

Building cities in the rain



*Photo:
SvR Design*

Puget Sound Regional Council
Growth Management Policy
Board

April 3, 2014

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Commerce: Tim Gates

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SvR: Amalia Leighton, Peg Staehli,
Kathy Gwilym

Project origin: “NPDES v GMA”

Stormwater regulations are often more costly in ultra-urban areas than in green-fields and suburbs.

NPDES & GMA: How to develop dense centers while meeting water quality requirements?

Development Comparison



Inside UGA

Outside UGA

2013 GMPB sessions:

May: Ecology intro; Problem Statement, (Tacoma); Regional Solutions (Redmond)

June: Puget Sound Partnership

July: Cost-effective stormwater strategies (OTAK)



National Estuary Program

Watershed Protection and Restoration grant



Department of Commerce
Innovation is in our nature.

“Regional Alliances”

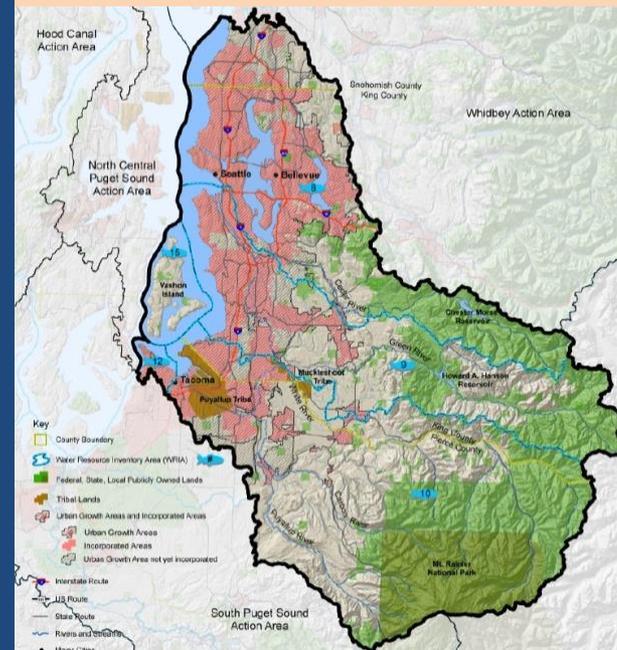
PugetSoundPartnership

LEADING PUGET SOUND RECOVERY

Action Agenda

&

South Central Puget Sound Action Area
Caucus Group



Near Term Action:
“Better alignment of land use plans with... NPDES permits to reduce stormwater impacts.”

South Central Sound Action Area Caucus Group

Subcommittee on Stormwater and Infill Development



Puget Sound Regional Council



Department of Commerce
Innovation is in our nature.



King County



City of Tacoma
WASHINGTON



seattle.gov

Background report

Summarizes GMPB sessions, literature review, interviews & meetings with:

- American Public Works Association
- NPDES Permit Coordinators
- MBA-Pierce
- Pierce Co Growth Management Coordinating Committee
- Oly Peninsula Planners Forum

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.¹

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 [De'Sean Quinn](#), Caucus Group Coordinator, at 206.263.3420.



Regional strategy for distributing growth

Population targets for cities

Authorize densities to achieve housing and job targets

GMA: Urban growth / stop sprawl / protect critical areas

Multi-county planning policies

County-wide planning policies

County / City

Comprehensive plan

Regulations

Project review



Clean Water Act: fishable, swimmable waters

Protect “beneficial uses”

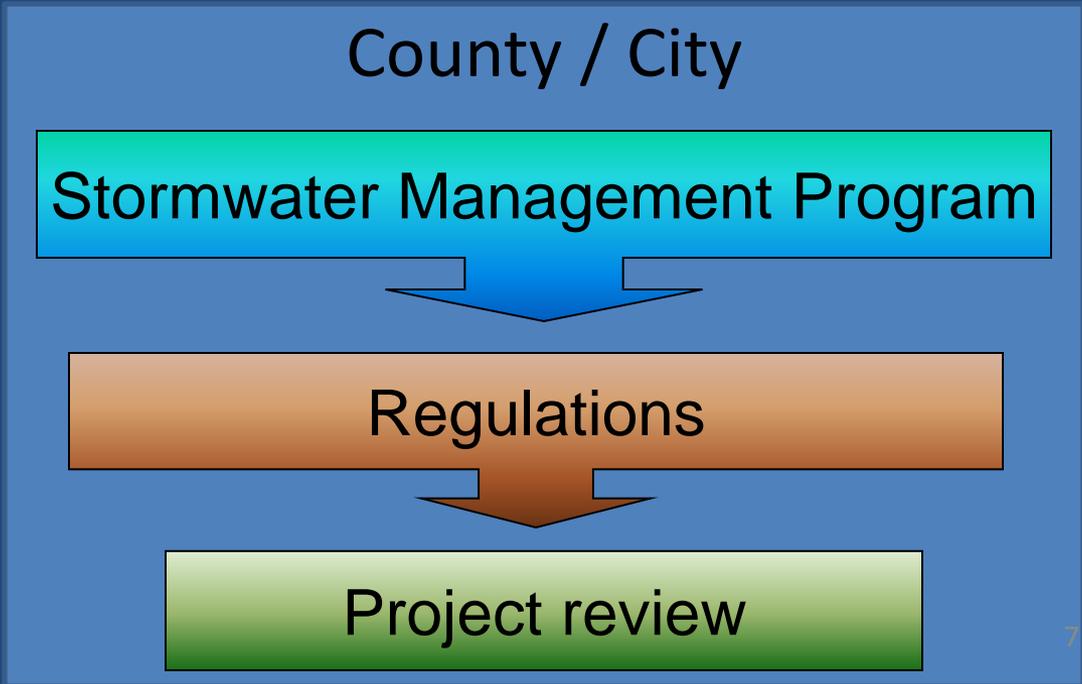
State water quality standards

NPDES “Maximum Extent Practicable” standard. Permits mostly identical now (2013 – 2018)

Phase I permit

Phase II permit

Adopt Ecology manual or equivalent



Default approach: Site-by-site **BMPs** for new development and re-development

Density = ultimate BMP?

Centers linked by transit:

27 Regional Growth Centers

- 2.5% of total UGA (~25 sq mi)
- Currently 29% of regions jobs

8 Manufacturing/Industrial Centers

- 3.7% of total UGA area

“TOD” = compact urban form;
mostly *redevelopment*; less cars,
roads and parking per capita



Major stormwater cost for high-density areas

Flow Control

Ponds or vaults to reduce peak flow rates and volumes to prevent erosion and flooding.

2005 Standard = match forested conditions.

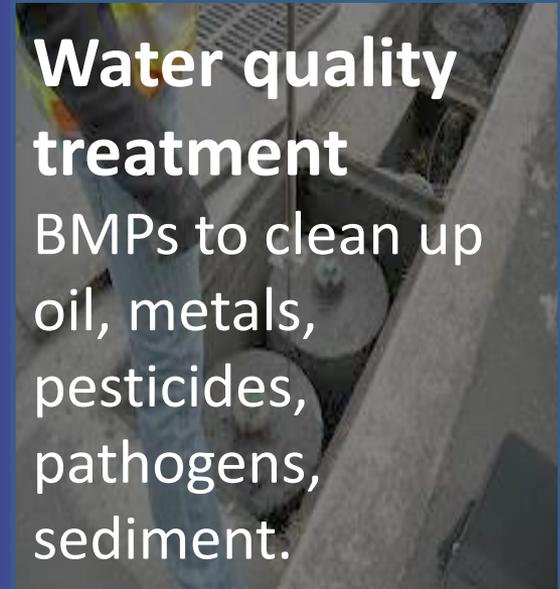


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Water quality treatment

BMPs to clean up oil, metals, pesticides, pathogens, sediment.



Protecting
wetlands
hydroperiod



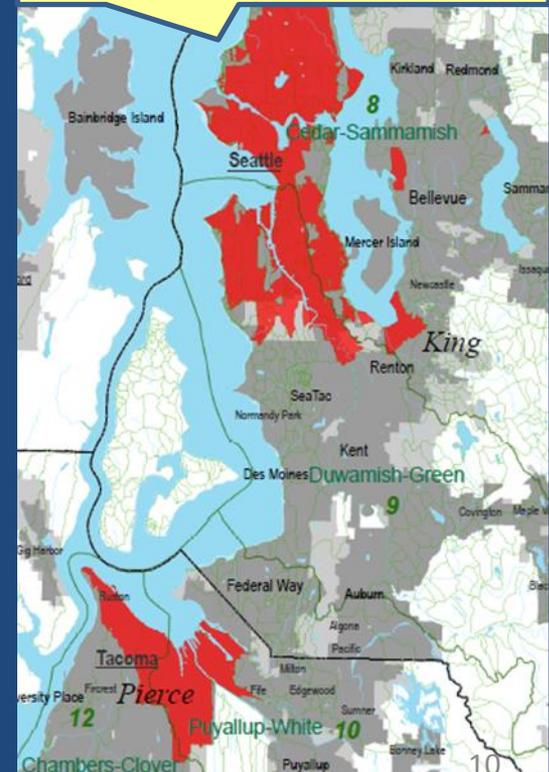
Where Flow Control costs are most challenging

Where future plans demand very high lot coverage:

- Where you can't pipe to **flow-control exempt waters** (*Puget Sound, large rivers or lakes*)
- Outside “**40/20**” zones: urban basins that have been 40% impervious for 20 years
- Where you can't **infiltrate** (e.g., bad soils, Aquifer Protection Area, etc.)



40/20 Zone: only need to match *existing* site conditions



Regional facilities: shared solutions

Centralized mitigation projects (big ponds/vaults, or pipes to exempt waters)

Escape the “tyranny of site constraints”

Scalable: can treat large areas or small neighborhoods

Concerns:
Need the right geography.
How to pay for facilities?



Cost example: Lynnwood Regional Growth Center



Existing: Car habitat.
Superblocks, one-story
single use buildings, big
parking lots

City of Lynnwood
**CITY CENTER
SUB-AREA PLAN**
September, 2007



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

Future: Pedestrian habitat.
Light rail "Transit-Oriented
Community," mixed use (zoning
to 350')

City Center: analysis of regional facility costs

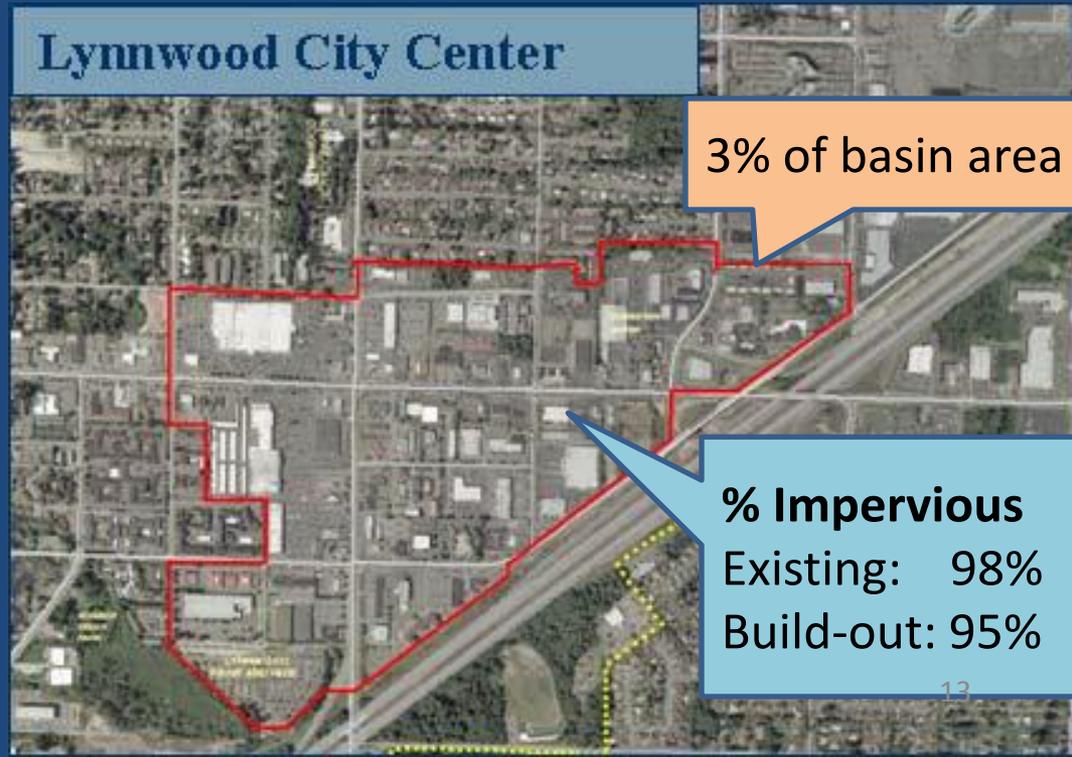
Lynnwood modeled stormwater flow control at full build-out.

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

- Can't pipe to exempt waters
- Outside "40/20" zone
- Can't infiltrate

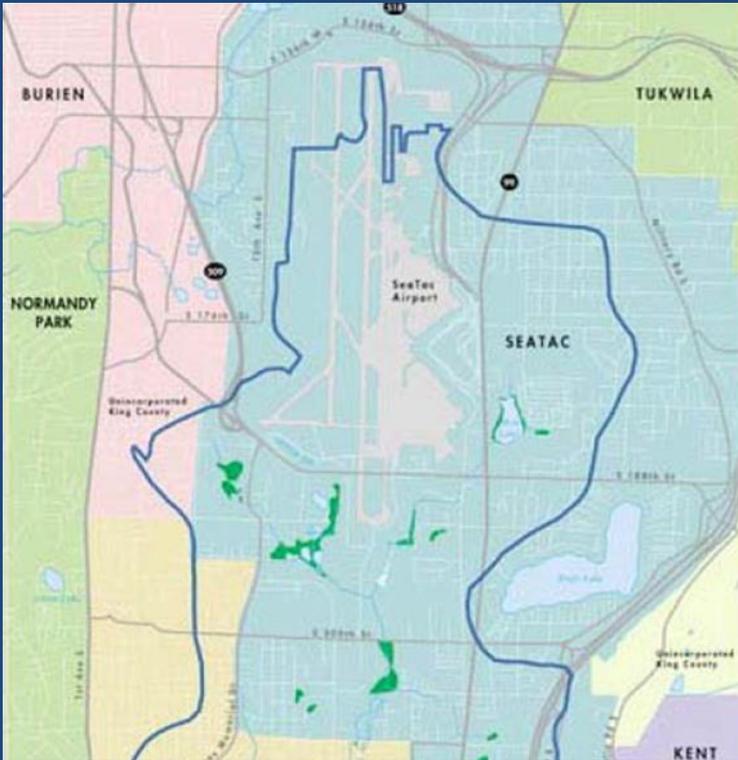
City concern: projects won't pencil

Regulatory approaches must acknowledge market realities



Flexibility in permit (1 of 2): Basin planning

Permit allows *tailored Flow Control standard*.



*Des Moines Creek Basin Plan:
lower flow control requirement
based on detailed assessment*

- Standard tailored to the need of individual basin
- Requires detailed study and modelling.
- Must get all jurisdictions in basin to approve plan before Ecology review.
- Few examples to date.

Flexibility in permit (2 of 2): In-lieu fee programs

Redmond approach approved Feb 2014.
Template for other cities.

Basic approach:

- Identify “sending areas” where dense development is desired; and “receiving areas” where urgent retrofit is needed
- City builds targeted improvements to stream hydrology and water quality
- Developers in “sending areas” pay fee-in-lieu to pay back facilities

2013
CITY OF REDMOND, WASHINGTON
CITYWIDE WATERSHED MANAGEMENT PLAN

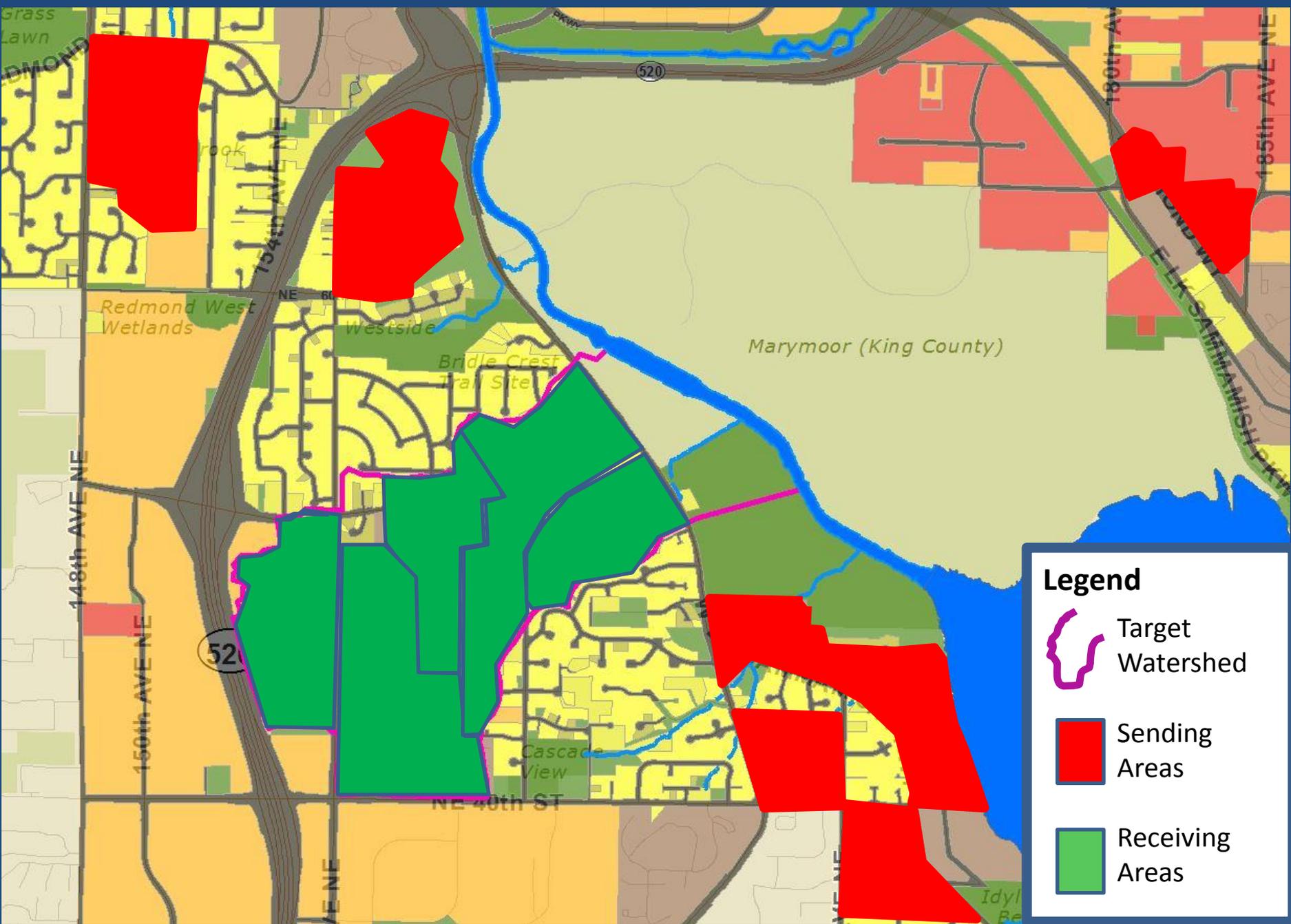


Prepared for
City of Redmond
Public Works Natural Resources Division

Prepared by
Herrera Environmental Consultants, Inc.



Carefully decouples mitigation from project site



Legend

-  Target Watershed
-  Sending Areas
-  Receiving Areas

An improvement over site-by-site mitigation?

Benefits	Environment	Development
Faster	Retrofits restore aquatic habitat sooner than site-by-site redevelopment.	Determine costs quicker. Cut a check and stormwater obligation is done.
Cheaper	Site retrofits where land and development costs are lower. Economies of scale.	Avoid design costs. No expensive, land-consuming vaults or ponds.
Greener	Directs mitigation where need is highest.	Meeting density targets helps prevent sprawl.

March 27, 2014 Settlement Agreement

5		
6		POLLUTION CONTROL HEARINGS BOARD
7		STATE OF WASHINGTON
8	COALITION OF GOVERNMENTAL	
9	ENTITIES: CITY OF AUBURN, CITY OF	No. 12-097c
10	BAINBRIDGE ISLAND, CITY OF	
11	BELLEVUE, CITY OF BURLINGTON,	STIPULATION AND AGREED ORDER
12	CITY OF DES MOINES, CITY OF	OF DISMISSAL OF PHASE II
13	EVERETT, CITY OF KENT, CITY OF	NON-CONSOLIDATED LEGAL ISSUES
14	ISSAQUAH, CITY OF MOUNT VERNON,	No. 1, 4, 6, 7, 8, 10, 11, 12, 13, 14, and 15
15	CITY OF RENTON, CITY OF SEATAC,	
	CITY OF SNOQUALMIE, CITY OF	
	SUMNER, all of which are municipal	
	corporations of the State of Washington,	
	COWLITZ COUNTY, a political subdivision	
	of the State of Washington; and KING	
	COUNTY, a political subdivision	

“Ecology agrees to continue to work with Phase II Coalition members, other permittees, and the Department of Commerce to **explore options** for meeting stormwater development/flow control standards on small, redevelopment sites in urban growth centers.”

Next steps: exploring the options

Task	Action	Notes
Guidance	Ecology review of Regional Alliance proposal	Will seek broader review as well
Pilots	Grants to develop more basin planning and in-lieu fee approaches	<i>Option:</i> NEP Watershed Protection and Restoration grants

Opportunity to lend support for use of NEP funds

Email comments by **April 18th** to:

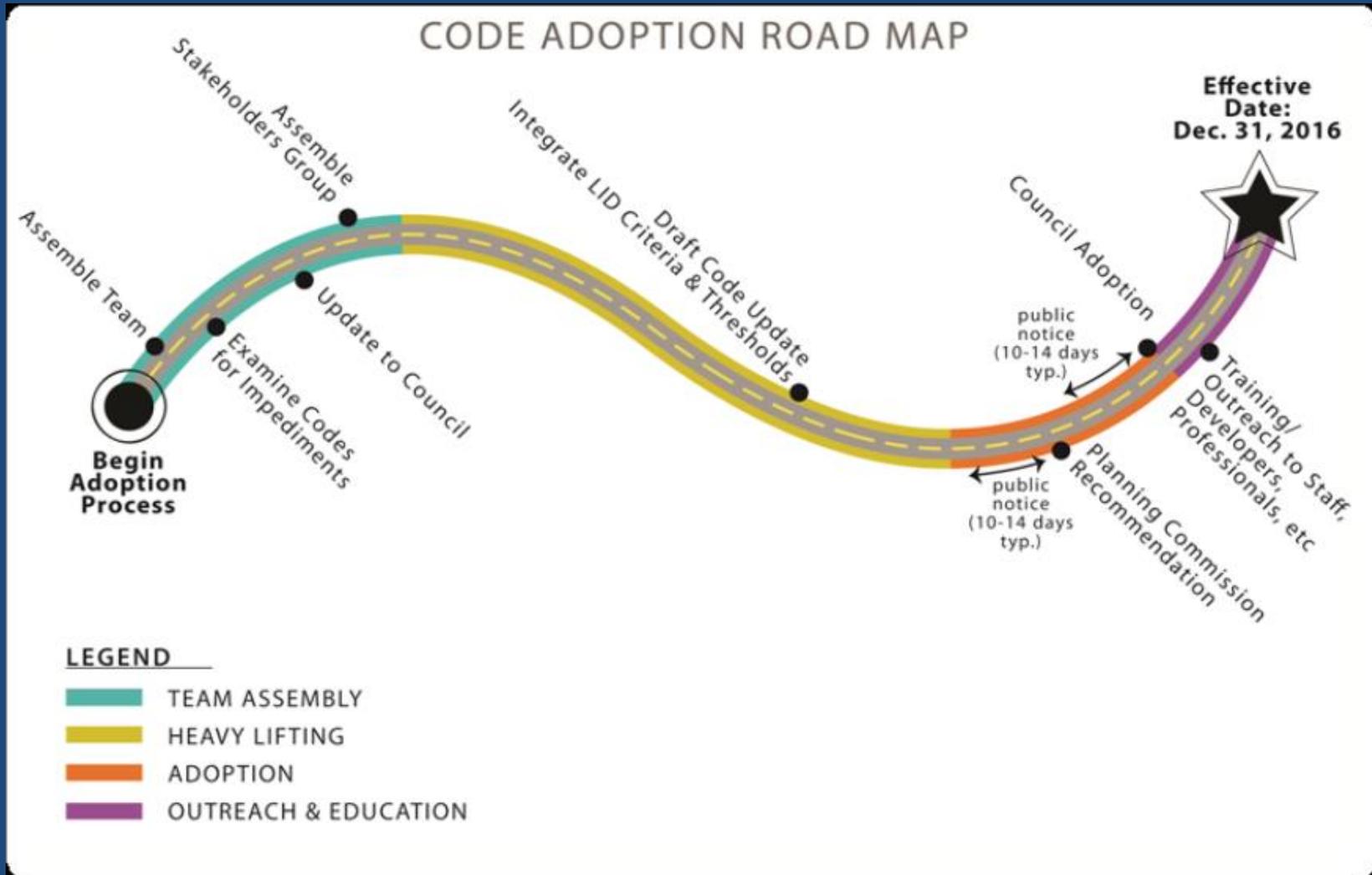
Angela Bonifaci at EPA:

To: Bonifaci.angela@epa.gov

Subject: Watershed Protection & Restoration Grants

“We support use of NEP Round 5/6 grants for aligning urban infill and stormwater mitigation strategies.”

SvR presentation



Extra slides

Cost evaluation: Watershed-scale (*WRIA 9 draft*)

King Co modelled current and VISION 2040 build-out conditions

Identified stormwater retrofits needed to achieve in-stream flow and water quality goals

Retrofit needs far exceed likely revenue sources (\$ Billions)

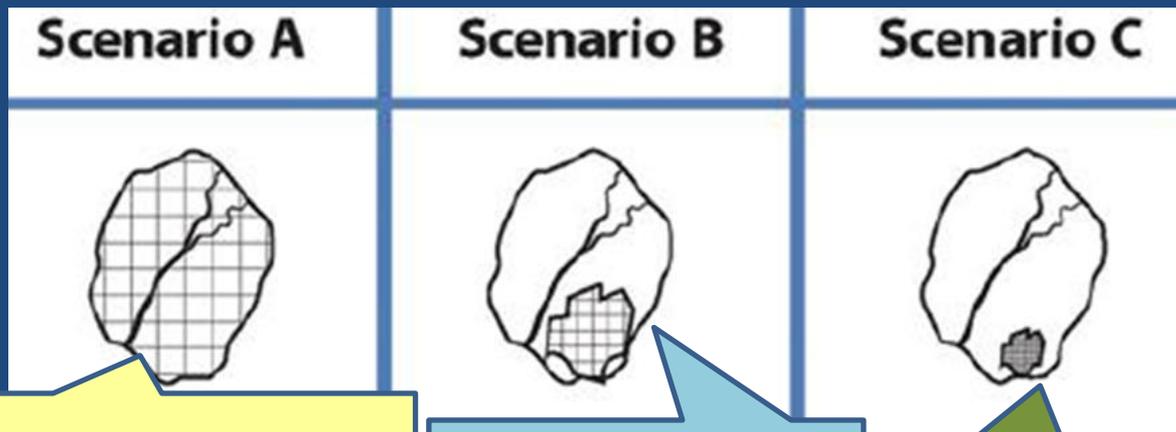


~ 50% of improvement in conditions will depend on development and re-development.

High density as a “Best Management Practice”

Scenario: 10,000 acre watershed.

How to accommodate 10,000 homes?



1 du/acre

Impervious

Site: 20%

Watershed: 20%

4 du/acre

Impervious

Site: 38%

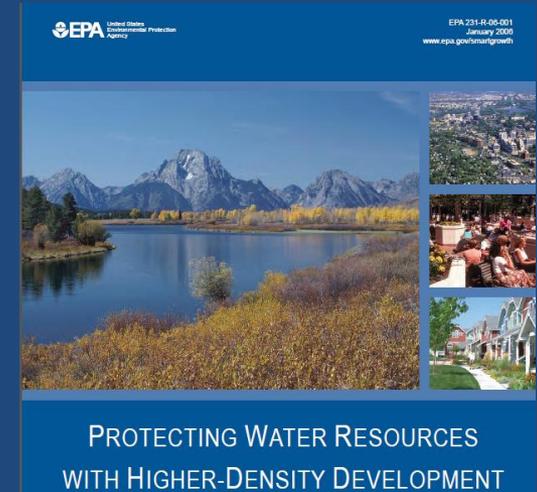
Watershed: 9.5%

8 du/acre

Impervious

Site: 65%

Watershed: 8%



Higher density

- Consumes less land than lower densities,
- Less run-off **per capita**

GMA & Clean Water Act are broadly compatible

“Compact development, with a smaller footprint... can help meet GMA goals of accommodating growth while protecting the environment.

Reducing dependence on cars, roads and parking areas reduces stormwater impacts.

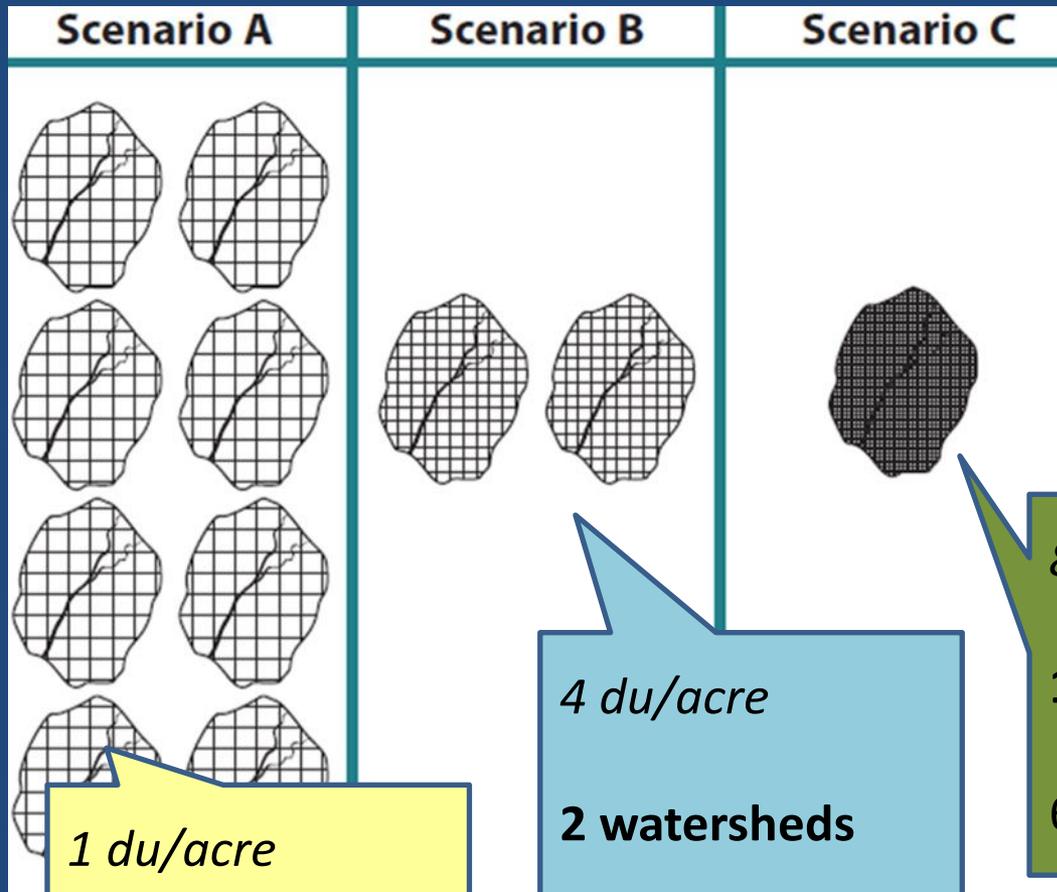
Stream side buffers serve many useful functions in preserving aquatic natural resources...”



Municipal Stormwater NPDES Permit Program

Report to the Legislature

Density a lot better than sprawl over long-term



Extend scenario to accommodate 80,000 homes

1 du/acre

8 watersheds

20% impervious

4 du/acre

2 watersheds

38% impervious

8 du/acre

1 watershed

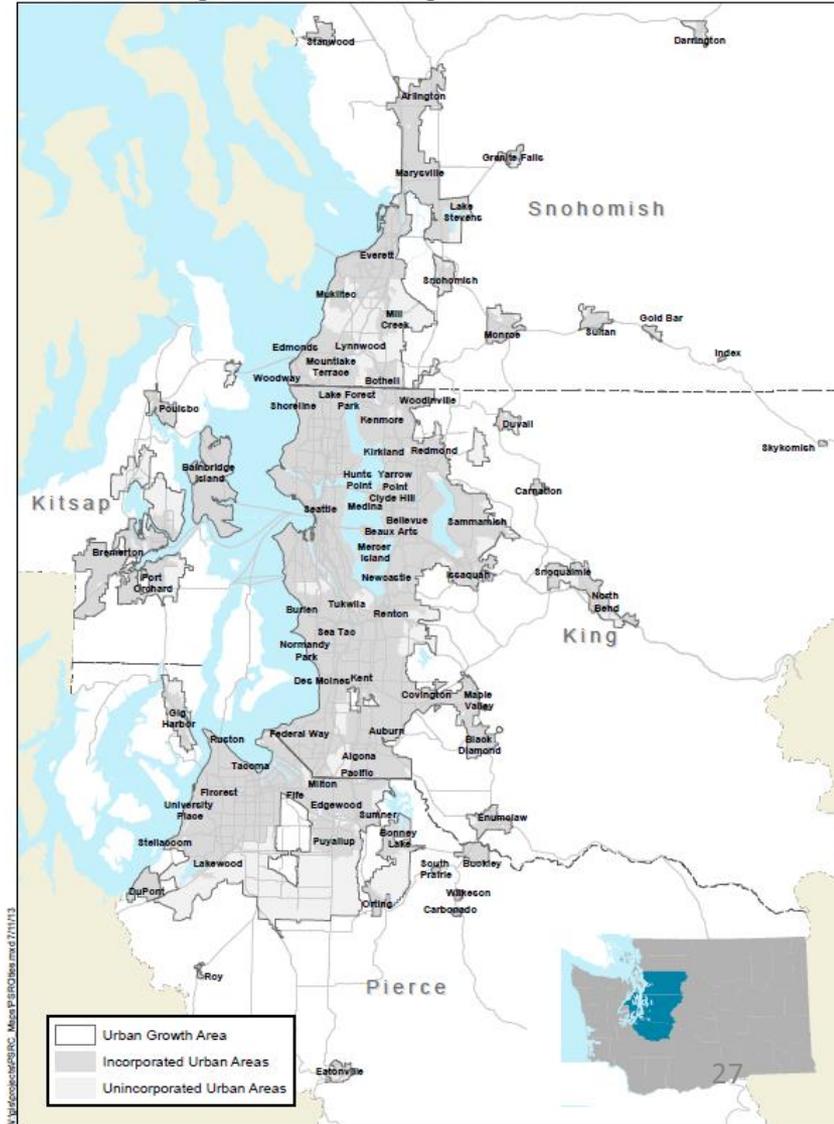
65% impervious

VISION 2040: jobs & housing for 1.7 Million



2 more Seattles + 2 more Tacomas

Central Puget Sound Region

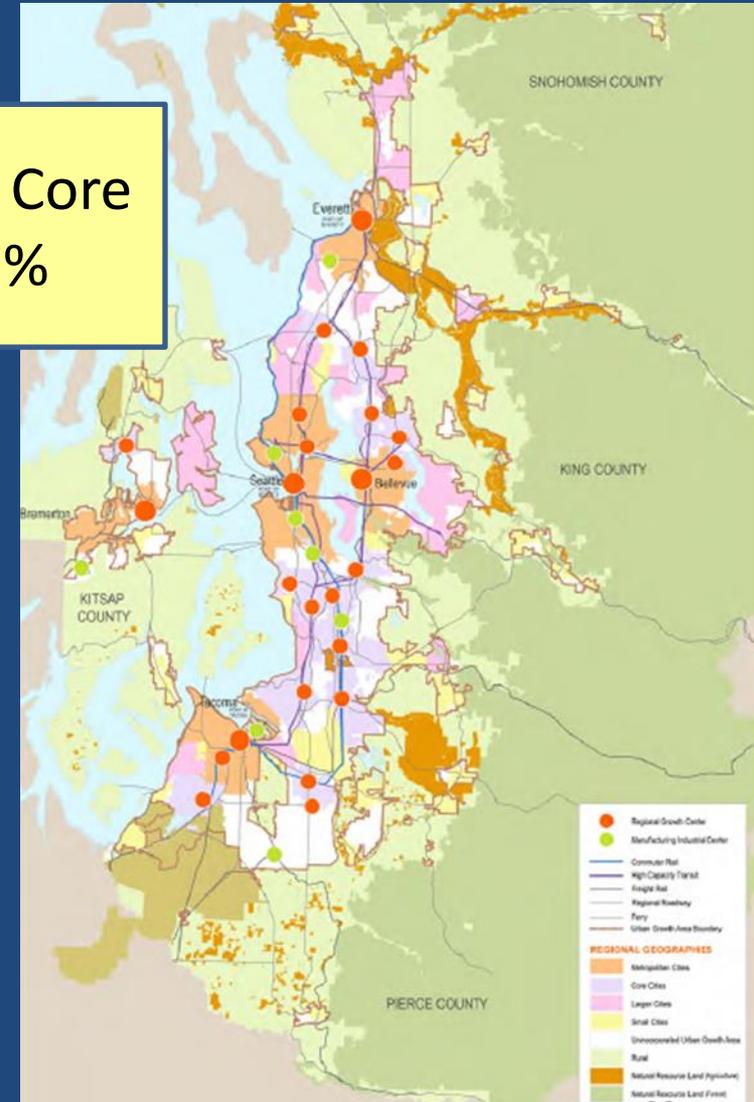


Regional anti-sprawl growth strategy

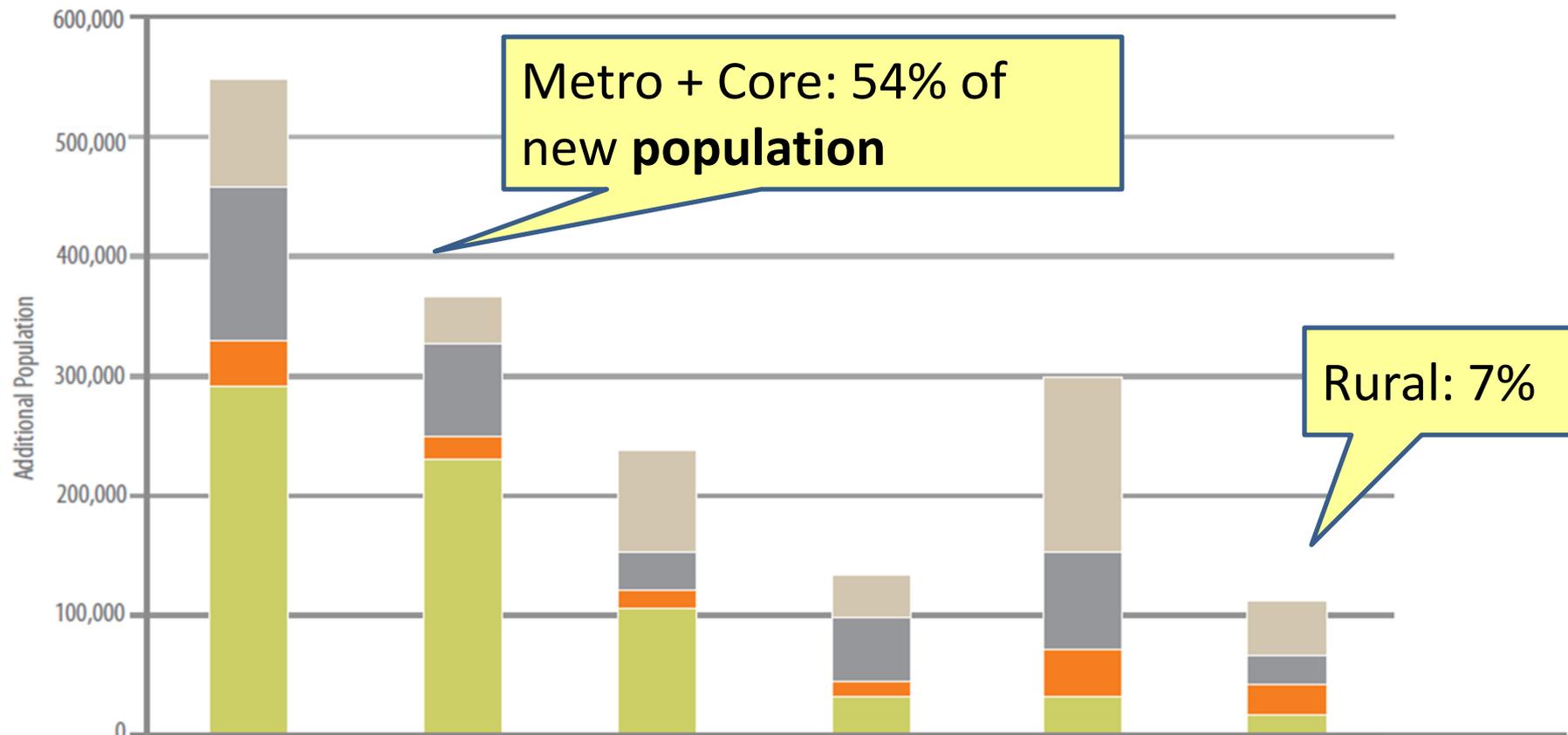
Regional geography	Sq miles
5 Metro Cities	222
14 Core Cities	212
18 Larger Cities	167
46 Small Cities	136
Unincorporated UGA	260
Rural Areas	1,464
Resource Lands	3,863
TOTAL	6,324

Metro & Core cities = 7%

23%



Population Growth by Regional Geography and County, 2000-2040



	Metropolitan Cities	Core Cities	Larger Cities	Small Cities	Uninc'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
Total Increase	32% - 550,000	22% - 369,000	14% - 240,000	8% - 136,000	18% - 302,000	7% - 115,000	100% - 1,712,000
2000 Base	1,007,000	601,000	403,000	210,000	586,000	470,000	3,276,000

Multicounty policies: Redevelopment is key

DP-2: Maximize development potential of **existing urban lands**

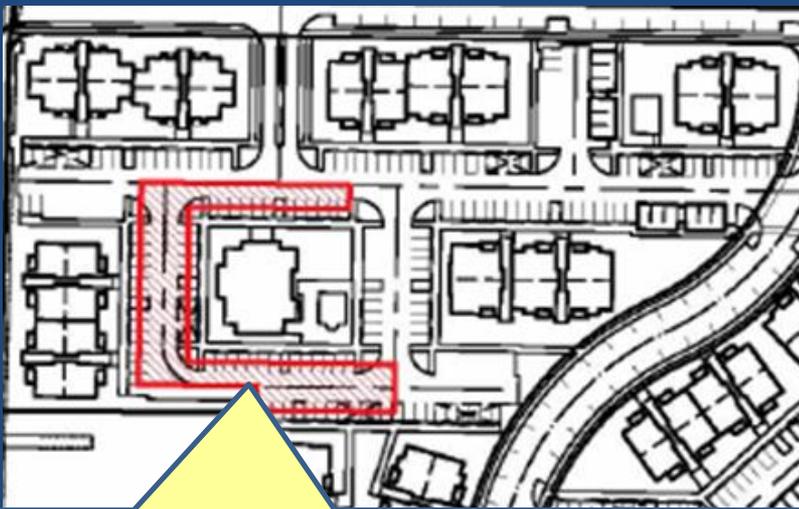
DP-15: Transform **key underutilized lands**, such as brownfields and greyfields, to higher density, mixed-use areas

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

Cost example: Flow Control at project-scale

MBA-Pierce report (*Nov 2013*): how pond/vault sizes increased with 2005 flow control standard for actual projects.

Example of multi-family project:



Previous manual

Vault: ~ 71,000 cubic feet



Ecology 2005 manual

Vault: ~ 210,000 cubic feet