

The background image shows a modern building with a blue logo on the left. A stormwater runoff system is visible, with water cascading down a series of steps or a series of small waterfalls into a pool of water. The scene is outdoors, with some greenery and a paved walkway visible in the foreground.

New Opportunities for Reducing Polluted Stormwater Runoff

NACWA Winter Meeting 2011

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American Rivers



American Rivers

- Founded in 1973 to protect and restore America's rivers
- 65,000 members and supporters nationwide







Energy Exchange Building Milwaukee, WI



Toledo, Ohio





**Poor Water
Management**



Green Infrastructure

Portland, Oregon

*Photo courtesy of the Portland Bureau
of Environmental Services*



Stormwater control measures that harvest, infiltrate, and evapotranspire stormwater are “critical to reducing the volume and pollutant loading of small storms.”

- National Research Council Report, 2008



Rain barrel, Delaware County, PA



Green roof, Heinz Center, Pittsburgh, PA



Rain garden, Portland, OR



EPA's Stormwater Rulemaking

- **Equity**
- **Multiple benefits**
- **Accountability**

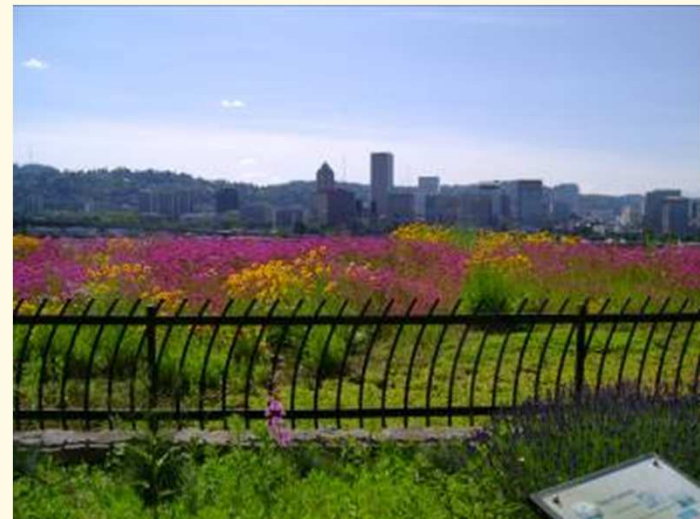


Green roof, Grand Rapids, MI



EPA's Stormwater Rulemaking

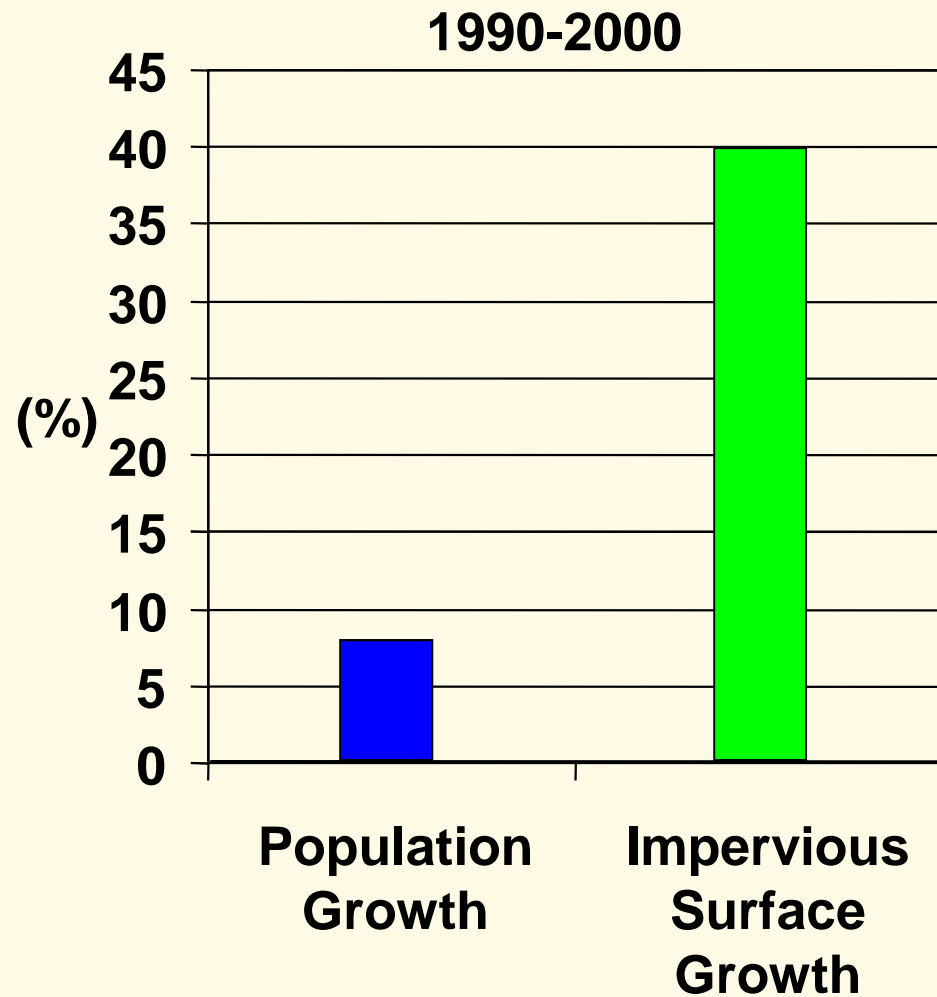
- **Better target polluted stormwater runoff outside the current scope of the municipal program**
- **Performance-based standards for development and redevelopment that will drive green infrastructure**
- **Establish plan for retrofits**



Green roof, Portland, OR



Growth Rates in Chesapeake Watershed





Local Policies:

Stormwater standards requiring treatment of water on-site

- Olympia, WA
- Lenexa, KS
- Anchorage, AK
- Philadelphia, PA
- Chicago, IL
- Seattle, WA
- Portland, OR



Cisterns in Raleigh, NC



EPA's Green Infrastructure Case Studies Report, 2010

Table 2: Case Studies and Common Policy Approaches

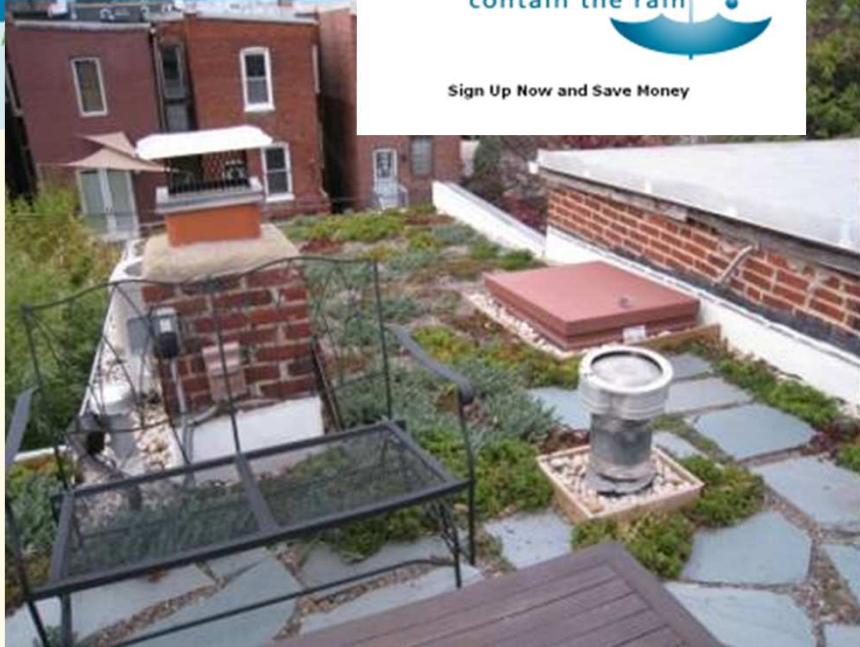
City	Public					Private			
	Demonstration projects	Street retrofits	Capital projects	Local code review	Education & outreach	Stormwater regulation	Stormwater fee	Fee-based incentives	Other incentives
Alachua County, FL	X		X			X			
Philadelphia, PA	X	X	X	X	X	X	X	X	
Portland, OR	X	X	X	X	X	X	X	X	X
Seattle, WA	X	X	X	X	X	X	X	X	X
San Jose, CA	X	X		X		X			
Santa Monica, CA		X	X	X	X	X	X		X
Stafford County, VA	X			X		X			
Wilsonville, OR	X	X	X	X		X			
Olympia, WA	X	X		X	X	X	X		
Chicago, IL	X	X	X	X	X	X			X
Emeryville, CA	X	X		X		X	X		
Lenexa, KS	X	X	X		X	X	X		
Total	11	10	8	10	7	12	7	3	4



Retrofits



- Portland
- Washington, DC
- Chicago
- New York City
- Philadelphia



Green Roof - Green Roof Rebate program in DC



Low Impact Development (LID) Feasibility Study

Analysis of opportunities and constraints to incorporate LID elements into
Capital Improvement Program (CIP) projects in Kirkland, Washington



Prepared for the City of Kirkland
by SvR Design Company
December 21, 2007



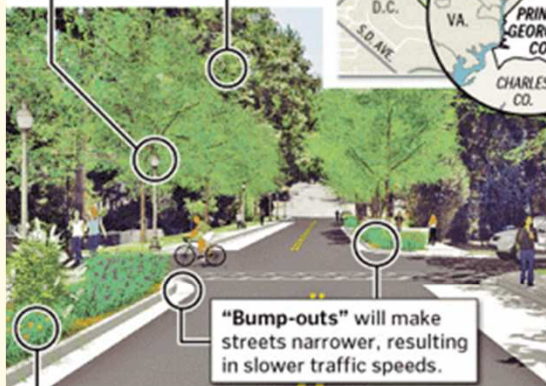


Funding



Wind-powered LED lighting.

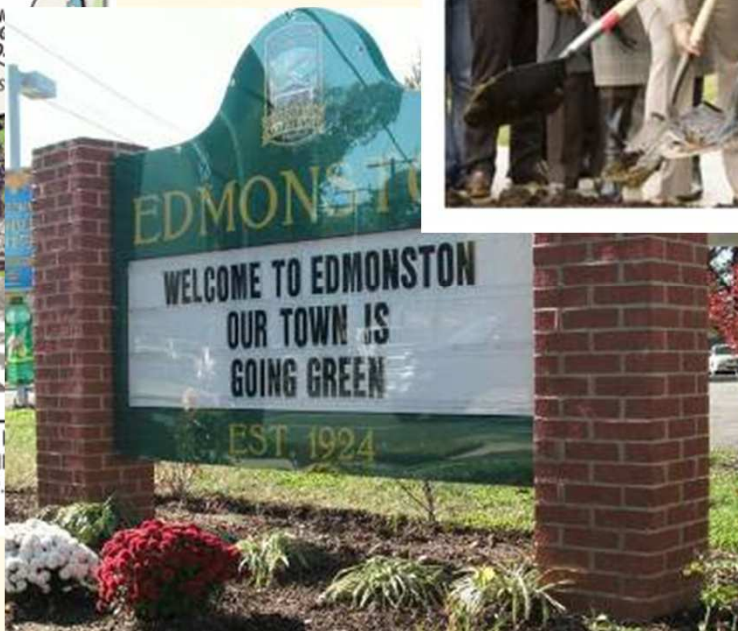
Native trees will provide shade and reduce heat.



Rain gardens will reduce runoff from storm.

"Bump-outs" will make streets narrower, resulting in slower traffic speeds.

Lighter colored pavements will reduce heat. Permeable concrete will be installed, allowing water to move through to the soil below.





The Value of Green Infrastructure

A Guide to Recognizing Its Economic,
Environmental and Social Benefits

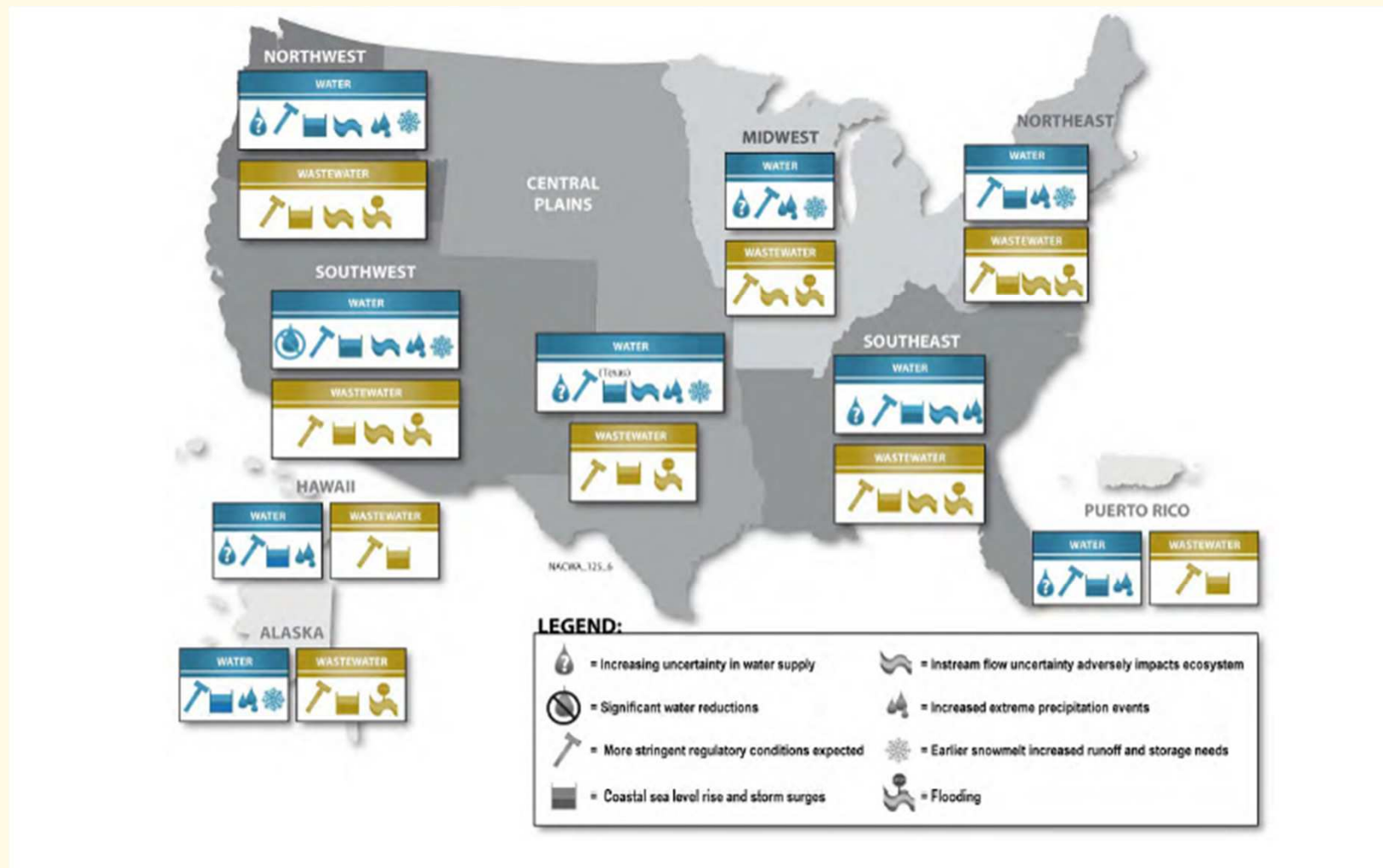


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Climate Change Impacts to Utilities by Region



Confronting Climate Change (NACWA/AMWA 2009)



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