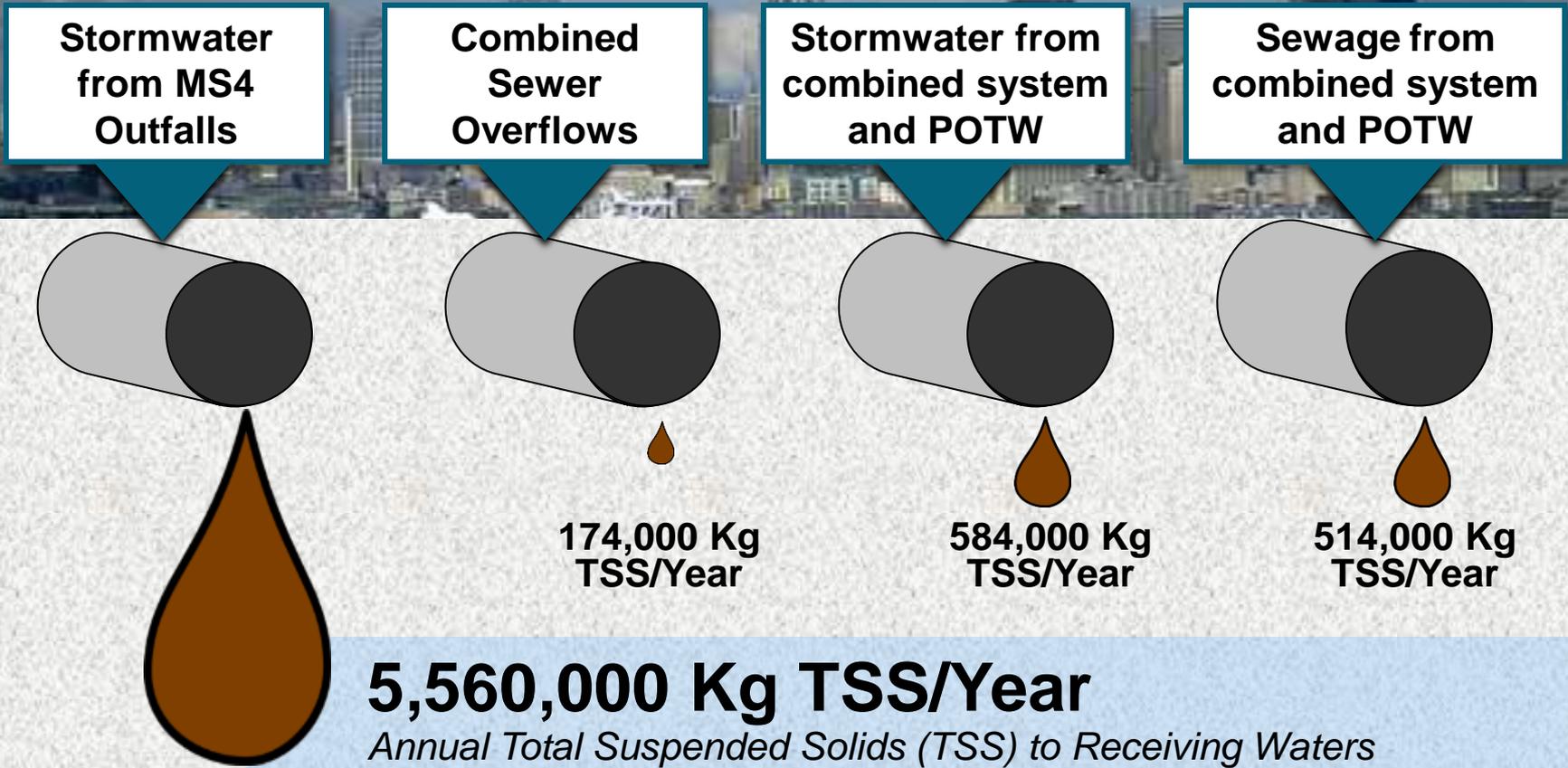


# Prioritization tools used for the Integrated Plan Development

Kevin Buckley

October 27, 2014

# Stormwater is major source of pollutant loading to local water bodies



Puget Sound, Duwamish Waterway, Lake Washington, Lake Union, Ship Canal, creeks

# Seattle negotiated Consent Decree to allow an Integrated Plan alternative

- Defer costly CSO projects with limited water quality benefits
- Implement stormwater projects with greater water quality benefits

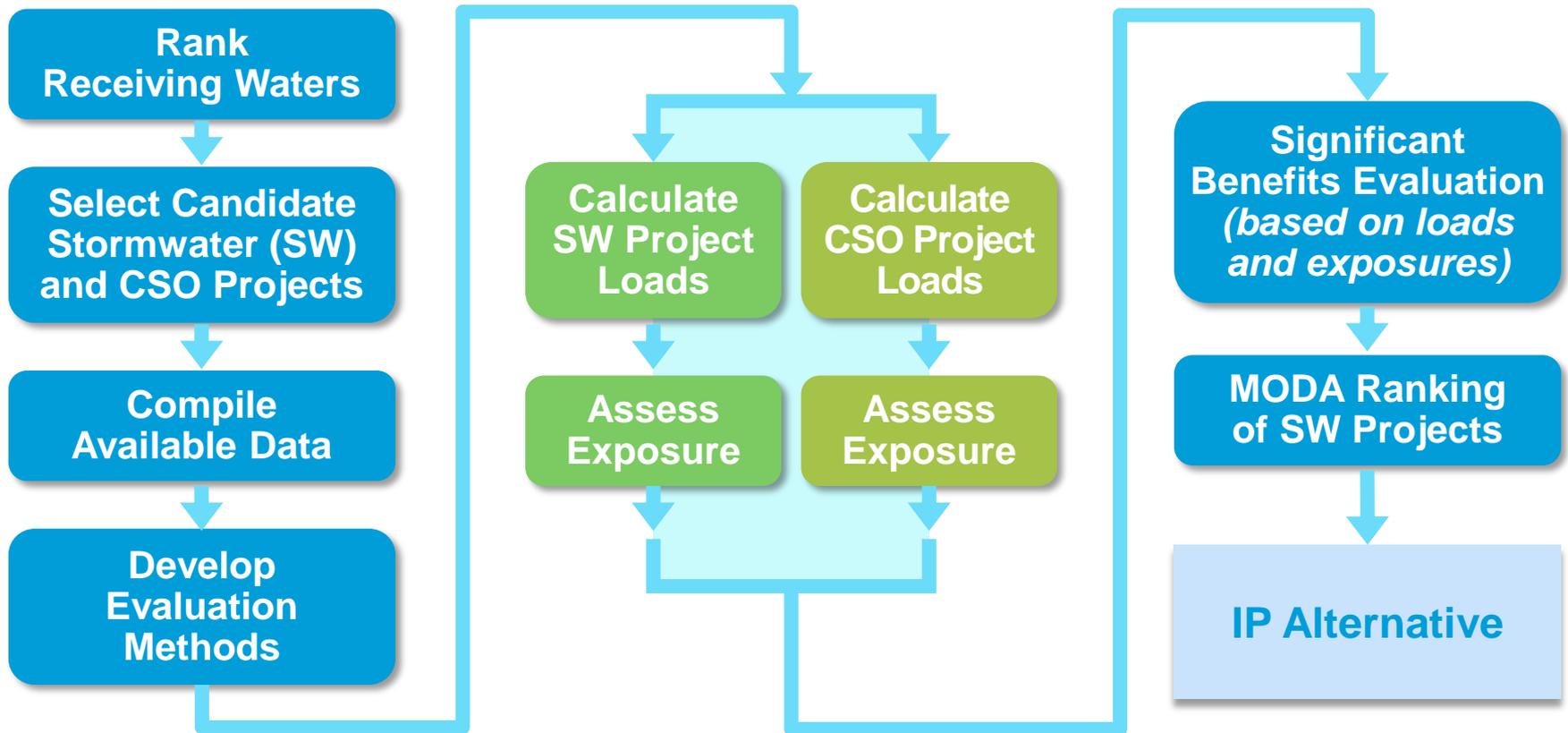


# Integrated Plan must:

- ✓ Analyze pollutant reductions
- ✓ Assess human and ecological exposure
- ✓ Address swimming beaches, TMDLs, ESA-listed species, sediment clean-up sites
- ✓ Evaluate costs and benefits
- ✓ Be approved by EPA and state

Message - focus on most impacted waterbodies

# Integrated Plan Work Flow



# Where to start?

## LEGEND

- CSO Outfall
- CSO Basins
- Streams

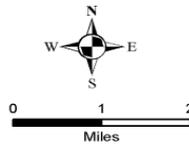
### Creek Watershed

- Longfellow Creek
- Piper's Creek
- Thornton Creek

### Drainage Basins

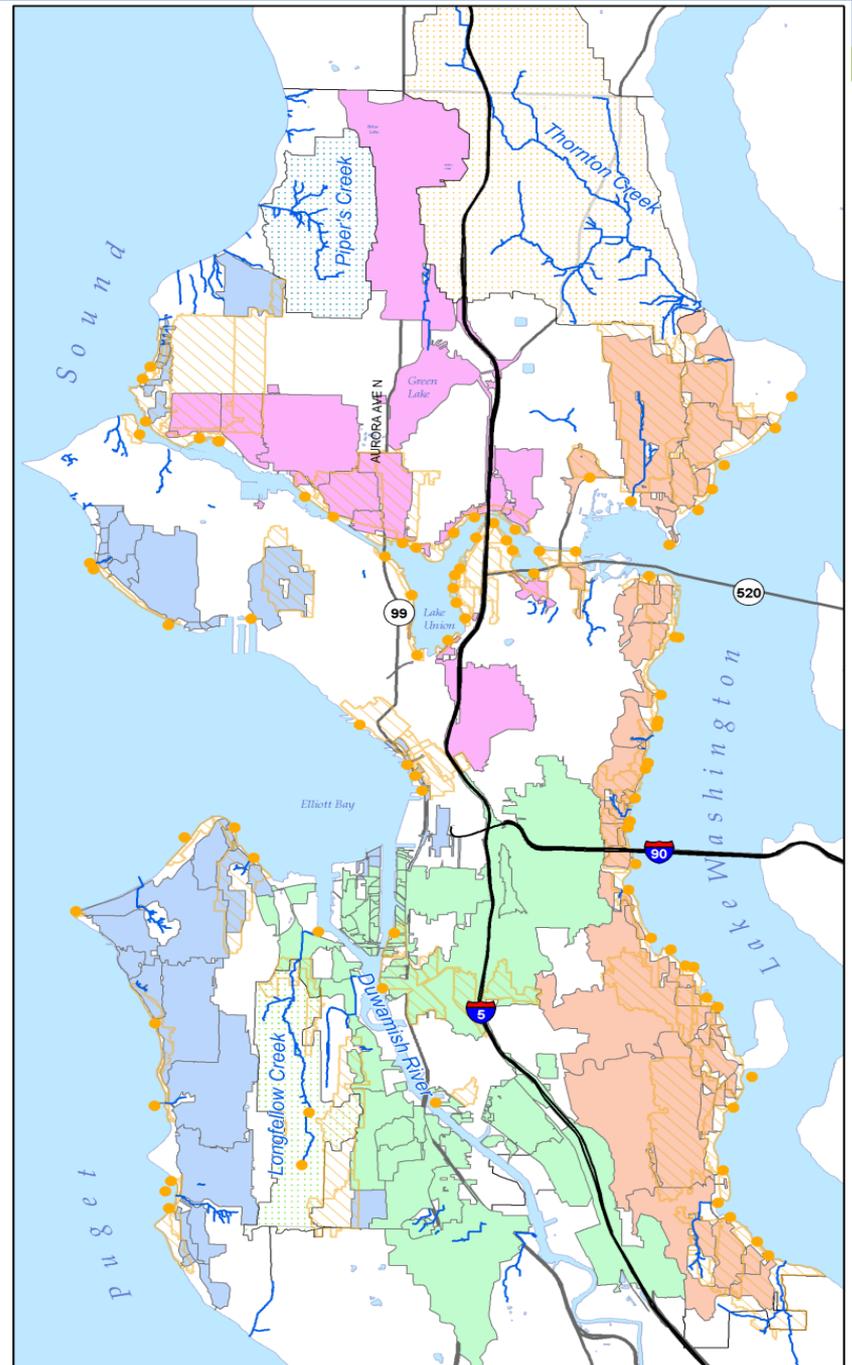
#### MS4 Receiving Waterbody

- Duwamish Waterway
- Lake Union/Ship Canal
- Lake Washington
- Puget Sound



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No warranty of any sort, including accuracy,  
fitness or merchantability, accompany this product.

Coordinate System: State Plane, NAD83-91,  
Washington North  
Vertical Datum: North American  
Vertical Datum of 1988 (NAVD88)



Prioritization =

(stormwater discharging from the drainage basin limits the ability of the receiving water to support swimmable & fishable uses)

Environmental Value to Protect  
(swimmable & fishable receiving waters)

X

Threat to the Environmental Value  
(stormwater discharges)

Use Index

Pollution Potential Index

Protect Existing  
Uses

Restore Impaired  
Uses

Maintain Restored  
Uses  
(Regulatory Driver)

Normalized Load

Flow  
(watercourses only)

Water-based  
recreation

Water column, fish  
tissue, sediment  
exceedance

Current/future  
sediment clean up  
plan

TSS kg/year per acre

2-year event Factor

Catch & eat fish

Beach closure  
advisory

Current/future TMDL

Habitat for ESA-  
listed species

Fish consumption  
advisory

Prioritization =

*(stormwater discharging from the drainage basin limits the ability of the receiving water to support swimmable & fishable uses)*

Environmental Value to Protect  
*(swimmable & fishable receiving waters)*

X

Threat to the Environmental  
Value  
*(stormwater discharges)*

Use Index

Pollution Potential  
Index

Protect  
Existing Uses

Restore  
Impaired Uses

Maintain  
Restored Uses  
(Regulatory  
Driver)

Normalized  
Load

Flow  
(watercourses  
only)

Water-based  
recreation

Water column,  
fish tissue,  
sediment  
exceedance

Current/future  
sediment clean  
up plan

TSS kg/year per  
acre

2-year event  
Factor

Catch & eat fish

Beach closure  
advisory

Current/future  
TMDL

Habitat for ESA-  
listed species

Fish  
consumption  
advisory

Use Index scoring scheme

Use Index Component	● High Score	● Moderate Score	● Low Score
Protect Existing Uses	<p>Swimming and boating</p> <p>Subsistence and Sport Fishing</p> <p>Critical Habitat for 2 or more ESA listed Species</p>	<p>Swimming or boating</p> <p>Heavy Sport Fishing (3 or more piers)</p> <p>Critical Habitat for 1 or more ESA listed Species</p>	<p>No swimming or boating</p> <p>Light sport fishing (less than 3 piers)</p> <p>No Critical Habitat</p>
Restore Impaired Uses	<p>Combination Category 5 (303(d)) and Category 2 listings indicating impairment for water column fish tissue, sediment</p> <p>More than 5 beach closures in last 10 years</p> <p>At least one "do not eat" fish consumption advisory</p>	<p>Combination Category 5 (303(d)) and Category 2 listings indicating potential impairment for water column fish tissue, sediment</p> <p>Between 1 to 4 beach closures in last 10 years</p> <p>At least one "do not eat once per week" fish consumption advisory</p>	<p>No listings but historical or suspected contamination of water column fish tissue, sediment</p> <p>No beach closures in last 10 years</p> <p>At least one "do not eat once per month" fish consumption advisory</p>
Maintain Restored Uses (Regulatory Driver)	<p>Ongoing large sediment cleanup</p> <p>TMDL in place for other than fecal coliform</p>	<p>Ongoing small sediment cleanup</p> <p>TMDL in place for fecal coliform</p>	<p>Category 4b</p> <p>TMDL in development</p>

Watercourse Ranking Legend						
Use Index Component	Criterion	● High Score	● Moderate Score	● Low Score	● Not Applicable	
Protect Existing Uses	Salmon Presence	3 or more species present	2 species present	1 species present	0 species present	
	Pre-Spawn Mortality	> 70% PSM	>50 % PSM	> 30% PSM	No PSM	
	B-IBI Rank	Very Poor	Poor	Fair	NA	
Restore Impaired Use	303(d) listings		3 or more Category 5 listings	2 Category 5 listings	1 Category 5 listing	0 Category 5 listings
	Aquatic Life Indicators	Temp/ DO	Poor WQ	Potential problem	Adequate	Data not available
		Turbidity/TSS				
		Ammonia				
		Metals				
		Organics				
	Human Health Indicators	Fecal Coliform				
		Metals				
Organics						
Maintain Restored Use	City of Seattle Municipal Code Flow Control Requirement	NA	Pasture Standard	Pre-Development Forested Standard	NA	

**Prioritization =**

*(stormwater discharging from the drainage basin limits the ability of the receiving water to support swimmable & fishable uses)*

**Environmental Value to Protect**  
*(swimmable & fishable receiving waters)*

**X**

**Threat to the Environmental Value**  
*(stormwater discharges)*

**Use Index**

**Pollution Potential Index**

**Protect Existing Uses**

**Restore Impaired Uses**

**Maintain Restored Uses  
(Regulatory Driver)**

**Normalized Load**

**Flow  
(watercourses only)**

Water-based recreation

Water column, fish tissue, sediment exceedance

Current/future sediment clean up plan

TSS kg/year per acre

2-year event Factor

Catch & eat fish

Beach closure advisory

Current/future TMDL

Habitat for ESA-listed species

Fish consumption advisory

### Pollution Potential Index scoring scheme.

Pollution Potential Index Component	● High Score	● Moderate Score	● Low Score
Normalized Load	<p>high stormwater pollutant discharging from the basin.</p> <p><i>TSS &gt;= 117 kg/year/acre</i></p>	<p>moderate stormwater pollutant discharging from the basin.</p> <p><i>TSS = 57-116 kg/year/acre</i></p>	<p>low stormwater pollutant discharging from the basin.</p> <p><i>TSS = &lt;57 kg/year/acre</i></p>
Flow (watercourses only)	<p>high stormwater flows discharging from the basin</p> <p><i>Increase over 2-year Storm Event</i></p> <p><i>&gt;=5</i></p>	<p>moderate stormwater flows discharging from the basin</p> <p><i>Increase over 2-year Storm Event</i></p> <p><i>4 – 4.9</i></p>	<p>low stormwater flows discharging from the basin</p> <p><i>Increase over 2-year Storm Event</i></p> <p><i>&lt; 4</i></p>

# MS4 Basin Ranking

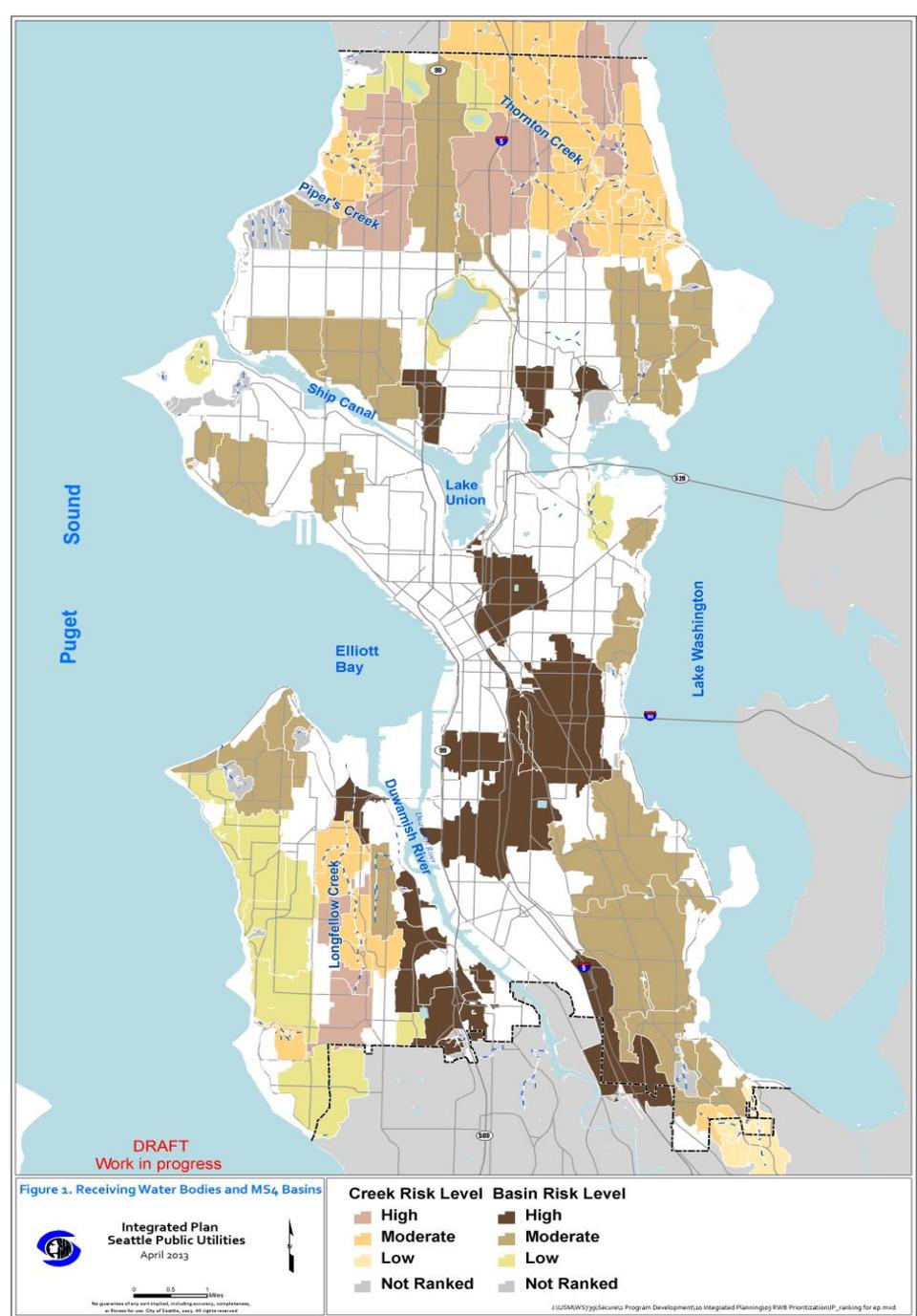
Receiving water  
body rank

+

Average annual  
volume and TSS  
load by land use

and

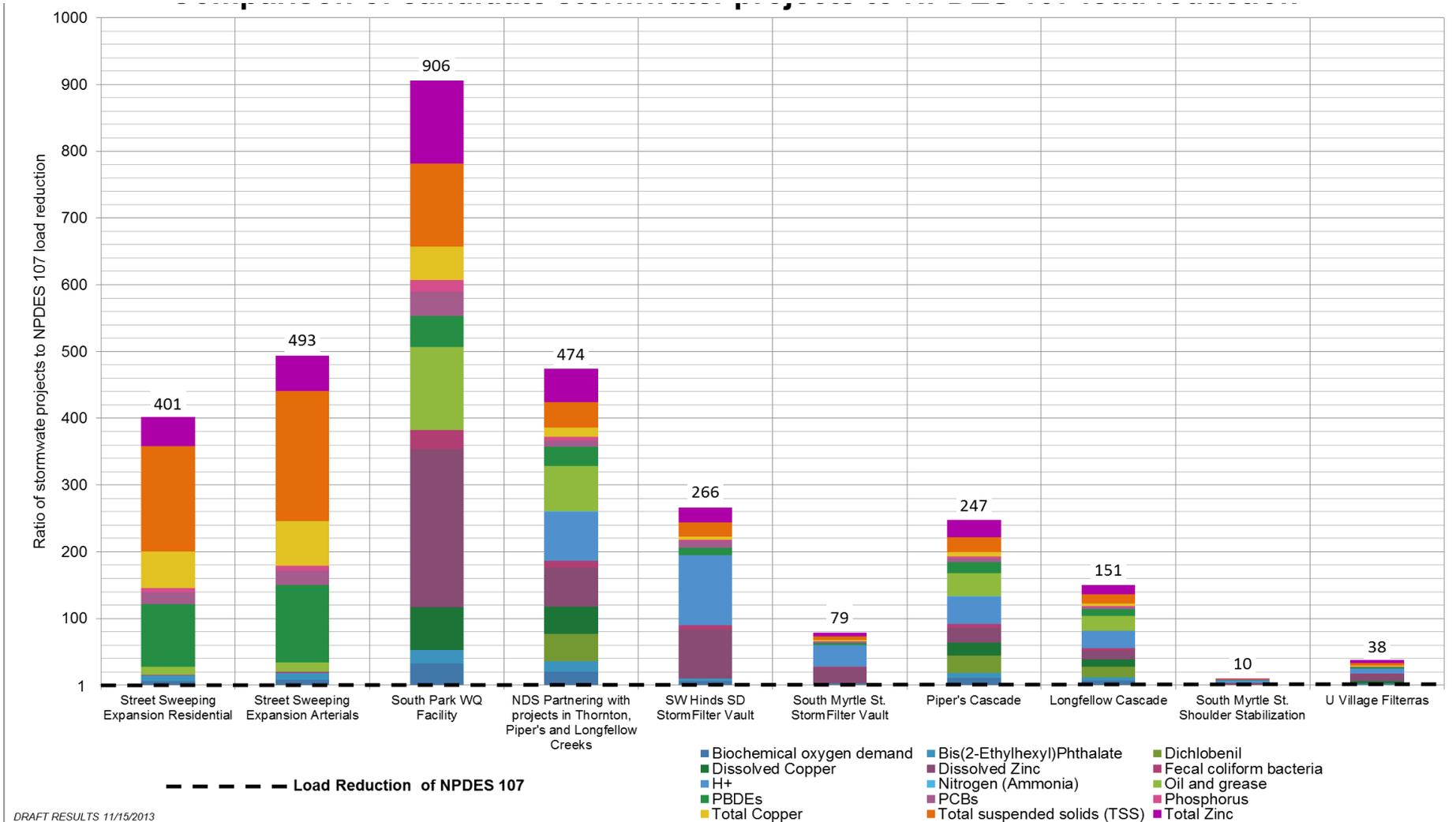
Increase in 2-year  
flow over historic for  
creek basins



# Potential Stormwater Projects

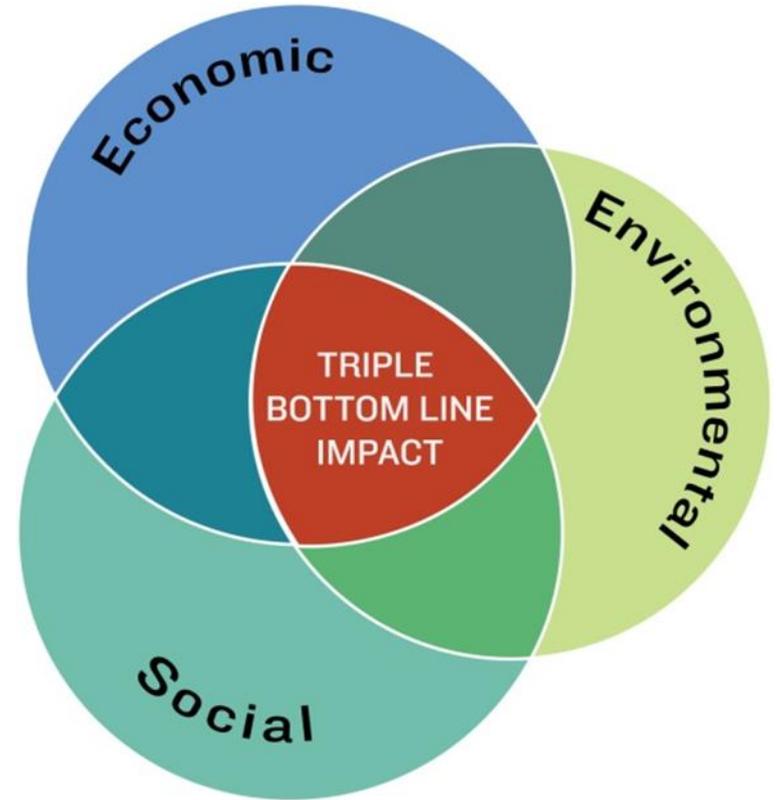


# Candidate Stormwater Projects Compared to Largest Deferred CSO Control Candidate



# MODA Process

- Team developed 9 criteria with descriptions of H, M, L score
- Projects rated against 9 criteria (H, M, L)
- SPU managers weighted the criteria
- Selected preferred projects



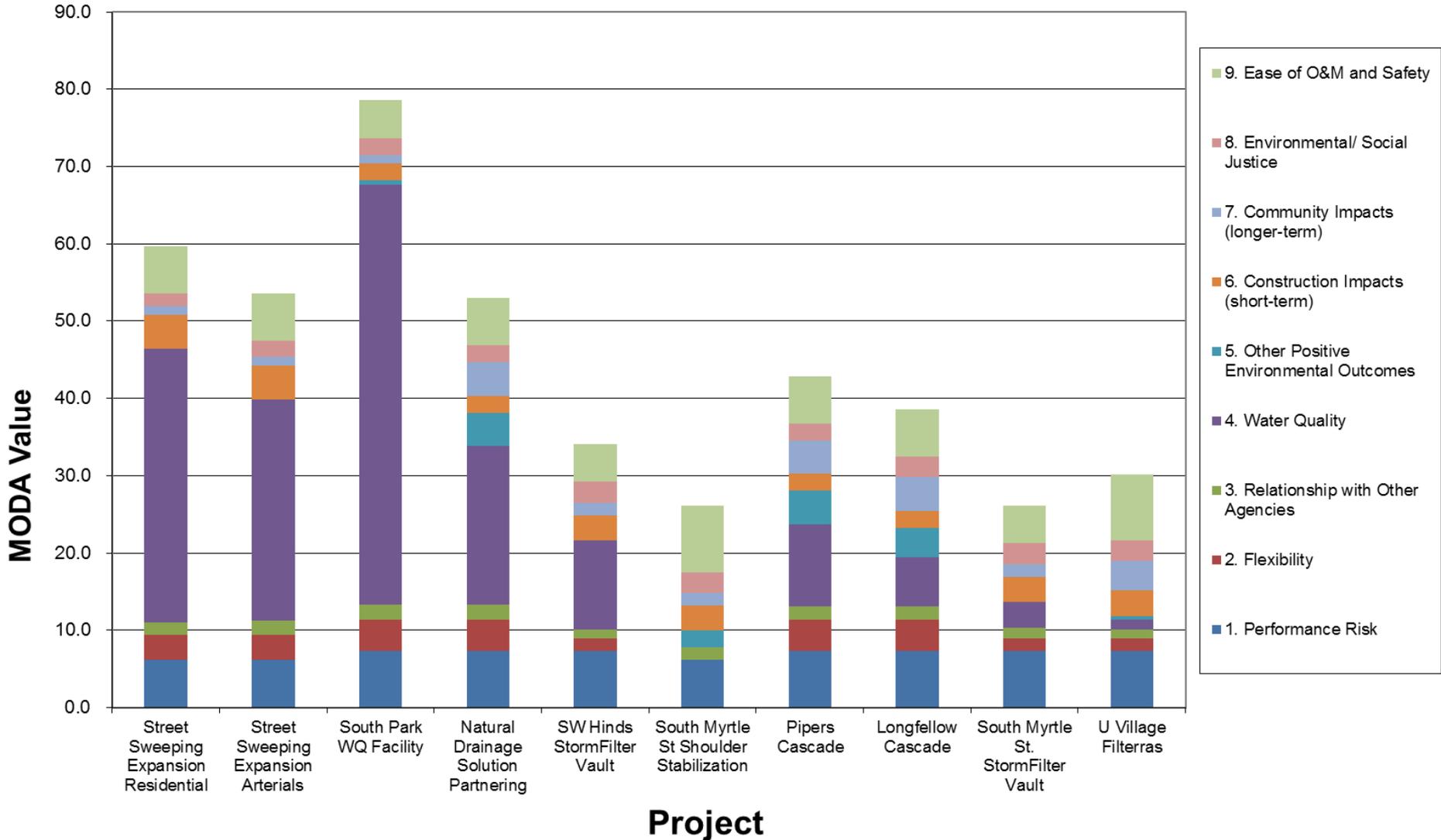
# Example Criteria

<b>Criteria</b>	<b>Sub-Criteria (not scored)</b>	<b>Question</b>	<b>High = 5.0 (Good)</b>	<b>Medium = 3.0</b>	<b>Low = 1.0 (Bad)</b>
Other Positive Environmental Outcomes	Green Goal (Flow, Habitat)	<i>Does the project help meet the City's Green Goal by reducing stream flow rates, and/or does the project add green space and habitat?</i>	Project reduces flow/volume to a flow impacted waterbody  The project provides substantive terrestrial habitat	Project reduces flow/volume to a flow impacted waterbody.  The project does not provide terrestrial habitat	Project will not manage flow  The project does not provide terrestrial habitat

# MODA Categories and Weights

	Consensus Weights		Sensitivities		
	Relative Value Weight	% of Total	Performance Risk, WQ, O&M 25% each	WQ 35%, Other Env/Comm Impacts Increase to 14%	Exclude WQ
1. Performance Risk	18	10%	25%	10%	21%
2. Flexibility	12	7%	6%	6%	14%
3. Relationship with Other Agencies	4	2%	2%	2%	5%
4. Water Quality	100	54%	25%	35%	0%
5. Other Positive Environmental Outcomes	8	4%	4%	14%	10%
6. Construction Impacts (short-term)	8	4%	4%	4%	10%
7. Community Impacts (longer-term)	8	4%	4%	14%	10%
8. Environmental/ Social Justice	8	4%	4%	4%	10%
9. Ease of O&M and Safety	18	10%	25%	10%	21%

### Total MODA Value Scores - Consensus Weights

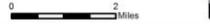


# Integrated Plan

Integrated Plan  
Integrated Plan project locations



Seattle Public Utilities  
March 2014



## Legend

### Stormwater Projects

Street Sweeping Program

— Potential arterial routes

— Current routes

■ NDS Partnering

■ South Park WQ Facility

### LTCP Projects

■ CSO Outfall 99

■ CSO Outfall 107

■ CSO Outfall 111

■ CSO Outfall 138

■ CSO Outfall 139

■ CSO Outfall 140



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Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- Implement 3 stormwater projects
  - NDS Partnering
  - South Park WQ Facility
  - Street Sweeping Arterials
- Defer six CSO projects
  - Detention projects
  - Complete after 2025

# Stakeholders

- SPU Staff
- SPU Management
- Citizen Advisory Groups
- Environmental Groups
- Neighborhood Groups
- Expert Panel:  
Jean Zodrow, Kyle Dreyfuss-Wells, Robert Gearheart,  
Derek Booth, Robert Pitt

# Data Sources

- City of Seattle State of the Waters Report (2007)
- Ecology Web site
- State Health Dept. Web Site
- City of Seattle & Tacoma 2007 NPDES Phase I stormwater monitoring data
- City of Seattle storm drain solids data
- City of Portland stormwater data
- National WQ Database

# Questions?



# Growth Management Act and VISION 2040

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## Why Regional Growth Centers?



**October 27, 2014**  
**Building Cities in the Rain**

# Goals of the Growth Management Act

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- ◆ There are 14 goals.
- ◆ All are equally important.
- ◆ Local jurisdictions must determine how to achieve a balance in satisfying the goals.



# The 14 Goals of the GMA

---

- ◆ **Urban Growth** - urban areas served with adequate public facilities.
- ◆ **Reduce Sprawl** - conversion of undeveloped land into sprawling, low-density development.
- ◆ **Transportation** – efficient multimodal transportation systems.
- ◆ **Housing** – affordable housing for all, variety of densities and housing types and preserve existing housing.
- ◆ **Economic Development** – Consistency with comp plans, promote opportunities for all citizens.
- ◆ **Property Rights** – protect private property rights from arbitrary and discriminatory actions.
- ◆ **Permits** – issue permits in timely and fair manner.

# 14 Goals (continued)

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- ◆ **Open Space and Recreation** — retain open space, enhance recreational opportunities.
- ◆ **Environment** — protect and enhance air & water quality and availability of water.
- ◆ **Citizen Participation** — encourage citizen involvement.
- ◆ **Public Facilities and Services** — ensure adequacy and availability at time of development.
- ◆ **Historic Preservation** — identify and encourage.
- ◆ **Natural Resource Industries** — maintain and enhance.
- ◆ **Shoreline Management** — goals & policies added to GMA.

# GMA Requirements for fully planning communities

---

Multi-county planning policies

```
graph TD; A[Multi-county planning policies] --> B[County-wide planning policies]; B --> C[Comprehensive plan]; C --> D[Development regulations]; D --> E[Project review];
```

County-wide planning policies

Comprehensive plan

Development  
regulations

Project review

# Classification, designation and protection/conservation of

---

## Critical Areas:

- ◆ wetlands
- ◆ fish and wildlife habitat conservation areas
- ◆ aquifer recharge areas
- ◆ frequently flooded areas
- ◆ geologically hazardous areas



## Natural Resource

### Lands:

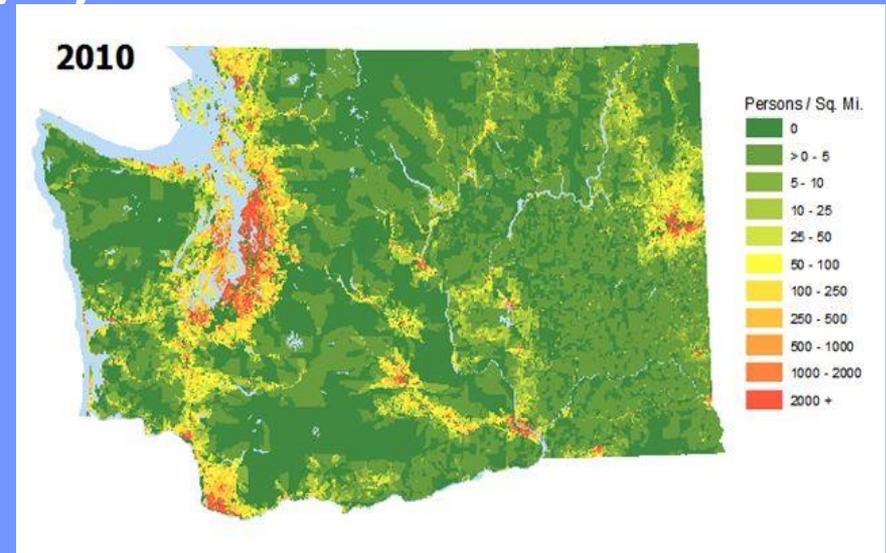
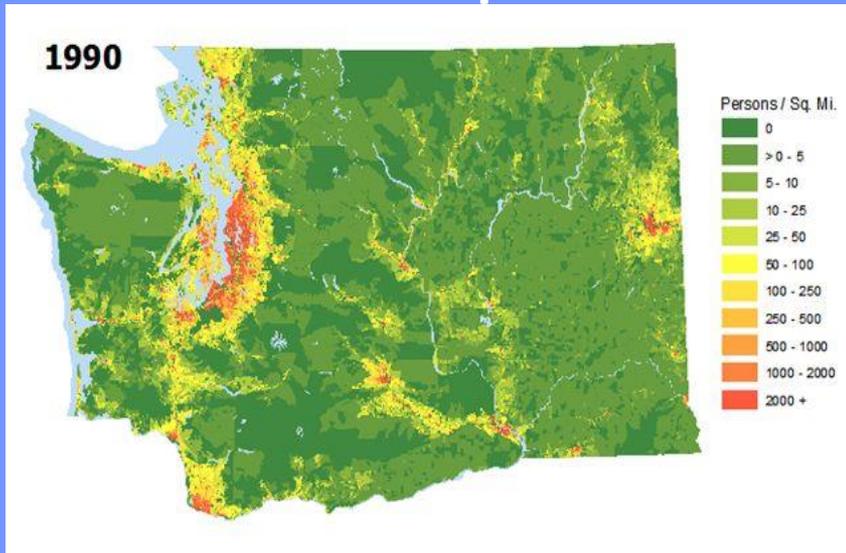
- ◆ forest lands
- ◆ agricultural lands
- ◆ mineral lands



# Designation of Urban Growth Areas (UGAs)

- ◆ Population allocation
- ◆ Land capacity analysis
- ◆ Provision for adequate public facilities and services

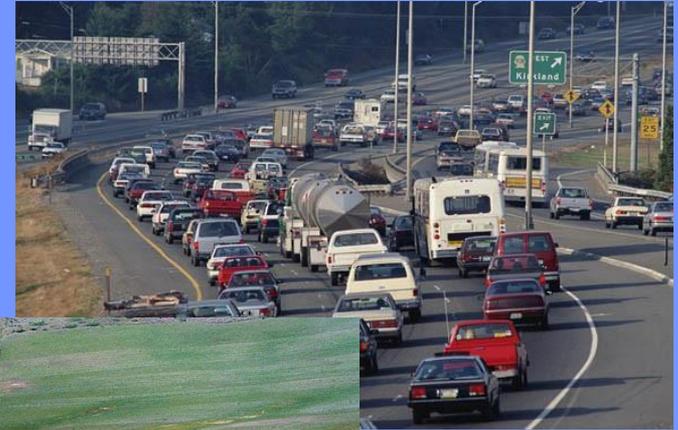
## Population density by census block



# Elements That MUST be Included in Comprehensive Plans

---

- ◆ Land Use
- ◆ Housing
- ◆ Capital Facilities
- ◆ Transportation
- ◆ Utilities
- ◆ Shoreline Master Program (policies)
- ◆ Rural (counties only)

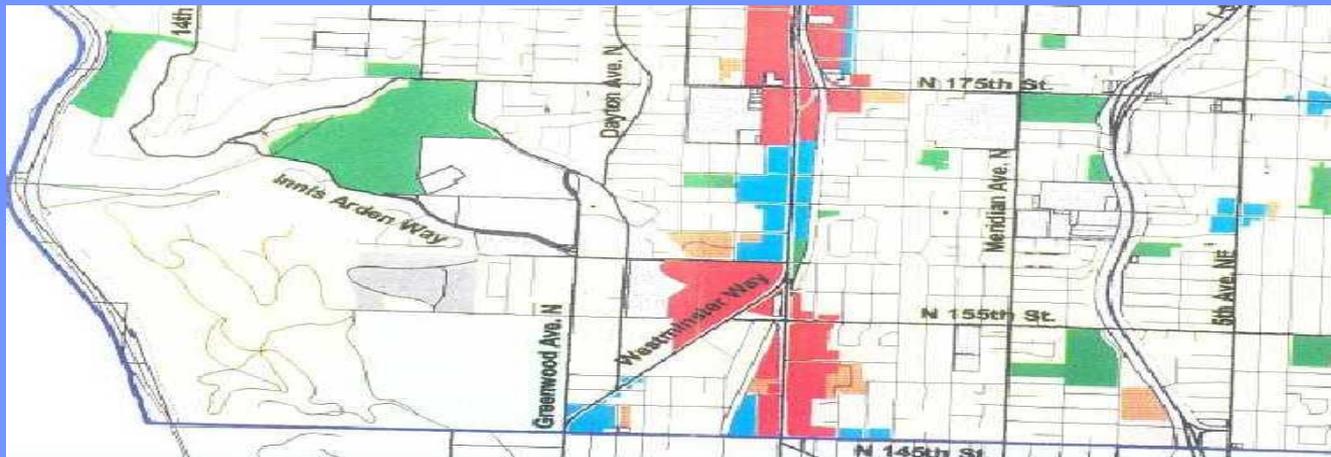


# Development Regulations

## Implement the Plan

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- ◆ zoning
- ◆ plats and subdivisions
- ◆ Development standards
- ◆ critical areas
- ◆ siting of essential public facilities
- ◆ shoreline master program (regulations)
- ◆ Impact fees
- ◆ Procedural requirements



# Early and Continuous Public Participation

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Public participation program:

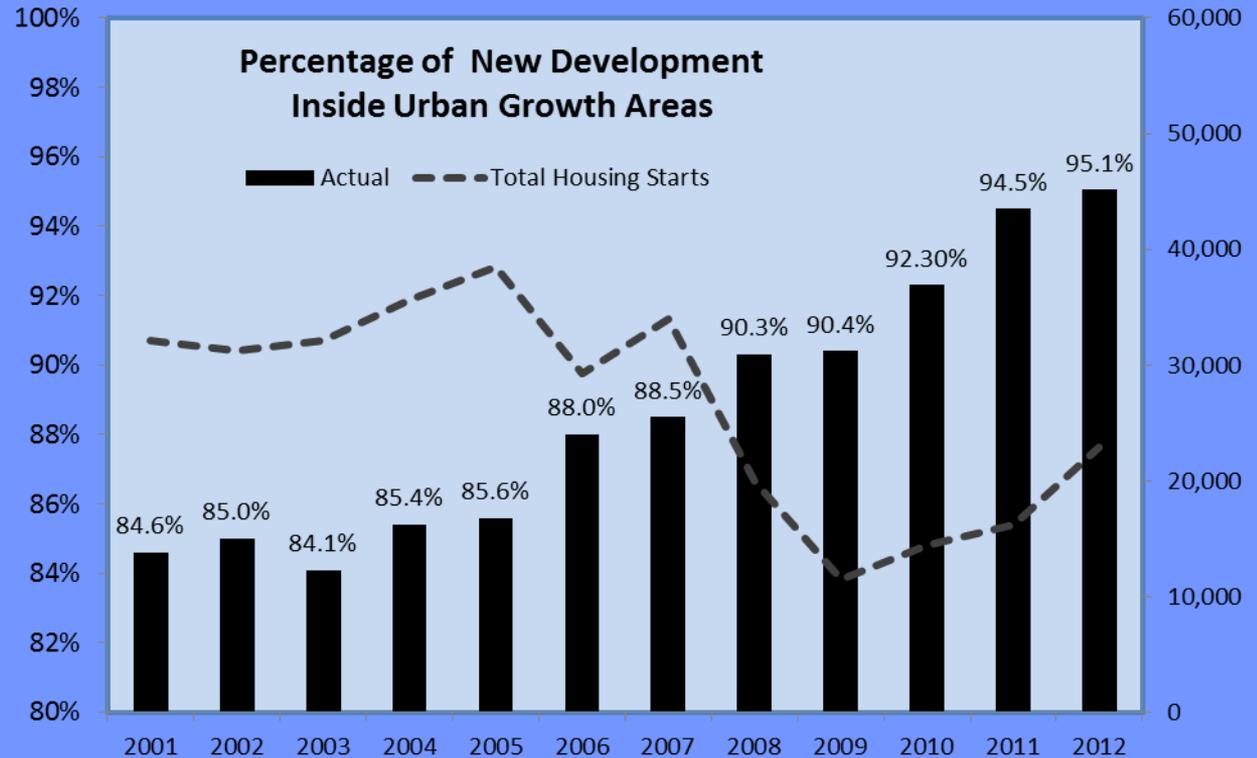
- ◆ Notice requirements
- ◆ Public meetings
- ◆ Workshops
- ◆ Citizen advisory committees
- ◆ Public hearings
- ◆ Opportunities for written comment



# Most New Development is in Urban Growth Areas

Smart Growth is the development of compact communities within urban growth areas.

Shifts in financing practices, market demand and transportation costs are aligning with smart growth goals to encourage development inside urban growth areas.



*This data is collected annually, in December of the year after permits are issued. The metric is the percent of housing starts permitted within cities and unincorporated urban growth areas in the six "Buildable Lands" counties: Clark, King, Kitsap, Pierce, Snohomish and Thurston.*