

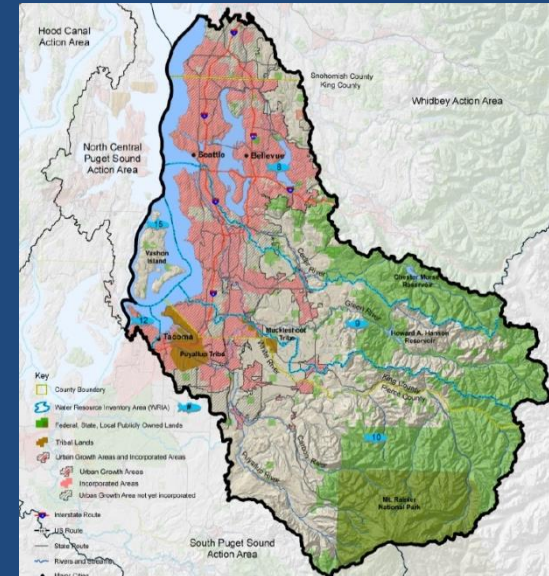
# *Intro: Building cities in the rain*

Follow up Growth Management Policy Board discussions (May - July 2013)

**Problem: “NPDES v GMA:”** Are stormwater regulations making it harder to build compact cities?

**Goal:** Identify strategies to encourage development in dense urban centers to meet land use goals, while meeting water quality requirements.

**“GMA + NPDES”**



South Central Puget Sound  
Action Area Caucus Group  
Subcommittee on Stormwater  
and Infill +

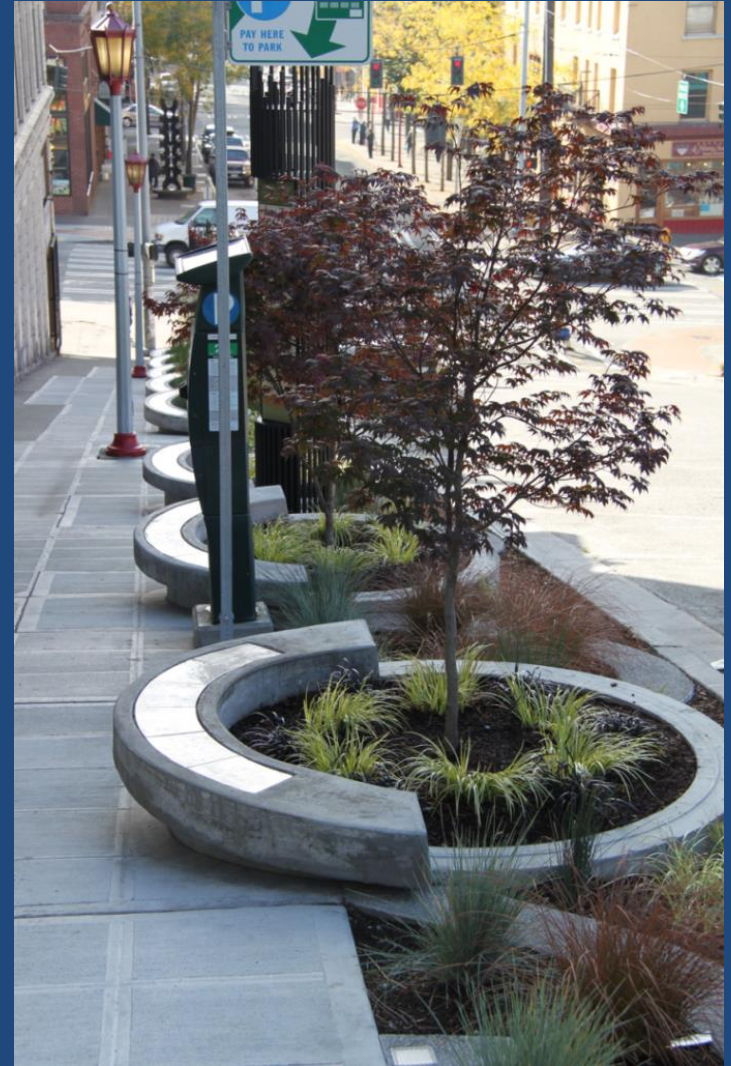


**Department of Commerce**  
Innovation is in our nature.

*Grant from National Estuary  
Program to help implement PS  
Action Agenda*

# Agenda

- 1) Update on Portfolio project  
*(SvR contract)*
- 2) Review Background memo
- 3) Options for next steps?

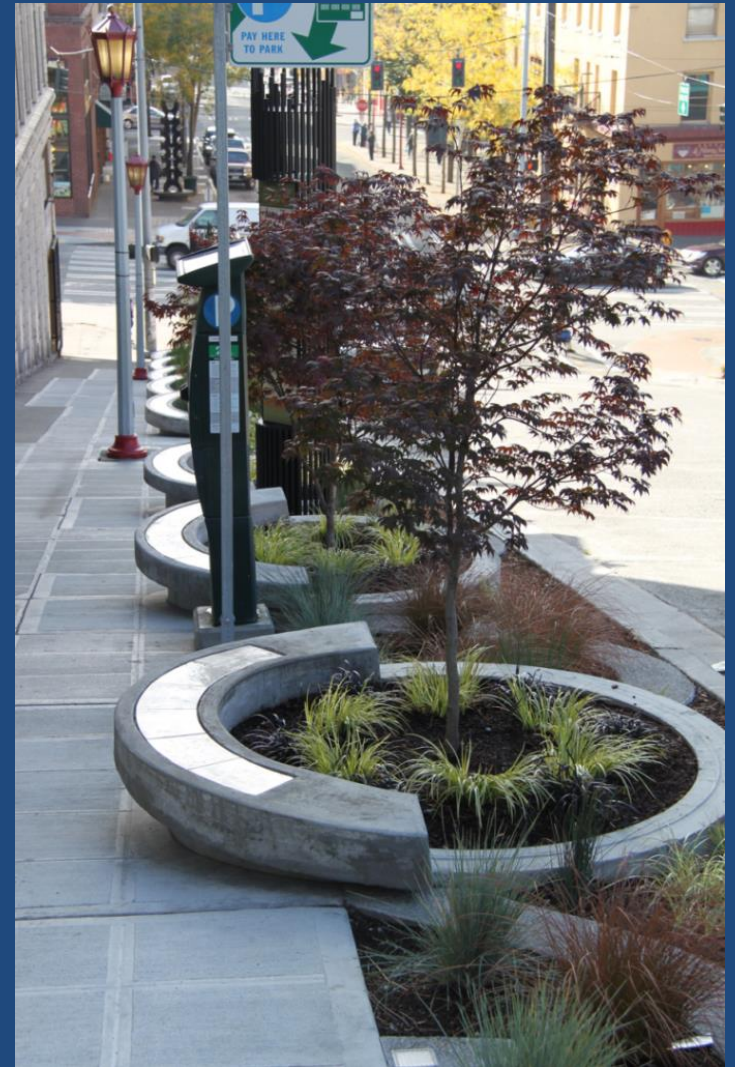


*Photo courtesy SvR Design.*

# Portfolio (contract with SvR)

Profile innovative approaches to manage stormwater for multiple benefits.

- Review profile areas (Nov 2013)
- SvR presentation to Subcommittee (~Jan 2014)
- Growth Management Policy Board presentation (~Feb 2014).



*Photo courtesy SvR Design.*



# Portfolio jurisdictions

- **Marysville** -  
Downtown  
Comprehensive  
Plan/EIS
- **Kirkland** -  
Stormwater Code
- **Fife** - Code and  
Green Factor
- **Kitsap County** -  
Stormwater Code  
and Manual
- **Sammamish** - Stormwater Code
- **Shoreline** - Surface Water Master  
Plan/Boeing Creek Basin Plan
- **Bellevue** - Bel-Red Corridor  
EIS/Basin Planning



# Background memo source of information

## Growth Management Policy Board presentations (May – July)

### Meetings:

- American Public Works Administrators
- MBA-Pierce Co
- Pierce Co Growth Management Coordinating Committee
- Olympic Peninsula Planners Forum
- individual interviews

Google

### *Building cities in the rain: background memo*

#### Introduction

Consistent with the Growth Management Act, [VISION 2040](#) sets forth a vision and strategy for accommodating growth in the central Puget Sound region by concentrating housing and jobs in designated growth centers. In most areas, reaching population and employment targets will require substantial infill development. In addition to encouraging efficient use of urban land through infill, VISION 2040 encourages maintaining hydrological functions, and where feasible, restoring them to a more natural state. The [Puget Sound Partnership Action Agenda](#) also calls for concentrated growth in UGAs and improved stormwater controls.

However, the Puget Sound Regional Council [Growth Management Policy Board](#) (GMPB) has heard concerns from cities that the high cost of site-by-site stormwater regulations, in combination with other costs such as demolition, brownfield remediation, historic preservation, and aging infrastructure repairs, may stifle redevelopment of urban areas. If costs are too high developers may look outside concentrated growth centers for lower cost strategies or options for their projects, or downsize redevelopment projects to avoid triggering thresholds for expensive stormwater requirements to the detriment of desired density.

Some areas have found regional stormwater facilities can help address the challenges of infill development, but those approaches may not work in all cities depending on local real estate markets, or constraints of local geology or hydrology.

The South Central Action Area Caucus Group *Subcommittee on Stormwater and Infill Development* is building on Growth Management Policy Board discussions with help from Commerce (*see sidebar*). This memo provides background information on stormwater management challenges in infill situations based on information presented to the GMPB as well as preliminary input from interviews and meetings with builders, planners and state and local stormwater managers.<sup>1</sup>

**Who, What and Why:** The [South Central Action Area Caucus Group](#) is a regional "Local Integrating Organization" (LIO) designated with advancing the [Puget Sound Action Agenda](#). This project is intended to further one of the group goals: "Better alignment of land use planning with conditions for, and implementation of, municipal NPDES permits to reduce stormwater impacts."

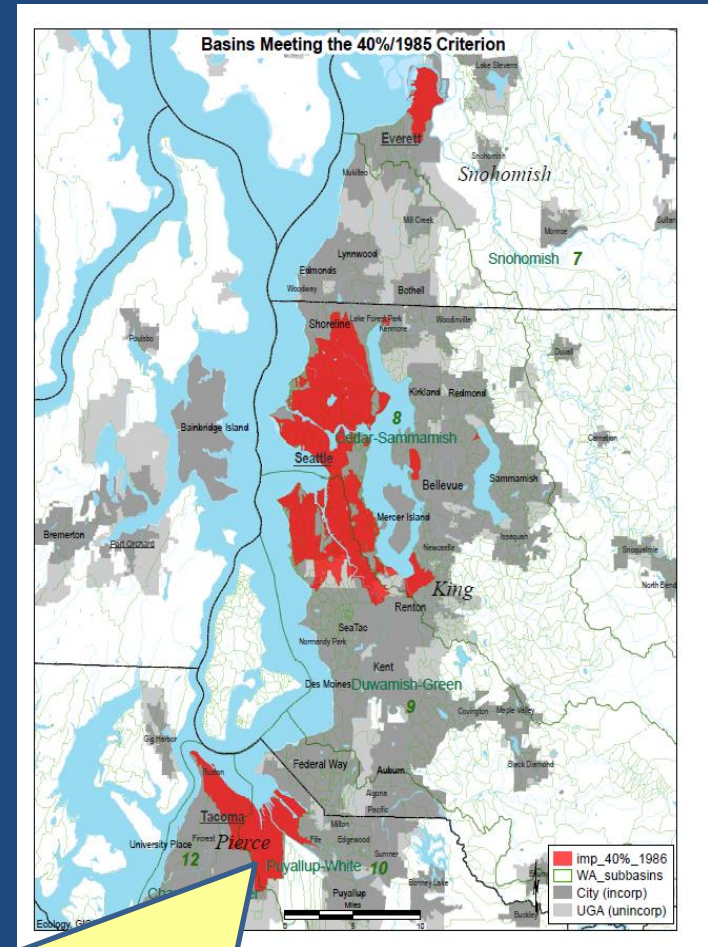
This memo was prepared by Department of Commerce with a grant from the National Estuary Program directed at promoting regional collaboration efforts that advance protection of Puget Sound. For information visit the project [EZ-View website](#) or contact [Tim Gates](#), Commerce, at 360.725.3058; or [DeSean Quinn](#), Caucus Group Coordinator, at 206.263.3420.

<sup>1</sup> Including meetings of the American Public Works Administrators; MBA-Pierce Co; the Pierce Co Growth Management Coordinating Committee.

# Main issue is *not water quality*, but flow control

Biggest concern is **Flow Control standard** (*matching forested condition*) in areas where future plans demand very high lot coverage:

- Outside basins that have been 40% impervious since 1985 (*aka “40/20” or “red zones”*)
- Where you can't pipe to flow-control exempt waters
- With limited infiltration options



Red Zone: Flow Controls only need to match *existing conditions* (“*No Net Loss of hydrologic function?*”)

# Justification for “40/20 zone”

“...stream channels have **re-stabilized** by adjusting form to accommodate flows from the existing land cover...

In these highly urbanized basins, requiring land development projects to match high flow durations produced by an historic land cover is not likely to appreciably benefit the geomorphology or hydrology of the stream, or the health of its beneficial uses.

Conversely, allowing use of the existing land cover condition... as the flow control target means that stormwater flow controls on new and redevelopment projects will not further damage the existing stream geomorphology and hydrologic condition. So, the purpose of the flow control standard is achieved.”

# Can LID reduce cost?

Recent study found 2012 Stormwater Manual using LID can reduce costs compared to 2005 manual in many scenarios.

Concern: modeled assumptions don't match many conditions.  
“Stormwater approaches at ultra-urban redevelopment sites may vary significantly from the approaches included in this analysis. Different BMPs... would be a significant cost element in **scenarios where the building footprint occupies a large percentage of the parcel.**”

## COST ANALYSIS REPORT

COST ANALYSIS FOR WESTERN WASHINGTON LID REQUIREMENTS AND BEST MANAGEMENT PRACTICES

Prepared for  
State Department of Ecology

Prepared by  
City of Puyallup  
Washington Stormwater Center  
Herrera Environmental Consultants, Inc.





# Regional facilities?

Can help escape the “tyranny of site constraints.”

## Concerns:

May not work everywhere

- Need the right geography
- Expensive, must be certain that redevelopment market will respond
- “Opportunity costs” (if affected streams are too altered to expect recovery)



# Basin planning to alter Flow Control standard?

Permit allows for tailored flow control standard through basin planning.

## Concerns:

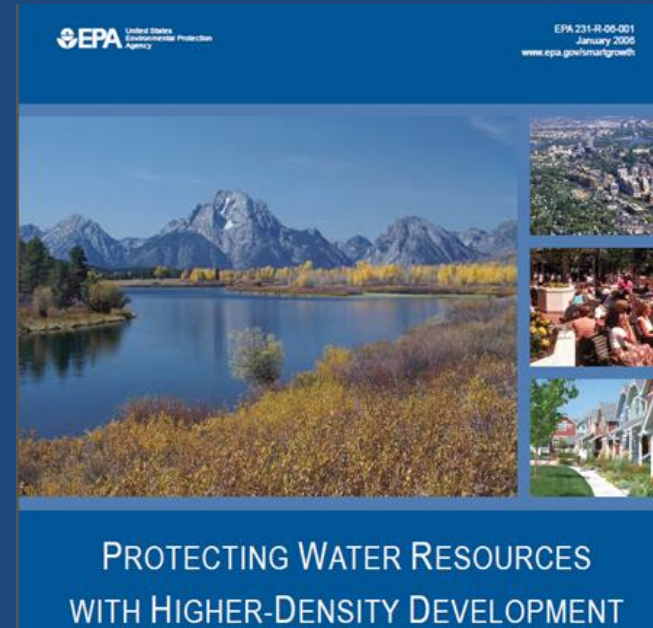
- Requires costly, time-consuming study.
- In many basins, must collaborate with multiple jurisdictions, get all to approve plan before Ecology review.
- Lack of clear criteria or approval/appeal process.

1 POLLUTION CONTROL HEARINGS BOARD  
2 STATE OF WASHINGTON  
3 ROSEMERE NEIGHBORHOOD  
4 ASSOCIATION; COLUMBIA  
5 RIVERKEEPER; and NORTHWEST  
6 ENVIRONMENTAL DEFENSE CENTER, PCHB NO. 10-013  
7 Appellants, FINDINGS OF FACT, CONCLUSIONS  
8 v. OF LAW, AND ORDER  
9 WASHINGTON STATE DEPARTMENT  
10 OF ECOLOGY, and CLARK COUNTY,  
11  
12  
13  
14  
15  
16  
17  
18

*Rosemere v Ecology and Clark Co:*  
Alternatives to Flow Control  
standard must use modeling and  
field approach outlined in permits

# What about “context-sensitive” mitigation?

- EPA Smart Growth Office and others: Consider redevelopment as a stormwater BMP.
- Dense infill development = less impervious surface *per capita*.
- **Opportunity to address mutual goals of GMA and Water Quality laws?**



## STORMWATER

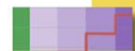
The Journal for Surface Water Quality Professionals

### Watersheds, Walkability, and Stormwater

The role of density

### Dense and Beautiful Stormwater Management

By Laurence Aurbach  
Ped Shed Blog • PedShed.net  
May 14, 2010



## RAINWATER IN CONTEXT

ing and design possesses the  
stormwater well and encourage  
er, stormwater standards  
pact urban development at a  
y unintentionally promote sprawl  
arily damage watersheds. Four  
ent are proposed to encourage  
t: (1) recognize density as a best  
site mitigation, preferably in the  
the Transect (neighborhood



JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION

AMERICAN WATER RESOURCES ASSOCIATION

June 2009

## Is Denser Greener?

“In almost every water quality study looking at the impact of urbanization, **urbanization itself is the nuisance that must be ameliorated.**

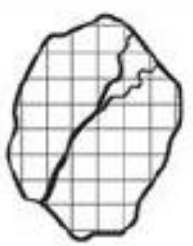

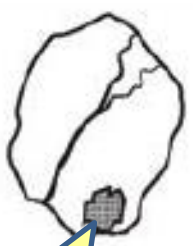
To many stormwater practitioners, **higher density urbanization** as a solution for the impacts of urbanization **must seem somewhat like treating lead poisoning with more lead**, perhaps explaining why few of them have ventured into studying the environmental benefits of higher density.”

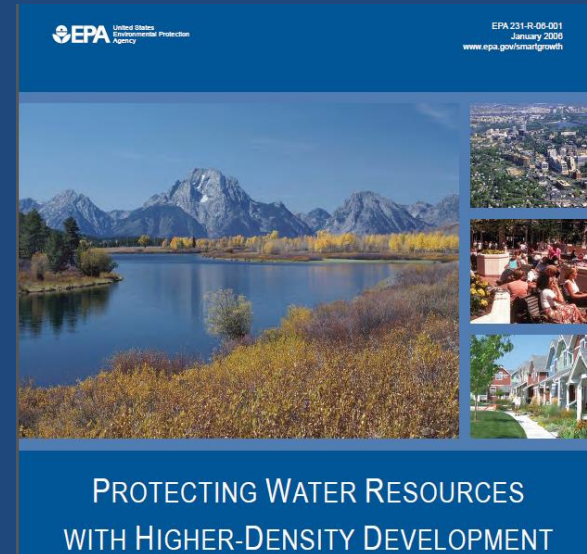
*(Jacob and Lopez, 2009)*



# Density from the watershed's point of view

EXHIBIT 5: 10,000-Acre Watershed Accommodating 10,000 Houses

Scenario A	Scenario B	Scenario C
	 <p data-bbox="425 749 666 835">4 du/acre</p>	 <p data-bbox="879 763 1110 821">8 du/ac</p>
<p>10,000 houses built on 10,000 acres produce: 10,000 acres x 1 house x 18,700 ft<sup>3</sup>/yr of runoff = <b>187 million ft<sup>3</sup>/yr of stormwater runoff</b> Site: 20% Impervious cover Watershed: 20% Impervious cover</p>	<p>10,000 houses built on 2,500 acres produce: 2,500 acres x 4 houses x 6,200 ft<sup>3</sup>/yr of runoff = <b>62 million ft<sup>3</sup>/yr of stormwater runoff</b> Site: 38% Impervious cover Watershed: 9.5% Impervious cover</p>	<p>10,000 houses built on 1,250 acres produce: 1,250 acres x 8 houses x 4,950 ft<sup>3</sup>/yr of runoff = <b>49.5 million ft<sup>3</sup>/yr of stormwater runoff</b> Site: 65% Impervious cover Watershed: 8.1% Impervious cover</p>

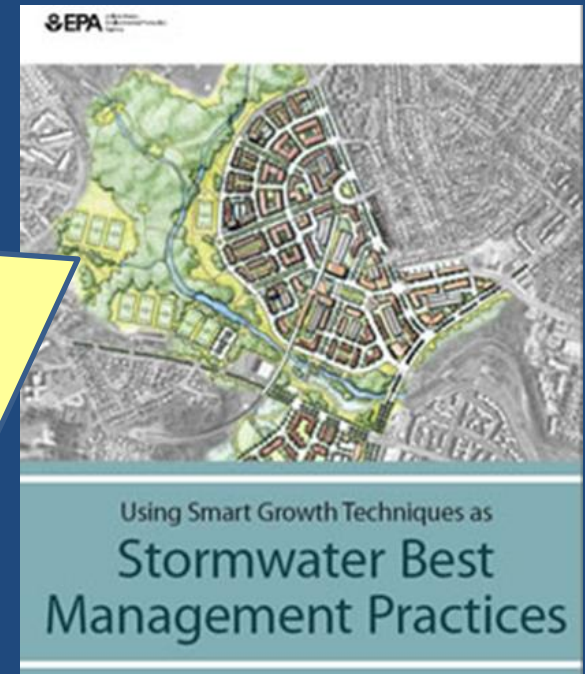


Higher density creates less runoff per capita and consumes less land than lower density scenarios.

# EPA manual: “no net loss of hydrology” for infill

## Language Fostering Creation of Joint Smart Growth and Stormwater Policies

Language specifying that post-development hydrology match the pre-development hydrology: Language to this effect may foster redevelopment. Because the pre-development state of the parcel was already developed, a redevelopment project with the same lot coverage will essentially have no effect. When you write your ordinance, however, you may want to avoid confusion by specifying that the pre-development condition refers to the site immediately prior to redevelopment.



Recommends same standard as Ecology’s “red zone” for infill areas

*(Caution: Rosemere v Clark Co. PCHB case)*

# National Pollutant Discharge Elimination System (NPDES)

[Recent Additions](#) | [Contact Us](#) Search NPDES:  [GO](#)

[EPA Home](#) > [OW Home](#) > [OWM Home](#) > [NPDES Home](#) > [Stormwater](#) > Stormwater Rulemaking

[NPDES Topics](#)

[Alphabetical Index](#)

[Glossary](#)

[About NPDES](#)



## Proposed National Rulemaking to Strengthen the Stormwater Program

EPA has initiated a national rulemaking to establish a program to reduce stormwater discharges from newly developed and redeveloped sites and make other regulatory improvements to strengthen its stormwater program. This website provides information on activities related to this proposed rulemaking:

[Rulemaking Considerations](#)

**Stormwater Information**

[Recent Additions](#)

## Performance Standards (Cont'd)

11

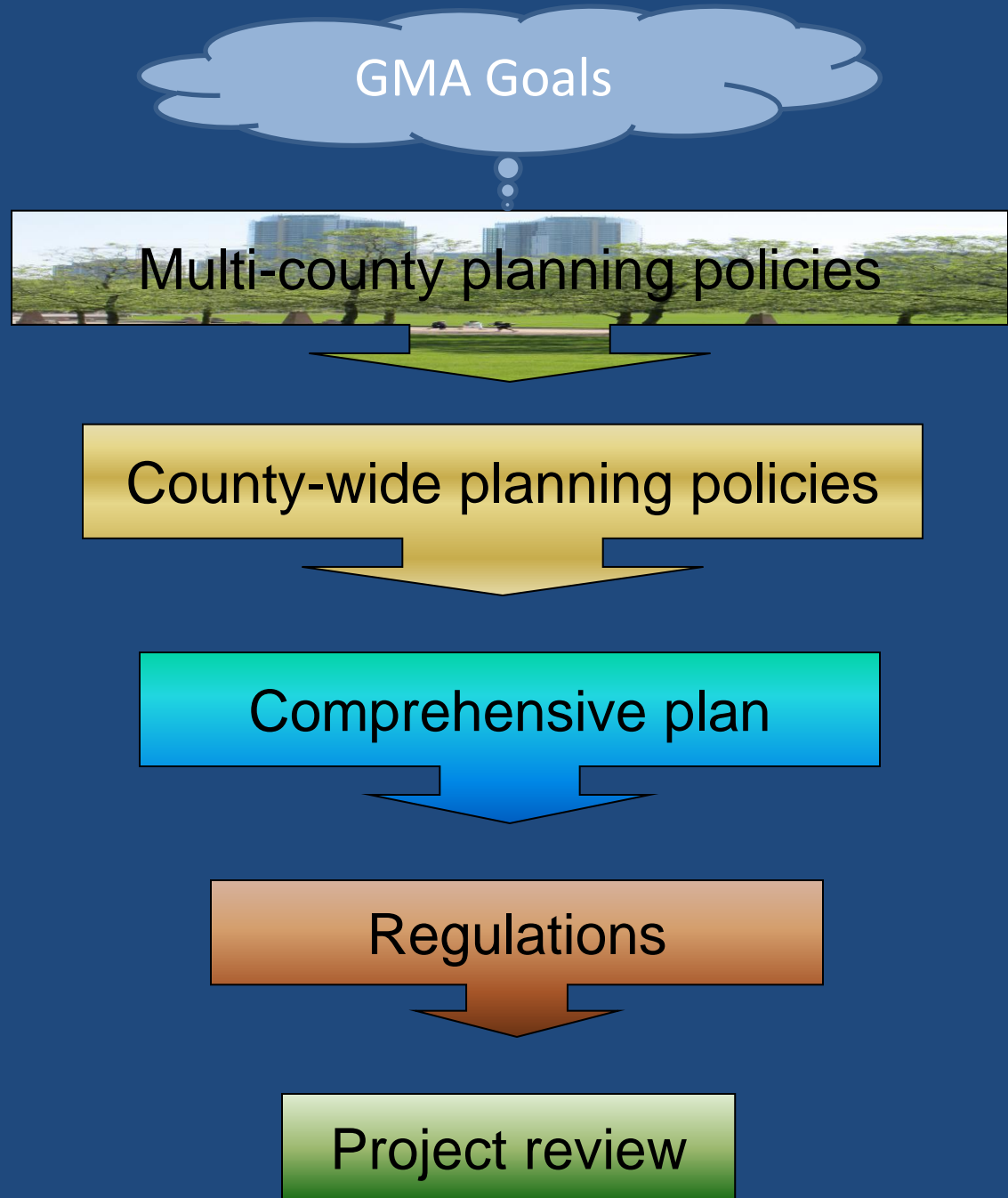
- Considering relaxed standard for redevelopment
  - Recognizes site constraints and benefits to reusing already developed site
  - Encourages redevelopment to revitalize urban communities
  - Considering additional incentives for smart growth and brownfields development

Applying the standard nationwide would create a level playing field for developers among municipalities and protect downstream communities from upstream development.

# “Smart growth”

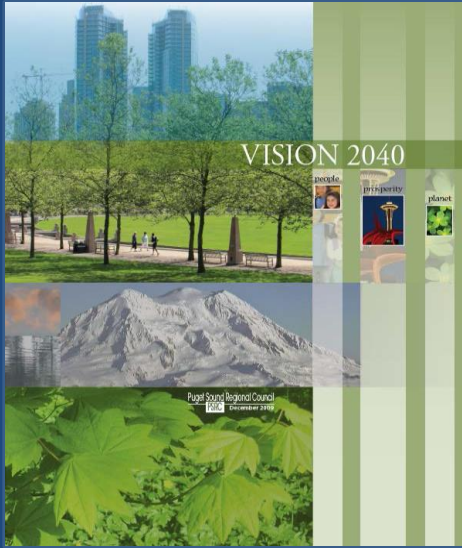
A quick tour of Central Sound plans for key GMA Goals relevant to “context-sensitive” stormwater regulation:

1. Urban growth
  2. Stop sprawl
  3. Multimodal transportation linking communities
- +
10. Protect the environment





# VISION 2040



Unique to Central Sound:

- Includes a “regional growth strategy:” distributing growth using regional geographies

GMA Goals

Multi-county planning policies

County-wide planning policies

Comprehensive plan

Regulations

Project review

# 1.7 Million more residents by 2040



2 more Seattles + 2 more Tacomas

## Central Puget Sound Region

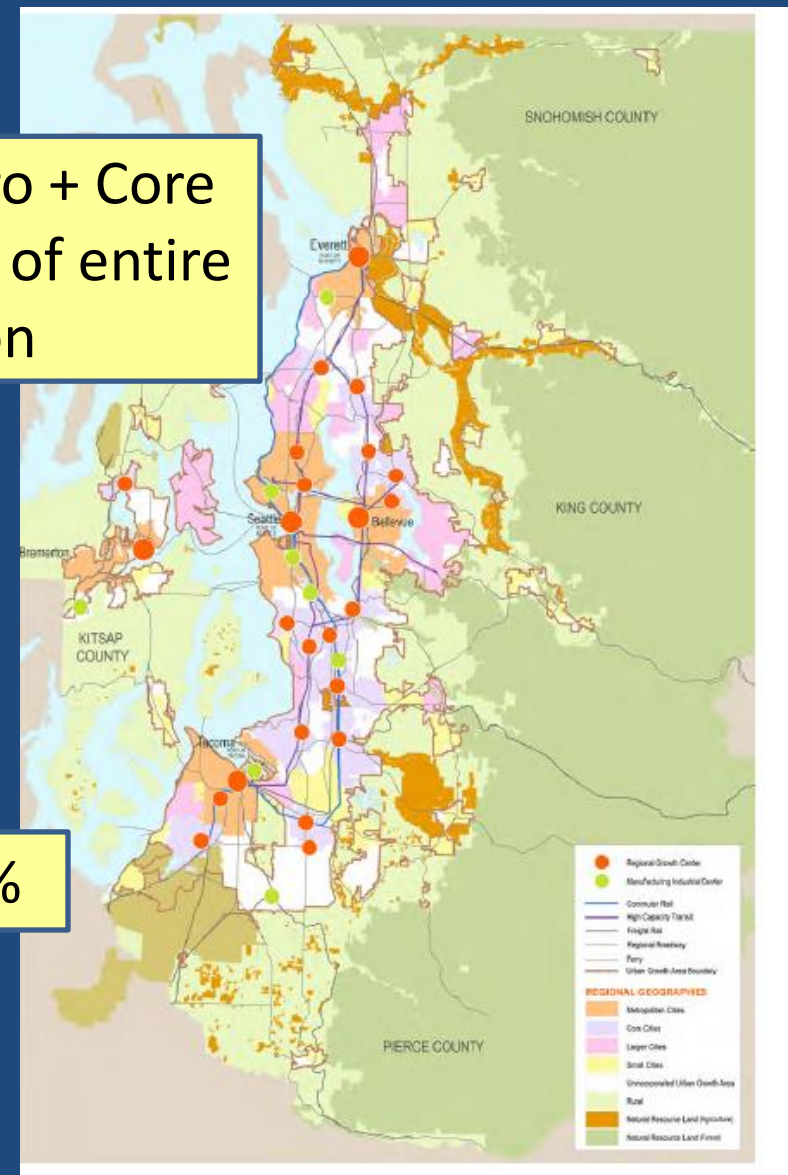


# VISION 2040: a differentiated landscape

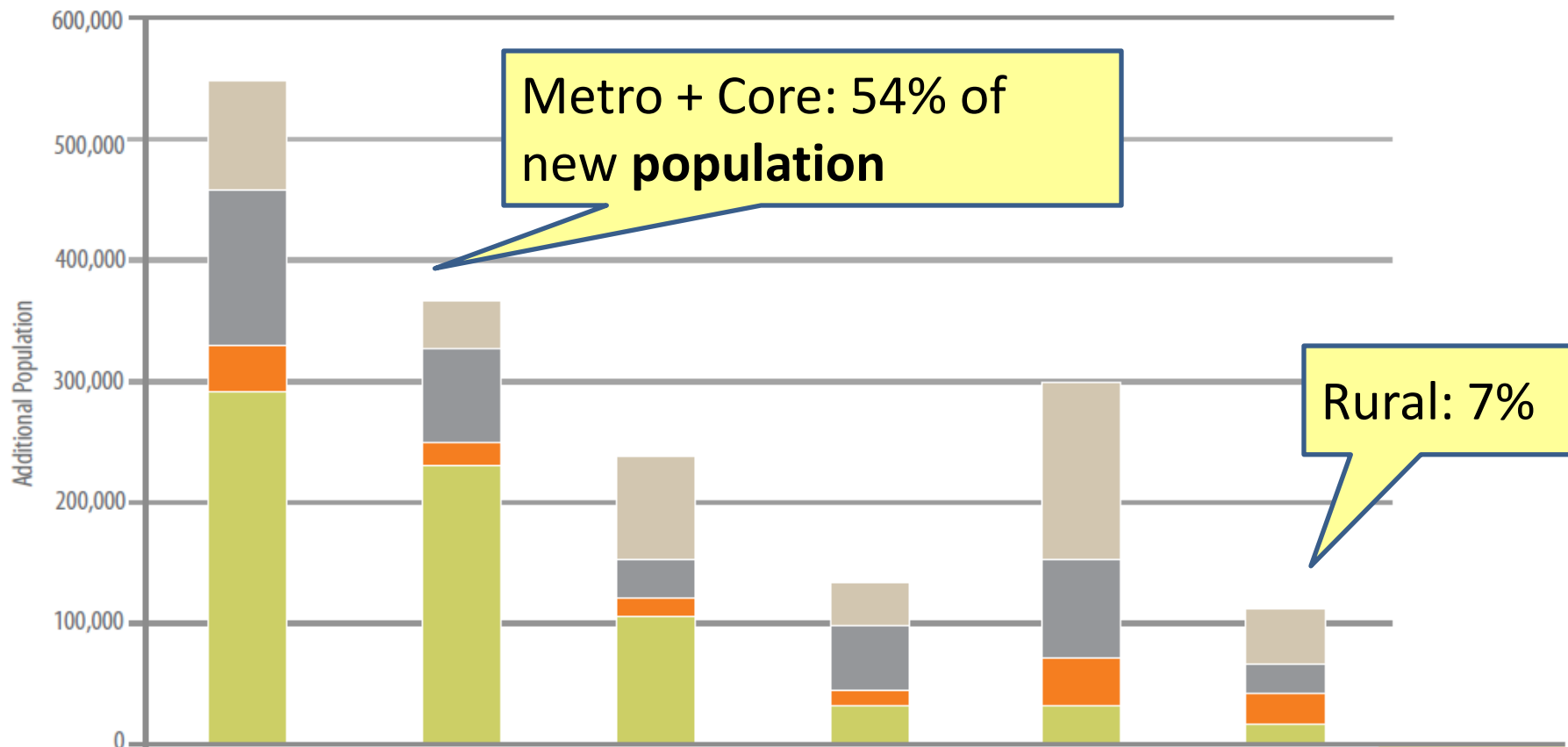
Regional geography	Sq miles
5 Metro Cities	222
14 Core Cities	212
18 Larger Cities	167
46 Small Cities	136
Unincorporated UGA	260
Rural Areas	1,464
Resource Lands	3,863
<b>TOTAL</b>	<b>6,324</b>

Metro + Core = 7% of entire region

23%



# Population Growth by Regional Geography and County, 2000-2040



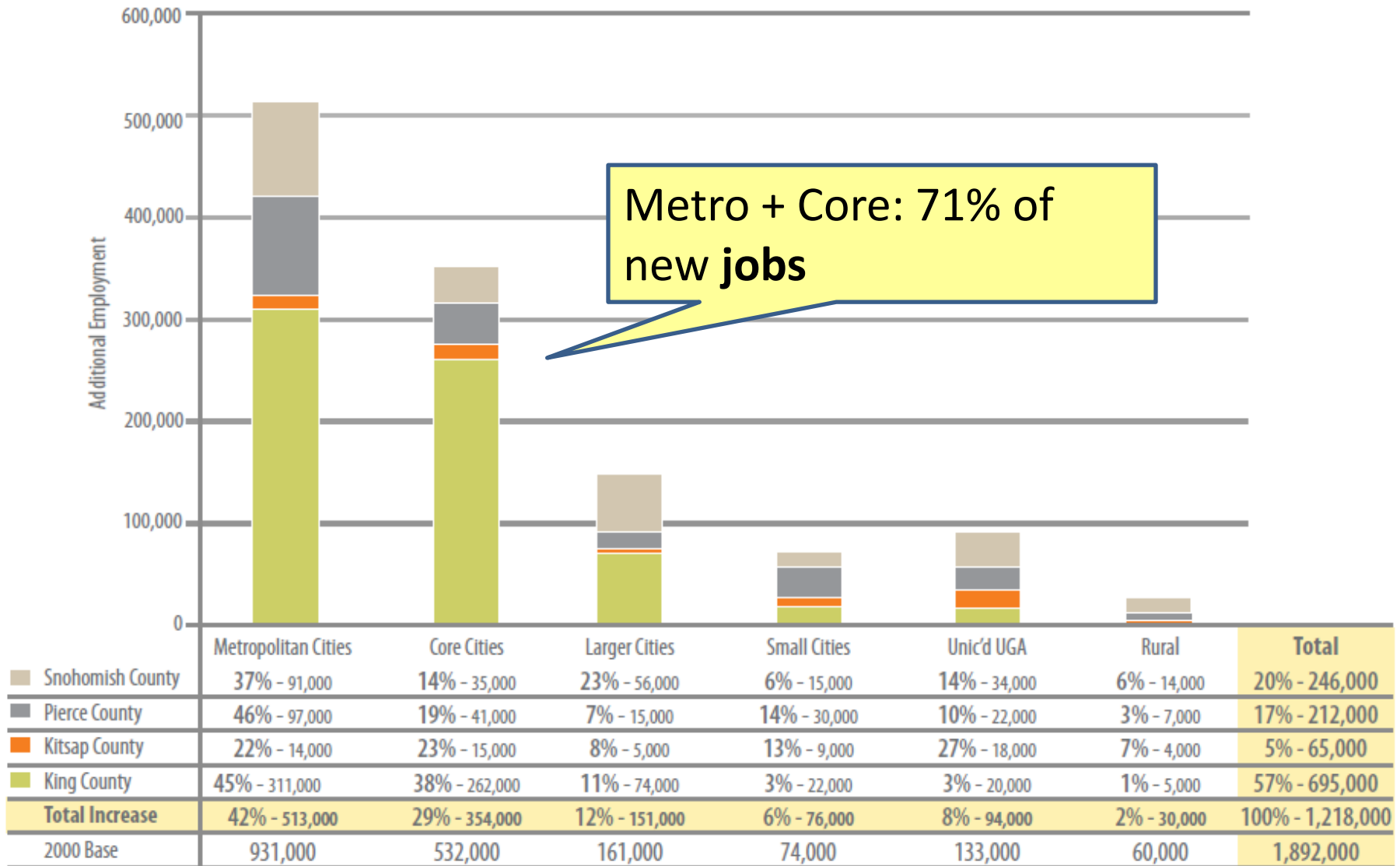
**Metro + Core: 54% of new population**

**Rural: 7%**

	Metropolitan Cities	Core Cities	Larger Cities	Small Cities	Unic'd UGA	Rural	Total
Snohomish County	20% - 90,000	9% - 40,000	19% - 85,000	8% - 37,000	33% - 148,000	10% - 46,000	26% - 446,000
Pierce County	32% - 127,000	20% - 77,000	8% - 32,000	13% - 52,000	21% - 81,000	6% - 24,000	23% - 393,000
Kitsap County	26% - 39,000	13% - 19,000	11% - 16,000	8% - 12,000	26% - 39,000	16% - 25,000	9% - 149,000
King County	41% - 294,000	32% - 233,000	15% - 108,000	5% - 35,000	5% - 34,000	3% - 20,000	42% - 724,000
<b>Total Increase</b>	<b>32% - 550,000</b>	<b>22% - 369,000</b>	<b>14% - 240,000</b>	<b>8% - 136,000</b>	<b>18% - 302,000</b>	<b>7% - 115,000</b>	<b>100% - 1,712,000</b>
2000 Base	1,007,000	601,000	403,000	210,000	586,000	470,000	3,276,000



## Employment Growth by Regional Geography and County, 2000–2040



# Multicounty planning policies

MPP-DP-2: Encourage **efficient use of urban land by maximizing the development potential of existing urban lands**, such as advancing development that achieves zoned density.

MPP-DP-15: Support the **transformation of key underutilized lands, such as brownfields and greyfields, to higher density, mixed-use areas** to complement the development of centers and the enhancement of existing neighborhoods.

MPP-DP-5: Focus a significant share of population and employment growth in designated **regional growth centers**.

# Regional Growth Centers

27 Regional Growth Centers: 2.5% of total UGA area (~25 sq miles)

- Currently 29% of regions jobs

+ 8 Manufacturing/Industrial Centers: 3.7% of total UGA area

Major state and local investments in centers, including:

- Connections between centers with **fast and frequent transit**





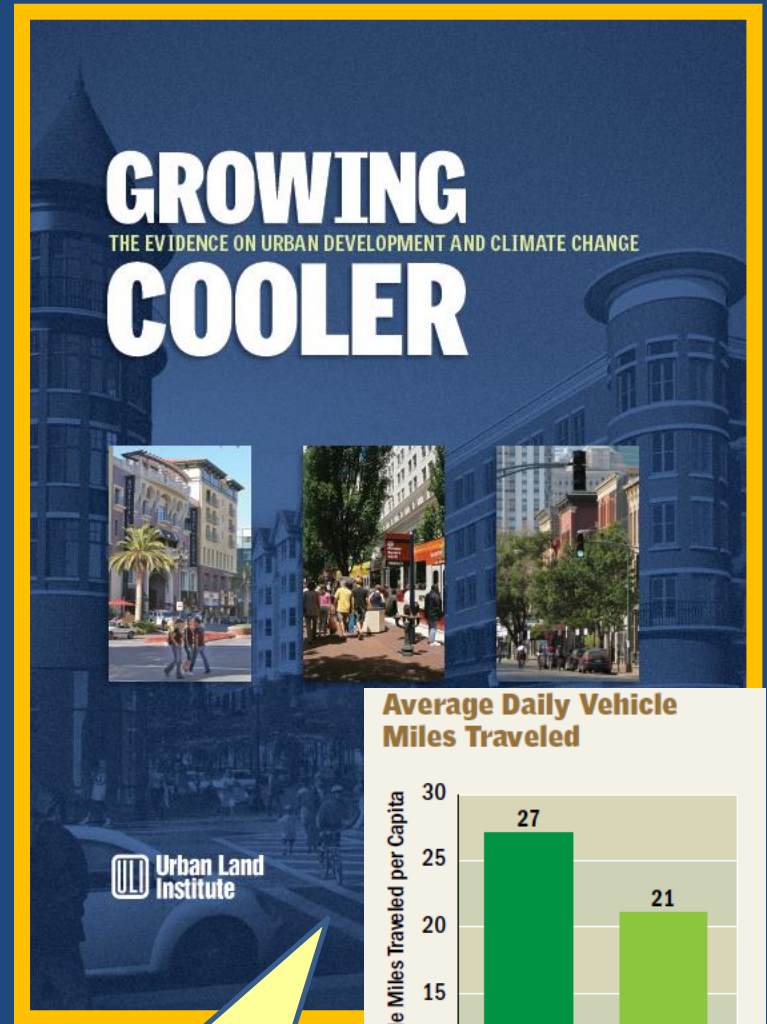


# Centers + climate change

**VISION 2040 EIS:** growth in centers + better jobs/housing balance will reduce GHG emissions by 6% from the trend

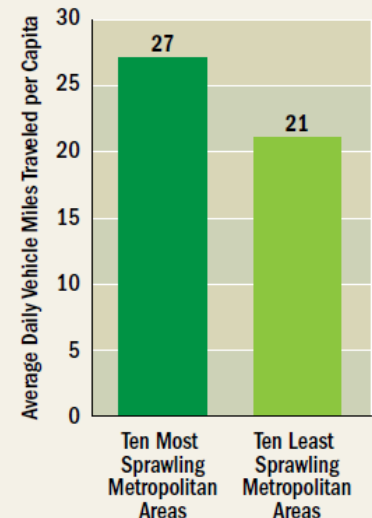
Nat'l study: compact cities = 1/3 fewer miles driven than sprawl scenarios.

Less greenhouse gases; lower air pollution; healthier, more active populations, (affordable housing, etc.)



Transpo: 50% of WA greenhouse gases

**Average Daily Vehicle Miles Traveled**



Example densities in Regional Growth Centers.

From *Transit Oriented Communities Blueprint*, Futurewise (2009)



The Salmon Creek mixed-use project at the Greenbridge development in White Center provides 34 low-income homes on 1.3 acres for a net density of 26 units per acre.



The Nia Apartments at the Greenbridge mixed-use development in White Center provides 82 low-income apartments on 1.39 acres for a net density of 59 units per acre.



The Alcyone mixed-use development in Seattle's South Lake Union neighborhood provides 161 mixed-income apartments on 0.83 acres for a net density of 194 units per acre.



The 18-story M Street mixed-use development in Seattle's First Hill neighborhood provides 220 market-rate apartments on 0.66 acres for a net density of 333 units per acre.

# “Countywides”

Include **population targets** to implement the Regional Growth Strategy

Adopted by counties

Ensure consistency between county and city comprehensive plans

GMA Goals

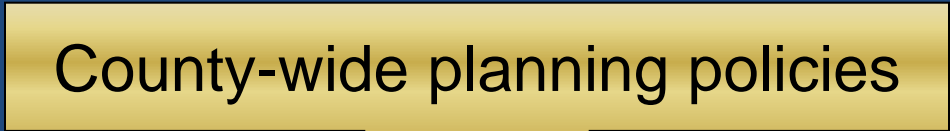
Multi-county planning policies

County-wide planning policies

Comprehensive plan

Regulations

Project review



# 20-year population targets (*SnoCo example*)

APPENDIX B, Table 1 - 2035 Population Growth Targets for Cities, UGAs and the Rural/Resource Area

Area	2011 Population Estimates	2035 Initial Population Targets	2011-2035 Population Growth	
			Amount	Pct of Total County Growth
<b>S.W. County UGA</b>	434,425	582,035	147,610	61.9%
Incorporated S.W.	261,506	363,452	101,946	42.8%
Bothell City (part)	16,570	23,510	6,940	2.9%
Brier City	6,201	7,011	810	0.3%
Edmonds City	39,800	45,550	5,750	2.4%
Everett City	103,100	164,812	61,712	25.9%
<b>Lynnwood City</b>	<b>35,860</b>	<b>54,404</b>	<b>18,544</b>	<b>7.8%</b>
Mill Creek City	18,370	20,196	1,826	0.8%
Mountlake Terrace City	19,990	24,767	4,777	2.0%
Mukilteo City	20,310	21,812	1,502	0.6%
Woodway Town	1,305	1,389	84	0.0%
Unincorporated S.W.	172,919	218,584	45,665	19.2%
<b>UGA Total</b>	<b>595,713</b>	<b>815,156</b>	<b>219,443</b>	<b>92.1%</b>
City Total	412,723	579,419	166,696	70.0%
Unincorporated UGA Total	182,990	235,737	52,747	22.1%
<b>Non-UGA Total</b> (Uninc Rural/Resource Area)	<b>121,287</b>	<b>140,125</b>	<b>18,838</b>	<b>7.9%</b>
<b>County Total</b>	<b>717,000</b>	<b>955,281</b>	<b>238,281</b>	<b>100.0%</b>

CPPs include growth targets for all cities and unincorporated UGAs



GMA Goals

Multi-county planning policies

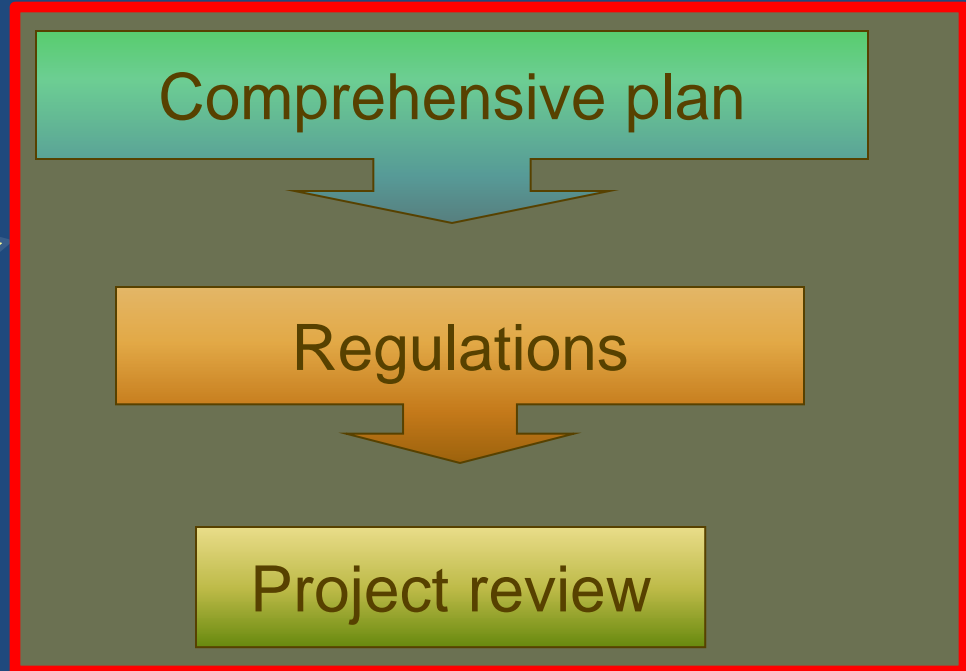
County-wide planning policies

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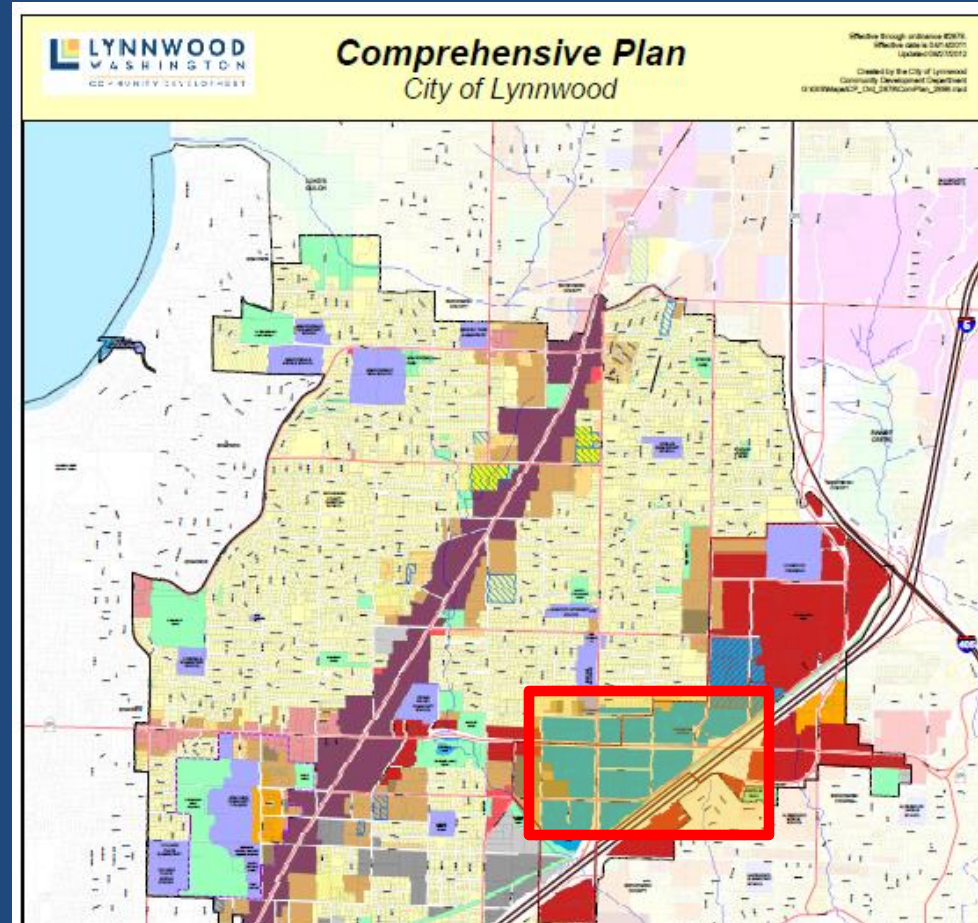
Plans, regulations and subsequent project review must implement the overall growth strategy and targets



# Comprehensive plans

**Land Use:** type, scale, design, density and intensity of development to absorb target population and jobs. (*FLUM*)

**Capital Facilities & Utilities:**  
How to pay for existing facilities and projected growth (6-year + 20-year plans)



## FUTURE LAND USE

### Residential

- SF1 - Low Density Single Family
- SF2 - Medium Density Single Family
- SF3 - High Density Single Family
- SF4 - High Density Single Family MUGA
- MF1 - Low Density Multiple Family
- MF2 - Medium Density Multiple Family
- MF3 - High Density Multiple Family
- WFB - Waterfront Beach

### Mixed Use

- City Center
- Alderwood - City Center Transition
- MU - Mixed Use
- H99 - Highway 99 Corridor
- MUCTR - Mixed Use Urban Center

### Commercial

- RC - Regional Commercial
- CC - Community Commercial
- LC - Local Commercial
- BTP - Business/Technical Park
- I - Industrial

### Other

- PF - Public Facilities
- PRO - Parks, Recreation, & Open Space
- MH-1 - Mobile/Manufactured Park Overlay
- College District
- Subregional Center
- Lynnwood City Limits

# Center subarea plan

A “Transit-Oriented Community”  
(light rail destination)

Dense, mixed-use, pedestrian-friendly center (buildings up to 350')

New roads; parks; activity centers; quality urban design.

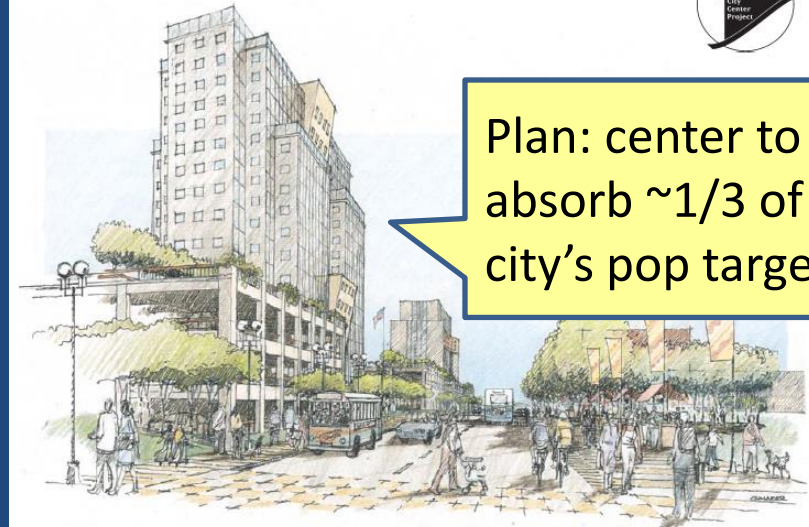
Existing:  
Car-oriented, superblocks,  
one-story single use  
buildings, parking lots

## City of Lynnwood **CITY CENTER SUB-AREA PLAN**

September, 2007



Plan: center to absorb ~1/3 of city's pop target





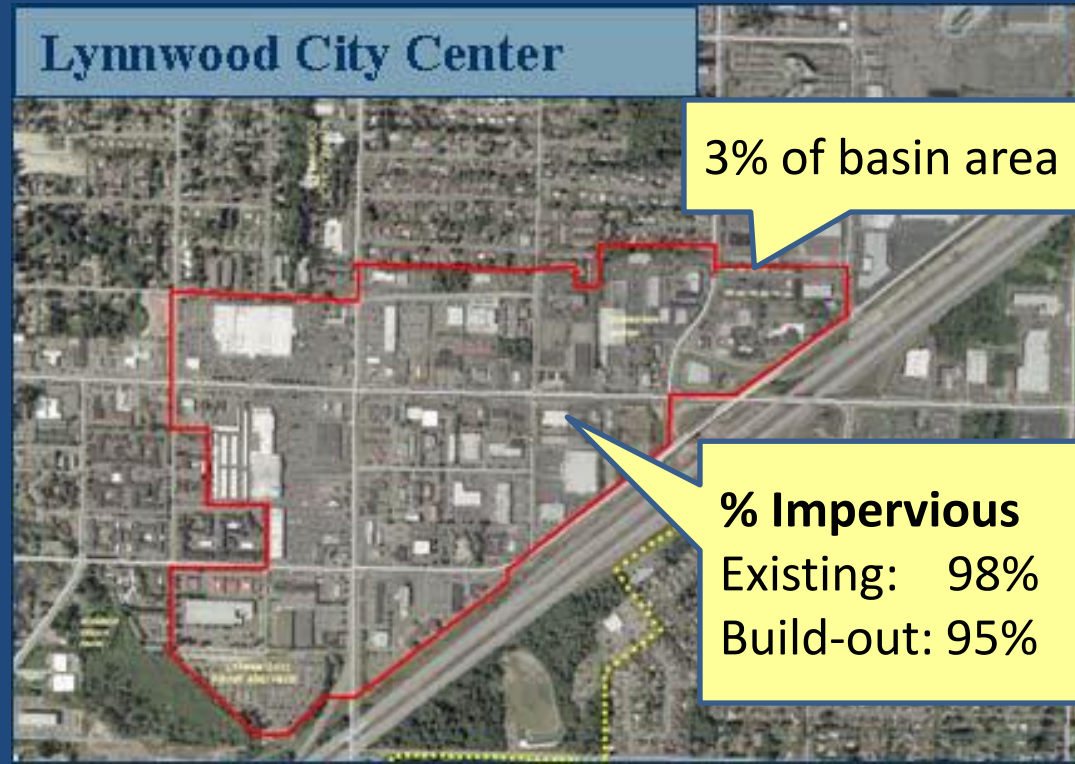
# Lynwood City Center NPDES cost analysis

Herrera modeled creeks with Center at full build-out.

**Environmental result for \$120M:**  
Erosive floods would decrease from 7 ½ hours/year to 6 hours/year.

**Cost:** \$120 Million for detention facilities to match forested conditions.

- Outside “40/20” zone
- Can’t pipe to exempt waters
- Bad soils for infiltration





## GMPB Co-Chair Ryan Mello on “NPDES + GMA”

“VISION 2040 expects **both growth to meet our GMA targets, *and* to protect the environment.**”

“Stormwater is one of those nitty-gritty details we need to wrestle with to actualize VISION. Water quality is important to us all but it’s not free, so there’s an obvious impact to our ability to create the kind of compact dense communities that VISION calls for.”

“So instead of pretending like the problem doesn’t exist, and like there aren’t details that might be getting in the way, we should **have the tough conversation** and figure out how to address them.”

# Evaluate stormwater requirements in centers?

Do stormwater requirements support the central sustainability strategy of GMA and Vision 2040?

## “Center” scale?

- Evaluate information from centers with different geographies and real estate markets?
- Contrast inside/outside “40/20” zone?

## Site scale?

- Incorporate cost information from pro formas (MBA project)?

