



Let's Recycle Better, Together.



TACKLING LITTER & RECYCLING CONTAMINATION:

STEPS TO INFLUENCE BEHAVIOR IN
PARKS AND OUTDOOR PUBLIC SPACES

TUESDAY FEBRUARY 15TH 1:00 - 2:30 P.M. EST.

📞 1-800-565-9931

🌐 buschsystems.com

🏠 81 Rawson Avenue, Barrie, Ontario, Canada L4N 6E5

Today's Panelists



Morgan Turner

Senior Project Manager

Gershman, Brickner &
Bratton, Inc.



Dr. Cecile Carson

CEO

Carson Consulting, LLC



Todd Burley

Sustainability Advisor

Seattle Parks & Recreation



Jenny Frankl

*Sr. Planning &
Development Specialist*

Seattle Public Utilities

Join the Discussion!

From your toolbar:



Share your experience
& opinions

Look for links
to resources

Type direct questions
for panelists

Litter & Recycling Behavior in Public Spaces





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GREENTHINKING

Webinar Series

Tackling Litter & Recycling Contamination

Technology Tools for Parks & Outdoor Public Spaces

By Morgan Turner
Senior Project Manager
Gershman, Brickner & Bratton, Inc.

February 15, 2022



Morgan Turner

GBB Senior Project Manager

TRUE Zero Waste Advisor

She/Her/Hers

"I am committed to creating healthy, resilient communities and organizations through the development and implementation of actionable zero waste strategies and policies."

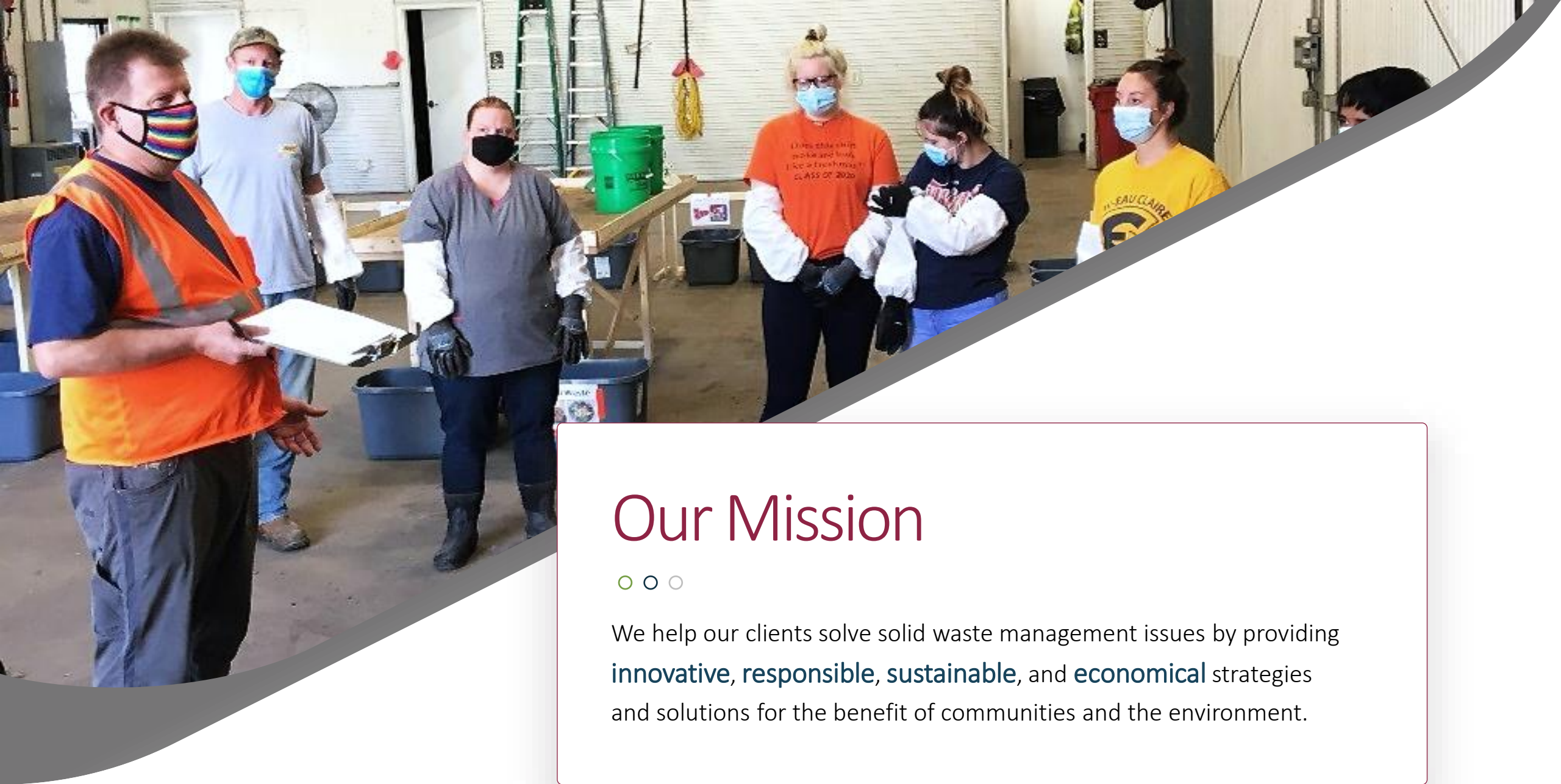
Our Story



GBB is an international solid waste management consulting firm that helps public- and private-sector organizations craft practical, customized and technically sound solutions for complex solid waste management challenges.

Since 1980, GBB has been a trusted resource at the forefront of the industry, creating success stories that integrate smart planning with effective management of solid waste services. Our staff enables our clients to do more with less.





Our Mission



We help our clients solve solid waste management issues by providing **innovative, responsible, sustainable,** and **economical** strategies and solutions for the benefit of communities and the environment.

Our Vision



We believe in a world where discarded materials are used as resources rather than wasted – for the benefit of communities and the environment.



Communities

We are guided by our principles of quality, value, ethics, and results to help communities of all shapes and sizes.



Environment

We believe effective management of solid waste is an imperative that directly affects our planet- both today and far into the future.



Circular Economy

We see solid waste as a valuable resource that can be creatively managed while protecting our planet and society.

Our Comprehensive Services



Foresight & Strategy



- Parks and Public Spaces
 - Limited resources
 - Local factors
- Changes Ahead to Consider
 - Social
 - Technological
 - Environmental
 - Economic
 - Political

Technology Trends for 2022

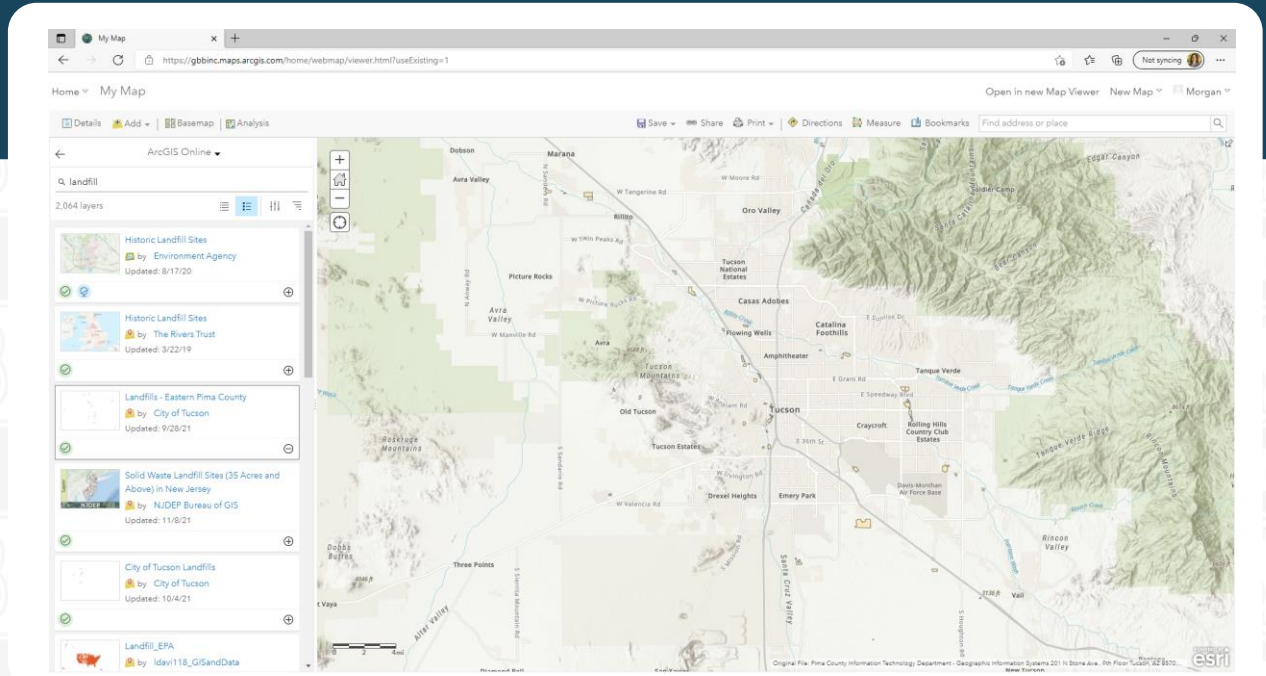
- AI
- 5G
- IoT
- Cloud Computing
- Metaverse
- Blockchain
- Cyber Security

Tool 1: GIS

Software and system to visualize/analyze geographic data (location of features)

Planning bin placement patterns

- Estimate walksheds
- Geolocate infrastructure assets and litter
- Confirm colocation of bins
- Evaluate proximity to key locations
- Reduce redundancy
- Adjust service areas
- Differentiate waste sort data by location



Future

AI

Apply weather patterns,
attendance trends

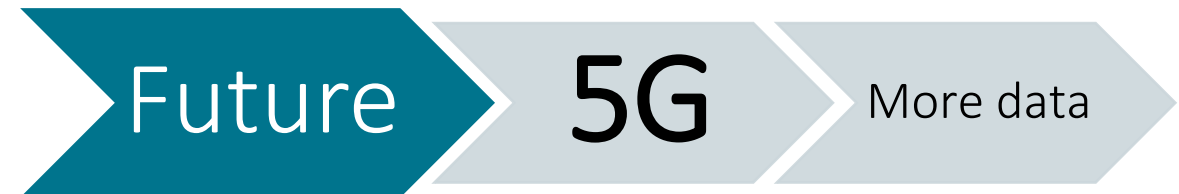
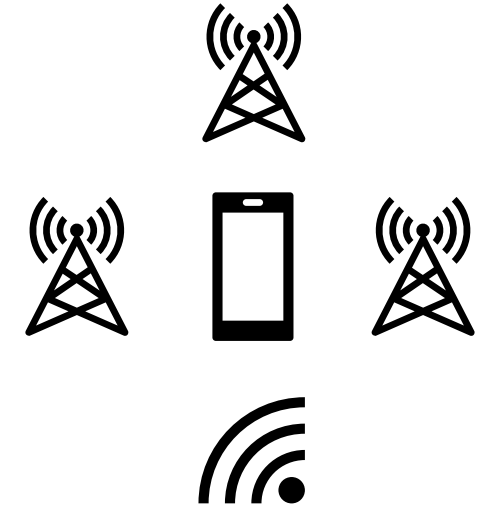
Tool 2: Cell Phone Data

Datasets of mobile device movements used to:

- ✓ Build profiles
- ✓ Understand patterns
- ✓ Make prediction about future

Designing signage and planning bin placement patterns

- Analyze data for specific boundary
- Understand visitor
- Inform messaging
- Leverage demographics (age, language, point of origin)
- Adjust containers & service based on:
 - Visit durations
 - Key time periods



Tool 3: QR Codes

Link to content easily read by digital devices

Designing signage and planning bin placement patterns



Future

IoT

Self-reporting bins

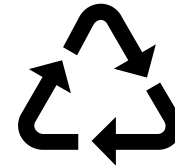
Continuous Improvement and Resiliency



Can use technology
tools to design
& improve programs



Pair with
behavioral (social)
understanding



Positively influence
how waste is
discarded

Questions & Answers

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GREENTHINKING *Webinar Series*

○ ○ ○



GBB

Thank You!



Morgan Turner

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Live Poll #1

What steps taken to manage / adjust bin placement? *(check any that apply)*

- Adjust based on proximity to key locations
- Adjust locations based on waste audit or litter mapping
- GIS mapping
- Remove redundant bins
- Use analytics to optimize placement (w/ cell data, etc.)
- Other *(share in Chat)*

A photograph of a park with large, mature trees and a grassy field. The trees have thick trunks and dense green foliage. The grass is bright green and well-maintained. The scene is peaceful and natural.

LITTER STRATEGIES IN PUBLIC PLACES

GREEN THINKING WEBINAR

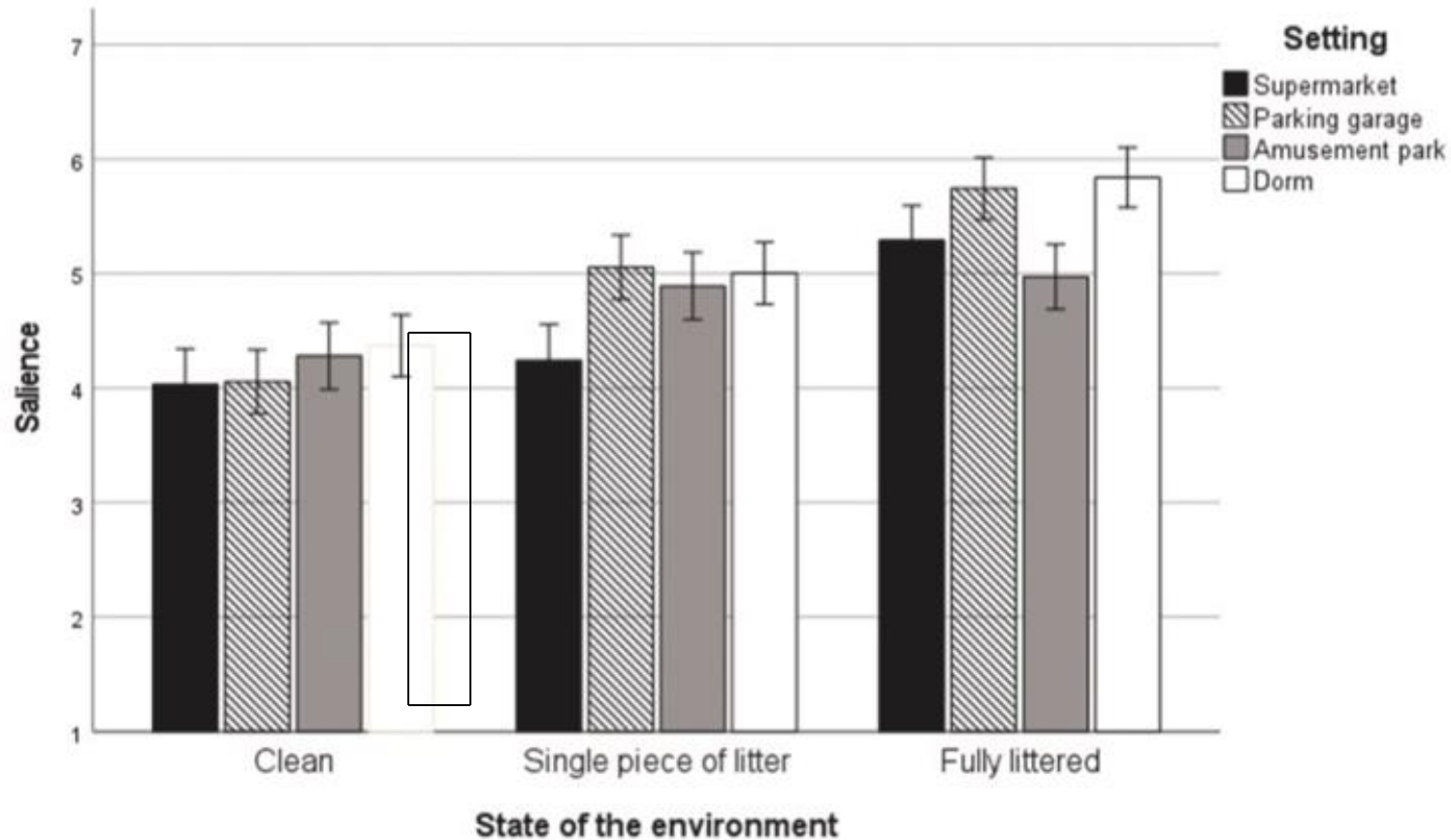
FEBRUARY 15, 2022

DEFINING THE ISSUE

- **Litter:** waste material - disposable packages, containers, cans, bottles, tobacco products, automotive parts, building materials, or other discarded materials of any kind and description
- **Littering:** throwing, discarding, placing, dropping, or allowing the escape of waste items



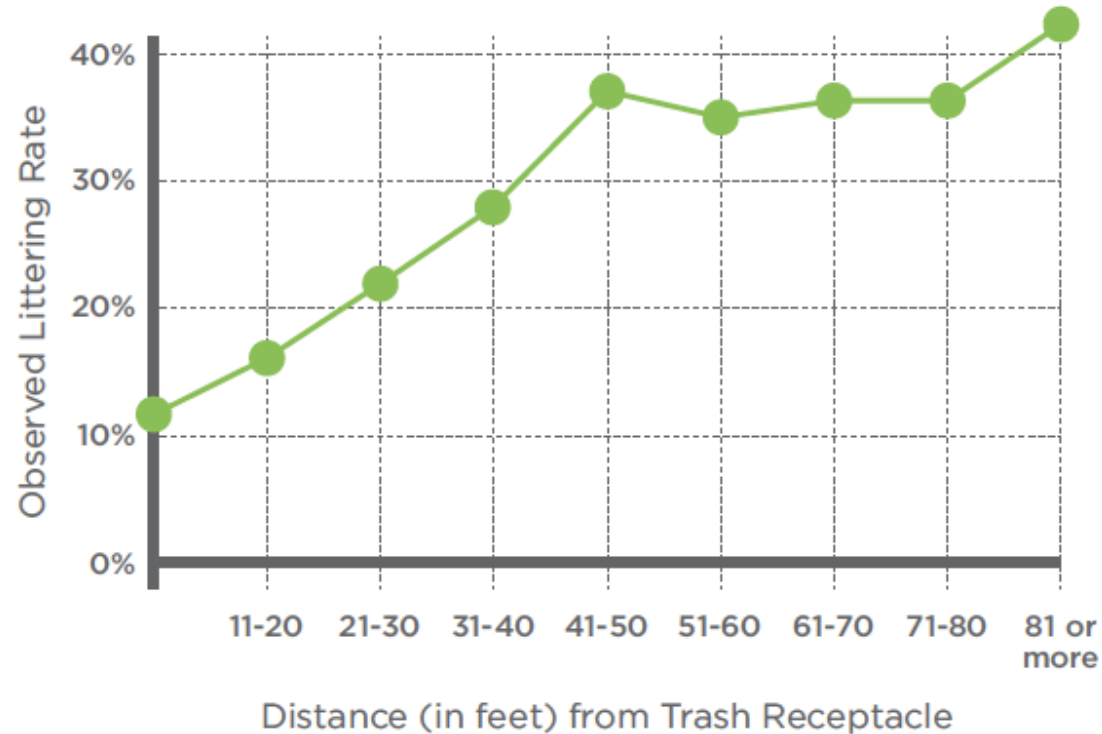
RESEARCH – LITTER ATTRACTS LITTER



(Bergquist et al., 2021; Cialdini et al. 1990)

RESEARCH – LITTERING BEHAVIOR

- Make proper disposal convenient and accessible (25-30 feet)

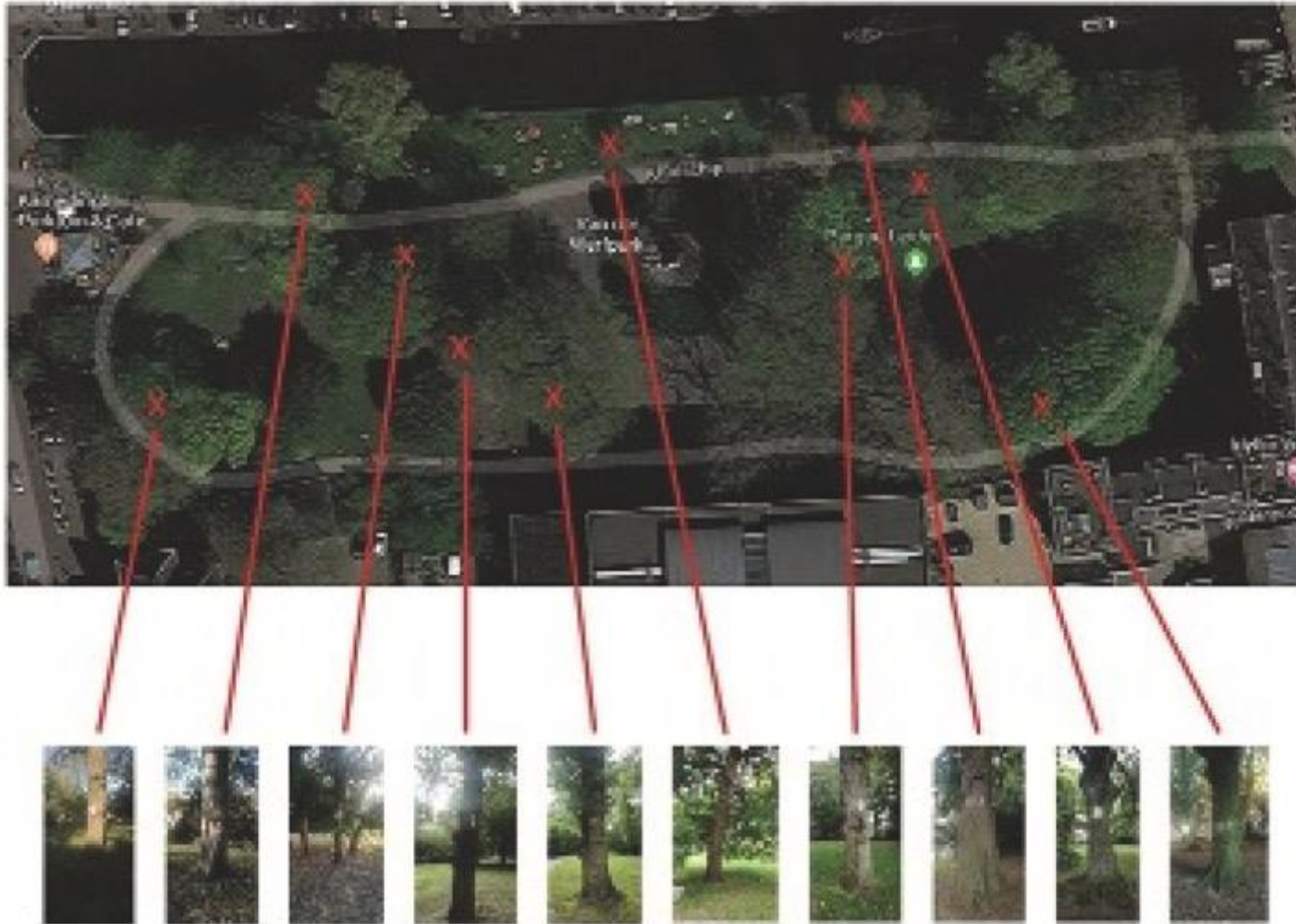


(Meeker, 1997; Bator et al, 2010; Carson, 2021)

RESEARCH – CONTAINER PLACEMENT



RESEARCH – CONTAINER PLACEMENT/NORMS



5 prints attached to trees throughout the park within eyesight of the data collection areas

RESEARCH – BEAUTY AND CLEANLINESS

- Landscaping and beautification with infrastructure results in lower rates of littering behavior by creating a sense of place



(Van Doesum et al., 2021; Honolulu, 2018;
Schultz et al., 2013)

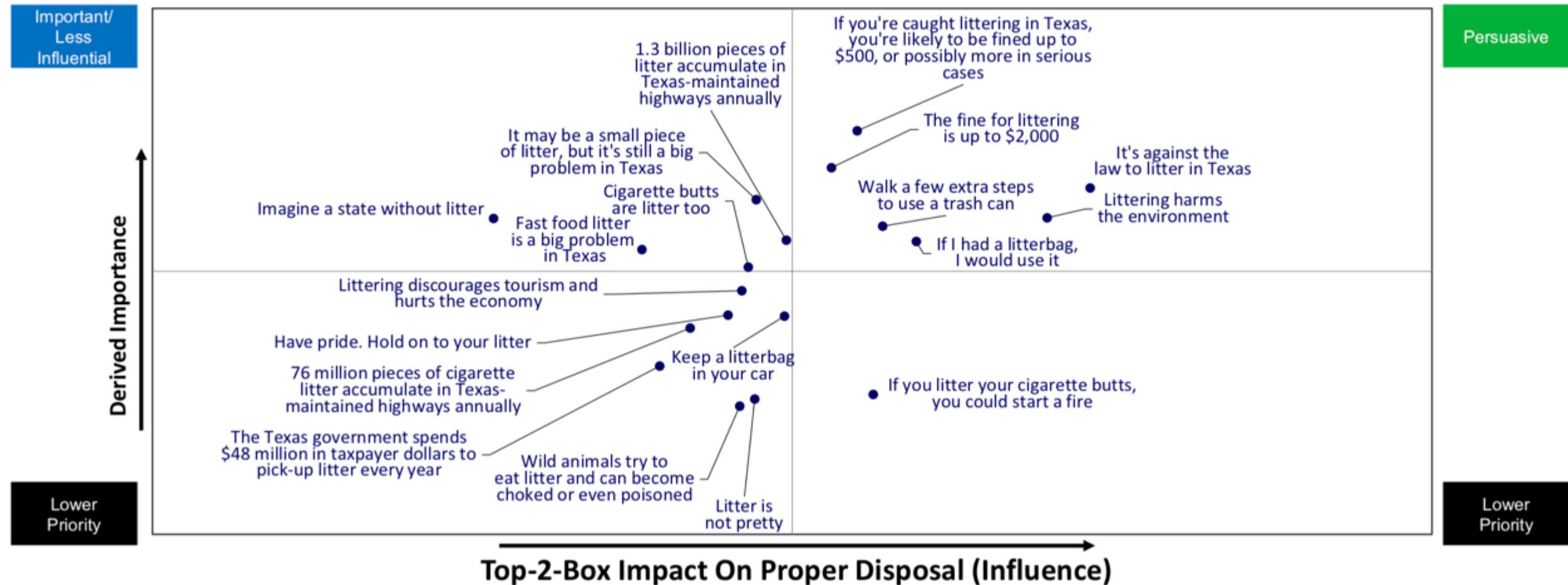
RESEARCH – LITTER AND APPEARANCE

- On-going maintenance and type of containers



(Geller et al., 1980; Honolulu, 2018; RW Beck, 2007; Schultz et al., 2013; Van Doesum et al., 2021)

Most Important/Influential Messages



Base: Total (n=730)
Source: Advanced Analytics

CONCLUSIONS

- Litter originates from behavior (most of which is intentional)
 - Target Issue or Behavior
- An Integrated Litter Strategy:
 - Clean and Beautiful
 - Strategic Infrastructure
 - Motivational messaging
- Active Community Participation



LITTER FREE PLACES



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Live Poll #2

What efforts taken to monitor performance? *(check one)*

- Formal litter mapping study
- Informal / limited scale waste audit
- Formal / large scale waste audit
- Tracking actual weights for Trash collected
- Tracking actual weights for Recycling collected
- Other *(share in Chat)*

Waste Not

Public Waste, Recycling, and Compost in
Seattle

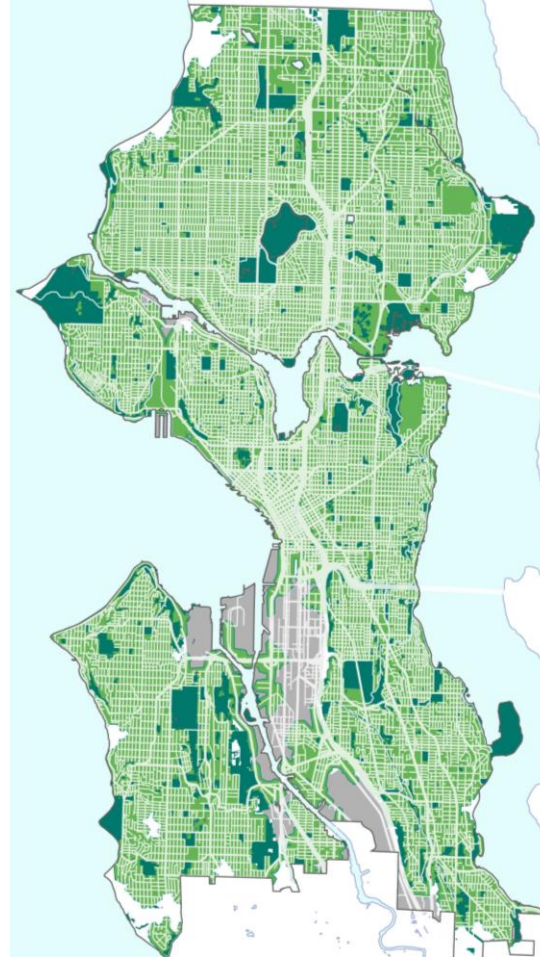


City of Seattle

City of Seattle

Seattle Public Utilities

- Garbage, recycling, and organics collection in Seattle
- Provides drinking water to 1.4 million people
- Wastewater collection and distribution



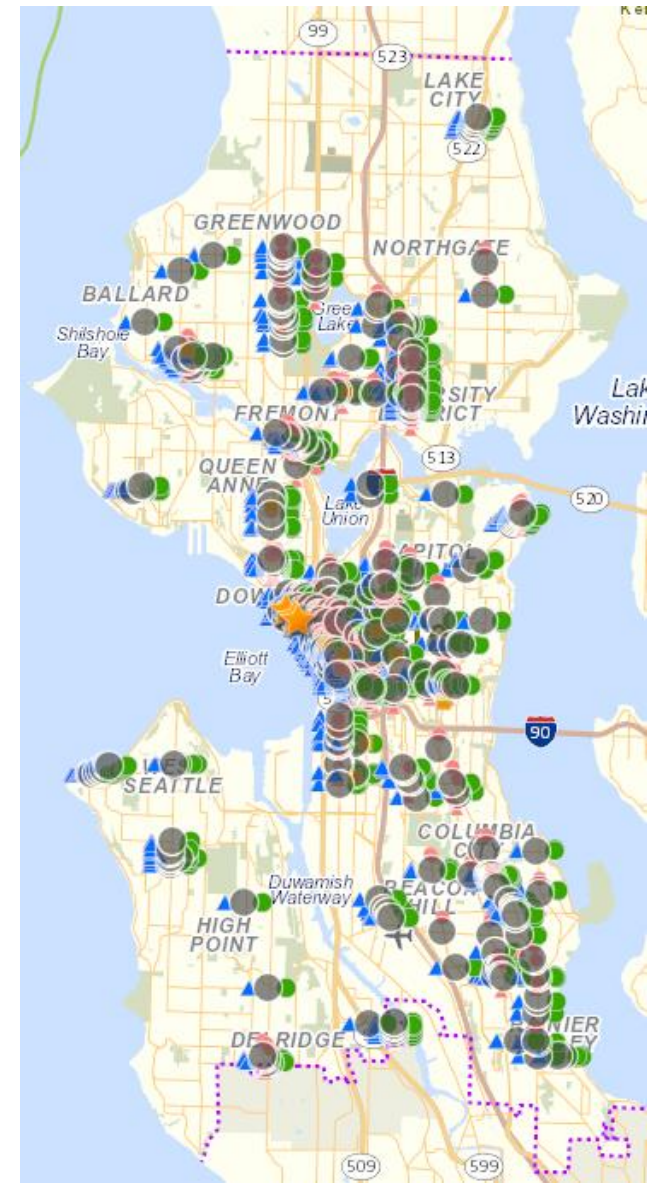
Seattle Parks and Recreation

- 489 parks
- 6,414 acres
- Parks, plazas, community centers, natural areas, fields, and more...



Public Waste Collection System

- SPU services 1,125 public litter & recycling cans
 - **568** garbage cans (4-14 x week)
 - **563** recycling cans (3-17 x week)
 - Contract with same haulers that service residential/commercial
- SPR is self-haul organization & contracts recycling & composting services
 - 45,000 cubic yards diverted in 2020 (SPR)



Where We Place Trash Cans

SPU



- Mixed-use business areas
- On public sidewalks
- Allows for easy service, inspection, vehicle access
- Easy access for pedestrians and ADA access

Parks



- Playfields
- Paths and entrances
- Building entrances
- Skate parks, pools, etc.
- Parking lots
- Bathrooms
- Food plaza parks

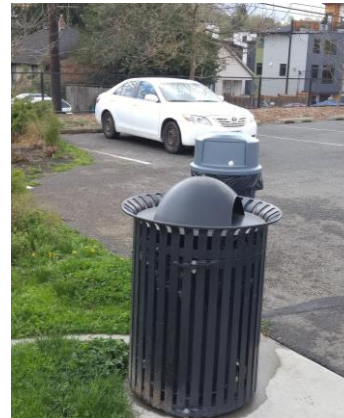


Bin Design Evolution

SPU



Parks



City of Seattle

Trash "Can'ts"



Important Considerations

Trash Can Design

- ▶ Contamination
- ▶ Vandalism
- ▶ Weather
- ▶ Illegal dumping
- ▶ Urban wildlife

Service

- ▶ Cost
- ▶ Citywide coordination
- ▶ Consistency
- ▶ Maintenance
- ▶ Staff safety



2021 SPU Pilot of New Can Model

- Spring-latch locked side door
- Vinyl art-wrap/anti-graffiti powder-coat
- Covered top/ no separate lid
- Wheelable tote
- Sturdy construction
- Less contaminated recycling



New Direction for Parks

- Spring-latch locked side door
- Vinyl art-wrap/anti-graffiti powder-coat
- Covered top/ no separate lid
- Wheelable tote
- Sturdy construction
- Less contaminated recycling
- Rodent-proof



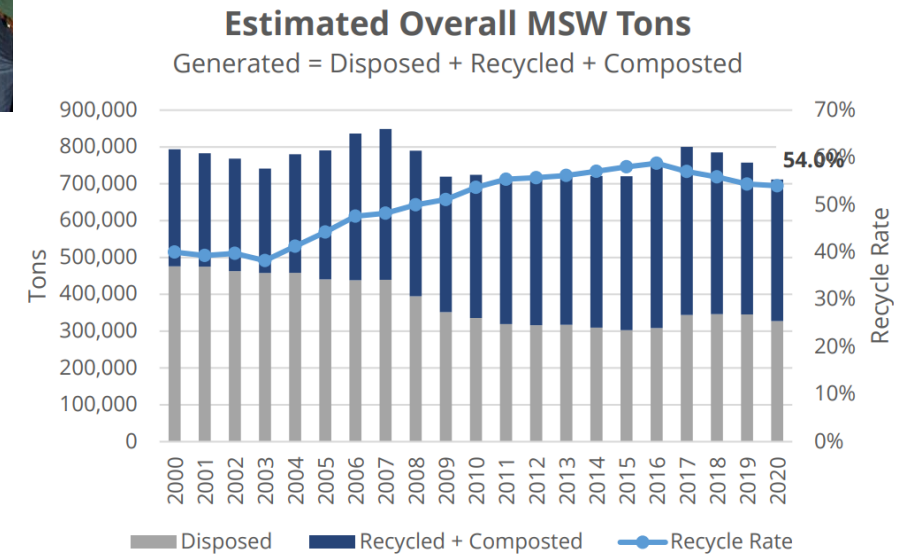
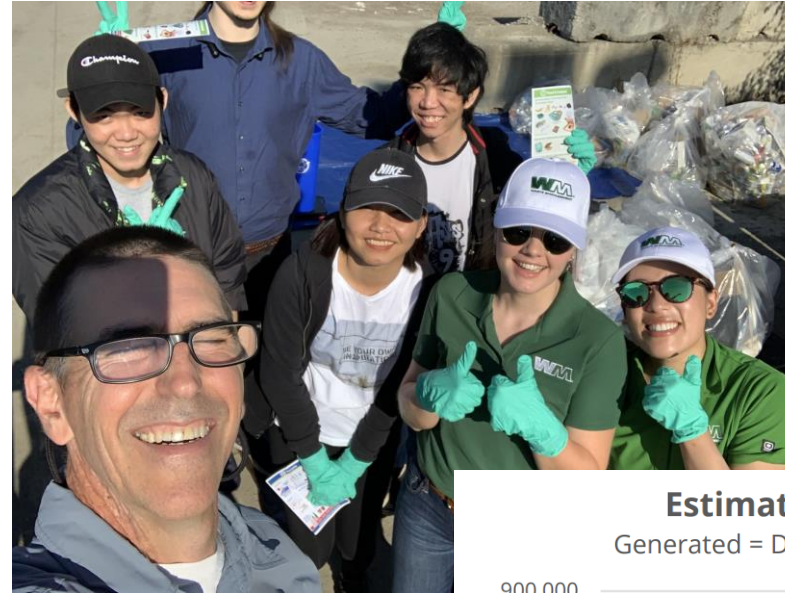
Coordinated Signage



Successes

Collaborate & Communicate

- ▶ One Seattle!
- ▶ Do what we do best, together
- ▶ Same, same, but different
- ▶ New cans! More coming!
- ▶ Nimbleness



Thank You!

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City of Seattle

Live Poll #3

Which design best practices used at most or all locations?

(check any that apply)

- Restrictive bin openings
- Prominent color distinction between streams
- Co-located recycling & trash bins
- Prominent signage (beyond simple label)
- Uniform branding / design standards
- Other *(share in Chat)*

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Engaging Public



Thank You to Our Panelists!

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Coming Up Next Month:

**FINDING THE PERFECT
OUTDOOR BIN:**
WHAT SPECS & FEATURES TO LOOK FOR
WEDNESDAY MARCH 23RD 1:00 - 2:30 P.M. EST.

A promotional graphic for a webinar. The left side has a green background with white text. The right side shows three people (two women and one man) smiling and standing behind a black outdoor bin. The bin has a "WASTE" label on its front.

Online Resources

Program Resources

- Download presentation slides
- Recording
- Links to speaker resources
- Responses to Q&A
- Archive of past programs

Advancing Recycling Blog Series

Recent posts:

- Specs for Outdoor Bins
- Using Words v. Images on Signage

Visit: buschsystems.com/blog

Database of Bin & Signage-Related Studies

Waste Signage & Bin Design Studies

File Edit View Insert Format Data Tools Extensions Help Last edit was 8 days ago

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A1 Academic Studies About Impact of Bin Designs, Placement & Signage on Recycling Behavior

	A	B	C	D	E	F	
1	Academic Studies About Impact of Bin Designs, Placement & Signage on Recycling Behavior						
2	Focus #1	Focus #2	Focus #3	Title	Authors	Year Published	Inst
3	<i>Note: This database is intended to catalog studies, surveys and other research projects related to recycling / waste signage and bin design. We encourage anyone familiar with relevant studies to contribute.</i>						
4	Signage			Comparative Analysis of Visual Triggers in Waste Management	Ahmed, Khanani & Koshy	2016	Uni
5	Words v images	Non-recycling		Distance-dependent processing of pictures and words.	Amit, Algom & Trope	2009	
6	Convenience			Recycling in Multifamily Dwellings: Does Convenience Matter?	Ando, A.W., and A.Y. Gosselin	2005	
7	Bin Design	Signage	Color	Citizen Centred Services: New Forms in Public Space Recycling	Andreas Eiken	2015	Met
8	Bin Design	Signage	Placement	Comparison of recycling outcomes in three types of recycling collection unit	Andrews, Gregoire, Rasmussen, & Wito	2013	
9	Other recycling			Solid waste characterization and recycling potential for a university campus	Armijo de Vega et al., 2008	2008	
10	Bin design			The relationship between receptacle design, normative conduct, environme	Arnold, M.	2015	
11	Signage			Increasing recycling in office environments: The effects of specific, informati	Austin, J., Hatfield, D., Grindle, A., & Bai	1993	Flor
12	Other recycling			Campus Community Responses on Waste Recycling Activity Towards Sustair	Azahar, Md Nor	2012	
13	Signage - not rec	Standardization		Ergonomic Guidelines for Traffic Sign Design Increase Sign Comprehension	Ben-Bassat & Shinar, 2006	2006	

1 Sheet1 Explore

View database at: <https://tinyurl.com/38w6kty2>

Need Credit for CEU's?

Email Rebecca Rainey
to request a
Certificate of Attendance

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