

The History and Value of Integrated Regional Water Planning

November 18, 2020



Improving Water Quality & Regional Resilience
One Drop at a Time

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Water Resource Center
Southwestern Pennsylvania Commission

<https://spcwater.org/>





essential ingredients®



The History and Value of Integrated Regional Water Planning

Featuring Brown and Caldwell's

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Water Resources Leader

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Water Resources Innovation Lead

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Environmental Scientist



Agenda

- What is Integrated Water Resources Planning? (IWRP/IRP/IP)
-
- What are common motivations for IWRP?
-
- **Example Integrated Plans**
 - Portland, Maine (Common ground - Turning opponents into partners)
 - Seattle (Integrated Water Quality / Flood Planning)
 - Georgia (Regional Climate Risks to Prioritize Investments in flooding, water supply, water quality, facilities)
 - Merrimack River, MA/NH – The value of Visioning
-
- **Some important IWRP Benefits**

Overview of Integrated Resource Planning

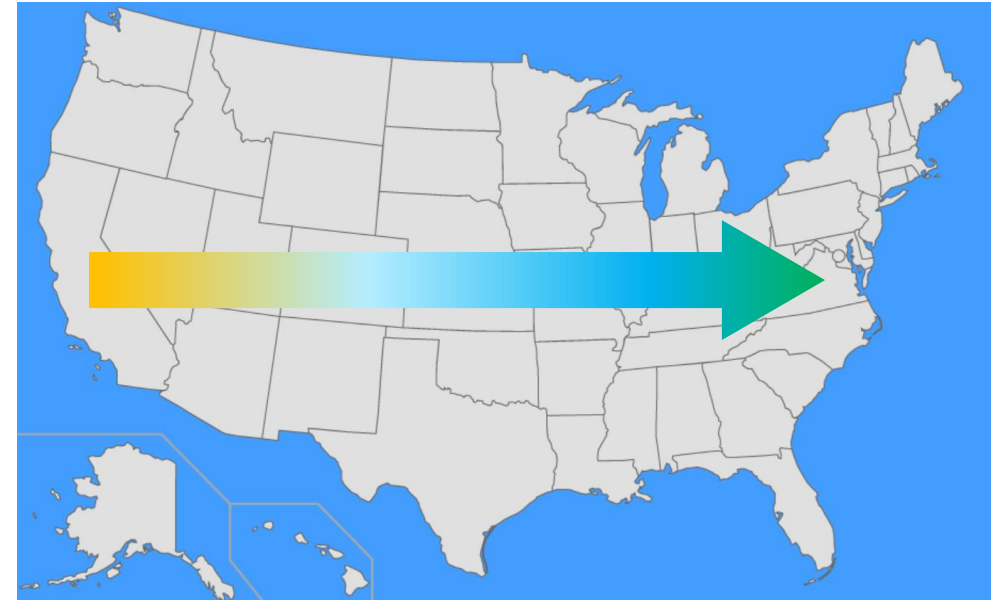
What is Integrated Planning?



- A formalized process that facilitates the prioritization of projects within and across sectors and watersheds in a cost-effective manner, focusing on progress toward compliance and yielding economic, social, and environmental co-benefits.
- **Combining Sectors:** Water, Wastewater, Stormwater, Reclaimed Water
- **Watershed Approach:** Looking at water and infrastructure as an interconnected system
- **Stakeholders:** Addressing multiple goals with each solution or strategy
- **OneWater:** Redefining the water cycle through reuse, replenishment, and getting the most of every drop

History of Integrated Planning

- Genesis was in arid west, as water supplies were regionalized
- Reclaimed water (potable and nonpotable) drew IRP eastward, connecting water and wastewater planning
- Cost efficiencies and compliance progress were realized over siloed planning
- In the East, issues were focused more on wet weather, less on supply, BUT:
 - Techniques were proven
 - Cost efficiencies were being realized
 - Process adapted to Integrated Wet Weather Planning
- 2012 – USEPA issued guidance document for 6-step IRP program for wet weather
- 2019 – Clean Water Act Amended with EPA’s 6-Step IRP Process, with options to include water supply and other elements

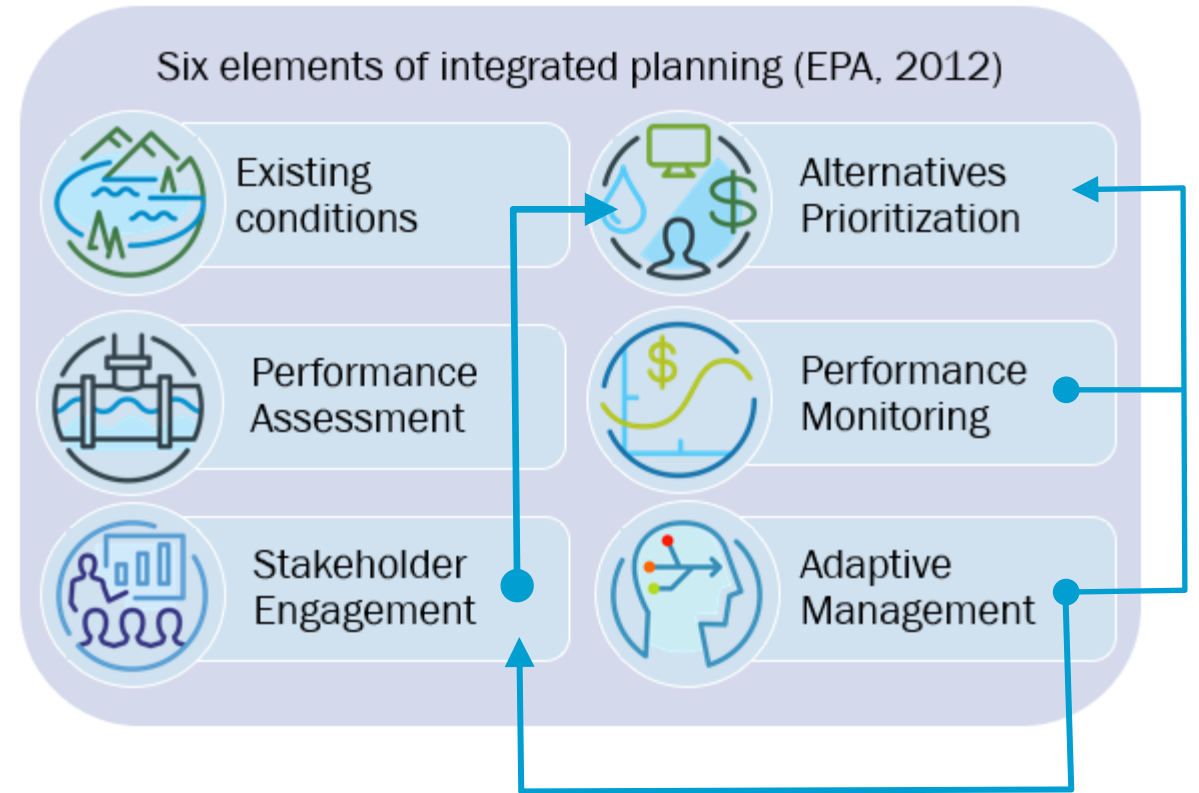


Different Types of Integrated Planning

- Water/Wastewater/Stormwater (Quality and Quantity) /Reclaimed Water – Broad opportunity for co-benefits
 - Within a community
 - Throughout a region
- Any subset of the above
- Reclaimed Water as Part of Water Cycle (“One Water”)
- EPA 6-Step Process for Wet Weather IRPs ([CWA Amendment, 2019](#))
- Regional Visioning and Priorities – First step in identifying common problems and goals, near term steps
- Regional Collaboration Between Municipalities / Utilities – [Water as a “System”](#)

How is it different than traditional water planning?

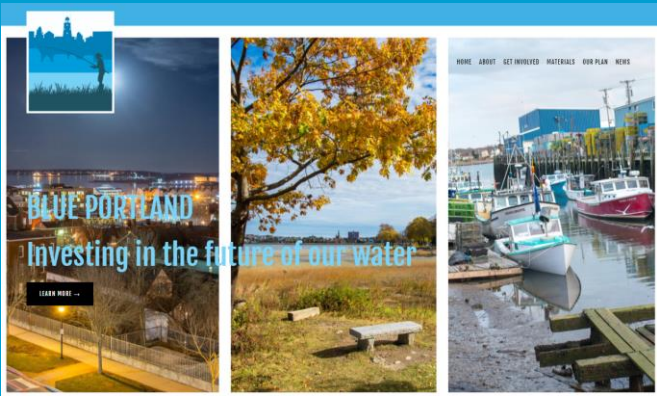
- Watershed as a system
- Illumination of Tradeoffs
- Identification of Co-benefits
- Simple tools vs. detailed modeling
- Stakeholder collaboration
- Collaborative with regulators
- Focused on goals and performance, not compliance schedules
- Adaptation
- Written into the Clean Water Act in 2019



Common Motivations for IRP

What Drives Integrated Planning in the East?

- **Simultaneous Regulatory Obligations**
 - Consent Orders (Combined Sewer Overflows)
 - NPDES (Wastewater Effluent Discharge)
 - MS4 (Stormwater)
 - CMOM (Collection Systems)
 - TMDLs, Pollution Reduction Plans (All Watershed Loads)
- **Climate Change**
 - Flooding
 - Water Quality
 - Water Supply and Replenishment
- **Incomplete understanding of how all of these overlap or work together**
 - Need simple framework to analyze tradeoffs, benefits, risks, and costs
 - Need to evaluate watersheds in their totality, not point by point
- **Multiple Goals:**
 - REGULATORY TRACTION: Is there a better way to attain water quality goals?
 - Can we also achieve other important goals at the same time?



Full Scale IRP
BluePortland.org



Integrated Water Quality and
 Flood Planning



Vulnerability of Regional
 Utilities to Climate Change

<https://gisdata.fultoncountyga.gov/datasets/GARC::arc-regions-map-11x17>



Regional Water Management
 Vision

Photo from: <https://epa.maps.arcgis.com/>

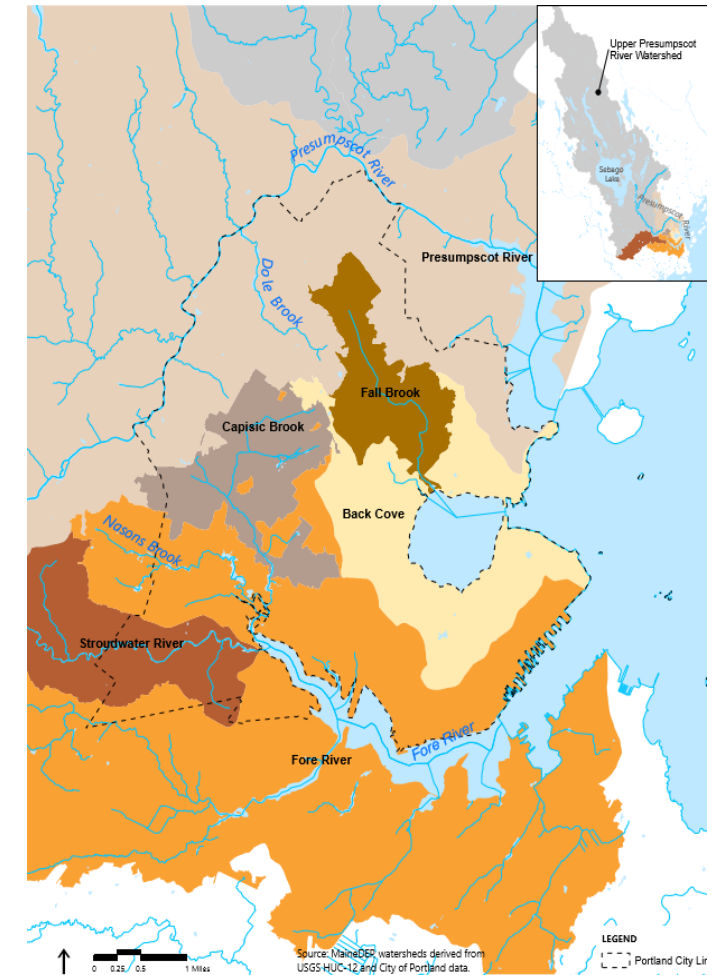
Examples of IRPs on Different Scales

Full IRP: Portland, Maine

Regional Consensus on Stormwater, CSOs, Wastewater



30 years of mandated water management:
Improvements but not compliance
IRP Changed the strategy: Focus on Progress, Adaptation, and End Result



A City, A Regional District, and Many Watersheds

Focus on Common Goals Led to Consensus Plan



Problem Statement:

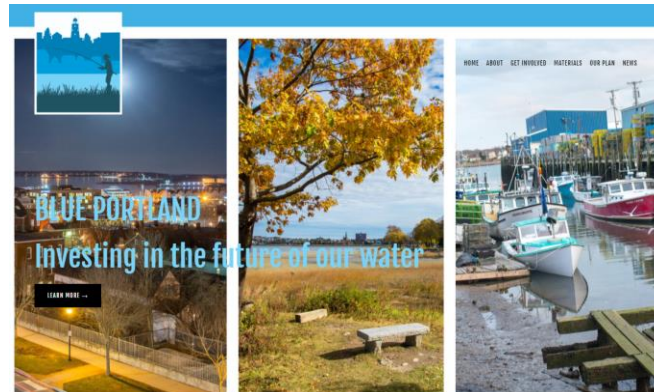
- Water Quality, Stormwater control (nutrients, bacteria, some flooding)
- Multiple Obligations: Consent Order, MS4, NPDES, CMOM

Challenges:

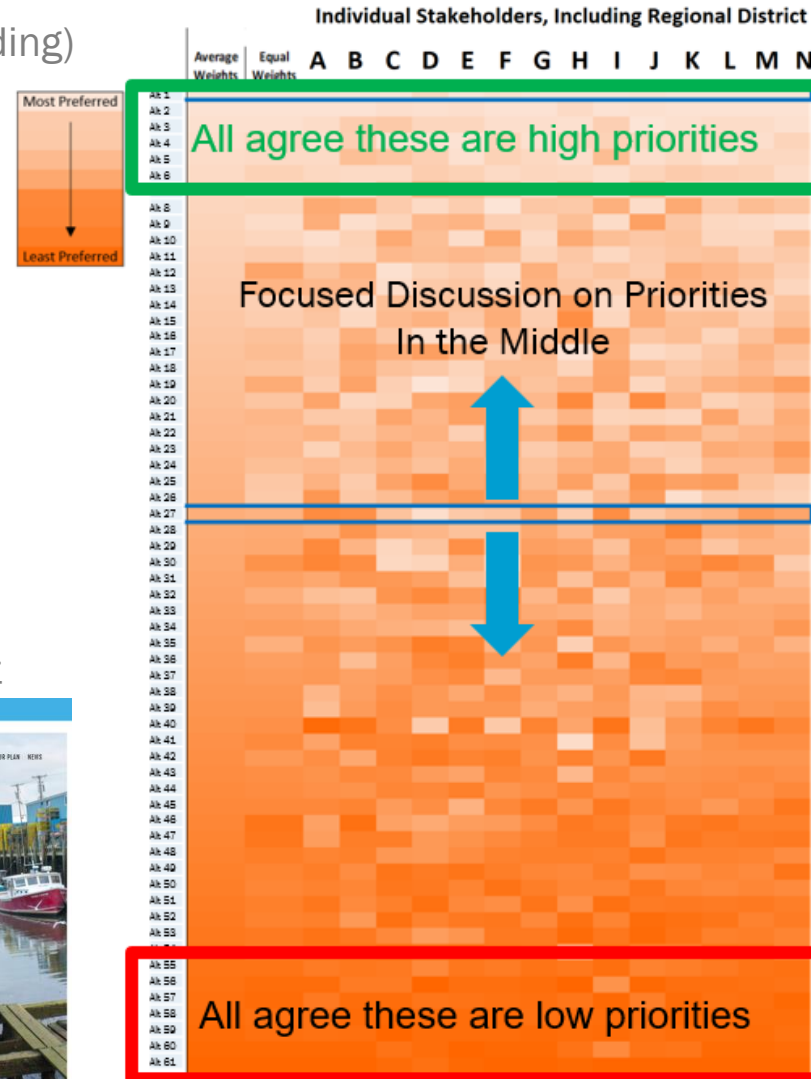
- City “vs.” Regional District
- Preconceived solutions in conflict
- Cost of compliance
- Social Equity

IRP Benefits

- City, District, and Regulators all participated in workshops
- Agreement on common goals before addressing solutions
- People understood how different solutions can achieve goals
- Tradeoffs and co-benefits helped inform recommendations
- Recommendations based on affordable progress instead of strict compliance schedules
- Investments adapt to progress
- IRP to become HUB of permits



BluePortland.Org



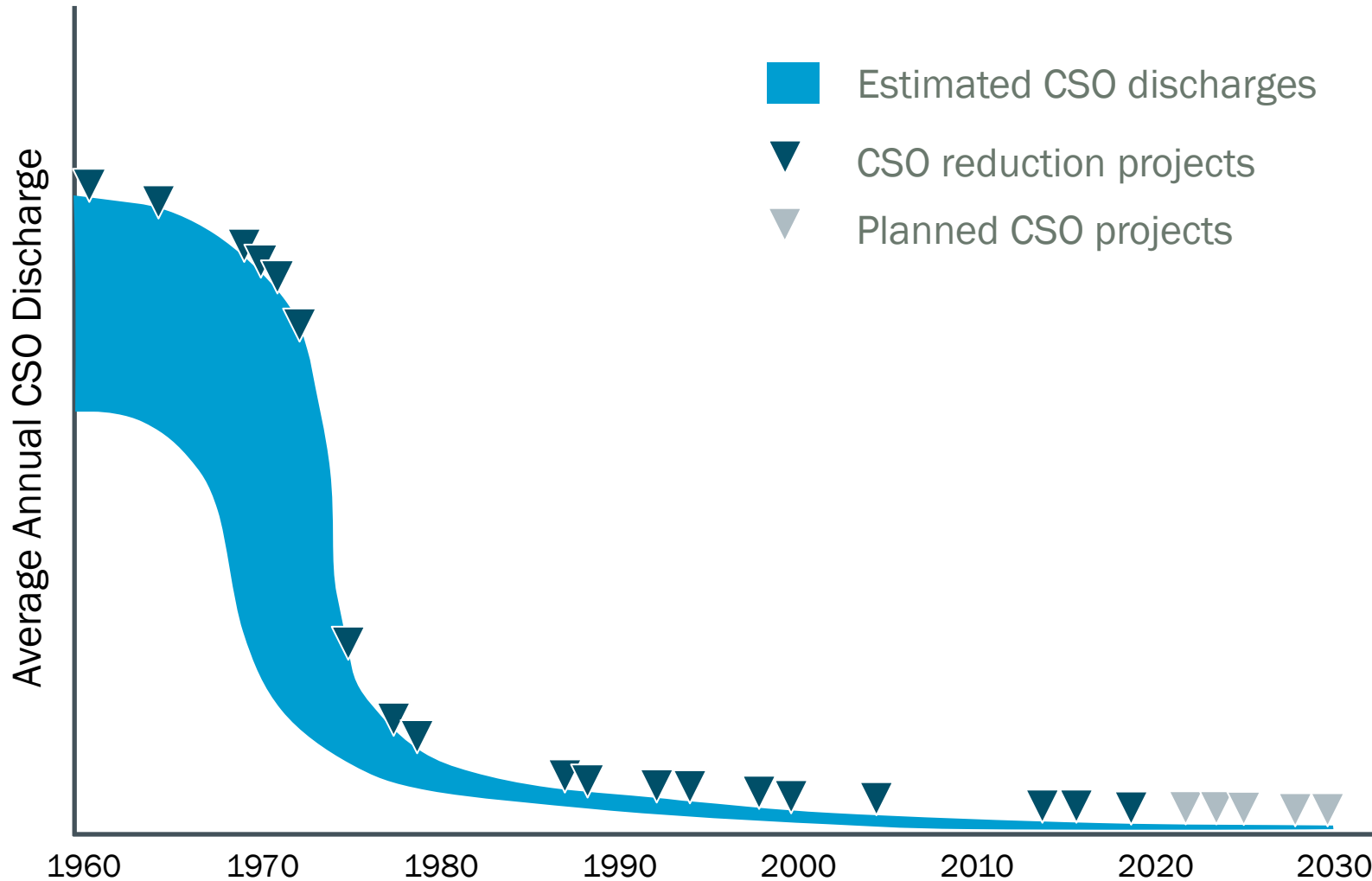
- All stakeholders see their own ranked list
- Watershed moment in project
- Basis of consensus plan, including regional District

Source:
Draft Report – Integrated Water Resources Management Plan, Portland, Maine

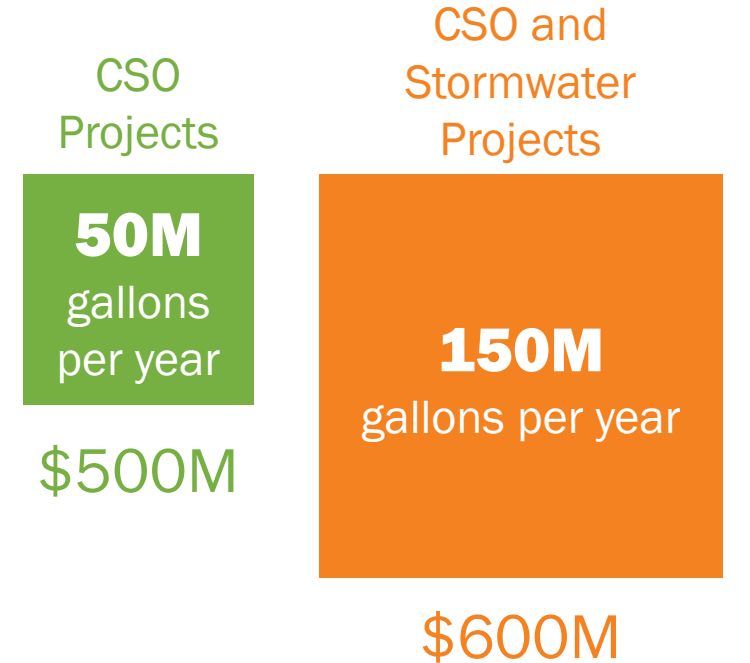
Integrated Planning for Seattle Public Utilities



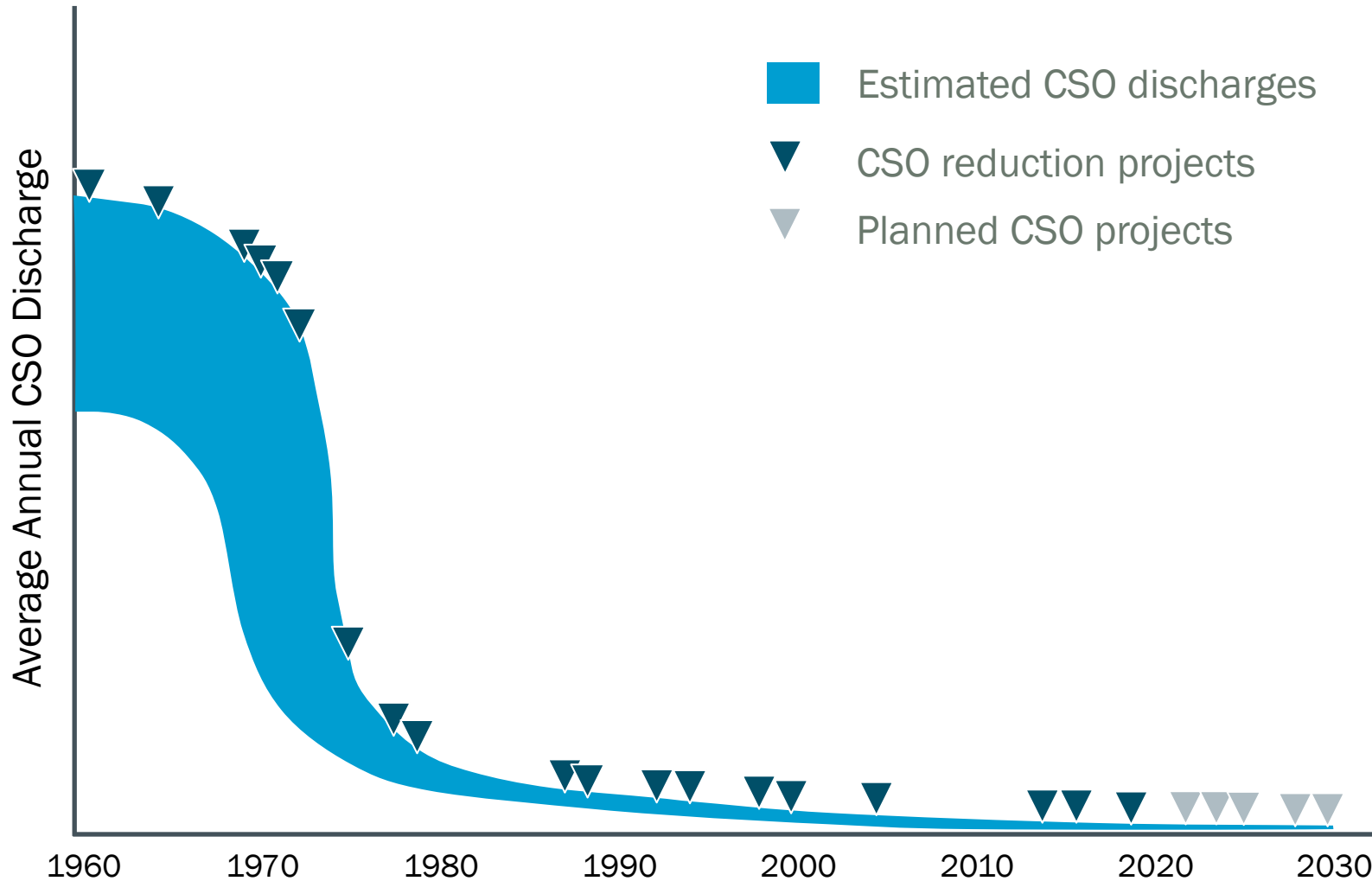
Integrated Planning for Seattle Public Utilities



Protect Our Waters



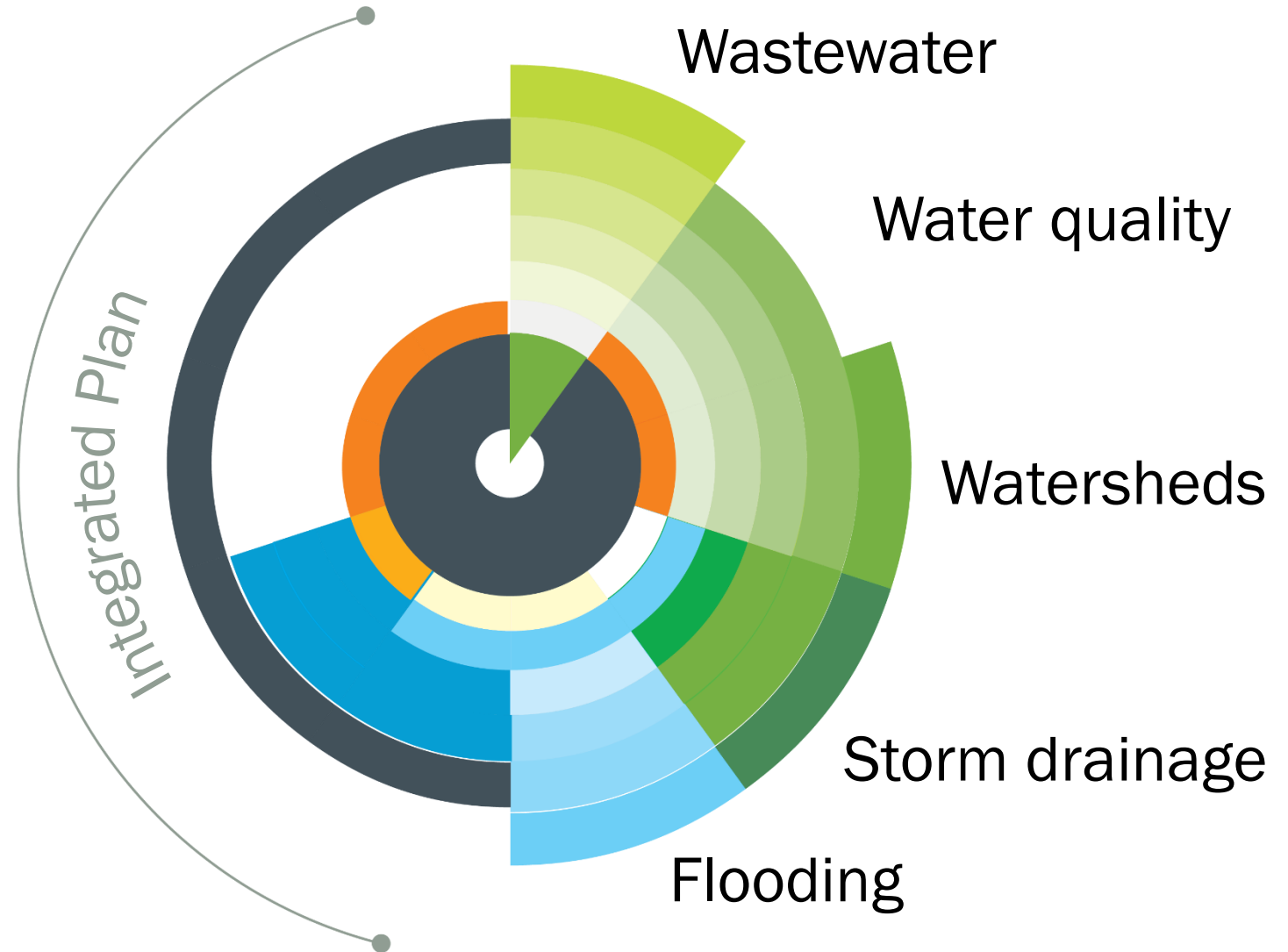
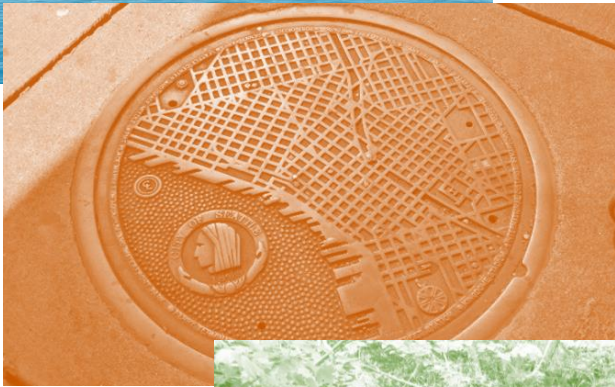
Integrated Planning for Seattle Public Utilities



Protect Our Waters

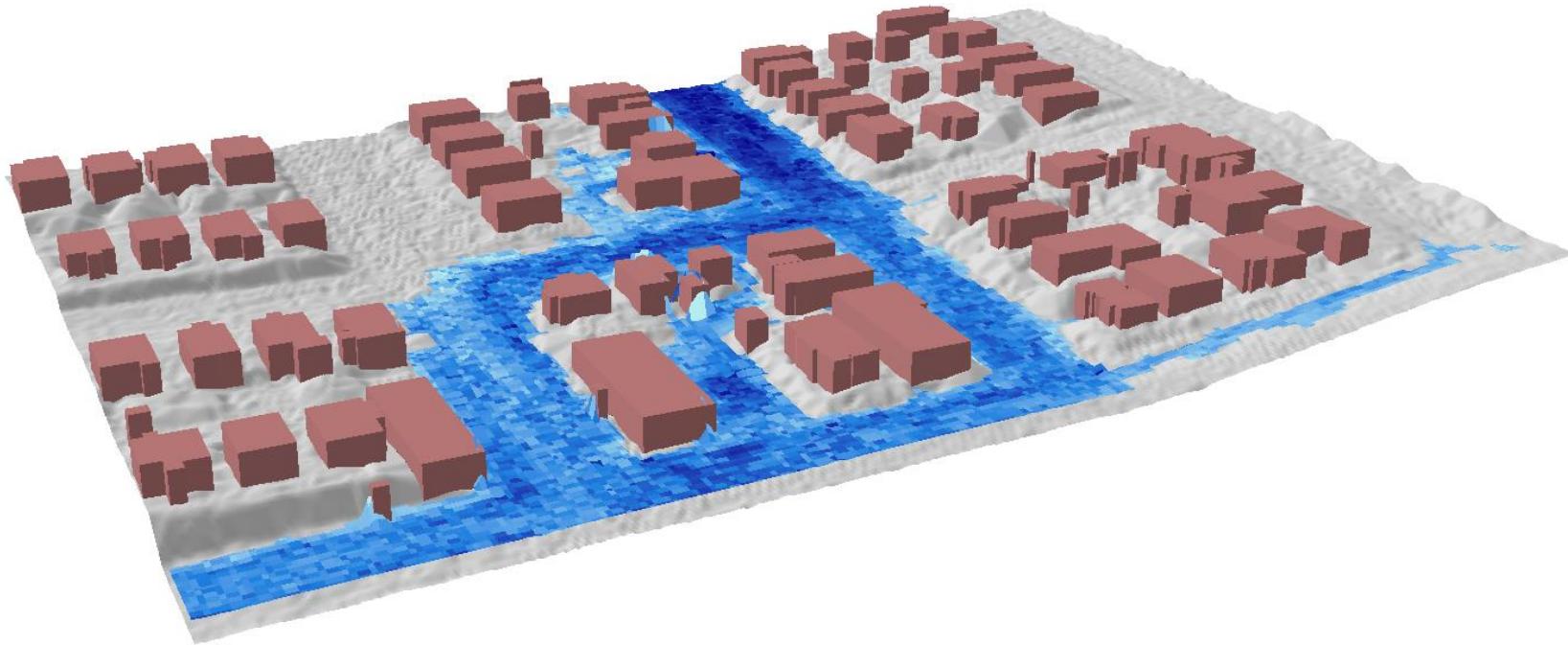


Integrated Planning for Seattle Public Utilities



Integrated Planning for Seattle Public Utilities

Citywide urban flood modeling for extreme storm events



Regional Climate Vulnerability

Water Supply / Wastewater / Flooding / Stormwater / Water Quality

500-Year Flood



Downtown Connector Just North of International Blvd Ellis St Interchange (Courtesy AJC)

https://www.weather.gov/ffc/atlanta_floods_anniv

Severe Drought



Perilously low water levels in Lake Lanier Reservoir north of Atlanta is threatening the metro area's water supply.
Robin Nelson / Zuma Press F116

Lake Lanier: <https://www.nbcnews.com/id/wbna21393296>

Ice Storms



David Beasley, Reuters • January 29, 2014

news.yahoo.com/winter-storm-brings-39-once-decade-39-ice-020122982-finance.html

Regional Vulnerability of Utilities

Metro North Georgia WMD / Atlanta Regional Commission



- 15-County Regional Water District and Planning Commission in Atlanta Area

- Within last 15 years:

- 500-year flood
- Drought approaching most severe in history
- Ice storms

- High-Level Evaluation of Facility & Resource Types

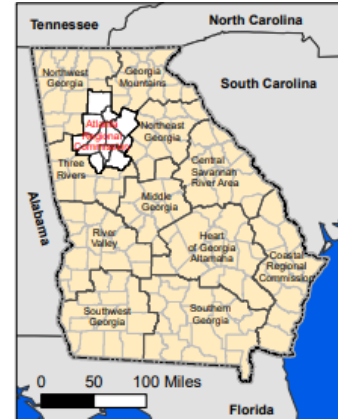
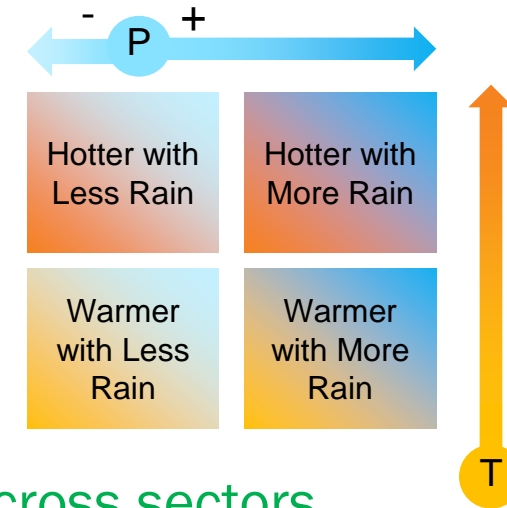
- Stormwater/Drainage
- Wastewater
- Water Supply
- Flood Control
- Collection Systems
- Water Quality



- Basis of their subsequent IRP by prioritizing specific risks across sectors

- Report:

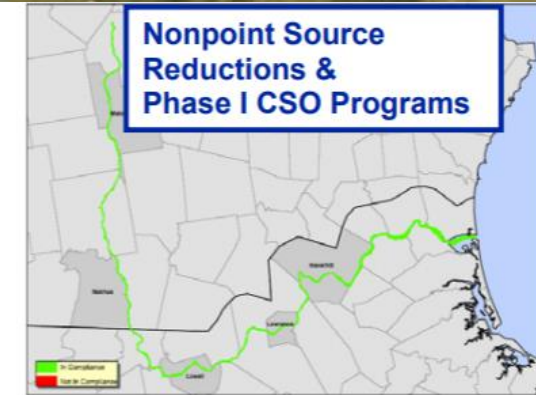
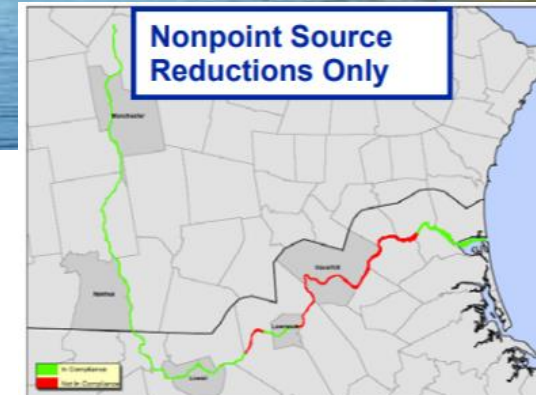
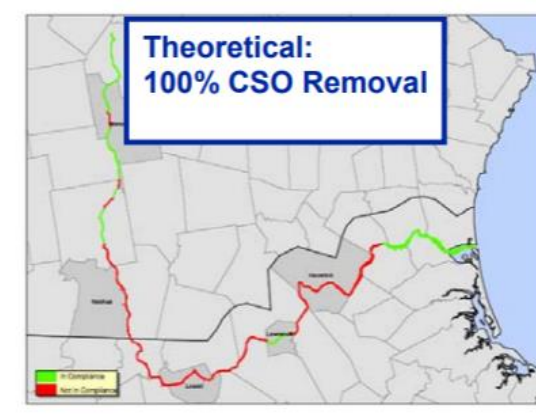
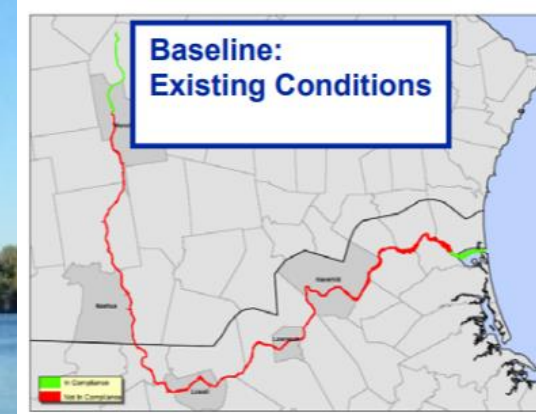
- http://northgeorgiawater.org/wp-content/uploads/2015/05/MNGWPD_UTILITY-Climate-Resiliency-Study.pdf



<https://gisdata.fultoncountygav.gov/datasets/GARC::arc-regions-map-11x17>



Integrated Regional Visioning: Merrimack River District Commission / Merrimack Valley Planning Commission



Source: CDM Smith report to USACE: Merrimack River Watershed Assessment Study, Final Phase I Report, September 2006
<https://www.nae.usace.army.mil/Portals/74/docs/Topics/MerrimackLower/PhaseI/Final.pdf>

Source: CDM Smith Report to USACE: Merrimack River Assessment Study
 US Army Corps of Engineers / Merrimack River Basin Community Coalition
 Phase I Report, Figure 6-6, September, 2006
<https://www.nae.usace.army.mil/Portals/74/docs/Topics/MerrimackLower/PhaseI/Final.pdf>



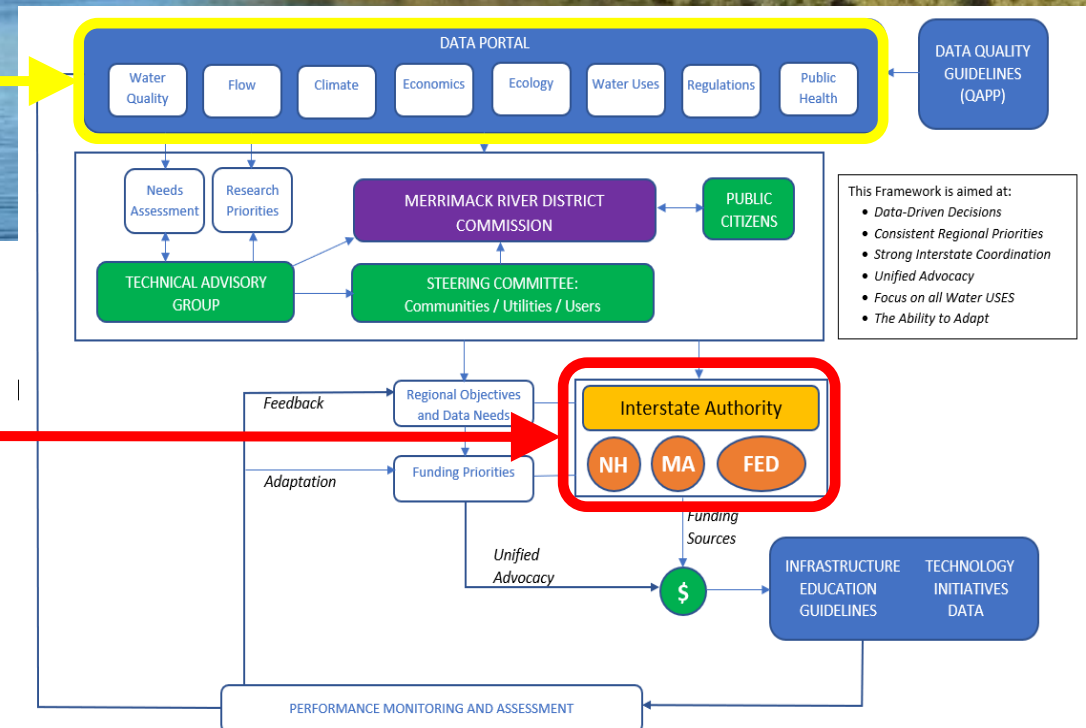
Visioning: A Framework for Regional Planning

Agree on Common Goals for the Basin
 Agree on "What's holding us back?"
 Establish framework for decisions
 Advance on current impediments

Goals

FUNDING	REGULATIONS	REGIONAL WATER MANAGEMENT	PUBLIC EDUCATION	DATA	LAND MANAGEMENT
Secure funding for infrastructure to enhance ability to comply with regulations.	Establish more collaborative check-ins with EPA	Designate one interstate entity to establish common goals, coordinate planning, help prioritize investments	Develop a "toolbox" to equitably help public understand ALL river uses and how they impact the river as individuals	Develop standards for data collection	Highlight the attractions of the river to encourage economic growth
Prompt legislative / congressional funding for infrastructure and explore restrictions	Must consider basin as a holistic system from a regulatory point of view - Integrated Management	Develop process for consistent prioritization of investments: "The river unifies but also divides."	Work with young people to educate early	Provide better access to data relevant to all uses	Emphasize LID & Stormwater management for new development
Seek long term commitments from elected officials for interstate funding and incremental benefits	Develop uniform standards for WWTPS and CSOs		Support/fund real-time dissemination of water quality data to communities downstream	Develop means of tracking future data against baseline	Work with land trusts and towns to acquire open space abutting the river (flood mgt, ecosystems, recreation, access)
Incentivize more creative and diversified funding streams: P3, Impact Investing	Require more regulatory control, enforcement based in law	Rebrand the river as a valuable resource for all uses: Share success stories and financial commitments, Connect the river and citizens with regional recreational opportunities (walking trails, bike trails, boat access, fishing, wildlife viewing, etc.)		Involve more science-based organizations in river mgt & decisions	Consider environmental justice populations with respect to open space preservation, river access, and benefits of use

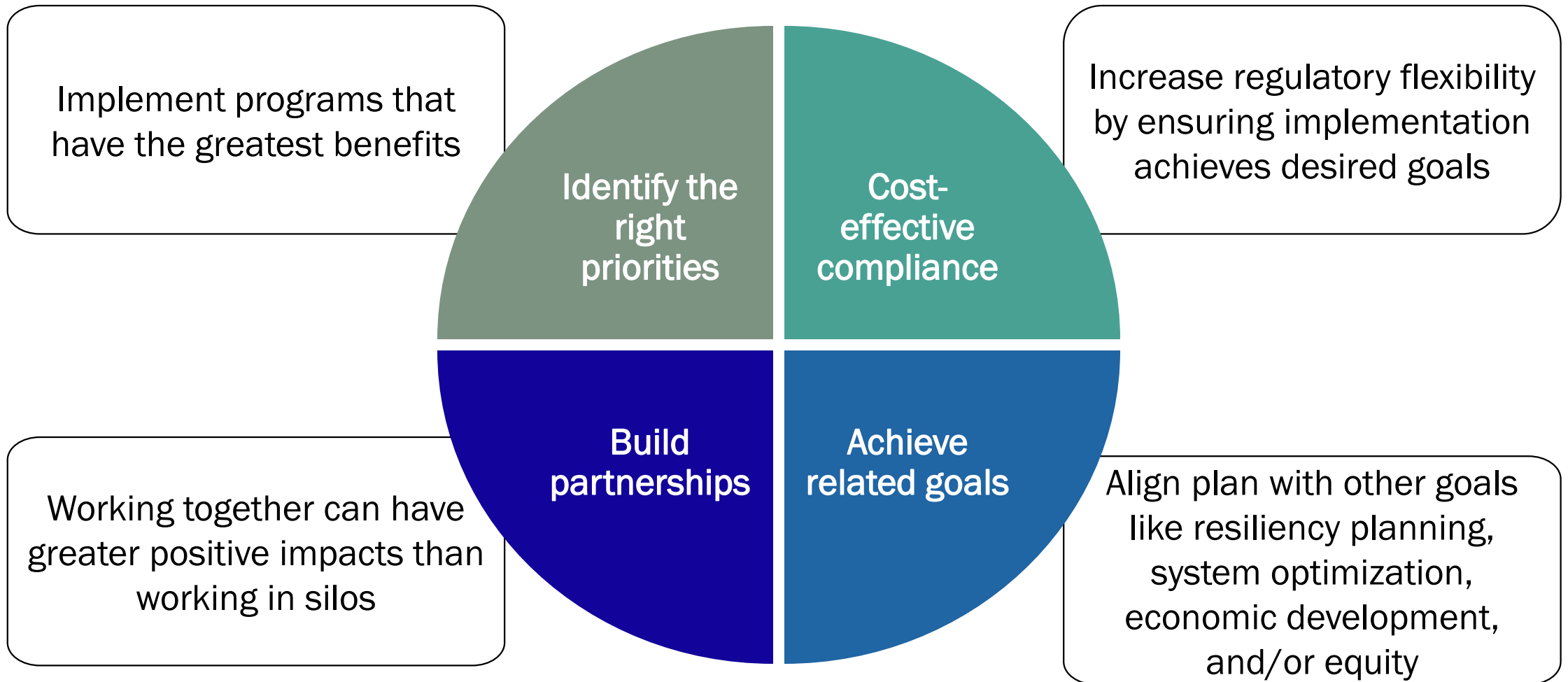
Framework and Actions



- This Framework is aimed at:
- Data-Driven Decisions
 - Consistent Regional Priorities
 - Strong Interstate Coordination
 - Unified Advocacy
 - Focus on all Water USES
 - The Ability to Adapt

Important Benefits of IRP

What **opportunities** does Integrated Planning provide?



Important strategic benefits of IRP

- Distinguish pre-existing positions from interest-based decisions
- Build strong consensus among stakeholders for investments
- Investments provide multiple benefits (environmental, social, economic...)
- Opportunities for regulatory support from the outset
- Establishing common ground early keeps stakeholder groups focused
- Expanding options can lead to more cost-effective strategies
- Adaptive plans are more likely to yield benefits over time

Specific Benefits of Today's Examples

- **Portland**
 - Turned adversaries into advocates by identifying co-benefits
 - Resulted in affordable compliance strategy
 - Regulatory concurrence by inclusion throughout the process
- **Seattle**
 - More cost-effective projects for improved outcomes
 - Expanded drivers and outcomes targeting multi-benefit projects
- **Atlanta Region**
 - Prioritizing risks across water sectors led to more targeted full-scale IRP
- **Merrimack River**
 - Established groundwork for interstate collaboration
 - Presented agreeable priorities to the legislature for funding advocacy

Continuing to Integrate in PA



NMR Equity Study



Integrated Planning



Green buildings

Pittsburgh p4

Performance Measures



Sustainable development



Thank you.
Questions?

The logo for Brown and Caldwell is centered on the page. It consists of the company name in a bold, dark blue sans-serif font, enclosed within a dark blue rectangular border. The word "Brown" is on the top line, followed by "AND" in a smaller font size. The word "Caldwell" is on the bottom line. To the right of the text, there are two small dark blue circles stacked vertically, with a vertical line extending downwards from the bottom circle.

Brown AND
Caldwell