



# **Moving Beyond The Automobile:** **Bellingham's Multimodal Transportation Concurrency Program**



**WASHINGTON STATE TRANSPORTATION COMMISSION**

**Olympia, WA - January 13, 2016**



City of  
**Bellingham** Public Works

# Multimodal Transportation Concurrency

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

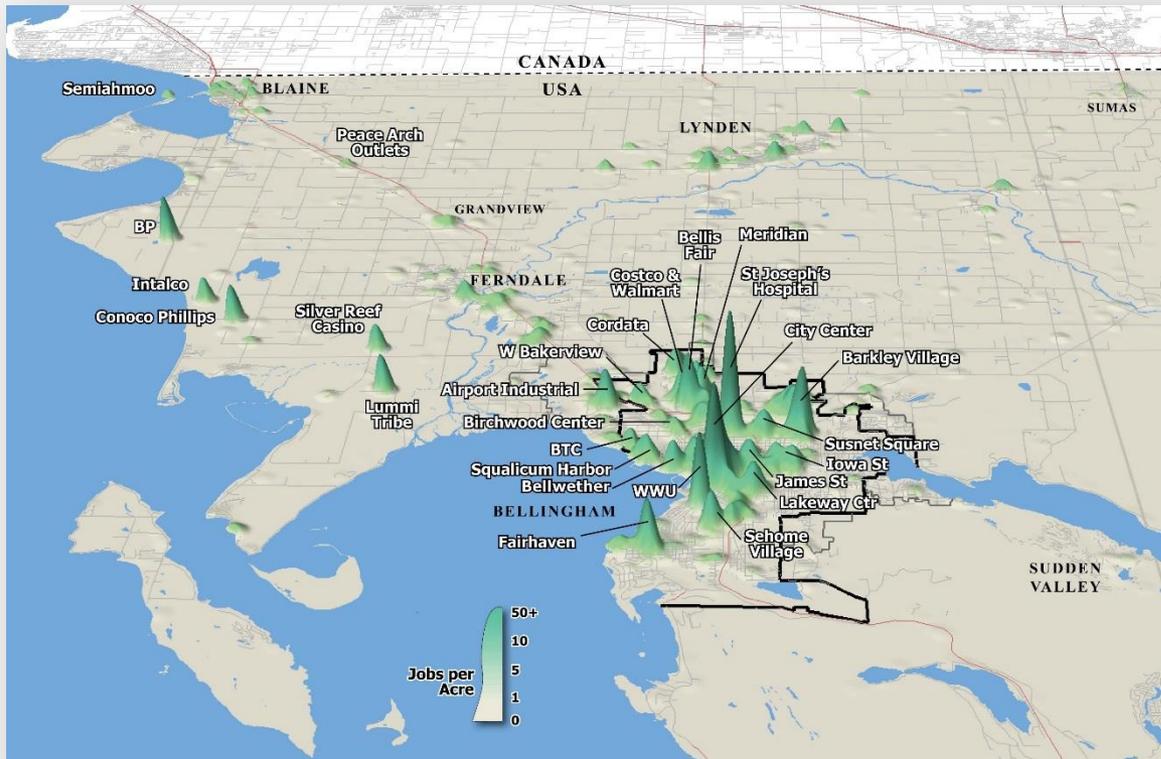
# Bellingham, WA

- 90 miles north of Seattle
- 60 miles south of Vancouver, BC, Canada
- Urban area ~ 95,000 residents
- Regional employment, shopping, entertainment, education, & medical center



# Bellingham is the regional center

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

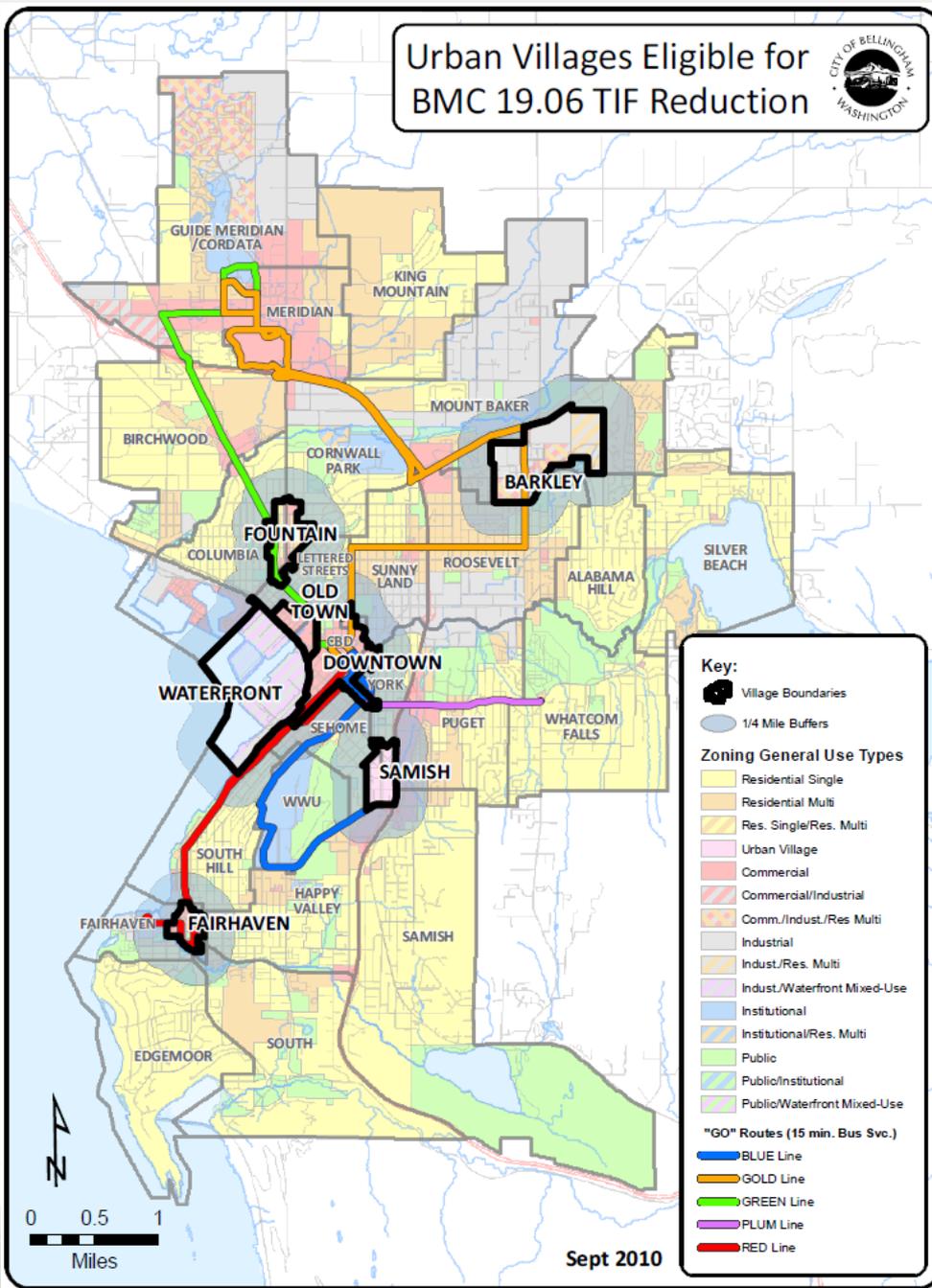


2010 Employment Density

## Inflow/Outflow Job Counts: Bellingham City Limits



Urban Villages Eligible for  
BMC 19.06 TIF Reduction



# Land Use Goals

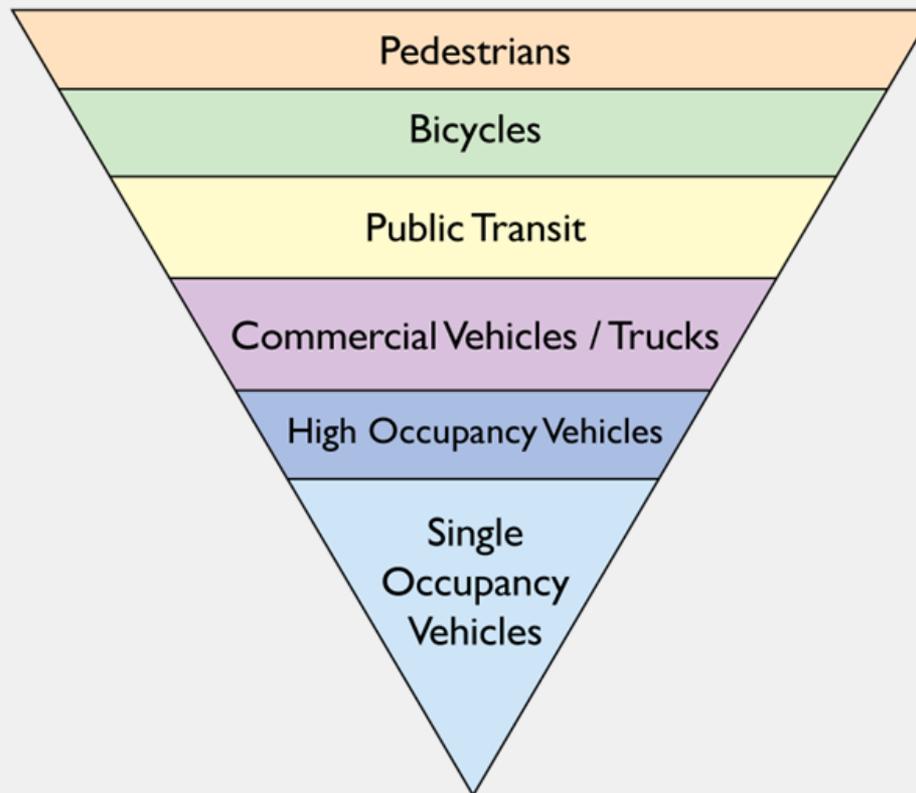
- Prioritize Infill Over Sprawl
- Several master-planned mixed use **“Urban Villages”**
- All well-connected with
  - ✓ **High-frequency (15 min) transit**
  - ✓ ADA Pedestrian Sidewalks
  - ✓ **Marked Arterial Bike Lanes**
  - ✓ **Multi-use “Greenways” Trails**
  - ✓ **Multimodal Arterial Streets**

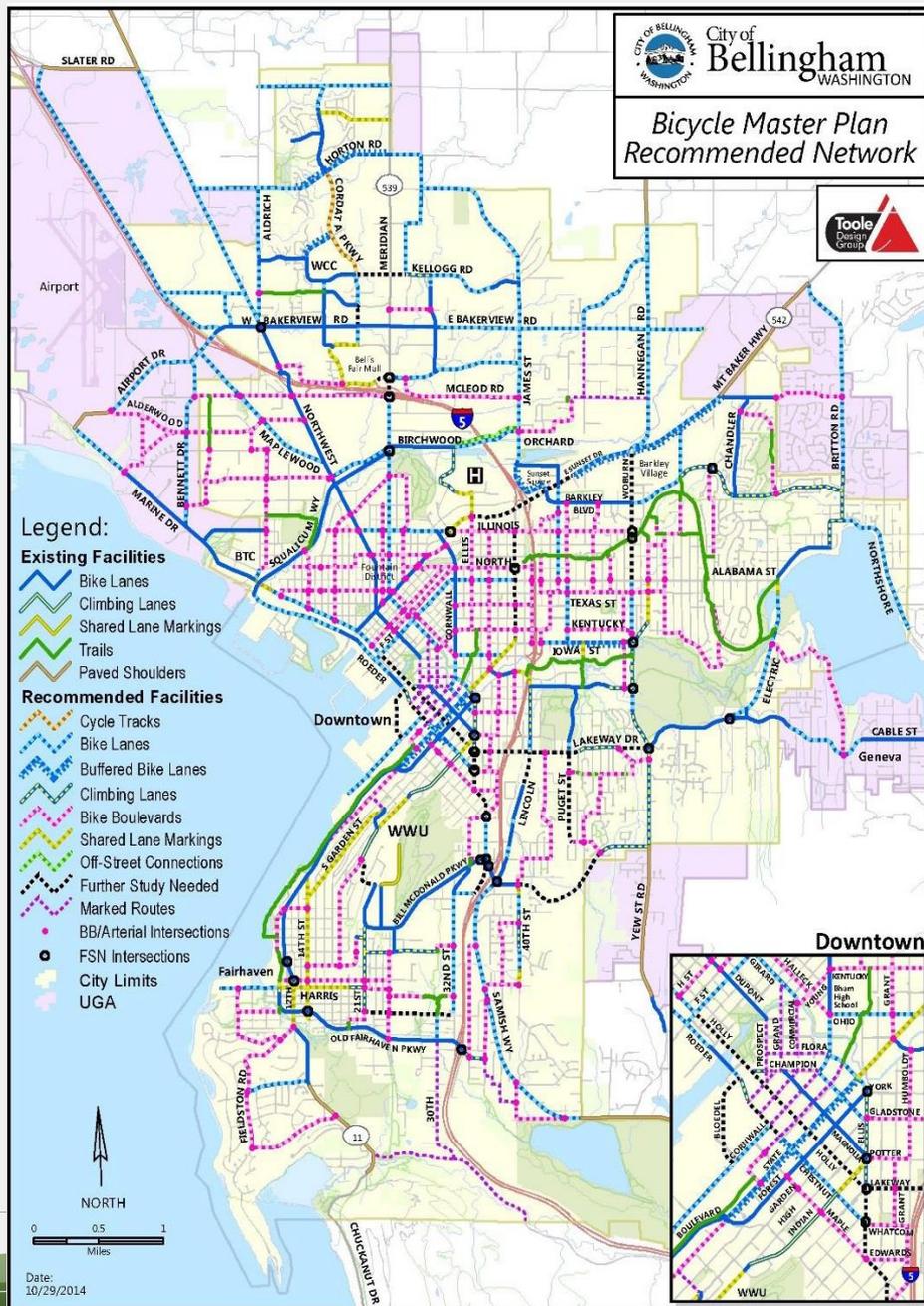
# Bellingham's "Complete Network" Approach to Transportation Planning



# Modal Priority in Bellingham's "Complete Networks" Approach to Transportation Planning

Prioritize Most to Least Vulnerable Users





# 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
<b>Bike Lanes</b>	31.9	82%	73.7	44%
<b>Buffered Bike Lanes</b>	0.0	0%	4.0	2%
<b>Shared Lane Markings</b>	0.4	1%	7.3	4%
<b>Climbing Lane</b>	0.7	2%	8.6	5%
<b>Bicycle Boulevard</b>	0.0	0%	52.1	31%
<b>Paved Shoulder</b>	5.7	15%	5.7	3%
<b>Cycle Track</b>	0.0	0%	0.8	<1%
<b>Further Study</b>	0.0	0%	9.4	6%
<b>Marked Route</b>	0.0	0%	7.8	5%
<b>TOTAL</b>	<b>38.7</b>	<b>100%</b>	<b>169.4</b>	<b>100%</b>

# Bellingham's Transportation Mode Share and Long-Term Mode Shift Goals

<b>Transport Mode Share Trends (2000-2014) and Long-Term Mode Shift Goals (2016-2036)</b>						
<b>Transport Mode to Work</b>	<b>2000<sup>1</sup></b>	<b>2005-2009<sup>2</sup></b>	<b>2010-2014<sup>3</sup></b>	<b>2016<sup>4</sup></b>	<b>2026<sup>4</sup></b>	<b>2036<sup>4</sup></b>
<b>Pedestrian</b>	6.8%	7.3%	8.2%	8.5%	9.5%	12.0%
<b>Bicycle</b>	2.6%	4.1%	3.5%	4.5%	7.0%	12.0%
<b>WTA Public Transit</b>	3.6%	5.9%	5.0%	6.0%	7.0%	9.0%
<b>Automobile/Vehicle</b>	<b>81.9%</b>	<b>77.2%</b>	<b>76.5%</b>	<b>75.0%</b>	<b>70.0%</b>	<b>60%</b>
<i>Single Occupant</i>	70.2%	67.9%	69.8%	66.5%	61.0%	50.0%
<i>Multi Occupant + Taxi<sup>5</sup></i>	11.7%	9.3%	8.1%	8.5%	9.0%	10.0%
<b>Work At Home</b>	5.2%	5.5%	5.4%	6.0%	6.5%	7.0%
<b>Bellingham/UGA Population</b>	76,937	84,543	91,251	93,906	109,726	124,107

**Notes:**

- 1.) Table P030: 2000 U.S. Census Summary; Means of Transportation to Work
- 2.) Table B08301: 2009-2013 Average from American Community Survey (U.S. Census)
- 3.) Table S0801: 2010-2014 Average from American Community Survey (U.S. Census)
- 4.) 2016 baseline and long-term mode shift goals [*Monitor annually in TRAM; update goals in 2026 Comp Plan*]
- 5.) Taxi includes ridesharing organizations, such as "Uber" and "Lyft"

# **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.

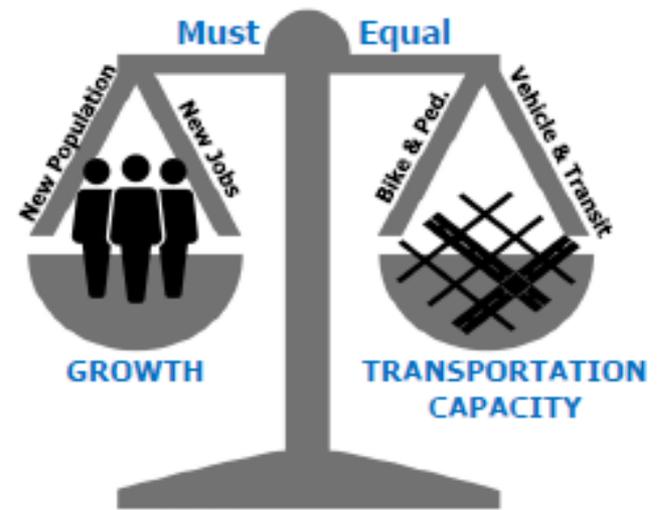
**Sounds pretty simple so far ..... right?**

# 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

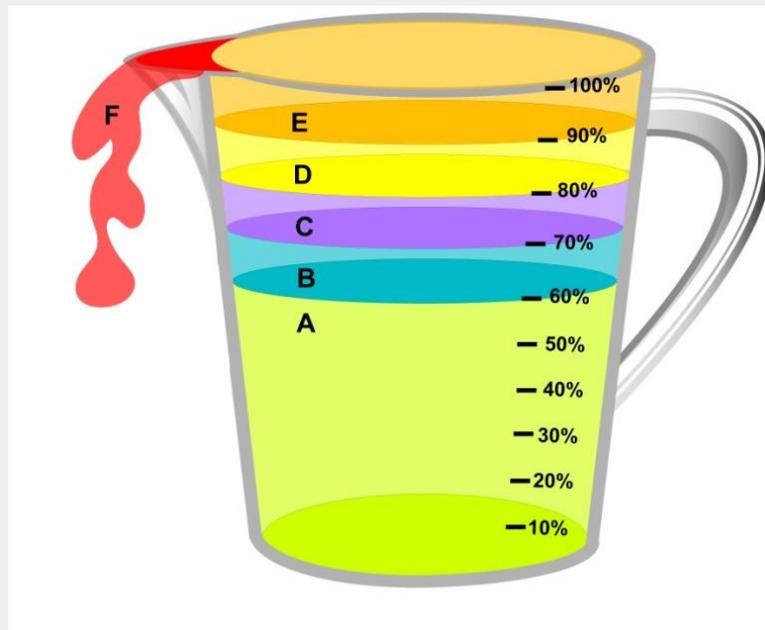
## **Transportation Concurrency:**

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.

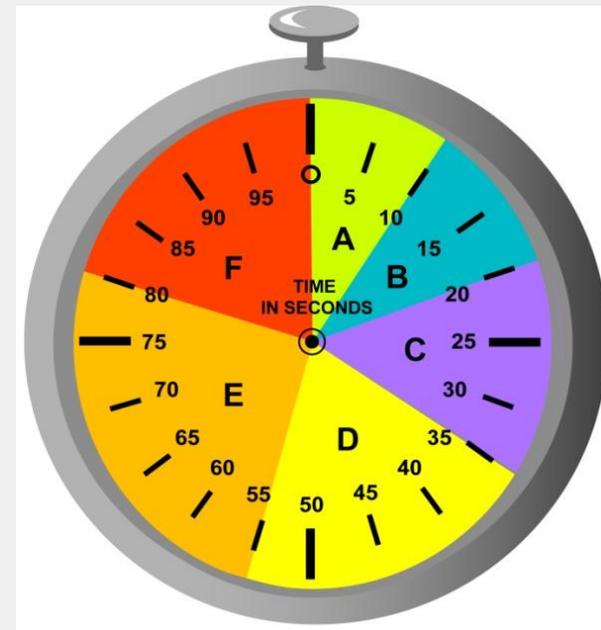


# Traditional Highway Capacity Manual Level of Service (LOS) Measures

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

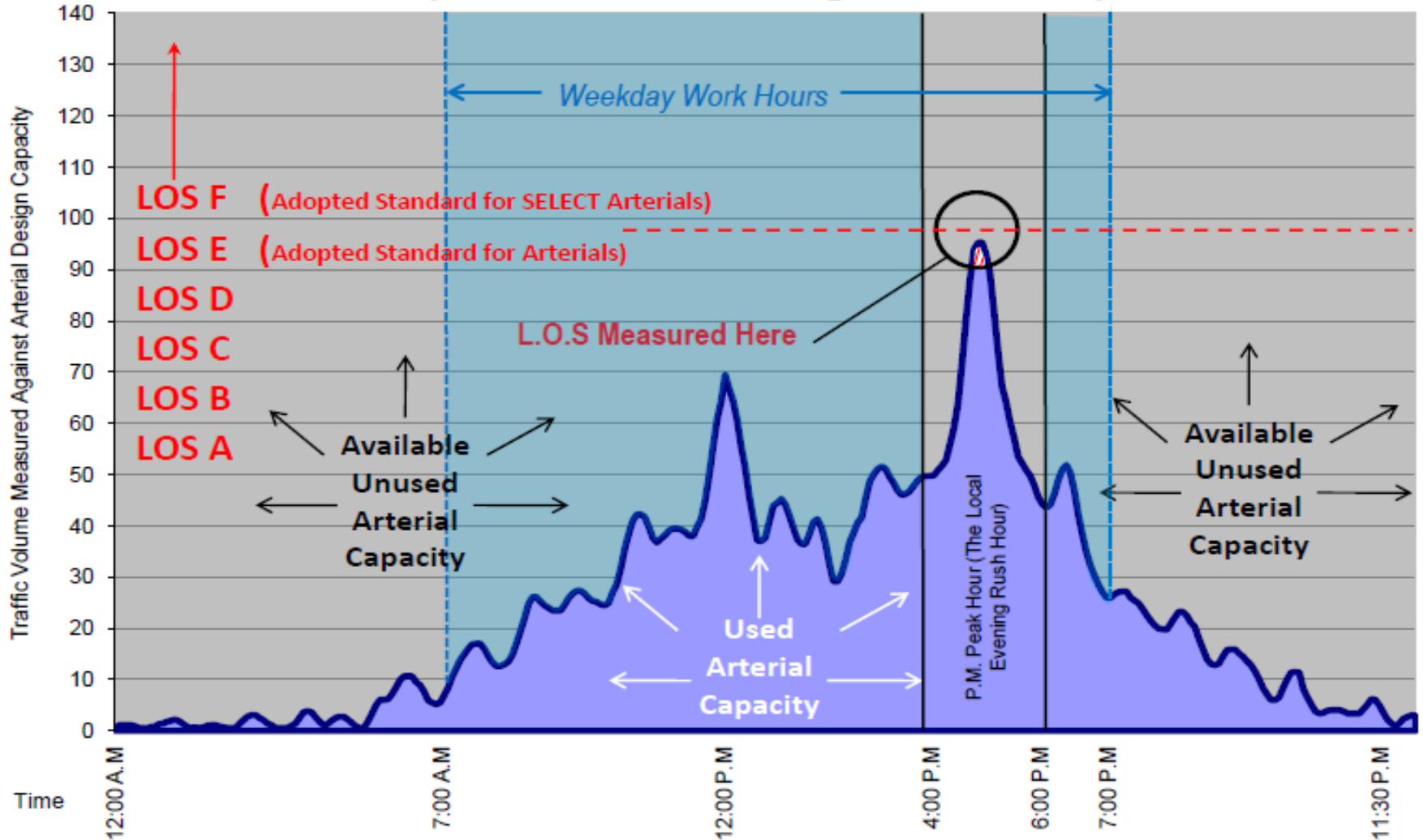


Intersection Delay  
(seconds) per Vehicle  
*[Driver Inconvenience]*



# Traditional HCM LOS is Auto-centric and Temporal

## P.M. Peak Traffic Volumes (The Local Evening Rush Hour)



# 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); In 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

- **21<sup>st</sup> 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

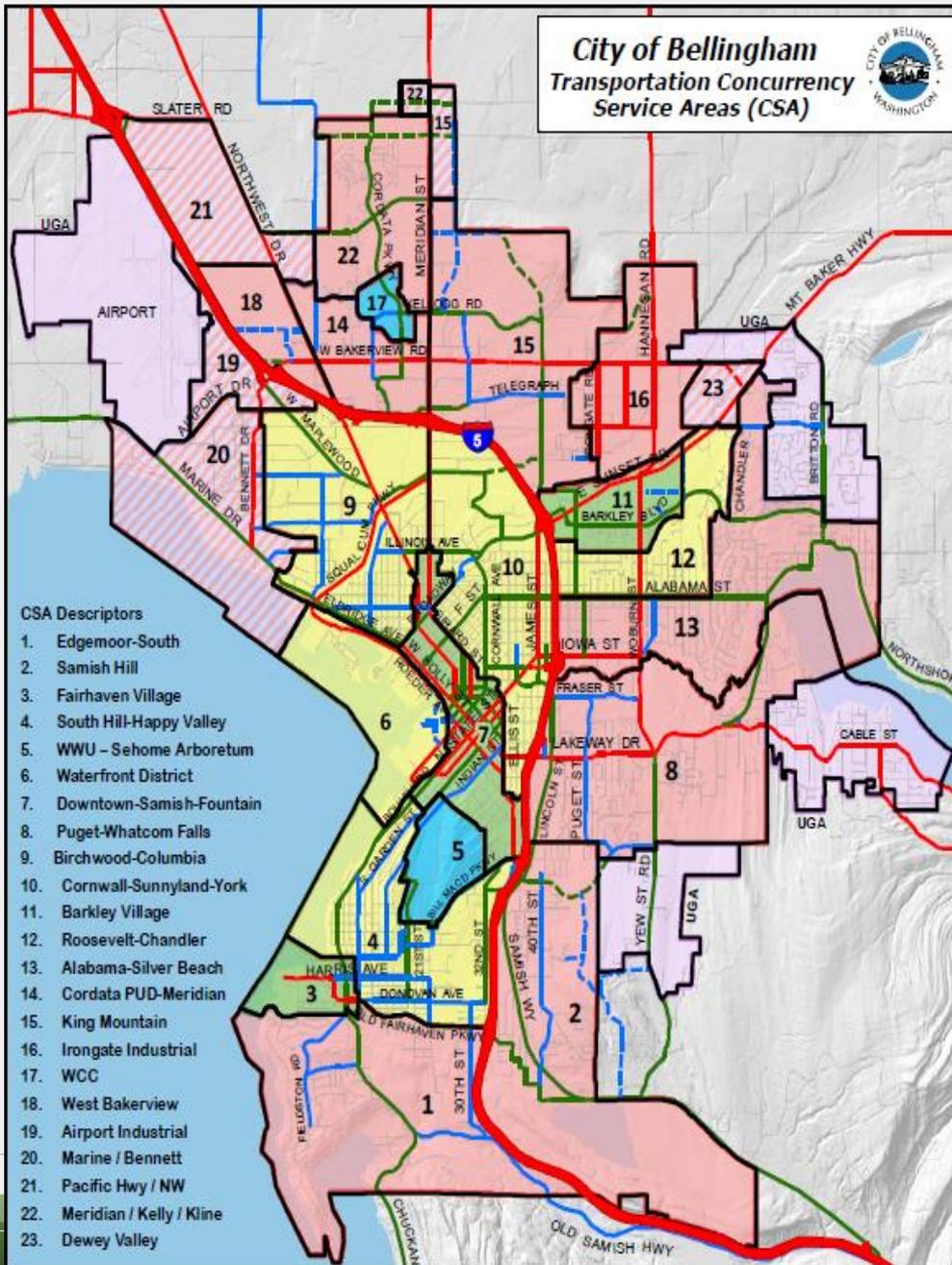
- **Key Concepts**

- **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 –  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)

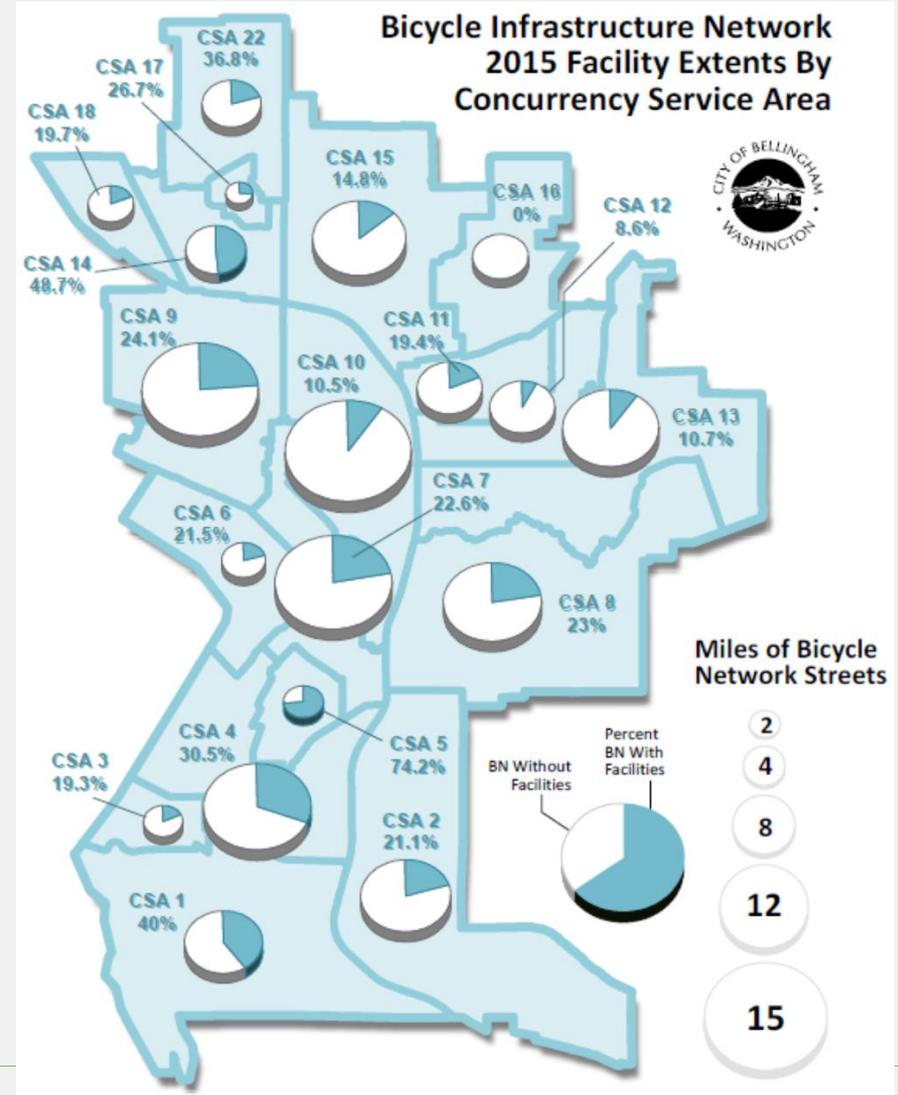
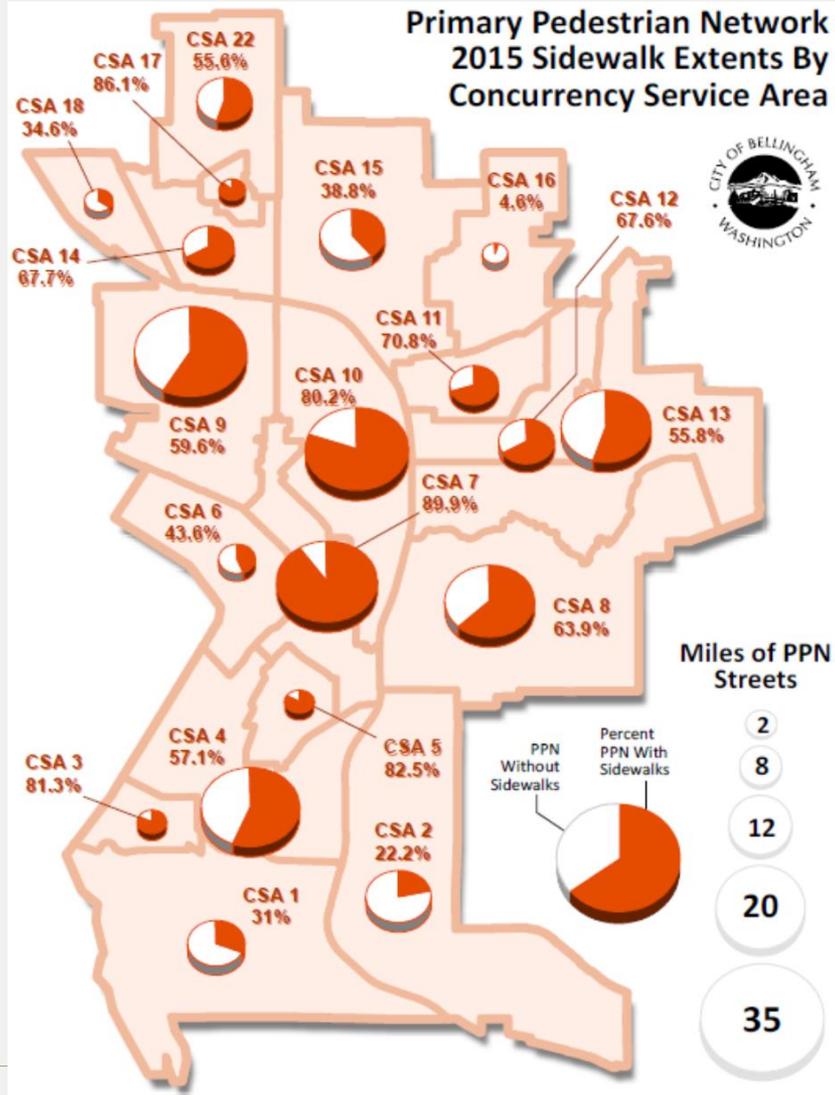
# “Policy Dials”

# Mode Weight Factors

# Based on Land Use Typology

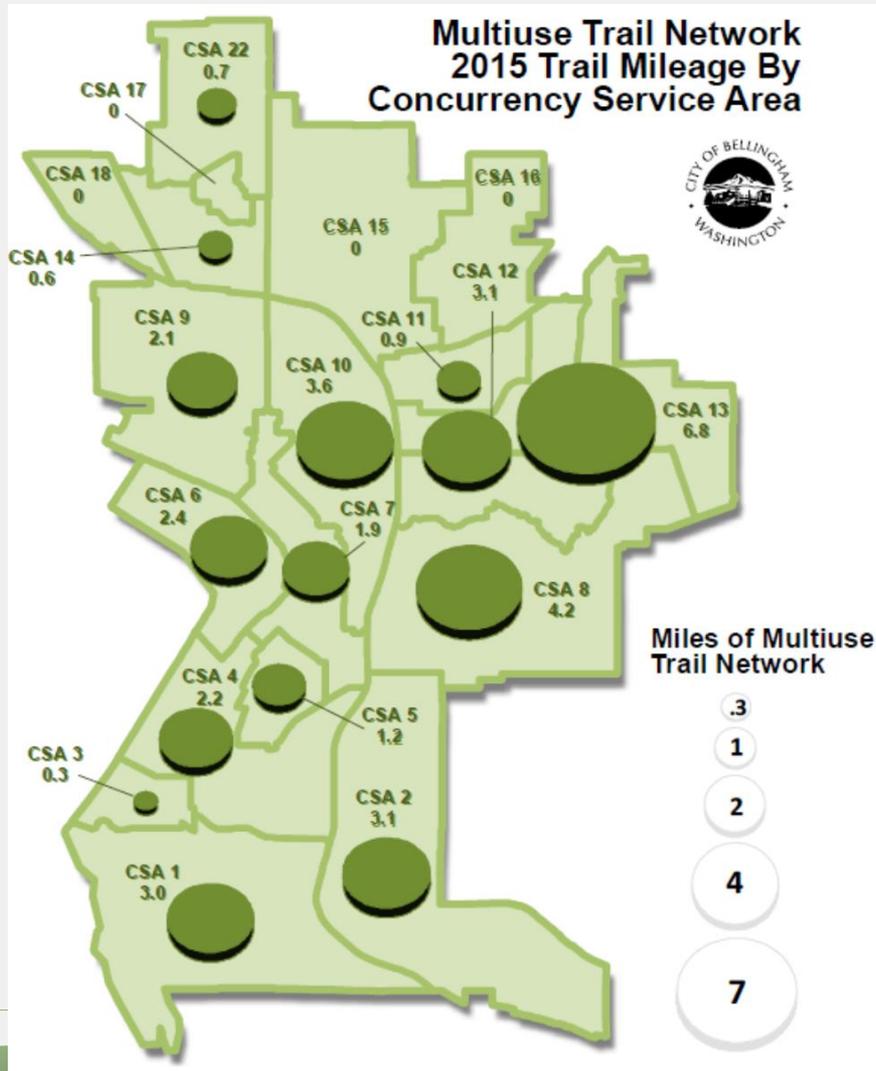
	Transportation Concurrency Service Areas		
Mode	Type 1 <sup>1</sup>	Type 2 <sup>2</sup>	Type 3 <sup>3</sup>
<i>Motorized</i>			
Auto			
Mode weight factor <sup>4</sup>	0.70	0.80	0.90
Transit			
Mode weight factor <sup>5</sup>	1.00	1.00	0.80
<i>Non-Motorized</i>			
Pedestrian			
Percent threshold for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

# Pedestrian & Bicycle Network Completeness by CSA



# Multiuse Trail Completeness by CSA

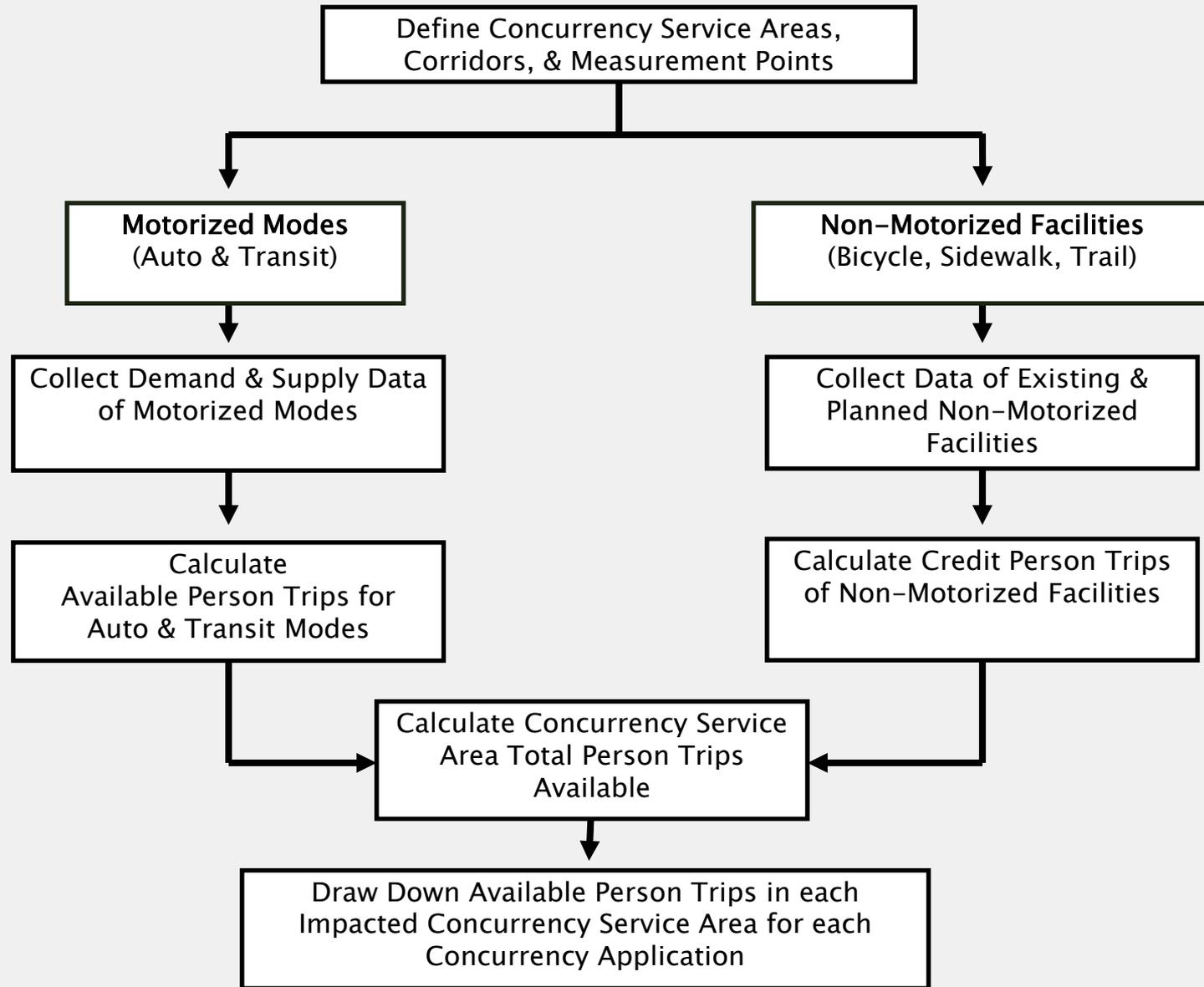
(as part of the Pedestrian & Bicycle Network)



## 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 <sup>1</sup>		Multiuse Trails		Bicycle Facilities <sup>2</sup>		WTA <sup>3</sup>	Auto <sup>3</sup>	2015
	%	Credit	%	Credit	%	Credit	Transit	Arterial	Net
CSA	Comp	PTA	Comp	PTA	Comp	PTA	PTA	PTA	PTA <sup>4</sup>
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 <sup>5</sup>	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

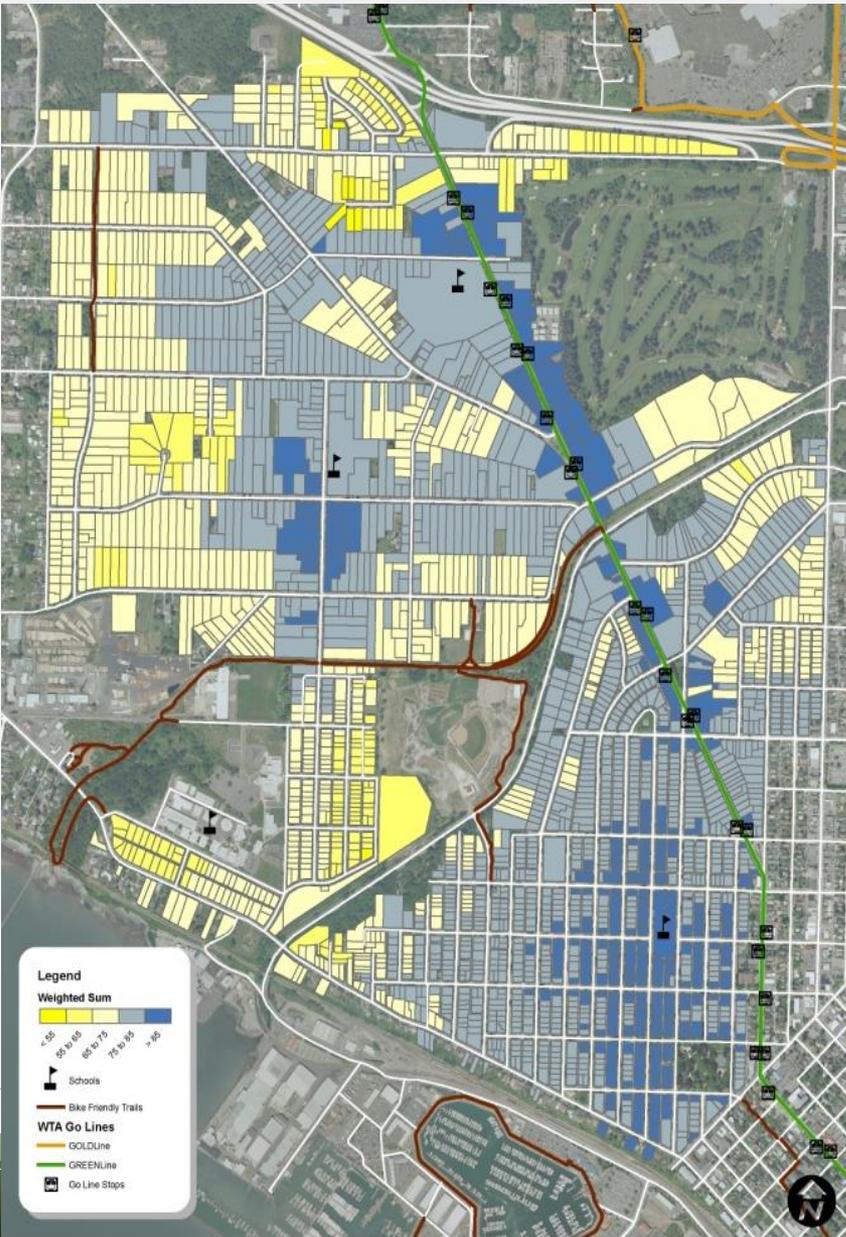
<http://www.cob.org/documents/pw/transportation/2015-tram.pdf>

# What's Next? Connectivity Metrics

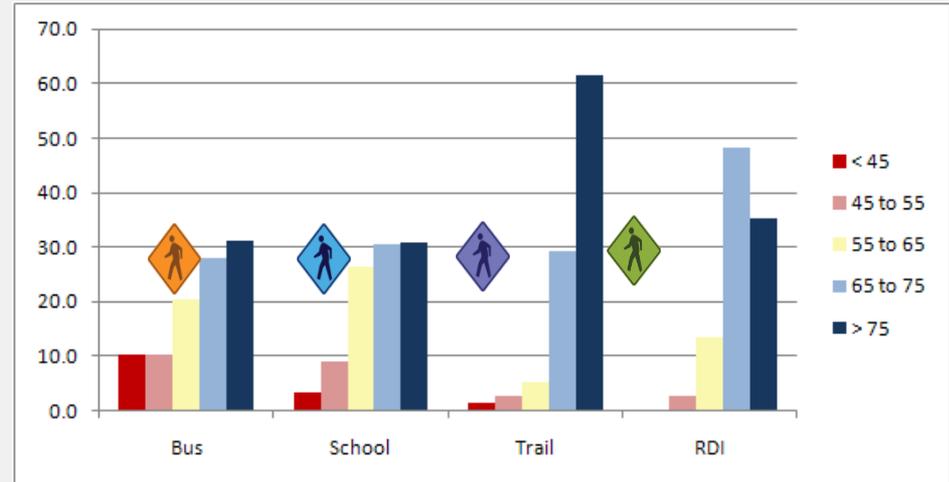
transpogroup  ViaCity

## Route Directness Index (RDI)

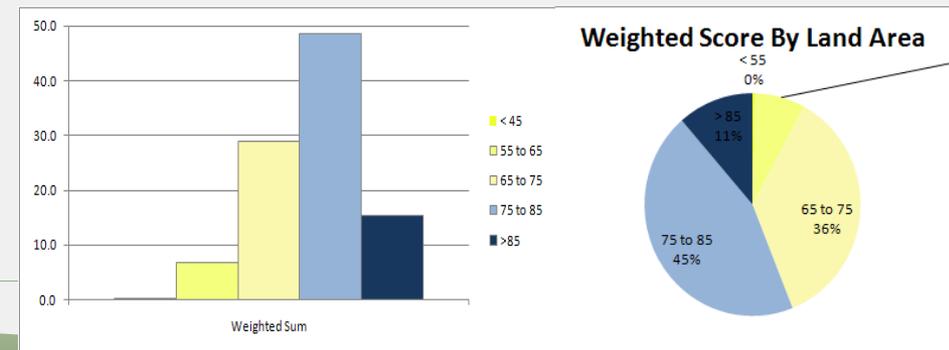
### CSA #9 Composite Scores



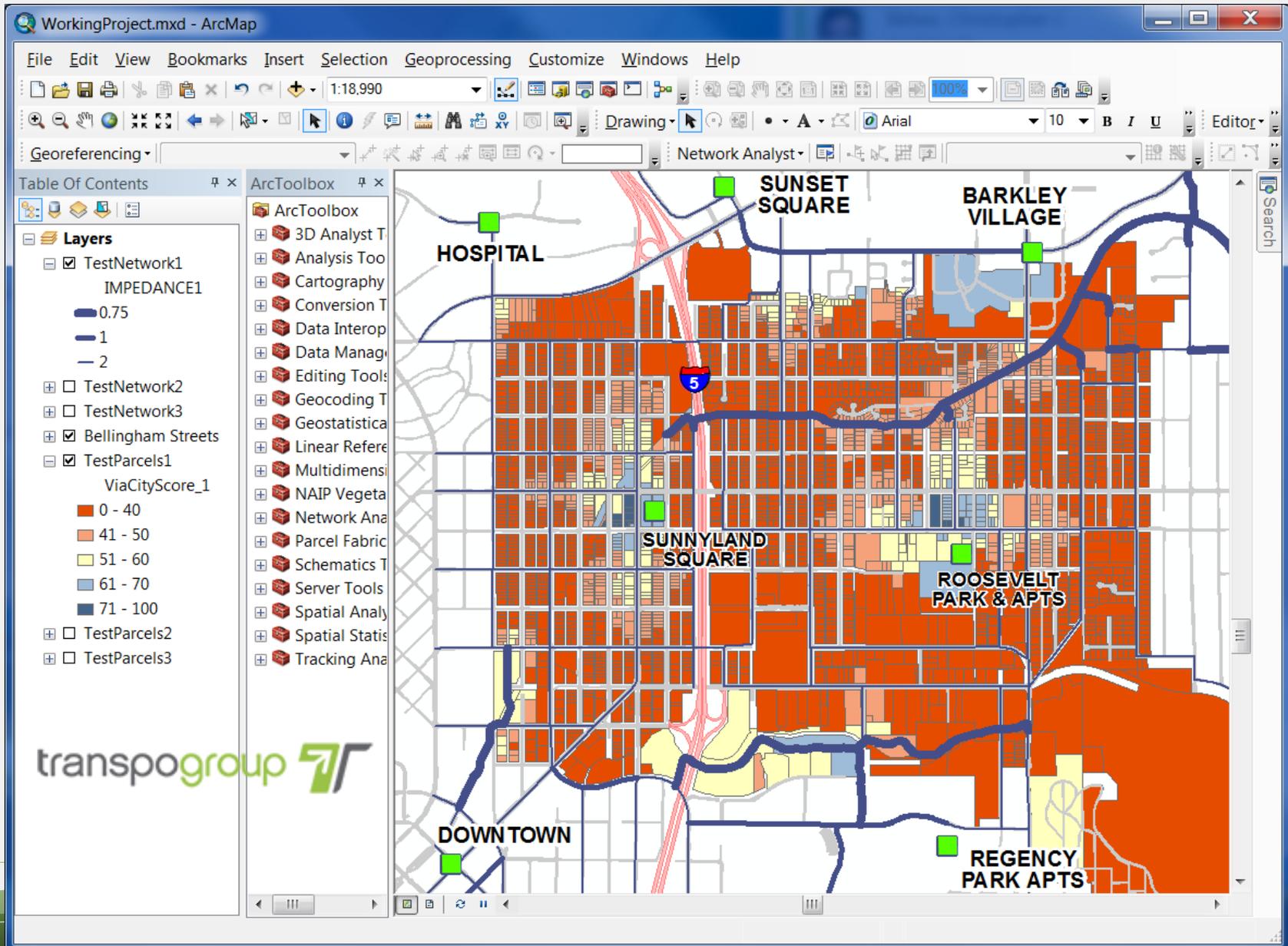
Connectivity Indices



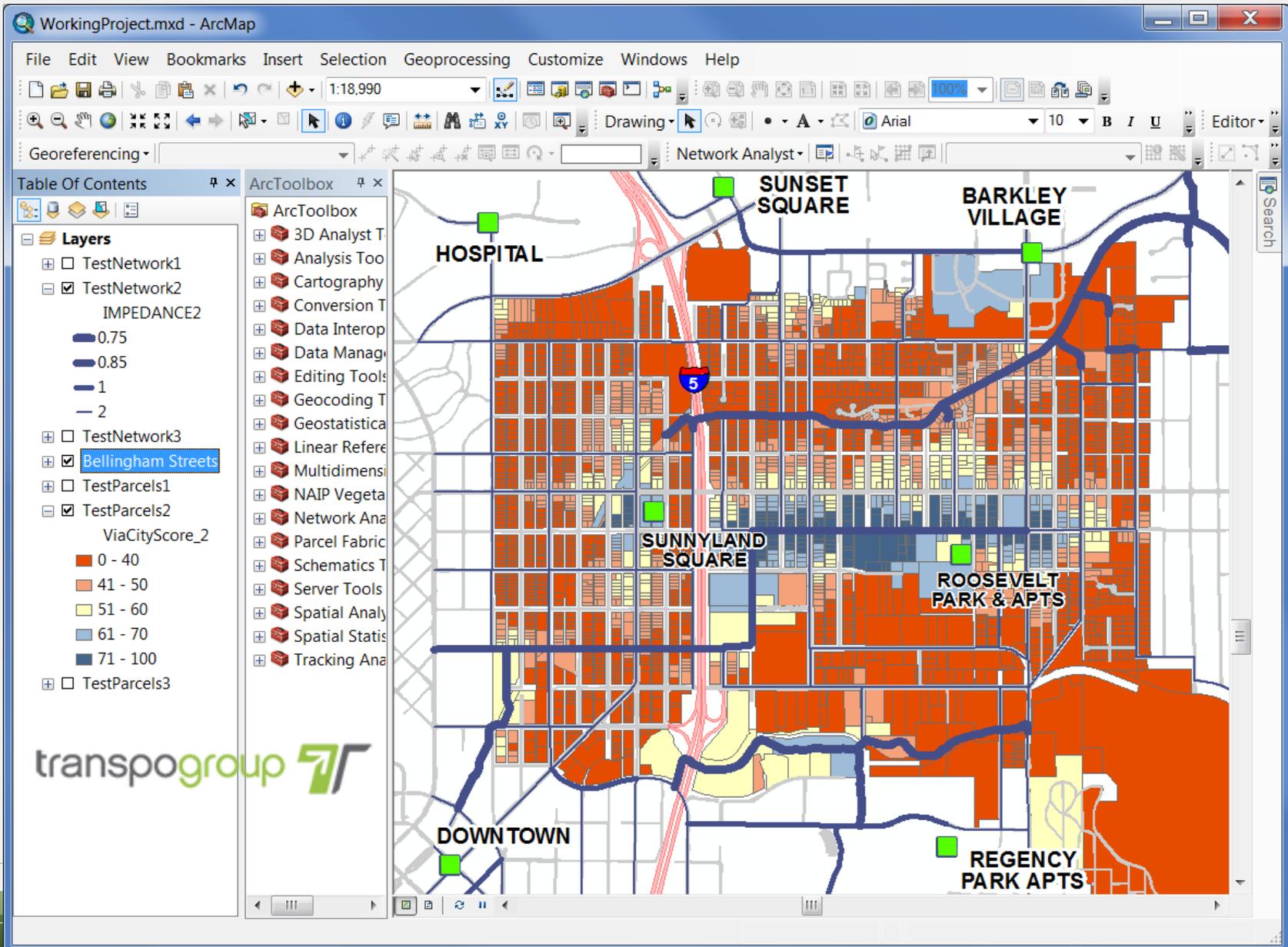
Composite Scoring



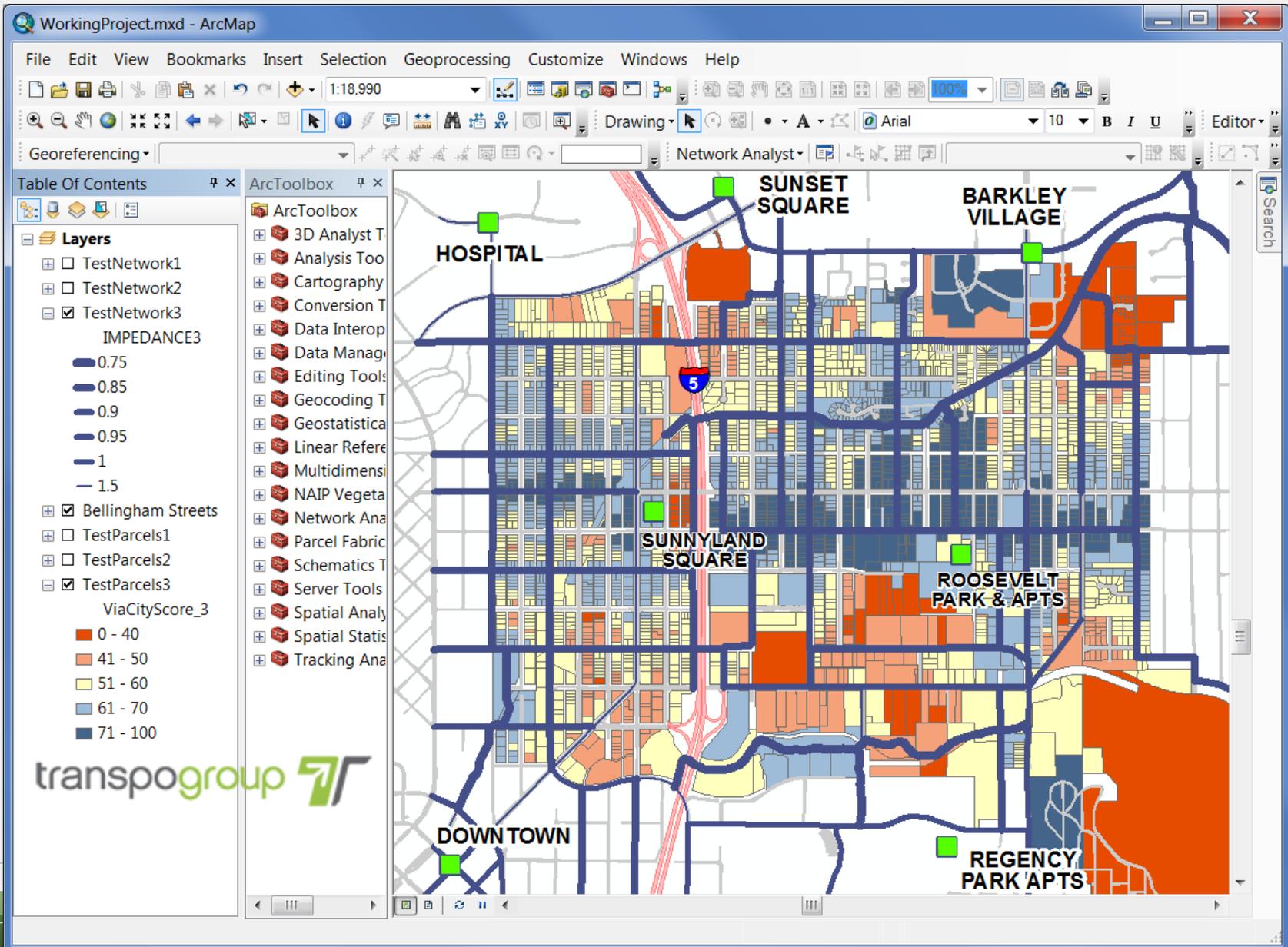
# ViaCity - 2013 Parcel-based Connectivity – Roosevelt Neighborhood (Red = Low)



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



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



# 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**

[www.cob.org/services/planning/transportation/multi-modal-trac.aspx](http://www.cob.org/services/planning/transportation/multi-modal-trac.aspx)

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City of  
**Bellingham** Public Works