

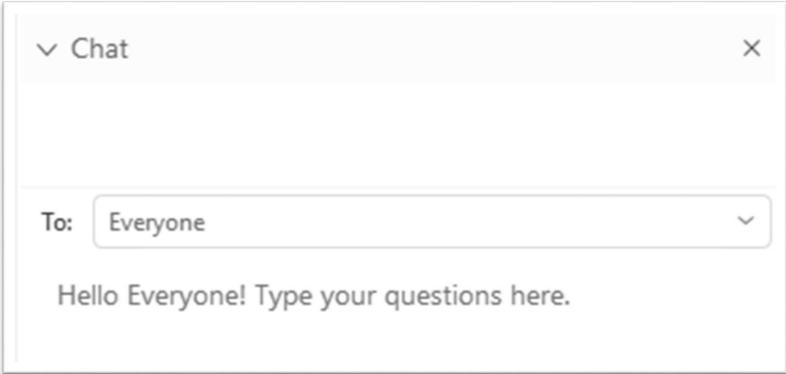


Recycling Development Center Advisory Board Meeting

October 13, 2021 | 9am – 12pm (Pacific time)

Participating in this meeting:

Anyone may use the chat box to ask questions.



Board members and presenters may unmute themselves.



We will have opportunities for public comments throughout the meeting.

*Note: we are **not** recording this meeting, meeting notes will be posted on the Advisory Board website.*

Agenda

9:10 am Board roundtable, agency updates

9:30 am One time grant updates

10:30 am King County Re+ discussion

11:00 am Glass discussion

11:55 am Wrap-up





Center updates

Board member roundtable

Ecology update

Commerce update

Attendee comments



Board roundtable:

Corinne Drennan



Karl Englund



Kyla Fisher



Deb Geiger



Margo Gillaspy



Nina Goodrich



Sego Jackson



Allen Langdon



Scott Morgan



Mike Range



Derek Ruckman



Tim Shestek



Jay Simmons



Heather Trim



Agency updates:

Kara Steward

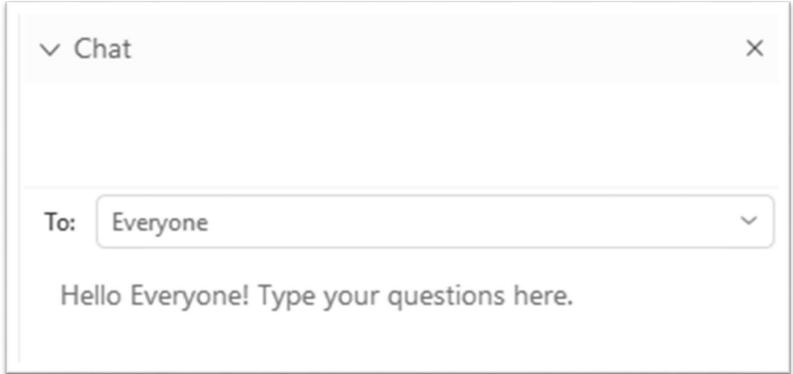


Rob Duff



Attendee comments:

Anyone may use the chat box to ask questions.



Board members may unmute themselves.



We will read comments from the chat box or unmute attendees for brief comments.

One-time grant projects

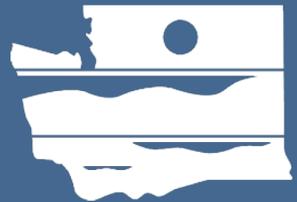


https://www.ezview.wa.gov/Portals/_1962/Documents/rdcab/2021-08-CenterGrants.pdf



	Organization	Contact	Proposal	Amount
	Chelan County - Public Works Department	Brenda Blanchfield	Purchased an Andela glass crusher/ pulverizer machine.	\$50,000
8/11	Jefferson County - Public Works / Solid Waste	Al Cairns	Market analysis of clean wood waste in Jefferson County.	\$4,361
8/11	King County - Solid Waste Division	Andy Smith	Infrastructure analysis and database and map of current facilities in WA, detailing the materials and capacity of each facility.	\$50,000
8/11	King County - Solid Waste Division	Andy Smith	WA Material Concierge : Secondary Material Market Business Assistance and Manufacturing Support.	\$50,000
6/9	Kittitas County - Solid Waste	Patti Stacey	Feasibility study and preliminary action plan, focused on recycling market development.	\$32,382
8/11	Leavenworth	Carl Florea	Researched operations for pickup and transport of commercial organic waste.	\$50,000
8/11	Lopez Island - Solid Waste Disposal District	Nikyta Palmisani	Begin the " ReMakery ", a Maker Space on Lopez Island that turns recyclable and reusable materials diverted from the recycling plaza and free store into usable and sellable goods.	\$50,000
8/11	Port of Port Townsend	Eron Berg	Feasibility study on the market for plastics in Jefferson County.	\$49,618
8/11	Seattle - Economic Development	Stephanie Gowing	Completed a Circular innovation challenge where applicants proposed product ideas & business plans for using regional recycled materials within a circular economy framework.	\$35,000
10/13	Seattle - Public Utilities Department	Katie Kennedy	Wood recycling/reuse, deconstruction, and salvage projects .	\$50,000
10/13	Tacoma - Environmental Services Department	Beth Jarot	Created a Washington materials marketplace .	\$25,000
	Washington State University*	Karl Englund	Plastics recycling market development analysis of technology and economic feasibility to determine opportunities and gaps.	\$108,913*
10/13	Washington State University - energy extension*	Todd Currier	Solar photovoltaic module retirement study .	\$29,163*
Total Center investment in projects				\$ 584,437

* WSU studies included Center funding from Commerce



Center grants

Katie Kennedy – Seattle

Todd Carrier – Washington State University

Beth Jarot – Tacoma





Wood recycling

Katie Kennedy, Seattle Public Utilities

- Wood Reuse and Recycling in King County
Grant amount \$50,000



Center-funded Grant on Wood Reuse & Recycling

Wednesday, October 13, 2021 |
Recycling Development Center Advisory Board Meeting



City of Seattle

Seattle Public Utilities | Solid Waste Line of Business



King County



Powered by the Solid Waste Division

Overview

- Partnership between Seattle Public Utilities and King County Solid Waste
- \$50,000 grant funding was split evenly between the 3 top scoring proposals: ReUse Consulting, EarthWise, and Rainier/Sankofa
- Each company pursued their proposed strategy to build up local salvaged lumber markets

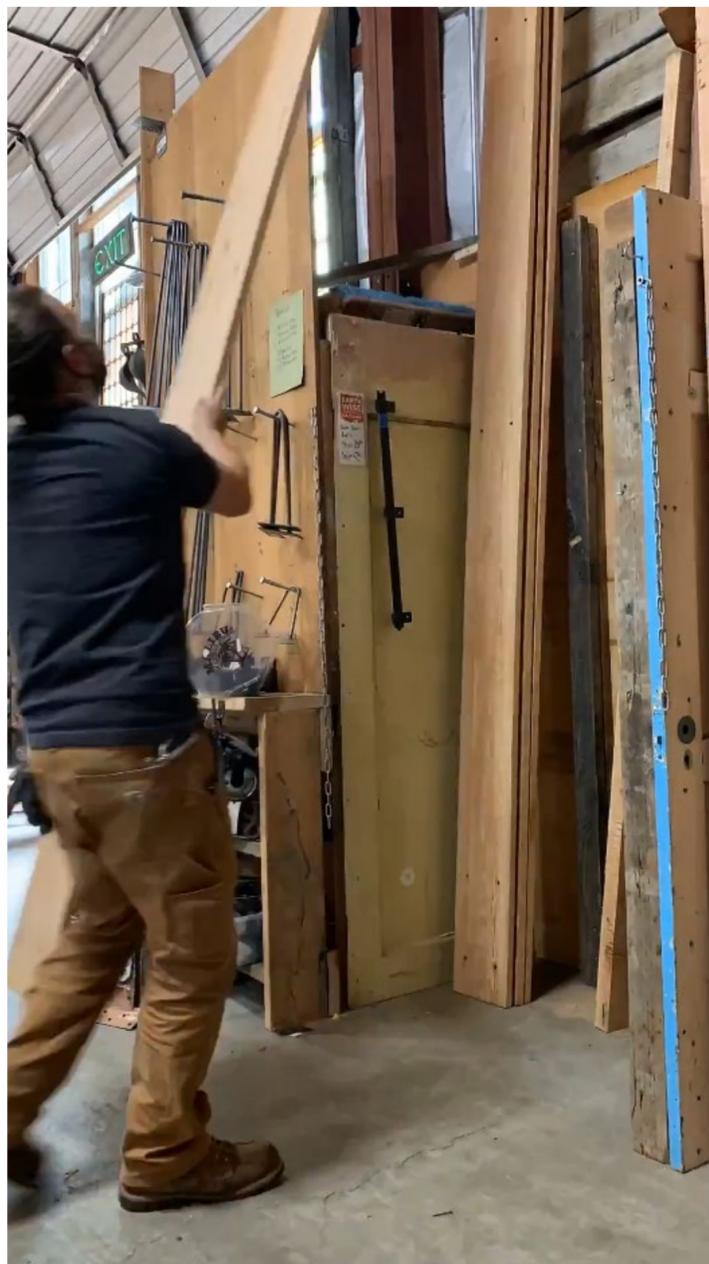




RE-USE Consulting



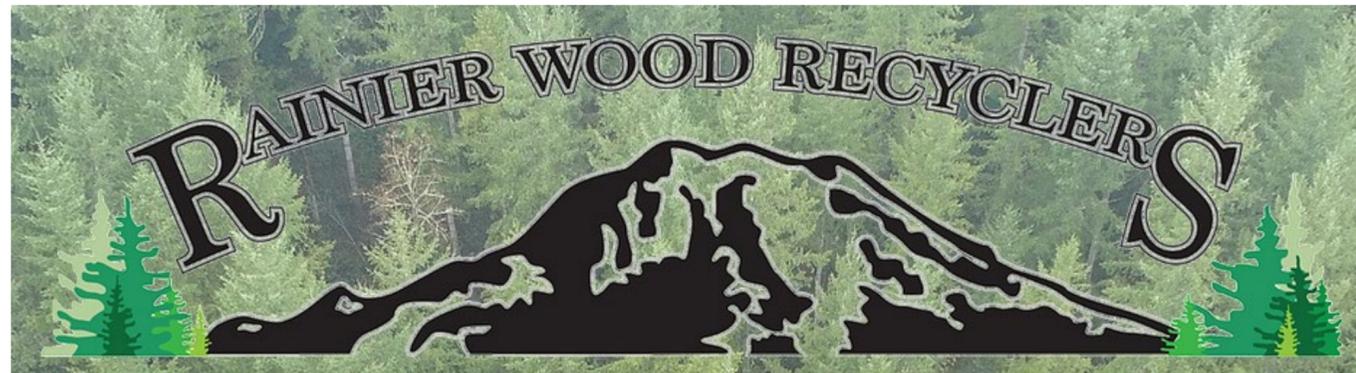




**EARTH
WISE
ARCHITECTURAL
SALVAGE**







SANKOFA LUMBER
Wood With a Future



Outcomes

Reuse Consulting

- House was successfully panelized
- 129,008 lbs. diverted from landfill, including 70,173 lbs. of wood diverted
- Crews from two different companies were trained

EarthWise

- 600 board feet of pew seats resized and sold
- 300 board feet of bleacher boards planed to remove paint and residue

Rainier/Sankofa

- Training of staff
- Establishment of on-site storage and system for shipping materials
- Recovery of 4 tons of 2x4s and 50 sheets of plywood
- Recovery of 150 pallets (7,000 lbs) per week which were sold for reuse



Thank you!

Solar panel recycling

Todd Currier, Washington State University

- Solar Photovoltaic Module Retirement in Washington State

Grant amount \$29,163





Solar End of Life Study Phase 1

Todd Carrier, Director
WSU Energy Program
October 13, 2021

The WSU Energy Program

Who we are:

- National experts on many energy technologies
- Provide energy efficiency program management, training and technical services
- Staff includes energy specialists, engineers, software developers, and program managers
- Self supporting from grants, contracts, fee for service work and state project funds

What we do:

- Perform near to market R&D, training and knowledge transfer, technical assistance and analysis
- Also implement programs or program components for the state

Our Key Activity Areas

- Building efficiency
 - Building energy systems research
 - Energy Star Homes Program Support
 - Energy code training and support
 - Ventilation and IAQ research
 - Manufactured housing research and performance improvement
 - Community Energy Efficiency Program management
- Industrial and agricultural efficiency
 - Efficiency systems training
 - Facility and system assessments
 - Northwest CHP Technical Assistance Partnership
 - Analytical software tools development
- Renewable energy
 - State Renewable Energy Incentive Program management
 - State Bioenergy/biofuels team
 - Green Transportation education and outreach
- Workforce development
 - Workforce skills gap analysis
 - Skill standards development
- Facility support
 - Plant Operations Consortium
 - Energy and Facilities Conference
 - Resource conservation manager support
- Technology tracking and evaluation
 - BPA's Emerging Energy Efficiency Technologies program (E3T Northwest)
 - Regional Emerging Technologies Advisory Committee

Background

- The State established its first incentive program for solar systems in 2005
 - Solar grew under the program from handfuls of systems per year to over 3000 per year
- That program was replaced in 2017 by a new incentive program
 - The new program supported about the same amount of solar capacity in two years as the previous program had in 12 years
 - The legislation that created the replacement program also included a PV Module Stewardship and Takeback Program

Product Stewardship Program

- Required module manufacturers to submit stewardship plans to Ecology in order to continue selling in the state
- Focused on residential-scale system modules, then expanded by subsequent legislation to cover the modules of larger systems
- Implementation has been delayed while the program design is revisited due to:
 - Lack of manufacturer participation
 - Lack of recycling infrastructure in U.S. for solar modules
 - Coverage gaps – modules not covered by the rule/plans

Study Purpose

Get a handle on the scope of the recycling opportunity that can point to a path forward that:

- Results in a high level of recycling or reuse of high-value, scarce materials
- Results in high level of recycling or reuse of the bulk of the material that makes up a module
- Covers all modules from the past and the future
- Recognizes that module composition and value will continue to evolve
- Can be supported financially

Study Phase 1 Focus

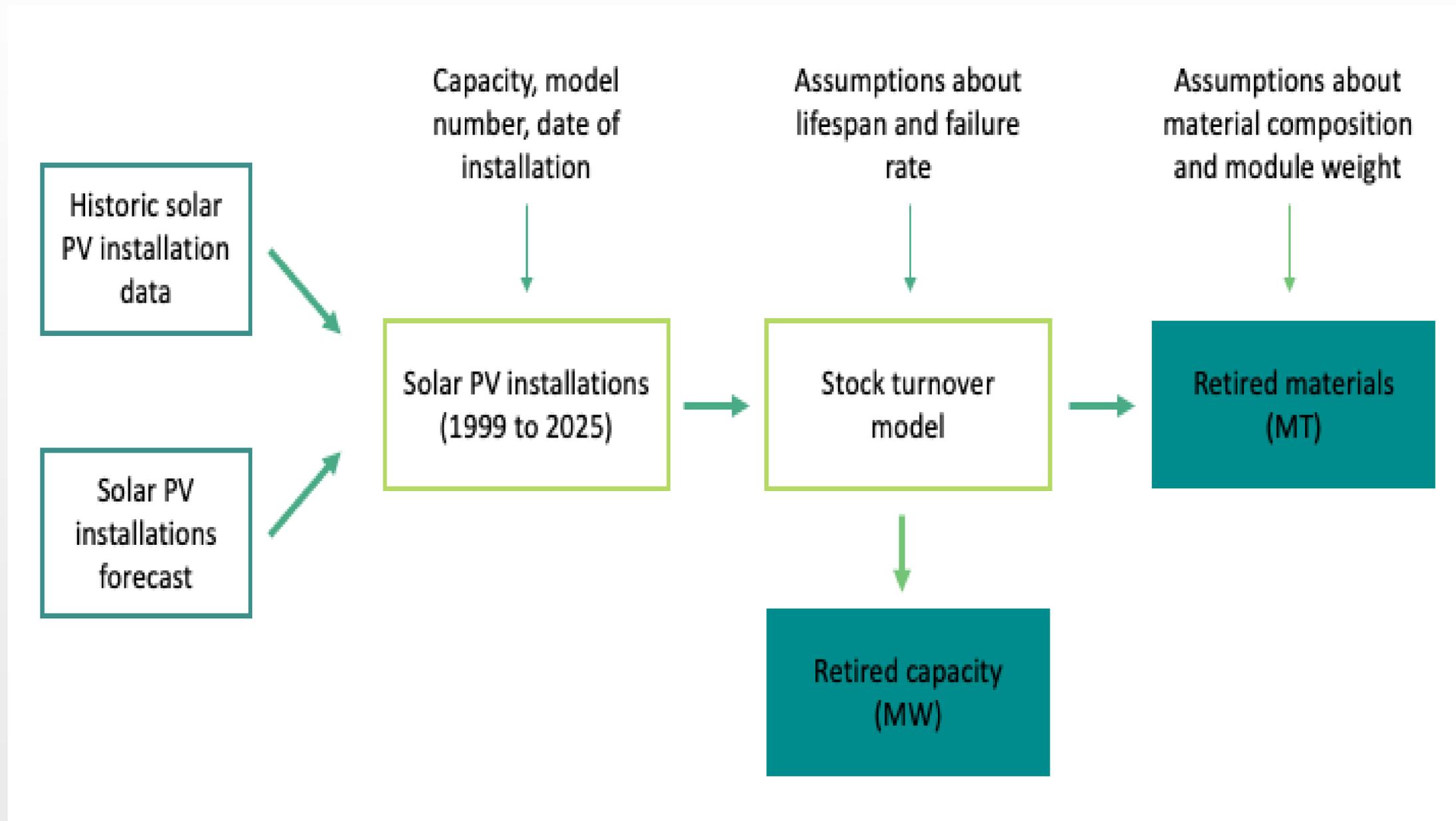
Characterize the problem/opportunity

- Module materials
- Expected retirements by year
- Reuse versus recycling
- Recycling infrastructure
- Other state and national models

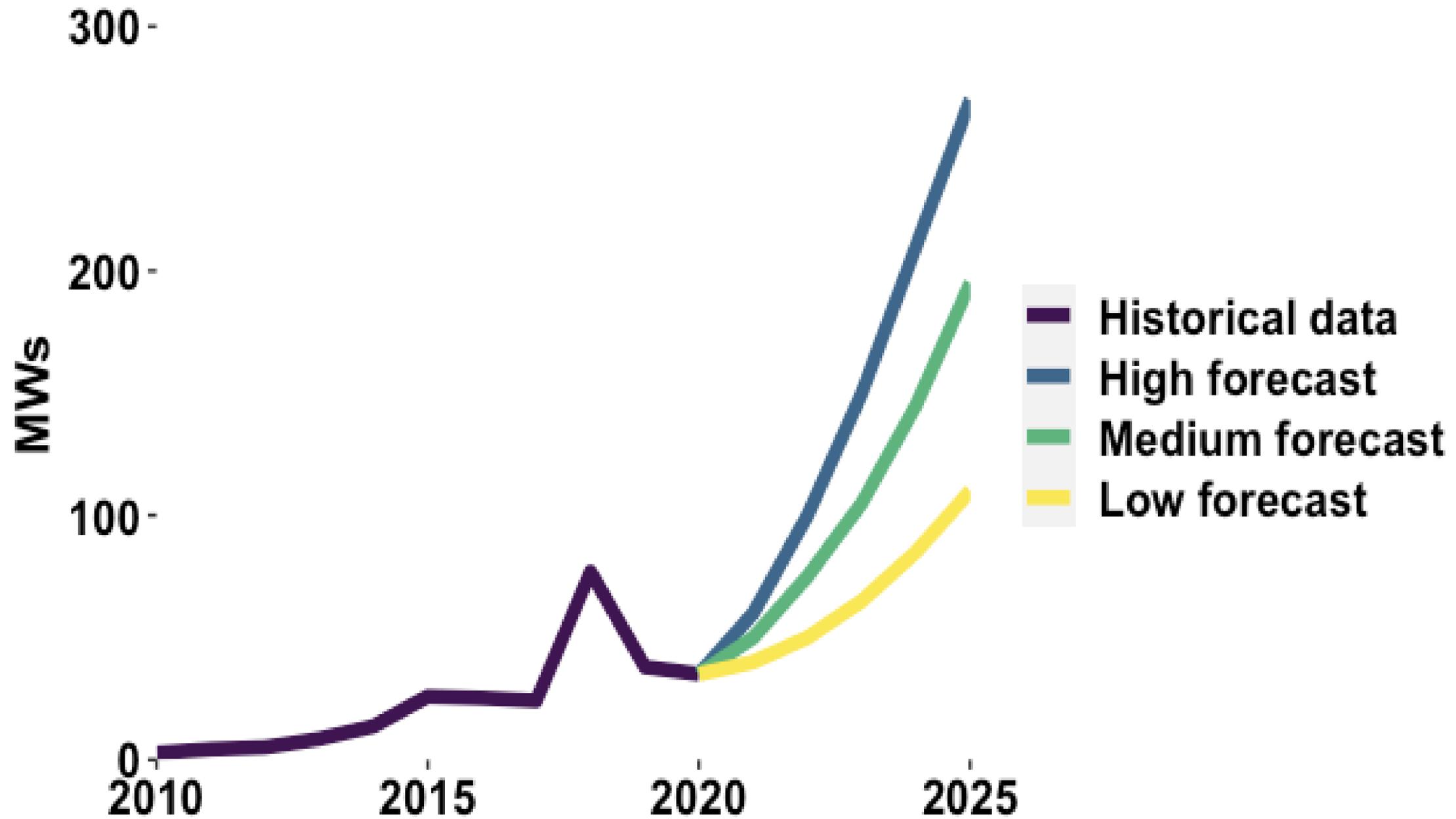
Recycling Policies and Marketplace

- The European Union has a policy requiring producers to collect and recycle 85% of modules
- The U.S. has no national directive or policy
- California classifies modules as “universal waste,” with no recycling obligation
- North Carolina and New Jersey have created commissions to study options
- There are two companies in the U.S. that specialize in recycling modules
- Washington has approximately .25% of the installed PV capacity in the U.S.

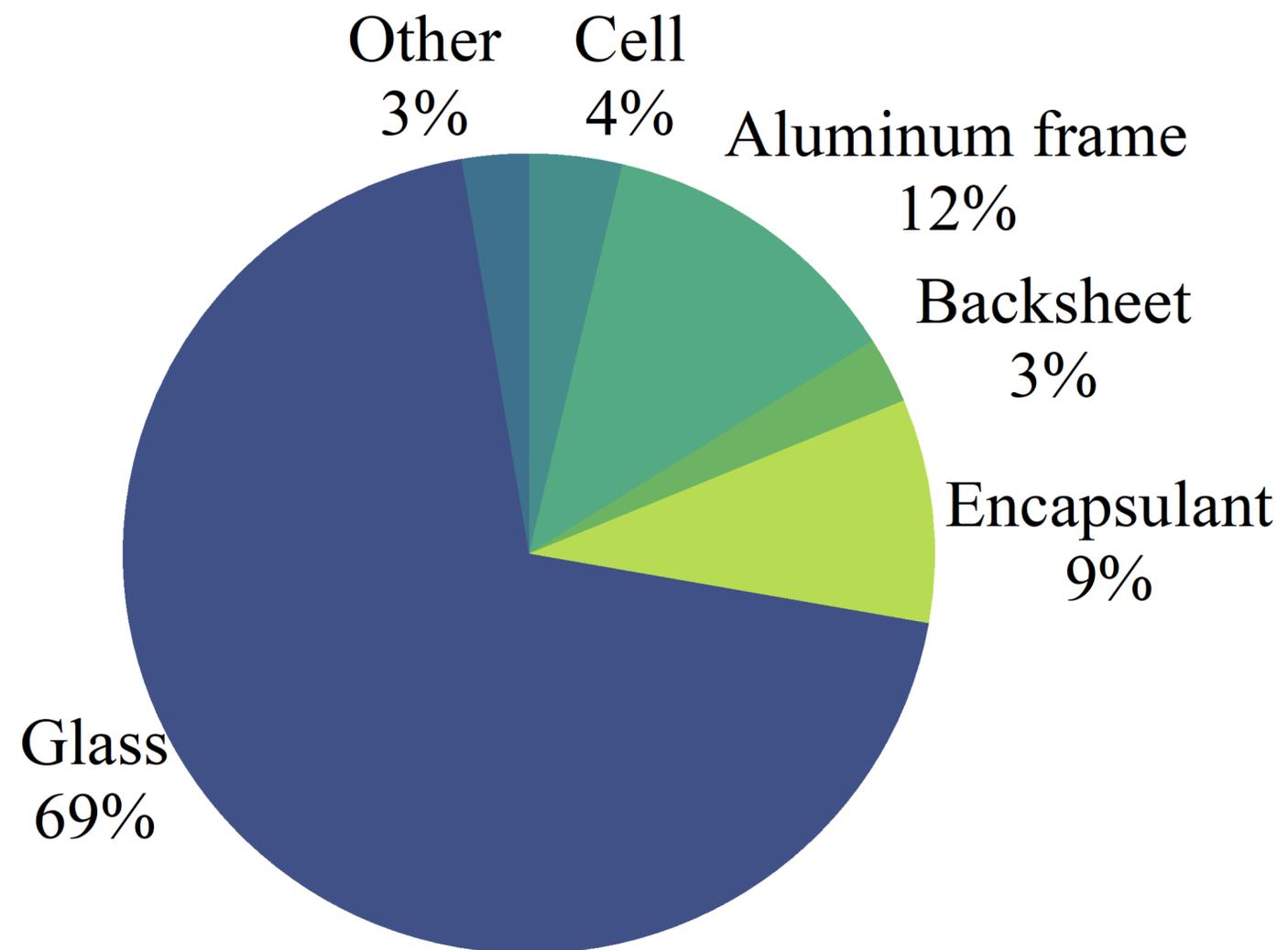
Retirement Modeling Approach



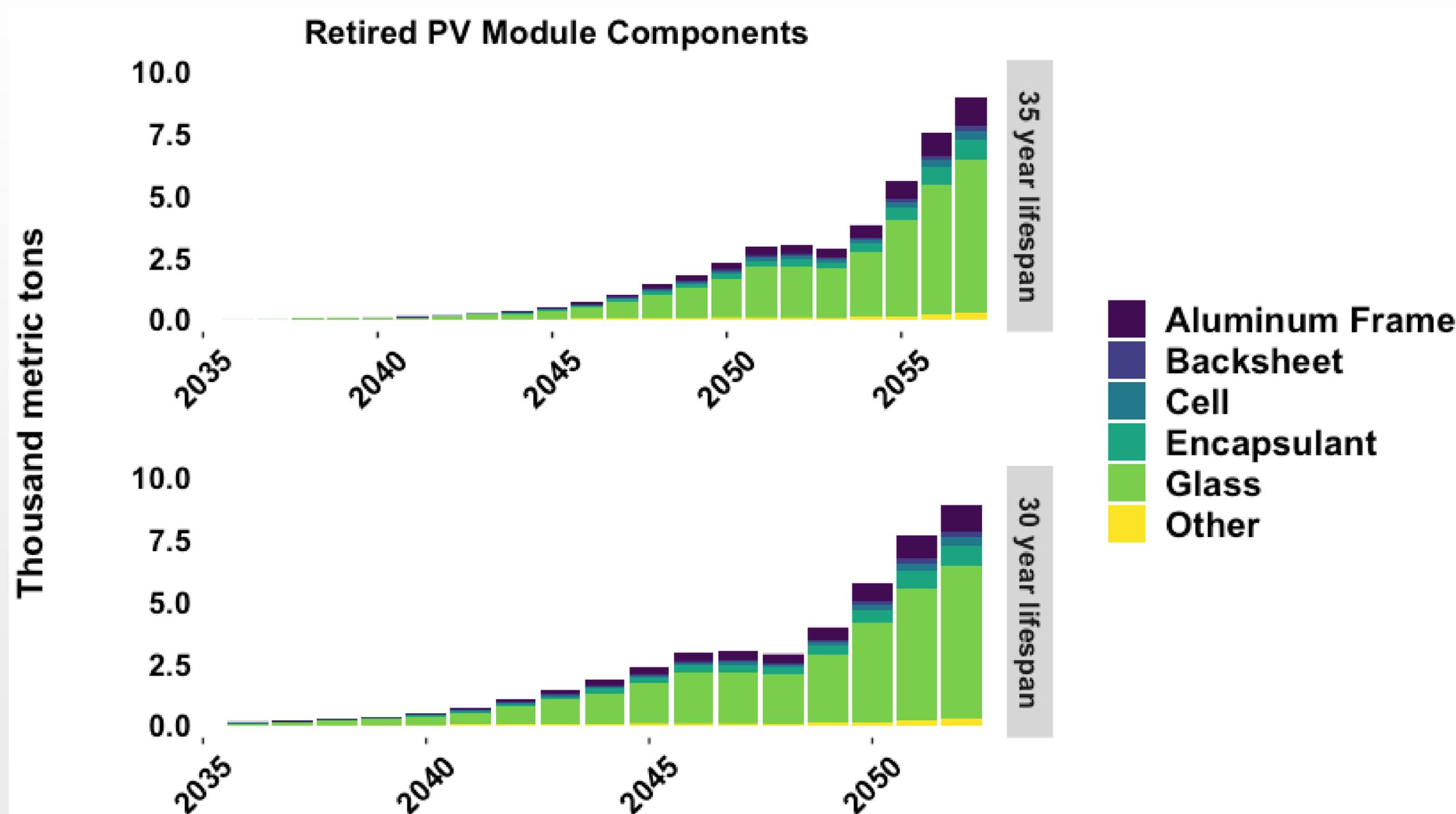
Solar PV Module Installations Forecast



Monocrystalline Module composition



“Other” includes silver, tin, lead and copper



Metric tons of retired solar monocrystalline PV modules in Washington sold between 1999 and 2025 - medium sales scenario

What Did We Learn From Phase 1?

We learned a lot, but particularly:

- Most of what can be recycled is glass and metal, with a bit of silicon recoverable, as well
- We do not have a large solar waste problem yet, so it is a good time to put a well thought-out system in place
- The current program model is not compatible with our solar growth vision – we are too small a market to impose unique rules on international manufacturers
- About half of the modules retiring when we reach one thousand metric tons of waste are not covered
- No national solution appears to be coming, and large U.S. markets are currently not leading through policy

What is Next?

- Perform location analysis of retirements
- Develop/refine understanding of the solar industry participants and value chain in Washington
- Dive deeper into PV recycling to explore costs, capacities and markets
- Dive deeper into other programs and models to understand costs, benefits, risks and operational approaches
- Develop options that meet recycling goals of current program, are financially viable and do not undermine industry growth
- Expand stakeholder engagement, working toward a solution to bring back to the Legislature



Energy Program

WASHINGTON STATE UNIVERSITY

www.energy.wsu.edu



Materials marketplace

Beth Jarot, Tacoma Environmental Services Department

Erin Adams, Seattle Good Business Network

Nico Onoda-McGuire, Seattle Good Business Network

- Washington Materials Marketplace
Grant amount \$25,000



WASHINGTON MATERIALS MARKETPLACE

Beth Jarot, Green Building Specialist
City of Tacoma

Erin Adams, Seattle Good Business Network

Nico Onoda-McGuire, Seattle Good
Business Network

Collaboration between:
City of Tacoma
Seattle Good Business Network
US Business Council for Sustainable
Development



OVERVIEW

City of Tacoma

- Solid waste diversion
- GHG emission reduction
- Green economy strategy

Seattle Good Business Network

- Regional local economic development via micro and scalable cluster strategies
- Community-led and interagency collaborative approach
- Circular economy beta testing with BIPOC- and women-owned micro enterprises

USBCSD and Rheaply merger - PATH TO SCALE

- **Idea (1992):** bring multiple industries together to find and implement By-product Synergy.
- **Action (1992-2015):** deploy regional projects to demonstrate the feasibility and benefits of industrial materials reuse, and propel reuse in the national dialogue. Develop better tools and strengthen the work processes.
- **Scale (present):** rapidly deploy multiple city, state, and national level reuse projects around the world. Enable the circular economy culture shift.

Rheaply

- Innovative approach to track inventory, buy, sell, trade assets through centering user experience
- A new category for resource management called Asset Exchange Manager (AxM)

Platform



Join the Circular Economy in Washington

The Washington Materials Marketplace connects businesses to develop and scale new reuse and recycling market opportunities.



manufacturers: find new solutions for challenging waste and by-product materials



recyclers: amplify the good work you're already doing, find new customers and new buyers



entrepreneurs: find suitable materials and innovate to build new reuse and recycling businesses

Talk to our Team

COT WEBPAGE

(7) Feed | LinkedIn x Virgin Pulse - Home x My Drive - Google Drive x For 10/13/21 Dept. of Ecology - x WMMDeptofEcologypresentatio: x Materials Marketplace - City of T x how to take screenshot on wind x + -

cityoftacoma.org/government/city_departments/environmentalservices/solid_waste/materials_marketplace

 **City of Tacoma**
WASHINGTON

RESIDENTS SERVICES GOVERNMENT BUSINESS VISITORS

Solid Waste
Call-2-Haul
Collection Schedule
Construction & Demolition Waste
Community Cleanup Program
Food/Yard Waste
Garbage
Hazardous Waste
Hours and Driving Directions
Materials Marketplace
Rates
Recycling
Setout Guidelines
Sustainable Material Management Plan
Waste Free 253


washington materials marketplace

» Government » City Departments and Offices » Environmental Services » Solid Waste » Materials [Print Friendly](#)

The Washington Materials Marketplace is a free online platform for businesses, organizations and entrepreneurs to sell or gift their leftover raw or by-product materials.

[Request an Account Today](#)

This platform aims to create a closed-loop, collaborative network where hard-to-recycle waste and by-products become another organization's raw materials. Such as:

   
Building Materials Shipping Materials Packaging Materials Equipment

Helping Washington organizations:

Contact
Beth Jarot
Resilient & Green Building Specialist
City of Tacoma
(253) 208-4351
[Email](#)

DASHBOARD

Materials Marketplace Platform Analytics

washington materials marketplace

Select a date range! Jun 15, 2021 - Oct 6, 2021

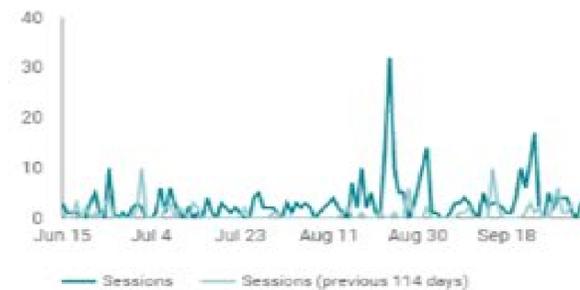
Washington Materials Marketplace Platform | Real-Time Analytics | Data From Google Analytics

Visitors	Sessions	Pageviews	Bounce Rate
178	349	1,123	55.3%
↑ 128.2%	↑ 271.3%	↑ 475.9%	↓ -11.9%

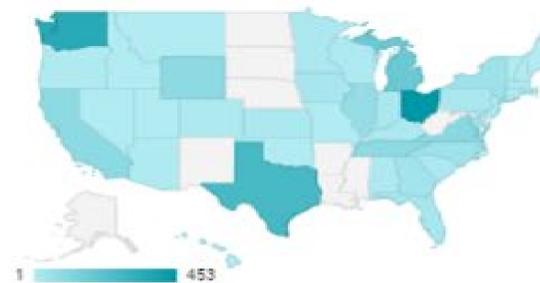
User Accounts	Listings Created/Updated	Messages Sent
48	9	27
↑ N/A	0	0

metrics generated by google analytics events

How are site sessions trending?



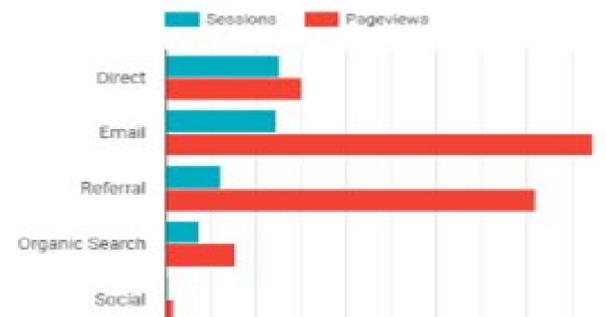
How does WA compare to other markets?



Region	Sessions	Pageviews
1. Ohio	453	
2. Washington	349	
3. Texas	271	
4. Michigan	182	
5. (not set)	106	

Which channels are driving engagement?

Goal: Engaged Users



What's Different?

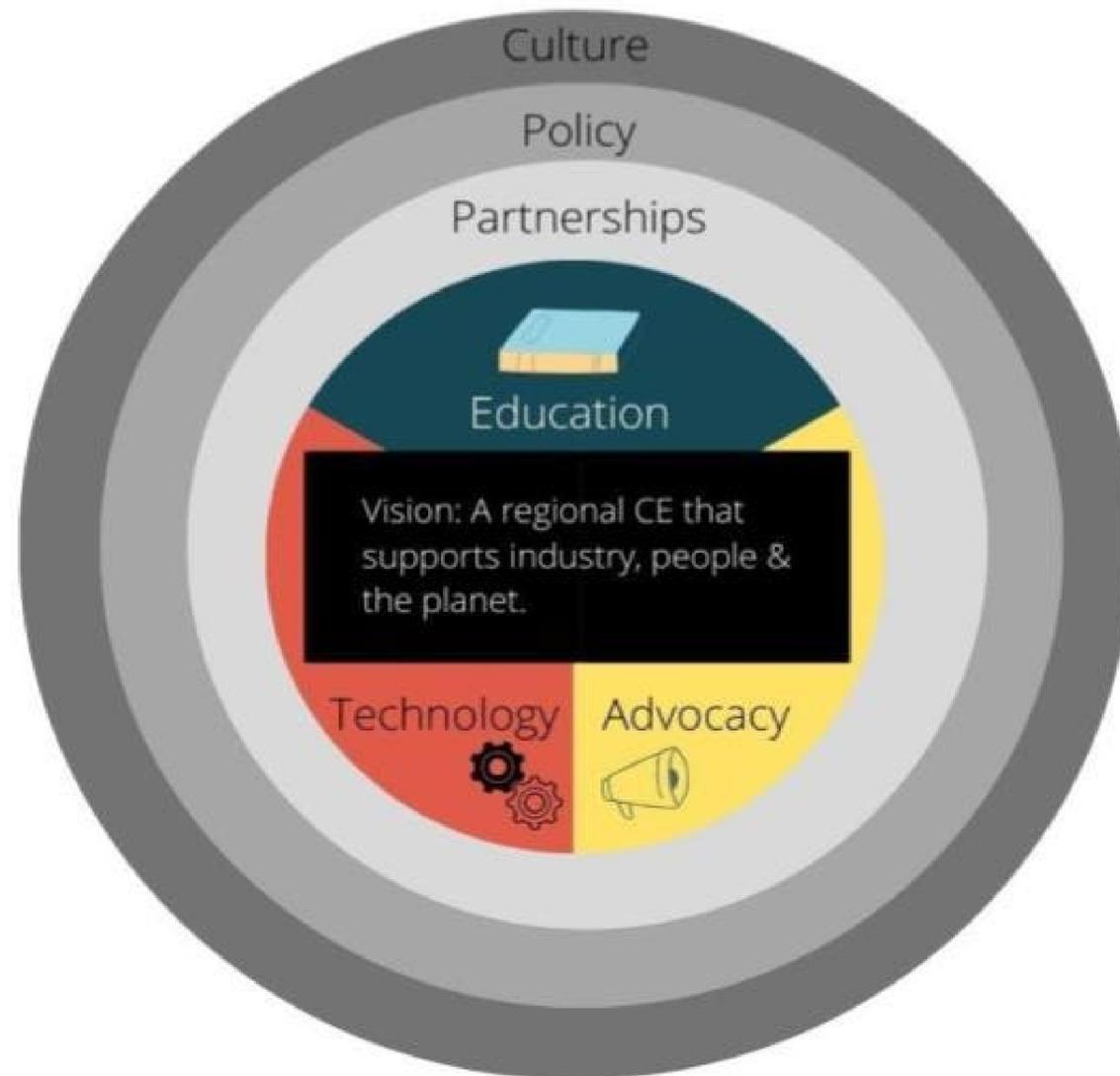


APPROACH

Not the end-all-be-all solution...

MARKETPLACE AS CATALYST FOR A REGIONAL CIRCULAR ECONOMY

Key Stakeholders and Initiatives Key



Paradigm shift in communities, schools, etc., and how we think, prioritize, and communicate about upstream, circular solutions.

Industrial Symbiosis Study and other policies that prioritize circular economy practices. Policymakers (e.g., SPU, ZWW, WEC, etc.)

Steering Committee, US BCSD, Circular Marketplace members, working groups on circular pilot projects, industry experts, local businesses. Existing CE partners.

Consistent and coordinated messaging shared with consumers, with youth and integrated in everyday social media, educational tools, work experiences, schools, etc.

Steering Committee members, participating marketplace members, and other circular economy practitioners work collectively to advocate for each other.

Circular Marketplace platform, material-flow tracking and mapping, etc.

BETA PLATFORM

- 2020 - Port of Seattle awards Seattle Good Business Network seed funding for a trial-based platform for small urban manufacturers
 - Baseline participants: our program [Seattle Made](#) that supports nearly 700 urban manufacturers
- Over the course of 9 months
 - Convened Steering Committee
 - Landscaped the gaps, needs, challenges, interests, and opportunities
 - Reached critical mass of 62 unique users
 - 34 listings, 8 transactions
- Key Findings
 - Facilitation is crucial
 - Capital to invest in circular business modelling
 - Consultation and ad-hoc technical support for assistance and technical and circular business model counseling
 - Active matchmaker for B2B material transactions of “waste” products for inputs of other end markets is key
 - Focused and tailored support for BIPOC-owned small businesses
 - Ecosystem of partners to advocate for and funnel users to create unified platform
 - Implementation of both, traditional and unique metric gathering that is open-source

TIMING/LEADERSHIP

Seattle, Tacoma, and other Washington-state manufacturers, industries, and municipal organizations have expressed a desire for resilient and sustainable material supply chains and a robust reuse economy. While over the years there have been a number of materials exchange efforts, some combination of inadequate facilitation, infrastructure, technology, supply, demand, or simply timing have undermined widespread adoption.

Lessons learned and a growing demand for circular economy initiatives in support of industrial symbiosis have generated renewed and even urgent interest in establishing a facilitated online materials marketplace, similar to those operating in other cities (e.g., [Austin Materials Marketplace](#), [Ohio Materials Marketplace](#), etc.).

PARTNERSHIPS

- Over 2,200 businesses and organizations are using the Materials Marketplace across North America, and have diverted over 5,300 tons of material to higher and better use as of June 2020.
- Seattle Good Business Network has over 1,200 business members regionally, 680 of these are urban manufacturers within Seattle city limits
- Past Steering Committee - Comprised of 14 public and private-sector stakeholders, and facilitated by Circular by Design. Including, but not limited to: Seattle Office of Economic Development, Port of Seattle, Skanska, King County, Seattle Public Utilities, Refugee Artisan Initiative, Metamorphic Gear, and others

Impact



GRANTS

- In August 2021, Seattle Good Business Network hosted our inaugural Circular Innovation Challenge that supported small businesses and entrepreneurs through a business pitch competition for best-manufactured product from waste-materials
 - On track to merge and expand programming with Zero Waste WA in 2022
- In September 2021, SGBN was awarded a small SPU Waste-Free Communities grant to carry out research for Materials Marketplace development and engagement of small businesses as well as expand our piloting of circular business design services to support BIPOC-owned businesses in advancing or starting transition to circular product design

ADVISORY BOARD

Through meaningful interagency collaboration, diversity, equity, and inclusion strategies, and relevant metrics and data-driven projects, we will actively work towards this list of goals

Advisory Board

- . Developing an Advisory Board of cross-industry stakeholders, industry leaders, and community partners to help inform, provide ad-hoc support to, and advocate for the Materials Marketplace.
- . Community Involvement via sector-specific panel discussions (C&D, textiles, food & beverage production (non-organics)
 - . First one: 11/16 or 17th (TBD)

HOW YOU CAN HELP

1. Help us make it easy for you - Tell us how you'd like to engage

Here - <https://forms.gle/EsXGEmdMWQyTzt8i7>

- a. Request an invite to the platform
- b. Schedule a 1:1 virtual walkthrough
- c. Sign up on your own
- d. Tell us who to invite
- e. Get invited to other relevant events, panels, workshops
- f. Sign up for newsletters

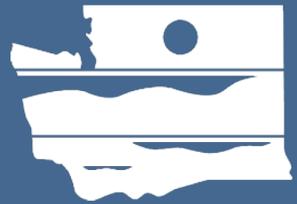
2. Promote to others



Quick break

5 minutes

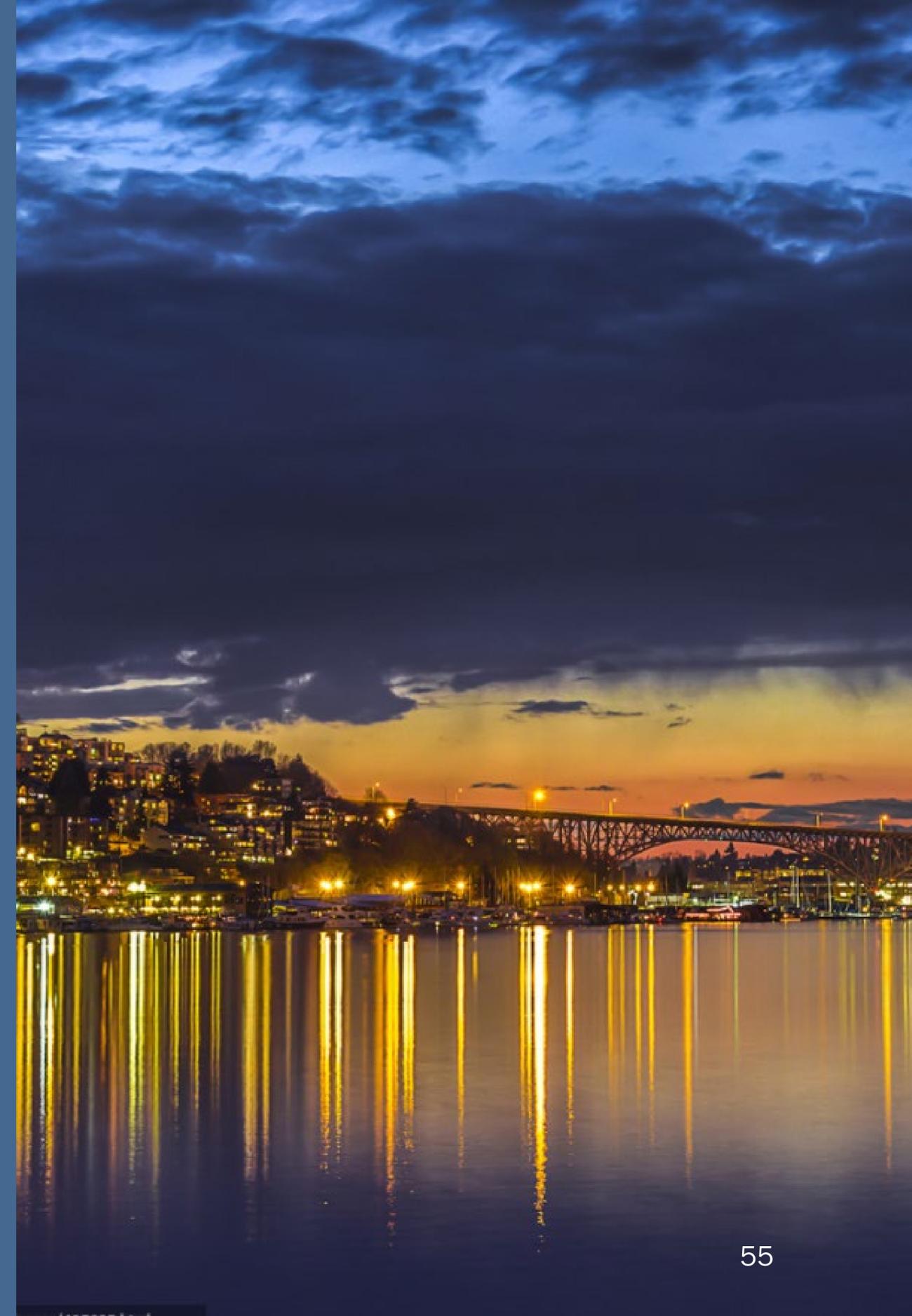




King County Solid Waste Division

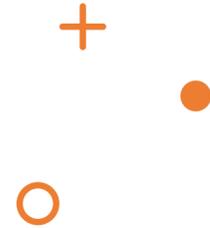
Andy Smith

Emily Coleman



Briefing Agenda

Re



- Market Development for 2030 and beyond
- New Circular Economy Innovation Platform
- New King County competitive grant



King County

Department of
Natural Resources and Parks
Solid Waste Division

Waste
Prevention

Resource
Recovery

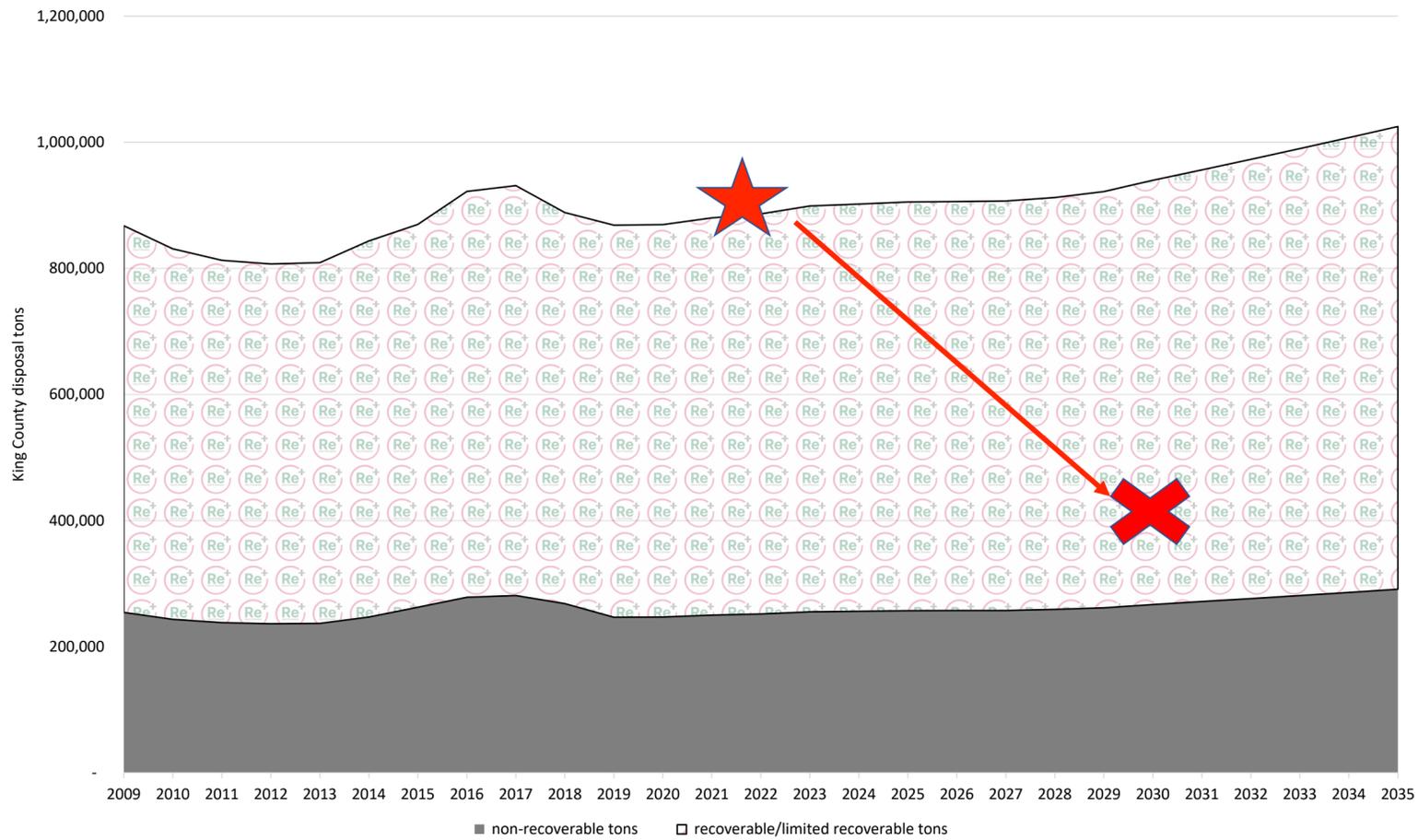
Waste
Disposal

Recycling Development Center Board

Update

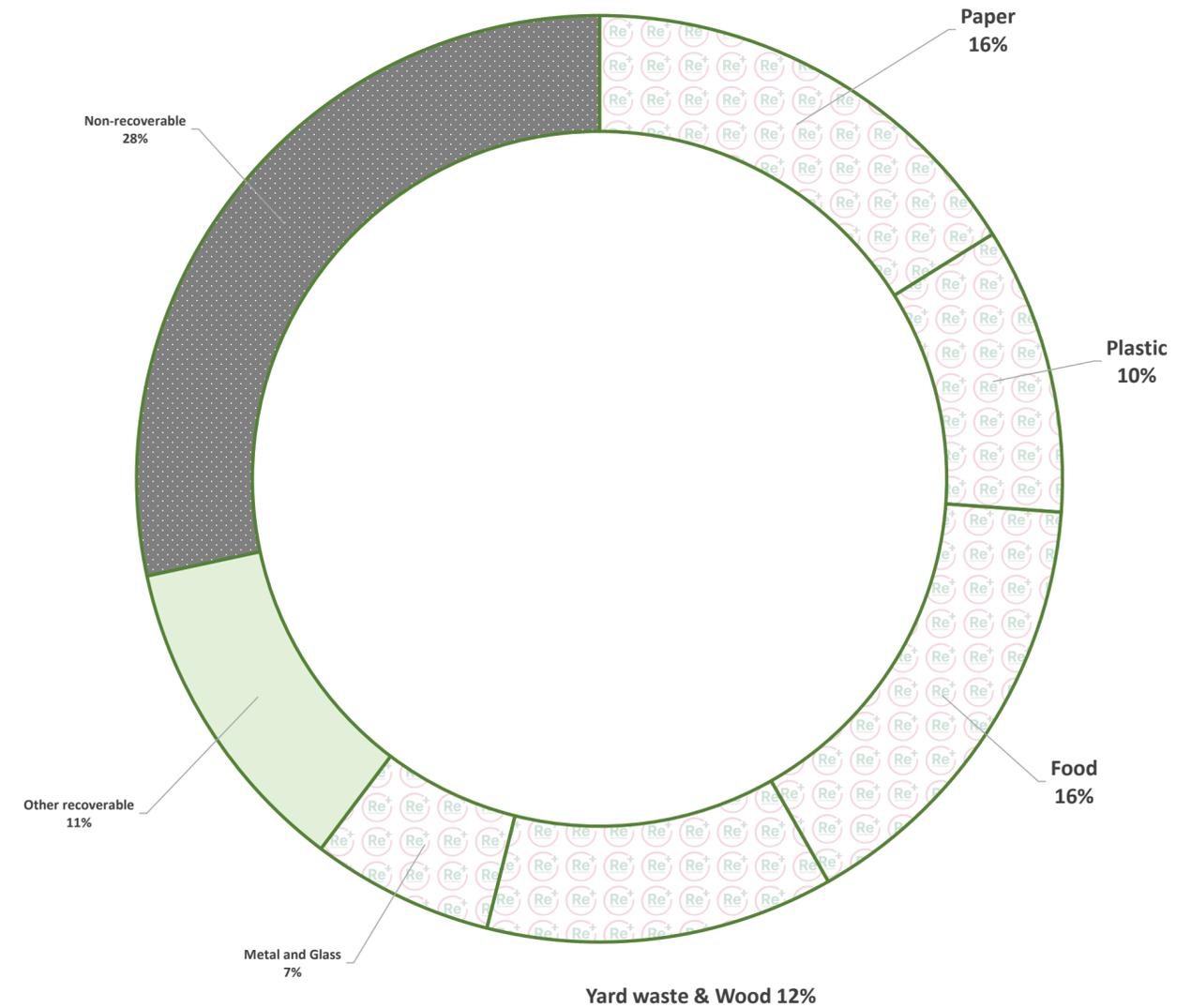
October 2021

Zero materials of value sent to landfill



Current status

KC code = Zero Waste of Resources 2030



Inclusive market development gaps identified



Available resources are geared toward large businesses and capital projects, leaving **small businesses without support to start up and scale.**



An **explicit equity lens and community engagement is absent** for most existing support programs.



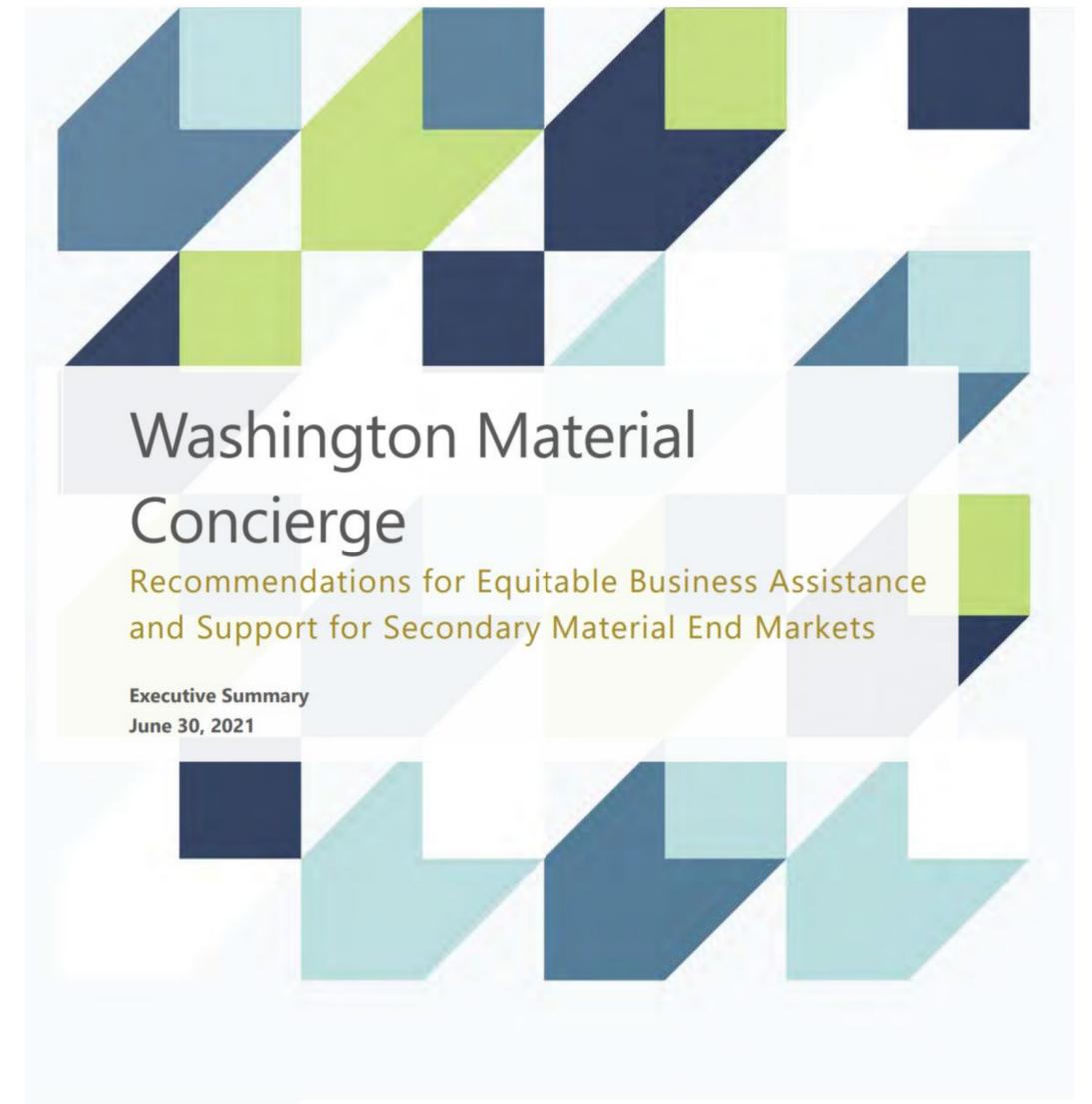
Efforts are **siloed between climate, equity, and circular economy.**



Efforts are **siloed between general economic & technical support and secondary materials & supply chain expertise.**



No **entity is explicitly tasked with a strategic coordination role** to align across silos and help stakeholders to identify, navigate, and access existing resources.

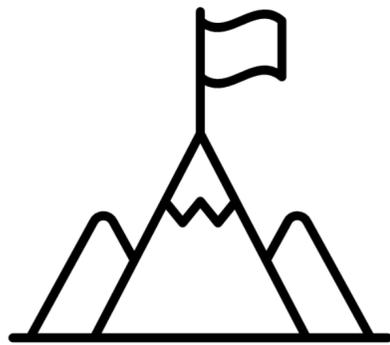


Driving market development innovation

Circular economy innovation platform providing technical support, subject matter expertise and funding pathways to move market development ideas toward implementation.



CO-DESIGN



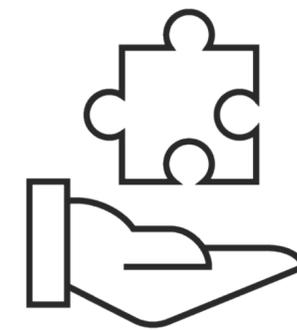
TARGETED
"INNOVATION
CHALLENGES"



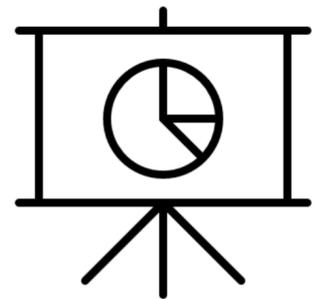
FUNDING
PATHWAYS



COMMS AND
RECRUITMEN
T



TECHNICAL
SUPPORT

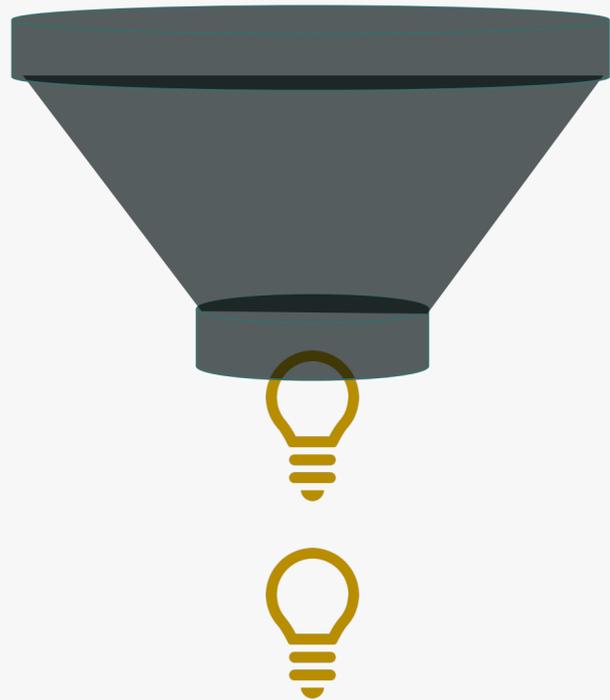


DATA
DRIVEN

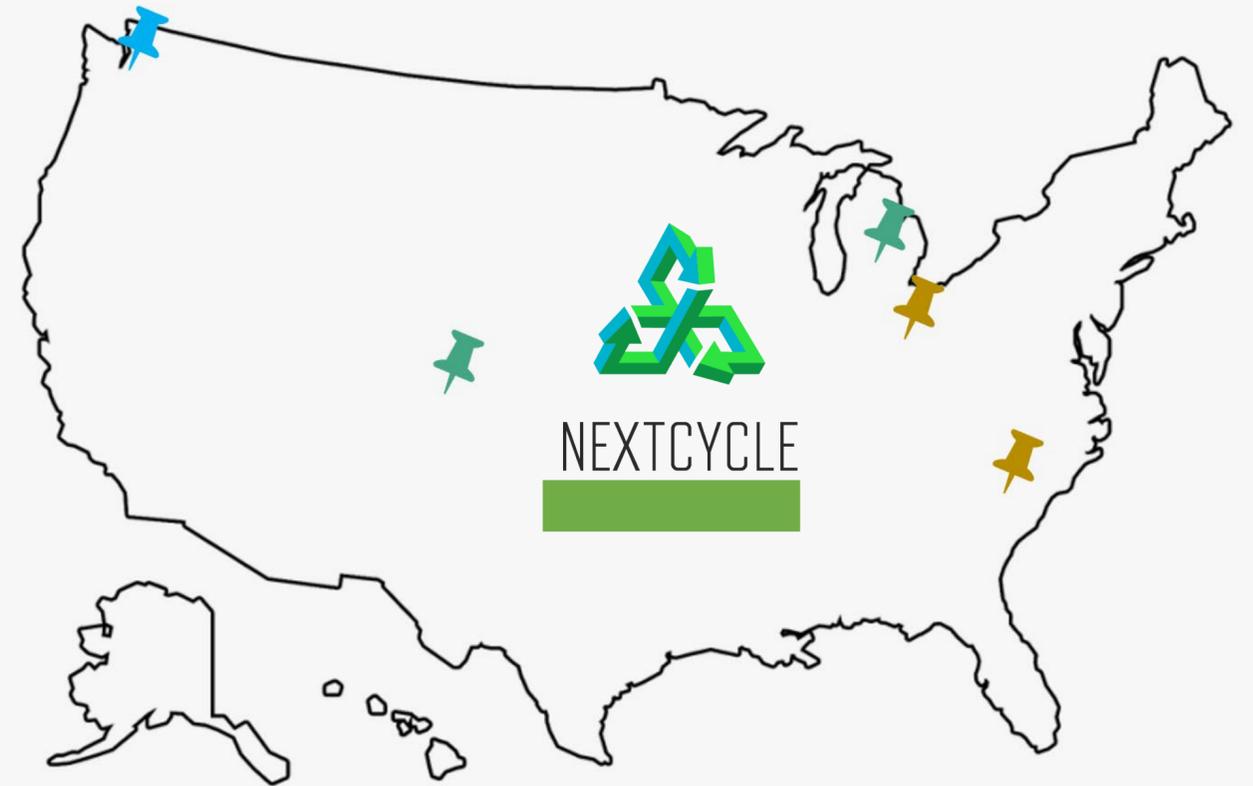
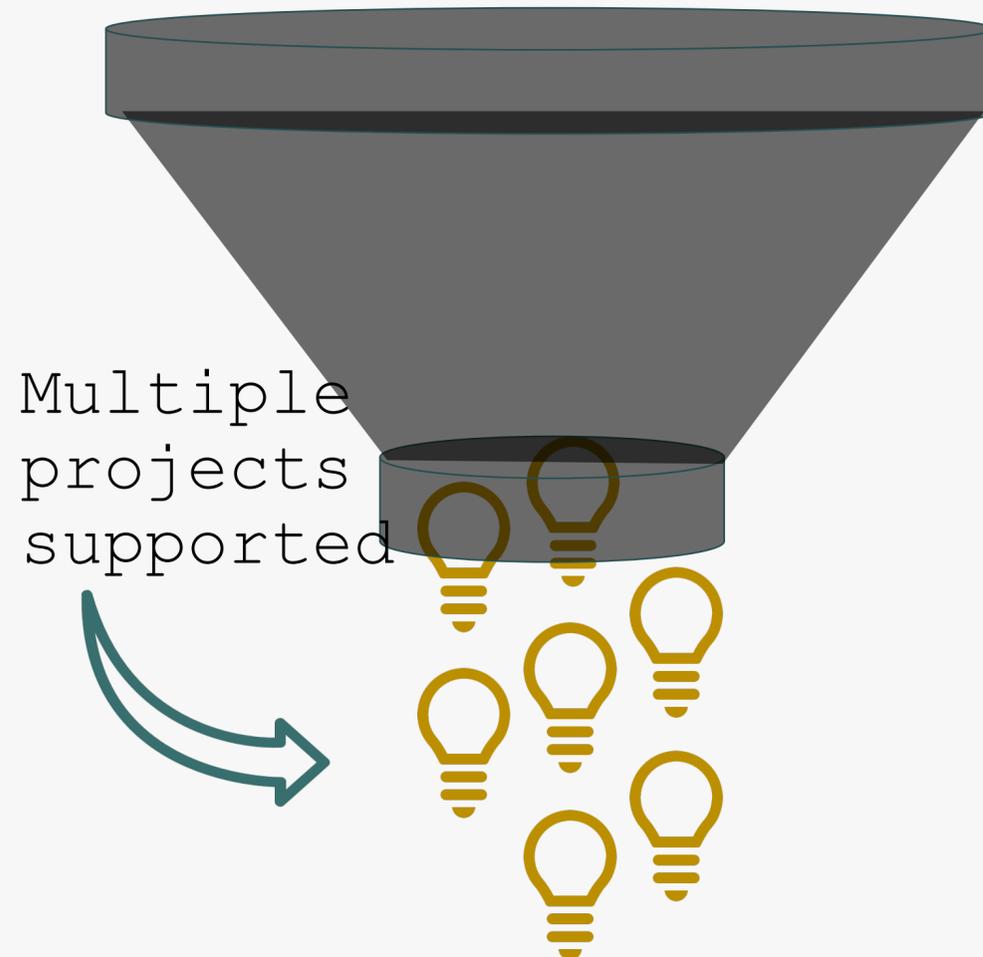
Q1 2022
Launch

Why innovation challenges

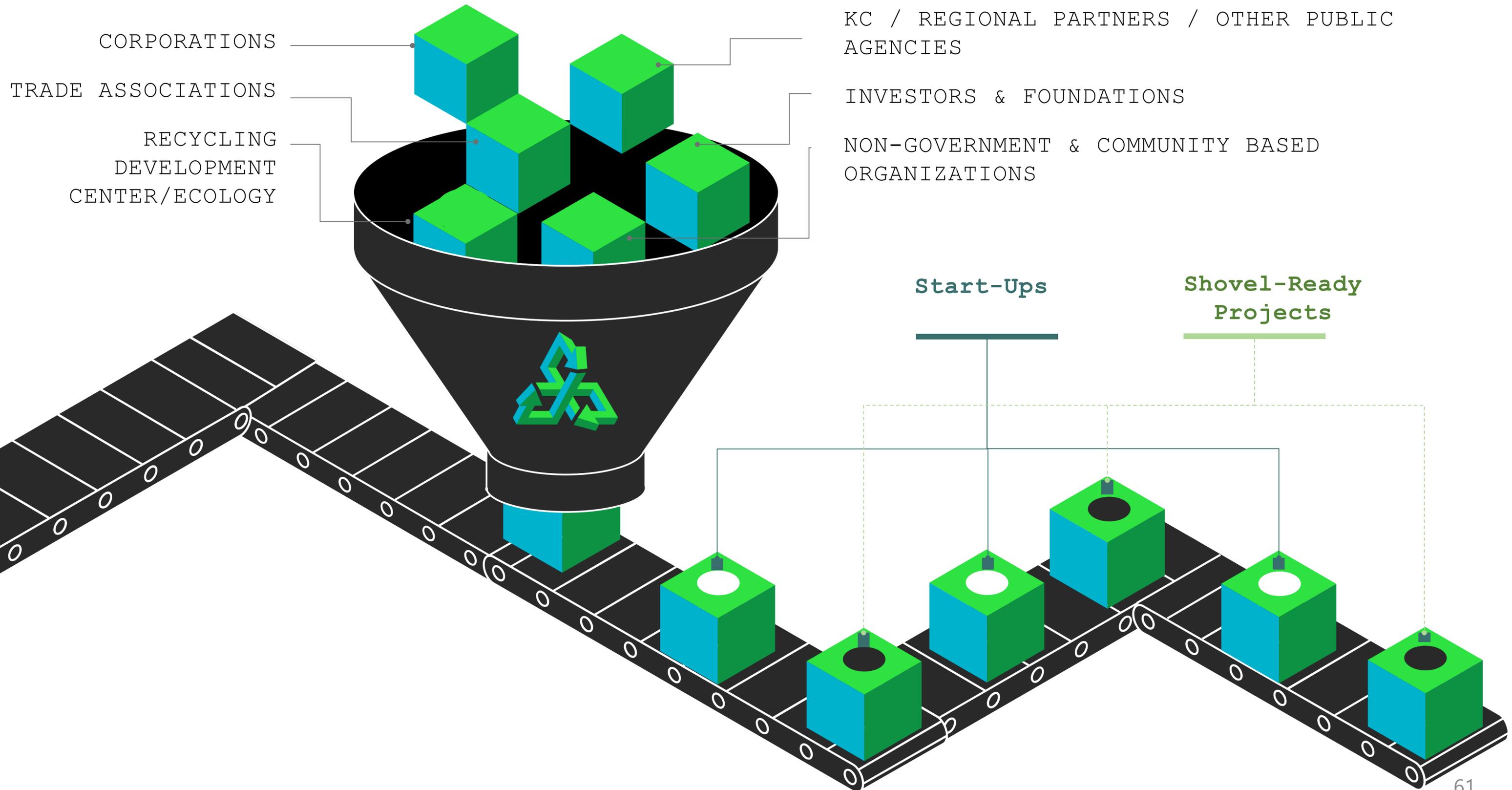
TRADITIONAL
INNOVATION
FUNNEL



INNOVATION
CHALLENGE
FUNNEL



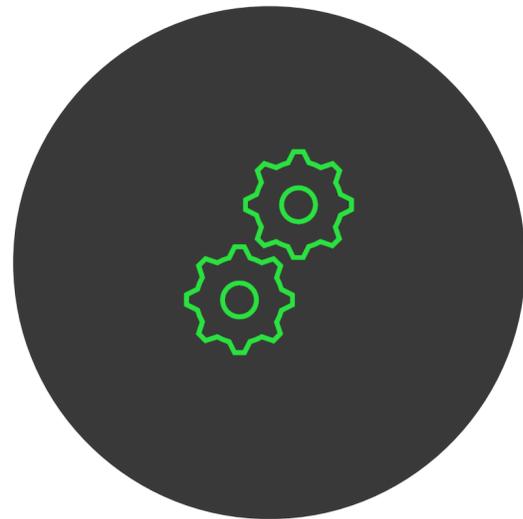
Growing number of regions adopting the NextCycle approach
www.nextcyclemichigan.com/ - a brand of RRS



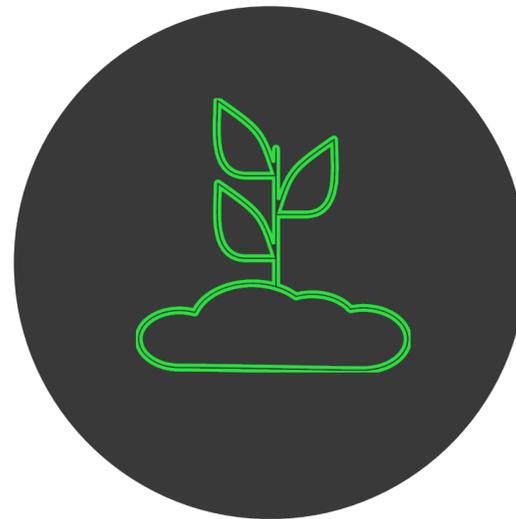
Examples of projects



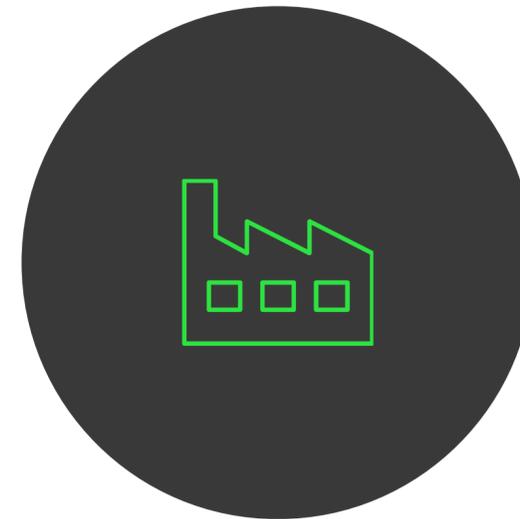
Repair center
in underserved
community



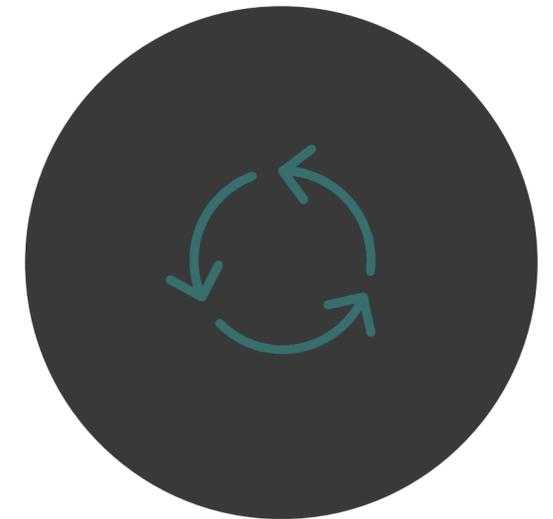
Product
manufacturers
upgrading
plant to
integrate PCR



New compost
site and
collection
program that
accepts food
scraps



10 communities
working
together on a
new MRF or
secondary
sorting
facility



Bottle wash
plant
cooperative
among craft
beverage
manufacturers

Major Platform Elements



NEXTCYCLE

Material Tracks (Technical Assistance)

- Curated curriculum around a theme, run by consultant team
 - Technical assistance (boot camps and ongoing consultant support)
 - Showcase events and challenges
 - Prepares organizations to apply for future funding opportunities
- Would be more effective as a statewide effort
- Examples of tracks: Upstream (focus on prevention), Recycle (focus on diversion)

Funding Cohorts

- Grants
 - Could bring in existing grants or develop new ones
 - Local jurisdictions could bring in their own grants
 - Examples of grant program: King County Re+ Grants
- Loans or other financial support opportunities
 - Connect businesses with existing offerings
 - Develop new opportunities

King County based circular economy grant



King County Private sector and community focus grants: new Re+ funding



Grant Cohorts: priority material recycling, reuse/prevention & community



Grants paired with technical assistance: applications through online platform in Q1 2022



Developing community co-design process & workshop: inclusive grants and access



Supports King County green jobs and opportunity: King County material/geographic focus

Key discussion questions



What does circular material innovation support look like?



How could the platform-based approach work for WA?



How can we develop partners for an all-WA approach?



Where else is co-delivering equity & market development?

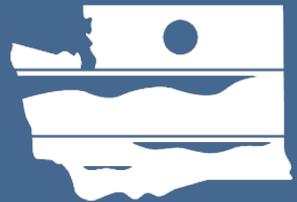
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Sustainable Purchasing Specialist

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Circular Economy Program Manager





Glass discussion

Glass material summary

Challenges

Recommendations



Material reuse



Europe

Steel

80%

Association of European Producers of steel for packaging (APEAL)

Aluminium

75%

European Aluminium (EA)

Glass

76%

European Container Glass Federation (FEVE)

North America

Steel

71%

Steel Recycling Institute

Aluminium

55%

Aluminium Association

Glass

34%

Glass Packaging Institute (GPI)

Brazil

Steel

98%

Abralatas



¹Recycling rates

NA
GLASS
40%
CULLET
CONTENT

EU
GLASS
71%
CULLET
CONTENT

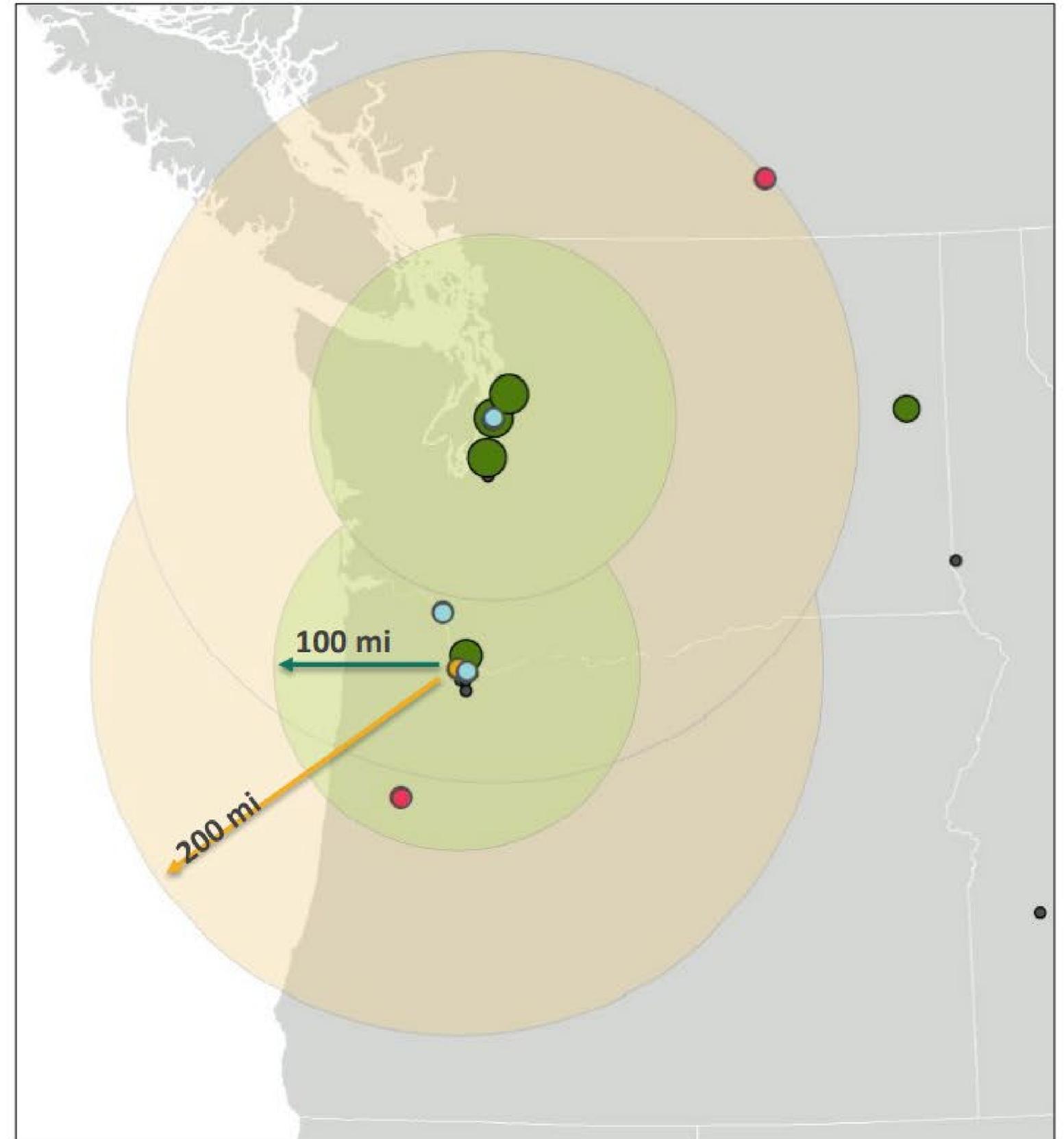
Glass Recycling Processors

Legend

-  Glass Manufacturers
-  Glass Recycling Processors
-  Fiberglass Plants
-  MRFs not accepting glass

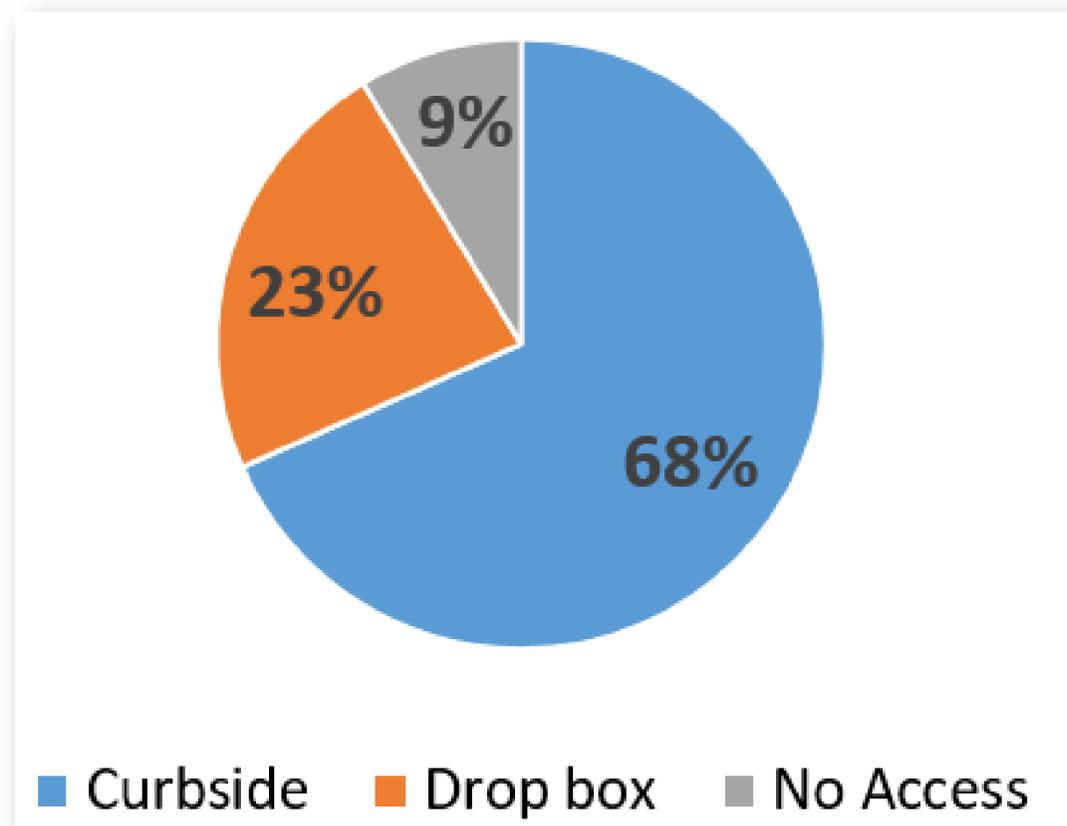
Glass MRFs by Throughput (TPY)

-  Unknown
-  1 - 25,000
-  25,000 - 50,000
-  50,000 - 75,000
-  75,000 - 100,000
-  > 100,000

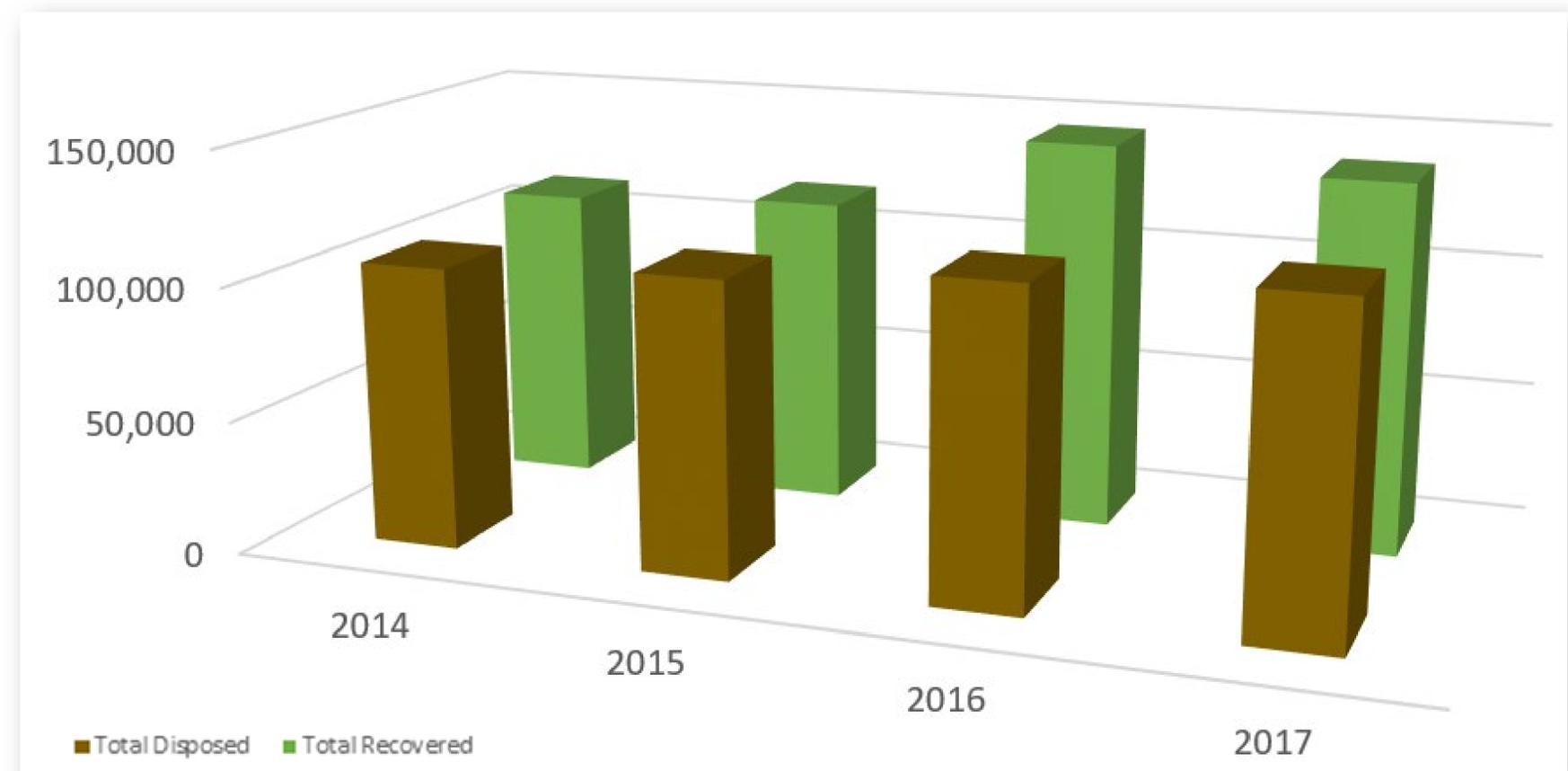


Glass in Washington

Access to glass collection across Washington



Recovered and disposed glass from 2014 to 2017



Draft recommendations

Research

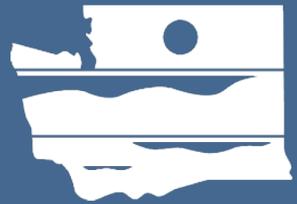
- Removing glass from the commingled system
- Transporting glass long distances
- Other end-markets for glass

Actions

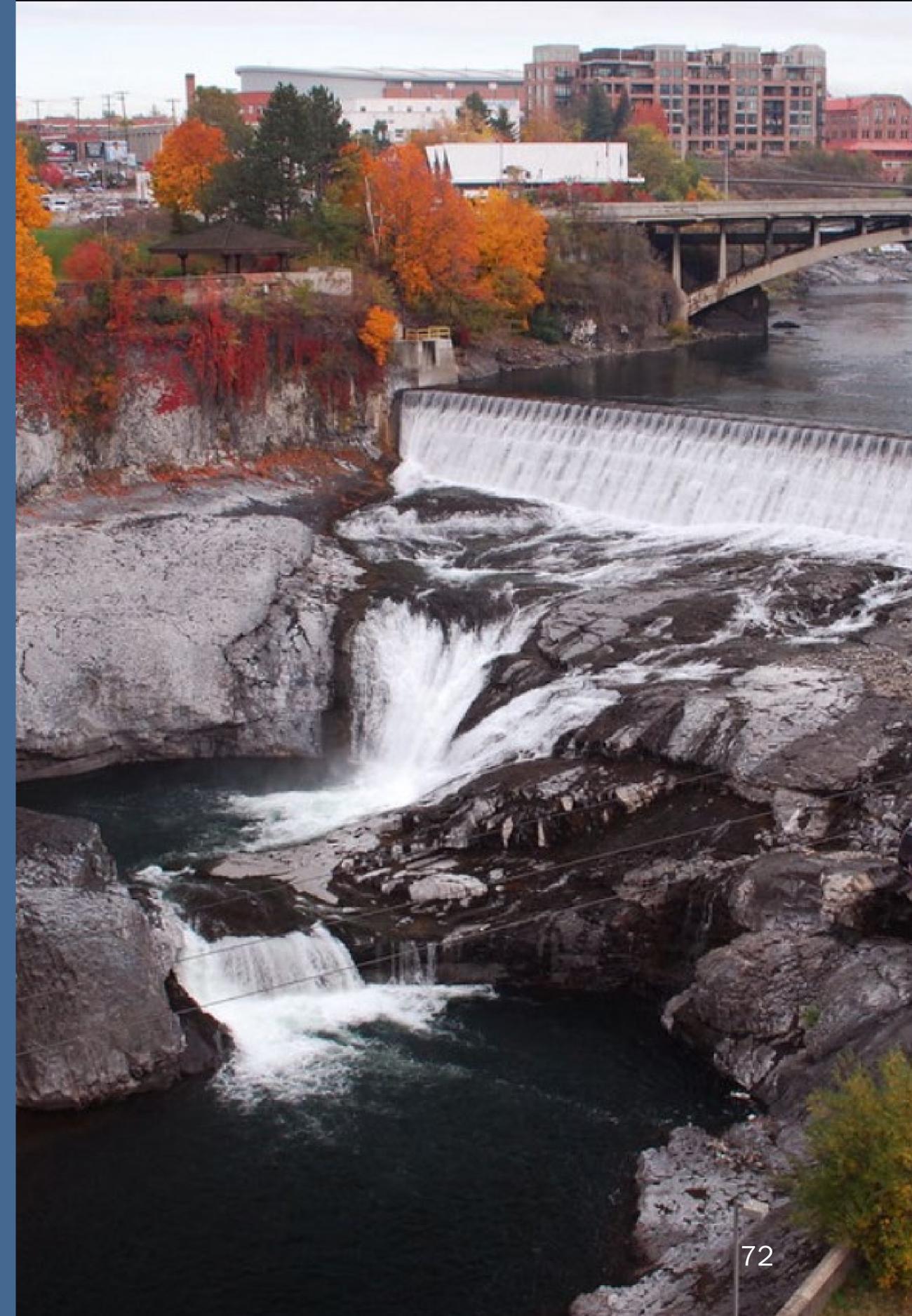
- Reduce contamination in the commingled system
- Increase commercial glass collection
- Improve MRF processing

Policies

- Deposit return system
- Extended producer responsibility program
- Mandate minimum post-consumer recycled content
- Landfill restrictions



Meeting wrap-up



Wrap up

Next meeting:

- Wednesday, December 8, 2021
- Topic: Plastic material

Tasks from today:

- Notes from today will be posted next week
- Finalize the glass summary
- Start next material topic – or ???





See you at the December 8th meeting

Link to the next webex meeting will be included in an email update next week with today's notes.