

# Building Back Innovative: Reimagining Infrastructure in a Circular Economy

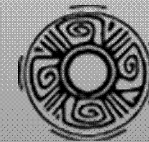
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IACC 2022 – S19

OCTOBER 19, 2022



Washington State  
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# Goals for today

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1. Discuss the circular economy and its impact within WA state
2. Clarify the benefits of resilient energy systems
3. Share results from the PWB Innovative Infrastructure Pilot Study
4. Q&A, group discussion: *How is this impacting you?*

# Building a Circular Economy

Updates Impacting Washington State

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OCTOBER 2022



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# What is the Circular Economy?

A circular economy reduces material use, redesigns materials to be less resource intensive, and recaptures “waste” as a resource to manufacture new materials and products.\*

\*US EPA – National Recycling Strategy:  
[What is a Circular Economy?](#)

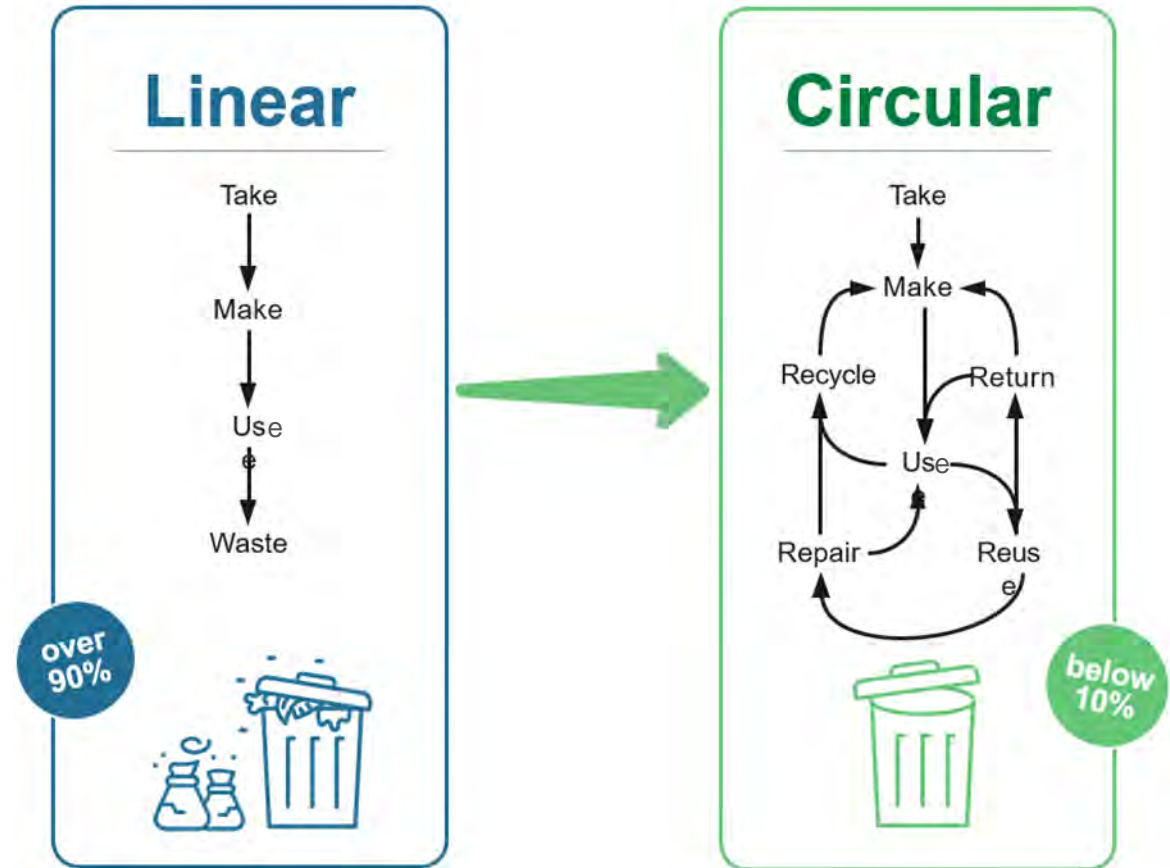


Image credit: [NextCycle WA](#)

# Why...?

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Enhancing economic development **to benefit businesses, society and the environment.**

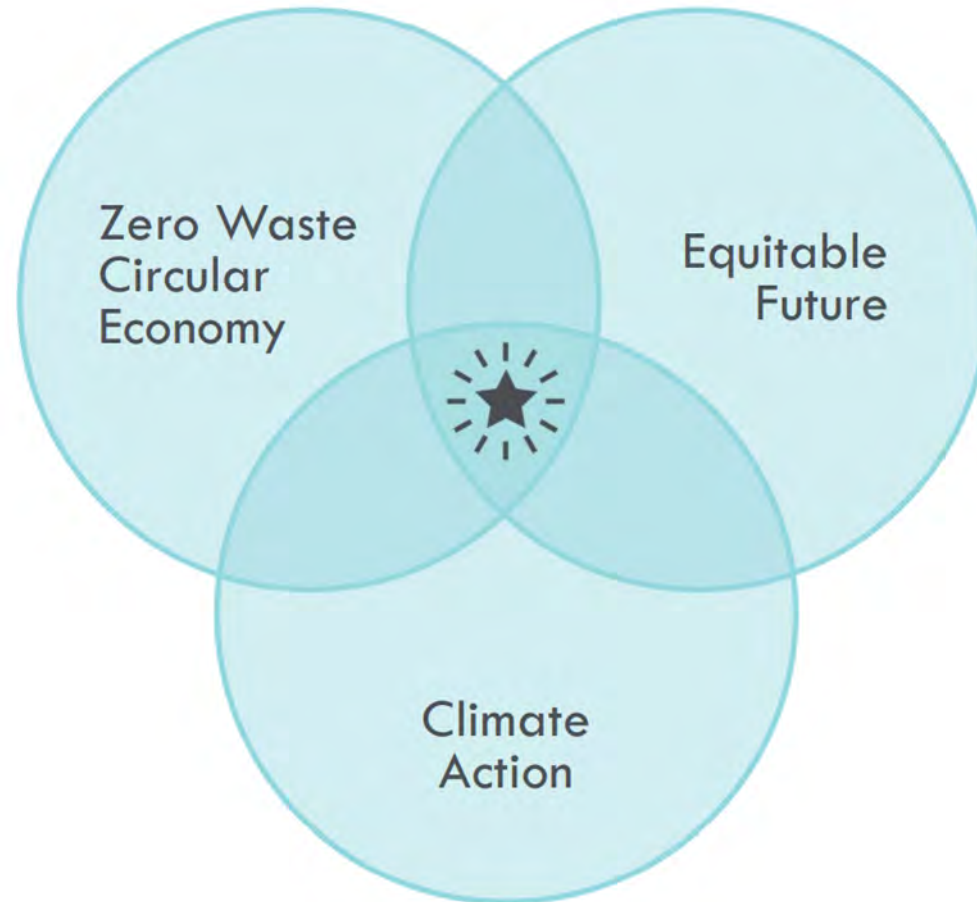


Image credit: [NextCycle WA](#)

# An emerging 'toolbox'

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New programs (and those underway).

## Policy changes

- Legislation – *Consumer and industrial waste*
- Municipalities – *China's 'National Sword'*

## Business

- Innovation – *Solutions from necessity*

## Public

- Demand increasing – *Plastic pollution*



# Recycling Development Center (RDC)

Strengthening recycling markets and processing.

RDC in action:

- **NextCycle Washington** – business accelerator and grant program.
- **Recycling studies** – technologies and the potential for regional recycling related activities.
- **Pilot projects** – material reuse, wood recovery and glass diversion.
- **Market research** – paper, glass, and plastic and economic impact and equity assessment.
- **Business resources** – an annual innovation challenge and online materials marketplace.



# NextCycle Washington

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A circular economy innovation platform.

Business support, technical assistance, mentoring, networking and access to funding pathways **to help circular models grow and thrive.**



Application period **NOW**  
**OPEN** Sept. 21 – Nov. 16, 2022



Currently Underway

Image credit: [NextCycle WA](#)



# Industrial Symbiosis

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## Turning waste into value.

### Industrial Symbiosis in action:

- **Anaerobic digesters** – for renewable natural gas (RNG)
- **Biochar** – transforming ag and forest waste to renewable energy
- **Waste heat** – wastewater treatment, server farms, crypto, potentially food processing
- **Sustainable aviation fuel (SAF)** – from forest and ag biomass, or *potentially* carbon dioxide



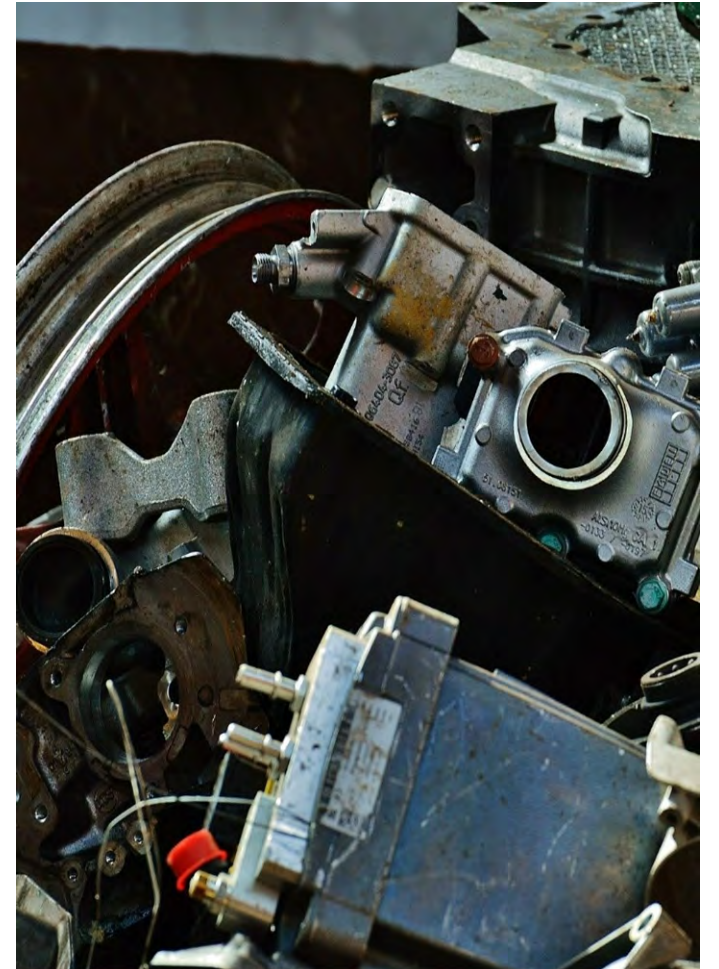
Image credit: [Department of Energy](#)

# Washington Materials Marketplace

Clearinghouse for waste and used materials.

Materials Marketplace connecting:

- **Manufacturers** – finding new solutions for challenging waste and by-product materials
- **Recyclers** – finding new customers and new buyers
- **Entrepreneurs** – finding suitable materials for innovative new reuse and recycling businesses



# More cool stuff

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## Washington Zero Waste Goals:

- 70% recycling rate (King County)
- 75% reduction in organic waste disposal (HB 1799)

## Circular Economy, Decision Package:

- Industrial Symbiosis expansion
- Circular business accelerator
- Regional circularity hubs



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# Energy Resilience

Keeping the lights on & supply going

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Elizabeth King, CEM

ENERGY RESILIENCE & EMERGENCY MANAGEMENT DIRECTOR

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# Energy Resilience & Emergency Management Office

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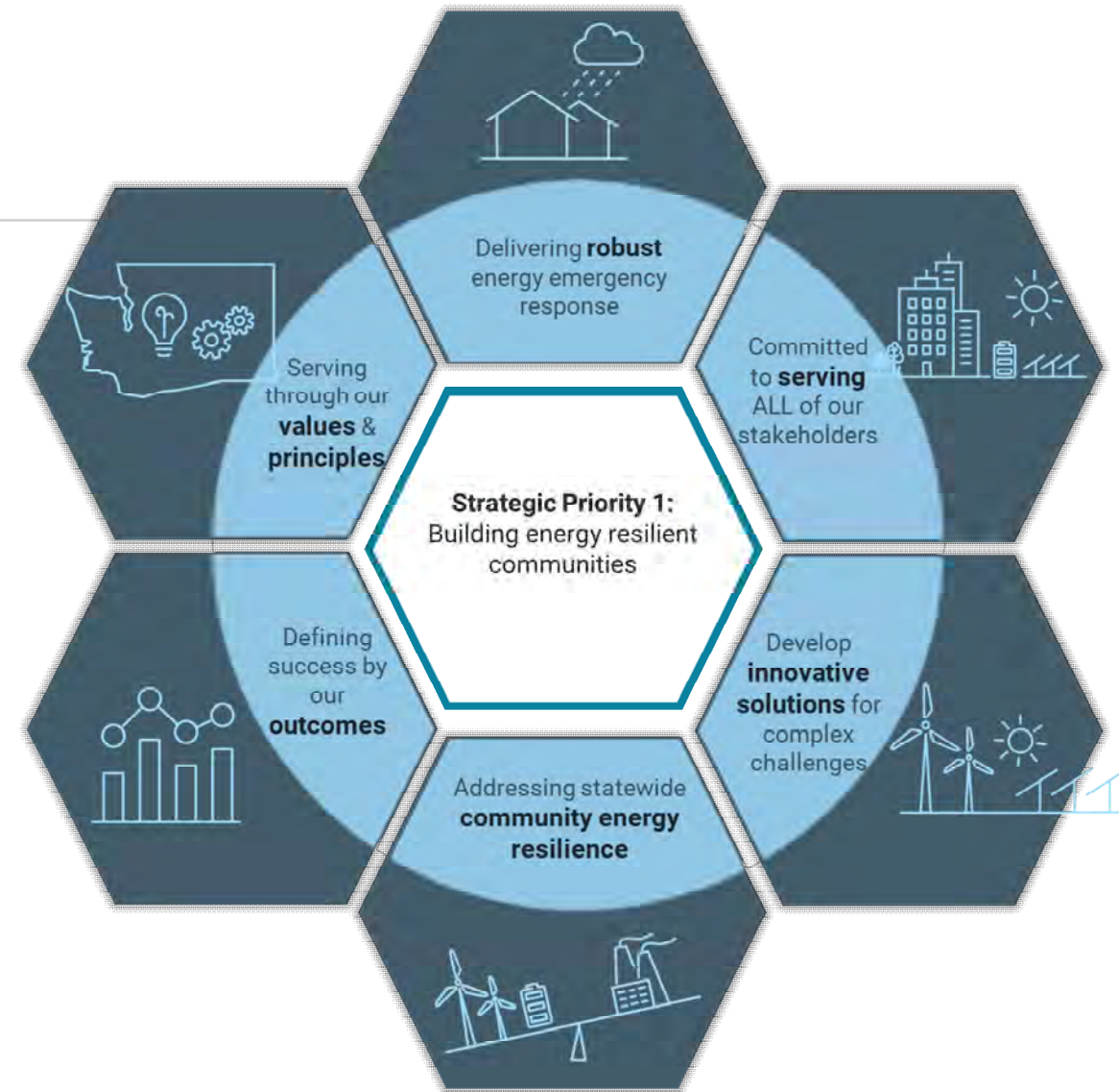
## Mission

We are committed to delivering comprehensive and sustainable emergency management, resilience development, cybersecurity services for the energy sector and residents of Washington State.

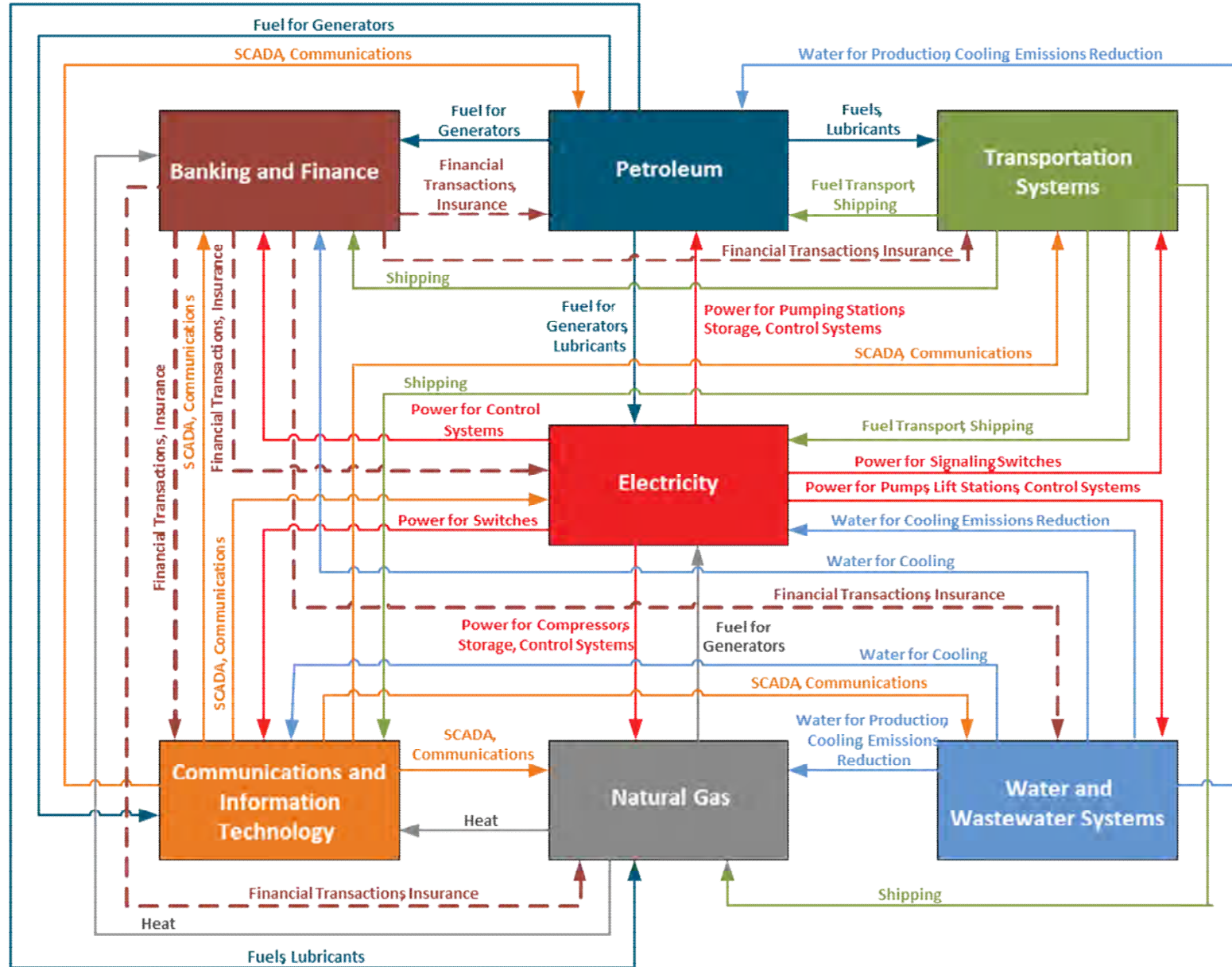


# Resilience

*“The ability of communities to positively adapt to challenging conditions and achieve a high quality of life, including, enduring cultural networks, economic vitality, durable infrastructure systems, and sustainable management of resources for present and future generations.”*

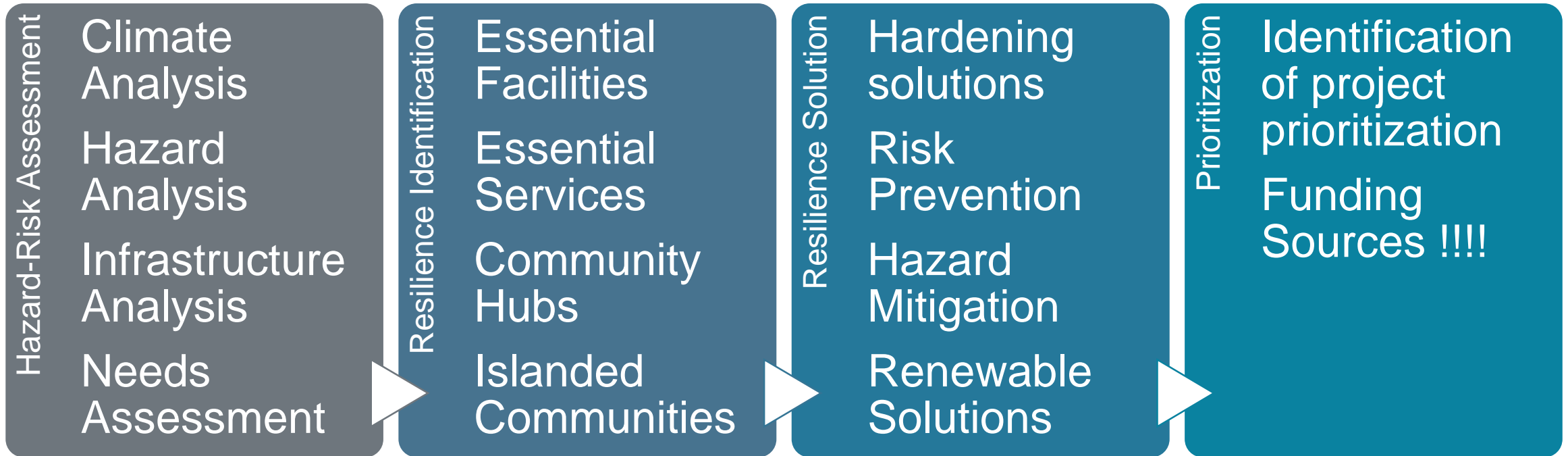


# Benefits of Energy Resilient Systems



# Integrated Resilience Planning

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“Strengthening Washington: A Community Resilience Initiative”



# Solar plus Storage for Resilient Communities

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- **What:** Solar and battery storage deployment
  - Planning and predevelopment
  - Installation
- **Why:** powering critical needs during outages
- **When:**
  - Application open this winter
  - Funds available July 1, 2023
  - + direct assistance this year
- **Where:** Community buildings serving critical needs
  - K-12 schools
  - Community colleges
  - Community centers
  - Recreation centers
  - Libraries
  - Tribal buildings
  - Government buildings
  - Other publicly owned infrastructure



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# PWB Innovative Infrastructure Pilot Study

Maria Jawad, PWB Policy Analyst

# The Public Works Board's Purpose

## THE MISSION

To empower Washington communities to build and maintain sustainable infrastructure

## THE TASK

Since 1985 - To be a reliable and sustainable infrastructure financing resource for local governments

## THE LEGISLATION

Authorized under RCW 43.155, the Public Works Board has retained the enduring support of cities, counties, and realtors since 1985

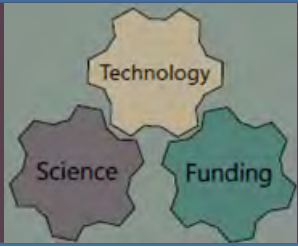
# Public Works Board Advantage

- **Easy** to **access** and **administer** funding that helps communities build projects that meet their unique needs
- Designed to meet the needs of WA communities **regardless of size**
- **Affordable** rates and terms
- Able to **fund multiple infrastructure systems** within a single project and funding source



# PWB Innovative Infrastructure Study 2022 Capital Budget Proviso

- Understand **barriers** to utilizing innovative systems and technologies
- Develop **program design** that marries science, technology and funding
- **Pilot** integrated, holistic solutions that are **scalable** for communities
- Leverage PWB's **flexible funding structure** to fund multi-beneficial projects



# Examples of Innovative Infrastructure

## Conserve Water and Energy

- Water reuse for irrigation and other non-potable uses

## Reduce Greenhouse Gas Emissions

- Solar panels on public works facilities, irrigation ditches or reservoirs

## Reduce Pollution and Waste

- Biogas production at wastewater treatment facilities
- Decentralized treatment processes to replace septic systems or treat stormwater
- Sustainable stormwater treatment, including structural soils with trees to control runoff

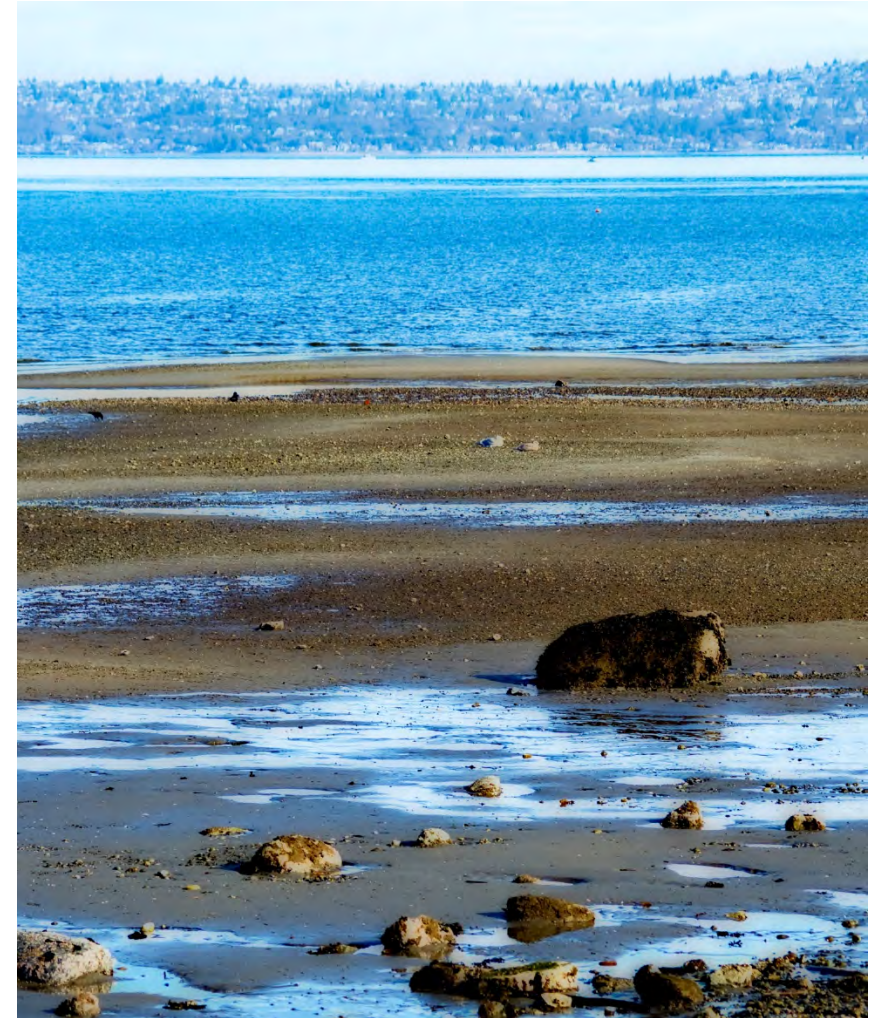
## Achieve Multiple Benefits

- Micro-turbines in water or wastewater systems
- Natural green infrastructure such as wetlands and swales that reduce nutrient load
- Artificial Intelligence (AI) and digital twin modeling

# Kitsap Public Utility District (KPUD)

## Small membrane bioreactor (MBR) wastewater treatment facility

- Do the drain fields work?
- Is there a reduction of nitrogen in the surrounding Puget Sound?
- Does this work outside an Urban Growth Area (UGA)?



# City of Pasco

## Process Water Reuse Facility

- Integrated energy generation
  - Anaerobic digester
- Use of waste products
  - Biological nitrogen removal using algae
- Multiple partnerships
  - Public-private partnership
  - Value planning
  - State investments





# I-5 Rose Quarter

## Transportation Improvement Project, Portland, OR

- Equity and environmental justice actions
  - Equity Advisory Group
  - Capacity building for disadvantaged business enterprises
  - Apprenticeship growth opportunities



# Discussion

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What are your risks and hazards?

What do you reimagine your community's infrastructure to look like?

How can we work together?



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# Resources

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- [Recycling Development Center - Washington State Department of Ecology](#)
- [NextCycle Washington](#)
- [Industrial Symbiosis - Washington State Department of Commerce](#)
- [Washington Materials Marketplace](#)
- [2022 Organics Management Law - Washington State Department of Ecology](#)
- [Building Infrastructure, Technical Assistance – Washington State Public Works Board](#)
- [Energy Emergency Management – Washington State Department of Commerce](#)
- [Solar plus Storage for Resilient Communities – Washington State Department of Commerce](#)



# Contacts

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# Thank you!

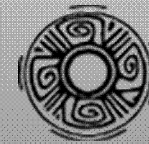
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