Championing Sustainable Water Infrastructure in Region 10

What's Water Infrastructure?

- Drinking water, wastewater, stormwater
- Pipes, plants, pumps, tanks, drainage systems, meters, hydrants…

What is Sustainable Infrastructure (SI)?

- Meet the present need while ensuring that future needs will also be met.
- How?
  - Meet environmental and service goals
  - Remain fiscally sound over the long term

What is the SI Initiative?

- Since 2002:
  - Better Management
  - Full Cost Pricing
  - Water Efficiency
  - Energy Efficiency
  - Watershed Approaches to Infrastructure

Why an SI Initiative?

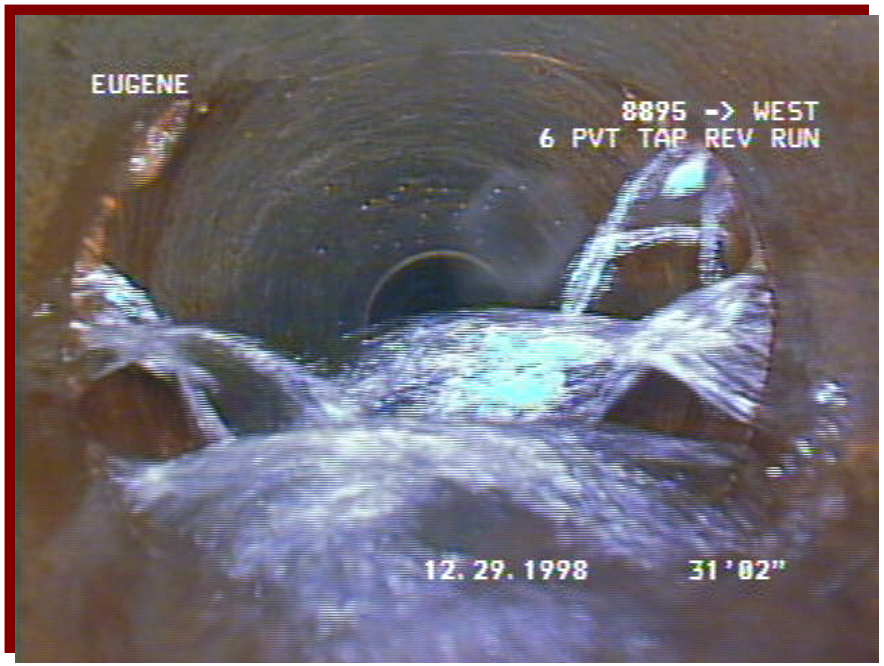
Major National Problem:

- Aging systems

  (some > 100 years in age)

- Deferred maintenance, under-spent on capital needs

- Small systems



Scope of National Problem

Additional Pressures:

- Increasing and shifting population
- Climate change impacts on infrastructure
- Stronger treatment requirements (nutrients, pharmaceuticals, etc)

Infrastructure Gap

No Revenue Growth Scenario

Total Payment Gap (20 Years) (Average in Billions of Dollars)		
	Clean Water	Drinking Water
Capital	$122	$102
O&M	$148	$161
Total	$271	$263

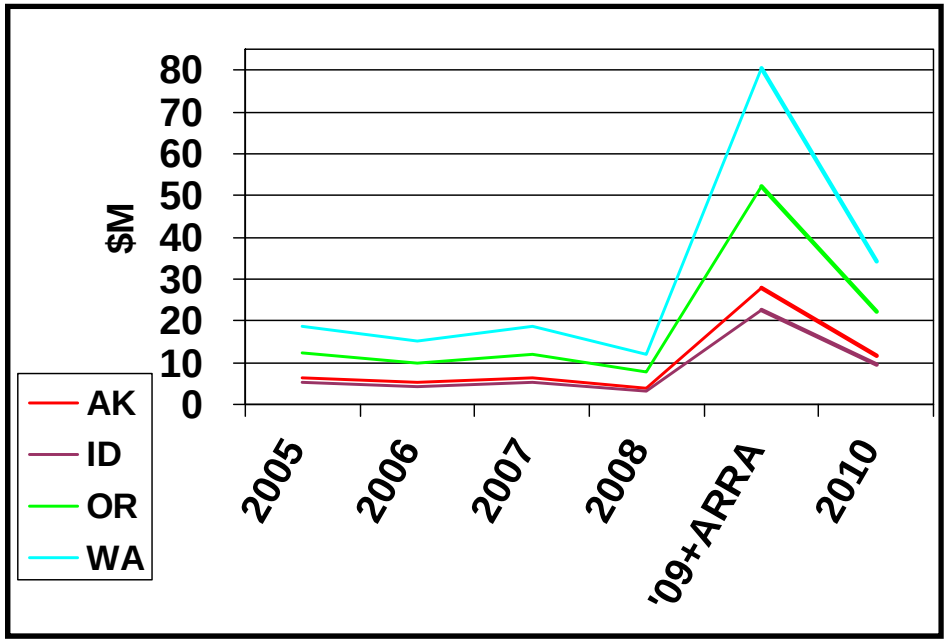
Revenue Growth Scenario

Total Payment Gap (20 Years) (Average in Billions of Dollars)		
	Clean Water	Drinking Water
Capital	$21	$45
O&M	$10	$0
Total	$31	$45

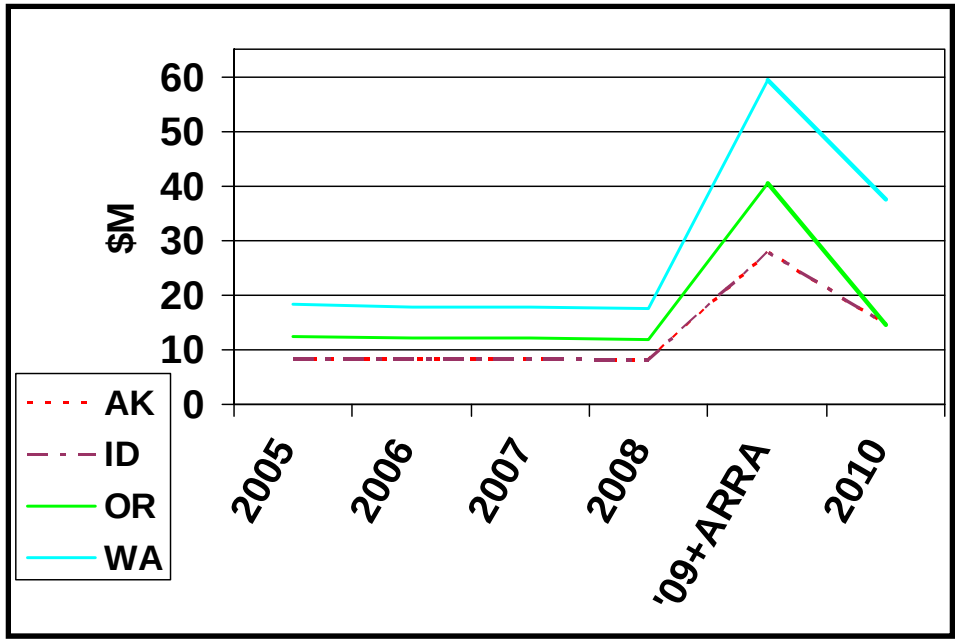
(Annual Rate of Increase - 3% Real)

Economic Stimulus:
Effect on the State Revolving Fund (SRF)

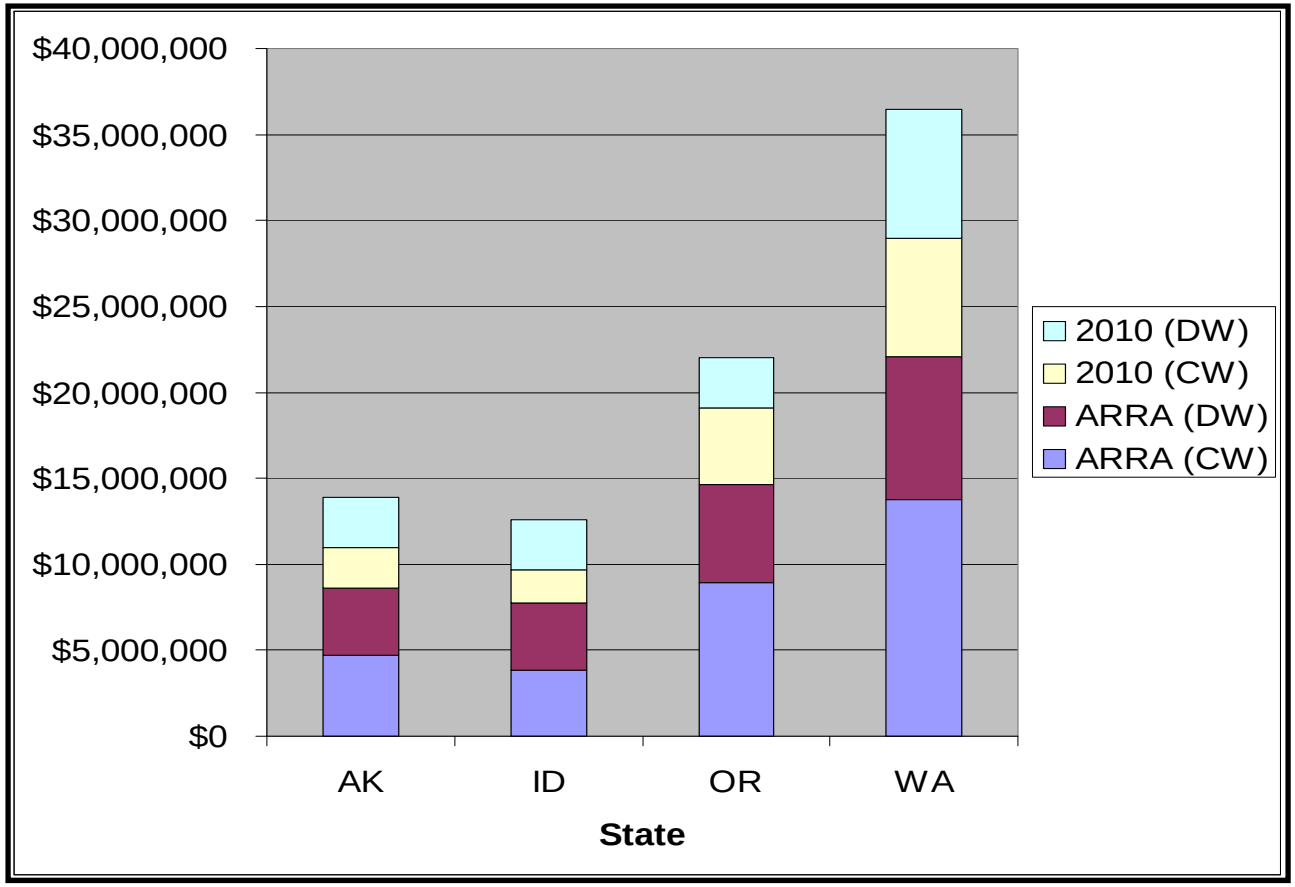
Clean Water



Drinking Water

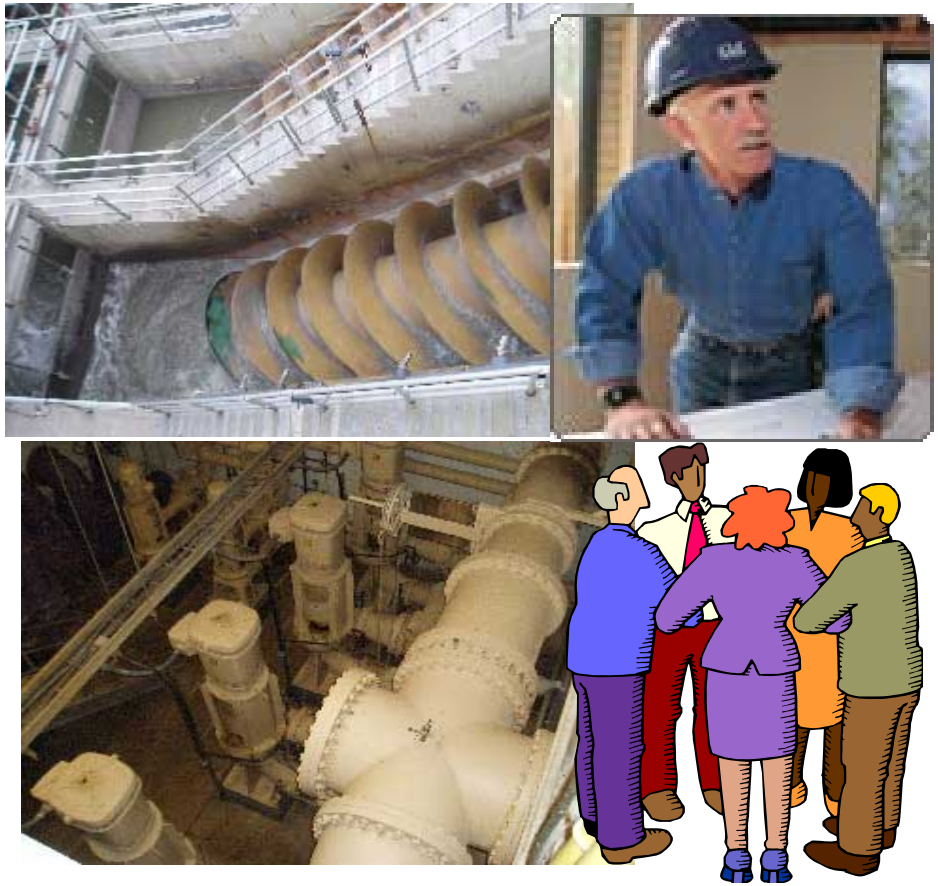


Green Project Reserve

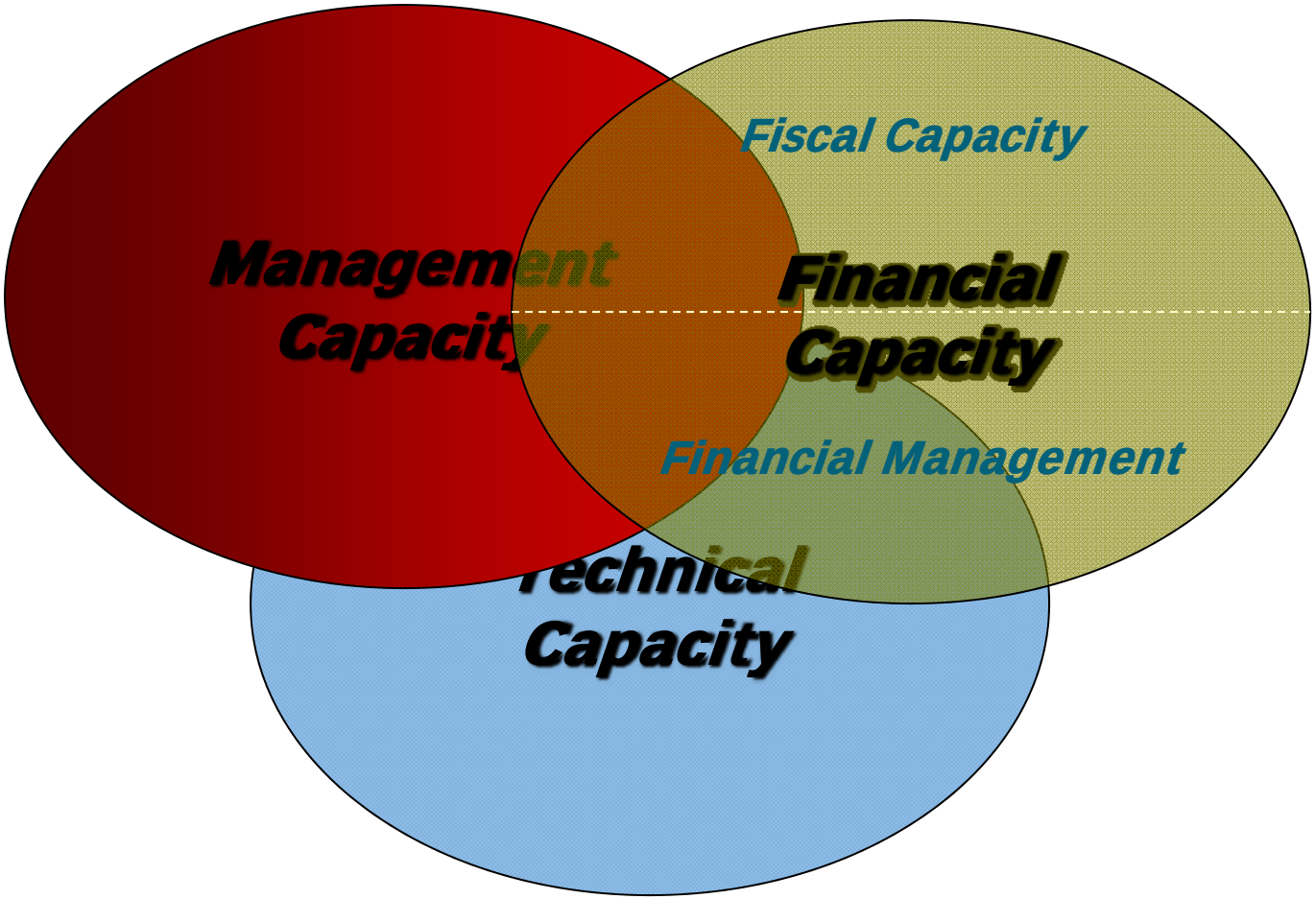


Why is EPA Leading SI?

- Funding agency
- Environmental and public health protection through prevention
- Reduce compliance assistance and enforcement costs
- Local communities self-sustaining through range of strategies



Building Resiliency into Your System



Looking for Funding?

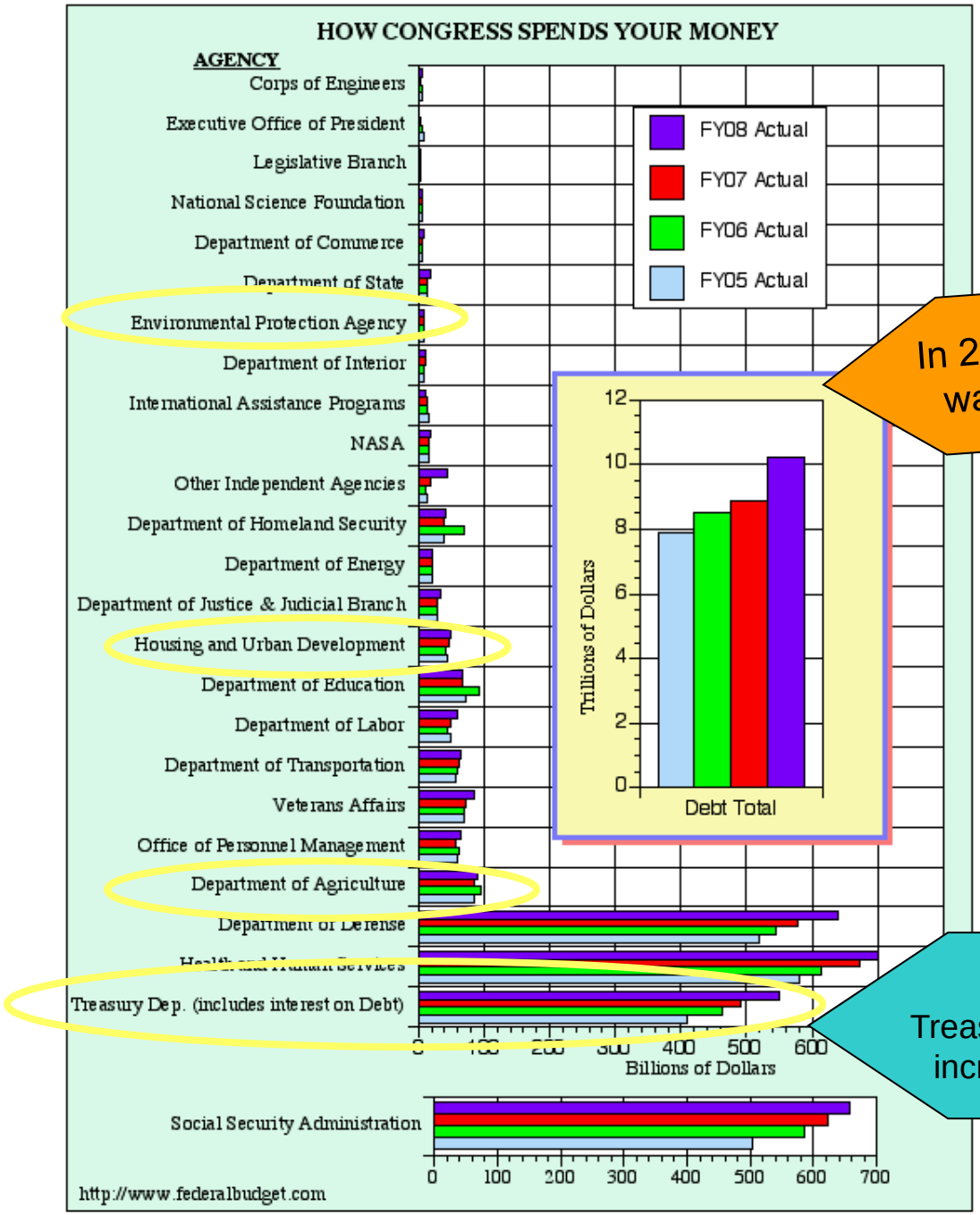
What is the funding environment?

Main Sources of Revenue

- Internal Sources (local government)
- External Sources (other governmental entities)
- Public and Private Capital Financing Sources
- Developer (or other private) Contributions
  - Sources of revenue from the private sector.
  - System development charges.

Next: Federal Budget

Adapted from Public Finance for Planners, Patrick Dugan



When the United States does not have a balance budget, it issues debt.

As debt is paid, interest incurred.

As debt grows, the portion of the budget used to pay debt exerts pressure on other expense categories having a lower priority.

- Defense
- Entitlements
- Interest on the Federal Debt

In 2009, total deficit was $1.42 trillion.

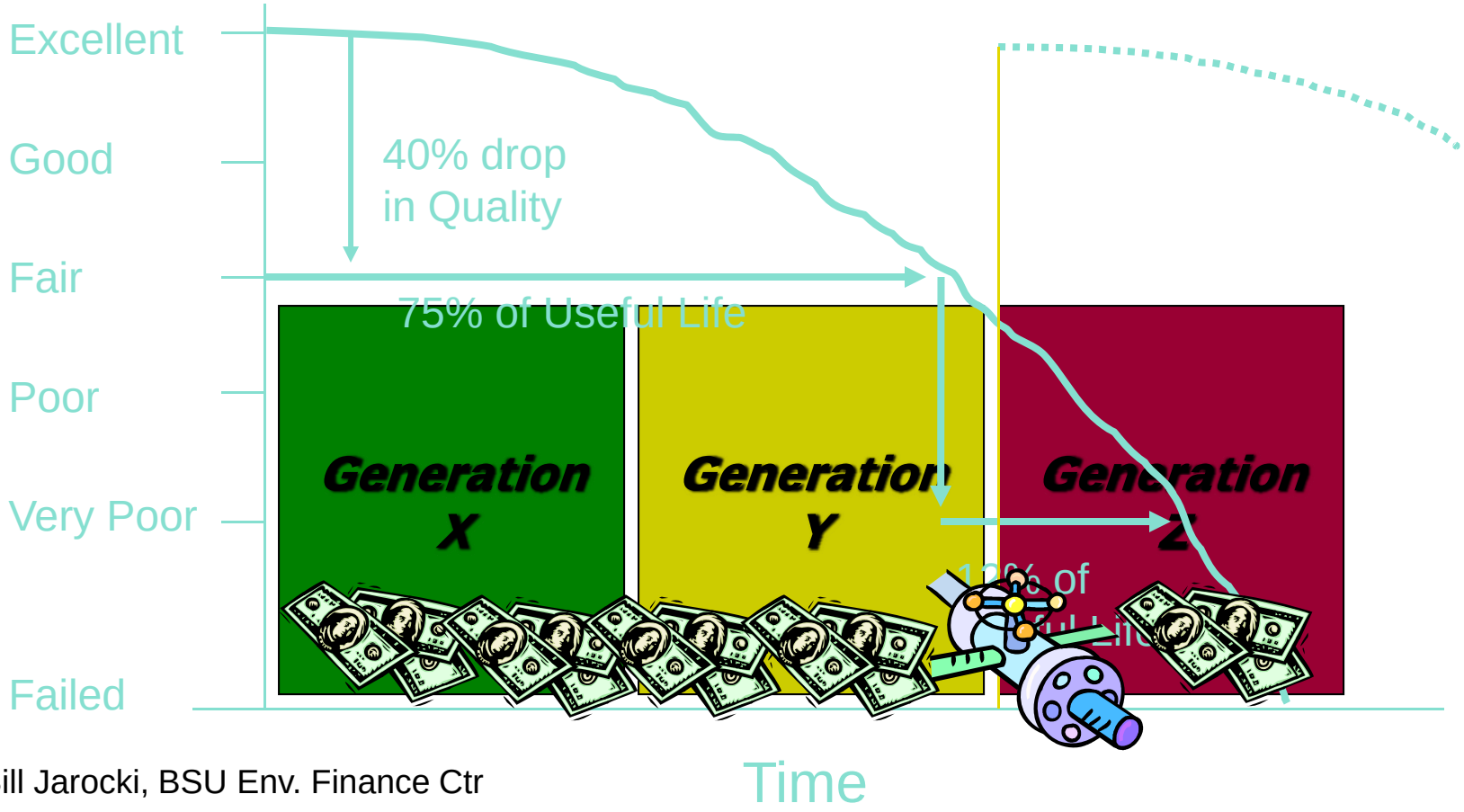
In four years, the Treasury Department budget increased by over $130B.

For the most part, the funds will come from ratepayers and local taxpayers

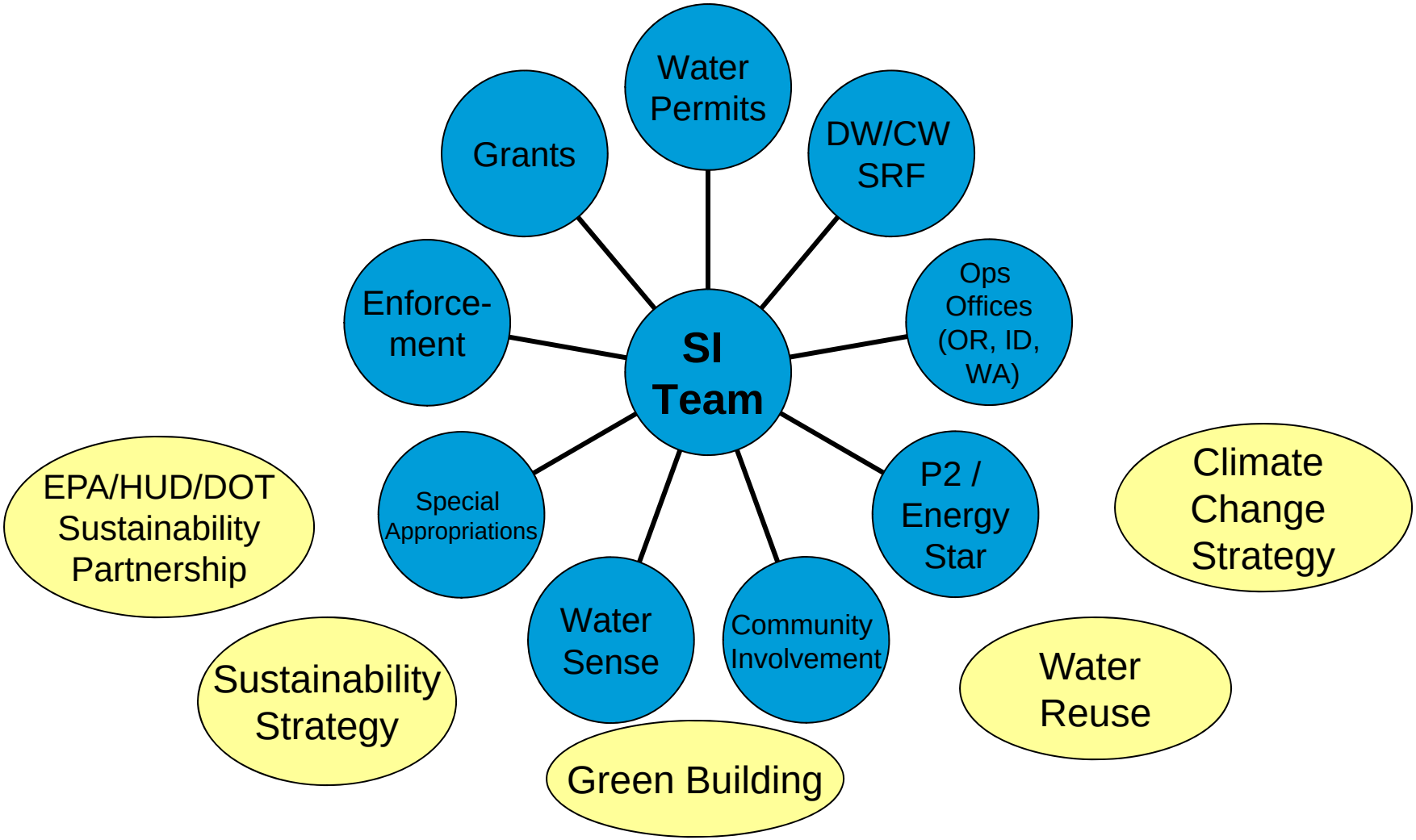
Preconditions to Gaining Community Support

- Customers understand what you do.
- Customers accept that what you do has value!
- Customers determine that the way you do your work (your practices) are responsible and competent, if not exceptional.

Intergenerational Finance



R10 SI Team


SI Team
Water Permits
DW/CW SRF
Ops Offices (OR, ID, WA)
P2 / Energy Star
Community Involvement
Water Sense
Special Appropriations
Enforce-ment
Grants
EPA/HUD/DOT Sustainability Partnership
Sustainability Strategy
Green Building
Water Reuse
Climate Change Strategy

R10 SI Strategy - Objectives

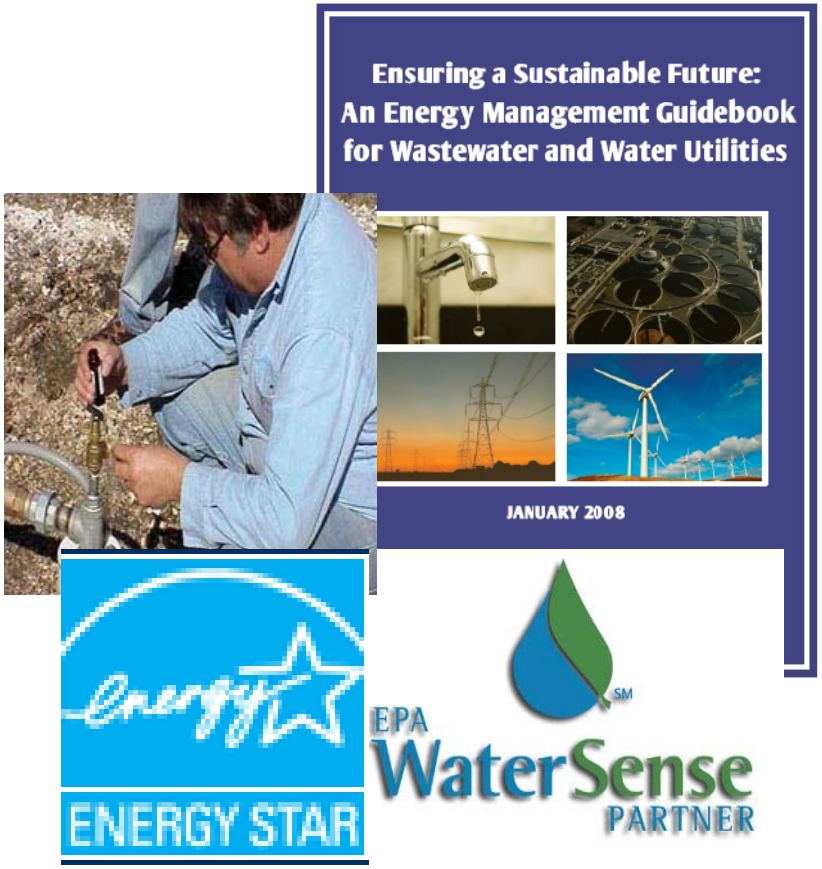
- Collaborate with partners to promote SI practices and policies.
- Work with utilities to pilot test and implement measurable SI activities.
- Serve as a resource, partner, and convener.

Championing Sustainable Infrastructure

EPA Region 10
Final – May 2009

Accomplishments (2009)

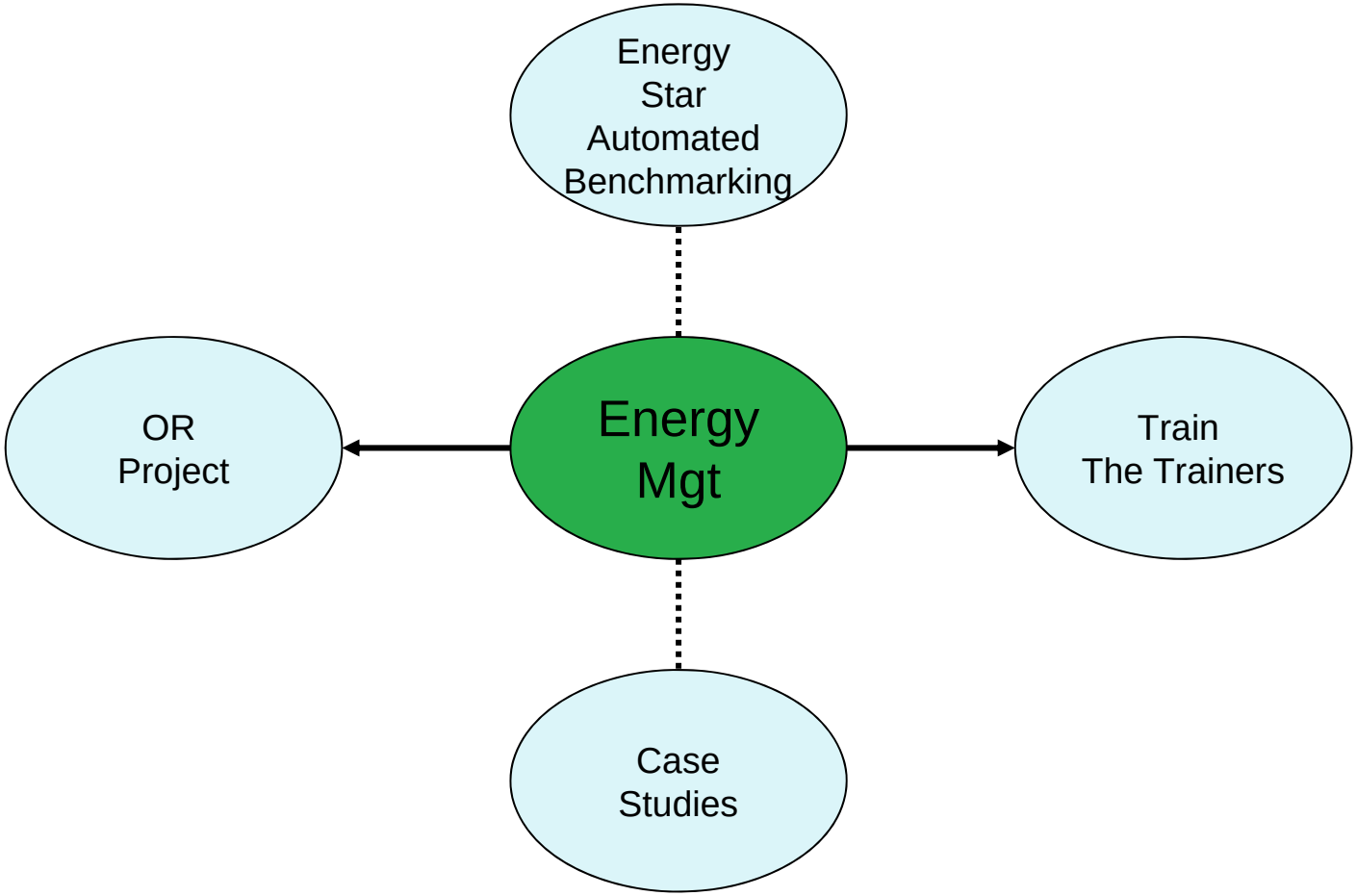
- Education and Outreach
  - Internal R10 - *Liquid Assets* and *Water Sense*
  - External Audience
    - Trade association articles
    - Presentations at national, regional, and local conferences/workshops
    - Technical sessions at conferences



Accomplishments (2009)

- Asset Management
  - Weiser Check Up Program for Small Systems (CUPSS) Pilot
  - Cases/Lessons Learned (in progress)

SI Team Accomplishments
Energy Management Projects



Water-Energy Nexus

Water and wastewater systems account for…

- 35% of municipal energy usage
- Expected to grow by 20% next 15 years
- As energy costs rise, operating costs rise
- Energy footprint of water
  - 90% of electrical energy used by water utilities for pumping

Energy Reduction at Water Utilities

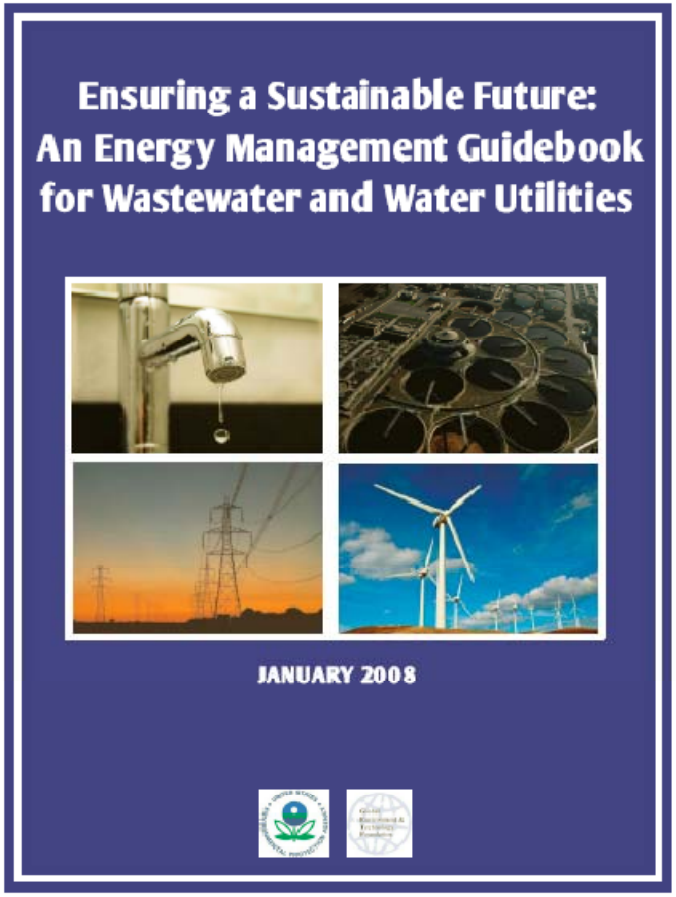
Water and Energy Efficiency at Utilities =

- Reduced energy usage
- Reduced operating costs
- Reduced climate impacts / carbon footprint
- Sustainability of water infrastructure
- Save water

Why Focus on Management?

- Energy issues are here to stay and will only get more serious—no quick fixes!
- Individual projects and technologies are fine, but something is needed to pull it all together (a system)
- Systematic management will ensure continuing focus on energy efficiency
- The Plan-Do-Check-Act management systems approach has worked in many different sectors

Managing to Maximize Energy Efficiency



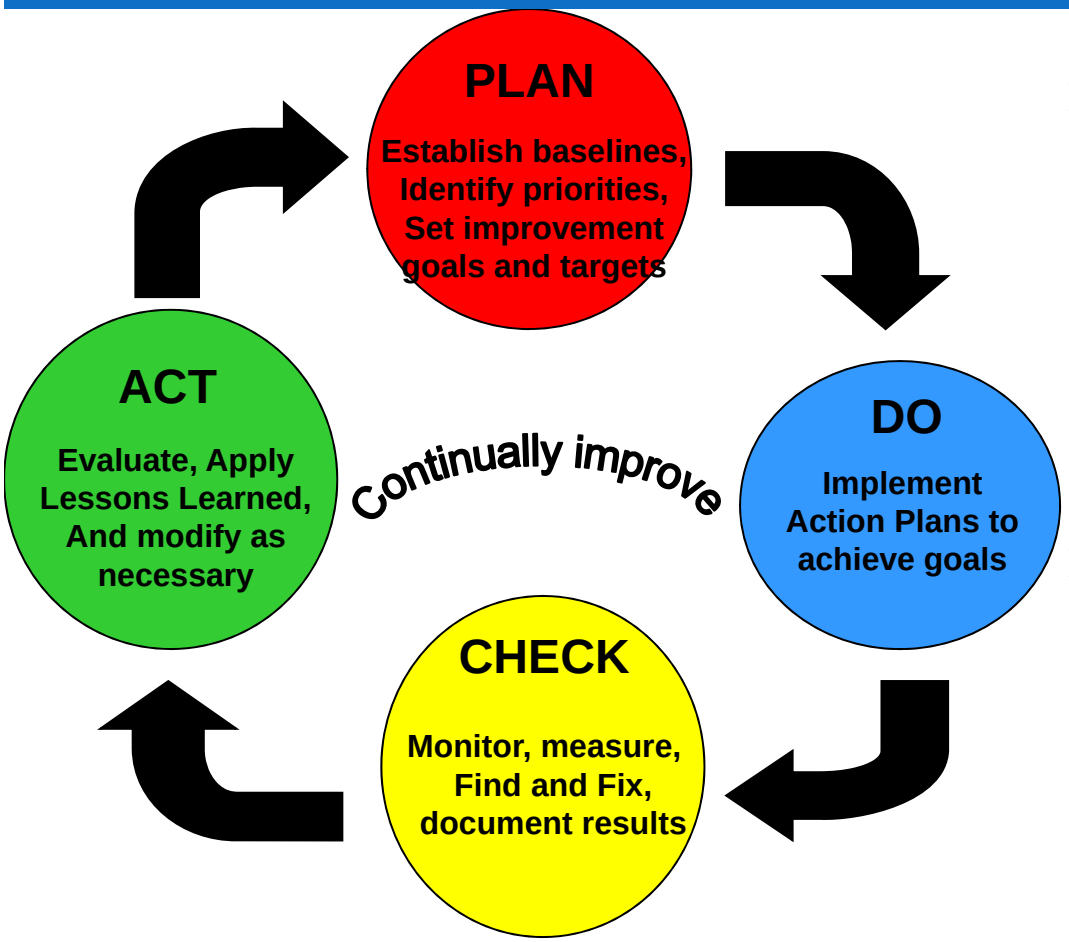
Designed to help utilities:

- Systematically assess current energy costs and practices
- Set measurable performance improvement goals
- Monitor and measure progress over time

Uses a management system approach for energy conservation, based on the successful Plan-Do-Check- Act process [based on Environmental Management Systems (EMS)

Jim Horne, EPA Office of Wastewater Mgt

The Plan-Do-Check-Act Approach



- Allows utilities to systematically assess and manage energy opportunities and take action
- NOT a project—a system to manage for the long haul

Jim Horne, EPA Office of Wastewater Mgt

Massachusetts Energy Management Pilot for Water & Wastewater Plants

Save $$

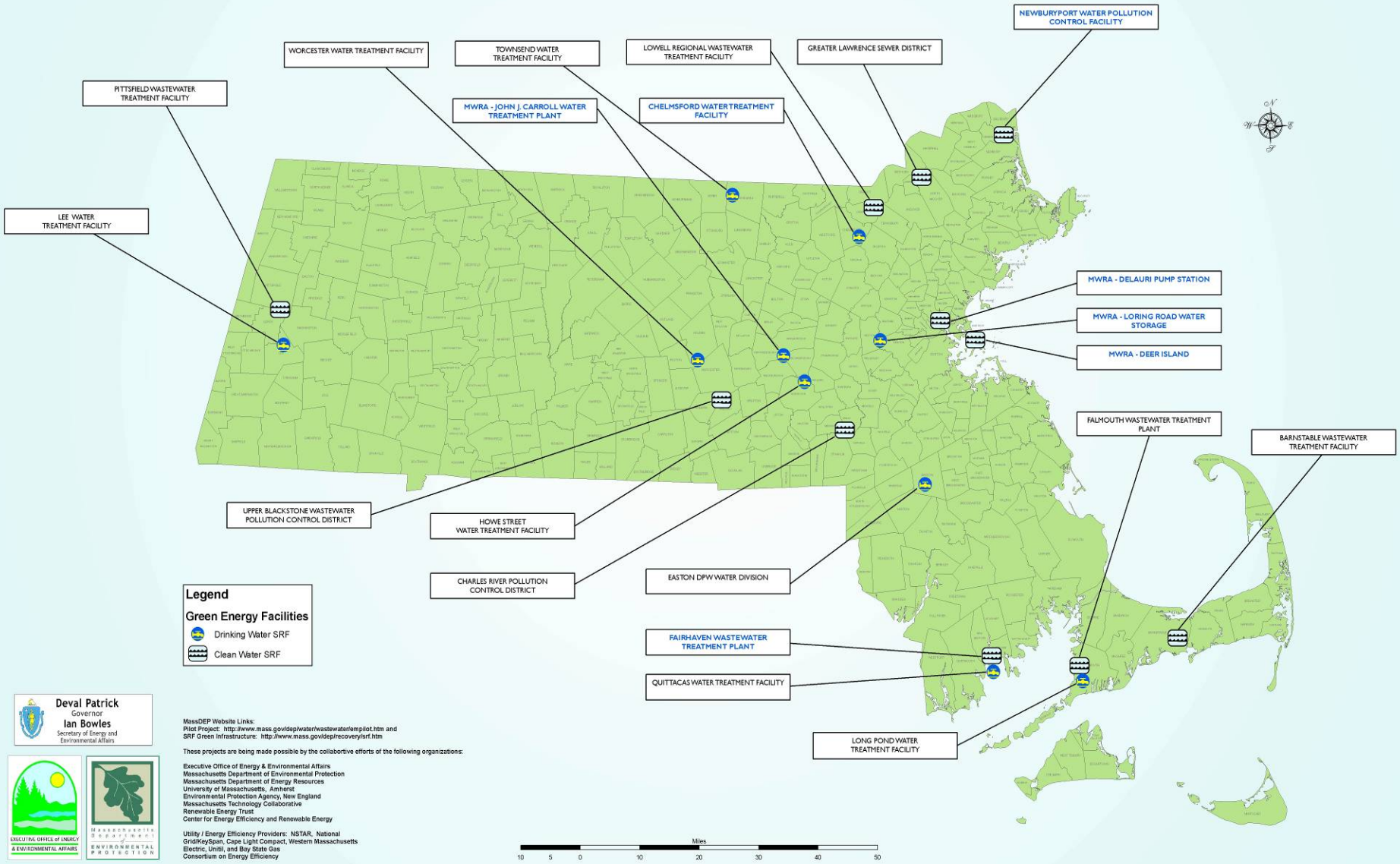
Reduce Greenhouse Gas Emissions

- **20% reduction in costs and CO_2 emissions**

Massachusetts Energy Management Project for Wastewater and Drinking Water Facilities

A Targeted Approach to Advance Municipal Energy Savings and Greenhouse Gas Reductions

Pilot Project and **Additional Green Project Reserve Facilities**



Deval Patrick
Governor
Ian Bowles
Secretary of Energy and Environmental Affairs

MassDEP Website Links:
Pilot Project: http://www.mass.gov/dep/water/wastewater/empilot.htm and
SRF Green Infrastructure: http://www.mass.gov/dep/recovery/srf.htm

These projects are being made possible by the collabortive efforts of the following organizations:

Executive Office of Energy & Environmental Affairs
Massachusetts Department of Environmental Protection
Massachusetts Department of Energy Resources
University of Massachusetts, Amherst
Environmental Protection Agency, New England
Massachusetts Technology Collaborative
Renewable Energy Trust
Center for Energy Efficiency and Renewable Energy

Utility / Energy Efficiency Providers: NSTAR, National Grid/KeySpan, Cape Light Compact, Western Massachusetts Electric, Unitil, and Bay State Gas
Consortium on Energy Efficiency

G:\Users\rgaulin\MXD\Green_Infrastructure_Projects.mxd 10/26/2009

MA Energy Pilot: Results

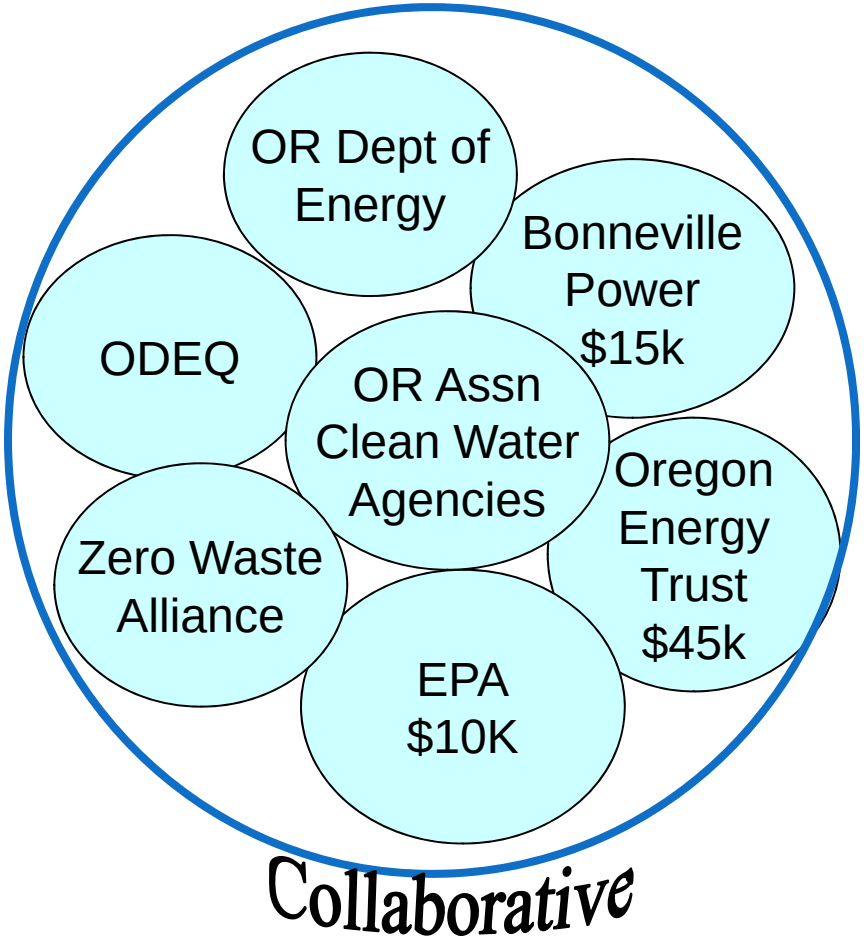
- Save 20 million kWhs
- Save $3.8M for ratepayers
- Remove 17,000 tons of CO_2

➢ Zero Net Energy:

Falmouth, Pittsfield, Barnstable, Lee

http://www.mass.gov/dep/water/wastewater/empilot.htm

OR Sustainable Energy Pilot (2010-11)



~$2k/participant

Redmond	Bend	Portland
Silverton	Newberg	Gresham	Medford
Lewiston, ID	McMinnville	Vancouver, WA
Troutdale	Eugene/ Springfield (MWMC)	Roseberg

Cohort

Pilot Components

- 7 Workshops
  - Energy Management Systems
  - Renewable Energy Technologies
  - Climate Action Planning
  - EnergyStar *Portfolio Manager* (Benchmarking)
  - Financing/Incentives
  - Standard Operating Procedures (SOPs)
  - Communication Strategies

- Project Implementation Summaries

2010 Priorities

- Work with strategic partners in providing education & technical assistance to utilities to implement SI principles
  - Energy Mgt pilot, “Train-the-Trainer,” CEU curriculum, and cases
- EPA steps in reducing infiltration and inflow (I&I)
  - (potential Capstone intern project)

Time is Now…

- Infrastructure is our community wealth.

  We depend on it for…
  - our economy
  - our health
  - our environment

- Infrastructure decisions made now will lock in America's built environment for next 80 years.

Thank You
EPA R10 SI Team

Mike Bussell	*SI Executive Sponsor*
Paula vanHaagen	*SI Management Sponsor*
Cyndi Grafe	*SI Team Lead*
Johnny Clark	Bob Drake
Bryan Fiedorczyk	Rick Green
Mike Lehner	Margaret McCauley
Margo Partridge	Sonia Porter
Joel Salter	Debra Sherbina
Sharon Wilson	

More information

- More information is available at:

http://www.epa.gov/waterinfrastructure/bettermanagement_energy.html

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