

DECENTRALIZED SYSTEMS

**A Gap Action Plan Under SPU's Strategic Business
Plan**

Mark Jaeger

InterAgency Project Coordination

SPU Decentralized Policy Efforts

STRATEGIC BUSINESS PLAN

Mission

Providing efficient and forward-looking utility services that keep Seattle the best place to live.

GAP ACTION PLANS

Develop and implement plans to address critical issues, gaps and challenges.



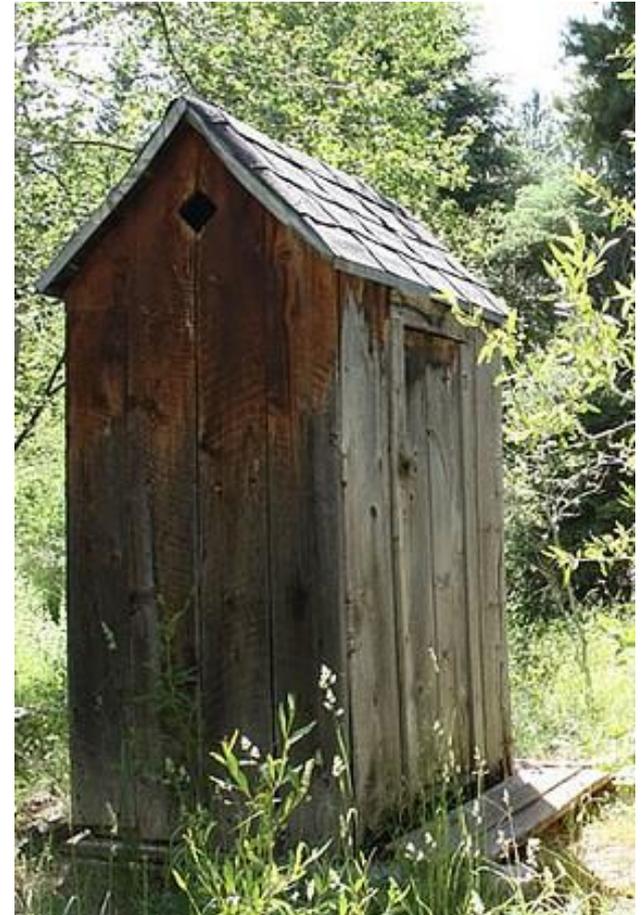
Strategic Business Plan
2015 - 2020

*Efficient and forward-looking utility services
that keep Seattle the best place to live.*

seattle.gov/util/strategicbusinessplan

**What is a
Decentralized
System?**

Early Decentralized Systems



To Centralized Systems



Why Did We Build these Big Systems in the First Place?

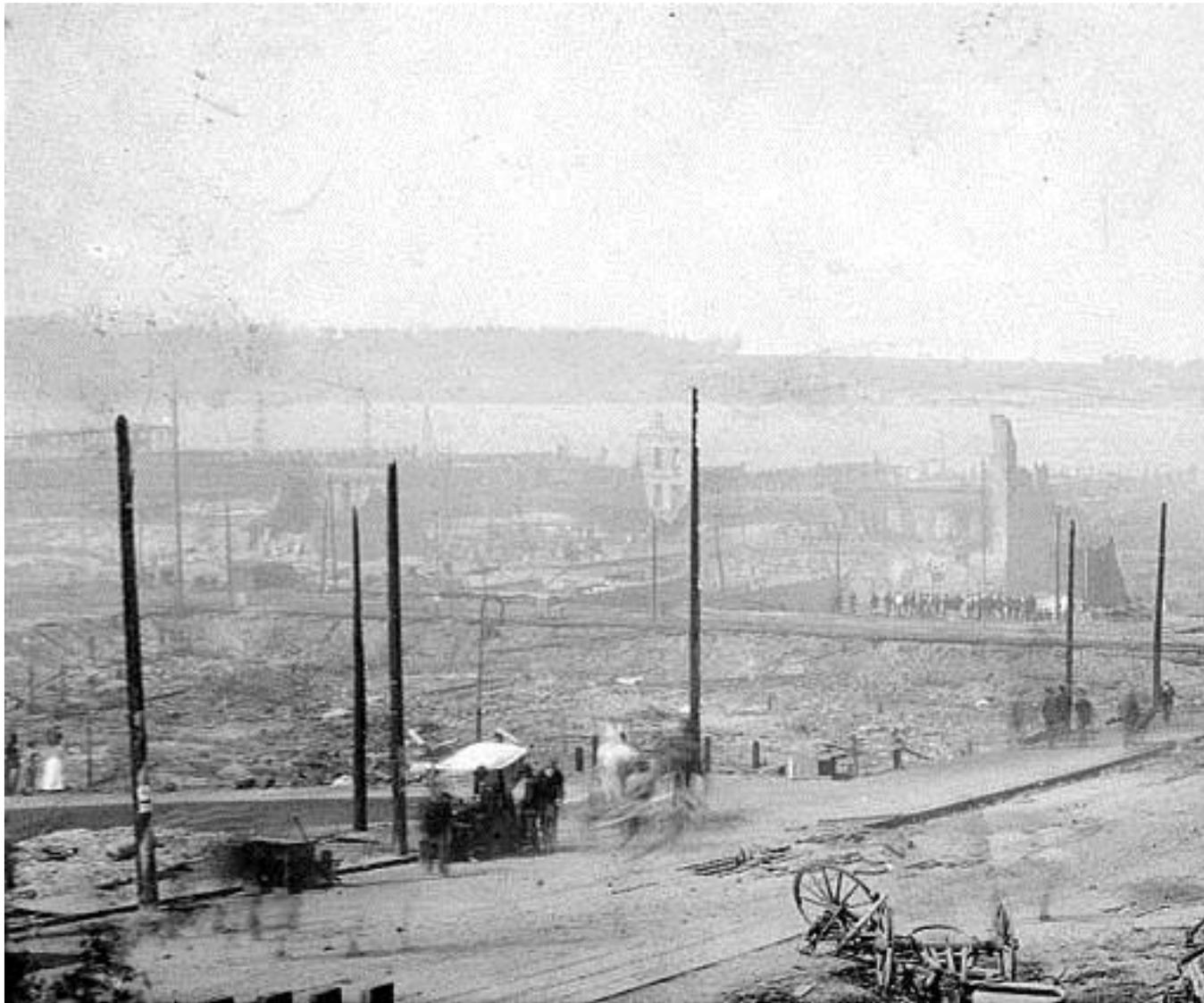
?



?



Seattle's Great Fire of 1889



King County Metro



Current Trends

- More and More Large Centralized Systems at or Exceeding Capacity
- Aging of Much of the Centralized Infrastructure
- Advancement in Decentralized System Technologies.
- Growing Trend of Development Looking to Incorporate Decentralized Strategies in their Projects

Decentralized Systems Today



So What's the Gap?

- Just Because We **CAN** Do Something Doesn't Necessarily Mean We Should Do Something
 - We Need a Better Understanding of Impacts
 - Health and Safety
 - Costs
 - Regulation
 - Social Equity
 - Environmental
 - Operation & Maintenance

Process

- Research
- Develop concepts for evaluative methodology
- Work with stakeholders to develop a shared understanding of the issues
- Convene Focus group sessions around specific lenses.
- Create analytical methodology.
- Report on findings and recommend policies and areas for further research and work.

Context Matters



Different Contextual Factors

Climate

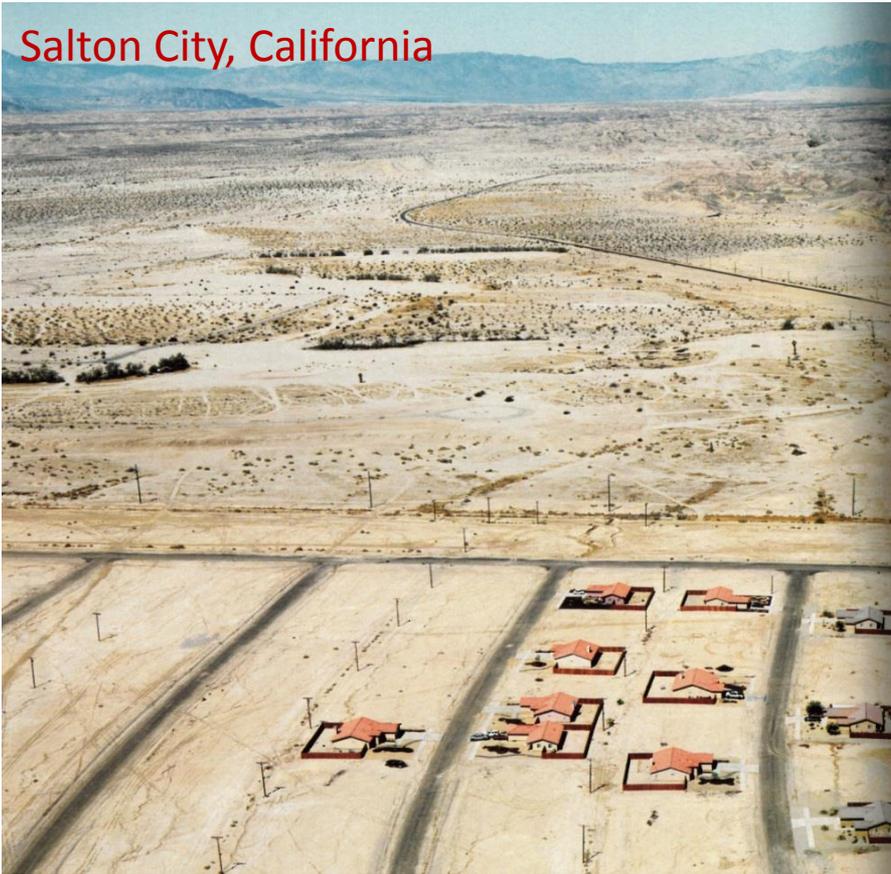
Topography

Population / Landuse

Existing Systems / Investments

Climate

Salton City, California



Seattle, Washington



Topography



Philadelphia's Schuylkill River



Seattle's Cedar River Watershed

Population / Landuse

Seattle Metropolitan Area

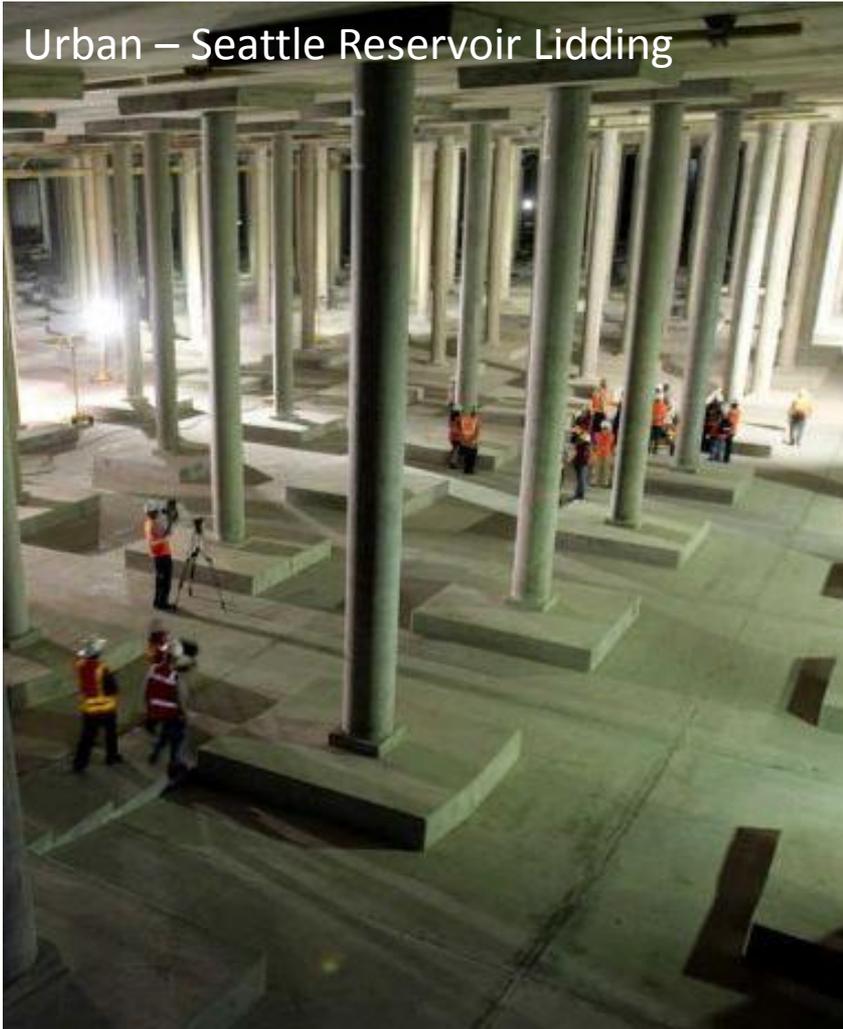


Eastern Washington Rural Area



Existing Systems / Investments

Urban – Seattle Reservoir Lidding

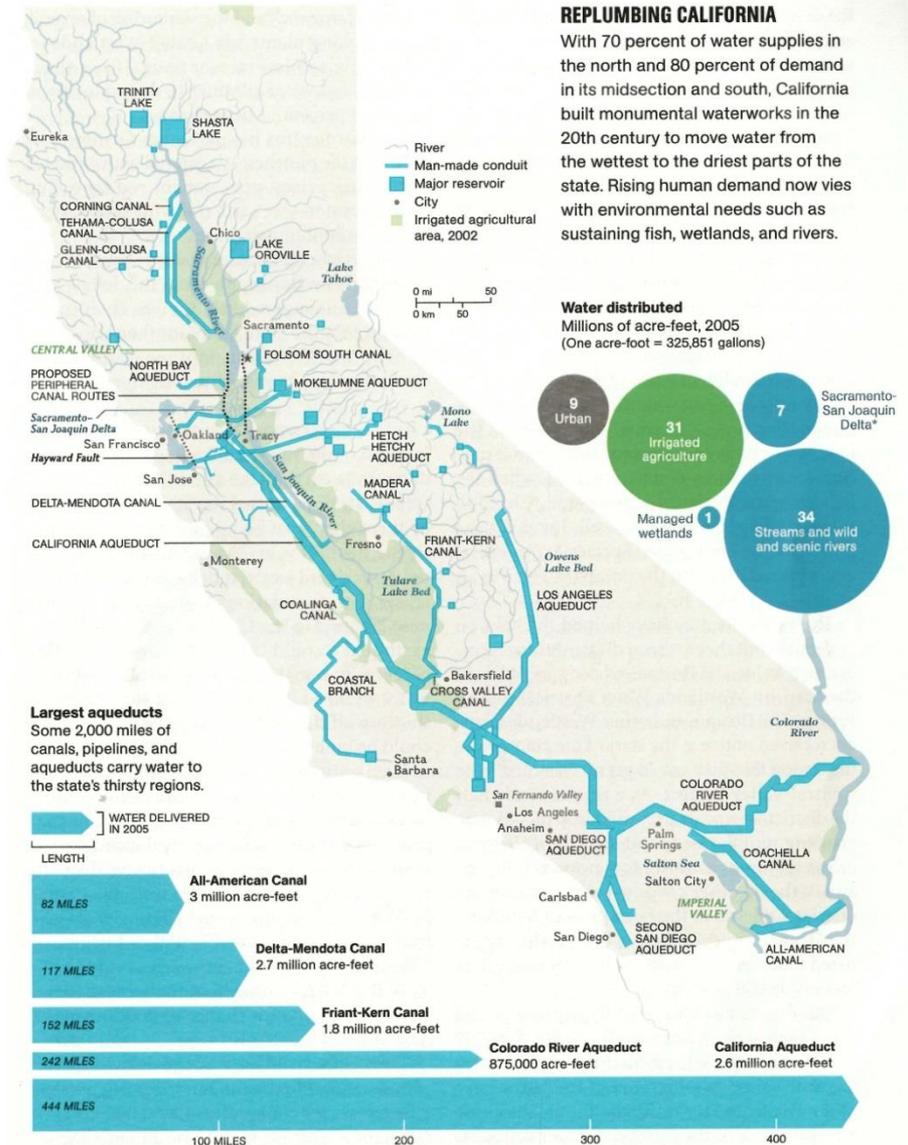


Rural – away from and off the grid



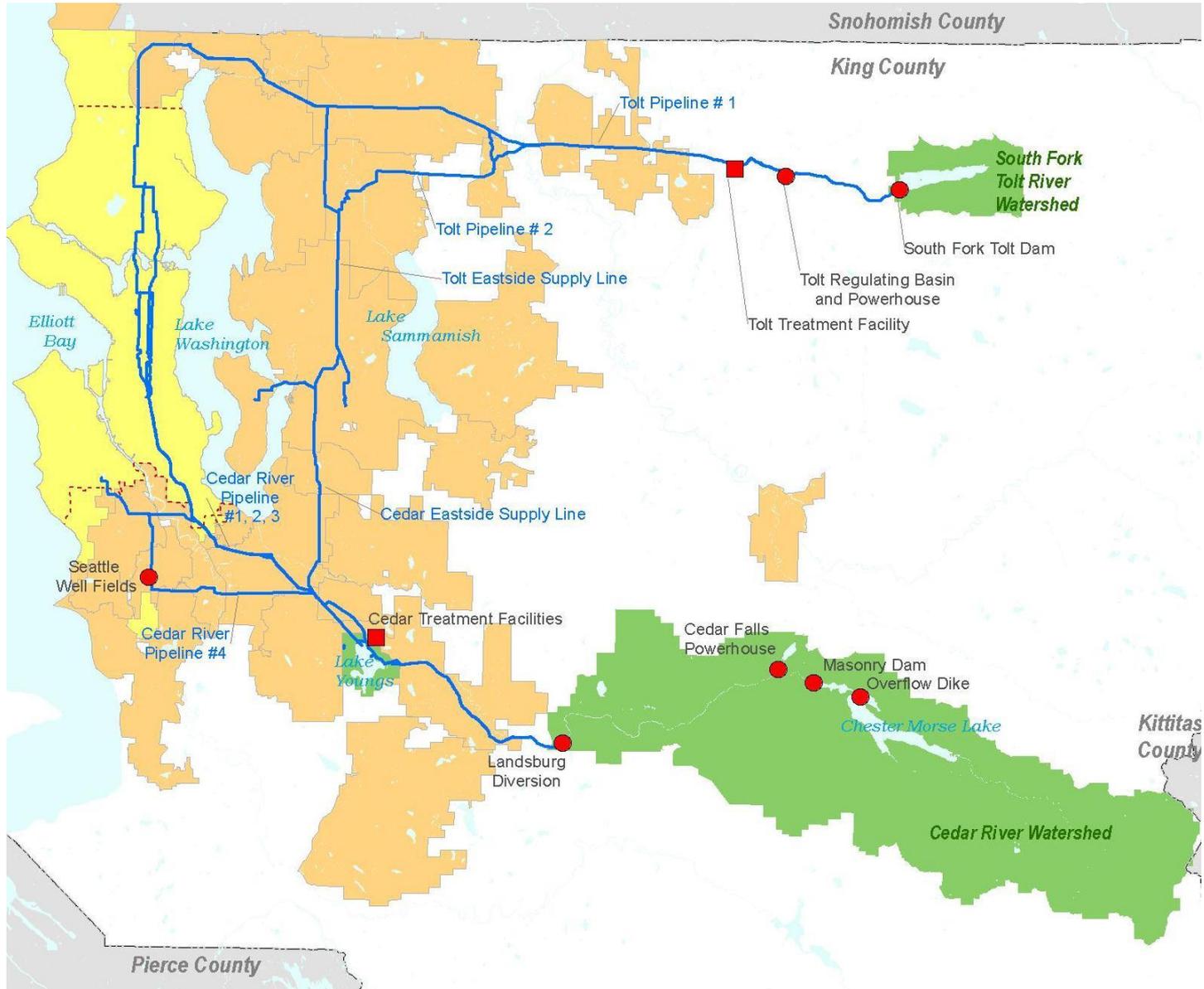
Puget Sound Seattle Region	Southern California Region
Forecasted good water supply through 2060.	Forecasted extreme water shortages. California drought entering 4th year.
Wet Marine Climate. 75% of rainfall October-March. Seasonal irrigation.	Generally dry desert climate. Year round irrigation / high evaporation.
Cedar and Tolt Reservoirs. Tacoma and Everett municipal water systems have good supply.	Massive infrastructure moving water long distances. Development of Desalination Plants.
Local water supply owned and managed by Seattle Public Utilities.	Water supplies imported, owned and managed by many Multi-State and Multi-County agencies.

California's Systems

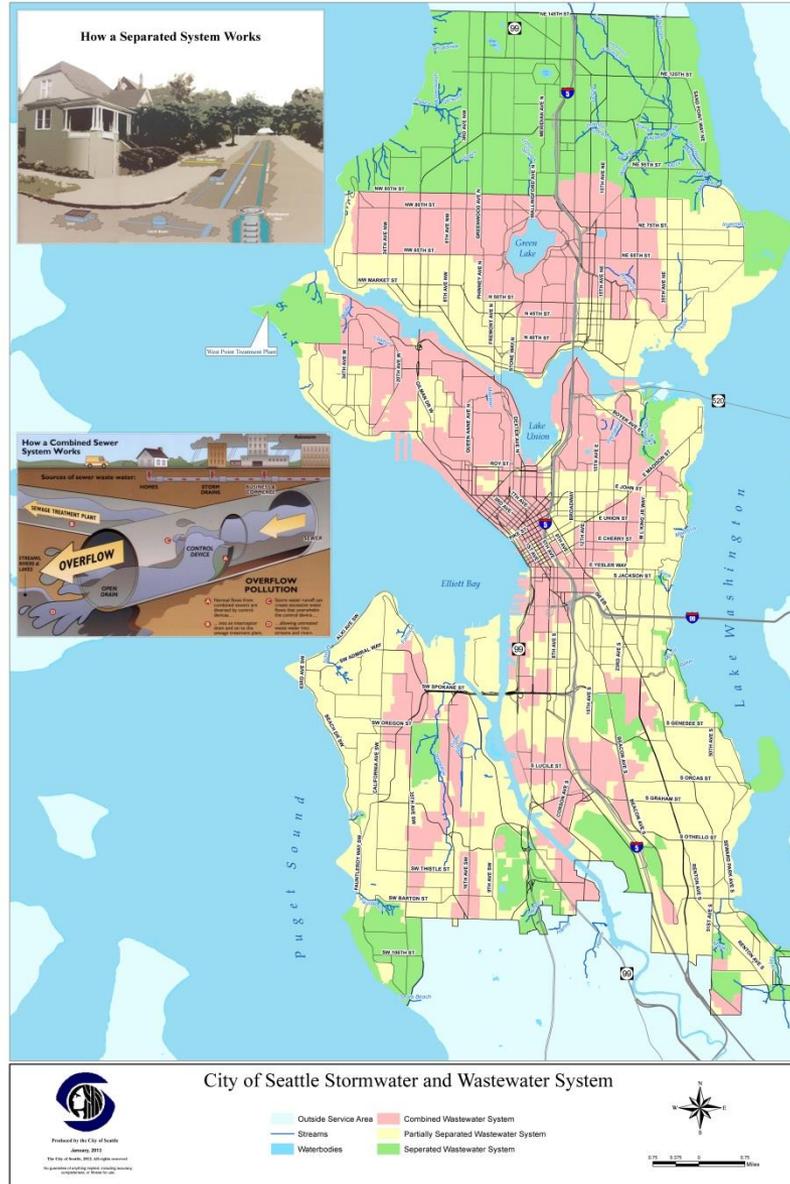


*MINIMUM REQUIRED OUTFLOW
 SEAN MCRAUGHTON, NG STAFF
 SOURCES: CALIFORNIA DEPARTMENT OF WATER RESOURCES; BUREAU OF RECLAMATION; AMERICAN FARMLAND TRUST

Seattle Puget Sound



Seattle Drainage/Wastewater



Stormwater: Flooding / Landslides

Lower Skokomish Valley, WA



Oso, WA



Thinking about Whole Systems



“The performance of the system depends on how the parts interact never on how they act taken separately.”

– *Russell Ackoff*

“If the whole is optimized, the components will not be.”

– *W. Edwards Deming*

Why Lenses?



Some Major Lenses:

Regulatory

Public Health

Environmental Protection

Social Equity

Sustainability and Resiliency

Management and Operations

Economics

Others?

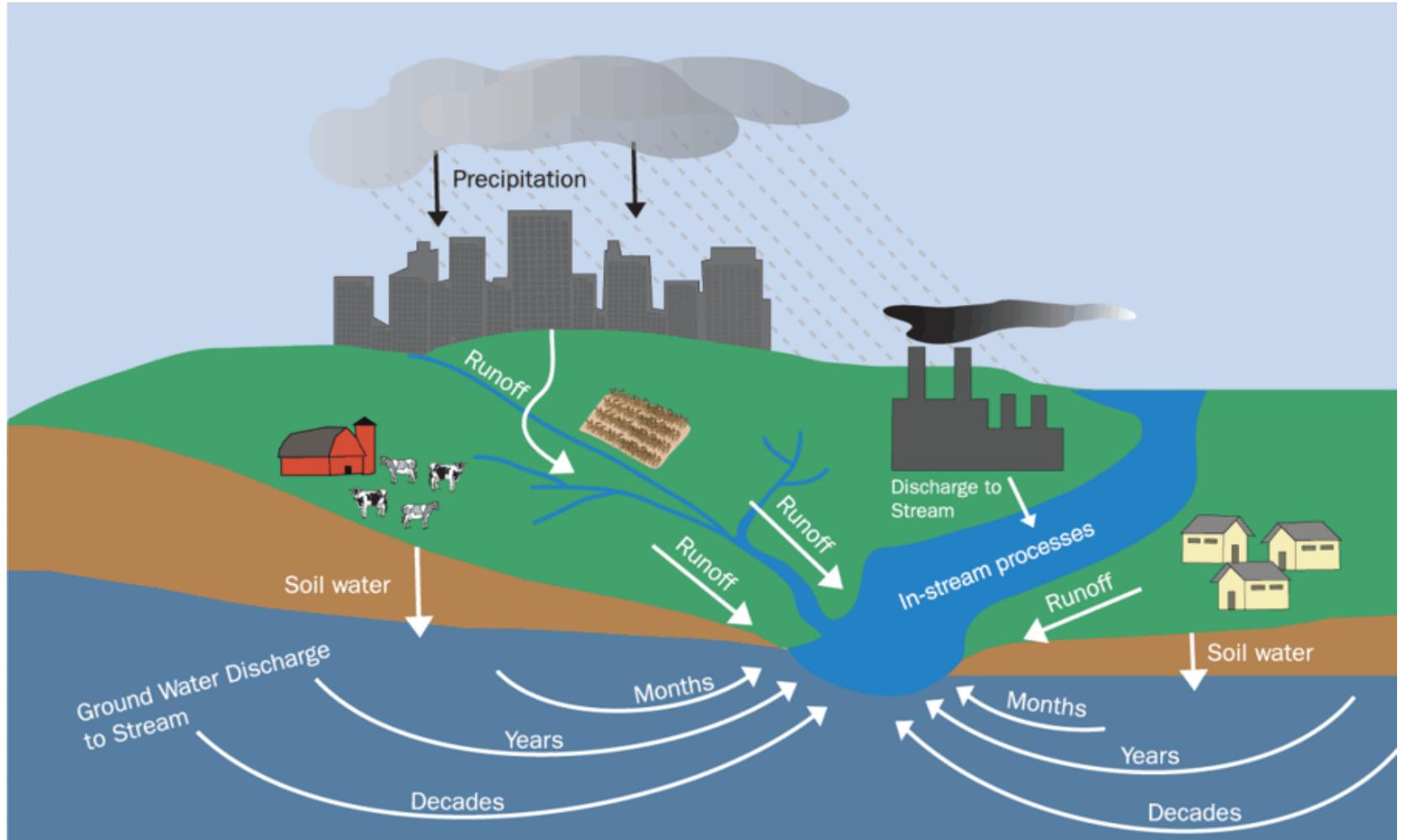
Regulatory



Public Health



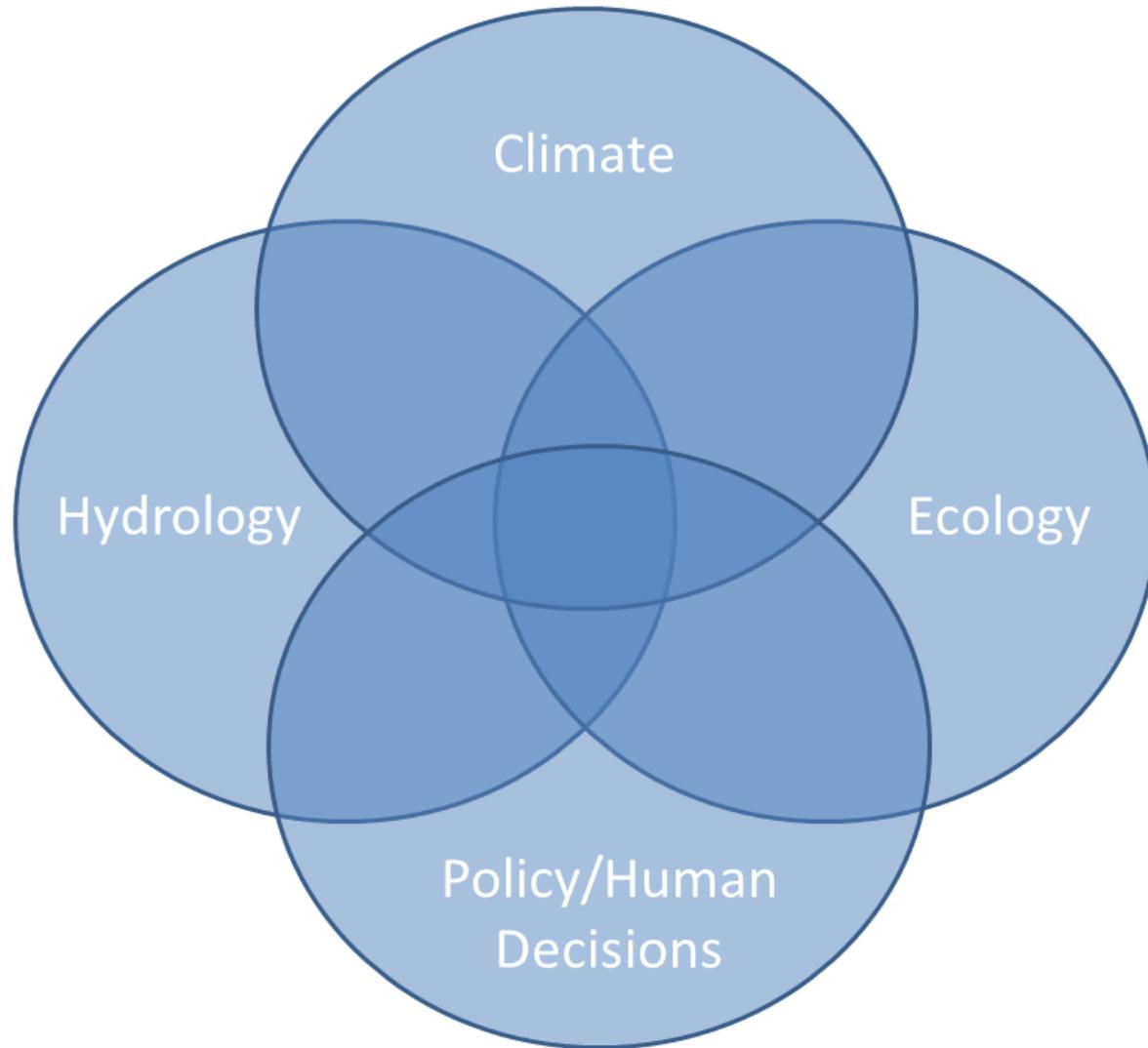
Environmental Protection



Social Equity

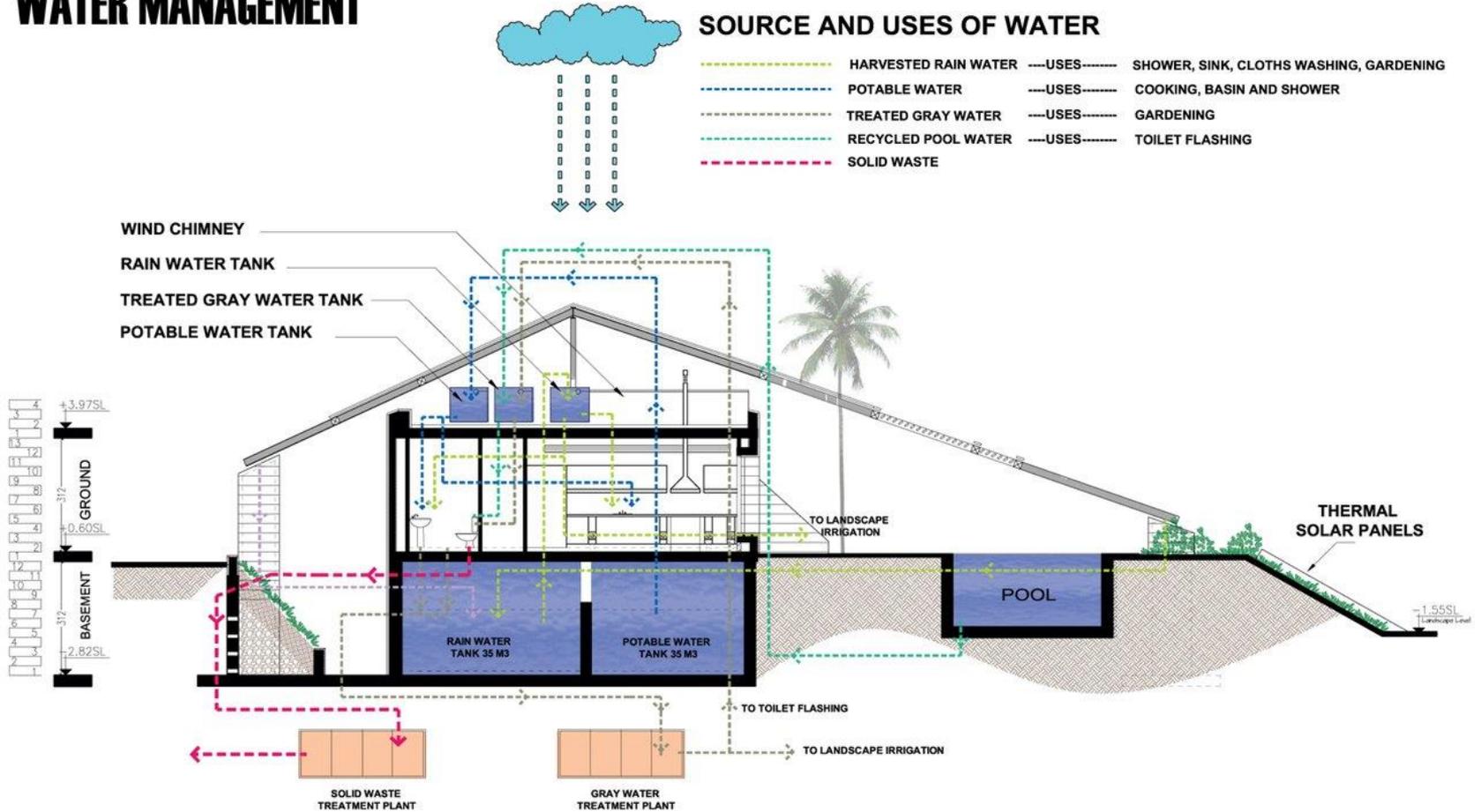


Sustainability and Resiliency



Management and Operations

WATER MANAGEMENT



Economics



WATER	ENERGY
Water is largely local. Expensive to transport.	Energy is mobile. Transmitted long distances: wire, pipeline, shipping.
Water is used for drinking and washing. Public health and safety.	Energy is not handled or ingested.
Water is essential for life, only second to air. A human right.	Energy is often a basic service provision.
Public Water Utilities provide for 85% of customers.	Private Electrical Utilities provide for 75% of customers.
Excess water cannot flow back into the centralized system.	Excess energy can flow back into the centralized grid.

Wrap-up

- Do completely separate independent decentralized systems make sense in Seattle?
- Are there ways these systems can be integrated and complementary with the larger system?
- Are there systems that are not needed or ones that interfere with the overall system?
- What should we do / What should we not do?

Role for CACs

- Provide rate-payer lens/perspective.
- Receive ongoing progress updates.
- Follow-up with CACs at the conclusion of the focus group process for additional input.
- Present findings of the GAP action report.