



Waste Prevention, Reuse and Recycling Education

A Handbook of Principles and
Best Practices

August 2015

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PURPOSE

Metro initiated production of this document to share resources and increase internal knowledge related to best practices in education for waste prevention, reuse, recycling and disposal, with a goal of effectively using limited staff resources to achieve measurable outcomes.

This document is designed to support planning and evaluation for Metro's solid waste education programs for residents and youth. It documents the "State of the Practice" so that all staff and managers can use a shared vocabulary and framework to assess and prioritize education efforts that seek to influence or change attitudes, awareness, public opinion and behaviors. The intent is to avoid using education approaches and tactics shown to be less useful, less efficient and less able to make progress toward achieving the region's solid waste goals.

As with all similar endeavors, the state of the practice is continually evolving as staff at Metro and other jurisdictions implement programs, make adjustments based on experience and react to new technology, policies and public sentiments. Information contained was summarized from a variety of reports, studies and papers collected by Metro staff. In addition, results from a workshop held in November 2014 with Metro and local government staff members helped inform this document. A list of resources consulted is included in the bibliography.

USING THIS HANDBOOK

This handbook should be consulted by staff members when initiating, updating or redesigning an education program to ensure the consistent use of best practices, select a strategy for desired outcome and promote efficiency. Managers and program evaluators should use the checklists to engage in a conversation with staff during the program design process and make adjustments to improve the final product along the way.

METRO'S ROLE IN WASTE REDUCTION, REUSE, RECYCLING AND PROPER DISPOSAL

Metro, as per State of Oregon law, is responsible for solid waste planning and disposal in the region as the regional government and manager of solid waste facilities. As a part of these responsibilities, Metro develops and administers the Regional Solid Waste Management Plan, which was last

EDUCATION

For the purposes of this document, education is defined broadly and includes all programs and services that provide information about waste prevention, reuse, recycling and disposal to youth and adults in the region.

Examples:

- Classroom presentations
- Outreach at community events or to Metro venue visitors
- General public marketing campaigns such as "Ask Metro"
- Information referral services such as the Recycling Information Center and Metro's website.

updated in 2008 and went through a mid-term review in 2015. The latest plan states that Metro is accountable for state-mandated waste reduction goals in the tri-county region, and works with its local government and private sector partners to accomplish these goals. Adult and school education programs are identified as one of eight key programs within the regional solid waste system. School districts, local governments, Metro, the State of Oregon, waste hauling and recycling companies cooperate in efforts to provide education services for waste prevention, recycling, composting and disposal of solid and household hazardous waste.

Metro delivers some education programs directly (e.g. school-based education), partners with other entities to deliver programs (such as Master Recyclers) and produces printed and electronic information resources to be used by local governments and schools. Metro staff also provides training and guidance to local government solid waste staff to design and implement education programs locally.

DEFINITIONS FOR METRO’S EDUCATION PROGRAMS

Metro’s education programs can be divided into three broad categories and are defined here to promote a common vocabulary for planning, evaluation and decision-making. There should be no implied preference or ranking for one type of a program over another.

Metro Education Program Categories

	Public and Customer Service	Awareness Building	Behavior Change
Description	Foundational efforts needed to support other programs; passive; required	Information actively shared to promote learning	Comprehensive sustained education over time about specific behaviors to specific target audiences
Measurement	Unique calls, web visits	Click rates from social media, subscribers	Pledges, material recovered, attitude change
Examples	Website, hotline	Ask Metro campaign, Healthy Homes outreach booth	Natural gardening, school education programs

-

Audience specificity
 Behavior conversion
 Cost per contact
 Participant engagement

+

Public and customer service related communications: Information made available to audiences who seek it.

- **Purpose:** Provide brand value and customer satisfaction; support awareness and behavior change programs.
- **Examples:** Metro website, Recycling Information Center, "how to" information on green cleaners or proper disposal.
- **Measurement:** Number of unique calls and visits to website and facilities.
- **Cost per contact¹:** Low.
- **Expectation for behavior change:** Low.

In many cases, Metro is required by policy, rule or customer service best practices to provide public and customer service information. These programs are foundational to the success of other programs and provide needed information to the public related to Metro's programs and services. They may be used in coordination with other tactics if the goal is to change behavior (e.g. webpage can provide more detailed information about an action promoted via an advertising campaign) or used to reinforce an adopted behavior by providing information on locations, schedules, etc.

Awareness building: Campaigns or programs designed to actively seek out audiences to increase awareness of Metro's tools and services, and provide how-to information about recycling, reuse and waste prevention.

- **Purpose:** Educate population on available services, desired behaviors and where to obtain more information.
- **Examples:** Traditional advertising, media relations, direct mail, information booths, events.
- **Measurement:** Click rates from social media, subscribers to e-news, and visits to event booths.
- **Cost per contact:** Low to medium. (Includes information development and distribution costs).
- **Expectation for behavior change:** Generally low. Could be medium when paired with new infrastructure or service.

The motivations and interests of specific audiences are taken into account when designing the message and communication medium. With effective planning and targeted messaging that links to audience values and motivators, awareness campaigns can affect public opinion, inform audiences about policy or service changes and invite participation in a decision-making process. However, they may fall short of motivating long-term behavior change without use of other tactics or prompts.

Behavior change: Programs designed to change the behavior of a specific, targeted audience.

- **Purpose:** Achieving Metro policy objectives through audience adoption of desired behavior.
- **Examples:** School education, natural gardening and household hazardous waste community programs.

¹ The program cost incurred by Metro divided by the number of customers served.

- **Measurement:** Amount of material collected, capture rate, sector specific waste studies, self-reported pre/post behavior surveys, number of pledges (proxy for intention to act).
- **Cost per contact:** High. These programs require contact with participants over time to promote behavior change and support actions taken to encourage continued adoption of the behavior.
- **Expectation for behavior change:** Medium.

These programs use multiple strategies to encourage specific audiences to become knowledgeable about the benefits of a very specific behavior, acquire skills to engage in the new behavior and remove barriers to participation in the behavior. These types of programs require support of the target audience throughout the entire continuum of the change. Education tactics and messaging are targeted specifically to the audience. *Community-based social marketing* is one type of behavior change strategy developed and publicized by Doug McKenzie-Mohr, with primary focus on removing both structural and perceived barriers to engaging in desired behaviors.

METRO'S EDUCATION PROGRAM HISTORY

Most education programs delivered through Metro since the mid-1980s have focused primarily on building awareness to motivate people to change behaviors. Common tactics have included advertising through broadcast, print and online media, the recycling hotline and printed informational materials distributed via many outreach channels.

Educating youth through classroom-based, experiential programs also has a long history at Metro with the earliest efforts starting in 1988. The region's education efforts have been most successful when they directly supported, and provided information about, structural operational changes and services that reduced barriers to participation (e.g. curbside recycling and residential food scraps collection).

Education efforts not coupled with structural or policy driven changes tend not to produce measureable results.

The appendix contains a timeline of Metro's education programs within the context of mandated policy changes and the resulting outcomes as well as a graphic showing waste generation and recovery rates over time.

METRO'S WASTE PREVENTION, REUSE, RECYCLING AND DISPOSAL EDUCATION PROGRAMS AND AUDIENCES

Program / service / initiative	Audiences
Ask Metro campaign	General public; people who are moving in or out of the region; green leaning consumers
Do the Right Thing – Do Your Part KOIN TV campaign	General public
Find-A-Recycler web tool	General public
Household hazardous waste education program (Healthy Homes booth outreach)	General public
Let's Talk Trash public engagement initiative	General public
Master Recycler program	General public, business/commercial
Multifamily recycling outreach program	Property managers, multi-family residents
Natural gardening program	General public, gardeners, families with children
Outdoor school waste reduction education	Middle school students
Recycling Information Center	General public, Metro facility customers
Tools for Living web resources on www.OregonMetro.gov	General public
Glean art project	Metro facility customers
School education program	K-12 students, teachers

RESEARCH FINDINGS ON VALUES AND MOTIVATIONS IN THE METRO REGION

Metro and local governments within the region have conducted both statistically valid surveys and focus groups to learn about the knowledge, values and motivations of its audiences. In some cases focus groups were used after a survey to further understand the results. In others, only focus groups were used or focus groups informed a statistically valid survey. Focus group findings represent opinions held by individuals and cannot be interpreted as representative of a population.

Recent research from the Metro region and statewide from 1999 to 2014 highlights some of the existing values and motivations in Oregon that affect audiences' actions and decision-making related to recycling, reuse, waste prevention and toxics. A baseline awareness study occurred for educator program development in 2012. This study will be repeated in 2015.² The bullets below

² EnviroMedia, DHM research, *Sustainable Living: Awareness + Public Perception Survey Results and Findings*, (Prepared for: Metro, September 2012)

represent the best of what is currently known, but should be considered a starting point to additional research when designing new programs or re-tooling existing ones.

- **Saving money or being thrifty.** Waste prevention may have more success when couched in these themes.^{3,4}
- **Helping the community.** Audiences seek to help their neighbors, their school or people with fewer resources. Supporting the community is a motivator to prompt donation and reuse of materials.^{5,6}
- **Protecting the environment:** The Oregon Values and Beliefs⁷ study and a Metro survey⁸ found that three-quarters of Oregonians value protecting the environment for future generations and are willing to consider changing behaviors to do so.
- **General health concerns:** Audiences are concerned about their own health and the health of their families. The health of children is a strong motivator for use of natural gardening products, according to surveys conducted by DHM Research and others.^{9,10,11,15}
- **The health of pets.** Pet owners tend to read labels, use alternative products or not use standard products and to dispose of unused products in preferred manner in order to protect pet health.^{9,10,11,12}

Barriers to behavior change also surfaced in Oregon-based focus groups:

- **The notion that recycling is enough.**¹³ The region has changed behaviors to the point where recycling is now the norm. However, an unintentional consequence is that many people believe they have successfully done their part if they recycle. They are not aware that more can be done – or are not receptive to this notion.
- **We live in a consumer-driven society.** Americans value the choices they have and the economy thrives on consumption. Some people view reusing and reducing akin to sacrifice – either in time or quality.¹⁴

³ DHM Research, Household Recycling Focus Group Research (2013)

⁴ EnviroMedia, DHM research, Sustainable Living: Awareness + Public Perception Survey Results and Findings, (Prepared for: Metro, September 2012)

⁵ DHM Research, Household Recycling Focus Group Research (2013)

⁶ Metropolitan Group, Phase Two Research Findings: The Power of Voice, (Prepared for: City of Portland Bureau of Planning and Sustainability, October 2009)

⁷ DHM Research and Policy Interactive Research, Oregon Values and Beliefs Project (2013)

⁸ Metropolitan Group, Phase Two Research Findings: The Power of Voice, (Prepared for: City of Portland Bureau of Planning and Sustainability, October 2009)

⁹ Research into Action, Household Hazardous Waste survey, (Prepared for Metro, 2007)

¹⁰ DHM Research, Research summary about stormwater behavior (Prepared for Oregon Association of Clean Water Agencies, February 2014). Accessed Feb. 17, 2015 at http://www.oracwa.org/pdf/dhm-acwa-stormwater-rpt_2013.pdf

¹¹ DHM Research, Stormwater Community Telephone Survey (Prepared for City of Salem, August, 2014)

¹² Portland State University Survey Research Lab, Metro Household Hazardous Products Telephone Survey, (Prepared for Metro, 2007)

¹³ DHM Research, Household Recycling Focus Group Research (2013)

¹⁴ Metropolitan Group, Phase Two Research Findings: The Power of Voice, (Prepared for: City of Portland Bureau of Planning and Sustainability, October 2009)

- **Lack of information.** Focus groups¹⁵ on recycling in 2013 found people very confident with usual household waste, but had less confidence with how to deal with bulky or hazardous waste. Metro staff has also observed that when some people believe they have sufficient information, they become less receptive to new information. In some cases, it's not clear whether information is even sought out, presenting additional challenges to reaching target audiences with certain messages.

¹⁵ DHM Research, Household Recycling Focus Group Research (2013)

BEST PRACTICES AND PRINCIPLES FOR PLANNING AND REFINING EDUCATION PROGRAMS

The following sections identify best practices found to be effective for the design and development of Metro’s education programs. In all cases:

- Integrate a communications strategy with initial program design.
- Apply Metro’s relevant style guides for writing and graphic design.
- Apply guidelines for universal design to reach people of all abilities and learning styles. See Appendix F for more information.

Public and customer service

- Use to reinforce an adopted behavior by providing information on locations, schedules, etc.
- Use in coordination with other tactics if the goal is to change behavior (e.g. webpage can provide more detailed information about an action promoted via an advertising campaign).
- To the extent feasible, target messaging to audiences.

Program examples: Metro website, recycling information phone line

Awareness building

- Use to inform audiences, affect attitudes and support other long-term behavior change efforts.
- Target messages to audiences via new or existing research on motivations.
- Measure and evaluate early to confirm results and refine.
- Invest time in the field. Remember awareness and action take multiple touches over time.

Program examples: Ask Metro campaign, Let’s Talk Trash public engagement effort, RID patrol bulky waste tags

Behavior change

- Identify the specific behavior that is impactful and not widely adopted.
- Look to other communities and past Metro practices to build on successes and avoid tactics that did not achieve the desired goal.
- Know your audience: Use existing or new research to identify and target an audience.
 - Learn what would motivate new behaviors to inform marketing tools and content.
 - Provide opportunities for feedback loops as audiences try new behaviors.
- Remove barriers to adopting the behavior – to the extent this can occur without a program infrastructure or policy change.
 - Give people tools that appeal to their values of frugality, community, health, clean water, protecting children and pets, etc.
- Use messaging to both reach the target audience and focus on the desired behavior.
 - Make it personal and use trusted messengers to deliver content.
- Use give-aways, such as native plant seeds, to support or encourage people to try a new behavior (known as “reciprocity”). Note that give-aways should not be used to induce

people to make a commitment such as sign a pledge, but rather to directly support the desired behavior.

- Catalyze commitment with pledges or another mechanism.
- Develop mechanism to measure outcomes and evaluate results.

Program examples: Daycare Logic, Natural Gardening, school-based education program

Serving the region equitably

- Consult with targeted community before planning programs.
- Develop partnerships with trusted members of the audience community to help lessen the stigma of working with the government held by some community members and partners.
- Build relationships in the community to help build trust and spread messages/event information.
- Use existing structures to deliver services.
- Build frequency of outreach delivery into the program.
- Use outreach tactics found to reach the audience.
 - e.g. Spanish radio ads were found to be effective to reach Hispanic audiences to launch the ¡Vamonos! map in spring and summer of 2012. At the September events, nearly half of attendees learned of the event through radio. Radio also was used in Spanish-language recycling campaigns in 2012 and 2013.¹⁶
- Employ outreach staff members who speak the language of the audience.
- Translate information into languages spoken at home by the audience if appropriate after consultation with community representatives. See Appendix H for more information.
- Develop a distribution plan for translated materials that serves the intended audience.

Measurement and evaluation

- Know what you want to measure – awareness, knowledge, actions, habits – and how the measurement will be used to inform future program design and implementation.
- Set meaningful goals and objectives that are specific, measurable, achievable, realistic and timely (SMART) to aid with measurement.
- Know the limitations of your measures.
- Collect and understand baseline data.
- Use a variety of tools to measure results both qualitatively and quantitatively.
- Use existing data where available.
- Use in-house data collection to track effectiveness over time – several times a year instead of once per year, if possible.
- Avoid using actions and tasks that are somewhat meaningless to track knowledge levels or behavior change, e.g. the number of stickers given at tabling events.
- Example data sources:
 - Web analytics quantify click-throughs
 - Changes in tonnage
 - Qualitative phone survey collection
 - Longitudinal measurement

¹⁶ Hispanidad, Phase I Report memo (Prepared for Metro, October 2011); Hispanidad, Phase III Report memo (Prepared for Metro, February 2013)

- Cost per outreach contact

Audience identification

- Use existing data from Metro, PSU, U.S. Census Bureau and/or ESRI Tapestry segmentation to identify basic demographics and language spoken at home.
- Review existing results from Metro's Regional Transportation Options program, RCR programs, local government programs for in-depth information.
- Consult with elders, community leaders to learn about the audiences.
- Conduct informal or statistically valid research to further specify the target audience.

Best practices for effective messaging

- Target messages to audiences and their motivations
- Use plain language, free of technical jargon
- Messages should be positive, concise and tangible
 - Use "do" messages instead of "don't" messages
 - Avoid scolding for not doing enough
- A message with a call to action should:
 - Be limited to one behavior at a time
 - Be achievable
 - Avoid overwhelming people with choices
- Focus on personal benefits: e.g. save time or money, protect health, reduce clutter in your home
- Reinforce social norms, i.e. many other people are already doing it

Use of pilot programs/adaptive management

Best practices for pilot programs and the use of adaptive management have not been identified for waste prevention, reuse and recycling at Metro. Pilot program and adaptive management tactics used by other Metro programs contribute to improvement and success and should be considered.

Building public will

Building the capacity of the public and its representative government to fund structural changes to programs or adopt new rules compelling action can be used to reach solid waste goals. While Metro has used these strategies for other types of public policy efforts, best practices have not been identified for education efforts related to waste prevention, reuse, recycling and disposal. See Metropolitan Group (2009) for more information.¹⁷

¹⁷ Metropolitan Group, Building Public Will: Five-Phase Communication Approach to Sustainable Change, (Metropolitan Group: 2009)

FRAMEWORK FOR EDUCATION PLANNING AND DECISION MAKING

The following tool should be used to plan a new education project that meets goals and objectives established in the Regional Solid Waste Management Plan or Resource Conservation and Recycling Strategic Action Plan and uses identified best practices. The questions below must be completed before starting a Metro Project Concept Form. This form may be completed on your own, with your RCR work team and/or with assistance from Consumer Goods team members and Communications Department staff. Fillable PDF form available.

In addition to indicating “Yes” or “No,” provide relevant information in the “Detail” section.

PART I	Yes	No
1. Have you identified the problem you’re trying to solve with an education project?		
Detail:		
2. Do you have a proposed education project?		
Detail:		
3. Have you clearly identified the goal(s) from the Regional Solid Waste Management Plan or RCR Strategic Action Plan the education project is trying to achieve?		
Detail:		
4. Does the proposed education project use principles and best practices identified in this handbook?		
Detail:		
5. Have you identified an audience for the education project?		
Detail:		
6. Are there infrastructure, policy, system issues or barriers that need to be addressed before the education project can be successful?		
Detail:		

Before completing Part II on the next page, discuss the project with your work team. If the work team agrees that the project is a priority and/or should be considered further, the team’s management liaison will bring the project to the management team to gain approval with a project concept form.

PART II	Yes	No
7. Does the education project align with Metro's priorities in the education strategy?		
Detail:		
8. Are there other agencies or organizations already doing something similar in our region? Prompt: What is Metro's unique role?		
Detail:		
9. Has research been conducted to determine if other programs have attempted to address the identified problem?		
Detail:		
10. Have audience segments been identified? See page 12 for best practices information.		
Detail:		
11. Does the education project have a primary education objective identified? Categories include public and customer service, awareness building and behavior change.		
Detail:		
12. Is the education project asking the audience to take an action?		
Detail:		
13. Does the education project use best practices for serving the region equitably? See page 11 for best practices information.		
Detail:		
14. Does the education project use best practices for measurement and evaluation, see page 11 for best practices?		
Detail:		

GLOSSARY

Attitude	A person's inclination to care or feel concern about something based on their values.
Behavior change	The process of acquiring the information, skills, and motivation required to adopt and continually engage in a specific action.
Community-based social marketing (CBSM)	A type of social marketing that draws from the tools and findings of social psychology and focuses on tactics that help a target audience overcome the perceived barriers to behavior change.
Education	Programs and services that provide people with the means to increase their knowledge and develop the motivation and/or skills to engage in new behaviors.
Marketing	Promoting a behavior or concept using research and communication tools.
Messaging	A focused set of research-based key statements delivered in educational programs or campaigns.
Outreach	Reaching out to an audience to inform them about community issues, opportunities to provide public comment, or to build awareness about desired behaviors or skills.
Prompts	Reminders in the form of signage, labels, postcards or other tools to encourage people to engage in a specific behavior.
Social marketing	A discipline that pulls from both traditional marketing and social science to change people's behaviors by focusing on specific actions.
Social norms	Values and behaviors based on actual or perceived social pressure and community expectations.
Values	Deeply held core constructs about what is good or bad, right or wrong.
Waste reduction	Decreasing the volume of the waste stream through recycling, composting or energy generation or by avoiding waste through tactics like repair, reuse or changes in purchasing and use habits.
Waste Prevention	Preventing the generation of waste through action or choice. Example tactic is avoiding single-use disposable items such as paper napkins or bottled water.

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**MAKING A
GREAT
PLACE**



**Waste Prevention, Reuse
and Recycling Education**

Appendices

August 2015

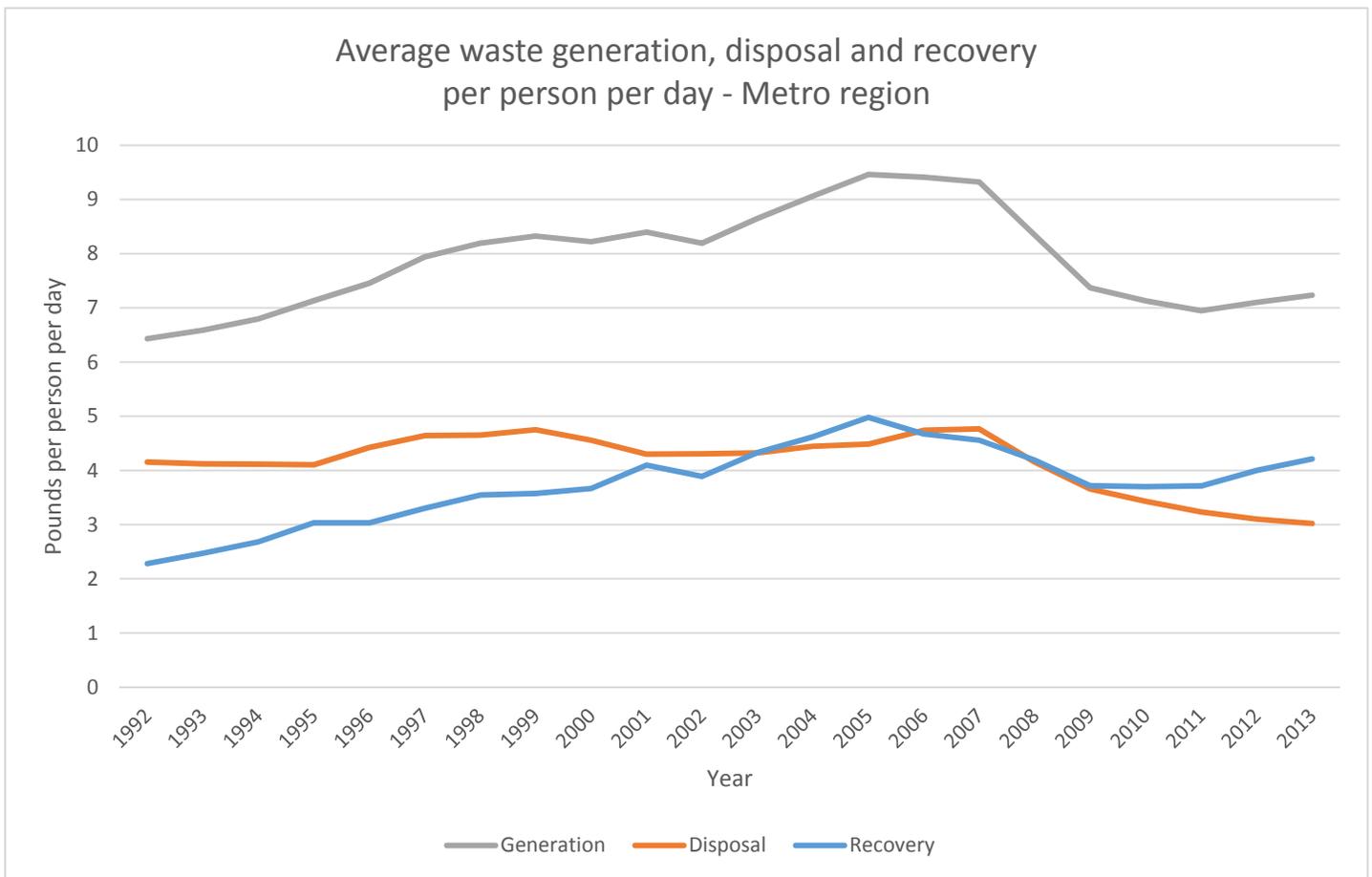
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APPENDIX A

Metro's waste prevention, reuse, recycling and disposal: A timeline of education, policy and change

Most education programs delivered through Metro since the mid-1980s have focused primarily on building awareness to motivate people to change behaviors. The region's education efforts have been most successful when they directly supported, and provided information about, structural operational changes and services that reduced barriers to participation (e.g. curbside recycling and residential food scraps collection). See the chart below for trends in waste generation, disposal and recovery rates.



The timeline below contains Metro’s educational programs within the context of mandated policy changes and the resulting outcomes.

	Policies	Programs	Outcomes/Use of Services
1979	>Metro, in its current form, is established.		
1981		>Metro takes over operation of the Recycling Information Center.	
1982			
1983	>Oregon Opportunity to Recycle Act passed. Requires curbside recycling, education programs and recycling at waste disposal sites.		
1984			
1985			
1986		>Three-year focus begins to build awareness of curbside recycling of newspaper, tin and glass. Yard debris and yard compost accounts for 25% of waste and is a secondary focus. >“Get out of the dump,” two recycling-related campaigns per year to raise awareness of garbage crisis and need for recycling. Ends in 1991 after campaigns on yard waste, proper sorting and commercial recycling.	>Recycling Information Center fields 17,000 calls. >1986 recycling participation rate: 28%. >Waste diversion rate: 25%.
1987			
1988		>First education programs in schools. Focus: How to recycle curbside.	
1989			
1990		>“Bugged by pesticides.” School programs add	

Policies	Programs	Outcomes/Use of Services
	<p>household hazardous waste to education efforts.</p> <p>>Targeted sites program begins. Part of multifamily recycling program to study best practices. Ends in 1994.</p>	
<p>1991 >Oregon Recycling Act passed. Establishes a statewide waste recovery goal of 50% by 2000.</p>		<p>>Recycling Information Center fields 85,000 calls.</p> <p>>1991 recycling participation rate: 61%.</p> <p>>1991 waste diversion rate: 38%.</p>
<p>1992 >All cities in region collect recycling curbside on weekly basis.</p>	<p>>Local jurisdictions begin to provide collection systems and a uniform outreach program for multifamily communities.</p> <p>>Metro designs and funds materials and funds container systems.</p> <p>>“Success With Multifamily Recycling” outreach program begins for managers and residents. Updates made in 1993, 1995, 1996.</p>	<p>>1992 recycling participation rate: 70%.</p>
<p>1993</p>	<p>>Alternatives to pesticides education program begins. Uses "Killer Tomato" display ad in Oregonian.</p> <p>>Paper Train Your Staff campaign (billboards)</p>	
<p>1994</p>	<p>>Metro begins program to sell discounted compost bins in region. By 2006, 94,000 bins are sold.</p>	
<p>1995</p>	<p>>Earth Day Art Contest begins. Winners had their art displayed on four billboards. School programs expand to</p>	

Policies	Programs	Outcomes/Use of Services
	include composting and waste prevention.	
1996		>Home composting rate: 52% of single-family households in Metro region.
1997 1998	>Restaurant and Food Service Guide to Food Donation developed (morphed into the Fork it Over program in 2004).	
1999 >Targeted waste reduction plans developed by Metro and local governments for Organics, Business, C&D, Multifamily sectors.	>Garden of Natural Delights tour begins with goal to raise awareness and motivate residents to reduce use of garden chemicals. Tour ends in 2009; 19,000 participated. >"Barbie Get Real." Waste prevention assemblies for high schools. Unit curricula initiated for high school classes in 2000. >Natural techniques demonstration garden built and summer programming begins. Closes in 2013.	
2000	>Recycling Information Center adds Spanish speakers to staff. >Point of service education about alternatives at local hazardous waste collection events begins. 10,000 people served annually.	>2000 waste recovery rate: 45%.
2001 >State and watershed goals adopted. Metro Region	>Restaurant and Food Service Guide to Food Donation	

Policies	Programs	Outcomes/Use of Services
required to recover 64% by 2009.	revamped (precursor to the Fork it Over Program)	
2002	<ul style="list-style-type: none"> >Find-a-Recycler tool launched on website as part of new website launch. >2002-2003: Tigard lawn care behavior pilot project to decrease chemical use. >First edition of “Grow Smart Grow Safe” consumer guide to product hazards. 	
2003	<ul style="list-style-type: none"> >Take on toxics (TOTS) program at daycare facilities begins. 	
2004	<ul style="list-style-type: none"> >Fork it Over food donation program begins 	<ul style="list-style-type: none"> >2004 waste reduction rate: 57%.
2005		<ul style="list-style-type: none"> >Recycling information center provides 97,688 callers with waste prevention, reuse and composting information. >2005 waste reduction rate: 59%. >Regional population grows by 18% and waste generation grows by over 50% over 10 years. Per capita waste generated increased 2.6% per year from 1992-2005.
2006		<ul style="list-style-type: none"> >2006 waste recovery rate: 56%. >Metro's household hazardous waste facilities serve 44,188 customers; community events serve 12,265 HHW customers.

Policies	Programs	Outcomes/Use of Services
2007	<ul style="list-style-type: none"> >Three-year public involvement effort titled "Let's Talk Trash" for Regional Solid Waste Management Plan ends. >Blue Lake Natural Discovery Garden built and summer programming begins. >Gresham lawn care behavior pilot project to decrease chemical use. 	
2008 >Regional Solid Waste Management Plan, 2008-2018 goes into effect. >Metro Auditor recommends shift in strategy for waste reduction and outreach to meet Metro goals.	<ul style="list-style-type: none"> >Residential recycling campaign. Point of activity tactics and messaging improved sorting habits. Outdoor school begins to provide waste reduction education to 6th graders. >Zoo backyard makeover exhibit built and summer programming begins. >Program overhaul of "Success With Multifamily Recycling" outreach program for managers and residents 	
2009		

	Policies	Programs	Outcomes/Use of Services
2010	<ul style="list-style-type: none"> >Metro's Resource Conservation and Recycling Division adopts strategic action plan. >Electronic devices banned from disposal statewide. 	<ul style="list-style-type: none"> >Natural gardening program begins formal partnership with OSU Extension Master Gardener program to extend program reach. >Metro joins partnership for Grow Smart Grow Safe consumer guide to garden product hazards. Grow Smart Grow Safe goes online as interactive database. >2010 TOTS program changes to focus more on tools to providers and less on education of parents. >"I just don't buy that." Middle school assemblies added to school programs. 	<ul style="list-style-type: none"> >Recycling Information Center fields 90,000 calls. >Find-a-Recycler website logs 50,000 views.
2011		<ul style="list-style-type: none"> >Bulky waste tags: RID Patrol begins using orange tags to identify illegally dumped waste. >Pacific NW Art Program starts. Artists create art from materials gleaned from transfer station. Program later called "GLEAN." >"We're Oregonians and we recycle." Hispanic outreach campaign begins to create awareness of Metro's tools for living programs (Phase I). 	
2012		<ul style="list-style-type: none"> >"Clever together: our everyday choices." Permanent bilingual program begins at OMSI to increase awareness of environmental, social and economic effects of consumer choices. >Healthy lawn care pilot in Tigard and Oregon City. 	

Policies	Programs	Outcomes/Use of Services
2013	<ul style="list-style-type: none"> >iPhone app with consumer guide to garden product hazards. >Phase III of Hispanic outreach campaign focuses on household hazardous waste. >"Recycle More Recycle Less." Pilot project to focus on reuse and waste prevention. >"Let's Talk Trash" public engagement effort begins for solid waste roadmap. >Grow Smart, Grow Safe releases. 	<ul style="list-style-type: none"> >Metro manages 153,000 calls to the RIC and visits to the Find-A-Recycler page. >2013 waste recovery rate: 58%%. >2013 recycling participation rate: 64%.
2014	<ul style="list-style-type: none"> >Metro launches new website based on use data and industry best practices to meet customer needs. >Ask Metro campaign. Promotes Metro's suite of tools for living resources. >Zoo quest: Visitor passport program to increase awareness of the life cycle of electronics and impact on wildlife habitat. 	<ul style="list-style-type: none"> >Youth education program reaches 26,591 participants via 555 school presentations. >Outdoor school provides waste reduction education to 13,470 participants.
2015	<ul style="list-style-type: none"> >iPhone app release of Grow Smart Grow Safe. >Language line added to Recycling Information Center to serve non-English speakers. >Bilingual assemblies added to school programs. 	

APPENDIX B

Behavior change related to waste prevention, reuse and recycling

Most behavior change literature and theorists describe a series of steps that individuals pass through from being unaware of the issue or problem and culminating in a desired action or behavior change.

Bob Doppelt, director of The Resource Innovation Group housed at the University of Oregon, described these steps in *The Power of Sustainable Thinking* and other publications using the "5-D staged approach"^{1,2}:

1. Disinterest: Individuals deny or fail to recognize the possibility of change. "I won't change."
2. Deliberation: Individuals begin to gather information. "I might change."
3. Design: Individuals conclude that benefits to change outweigh the costs. "I will change."
4. Doing: Individuals make overt changes that can be seen by others. "I am changing."
5. Defending: Individuals ward off setbacks and opposition to the action. "I have changed."

At each stage of the continuum, audiences have different motivations and needs in order to successfully move to the next stage, Doppelt writes. Successful education efforts for audiences in the "deliberation" phase will vary considerably from the efforts to audiences in the "doing" phase. Many other theorists and practitioners have described the behavior change process for environmental issues, education and consumer preferences. See also: McKenzie-Mohr, Schultz.

DOPPELT: Align behaviors with existing values

Doppelt and others conclude that people are more motivated to participate in a new behavior when the behavior is aligned with their existing values. *The Ecological Roadmap*, which contains results from surveys and focus groups nationwide, identified 10 audience segments based on their social values for the purpose of public engagement on environmental issues. The Roadmap provides guidance for values to tap and values to avoid for each of the 10 segments when developing education and outreach campaigns and framing issues.³

CBSM: Address barriers to the behavior

Doug McKenzie-Mohr, who coined term "community-based social marketing," advises that in addition to aligning with existing values, behavior change advocates must work to remove real or perceived barriers to participation.⁴ Some of these barriers may be institutional or structural, such as long-distance travel required to dispose of recyclable waste or lack of markets to purchase recyclable goods, for which an education program is insufficient to achieve a waste reduction goal. An effective program designed to promote behavior change will identify how to move a target

¹ Doppelt, Bob, *The Power of Sustainable Thinking*, Earthscan, London; 2008

² Pike, Cara, Bob Doppelt and Meredith Herr, *Climate Communications and Behavior Change: A Guide for Practitioners* (The Climate Leadership Initiative, University of Oregon, 2010). Accessed December 2014 at <http://www.theresourceinnovationgroup.org/SCP-publications>

³ Pike, Cara, Meredith Herr, David Minkow and Heather Weiner, *The Ecological Roadmap: A Guide to American Social Values and Environmental Engagement*, (2008)

⁴ McKenzie-Mohr, Doug and William Smith, *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing* (2008)

audience from simple awareness of a problem to actively engaging in the problem by both addressing real or perceived barriers and ensuring the new behavior is consistent with or supports existing values.

Community-based social marketing draws from the tools and findings of social psychology to encourage more sustainable behaviors. Through careful research and planning, community-based social marketing efforts strive to identify the barriers to behavior change and help a target audience overcome them. Before initiating a social marketing campaign, work is needed to identify the specific behavior that will help address program goals and has a potential to be adopted by audiences. Key steps to a community-based social marketing campaign include^{5,6}:

1. Identify barriers to a behavior, through focus groups, surveys or other empirical research.
2. Design a strategy that uses tools that help change behavior based on key barriers identified.
3. Pilot the strategy with a small segment of a community most likely to adopt the behavior.
4. Evaluate the impact of the program once it has been implemented across a community.

There are several tactics used by social marketers to encourage behavior change. Three of the most common tactics include:

- **Reciprocity.** A person will often agree to a large request as repayment for a small favor, often in the form of giveaways or other small incentives. In some cases, though, incentives may prompt an initial change but not necessarily lead to a sustained and long-term change.
- **Commitment and accountability.** People are more likely to engage in a behavior if someone asks them to commit to it, makes the commitment public and checks on their progress.
- **Social proof.** People will try to act in accordance with perceived community norms.

⁵ Carlson Communications, *Sustainable Behavior Change Marketing and Communications: Literature Review*, (Prepared for: Metro April 2011)

⁶ Mckenzie-Mohr, Doug and P. Wesley Schultz, *Choosing Effective Behavior Change Tools*, paper presented to Behavior, Energy and Climate Conference, Sacramento, CA, (November 2012)

APPENDIX C

A summary from the literature of best practices for waste prevention, reuse and recycling

A literature review conducted in 2011 for Metro found two “overarching principles” essential to behavior change programs. A 2014 workshop held with local and regional education staff on these topics produced similar themes for best practices. The results of the literature review are borrowed heavily here:

First, integrate a communications strategy with initial program design. A clear goal must be identified along with the target audience, tools and tactics to deliver the program and evaluate its success. The message, messenger, message timing and values of the receiver all must be considered when designing a campaign. The literature is clear in its conclusion that information-based, public service efforts that rely on one-way communication (e.g. brochure or a mailed newsletter) will not lead to behavior change, if that is the goal.⁷

Second, identify and address structural barriers that inhibit new behaviors. The existence of structural barriers will not allow behavior change efforts to be successful, regardless of how well-planned the education strategy. For example, the lack of convenient locations to properly dispose of used batteries could be a barrier to recycling for an apartment dweller without sufficient storage space. Workshop participants in 2014 went even further and said education strategies need to be linked to policy and infrastructure changes to be successful. For example: Reducing the residential food waste stream in Portland has occurred with direct mail and telephone hotline, distribution of kitchen food waste bins to residents, and reducing garbage pick-up to every-other week.

The literature review also found seven best practices for effective behavior change communication:

- **Know your audience and target messages, message delivery to a specific audience’s context and barriers.** Each audience has different motivations and level of trust with government. Messages must be crafted individually that focus on changing behavior and not values. Focus groups, surveys, stakeholder interviews and demographic research all may be used for this best practice. In the absence of new research, data from existing surveys and focus groups conducted by Metro or local jurisdictions can be used to craft messaging.
- **Easy and convenient.** Local focus groups and the literature indicate success is more likely when the focus is on one behavior at a time and when a clear and specific call to action is used. A successful call to action focuses what an audience should “do” rather than a “don’t.” Campaigns that provide choices of behaviors can dilute the primary message or provide too much information to be absorbed by busy people.

⁷ Mckenzie-Mohr, Doug and William Smith, *Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing* (2008)

Mckenzie-Mohr, Doug and Wesley Schultz, *Choosing Effective Behavior Change Tools*, paper presented to Behavior, Energy and Climate Conference (2012)

Metropolitan Group, *Measuring What Matters: The Challenge of Quantifying Social Change* (2009)

Carlson Communications, *Sustainable Behavior Change Marketing and Communications: Literature Review* (2011)

- **Emphasize personal contacts.** The literature finds that people are more likely to adopt new behaviors when someone they trust encourages adoption or when they see a new behavior becoming more common in the neighborhood or workplace.
- **Use partnerships with trusted organizations.** Volunteer programs and community events can be used to increase personal contacts and increase “social diffusion” where a new behavior is spread within existing social networks. In addition to the promotion of personal contact, partnerships may decrease the cost of message delivery.
- **Look for opportunities to help people break old habits.** Use prompts and feedback to support new behaviors. Visual reminders such as stickers or signs can be used effectively to reinforce a new behavior such as composting or proper sorting of curbside recyclables. Providing resources to people in a major life change also promotes a change in old habits. For example, moving to a new residence or downsizing, or becoming a parents.
- **Use multiple delivery methods and times to send messages.** People have varying preferences for receiving messages and often need to receive information multiple times before it begins to resonate. Example delivery mechanisms include direct mail, Facebook posts with video, radio ads and news articles.
- **Build measurement evaluation into program design.**

APPENDIX D

Current behaviors in the Metro region

Recent research with surveys and focus groups conducted in the Portland area provide insights for targeting education efforts to meet Metro's solid waste goals. Most research on current behavior depends on self-reporting, which is a less reliable source of data that can lead to inaccurate or inflated results. That said, data from 2013 shows the Metro region met its recovery goal of 64 percent, which helps reinforce the value of the research for education planning.

Recycling: The majority of people in the region recycle.

The education efforts since the 1970s have been successful. According to recent surveys and focus groups, the action of recycling everyday waste is a usual and expected behavior done without much thought.^{8,9} A 2012 telephone survey found that 95 percent of people say they always recycle or often recycle.¹⁰ Those who are less likely to regularly recycle include Hispanics and other minorities.

Reuse and Waste Prevention: Requires forethought.

Focus groups conducted in November 2013 indicate that reusing and reducing materials also is valued by Metro residents, but the activities elicit less confidence and knowledge.¹¹ Some people use the words reuse and recycle interchangeably. Reducing and reusing requires forethought and intention. The motivations related to these actions relate to more to saving time and money rather than environmental sustainability.

Toxics Disposal: Questions exist

In a telephone survey conducted in 2014 respondents who reported using standard products were asked how they usually dispose of unused amounts of each of those products. Across all of the products, preferred disposal methods (ranging from 62.1 to 83.0 percent) exceed less preferred disposal methods (ranging from 2.5 to 34.8 percent). Respondents more often reported always using a product until it is gone (ranging from 52.4 to 70.9 percent) for all but petroleum-based products, which respondents were more likely to take to a designated disposal facility (39.4 percent). Among the less preferred methods of disposal, throwing leftover products in the trash was most common (ranging from 2.5 to 34.3 percent).¹² The findings from 2007 are quite similar.¹³

Over half, a clear majority, of the respondents (54.1 percent) reported that independent organizations or non-profits are most trusted to provide consumers with information about safety of product ingredients. The majority of respondents (80.8 percent) either strongly agree or agree that businesses who manufacture hazardous products, rather than the government, should have the

⁸ DHM Research, Household Recycling Focus Group Research, (2013)

⁹ EnviroMedia, DHM research, Sustainable Living: Awareness + Public Perception Survey Results and Findings, (2012)

¹⁰ Ibid

¹¹ DHM Research, Household Recycling Focus Group Research, (2013)

¹² Elliott, Debi; Conklin, Tiffany; Johnson, Amber; Piatkowska, Jolanta; and Cameron Mulder, Portland State Research lab, Metro Household Hazardous Products Telephone Survey, December 2014

¹³ Portland State University Survey Research Lab, Metro Household Hazardous Products Telephone Survey, (Prepared for Metro, 2007)

responsibility to inform consumers about the hazards of their products. Only slight differences were found when comparing to these items in the 2007 survey.

The majority of respondents (86.9 percent) either strongly agree or agree that the businesses who manufacture hazardous products, rather than the government, should have the responsibility to pay for convenient facilities or locations for consumers to safely dispose of those products. This question was not included in the 2007 survey.¹⁴

Lawn and Garden Care: Chemicals are in use, but people are receptive to reducing

The 2012 telephone survey found that about two-thirds of residents use chemical products, such as Round-Up, weed and feed, pesticides or weed killer, on their lawn or garden. About a third said they use organic or less toxic products and 78 percent said being chemical-free is at least somewhat important.¹⁵ Chemical use was reported to be 15-20 percent higher in Washington and Clackamas counties. In 2002, focus groups found the reasons for chemical use were time savings, ease of use and effectiveness to deal with a problem. However, most of the participants were concerned about the use of garden chemicals and were open to considering alternative methods.¹⁶

Youth Behaviors and Attitudes: Kids already recycle and have pro-environment attitudes

Surveys completed by elementary and secondary students participating in school education programs during the 2011-2012 school year indicate students already have high levels of agreement with statements affirming their participation in environmentally responsible behaviors surrounding recycling. Items that approached 100 percent agreement include “recycle bottles, cans, and paper” and “use a reusable water bottle.” These surveys, along with surveys conducted during 2012-2013, also indicate that students already have high levels of agreement with items inquiring about interest in and concern for the environment. These findings suggest that youth in the region have moved beyond “disinterest” and “deliberation,” the initial 2 stages of Doppelt’s 5-stages model of behavior change, and are ready to engage in higher level educational content that addresses the stages of “design” and “doing.”¹⁷

¹⁴ Elliott, Debi; Conklin, Tiffany; Johnson, Amber; Piatkowska, Jolanta; and Cameron Mulder, Portland State Research lab, Metro Household Hazardous Products Telephone Survey, December 2014

¹⁵ EnviroMedia, DHM research, Sustainable Living: Awareness + Public Perception Survey Results and Findings, September 2012

¹⁶ Research Into Action, Inc., Household Toxic Waste Focus Groups, Vol. 1, (2002)

¹⁷ Metro-owned data

APPENDIX E

Regional demographics for recycling, reuse and waste prevention education

According to 2013 census data, more than 1.6 million people reside within Metro’s three-county jurisdiction. The region is predominately White (79.2 percent) with English as the dominant language at home (81.3 percent). More than a third of all households had incomes greater than \$75,000 per year, in 2011 dollars.

The population demographics vary significantly across the region. Among key cities, Hillsboro has the highest percentage of Hispanic or Latino residents (22.6 percent) and those who speak Spanish at home (17.2 percent).¹⁸ In Beaverton, more than 18 percent of people speak a language other than English or Spanish, while Gresham has 18 percent of its population below the poverty level. The diversity across the region highlights the need for targeted and specific outreach tailored to the needs of various cultures, languages, reading abilities, motivators and incomes. Figure 1

	Beaverton	Fairview	Gresham	Hillsboro	Lake Oswego	Oregon City	Portland	Tigard	Troutdale	Metro
Total Population (2010 Census)	89,803	8,920	105,594	91,611	36,619	31,859	583,776	48,035	15,962	1,641,036
Race/Ethnicity – Collapsed across Ethnicity¹ (Hispanic or Latino counts duplicated in other race categories)										
Hispanic or Latino	16.3%	16.4%	18.9%	22.6%	3.7%	7.3%	9.4%	12.7%	10.6%	11.7%
White	73.0%	73.1%	76.0%	73.3%	89.3%	91.1%	76.1%	79.6%	83.6%	79.2%
Black or African American	2.6%	4.6%	3.5%	2.0%	0.7%	0.6%	6.3%	1.8%	2.1%	3.3%
American Indian and Alaska Native	0.6%	1.1%	1.3%	1.0%	0.4%	0.9%	1.0%	0.7%	1.0%	0.9%
Asian	10.5%	5.5%	4.3%	8.6%	5.6%	1.7%	7.1%	7.2%	4.6%	6.5%
Native Hawaiian or Other Pacific Islander	0.5%	1.0%	0.7%	0.4%	0.2%	0.2%	0.5%	0.9%	0.4%	0.4%
Some Other Race	8.2%	9.7%	9.8%	10.0%	0.8%	2.3%	4.2%	5.9%	6.1%	5.4%
Two or More Races	4.5%	5.0%	4.5%	4.7%	3.0%	3.1%	4.7%	4.0%	4.0%	4.2%
Language Spoken at Home²										
English	67.0%	70.9%	68.7%	63.9%	84.4%	83.3%	75.1%	75.5%	75.8%	81.3%
Spanish or Spanish Creole	11.4%	10.3%	13.5%	17.2%	2.6%	4.6%	6.8%	9.6%	5.9%	8.9%
Vietnamese	1.1%	3.3%	0.7%	1.3%	0.5%	0.2%	2.0%	1.5%	0.8%	1.4%
Chinese	1.6%	0.2%	0.5%	0.4%	2.0%	0.3%	1.5%	0.8%	0.0%	1.2%
Russian	0.7%	0.0%	1.4%	0.3%	0.2%	1.1%	1.4%	0.5%	0.8%	1.0%
All Other Languages	18.2%	15.4%	15.2%	17.0%	10.4%	10.5%	13.2%	12.0%	16.7%	6.3%
Household Income in Past 12 Months³ – Collapsed into 8 Groupings (in 2011 inflation-adjusted dollars)										
Less than \$10,000	5.3%	3.6%	8.1%	4.3%	4.1%	7.4%	8.8%	3.0%	3.6%	6.3%
\$10,000 - \$14,999	4.5%	4.7%	5.5%	3.4%	1.2%	4.3%	5.8%	4.2%	1.6%	4.6%
\$15,000 - \$24,999	9.3%	7.1%	10.9%	7.8%	5.9%	8.6%	10.8%	9.8%	8.9%	9.4%
\$25,000 - \$34,999	11.3%	12.1%	11.3%	9.8%	7.5%	8.2%	10.7%	9.3%	11.1%	9.8%
\$35,000 - \$49,999	14.5%	19.4%	16.3%	12.0%	11.2%	14.1%	13.7%	14.0%	14.5%	13.7%
\$50,000 - \$74,999	20.1%	21.9%	20.1%	21.9%	15.8%	21.8%	18.6%	17.6%	20.5%	19.2%
\$75,000 - \$99,999	11.9%	13.7%	13.4%	17.3%	13.1%	14.7%	11.5%	14.1%	18.4%	13.3%
\$100,000 or more	23.1%	17.5%	14.5%	23.5%	41.2%	20.9%	20.1%	27.9%	21.4%	23.8%

¹Sources: 2010 Census Summary File 1, Table P5.

²Sources: 2007-2011 American Community Survey 5-year estimates, Table B16001.

³Sources: 2007-2011 American Community Survey 5-year estimates, Table B19001.

Figure 1: Selected Demographics for Nine Metro Cities. Data compiled by Portland State University, 2013.

¹⁸ Beaverton, Fairview, Gresham, Hillsboro, Lake Oswego, Oregon City, Portland, Tigard and Troutdale

summarizes key demographic data for the Metro region, as compiled by Portland State University for Metro.¹⁹

Education program demographics

The Resource Conservation and Recycling Division’s equity goal states the division should “Invest in equitable involvement and benefits for all members of the community in implementing the program’s strategies and actions.” RCR contracted with PSU in 2013 as a first step to better understand the demographics of communities it serves in its programs, gauge progress toward the equity goals.

The results showed that RCR’s education programs targeted to the general population proportionally reach women, people older than 30, people who identify as White, speak English and own their home.

Figure 2 summarizes the study results for the general population for five key programs where respondents were underrepresented compared to Metro’s population. ²⁰

Recycling Information Center: People who use Metro’s Recycling Information Center tend to live in single-family homes and have an annual household income above \$50,000. A survey found that RIC users are overrepresented by women, people between the ages of 50-69 and people who identify as white.

Subgroup(s) of Survey Respondents Underrepresented by Program					
Demographic Characteristic	Recycling Information Center ¹	Natural Gardening: Learning Gardens	Natural Gardening: Farmers’ Markets	Natural Gardening: E-newsletter	Master Recyclers
Gender	Men	Men	Men	Men	Men
Age	18-49 years	18-29 years 50+ years	18-29 years 40-49 years	18-49 years	18-29 years 70+ years
Race and Ethnicity	People of Color	[similar]	People of Color	People of Color	People of Color
Language Spoken	N/A	Non-English	Non-English	Non-English	Non-English
Home Ownership	N/A	[similar]	Renters	Renters	Renters
Annual Household Income	Under \$50,000	\$15,000-\$34,999	\$15,000-\$24,999; \$35,000-\$49,999; \$100,000 or more	\$35,000-\$99,999	\$10,000-\$14,999; \$15,000-\$24,999; \$35,000-\$49,999

Figure 2: Comparison of survey respondents to Metro Region’s general population. Source: Portland State University, 2013.

Recycle at Work: The majority of survey respondents were employees at the business and they tended to be women. Businesses owned by white males were overrepresented in the program compared to the general labor force.

Multifamily Waste Prevention and Recycling Program: Compared to the general Metro population, residents of multifamily complexes receiving waste prevention and recycling

¹⁹ Portland State University Survey Research Lab, Measuring Demographics of Communities Served by Metro’s Resource Conservation and recycling Division, 2013

²⁰ Ibid

information from the program are more likely to identify as Hispanic/Latino, speak Spanish at home and have a lower household income.

Youth Solid Waste Reduction Education Program: Participants in the school programs for waste prevention largely mirror the general population with regard to race, ethnicity, language spoken and income status. During the fiscal year of 2013-2014, Metro provided 555 presentations to over 26,000 participants²¹. Additionally, Metro partners with three Outdoor School providers to deliver waste reduction education at 15 different sites to sixth grade students from four school districts.²² Teachers and camp counselors are also exposed to waste reduction materials as they receive training on how to implement the programs during outdoor school.

Natural Gardening Demographics: Metro's natural gardening content is targeted toward current and future homeowners within the Metro region. People who completed surveys at Metro's learning gardens were most commonly women, people between the ages of 30-39, and people who speak English. Some demographic information collected in the 2008 Gardens of Natural Delights tour Ten-Year Review indicate that natural gardening participants tend to be higher-income, higher-age people who identify as "white not Hispanic."²³

Reaching Hispanic audiences

Metro has been working with culturally diverse communities through Recycling Information Center campaigns focused on Hispanic audiences. From 2011-2013 Metro contracted with Hispanidad to create a culturally relevant sustainable living campaign to reach targeted Hispanic households. In 2011 the contractor created a campaign the audience would feel is absolutely for them. The Somos Oregonenses y Nosotros Reciclamos (We're Oregonians and we recycle) campaign featured Hispanic individuals from all walks of life who serve as examples of individuals who are a part of Oregon's Hispanic community and actively participate in sustainable living behaviors. This campaign was repeated again in 2013.

Key findings from an informal intercept survey conducted in 2012 by Hispanidad targeting Spanish-dominant and Spanish-preferred Hispanics found that:

- Portland-area Hispanics are receptive to Metro's recycling messages; however, reach and frequency play a critical role in ensuring the effectiveness of the message(s);
- Caring for the environment is a key motivator in recycling behavior;
- Of those respondents who indicated they do not recycle, it is primarily a result of not knowing how or not having the means to do so;
- There is an opportunity to enhance the recycling message, and to introduce the complementary concepts of "reusing" and "reducing;" and
- Additional efforts to promote the Metro "brand" are needed and will pay off with increased awareness of Metro's role in sustainability initiatives.

Key findings from the Regional Travel Options project Vamanos, also focused on Hispanic audiences.

- Personal relationships were key to success of the project.
- Partnerships helped lessen the stigma of working with the government held by some community members and partners.

²¹ Metro, Waste Reduction Education School Programs, (DATE)

²² Pacific Research and Evaluation, Evaluation of Waste Reduction Education at Outdoor School, 2013

²³ Grimm, Carl, Gardens of Natural Delights tour Ten-Year Review, 2008

- Spanish-speaking outreach staff was paramount to the success of many partnerships.
- Spanish radio ads were found to be a very effective way to reach Hispanic audiences to launch the map in spring and summer of 2012. At the September events, nearly half of attendees learned of the event through radio.
- Word of mouth was strong for event participation. Many attendees reported hearing about events and the program from neighbors and Metro community partners.

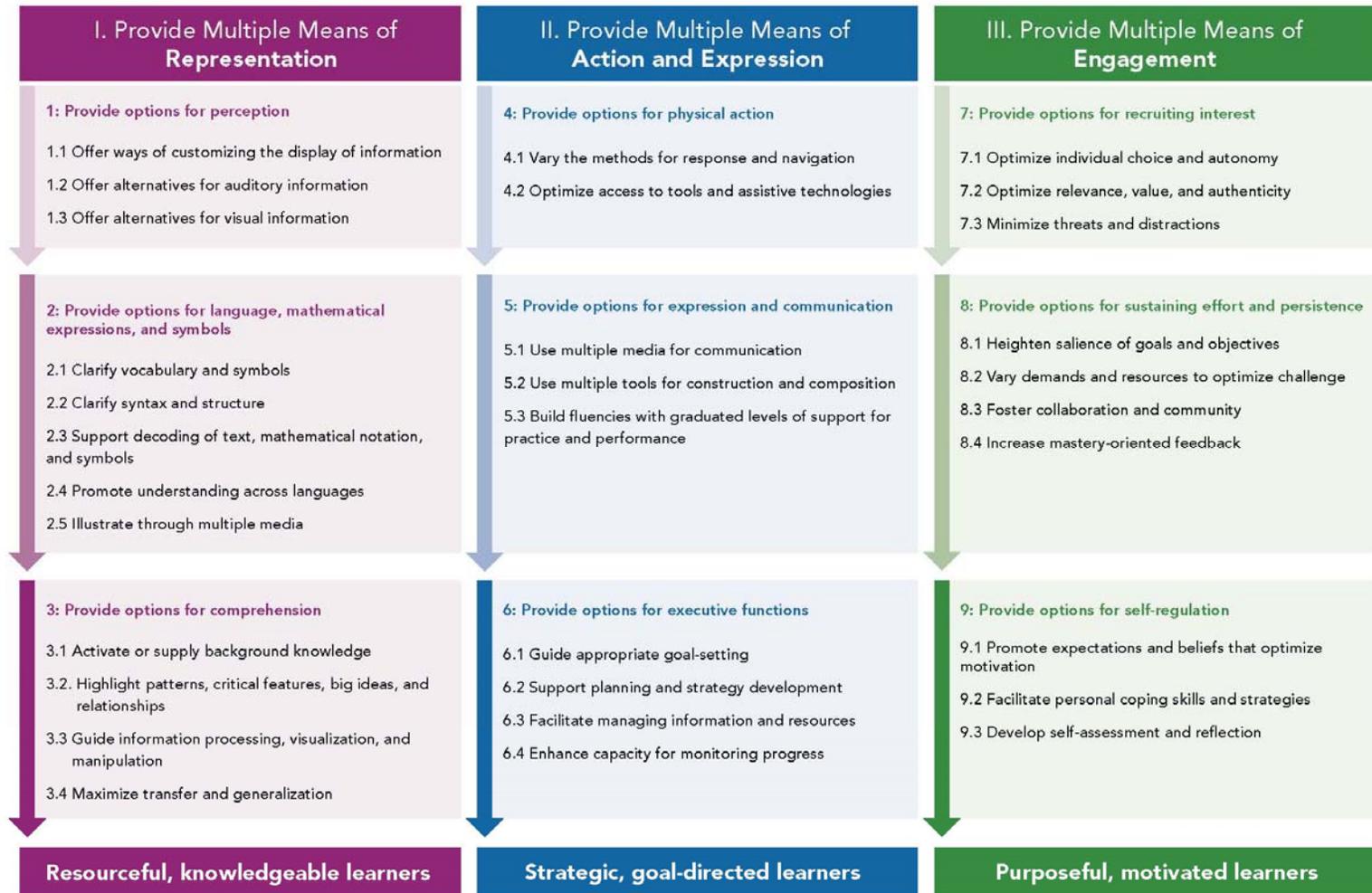
APPENDIX F

Guidelines for universal design

At the Center for Universal Design at North Carolina State University a group of architects, product designers, engineers, and environmental design researchers established seven principles of universal design to provide guidance in the design of products and environments. The principle of universal design are listed below along with an example of an application in an educational setting for each.

1. **Equitable Use.** The design is useful and marketable to people with diverse abilities. For example, a website that is designed to be accessible to everyone, including students who are blind and using text-to-speech software, employs this principle.
2. **Flexibility in Use.** The design accommodates a wide range of individual preferences and abilities. An example is a campus museum that allows a visitor to choose to read or listen to the description of the contents of a display case.
3. **Simple and Intuitive.** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level. A navigation screen for an online registration system that is accessible to a visitor who is blind and using text-to-speech software is an example of an application of this principle.
4. **Perceptible Information.** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities. An example of this principle being employed is when multimedia projected in a noisy student union facility includes captioning.
5. **Tolerance for Error.** The design minimizes hazards and the adverse consequences of accidental or unintended actions. An example of a product applying this principle is an educational software program that provides guidance when the user makes an inappropriate selection.
6. **Low Physical Effort.** The design can be used efficiently and comfortably, and with minimal fatigue. For example, doors that open automatically for people with a wide variety of physical characteristics demonstrate the application of this principle.
7. **Size and Space for Approach and Use.** Appropriate size and space is provided for approach, reach, manipulation, and use regardless of the user's body size, posture, or mobility. A study area with adjustable tables designed for use by students with a wide variety of physical characteristics and abilities is an example of employing this principle.

Universal Design for Learning Guidelines



Other universal design resources

- Universal Design: <http://www.cast.org/our-work/about-udl.html#.VTF7w039mUk>
- Universal Design for Learning: <http://www.universaldesign.com/about-universal-design.html>
- Do It Universal Design: <http://www.washington.edu/doiit/programs/accesscollege/faculty-room/universal-design>

APPENDIX G

Current Metro education program case study in best practices

School Education

Metro has been offering waste reduction education programs in schools since around 1988. School programs were originally developed to teach students in elementary grades how to recycle at home but have since expanded to serve K-12 audiences and to include an upstream focus that examines the impacts of unsustainably extracting and consuming natural resources. School education programs build foundational knowledge surrounding waste prevention and resource conservation and strive to promote environmentally responsible behaviors through increasing students' sense of personal responsibility and self-efficacy. Best practices are applied to school programs at three key stages: development, implementation, and evaluation.

Program development:

- Program content aligns with Metro's goals and RSWMP directives
- Content reinforces curricula teachers are already implementing and aligns with school standards
- Format and program logistics are feasible within the context of a school setting
- Approach, content, and method of delivery are developmentally appropriate and informed by research-based frameworks and theories
- Multiple learning styles are utilized to meet the needs of diverse audiences
- Material is relevant to students
- Outcomes are clearly identified and are measurable

Program implementation:

- Delivery is developmentally appropriate and is responsive to students' individual experiences and values as well as sensitive to socio-economic conditions
- Presentation is objective and science based; students are encouraged to draw their own conclusions
- Program is student-centered and interactive and/or hands-on utilizing question-based teaching techniques, discussion, modeling activities, manipulatives, demonstrations, stories, drama/arts, etc.
- Includes partnerships and extends learning beyond school/immediate context to include families and communities when appropriate
- Accesses and utilizes students' prior knowledge, promotes systems thinking and examination of individual impact
- Serves diverse audiences with a focus on proportional reach across the region when appropriate

Program evaluation:

- Measurement includes tools for collecting both qualitative and quantitative data
- Use multiple evaluation tools:
 - Focus groups with students
 - Structured interviews with teachers
 - Satisfaction surveys

- Informal internal observation of program
 - Pre- and post-surveys utilizing control groups
- Use findings to learn about current audience attitudes, behaviors and opportunities, identify areas of improvement, measure success against goals and potentially reexamine goals and objectives.
- Build a community of practice around effectively evaluating programs.

APPENDIX H

Work in culturally diverse communities

Excerpt from: Portland-Multnomah County Climate Change Preparation Strategy: Risk and Vulnerabilities Assessment (2014) Chapter Two, Climate Equity²⁴

Putting equity into practice requires looking at relevant questions, data and priority setting needed to advance equity in decision-making. To ensure the most equitable outcomes possible, these or similar questions should be explored at different phases of a project, policy or program:

- What are the desired results or outcomes of the action?
- What are the current and historical racial disparities related to the action (or similar actions in the past)?
- Does the action involve land or space? If yes, how is any historical connection to the land and the populations who hold such connections considered in decision-making?
- Who primarily benefits from the action?
- Are racial, ethnic, low-income populations, older adults or disabled people positively affected by the action? Is there a missed opportunity to reduce existing disparities these communities experience?
- Are there unintended consequences or negative impacts of this action for racial, ethnic, low-income communities, older adults or disabled people? If so, what are the strategies to mitigate negative impacts?
- How does the proposed action promote 1) meaningful engagement of those most impacted, and 2) transparent, inclusive and empowering collaboration?

Translation

The following criteria were developed to help Metro departments identify documents for which translation is not required but may be beneficial.

- Client population: Does a specific Limited English Proficiency (LEP) population consistently access your department's services?
- Frequency: Has this material been requested in other languages in the past?
- Reliance on services or programs: How important is a particular service or program to a LEP population? Does a particular LEP population rely on these services more than other services? To learn more about program relevancy, see Language Discussion Group report, 2013.
- Availability: Does a translated version of this material already exist from other agencies? Check to see if other local, state or federal departments already have this material available in other languages.
- Safety: Is this message or material critical to ensuring the safety of community members?

²⁴ Portland's City Council and Multnomah County's Board unanimously adopted the joint city/county Climate Change Preparation Strategy and the associated Risk and Vulnerabilities Assessment. Access: www.portlandoregon.gov/bps/ccps

- Emergency: Is it an emergency? Is this a critical message that needs to be disseminated to the community or to a specific language group?
- Consistency and longevity: Will the content be consistent over a long period? Messages that change often may be less suited for translation, when compared with longer-lasting messages.

APPENDIX I

Handbook update schedule

The RCR Consumer Goods Team is committed to updating the Education Strategy Handbook, Appendices and behavior strategies on annual basis, with the first updated schedule for fall of 2016. Fall was selected as the most advantageous time to consider updates in part to advantageously timed with Metro's annual budgeting exercise which takes place in late Fall and early Winter. At that time any edits and updates will be made to the documents.

APPENDIX J

Results from November 2014 Best Practices Workshop



Metro

**Waste prevention, reuse, recycling and disposal
education**

Principles and best practices for the Metro region

Workshop summary

Date: Thursday, Nov. 6, 2014
Time: 8 a.m. – 12 p.m.
Location: Metro Council Chamber
Metro Regional Center, 600 NE Grand Ave Portland
Purpose: Gain input for draft Education Principles and Best Practices Handbook.

Summary Results:

- About 30 people attended the workshop and were about evenly split between Metro staff and local government staff.
- Key themes that emerged related to education best practices included the following:
 - Measurement and evaluation of results is necessary. Comments included:
 - If you can't measure it, don't do it
 - Know what to measure
 - Establish and use a baseline
 - Use existing data where possible; use multiple tools
 - Write and use meaningful goals and objectives.
 - Specific, Measurable, Achievable, Realistic and Timely
 - Be clear on the desired outcomes
 - Know your audience. Comments included:
 - Use research (new or existing) to learn about your audience
 - Match your message to your audience
 - Meet people where they are
 - Make it personal
 - Use adaptive management and pilots before launching full scale implementation
 - Build on existing successes and learn from mistakes
 - Messages should be positive, concise and tangible
 - Use point-of-contact reminders and prompts
 - Peer-to-peer and personal contacts work
 - Link policy and infrastructure (e.g. service changes) with education efforts to see results
- Top identified challenges included: lack resources (budget, staffing, time, knowledge), cultural barriers to behavior change (consumer culture, apathy, capitalism), reaching diverse audiences, politics/political will, complexity of problems and the solutions.

- About a third of attendees provided responses to an online evaluation sent via email link. Attendees found the workshop to be worthwhile. Agenda items focused on case studies and best practice successes were identified as the most useful.

Workshop Objectives:

- A positive experience for all participants where their expertise is honored and valued.
- Participants gain shared understanding of the regional practice of education and outreach activities related to waste reduction and disposal.
- Participants gain new ideas about best practices that lead to waste reduction and proper disposal.
- Participants identify the structural, operational and communications elements that exist in successful waste reduction education programs. Participants are able to give constructive feedback on draft best practices handbook and are informed to support effective participation in development of the education strategy.

Welcome and stage setting

Pam Peck, resource conservation and recycling manager at Metro, welcomed participants and reviewed the meeting objectives. Pam gave the following definitions for terms used during the workshop:

Education: Defined broadly, education includes all programs and services that provide information about waste prevention, reuse, recycling and disposal to youth and adults in the region. This includes classroom presentations, outreach at community events, general public marketing campaigns, and information referral services.

Anne Pressentin, the workshop facilitator from EnviroIssues, reviewed the agenda and explained the meeting process.

Matt Korot, resource conservation and recycling program director, reviewed the region's policies, programs and current status. The region's waste reduction efforts use three strategies, which include policy, infrastructure development, and education. Education is the area in which the workshop participants collaborate most, where their organizations make similar types of investments in time, effort and resources.

Waste reduction education has many goals, which make it difficult to implement. The Metro region has been successful in recycling. To achieve desired outcomes, educators need to change behaviors related to purchasing practices, consumer habits, waste prevention and reuse. Educators need to be more attuned to what has been learned collectively within the region about how to obtain outcomes most effectively.

To be effective, educators need to follow best practices regarding how and when to implement plans. Educators also need to know how to recognize when education is not the best tool to achieve an outcome.

Learning from successes: Education in schools

Freda Sherburn and Kim Taylor shared information about Metro's youth education programs in schools, including outdoor school. The programs build a foundational knowledge about waste prevention and resource conservation, and demonstrate the connection between natural resources and the things we use in daily life. The programs teach kids how to recycle at home, which has the added benefit of spreading the same behaviors to other family members. Over time, the program has added topics including waste reduction and composting.

Best practices - development

Education programs have five components of development:

1. How does the program align with Metro's goals and RSWMP directives?
2. Can the program align with school standards and curricula teachers are already using?
3. How does the program align with Metro frameworks, including the environmental literacy framework?
4. Does the program address different learning styles and audiences?
5. How will the program be evaluated?

Best practices - implementation

Freda Sherburn shared implementation strategies for elementary education programs, which include:

- Focusing on natural resources, the three 'R's - Reduce Reuse Recycle and composting
- Adjusting curricula to focus on reducing consumption and using things longer, e.g. "I just don't buy that"
- Targeting programs for specific age groups
- Using hands-on presentations with visual aids
- Using a question-based presentation style instead of lecture-based
- Puppet shows and assemblies that are engaging and memorable for younger children
- Trying to make what students study in the classrooms real, by providing practical applications
- Presenting in a balanced and unbiased manner
- Giving people choices and letting them make their own judgments

Kim Taylor shared implementation strategies for secondary education programs, which include:

- Preparing students to make decisions that will come with adult life
- Using discussion-style presentations
- Connecting with science standards by discussing topics like habitat, ecosystems and climate change
- Calculating earth 'footprint'
- Practicing making conscious consumption choices
- Providing waste reduction activities in camp programs
- Modeling compost process, decomposition and effects to water quality
- Focusing on science instead of emotions

Best practices – evaluation

Freda and Kim shared the following best practices for program evaluation:

- Collect both qualitative and quantitative measurements
- Measure whether and how behaviors changed
- Use multiple evaluation tools:
 - Focus groups with students
 - Interviews with teachers
 - Satisfaction surveys
 - Informal internal observation of program
- Identify areas of improvement
- Apply what was learned from evaluations moving forward
- Reexamine goals and objectives
- High quality outcomes result in high demand for programs

Questions

- Does the youth education school program approach schools about giving presentations?
 - The youth education school program sends an email at the end of the school year to teachers explaining what the program offers. The responses to that email book the program for the next year.
 - The program targets schools that have not been previously or recently reached before returning to other schools.
- What is the reach of your program by county?
 - The school program tries to reach a proportional amount of schools in different counties by population.
 - Multnomah County: 50%
 - Washington County: 25%
 - Clackamas County: 25%

Learning from successes: Natural Gardening

Carl Grimm shared successes and outreach strategies for Metro’s natural gardening program. The goal of the program is to reduce pesticide use and achieve RSWMP goals for hazardous waste reduction. The first 10 years of the program were awareness focused. As the program continues, it has tried to use data-driven approaches and community-based social marketing strategies.

Best practices for community-based social marketing include:

- Know your audience
 - Research shows that most people use pesticides
 - One-third of people with yards use “greener” products
 - Need to learn what would motivate new behaviors to inform marketing tools and content
 - The natural gardening program chooses to not segment audiences too narrowly, partly due to Metro’s responsibility to serve the whole region, and due to the time and resources required to research and implement programs on a neighborhood scale.

- Get personal
 - The program works with master gardeners because they are trusted sources of gardening information
 - People come to master gardeners looking for solutions
- Remove barriers
 - People have attitudes that natural gardening does not work, is too hard, and costs too much
 - Give people tools that appeal to their values of health, clean water and protecting children
 - Distribute coupons to help with cost barrier
 - Use mobile app to find least toxic approaches to gardening
- Give a little – reciprocity (i.e. give-aways, such as native plant seeds)
- Catalyze commitment
 - The natural gardening program uses a pledge card to get people to commit to desired behaviors
 - Use yard signs to make pledge public – the more public the pledge, the more likely people will keep commitments due to social norms
- Measure
 - Program effects are difficult to measure – It is difficult to measure behavior change
 - Total hazardous waste use is lower than the margin of error for measurement tools
 - Surveys are not completely reliable because people are untruthful
 - People may gain new knowledge but not change their behavior
 - The program is changing strategies to bring measurable results – and building public will

Question

- Are you working with big box stores that sell pesticides about reaching people at the point of sale?
 - Big box stores are easy to go to, but most difficult to change due to corporate culture. One store can have multiple managers for different hours of operation.
 - One of the reasons the mobile app was made was because it was simpler to update the app than to try and work with several managers at multiple stores.
 - Meeting people at the point of purchase is difficult. We try to engage people at other points of contact – at demonstration gardens, etc.

Small group activities

Workshop participants formed six groups to discuss a number of questions. The purpose of the small group discussions was to broaden understanding related to:

- Where best practices are being applied throughout the region
- The structural, operational and communications elements that exist
- How best practices may be applied in the future

Participants were given flip chart paper, markers and pens and encouraged to draw pictures and be creative as they write down their ideas, answers and follow-up questions. A few groups were asked to

share their answers for each question, followed by a larger discussion of ideas with the rest of the groups. The responses given during the report-out session are listed below. Transcriptions of the flip charts are found in the appendix.

Q: What other program examples exist from the region that exemplify best practices to meet waste reduction and/or disposal education goals?

Group 4 report out:

- Tool library
- Waste rescue
- Swap and play
- Repair café
- Trash to treasure
- Social media and other online tools
 - Freecycle
 - Yerdle
 - Craig's list
- DIY movement
- Community supported agriculture
- Farmers markets
- Garbage day reminder tool
- Every other week garbage
- Biggest driver is a poor economy

Group 6 report out

- Portland composts
- Business recycling departments
- Rural recycling rollout

Other discussion

- Stewardship program (Oregon recycles)
- Food waste prevention programs
- Clackamas outreach at county fair
- Gresham outreach at tabling events
- Clackamas county fake food sorting game
- Portland best business awards
- Gresham pledge to be great
- Programs to reduce contamination
 - Vancouver multifamily
 - Portland use with businesses, composting
- Food quest program
- Connecting issues of solid waste with wildlife at the zoo

- Trading program with neighborhood associations
- Arts-based plastic waste prevention project

Q: What best practice tactics were used and why were they successful? What messages resonated in the community and why?

Group 3 report out

- Neighbor-to-neighbor social norm programs
- Clearly communicating desired outcomes
- Super-targeted messages
- Piloting projects
- Fail fast and forward
- Use control groups to understand if a project is working

Group 2 report out

- Salmon program – point of sale labeling
- Hazardous waste disposal – people know to call about hazardous waste
- Data-driven approaches
- Using data on people who recently move or get married to send targeted coupons in the mail

Other discussion

- High-level, successful programs combine tools and education
- The programs deemed successful are the ones we can measure
- Removing barriers, providing incentives or benefits, choosing the right combination of strategies such as education and policy
- Know your audience, segment sectors based on information like time of life
- Research before piloting projects, take advantage of existing research
- Monterey Bay Aquarium fish watch
- City of Portland switched to food scrap collection, reducing barriers to desired change

Q: What program tactics exist to effectively quantify the results of our efforts?

Group 5 report out

- Marry policy with programs
- Use different ways to measure and quantify results
- Understand of baseline data
- Collect post-experience/post-message feedback

Group 1 report out

- Web analytics quantify click-throughs
- Changes in tonnage
- Qualitative phone survey collection
- Many outcome measures are self-reported, which is debatable

- Measure results at different points in an effort: inputs, outputs and outcomes
- Understand cause/effect relationship throughout the chain of events leading to goals

Other discussion

- Recycle at work program – data available to measure change
- “If you can’t measure it, don’t do it”
- Oregon green schools – every school that applies must conduct a waste sort to be certified and re-certified
- Web and social media analytics
- Baseline data
- Track outputs
- Establish consistency in measurements and definitions between jurisdictions
- Use in-house data collection to track effectiveness over time – several times a year instead of once per year
- Longitudinal measurement
- Look at cost per contact – efficiency
- Small jurisdictions cannot afford measurement
- Using existing data sources when available
- Due to expense of measurement, programs often count actions and tasks that are somewhat meaningless, such as the number of stickers given at tabling events
- Know what you want to measure – awareness, knowledge, actions, habits
- How are behaviors like sharing measured?

Q: Planning your next education program: what are essential steps and components?

Group 4 report out

- Go where people are –literally and figuratively
- Find actions people are prepared to take
- Know your audience – barriers and benefits
- Put the right people/messengers on the project
- Focus on what matters and measure it
- Set aggressive goals and be bold
- Adaptive management – know when you make mistakes and retool early

Group 6 report out

- Understand who the messenger is – pick the right messenger
- Customize messages for audiences
- Use existing data sources before creating new ones
- Succeed small before taking a big leap
- Understand the difference between programs and projects – know how to measure them differently

Other discussion

- During the design phase, write meaningful goals and objectives, including how and when the program will achieve goals
- Build a meaningful evaluation at several stages of the program
- Reach out to a diverse audience – capture all end users
- Look at communities where similar programs are already happening and replicate and improve upon it
- Approaches will vary to reach different audiences
- Get to know thought leaders in the community
- Reach out to communities that are not part of the dominant culture
- Make sure goals and objectives are measurable
- Talk about desired outcomes beyond measurable goals

Sticky wall activity

Meeting participants were asked to write down existing challenges and barriers to meeting waste reduction and disposal education goals on half-sheets of paper. Participants put their written challenges on a sticky wall and grouped similar challenges together into categories. The emergent categories are listed below. A transcript of all challenges submitted are found in the appendix.

Challenges:

- Resources – budget, staffing and time
- Cultural barriers to behavior change – consumer culture, apathy, capitalism
- Challenges reaching diverse audiences – language barriers, trust
- Politics
- Measurement
- Complexity – too many steps
- Common misconceptions
- Meeting priorities
- Education is not always supported by policy or infrastructure

Participants were asked to find a partner and list three best practices that could be used to address the challenges on the sticky wall, or a best practice that should be reexamined for its effectiveness. Examples discussed during the workshop are listed below. A complete list of best practices submitted are found in the appendix.

Best practices to address challenges:

- Do a better job of setting measurable education and outreach goals, focusing on quality not quantity, prioritizing goals based on broad agreement of desired outcomes and values
- Know the audience beyond demographics – understanding values, and who are trusted messengers
- Customize communications to the audience – link communications to the desired outcomes and metrics
- Successful outreach must be coordinated with policy and infrastructure

- Evidence-based programs
- Specific, focused goals
- Have realistic, affordable data sources to measure
- Build barriers to negative behaviors
- Do not ask individuals to make choices that go against their own values of convenience – structure choices so the desired choice is most convenient
- Plan the measureable products
- Person-to-person outreach is more expensive but effective
- Collective policy changes
- Build political support for actions
- Clear and controlled goals and objectives aligned with strategies
- Deliver improvement that is meaningful to the public
- Know your audience
- Concise and clear messages
- Use “do” messages instead of “don’t” messages

Best practices to be reexamined:

- Education programs that are not adequately supported by policy or infrastructure
- Annual plan for local jurisdictions are task-driven work plans are not working well – it may be better to plan with goals instead of tasks
- Educating public about waste reduction instead of working with suppliers to change system

Evaluation

Following the workshop, a link to an online evaluation was sent to all attendees and about one third participated. Results included:

- Agenda items on case studies and best practices small group discussions were identified as very useful or useful. Agenda items related to education challenges received mixed results with half of respondents saying they were “somewhat useful.” Two comments indicated that the topic was relevant, but perhaps the format or amount of time devoted was not sufficient.
- Most agreed or strongly agreed the meeting was a valuable use of time and well-planned. A couple of respondents were neutral.
- Half of respondents were from Metro and half from local governments.