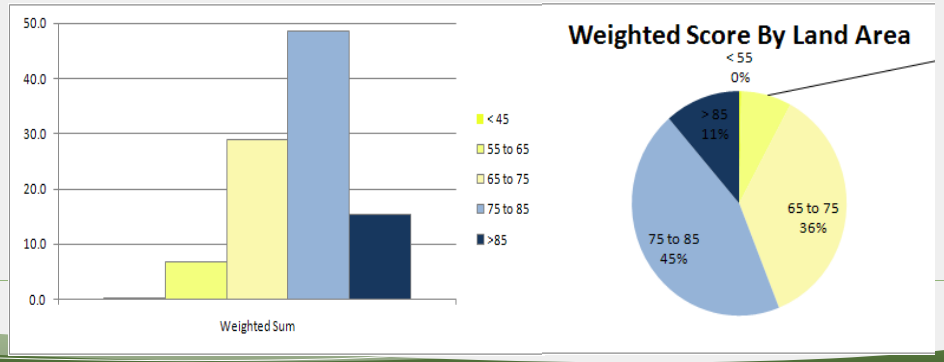
Route Directness Index (RDI)

CSA #9 Composite Scores

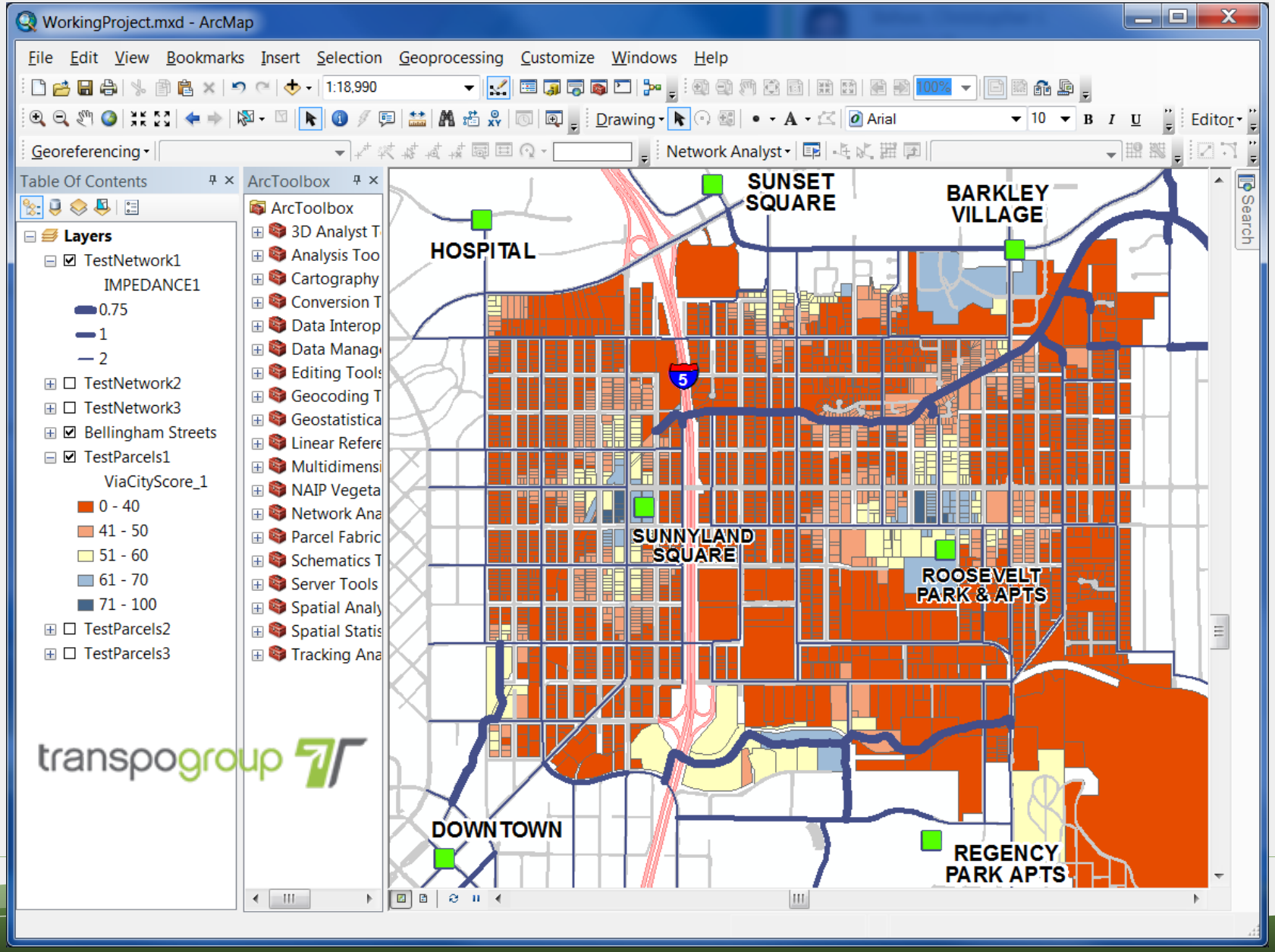
Connectivity Indices



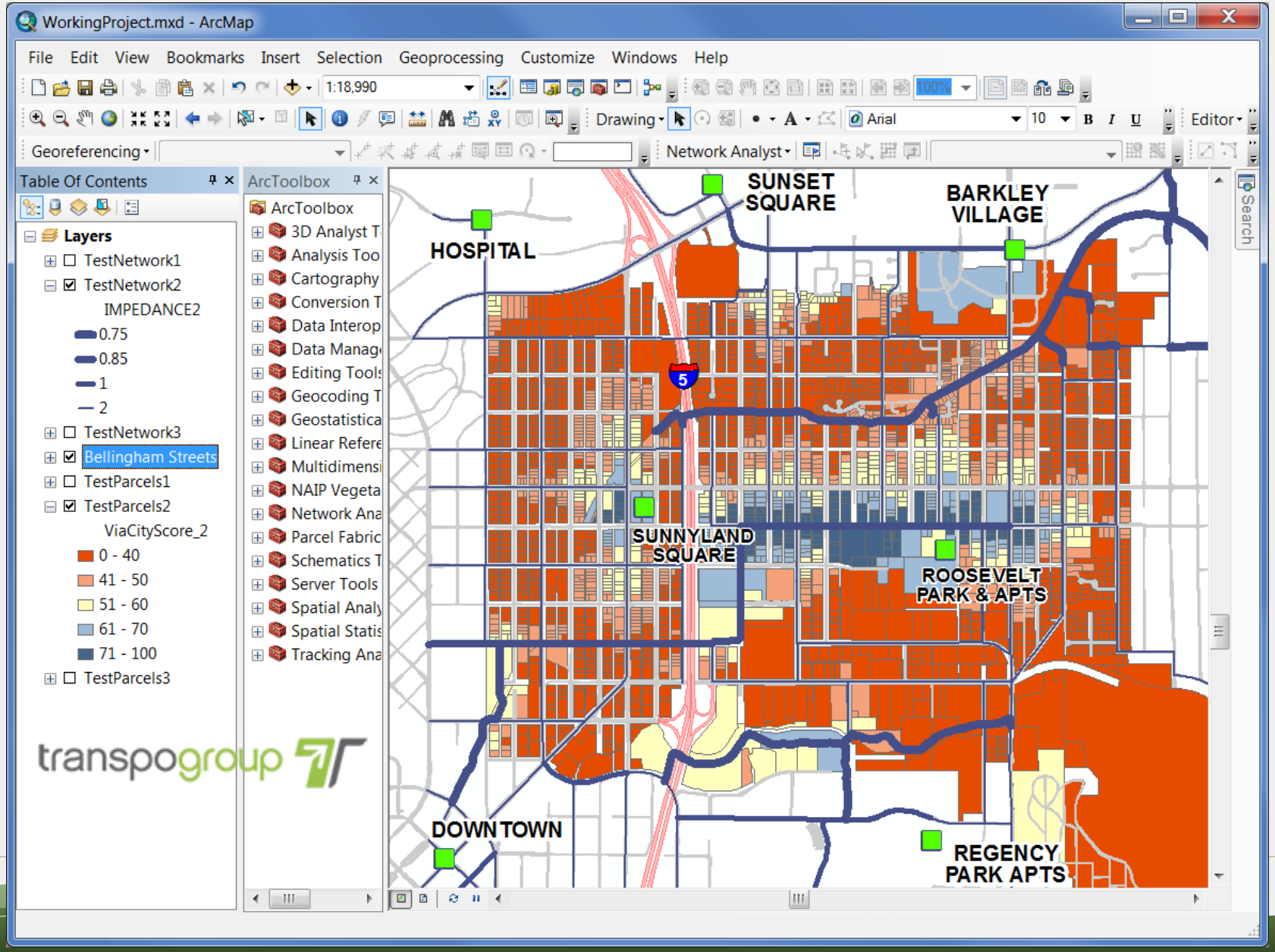
Composite Scoring



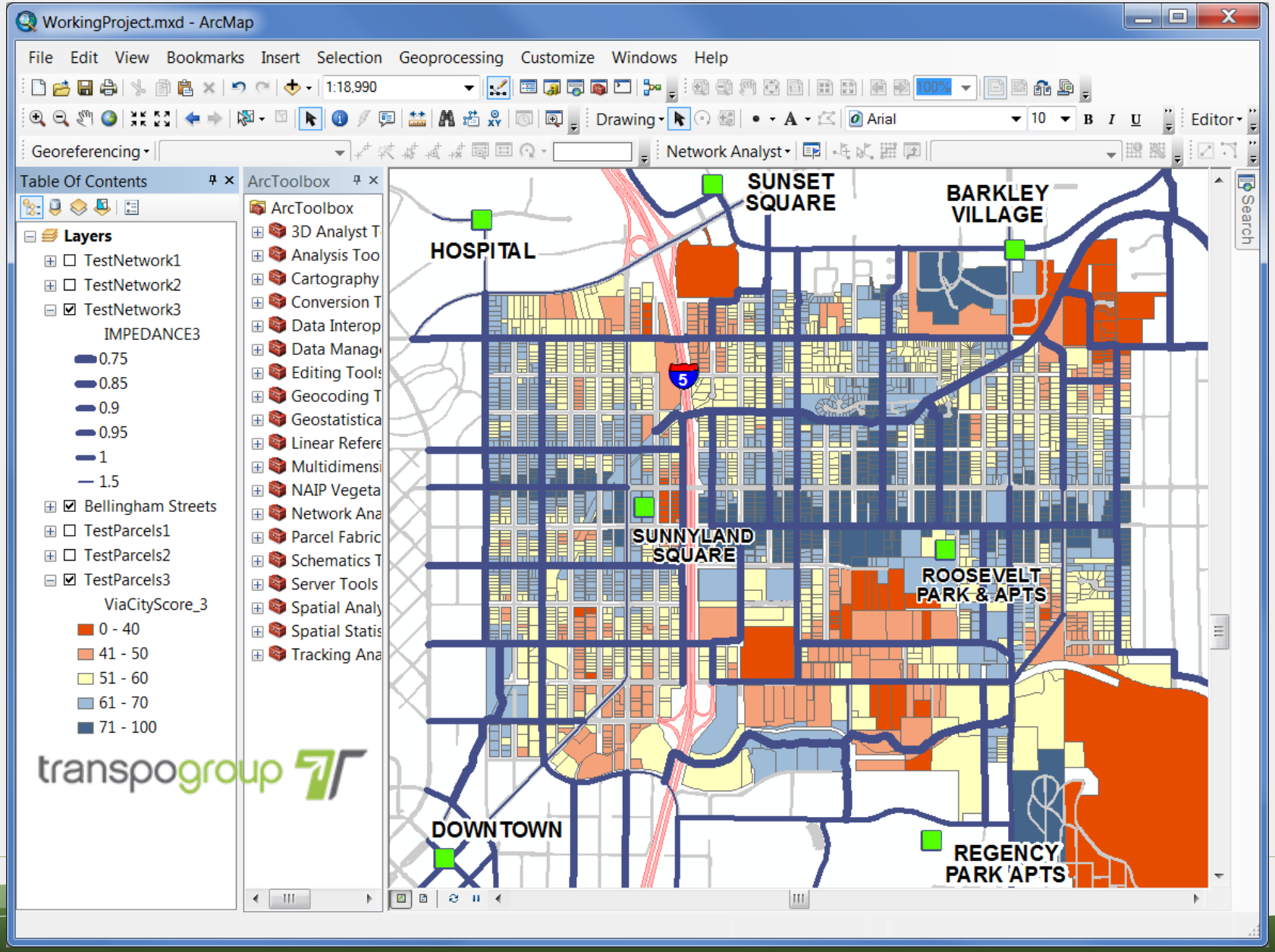
ViaCity - 2013 Parcel-based Connectivity – Roosevelt Neighborhood (Red = Low)



ViaCity Connectivity Benefit of the Kentucky-Texas Bike Boulevard (Blue = High)



ViaCity Connectivity Benefit of Full Bike Network Implementation (Blue = High)



State Street Corridor
Existing Conditions

Major entry/exit for downtown

2002 - 3 lanes to 2, added 7’ bike lane

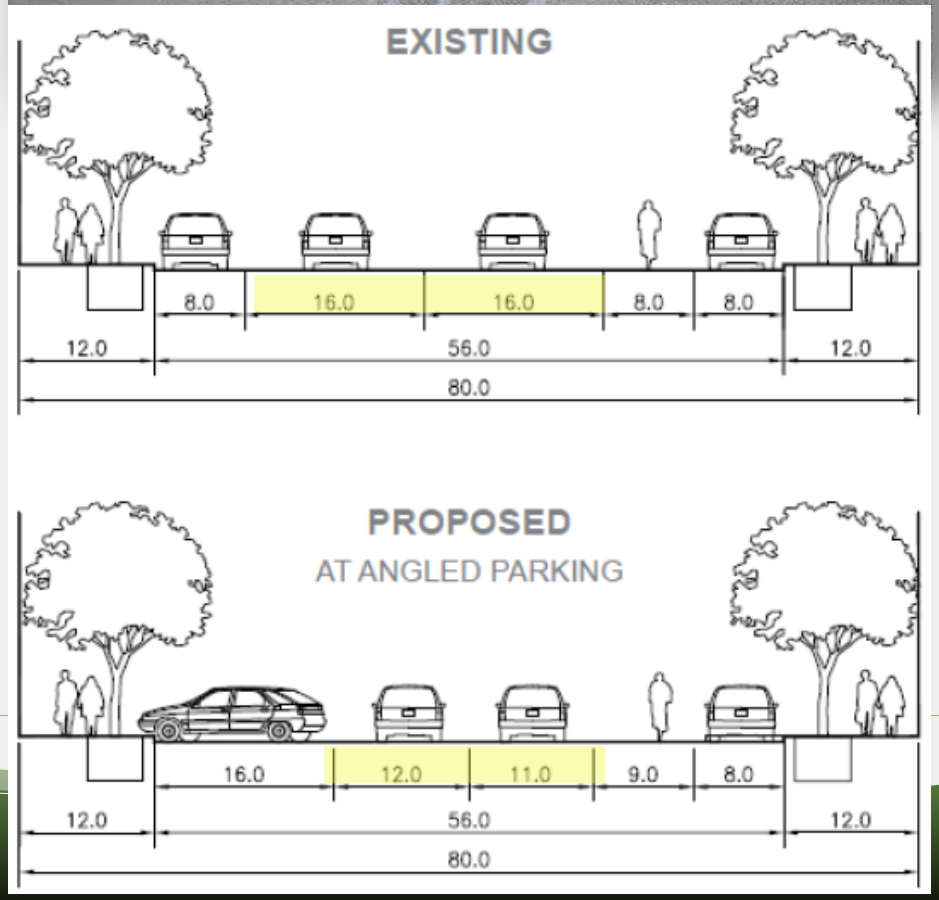
Bike route: Downtown to Fairhaven, links to Bike Boulevards

Lots of pedestrians crossing State

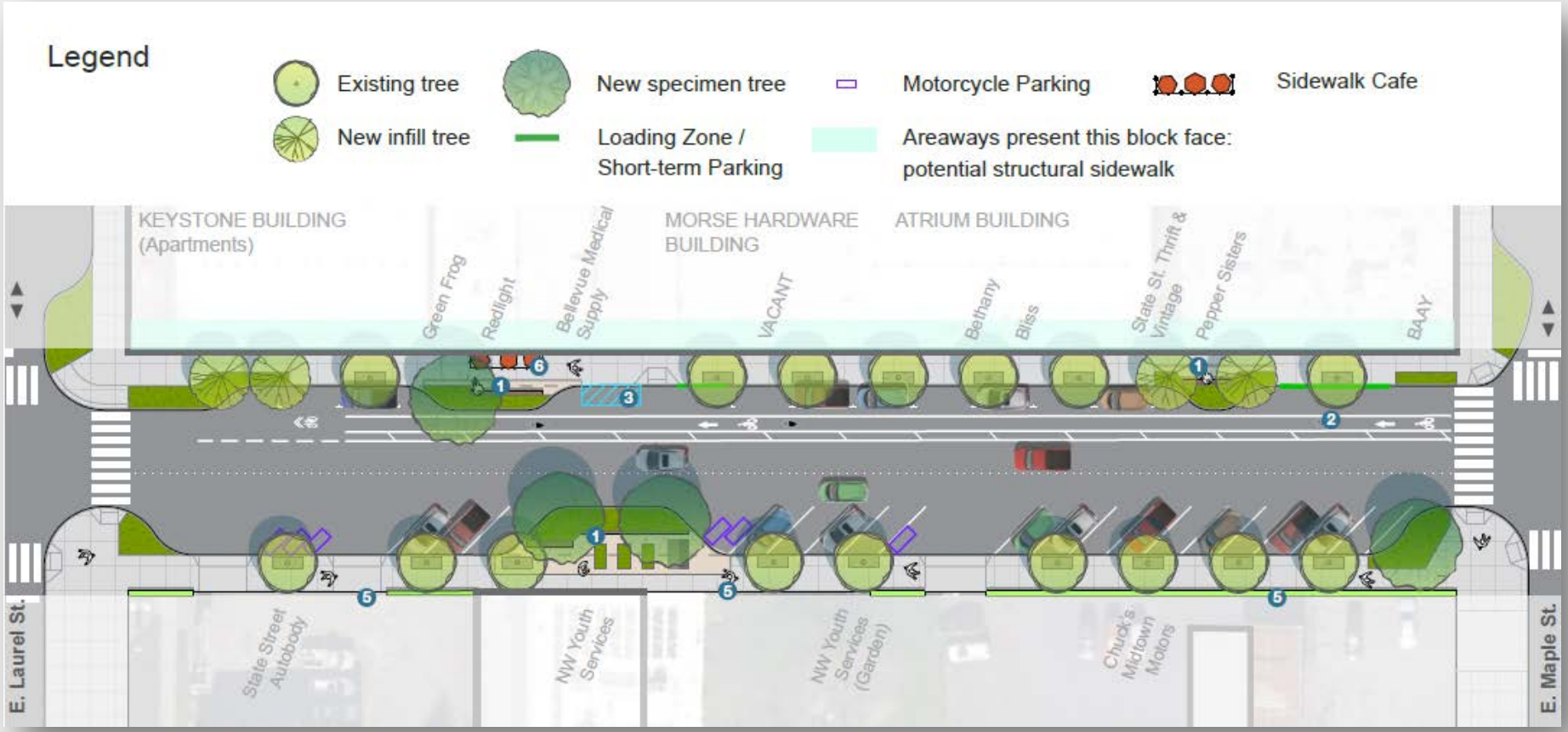
WTA high-frequency transit route

Designated freight truck route

2014 - traffic volume = 6,400 ADT



Integrated Land Use-Transportation Corridor Transformation



Recent Projects:

2013 - State/Maple Street Intersection	*$410,000*
2013 - State/Wharf Roundabout	*$3,200,000*
2014 - Intersection Rain Gardens	*$50,000 per*
2015 - State/Laurel Street Intersection	*$515,000*

Multimodal Metrics Summary

- **There is no universal land use-transportation performance metric**
  - **Local urban "needs" are *multimodal* and far different than rural, State, or federal**
- **You get what you measure; design measures to get what you want**
  - **Prioritize metrics to emphasize movement of people, not just cars**
- **Urban traffic congestion does not equal "failure" of facilities**
  - **Peak hour congestion is inevitable, unavoidable, temporary driver inconvenience**
- **People want "Cool," "Hip," "Happening" places - "People Magnets"**
  - **Measure how people get there: Connectivity, accessibility, demand**
  - **Measure safety/comfort for most vulnerable users: Pedestrian, bicycle, transit**
- **There is much more work to be done!**
  - **Integrating Ped/Bike/Transit Data into multimodal TIAs and impact mitigation**

For more information

http://www.cob.org/services/planning/transportation/index.aspx

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