

The Implementation and Communication of Source Reduction Policy and Initiatives by United
States Federal, State, and Local Environmental Agencies

by

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Abstract

The Implementation and Communication of Source Reduction Policy and Initiatives by United States Federal, State, and Local Environmental Agencies

by Jessica L. Parson, Master of Applied Science in the Program of Environmental Applied Science and Management, 2010

Source reduction is ranked by the United States Environmental Protection Agency as the preferred resource management practice; however, current source reduction efforts in the US are overshadowed by other waste management practices. It was theorized that the source of disparity might be (1) unequal implementation priorities on a Federal, state, or local level, or (2) insufficient communication between environmental agencies and stakeholders. A panel of ten Federal, state, and local waste management officials participated in a modified Delphi survey exploring the issues surrounding source reduction policy implementation and communication. The study resulted in a focused discussion of the value of source reduction and the challenges environmental agencies face in implementing source reduction policies. The study concludes that while the value of source reduction is not debated, there are several barriers to implementing these policies in the US, including questions of authority, lack of consistent leadership, implementation cost, and developing effective communications.

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1 Introduction

In the United States (US), Federal, state, and local governments play an integral role in protecting the environment by identifying environmental issues facing their society and developing and implementing policy initiatives to protect human health and the environment. The success of an environmental agency can be measured by its ability to implement policy goals and achieve environmental missions. The implementation of environmental programs is predicated on the effective communication of environmental goals to an engaged and educated public, including businesses, interest groups, and individual citizens.

How a society utilizes its resources and manages its waste is a cornerstone of all environmental programs. Source reduction is just one of several resource management practices utilized today in the US to address the perennial problem of waste management. As defined by the US Environmental Protection Agency (EPA), source reduction is “the reduction of the amount of materials entering the waste stream from a specific source by redesigning products or patterns of production or consumption”¹ (e.g., product stewardship and smart consumption). The US EPA ranks source reduction as the most important aspect of their solid waste management hierarchy.² As the US population and its demand for resources increases, the importance of source reduction will continue to grow, especially in light of ongoing efforts by the US Congress to pass comprehensive legislation to change resource management practices to increase efficiency and promote sustainability. However, current source reduction efforts are overshadowed by other management practices (e.g., recycling, recovery, and composting). This disparity between the highly valued principle of source reduction and the often overlooked practice offers a unique opportunity for study as a classic example of preventative versus remedial approaches to environmental governance

¹ US EPA, Terms of the Environment: Glossary, Abbreviations, and Acronyms. (<http://www.epa.gov/OCEPATERMS/>)

² US EPA, MSW Characterization Methodology. (Washington D.C.: GPO, 2009), 1.

With the documented focus on the importance of source reduction in resource management, there may be a number of reasons for the disparity between policy and practice including cultural resistance to change, high level economic considerations, a vested interest in the status quo, or individual behaviors. For the purposes of reducing the scope of this study, the study assumes that the agencies in question have full buy-in for source reduction policy initiatives on a macro-scale and that the reason for the disparity is due to implementation or logistical reasons. Therefore, it is theorized that the reason for this disparity might be due to either (1) uneven implementation on a Federal, state, or local level, or (2) ineffective communication between waste management agencies and the public. Although, most environmental agencies include some sort of public relations office, in practice it more often falls to the relevant subject matter experts to communicate new policy initiatives and complex environmental issues. These subject matter experts become the point of contact with the regulated community, the key informants on environmental policy. On the one hand, these subject matter experts are uniquely qualified by their specialized knowledge of environmental subjects to undertake public and industry education efforts. However, subject matter experts are often faced with the challenge of communicating their expertise in fora and with tools that they were not specifically trained to employ.

Through a focused survey of key agency officials, this study explores the role of municipal solid waste source reduction in resource management policy; the state of source reduction implementation efforts in the US; and how source reduction initiatives and goals are communicated by agencies to stakeholders. The study offers insight into Federal, state, and local level resource management priorities; provides examples of successful and unsuccessful source reduction efforts; identifies relevant resources for source reduction efforts; and provides a snapshot of the current state of source reduction efforts in the US on a national, state, and local level.

In general, the study of source reduction policy implementation and communication is a topic that spans several fields of study from politics and policy instruments to environmental protection to communication. This study specifically offers opportunities to contribute to the current body of work in these fields, inform decision makers at the

national, state, and local level about challenges to source reduction implementation and communication.

Conclusions drawn from this study may contribute to the current fields of environmental communication and policy by providing insight into how agencies prioritize, implement, and communicate environmental programs. For example, conclusions drawn in this study about the role of source reduction in Federal, state, and local resource management programs could be applied towards efforts to study environmental policy setting and implementation in the US as a whole. Further, examples of communication observed between agencies and stakeholders identified by this study would apply to efforts to categorize and gauge environmental communication by governmental agencies in the US and elsewhere.

Results from this study could also support efforts to identify and characterize opportunities for source reduction in current environmental policy making debates, including most prominently the efforts by the US Congress to pass a comprehensive energy or climate change bill. To date, most sustainability initiatives have concentrated on energy generation (e.g., clean energy through renewable resources or energy efficiency through technology initiatives or green building) but source reduction offers a new way of looking at greenhouse gas (GHG) generation and how states and localities can meet GHG reduction goals (e.g., waste energy interface). Results drawn from this study may provide insight into how source reduction currently functions within resource management programs and assist in identifying opportunities for program expansion.

On a practical level, the study could also be used to support current efforts to promote source reduction programs on a national, state, or local level. Specifically, insights gained in this study could assist regulating agencies in identifying weak points in and barriers to source reduction program implementation. These agencies could then, in turn, develop more holistic approaches to identifying source reduction opportunities and successfully implementing their programs. Such guidance could also assist in resource management efforts by identifying and standardizing source reduction goals and metrics across multiple levels of government.

Finally, this study also contributes to the current body of literature on the use of the Delphi Method. Although the method is generally used to reach consensus on complicated issues, the focus on policy and the broader approach used for this study (i.e., to facilitate discussion of priorities and issues without placing un-needed emphasis on a final consensus) would serve to expand on the current literature. Such a use for the method was first put forth by M. Turoff³ and is discussed further in Section 3: Methodology.

Finally, in addition to contributions to current fields of study and agency operations, this study provides for new and continuing research opportunities. For example, while this study concentrates specifically on source reduction, additional studies could use the methods and analysis as a template to study environmental communication related to other environmental issues. Target studies might include other resource management questions pertaining to sustainability, such as renewable energy generation, or other environmental topics, such as climate change or pollution prevention.

³ Murray Turoff, "The Design of a Policy Delphi," Technological Forecasting and Social Change 2, no. 2: (1970), 80.

2 Background

This study is based on an understanding of the basic framework of waste management in the US and how federal, state, and local governments manage non-hazardous wastes. It also builds upon the strategic understanding of how individuals within these governmental units function in order to assist their agencies in achieving stated mission goals. Finally, the study assumes a basic understanding of environmental communication and the methods utilized by agencies, interest groups, and individuals to communicate environmental values and practices. Additional background information for this study is provided in the following sections.

2.1 Waste Regulation in the US

The modern era of environmental regulation in the US can be said to have begun with the creation of the Environmental Protection Agency in 1970 under then President Nixon's *Reorganization Plan Number 3*. The Plan consolidated environmental Offices and Divisions located in other Agencies and Departments into a single environmental agency tasked with the protection of human health and the environment.⁴ In response to public pressures, Congress passed a number of influential environmental statutes throughout the late 1960s and into the late 1970s including the National Environmental Protection Act,⁵ the Toxic Substances Control Act,⁶ the Safe Water Drinking Act,⁷ the Clean Water Act,⁸ the Superfund Act,⁹ and the Resource Recovery Conservation and Recovery Act.¹⁰

The Resource Conservation and Recovery Act of 1976 (RCRA), in conjunction with its predecessor and its amendments,¹¹ created the statutory mandate within the US for the proper handling, management, and disposal of solid (hazardous and non-hazardous)

⁴ US EPA, *The Guardian: Origins of the EPA*. <http://www.epa.gov/history/publications/print/origins.htm>

⁵ *The National Environmental Protection Act*, Public Law 91-190.

⁶ *The Toxic Substances Control Act*, Public Law 94-469.

⁷ *The Safe Water Drinking Act*, Public Law 93-523.

⁸ *The Clean Water Act*, Public Law 92-500.

⁹ *The Comprehensive Environmental Response, Compensation, and Liability Act*, Public Law 96-510.

¹⁰ *The Resource Conservation and Recovery Act*, Public Law 94-580.

¹¹ *The Solid Waste Disposal Act*, Public Law 89-272; *The Hazardous and Solid Waste Amendments*, Public Law 98-616; *The Federal Facilities Compliance Act*, Public Law 102-386; and *The Land Disposal Program Flexibility Act*, Public Law 104-119.

waste. Specifically, RCRA Subtitle D set forth the statutory requirements for the management of nonhazardous wastes by state and local government entities. Under Subtitle D, the US EPA may delegate authority for the management of solid, non-hazardous wastes such as municipal solid waste to individual states for implementation. The US EPA then sets national goals, provides technical assistance, and makes available guidance to states and local government units on the management of non-hazardous solid wastes.¹²

The US Congress also provided statutory mandates for the management of resources under the Pollution Prevention Act of 1990.¹³ As part of the Act, Congress declared:

... it to be the National policy of the United States that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort...¹⁴

Together, the RCRA and the Pollution Prevention Act provide the federal statutory mandate for resource management in general, and source reduction by default, within the US; however, no holistic source reduction program has resulted from the Act. In addition to these statutes and the regulations promulgated pursuant to them, individual states and localities in the US may pass statutory and regulatory requirements in line with or more stringent than the federal requirements. For example, in the State of Washington an Executive Order mandates sustainability goals for state operations,¹⁵ while the City of Atlanta has adopted a zero waste zone.¹⁶ Federal, state, and local governments use a suite of regulatory and non-regulatory approaches to effect change in the way the American public views and utilizes their natural resources.

¹² US EPA. *The RCRA Orientation Manual*. (Washington D.C.: GPO, 2008), II-1 – II-3.

¹³ *The Pollution Prevention Act* as contained within *The Omnibus Budget Reconciliation Act of 1990*, Public Law 101–508.

¹⁴ *The Pollution Prevention Act*, Public Law 101-508, Sec 6602(b).

¹⁵ State of Washington, EO 05-01, 2005.

¹⁶ Sustainable Atlanta. <http://www.sustainableatlanta.org>.

2.2 Solid Waste Management Hierarchy

The US EPA promotes a model of integrated waste management through guidance and policy directives where communities work to reduce the amount of waste entering the waste stream, recover materials from the waste stream through recycling and composting, and dispose of the remaining waste in an environmentally responsible manner.¹⁷ As established under the Pollution Prevention Act, the US EPA endorses a specific hierarchy of resource and waste management practices whereby first and foremost all waste should be “reduced at the source” prior to entering the waste stream (i.e., source reduction).

Source reduction is then followed in preference by Recycling (including off-site composting), Combustion with Energy Recovery, and Disposal.¹⁸

Figure 1 presents waste management practices in the US as characterized by the US EPA.¹⁹

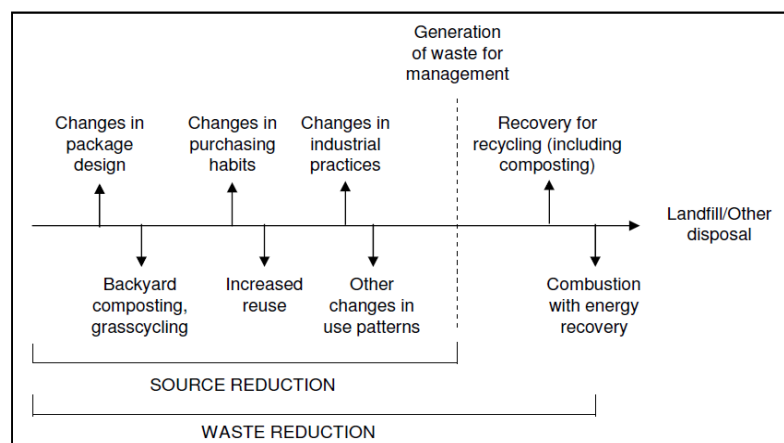


Figure 1: Diagram of Solid Waste Management Practices

2.3 Source Reduction Defined

The US EPA defines source reduction as “the reduction of the amount of materials entering the waste stream from a specific source by redesigning products or patterns of production or consumption.”²⁰ Broadly defined the term includes any activity that prevents materials from entering the waste stream including, but not limited to, product stewardship and smart consumption. There are a number of activities, practices, and programs that are included under the larger umbrella of source reduction. Some activities are specific to businesses or manufacturers such as changes to product

¹⁷ US EPA, MSW Characterization, 1-2.

¹⁸ Ibid.

¹⁹ US EPA, Municipal Solid Waste Generation, Recycling, and Disposal in the United States Detailed Tables and Figures for 2008. (Washington D.C.: GPO, 2009), 49.

²⁰ US EPA, Terms of the Environment

designs to reduce materials use or waste production. Examples of this type of source reduction include reducing packaging materials and design in order to reduce the amount of packaging waste that enters the waste stream or the substitution of less toxic materials into the production process in order to reduce the toxicity of any resultant waste.

Individuals also may practice source reduction activities. For example, source reduction may be accomplished by changing purchasing habits like purchasing in bulk or purchasing durable goods that have a longer lifespan. Alternatively, individuals may reduce the amount of waste generated by using reusable shopping bags, which reduces the amount of plastic waste. Individuals may also practice composting in their homes, which reduces the amount of organic waste entering the waste stream. It is important to note that according to the US EPA's waste management hierarchy, composting of materials off-site is considered a recovery activity, not source reduction, because organics composted off-site have already entered the waste stream and are being recovered rather than reduced.

Table 1 provides select examples of source reduction practices.

Table 1: Selected Examples of Source Reduction Practices²¹				
Source Reduction Practice	MSW Product Categories			
	Durable Goods	Nondurable Goods	Containers & Packaging	Organics
Redesign				
Materials reduction	<ul style="list-style-type: none"> Downgauge metals in appliances 	<ul style="list-style-type: none"> Paperless purchase orders 	<ul style="list-style-type: none"> Concentrates 	<ul style="list-style-type: none"> Xeriscaping
Materials substitution	<ul style="list-style-type: none"> Use of composites in appliances and electronic circuitry 		<ul style="list-style-type: none"> Cereal in bags Coffee brick Mutli-use products 	
Lengthen life	<ul style="list-style-type: none"> High mileage tires Electronic components reduce moving parts 	<ul style="list-style-type: none"> Regular servicing Look at warranties Extend warranties 	<ul style="list-style-type: none"> Design for secondary uses 	
Consumer Practices				
	<ul style="list-style-type: none"> Purchase long lived products 	<ul style="list-style-type: none"> Repair Duplexing Reduce unwanted mail 	<ul style="list-style-type: none"> Purchasing products in bulk, concentrates Reusable bags 	
Reuse				
By design	<ul style="list-style-type: none"> Modular design 	<ul style="list-style-type: none"> Envelopes 	<ul style="list-style-type: none"> Reusable pallets Returnable secondary packaging 	
Secondary	<ul style="list-style-type: none"> Borrow or rent for temporary use Give to charity Buy /sell at garage sales 	<ul style="list-style-type: none"> Clothing Waste paper scratch pads 	<ul style="list-style-type: none"> Loosefill Grocery sacks Dairy containers Glass and plastic jars 	
Reduce/Eliminate Toxins				
	<ul style="list-style-type: none"> Eliminate PCBs 	<ul style="list-style-type: none"> Soy ink, waterbased Waterbased solvents Reduce mercury 	<ul style="list-style-type: none"> Replace lead foil on wine bottles 	
Reduce Organics				
Food scraps				<ul style="list-style-type: none"> Backyard composting
Yard trimmings				<ul style="list-style-type: none"> Backyard composting Grasscycling

2.4 Role of Source Reduction in Waste Management Strategies

The role of source reduction in US waste management strategies can be explored in how the US EPA communicates source management goals and initiatives and how it measures success towards achieving those goals. As previously noted, the US EPA places source reduction at the top of the waste management hierarchy, and as such, does provide guidance and technical assistance for source reduction programs, most notably through their web site.²² The US EPA maintains a series of web sites devoted specifically to source reduction, which provides general information on source reduction

²¹ US EPA, MSW Detailed Tables and Figures, 26.

²² US EPA. <http://www.epa.gov>.

and links to publications and programs sponsored by the US EPA.²³ Specifically, the source reduction web site directs visitors to the WasteWise program site (a voluntary source reduction initiative for businesses overseen by the EPA), a page with information on Pay As You Throw programs (an initiative which may be applied on a state or local level), and information on backyard composting. State and local environmental agency web sites also make this information available to a varying degree.

In addition to information provided on the Internet, environmental officials on a federal, state, and local level communicate with stakeholders through conferences and meetings, videos, TV and radio, and print media. In general, each individual agency makes a determination on how best to communicate environmental programs as a whole and source reduction initiatives specifically based on the nature of their constituency and other logistical constraints. As previously stated, while agency priorities may drive the type of communication an agency engages in, it is most often the waste management and source reduction experts within the agency who are asked to develop and present this communication. How an individual agency or official may choose to communicate source reduction policies specifically and whether or not these efforts were successful was one of the topics under study here and is discussed in more detail in Section 4: Results and Section 5: Discussion.

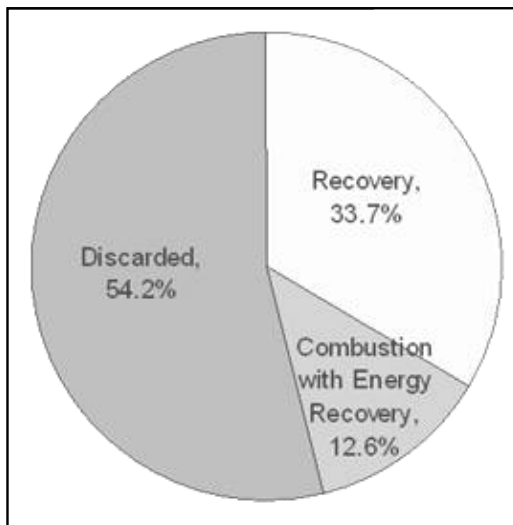
Beyond the emphasis placed on the source reduction in setting priorities and communicating initiatives, another way in which to gauge the role of source reduction is through published data. Every two years, the US EPA makes available a report on municipal solid waste in the US. This biennial report provides information on waste generation (both nationally and per capita), recycling and waste diversion rates, and product specific lifecycle information. The report also includes a fact sheet on waste generation, data tables and figures for both states and the Nation as a whole, and

²³ US EPA. <http://www.epa.gov/epawaste/conserve/rrrr/reduce.htm>.

methodology and characterization information on municipal solid waste in the US. The most recent version of the Municipal Solid Waste Report was published in 2009.²⁴

According to the most recently published data, Americans generated 250 million tons of trash, or about 4.5 pounds per person per day. Of this total, Americans recovered through recycling or composting,

approximately 33%. Discounting recycling and recovery activities, Americans combusted for energy or otherwise disposed of approximately 3 pounds of waste per person per day. The US EPA further estimates that between 55 and 65% of the waste is generated by residences and households, with the remainder being attributed to business and institutions.²⁵



he US (2008)

Figure 2 graphically represents waste management practices in the US in 2008.²⁶

As shown above, source reduction efforts are not included in the data and figures provided by the US EPA on solid waste generation and diversion. Although source reduction is discussed as part of the methodology and examples of source reduction practices are provided (see Table 1), no actual source reduction rates or figures are available either nationally or per capita (unlike the other waste management practices) in the report (e.g., lack of goals, targets, and metrics). It is important to note that although the US EPA does not make source reduction rates or percentages available in the same manner as recycling, recovery and composting, combustion, and disposal

²⁴ US EPA, MSW Generation Facts and Figures (2008).

²⁵ US EPA, Municipal Solid Waste Generation, Recycling and Disposal in the United States: Facts and Figures for 2008. (Washington D.C.: GPO, 2009), 1-4.

²⁶ MSW Facts and Figures for 2008, 3.

rates, it has proposed to include source reduction goals in its 2010-2014 Pollution Prevention Plan. Specifically, the US EPA included goals to increase source reduction through federal procurement and specific metrics related to identifying source reduction opportunities in the field of chemical manufacturing (e.g., by 2010, identify initial opportunities for source reduction for chemicals of concern).²⁷

However, for all the emphasis placed on source reduction at a federal level, data on actual source reduction progress or clear metrics for gauging success are not available either on a federal, state, or local level beyond the most basic of data.

2.5 Development of the Study

It was this noted dichotomy between the communicated importance of source reduction and the lack of documented source reduction successes, especially in light of the documented and highly publicized success of recycling efforts, which originally drove this inquiry. Initial research established the mandate for source reduction and confirmed that the US EPA was making efforts to communicate that mandate. Research was less conclusive about the same emphasis being placed on source reduction efforts on a state and local level. Additionally, informal research into term recognition (source reduction) led the author to question whether environmental agencies were making efforts that were going unrecognized simply because the regulated community was unfamiliar with source reduction as a policy goal. The original problem statement and approach to the study evolved from these statements.

Problem statement: With the documented focus on the importance of source reduction in resource management, it is theorized that the reason for the disparity between prioritization and implementation might be due to either (1) uneven implementation on a federal, state, or local level, or (2) ineffective communication between waste management agencies and the public (including industry).

²⁷ US EPA. 2010-2014 Pollution Prevention (P2) Program Strategic Plan. (Washington D.C.: 2010)

Approach: To have a panel of federal, state, and local waste management officials participate in a modified Delphi Survey exploring the issues surrounding source reduction policy implementation and communication.

Goals and Objectives: The stated goal of the study is to facilitate a discussion of the value of source reduction and the challenges facing environmental agencies in implementing source reduction policies with a focus on addressing the problem statement.

3 Methodology

In order to explore the role of federal, state, and local government in setting source reduction policy, implementing source reduction programs, and communicating with stakeholders, a panel of subject matter experts with a common expertise was formed. Subject matter experts were defined as officials with source reduction responsibilities within US federal, state and local agencies tasked with protection of the environment and waste management. The survey group was presented with a series of iterative surveys on creating, implementing, and communicating source reduction policy. The first survey was based primarily on the critical literature review and the question of waste management priorities. Subsequent surveys explored participant responses through a modified Delphi method. The results are formally documented and analyzed as part of Section 4: Results and Section 5: Discussion. Figure 3 provides an overview of the survey methodology. The following sections provide detailed information on the survey group, the survey method (Delphi), and the survey process.

Figure 3: Study Methodology

Initiation	Survey	Close Out
<ul style="list-style-type: none">• Source Reduction Officials Identified• Survey Invitation E-mailed to Source Reduction Officials [approx. 65 individuals]• Background Questionnaire E-mailed to Initial Survey Group [15 individuals/ 12 responses]	<ul style="list-style-type: none">• Survey 1 E-mailed to Initial Survey Group [12 individuals/10 responses]• Survey 2 E-mailed to Final Survey Group [10 individuals/10 responses]• Survey 3 E-mailed to Final Survey Group [10 individuals/10 responses]• Survey 4 E-mailed to Final Survey Group [10 individuals/9 responses]	<ul style="list-style-type: none">• Survey Evaluation Form E-mailed to Final Survey Group [10 individuals/5 responses]

3.1 Survey Group

In order to ensure significant findings, the composition of the survey group was strictly moderated. Each participant had to meet certain basic eligibility criteria in order to be included as part of the panel. The process for selection and the method of solicitation were subject to approval by the Ryerson University Ethics Board. The following

sections provide additional information on creating the subject matter expert panel for this study. It is important to note that as part of the study, participants were guaranteed confidentiality and no personal information on participants (inclusive of their name, position, agency, or direct quotes) is contained either in this section or in the document as a whole.

3.1.1 Criteria

Although there are a number of individuals who may provide insights into the process by which US environmental agencies set resource management priorities, implement source reduction programs, and communicate source reduction policies, it was determined early in the process by the study coordinators that the survey panel should be composed solely of government officials employed by offices tasked with waste management. This was done for a number of reasons. Primarily, these waste management and source reduction officials offered a perspective least removed from the key decision makers, as they participate in or drive these types of policy, implementation, and communication discussions as part of their positions within their agency. It was determined that these individuals were most likely to have firsthand knowledge of government decision making processes and therefore, be considered experts. Additionally, these types of individuals were most likely to be responsible for communication efforts on waste management between their respective agencies and stakeholders.

Contractors who support these agencies in a waste management administrative role were not invited to participate. Although, like government employees, they may be able to offer insight into resource management prioritization and communication for the agency they support, these individuals are less likely to be able to affect change or influence final decisions on policy in the manner that a government employee might. Additionally, these individuals are generally restricted by additional client confidentiality clauses that would restrict their ability to participate meaningfully in the survey process.

It was also determined early in the process that the only federal agency from which participants would be solicited would be the US EPA. Although other agencies may have source reduction officials, especially as part of their procurement offices (as a

result of the Pollution Prevention Act²⁸ and Federal Facilities Compliance Act²⁹), these individuals were not considered to have a direct impact on resource management practices and initiatives on a national, state, or local scale. This general methodology was also applied to state and local officials, although it is important to note that state government organization may place waste management policy decisions under the auspices of a department solely tasked with natural resource and environmental protection (e.g., Department of Natural Resources) or an office tasked to protect human health (e.g., Department of Health Services). On a local level, waste management officials are most often associated with the Office of Health and Sanitation Services.

In all other aspects, potential survey participants were deemed eligible to participate in the survey panel regardless of tenure, position within the agency, or overall job responsibilities provided that their position included responsibilities for waste management generally and source reduction specifically. Further, an official's level of expertise was not a defining criterion for participation. Provided an official had responsibility for source reduction, potential survey participants were allowed to self select based on their level of interest in the topic. While this method does not ensure a basic level of expertise, it also does not preclude it. Additionally, while expertise is of particular interest in a traditional Delphi survey, Turoff specifically notes that "a policy issue is one for which there are no experts, only informed advocates and referees."³⁰ By self-selecting based on interest in the topic, survey participants can be said to meet this broader statement of intent. Finally, only the timing of the survey provided any further restrictions on an individual's eligibility to participate. Although every effort was made to ensure that only individuals who met the above criteria were invited to join the process, it was ultimately the responsibility of each individual to determine their eligibility based on the criteria as outlined in the survey invitation.

²⁸ *The Pollution Prevention Act*, Public Law 101–508.

²⁹ *The Federal Facilities Compliance Act*, Public Law 102-386.

³⁰ Turoff, 81.

3.1.2 Solicitation

Due to the nature of the survey method and the logistics of performing the survey (discussed in the next section), the target number of participants was set for between ten and fifteen individuals. Although a small sample size, the number was deemed sufficient to meet the needs of the survey – that is, provide for a discussion of source reduction initiatives on a national, state, and local level in order to gain insight into the prioritization, implementation and communication of source reduction goals. For additional information on the limitations of the study imposed by the survey panel size, see Section 5.7.

The list of officials targeted for the survey was compiled from readily available information sources (i.e., federal, state, and local environmental agency web sites and source reduction publications). The initial list of officials included 46 individuals: 10 federal officials including representatives from Headquarters and Regional EPA offices, 18 state officials including two from each EPA Region, and 18 local officials including representatives from the largest municipalities and cities within each state previously selected for the study based on population. The choice of population as a selective criterion was made in order to (1) focus on geographic locations with the greatest opportunity for impact and (2) mitigate to whatever extent possible the question of economic feasibility of source reduction programs. The initial list of officials included representatives from the two most populous states within each EPA Region and the most populous municipalities within those states. The initial list of 46 individuals eventually expanded to include approximately 65 individuals as additional local officials were added to the list in order to ensure inclusion from localities associated with participating states or regions.

Once the final list of officials was compiled and ethics approval was received for the study from the Ryerson University Ethics Board, each previously identified official was emailed an invitation to participate in the study. A copy of the approved email solicitation is available in Appendix A. Approximately thirty percent of the email invitations resulted in some form of response from the individual emailed. Of those responses, approximately ten individuals declined the invitation to participate out-right,

either because of time constraints or because they did not feel eligible for the study. It is important to note that three of the individuals who declined to participate in the study did so because their state had no source reduction program. As a follow-up, these individuals were advised that it was not necessary for their state to have a formalized source reduction program and their insights into waste management prioritizations would be especially welcome because of this gap in source reduction initiatives. One of these individuals later went on to join the study group.

3.1.3 Final Composition

In the final tally, twelve individuals agreed to participate in the final study and were able to meet the initial scheduling requirements. This included four representatives from the federal government, four representatives from the state government, and four representatives from local government agencies. Two of these individuals (both state officials) later dropped out of the study due to scheduling conflicts (one of which never returned the first survey, the other of whom returned the first survey several weeks late). The final survey group also included geographically diverse representatives including officials from the North East, Mid-Atlantic, Mid-West, Mountain, and Western US.

3.2 Delphi Method

A number of study methods were originally considered for use in this study. Potential methods included individual interviews (either in person or via telephone), a conference call/meeting facilitated through the Internet, a traditional survey, and a survey utilizing the Delphi technique. Due to the broad and non-standardized nature of the source reduction efforts and the potential for individuals to impose their personal views on other participants based on the various levels of authority represented by the panel, it was determined that the study must allow for confidential participation. It was also determined that in order to ensure significant results, the study must provide for discussion rather than static polling of positions. Specifically, study participants would have to be provided an opportunity to refine, redefine, and reevaluate their positions and share subject matter expertise with other participants. These determinations restricted the available study methodologies. In the final analysis, it was determined that a Delphi Survey satisfied both of these criteria without posing any insurmountable

limitations. Additional information on the method, advantages and limitations associated with it, and how the technique was modified for use in this study appear in the following sections.

3.2.1 Overview: Delphi Method

The Delphi method is an iterative survey technique originally designed to “allow a group of individuals, as a whole, to deal with a complex

problem.”³² The survey allows users to explore undefined topics, promotes anonymous discussion between experts within a community, and allows participants to draw conclusions on topics based on moderated feedback. Specifically, the technique provides a framework for structured communication wherein participants are posed questions on a topic, provided summarized data from the panel as a whole, asked to assess the group position, and revise or refine their opinion with an eye towards reaching a consensus. The Delphi process allows researchers to document the opinions of experts on a particular topic and capture their collective knowledge, while allowing for new ideas to emerge.³³

Table 2: Critical Aspects of the Delphi Method³¹

- | |
|---|
| <ul style="list-style-type: none">◦ Anonymous response◦ Iteration and controlled feedback◦ Statistical group response |
|---|

The Delphi technique, as originally developed in the late 1950s, was created to forecast (technological) events based on the opinions of a group of experts.³⁴ Since then the Delphi Method has evolved into a broad-based planning and decision making tool that has been applied to an ever expanding list of fields including education, business, health care, public policy and environment.³⁵

³¹ Norman C. Dalkey, “An Experimental Study of Group Opinion: The Delphi Method,” *Futures* 1, no. 5 (1969): 408-426, 408.

³² Murray Turoff and Harold Linstone, *Delphi Method: Techniques and Applications*. (Reading M.A.: Addison-Wesley Publication Company, 1975), 3.

³³ Kathy Franklin and Jan K. Hart, “Idea Generation and Exploration: Benefits and Limitations of the Policy Delphi Research Method,” *Innovative Higher Education* 31 (2007): 237-246, 238.

³⁴ Dalkey, “An Experimental Study of Group Opinion”

³⁵ Uma G. Gupta and Robert E. Clarke, “Theory and Application of the Delphi Technique: A Bibliography (1975-1994),” *Technological Forecasting & Social Change* 53 (1996): 185-211, 189.

In 1969, Turoff proposed that the Delphi technique could serve as a tool for decision makers to explore matters of policy and generate expert information from which to make informed decisions. Unlike a conventional Delphi study, which seeks to arrive at a consensus on the best answer to a question, the result of a policy Delphi is not consensus.³⁶ Rather, in a policy Delphi, informed advocates contribute to a mechanism “intended to bring forward options and alternatives [and] establish pro and con arguments for differing positions.”³⁷ A policy Delphi is particularly relevant to survey groups composed of administrative officials because it directly addresses some of the issues unique to making policy decisions in a political environment. These issues include the impact of strong personalities, the unwillingness of administrative officials to issue strong policy statements without significant reflection, the tendency to not express contradictory views in light of the position expressed by leadership, and the need to maintain public appearances at all costs.³⁸ Recent studies to utilize the policy Delphi include efforts to identify policy priorities for citizens in developing countries,³⁹ efforts to identify and evaluate policy responses to the impact of climate change on water resources,⁴⁰ and an effort to generate an environmental policy implantation plan at a university.⁴¹

3.2.2 Advantages and Limitations of Delphi Method

As with any study method, the Delphi method is marked by a number of advantages and disadvantages that must be weighed against each other in determining whether the method is appropriate for a study. The Delphi method provides (1) the opportunity for confidential feedback, (2) a heavily structured format that allows for targeted discussion of subjective topics for which other analytical methods are unequipped to assess, (3)

³⁶ Turoff, 80.

³⁷ Franklin and Hart, *Idea Generation and Exploration*, 238.

³⁸ Turoff, *Delphi Method: Techniques and Applications*, 82.

³⁹ Martin Hilbert, Ian Miles, and Julia Othmer, “Foresight Tools for Participative Policy-Making in Intergovernmental Processes in Developing Countries: Lessons Learned from eLAC Policy Priorities Delphi,” *Technological Forecasting & Social Change* 76 (2009): 880-896.

⁴⁰ Robert C. de Low, “Exploring Complex Policy Questions Using the Policy Delphi: A Multi-Round, Interactive Survey Method,” *Applied Geography* 15, no 1 (1995): 53-68.

⁴¹ Tarah Wright, “Consulting Stakeholders in the Development of an Environmental Policy Implementation Plan: A Delphi Study at Dalhousie University,” *Environmental Education Research* 10 (2004): 179-194.

the application of quantitative metrics, and (4) an efficient methodology that smartly addresses time and effort concerns. As Franklin and Hart summarize in their 2007 review of the policy Delphi, additional benefits of a policy Delphi include providing experts with “adequate time [for] thinking and reflection,” encouraging a problem-centered, focused discussion, and the avoidance of “face-to-face debates” and group think.⁴²

One of the most significant criticisms of the Delphi process is a study done in 1991 by Woudenberg that evaluated the three major claims by Delphi proponents: that the Delphi technique (1) resulted in more accurate results than other study methods, (2) produced results that are more reliable, and (3) quickly resulted in consensus.⁴³

Woudenberg conducted an evaluation of current Delphi studies (methodology and results) and found that claims of Delphi’s benefits were at best unsubstantiated and at worse, incorrect.⁴⁴ While these criticisms may be valid, Woudenberg did not find that Delphi results were inaccurate or unreliable, just that comparisons made with other methods were perhaps inaccurate. Further, the criticism on consensus did not apply to a policy Delphi, which does not seek consensus. As Woudenberg himself admits in summarizing Thomas Murray:⁴⁵

“Delphi is thus not a science but an art,” which can be used when “nothing better than opinion can be achieved,” while “the final justification for the technique must be on its usefulness to decision makers.”⁴⁶

Beyond the criticisms on the claimed benefits of the Delphi technique, the Delphi method has some limitations including (1) restricting communication between subject matter experts, (2) imposing significant responsibilities on the survey coordinator to accurately characterize discussions, and (3) increasing opportunity for the survey coordinator/team’s preconceptions to be imposed on experts.⁴⁷ Perhaps the most

⁴² Franklin and Hart, *Idea Generation and Exploration*, 238.

⁴³ Fred Woudenberg, “An Evaluation of Delphi,” *Technological Forecasting & Social Change* 40 (1991): 131-150.

⁴⁴ *Ibid.*, 145.

⁴⁵ *Ibid.*, 147.

⁴⁶ Thomas J. Murray, “Delphi Methodologies: A Review and Critique,” *Urban Systems* 4 (1979): 153-158, 157.

⁴⁷ Delphi Method: Techniques and Application. 4-6.

significant limitation of the method is the onus placed on the researchers (and participants) in developing the questions for the first questionnaire.⁴⁸ In a traditional Delphi survey, it is imperative that all key topics within the topic of research be reflected in the first survey. As a way to mitigate this limitation some researchers have recommend that the initial survey be developed from in person interviews with a few key experts prior to beginning the Delphi process. In this study, the initial survey was built from a critical literature review but the risk of omitting a key topic was mitigated by changes made to the survey process (See 3.2.4 Modifications to the Policy Delphi). Additional information on the initial questionnaire is available in Section 3.3.

In addition to the difficulties associated with creating the initial survey, the Delphi Method and study is also vulnerable through the process of developing subsequent survey rounds. Where ever non-qualitative data are gathered or comments are submitted by participants, the survey coordinator must evaluate the data and ensure that all data are properly represented in the following rounds.⁴⁹ Finally, the process relies heavily on the continued participation of the survey panel (although valuable insights may also be collected from an analysis of the character of those who drop out⁵⁰). As Landeta notes, the survey process asks a lot of participants in terms of time and attention to the process and there is little interaction between experts (except for mediated results). This can result in participants feeling “that they have been used and that they have received practically nothing in return.”⁵¹ This study seeks to mitigate this in a number of ways including, the use of examples provided by participants rather than independent research and predicating changes in topic on unique comments submitted. Additionally, at the end of the process, participants were provided with a quick reference sheet detailing all the examples and resources compiled from participants during the survey (See Appendix E).

⁴⁸ W.H.C. Simmonds, “The Nature of Futures Problems,” in Futures Research: New Directions, ed. H. A. Linstone, & W. H. C. Simmonds (Reading, MA: Addison-Wesley, 1977), pp. 13–26.

⁴⁹ Franklin and Hart, *Idea Generation and Exploration*, 243.

⁵⁰ Michal Bardecki, “Participant’s Response to the Delphi Method: An Attitudinal Perspective,” Technological Forecasting and Social Change 25 (1984): 281-292.

⁵¹ Jon Landeta, “Current Validity of the Delphi Method in Social Sciences,” Technological Forecasting & Social Change 73 (2006): 467-482, 470.

3.2.3 Modifications to the Policy Delphi

It is important to note that while this study was based on the policy Delphi, there were some modifications made to the process. Primarily, in a traditional policy Delphi, during subsequent rounds, respondents are presented with the results of the early survey and their previously submitted response and asked to review their previous response and either (1) confirm their standing, or (2) modify it and then provide a reason as to why. In this survey, while respondents were provided with summarized information on group responses, they were not asked to formally review previously stated positions and reconfirm results (except in one case, See Section 4: Results). Rather than limit the survey topic in this manner, it was determined to be more beneficial to the study to allow participants to explore comments and group positions through additional questions. This was made possible by the fact that the goal of the process was not to reach a consensus on any one aspect of source reduction but rather to bring together a panel of informed advocates to explore diverse opinions on a number of issues related to the topic.

Regardless of the changes made to the survey process, the final process continues to meet the general standards of a policy Delphi as outlined in Table 3,

Table 3: Aspects of a Policy Delphi⁵²

- | |
|--|
| (1) Formulation of the issues.
(2) Exposing the options.
(3) Determining initial positions on the issues.
(4) Exploring and obtaining the reasons for disagreements.
(5) Evaluating the underlying reasons.
(6) Reevaluating the options. |
|--|

including determination of a broad undefined topic, presentation of issues, polling of experts, summary of positions and evaluation of options. Most importantly, the goals of the survey process were in line with Turoff's original intent that the method be a tool with which to analyze policy issues.⁵³

3.3 Logistics

In order both to ensure compliance with the process set before and approved by the Ryerson University Ethics Board and to ensure meaningful participation by the survey

⁵² Turoff, The Policy Delphi, 84.

⁵³ Turoff, The Policy Delphi, 80.

group, the survey process included a number of logistical constraints including specific communications guidelines and a stringent process schedule. As per the application approved by the Ryerson University Ethics Board, all communication undertaken for this study was conducted via email. Environmental officials were invited to participate in the study via email, surveys were conducted via email, and survey participants were encouraged to contact the study coordinator via email with any questions or concerns regarding the survey process or questions. It is important to note that because of the confidentiality guarantee provided to participants, no one other than the study coordinator had access to or reviewed communications by survey participants.

In addition to the communications constraints, the study process adhered to a strict schedule. The entire survey process was scheduled to extend over four weeks with one survey issued each week. Surveys were emailed to participants on the first work day of the week and due to the study coordinator no later than close of business on the last day of the work week. The survey process began with the first survey on June 21, 2010, and the last survey was issued on July 12, 2010.

3.4 Surveys

The development, review, and validation of each survey were, per force, the most important aspects of the study. In keeping with the modified framework discussed above, survey questions were developed either to provide direct quantitative information or to provide qualitative data which could then be summarized and used to solicit quantitative data. For example, when an open ended, qualitative question was posed, it was immediately followed in a subsequent survey with a follow-up question for which there was a defined quantitative response.

The initial survey was developed through a critical literature review of the relevant topics. The development of the initial survey is discussed in detail in the following section. As per the methodology, each survey built on the information provided in response to the previous survey by survey participants. The goal of each subsequent survey was to encourage participants to clarify or further refine opinions voiced in previous surveys. On occasion this necessitated introducing a new question set. For additional information on the evolution of topics, see Section 4: Results.

Each subsequent survey was developed over the weekend between the submission of the previous week's survey and the issuing of the following week's survey. Each iteration of the survey process was subject to review and validation by the study coordinator's faculty advisor (without disclosure of confidential identifying information). Any comments or changes to the survey were discussed between the study coordinator and faculty advisor and resolved prior to issuing the survey. Surveys were issued to participants as text inserted into an email and as an attached PDF file. The attached PDF file allowed participants to view tables and figures without distortion from email programs, while the text of the questions provided in email allowed the participants to quickly type in responses and respond via email.

There are a number of general assumptions made when issuing the survey. First and foremost, it is assumed that the participants read and adequately understood the information provided on the nature of a Delphi survey and, more specifically, the study in which they had agreed to participate. This information was provided to each participant as part of the email solicitation (Appendix A) and by agreeing to participate in the survey, each participant certified that they had read and understood the study information and had no questions about the study. No questions were received about the survey either prior to or during the survey process. Second, it is assumed that the participants read and adequately understood each question. During the process the survey coordinator received three inquiries for further clarification and responded within the hour. No further questions were raised and it is assumed that all questions were answered completely and that no other participants had questions. Third, it is assumed that each survey participant read the summary information provided with each survey. The inclusion of a PDF file was done specifically to ensure that figures and findings came through clearly, but this provided the opportunity for survey participants to skip the detailed information and simply respond to the questions provided in the email for their convenience. In order to mitigate this issue, the survey coordinator advised each participant that there was a file attached to the survey email and requested that any individual who did not receive the attachment contact them directly at their earliest convenience. Only one issue was noted with an attachment and the problem was resolved immediately. It is therefore assumed that all participants received the

attachment and viewed it prior to responding to the survey questions. Finally, it is assumed that the only persons to view or respond to the survey were the documented survey participants. At the start of the process, participants were advised not to share the survey materials with other individuals in order to maintain the confidentiality of the study. By agreeing to participate in the survey, officials agreed to this stipulation. As all responses originated from the personal, government, email accounts of each named participant, it is assumed that the official personally responded to the request and did not delegate the information to another.

In total, sixty-one surveys were returned to the survey coordinator as part of this process including the basic questionnaire, the four rounds of surveys, and the close out questionnaire. The results of the survey are discussed in Section 4: Results.

3.5 Initial Survey

As previously noted, the initial survey is of paramount importance when conducting a Delphi study. The initial questionnaire must be inclusive of the key aspects of the topic under discussion. In this study, there were two main aspects (1) resource management practices in general and source reduction practices specifically and (2) communication techniques in general and environmental communication specifically. The first survey needed to establish the disparity in national versus state and local priorities and introduce key aspects of source reduction policy such as practices, objectives, communication methods, and messages. The initial survey was developed based on the background research conducted in the course of defining the scope and direction of the study, as well as the personal experience of the author in working with federal environmental agencies in the US. Where appropriate, information from the critical literature review was used to craft initial survey questions and define the approach to the study. Although it is noted as part of the critical literature review that targeted interviews can serve as an important tool in developing the initial survey, they were not utilized in this study due to limitations in time and scope.

In developing the initial survey, there were three main objectives with regards to source reduction policy and initiatives: (1) to establish a baseline with regards to what source reduction is, (2) to establish what the role of source reduction is and what function it

plays in both resource management and protection of the environment as a whole, and (3) to establish how source reduction programs were being developed and implemented on a national, state, and local level in the US.

The question of what source reduction is and how it functions within the waste management hierarchy was previously addressed in Section 2: Background; that information is not covered again in this Section. However, beyond the question of how the US EPA defines source reduction and how the federal government prioritizes their waste management activities, lies the broader question of what role source reduction should play in resource management activities. Part of this determination lies in examining how other countries and their equivalent state and local units prioritize waste management practices. Both North American and European⁵⁴ examples of waste management practices were consulted to gain insight into how waste management priorities are being set and implemented across differing government units and structures. Canadian examples were of particular note for this study because of the similarity between approaches to environmental regulation in the two countries.⁵⁵ For example, the City of Toronto has instituted a 100% waste diversion program,⁵⁶ while the Province of Nova Scotia instituted a holistic waste diversion program in order to meet national waste diversion rates by 2000 (Canadian Council of Ministers of the Environment).⁵⁷

In addition to waste management program plans, a brief survey was done of individual waste management practices with an eye toward identifying the benefits and challenges to implementation. Of particular interest were questions of how successful recycling

⁵⁴ G. Zotos et. al., "Developing a Holistic Strategy for Integrated Waste Management within Municipal Planning: Challenges, Policies, Solutions and Perspectives for Hellenic Municipalities in the Zero-Waste, Low-Cost Direction," Waste Management 29 (2009): 1686-1692.

⁵⁵ G. Hoberg, "Sleeping with an Elephant: The American Influence on Canadian Environmental Regulation," Journal of Public Policy 11 (1991): 107-131.

⁵⁶ Toronto Solid Waste Management Business Plan (2010). Toronto New and Emerging Technologies Policies and Practices Advisory Group, "Is 100% Diversion from Landfill an Achievable Objective?" (Toronto: 2004).

⁵⁷ Travis Wagner and Paul Arnold, "A New Model for Solid Waste Management: An Analysis of the Nova Scotia MSW Strategy," Journal of Cleaner Production 16 (2008): 410-421.

programs were⁵⁸ and how households work to meet recycling standards.⁵⁹ Of paramount importance, of course, was literature on source reduction efforts. Questions of how governments can encourage waste minimization,⁶⁰ how they administer these programs,⁶¹ and how states tailor these programs for their own use⁶² were all addressed.

The questions posed on waste management priorities and source reduction in the initial survey were developed using this initial research. The first two questions posed sought to establish the opinions on waste management priorities as supported by the agencies represented and individual experts participating in the process. The question of objectives was posed in order to clarify the reasoning behind these priorities and assist participants in articulating values. Finally, the question of successful source reduction programs (as interpreted by the respondent) was included both to generate relevant examples for inclusion in subsequent surveys and to ensure that the critical literature review sufficiently addressed key aspects of source reduction initiatives.

In developing the initial survey, there were three main objectives with regard to environmental communication, specifically (1) to establish a baseline with regards to what environmental communication is, (2) to establish what the role of environmental communication in waste management implementation, and (3) to establish how environmental agencies in the US communicate policy. Environmental communication can be defined as “the planned and strategic use of communication processes and media products to support effective policy-making, public participation, and project

⁵⁸ I. Ferrara and P. Missios, “Recycling and Waste Diversion Effectiveness: Evidence from Canada,” Environmental and Resource Economics 30, no 2 (2005): 221-238.

⁵⁹ D. Scott, “Equal Opportunity, Unequal Results: Detriments of Household Recycling Intensity,” Environment and Behavior 31, no 2. (1999): 267-290.

⁶⁰ D. Taylor, “Policy Incentives to Minimize Generation of Solid Waste,” Waste Management & Research 18, no. 5 (2000): 406-419. Douglas J. Lober, “Municipal Solid Waste Policy and Public Participation in Household Source Reduction,” Waste Management & Research 14 (1996): 125-143.

⁶¹ Waste Management Inc., Waste Reduction: Policy & Practice (New York: Executive Enterprises Publications Co, 1990). National Round Table Series on Sustainable Development, The National Waste Reduction Handbook: An Introduction to Source Reduction & Recycling for Municipal Decision-Makers (Ottawa: 1991). Inform, Making Less Garbage: A Planning Guide for Communities. (New York: 1991).

⁶² US EPA, Municipal Solid Waste Source Reduction: A Snapshot of state Initiatives (Washington, D.C.: GPO, 1998).

implementation geared towards environmental sustainability.”⁶³ As a policy instrument, environmental communication encompasses guidance and technical assistance, education, and marketing/advertising and can be achieved through mass media, networking, and conferences and meetings.⁶⁴ The goal in source reduction communication is specifically to reframe the concept of waste management into a framework of resource management, wherein the public begins to realize that consumption is not a closed loop but rather a life cycle process where resources are put into the system and waste results.⁶⁵ Efforts by governments to communicate source reduction goals are often a question of how to motivate people to take ownership of waste minimization goals. Approaches include appealing to the public responsibility for conservation and stewardship, framing the argument for source reduction in terms of global sustainability,⁶⁶ or placing a monetary value on individual actions or lack thereof.⁶⁷

The questions posed on environmental communication in the initial survey were developed using this initial research. Prior to beginning the survey process, participants were polled to determine if their agency had an environmental communications plan. This served to give context to the responses provided to the first survey. In the first survey, the question of what methods an agency used to communicate with stakeholders was posed in order to establish a baseline for environmental communication methods across survey participants. The question of who the agency specifically targeted for source reduction initiatives was posed in order to tie communication methods to a particular source reduction goal or initiative. Finally, participants were given the option of suggesting other methods and targets in order to ensure that the initial survey was inclusive of all key topic areas. The results of this

⁶³ Manfred Oepen and Winfried Hamacher, Communicating the Environment: Environmental Communication for Sustainable Development (New York: 2000, 15-16)

⁶⁴ Ibid. 64-65

⁶⁵ Julia Corbett, Communicating Nature: How We Create and Understand Environmental Messages (Washington DC: 2006).

⁶⁶ V. Jegatheesan et. al., “The Need for Global Coordination in Sustainable Development,” Journal of Cleaner Production 17 (2009): 637–643. Joost G. Vogtlander, “Communicating the Eco-Efficiency of Products and Services by Means of the Eco-Costs/Value Model,” Journal of Cleaner Production 10 (2002): 57–67.

⁶⁷ Joost G. Vogtlander, “Communicating the Eco-Efficiency of Products and Services by Means of the Eco-Costs/Value Model,” Journal of Cleaner Production 10 (2002): 57–67.

initial survey and information on subsequent surveys is discussed in the following section.

4 Results

In total, participants completed four surveys, a basic questionnaire including background and reference material, and a close out survey. The results of the survey process each week included both quantitative and qualitative information. The results from each of these six data requests are summarized below. A discussion of the results is provided in Section 5: Discussion. It is important to note that due to the confidentiality guarantee provided to survey participants, no personal information including direct quotes from participants is provided in this section. All quantitative information submitted through the survey process including rankings and ratings is provided here unfiltered, but any qualitative data are summarized in order to protect the identity of participants.

4.1 Background Information

Prior to beginning the survey process, the expert panel was asked to complete a brief background questionnaire. The questionnaire asked participants to provide background information on themselves and the waste management office they supported. A copy of the basic questionnaire is available in Appendix B. For additional information on the formation of the survey group, see Section 3.1: Survey Group.

Six of the final ten participants returned the survey. Their responses are summarized below.

- Regarding their tenure with their office and time in position specifically, two survey participants had served with their office for over 20 years, two had served for an average of 15 years, and two participants had served for less than five years. This provided for a representative spread of experience within the survey group.
- Regarding technical job skills, all six respondents noted that the position required at least a Bachelor's degree and one specifically noted the need for a graduate degree. All six also noted the need for an engaged and passionate person who exhibited independent motivation and leadership skills. Additionally, four of the six respondents noted the need for public communication skills.

- Regarding agency environmental communication policies, all six respondents noted that their office either did not have or were not familiar with an environmental communication policy.
- Regarding public outreach technical skills, five of the six respondents noted that their office did have a Public Affairs division. However, three of those noted that they personally were primarily responsible for public outreach.
- Regarding an official source reduction policy, only one of the participants noted that their office had an official source reduction policy with codified goals and metrics. All other respondents referred instead to general waste diversion or recycling goals which had source reduction initiatives rolled into them.
- With regards to specific source reduction initiatives, all but one respondent provided at least one example. Examples provided included: Zero Waste initiatives, procurement standards that include source reduction aspects, WasteWise,⁶⁸ backyard composting, and Pay As You Throw programs.

The results of the questionnaire confirmed the general statement that environmental officials were acting as key informants, often without the support of public affairs offices, and that source reduction efforts were being prioritized and implemented in an uneven manner. Additional conclusions are discussed in Section 5: Discussion.

4.2 Surveys

Four surveys were provided to the subject matter expert panel; in total, thirty-nine responses were received (of forty possible) and included in the final analysis. This does not including responses to the basic questionnaire or the evaluation survey, which are discussed Section 4.1 and 4.3 respectively. Surveys included both quantitative and qualitative data. Results from each of the four survey calls are provided below, sorted by survey number and grouped by topic. Please note that participants were often asked to provide two or more answers and the number of responses varies from question to question based on the number of responses requested and received. Wherever a

⁶⁸ <http://www.epa.gov/wastewise>

conclusion was drawn based on the provided data and used to influence subsequent surveys that information is provided here. A holistic analysis of the responses is provided in Section 5: Discussion.

4.2.1 Survey One

In the first survey, participants were asked to establish a baseline for the study by answering questions about waste management priorities, source reduction objectives, communication methods, target groups, and sources and examples of source reduction initiatives. A copy of Survey One is included in Appendix C.

4.2.1.1 Resource management priorities

As part of Survey One, participants were asked to rank resource management practices according to both the priority endorsed by their agency and their own personal prioritization. The choices provided to participants mirrored the published waste management hierarchy supported by the US EPA. The results of Questions 1 and 2 are summarized in Table 4.

Table 4: Survey One – Resource Management Prioritization (individual responses and means by level of government)					
<i>Question 1: Rank resource management strategies according to the implementation priority currently supported by your Agency/Office. [1 is the highest priority, 5 is the lowest priority]</i>					
	Source Reduction	Recycling	Recovery & Composting	Combustion for Energy	Disposal
Federal	[1,1,3,1]	[3,3,4,2]	[2,2,5,3]	[4,4,2,4]	[5,5,1,5]
Mean	1.50	3.00	3.00	3.50	4.00
State	[5,1]	[1,2]	[3,3]	[4,4]	[2,5]
Mean	3.00	1.50	3.00	4.00	3.50
Local	[3,1,4,3]	[1,2,1,1]	[2,2,2,2]	[5,5,5,5]	[4,5,3,4]
Mean	2.75	1.25	2.00	5.00	4.00
Total Mean	2.30	2.00	2.60	4.20	3.90
<i>Question 2: Rank resource management strategies according to personal implementation priority. [1 is the highest, 5 is the lowest]</i>					
Federal	[1,1,1,1]	[3,3,2,2]	[2,2,3,3]	[4,4,4,4]	[5,5,5,5]
Mean	1.00	2.50	2.50	4.00	5.00
State	[2,1]	[1,2]	[4,3]	[5,4]	[3,5]
Mean	1.50	1.50	3.50	4.50	4.00
Local	[3,1,1,1]	[1,2,3,2]	[2,2,2,3]	[5,5,4,5]	[4,5,5,4]
Mean	1.50	2.00	2.25	4.75	4.50
Total Mean	1.30	2.10	2.60	4.40	4.60

Comments provided in regards to agency prioritization included one comment noting the similarity of the management practice titles to the US EPA management hierarchy, and two comments noting that implementation priority does not always reflect the

assignment of resources, which could result in a priority like source reduction going unfunded regardless of its position in the hierarchy. Comments provided in regards to personal prioritizations included one comment stating agreement with the federal prioritization scheme, one comment on the use of resources (i.e., funds and manpower) by disposal and recycling programs due to their size as compared to source reduction programs, and one comment on the importance of each individual management aspect.

In total, 80% of survey participants ranked source reduction as their number one personal priority. When asked to rank the implementation priority of the same resource management strategies by their Agency/Office, federal respondents again ranked source reduction as the top priority. However, state and local representatives both ranked source reduction implementation by their agency as secondary to recycling, and disposal as preferred over combustion for energy.

The results of these questions were seen as supporting the general statement that there is a disparity between source reduction prioritization and implementation on a national level and on a state and local level. Additional questions clarifying this point were prepared for inclusion in Survey Two.

4.2.1.2 Source Reduction Objectives

As part of Survey One, participants also were asked to choose the two most important and (one) least important objective for source reduction policies. Source reduction objectives were based on proposed sustainability goals put forth by Dower.⁶⁹ The results of Questions 3 and 4 are summarized in Table 5.

⁶⁹ Dower, Rodger. Frontiers of Sustainability: Environmentally Sound Agriculture, Forestry, Transportation, and Power Production. (Washington D.C.: Island Press, 1997), 21-22.

Table 5: Survey One – Source Reduction Objectives (number of responses)							
<i>Question 3: Choose the two most important objectives currently supported by your Agency/Office to communicate to stakeholders to ensure the success of a source reduction initiative.</i>							
	Efficiency	Conservation	Smart Consumption	Stewardship	Innovation	Security	Other
Federal	2	2	0	2	2	0	0
State	0	1	0	2	0	1	0
Local	1	1	2	3	1	0	0
Total	4	4	2	7	3	1	0
<i>Question 4: Chose the one least important objective currently supported by your Agency/Office to communicate to stakeholders in order to ensure the success of your source reduction initiative.</i>							
Federal	0	0	2	0	1	1	0
State	0	0	1	0	0	0	0
Local	0	0	1	0	1	2	0
Total	0	0	4	0	2	3	0

Comments provided to either Question 2 or 3 were generally clarifications of the provided position stance. Although respondents were given the option of providing another more important objective, no respondents proposed or ranked additional objectives and one respondent chose not to respond at all. Those respondents responding favorably to efficiency noted its alignment with the Pollution Prevention Act goals and its role in product stewardship. Comments in favor of conservation and stewardship specifically noted their historical relevance as a general objective of all environmental activities. Comments in favor of smart consumption specifically provided an example of the King County EcoConsumer Program.⁷⁰ Comments in support of innovation noted both the connection to pollution prevention and the strong support of businesses. Finally, the one comment in support of security specifically noted the timely nature of the objective. Comments provided against smart consumption noted a general unease towards commenting on public purchasing practices. The one comment against innovation simply stated its unimportance, while the comments on security noted the general sensitivity of the topic.

Respondents obviously showed a noted diversity in choosing relevant source reduction objectives but stewardship, efficiency, and conservation composed over 70% of the responses. Respondents were much more consistent in their choice of least important objective with nearly 45% choosing Smart Consumption, 33% choosing Security, and

⁷⁰ King County EcoConsumer Program. <http://www.KCecoconsumer.com>.

22% choosing innovation. Of particular note was the nearly equal number of respondents who rated innovation as either important or unimportant. Additionally, the in-depth nature of comments generated for or against smart consumption far exceeded those on other topics. For this reason, innovation and smart consumption were selected as topics of inquiry in Survey Two.

4.2.1.3 Source Reduction Communication

As part of Survey One, participants were asked to choose the two most important outreach methods currently employed by their Agency/Office. The results of Question 5 are summarized in Table 6.

Table 6: Survey One – Source Reduction Communication (number of responses)						
<i>Question 5: Choose the two most effective outreach methods currently employed by your Agency to communicate source reduction goals.</i>						
	Electronic	Meetings/ Conferences	Print Media	TV / Radio	Telephone	Other
Federal	3	4	0	1	0	0
State	2	1	0	1	0	0
Local	3	1	3	1	0	1
Total	8	6	3	3	0	0

Comments provided were generally clarifications of the provided position. Although respondents were given the option of providing another outreach method, only one respondent did so, specifically noting the importance of lobbying efforts by the local government on a state level. Comments in favor of electronic media specifically noted it as relevant to the current populace, efficient with a broad opportunity for impact, and easily accomplished. Comments in favor of meetings and conferences noted the relevance of speaking in person with stakeholders and its historical precedence. Comments in favor of print media and TV and radio specifically noted the large impact these methods have on stakeholders and again provided examples of the King County EcoConsumer Program. However, comments were also submitted not in favor of TV and radio, specifically noting the cost.

Respondents obviously showed a preference for electronic media and meetings and conferences; 70% of respondents chose one of these methods as the most effective in reaching stakeholders. The number of comments against TV / Radio in addition to the

strong example provided arguing for its relevance led to this topic being selected for additional discussion in Survey Two.

4.2.1.4 Target Groups

As part of Survey One, participants were asked to list the two most important target groups for Agency/Office communication on source reduction initiatives. The results of Question 6 are summarized in Table 7.

Table 7: Survey One – Source Reduction Target Groups (number of responses)							
<i>Question 6: List the two highest priority target groups for your Agency/Office</i>							
	Business	Manufacturers	Home Owners	Young Professionals	Retirees	School Kids	Other
Federal	2	1	1	0	0	2	1
State	1	2	0	0	0	0	0
Local	1	1	1	0	0	1	3
Total	4	4	2	0	0	3	4

Comments provided were generally clarifications of outreach methods.

Respondents were given the option of providing another target group and several did so, although again one respondent chose not to respond. Other target groups listed included federal facilities and government employees, interest groups, and women aged 25 to 54. Comments about targeting businesses and manufacturers were in general more significant (in terms of length and content) than comments provided about other target groups. Respondents particularly noted the WasteWise program, technical assistance grants for industry, real estate management companies, and green business awards. Comments on homeowners specifically noted backyard composting efforts, while comments on school children noted program initiatives targeted at universities.

Respondents obviously showed a noted preference for targeting businesses and manufacturers. Nearly 50% of respondents chose one of these groups as a primary target for source reduction initiatives, while less than 30% chose a target group composed of individuals such as home owners, women, or school children. This preference for targeting businesses over individuals was noted for further discussion in Survey Two.

4.2.1.5 Source Reduction Initiative Development

As part of Survey One, participants were asked to rank the importance of several sources of information and innovation relating to the development of new source reduction programs. The results of Question 7 are summarized in Table 8.

Table 8: Survey One – Source Reduction Initiative Development (individual responses and means by level of government)					
<i>Question 7: Rank sources of information on source reduction initiatives on their importance to developing new initiatives and policies. [1 is the highest, 5 is the lowest]</i>					
	Other Agencies	Business	Community Initiatives	School Programs	Other
Federal	[2,4,1,2]	[3,1,2,1]	[4,3,3,3]	[5,2,4,4]	[1,5,5,5]
Mean	2.25	1.75	3.25	3.75	4.00
State	[2,3]	[1,1]	[4,2]	[3,4]	[5,5]
Mean	2.50	1.00	3.00	3.50	5.00
Local	[2,2,3,2]	[5,3,2,3]	[4,4,1,1]	[3,5,4,4]	[1,1,5,5]
Mean	2.25	3.25	2.50	4.00	3.00
Total Mean	2.30	2.20	2.90	3.80	3.80

A minimal number of comments were submitted in support of this question. Primarily, respondents took the option of commenting in order to provide another source of information. Other sources of source reduction initiative development listed included strategic meetings with stakeholders, internal consulting support, and non-governmental agency interest groups (options not included in the survey in favor of including initiatives mapped to national programs such as WasteWise and Waste-Free Lunch⁷¹). The only other comment was in regard to the regulatory mandate for source reduction initiatives.

Respondents were less divided on this topic than on previous questions as noted by the low range in ranking. Rankings for the sources showed that other agencies were an important source of information, but so were businesses and community initiatives. Of particular note was the emphasis placed on community initiatives by some local respondents. This data point was used in Survey Two to explore the role of community initiatives in overall source reduction efforts.

⁷¹ US EPA. <http://www.epa.gov/osw/education/lunch.htm>.

4.2.1.6 Source Reduction Initiative Examples

At the conclusion of Survey One, participants were asked to provide an example of a source reduction initiative that performed particularly well or particularly poorly within their jurisdiction. Eight of the ten panel members provided some examples. All programs listed were noted as a success with the exception of a state PAYT Program. Responses are summarized below.

- Federal Green Challenge – a voluntary partnership program for federal facilities that focuses on source reduction goals within specific target areas.⁷²
- WasteWise – a voluntary business partnership that focuses on source reduction within specific targeted waste streams.⁷³
- Chicago’s Waste to Profit Network – a by-product synergy program that links manufacturers with markets for their waste products in the Chicago area.⁷⁴
- PAYT – a Pay As You Throw program where communities impose fees based on the quantity of waste disposed of by residents.
- Backyard composting education and outreach
- King County EcoConsumer – a multimedia source reduction outreach program that utilizes electronic media, TV appearances, radio outreach, and print media to educate the residents of King County, Washington, on source reduction efforts.

Selected examples provided here were communicated to survey participants as examples in Surveys Two and Three.

4.2.2 Survey Two

In the second survey, participants were asked to expand on topics previously covered in Survey One by answering questions about differences in waste management priorities on a federal versus state and local level, the importance of innovation as a source reduction objective, the importance of smart consumption and barriers to

⁷² Federal Green Challenge. <http://www.epa.gov/federalgreenchallenge>.

⁷³ WasteWise. <http://www.epa.gov/wastewise>.

⁷⁴ Chicago Waste to Profit Network. <http://www.wasteforprofit.org>.

implementation of smart consumption programs, the use of TV and radio as an outreach method, target groups, and the role of local communities in source reduction initiatives. A copy of Survey Two is included in Appendix B.

4.2.2.1 Differences in resource management priorities

As part of Survey Two, participants were asked to speculate on the reason for the noted difference in waste management priorities on a federal versus state and local level, as shown in Survey One. The responses to Question 1 are summarized below.

- Several participants noted that the federal government did not implement waste management programs and was therefore removed from the logistical constraints placed on state and local agencies. One participant particularly noted the lack of communication between federal agencies and the general public as resulting in a disconnect between federal authorities and individual priorities.
- One participant noted that recycling programs are very popular with their constituency, which results in an increased demand for recycling resources. This increased public demand results in the agency placing more emphasis on recycling programs over source reduction programs. Another participant noted that the public could see direct results through the use of recycling bins, whereas source reduction was harder to observe. One comment specifically noted examples of individuals being resistant to source reduction changes (i.e., the availability of double sided copies and reusable shopping bags contrasted to the actual use of these materials).
- Several participants noted that there are federal data calls for recycling information and that their state or locality had additional recycling reporting requirements. It was implied that this was in direct contrast to source reduction efforts which lacked clear, reportable metrics. One participant specifically noted the role the federal government played in standardizing recycling metrics and their lack of leadership in source reduction metrics.
- Several participants specifically noted the cost in dollars and resources associated with implementing new programs.

The comments provided as part of this question were categorized and used as the basis for additional questions on source reduction priorities in Survey Three.

4.2.2.2 *The importance of innovation as a source reduction objective*

As part of Survey Two, participants were asked to rank the importance of innovation as a source reduction objective in response to the opinions on innovation noted in Survey One. The results of Question 2 are summarized in Table 9.

Table 9: Survey Two – Innovation as a Source Reduction Objective (number of responses)					
<i>Question 2: Rate the importance of innovation as a source reduction objective</i>					
	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
Federal	3	0	1	0	0
State	1	1	0	0	0
Local	2	1	0	(1)*	0
Total	6	2	1	1	0

* This response was provided after the deadline and not included in the initial analysis presented to participants in Survey Three

Comments provided were generally clarifications of the provided rating. Participants who rated innovation as very important noted its role in changing the way the public thinks about resources, the role it plays in supporting other source reduction objectives, and how the "spirit of innovation" is crucial to advancing source reduction goals. Another participant noted that when taken individually, each objective is important. Two comments were submitted that provided an alternative view, one of which noted that innovation was hard to institutionalize and another that noted that innovation can only be made a priority for manufacturers and is therefore somewhat limited in scope.

A marked majority of respondents (80%) rated innovation as either very important or somewhat important. No respondent rated innovation as very unimportant. This led to the conclusion that the original ranking of objectives in Survey One was more of a parsing of equals than a true ranking of importance. For this reason, no additional questions on innovation were included in the survey process.

4.2.2.3 *Smart consumption as a source reduction objective*

As part of Survey Two, participants were asked to rank the importance of the concept of smart consumption and suggest barriers to implementation of smart consumption

education programs, in response to comments provided in Survey One. The results of Questions 3 are summarized in Table 10.

Table 10: Survey Two – Smart Consumption as a Source Reduction Objective (number of responses)					
<i>Question 3: Rate the relevance of the concept of Smart Consumption</i>					
	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
Federal	3	0	1	0	0
State	1	1	0	0	0
Local	1	2*	1	0	0
Total	5	3	2	0	0
<small>* One of these responses was provided after the deadline and not included in the initial analysis presented to participants in Survey Three</small>					

Comments provided were generally clarifications of the provided rating. Participants who rated smart consumption as very important noted its central role as a tenant in source reduction efforts. Participants who rated smart consumption as somewhat important noted that smart consumption efforts would have to be supported by manufacturers and that smart consumption alone would not affect the needed change towards a sustainable future. Another participant noted that when taken individually, each objective is important. The two participants who rated smart consumption as neutral noted that the term needed to be better defined and that without standardization for 'green' labeling, smart consumption efforts were severely handicapped.

Eighty percent of survey participants rated the concept of smart consumption as either very important or somewhat important. The remaining participants were neutral on the concept. This result is in marked contrast to the results of Survey Two where smart consumption was ranked second to last as an Agency/Office recognized source reduction objective. Once again, this change is attributed more to a clarification of standing rather than a change in opinion/prioritization of the survey group as supported by the comments received regarding this question.

As a follow-up to the rating of smart consumption as a concept, participants were asked to speculate on the types of barriers that may exist within their agency preventing implementation of smart consumption education programs (Question 4). Their responses are summarized below:

- Several participants noted that the smart consumption programs may be viewed as either anti-American or anti-economic. Specifically, participants expressed the opinion that asking Americans to purchase less impinges upon the sovereign nature of consumers and businesses in the US.
- One participant noted that there was not an actual lack of education programs but rather that these programs had to compete with other environmental programs for the attention of a public body suffering from “information over-saturation.”
- Several participants noted that the term “smart consumption” was broadly defined and that “green” labeling efforts were un-standardized, making education programs difficult to implement. Further, education programs of this nature were noted as a low priority for agencies.
- One participant noted that the cost of education programs was prohibitive without federal support.
- One participant questioned whether the statutory mandate for source reduction would extend to smart consumption programs.

The comments provided as part of this question were categorized and used as the basis for additional questions on smart consumption programs in Survey Three.

4.2.2.4 Re-evaluation of TV / Radio as an outreach method

As part of Survey Two, participants were asked to re-evaluate the importance of print and TV/radio as outreach methods in light of the provided successful example of the King County EcoConsumer Program (referred to as the “King County example” in the survey questions). The results of Question 5 are summarized in Table 11.

Table 11: Survey Two – Re-evaluation of TV / Radio as an Outreach Method (number of responses)					
<i>Question 5: In light of the King County example, how likely are you to re-evaluate the use of Print or TV/Radio media in your outreach efforts</i>					
	Very Likely	Somewhat Likely	Neutral	Somewhat Unlikely	Very Unlikely
Federal	1	0	2*	0	1
State	0	1	0	1	0
Local	1	0	2	1	0
Total	2	1	4	2	1
*This number includes one response incorrectly listed as Very Likely as determined by the comment provided and one response that was provided after the deadline and not included in the analysis provided in Survey Three.					

Comments provided to were generally clarifications of the noted rating. Most participants who responded as very likely, somewhat likely, or neutral towards investigating the King County example had either already heard of the example or were already implementing a similar program in their area. The participants who noted that they were somewhat unlikely or very unlikely to research the King County example and re-evaluate their position on Print media or TV/Radio outreach methods cited several reasons. One participant stated that the current state administration particularly supported social media outreach and efforts to introduce other methods would not be particularly well received. Another participant noted that the example was of a local community and difficult to scale up to a state or national level.

In general, the purpose of this question was to test how participants responded to challenges to previously stated opinions by providing additional information that supported another conclusion. In this instance, while participants provided additional information on their positions, none of the comments provided indicate that participants changed their opinion based on the information provided. Additional information on these conclusions is provided in Section 5: Discussion. The comments provided both in Survey One and Survey Two on source reduction communication informed the development of additional questions on communication in Survey Three.

4.2.2.5 Example of initiatives targeted towards businesses and manufacturers

As part of Survey Two, participants were asked to rate the likelihood of their Agency/Office implementing a waste synergy program like the Chicago Waste to Profit Network in conjunction with or as opposed to a more traditional WasteWise program. The results of Question 6 are summarized in Table 12.

Table 12: Survey Two – Evaluation of WasteWise and Waste Synergy Networks (number of response)					
<i>Question 6: Rate how likely your Agency/Office is to implement a Waste to Profit program</i>					
	Very Likely	Somewhat Likely	Neutral	Somewhat Unlikely	Very Unlikely
Federal	0	1	3*	0	0
State	1	0	1	0	0
Local	1	0	1	0	1
Total	2	1	5	0	1
<i>*This number includes one response incorrectly listed as NA as determined by the comment provided</i>					

A minimal number of comments were submitted in regard to this question. Primarily, respondents took the option of commenting in order to note success with the WasteWise program or success with state or local waste synergy programs. A few participants noted confusion as to what the two programs had in common. In general, the purpose of this question was to prompt comments on the WasteWise program and foster additional discussion of programs targeted towards businesses or manufacturers. Although participants did provide additional information, it was the opinion of the survey coordinator that the information provided did not provide significant opportunity for further inquiries. For this reason, no further questions on business initiatives were included in the survey process.

4.2.2.6 Barriers towards targeting individuals

As part of Survey Two, participants were asked to speculate on the types of barriers that may exist within their agency preventing the implementation of source reduction programs targeted towards individuals (as opposed to businesses, manufacturers, or interest groups). Their responses are summarized below:

- Several participants noted a lack of established channels of communication between environmental agencies and individuals. One comment specifically noted a lack of institutional knowledge on communicating with individuals.
- One participant noted the logistical challenges of targeting a large a number of individuals personally.
- Several participants noted that cost of such a massive outreach effort (both in terms of money and resources) would be prohibitive.
- Almost half of the participants noted that the opportunity for impact was greater when targeting businesses as opposed to individuals.

The comments provided as part of this question were categorized and used as the basis for additional questions on individuals as a target group in Survey Three.

4.2.2.7 The role of communities in source reduction initiatives

In the final question of Survey Two, participants were asked to rate the importance of community initiatives in shaping state or national source reduction initiatives based on

the noted emphasis local governments placed on community initiatives in Survey One. The results of Question 8 are summarized in Table 13.

Table 13: Survey Two – Importance of Communities in Shaping state or National Initiatives (number of responses)					
<i>Question 8: Rate the impact of Local Government advocacy/Community Initiatives should have on shaping State or National source reduction initiatives.</i>					
	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
Federal	0	4	0	0	0
State	1	0	0	0	1
Local	1	2	0	0	0
Total	2	6	0	0	1
Note: One participant chose not to respond to this question or provide a comment					

Comments provided were generally clarifications of the provided rating. Except for one case, all comments provided were in support of local community's role in source reduction initiatives. Participants generally noted that successful programs needed to be both recognized on a state and national level and evaluated for scalability. Most respondents also noted that communities and local governments cannot act effectively without support from state and federal agencies; change must be promoted at all levels in order to affect a fundamental, transformational change in public priorities. The one dissenting participant noted that not all communities are equipped to promote source reduction initiatives and that community capabilities needed to be evaluated prior to being delegated authority.

The overwhelmingly positive response to community involvement led to follow-up questions on lines of communication between officials and communities in Survey Three.

4.2.3 Survey Three

In the third survey, participants were asked to expand on topics previously covered in Surveys One and Two by answering questions about barriers to the implementation of both source reduction programs in general and smart consumption education programs specifically, challenges to effective communication with stakeholders, challenges to targeting individuals, outreach methods that target individuals, and lines of communication. A copy of Survey Three is included in Appendix B.

4.2.3.1 Barriers to source reduction program implementation

As part of Survey Three, participants were provided with a list of potential barriers to source reduction program implementation, as generated by the group in Survey Two, and asked to rank the relative importance of each. The responses to Question 1 are summarized in Table 14.

Table 14: Survey Three – Barriers to Source Reduction Program Implementation (individual responses and means by level of government)					
<i>Question 1: Rank the relative impact each issue might have on an Agency's decision to implement a Source Reduction Program. [1 is the highest, 5 is the lowest]</i>					
	Authority / Purview	Public Awareness	Lack of Metrics	Cost and Resources	Communication and Vision
Federal	[1,3,5,5]	[2,2,1,4]	[5,4,3,3]	[3,1,2,1]	[4,5,4,2]
Mean	3.50	2.25	3.75	1.75	3.75
State	[1,4]	[4,3]	[2,2]	[3,1]	[5,5]
Mean	2.50	3.50	2.00	2.00	5.00
Local*	[2,4,4,2]	[3,1,3,4]	[4,5,2,3]	[1,3,1,1]	[5,2,5,5]
Mean	3.00	2.75	3.50	1.50	4.25
Total Mean	3.10	2.70	3.30	1.70	4.20
<i>* One response was provided after the deadline and not included in the initial analysis presented to participants in Survey Four</i>					

Comments provided were generally clarifications of the ranking provided. One participant noted that the question of authority and purview was complicated by the question of whether a given level of government was capable of effectively implementing a program, while another noted that authority was sometimes superseded by an agency's willingness to exercise that authority. Several participants reiterated that costs were a major driving force in determining Agency implementation schedules. One participant went on to note that making progress on source reduction goals was difficult because "no one [made] a profit off of source reduction." Finally, one participant commented on the difficulty of changing value systems.

Over half of the respondents chose cost and resource allocation as the number one barrier to source reduction program implementation. The remaining participants were split between public awareness of programs and Agency/Office authority and purview. Throughout the survey process, cost was a reoccurring theme, so an additional question on cost and resource allocation was included as a follow-up in Survey Four. Additionally, the phrase "authority and purview" was interpreted differently by each participant who provided a comment on that aspect. Therefore, a clarifying question on

authority was included in Survey Four to clarify participant's concerns about questions of authority.

4.2.3.2 Barriers to smart consumption program development

As part of Survey Three, participants were provided with a list of potential barriers to smart consumption education program implementation, as generated by the group in Survey Two, and asked to rank the relative importance of each. The responses to Question 3 are summarized in Table 15.

Table 15: Survey Three – Barriers to Smart Consumption Programs (individual responses and means by level of government)					
<i>Question 3: Rank the relative impact each issue might have on an Agency's decision to implement a Smart Consumption Program. [1 is the highest, 5 is the lowest]</i>					
	Anti-American or Economic	Cost and Resources	Information Over Saturation	Authority / Purview	Lack of Metrics
Federal	[1,4,1,4]	[3,1,3,2]	[5,5,5,5]	[2,2,2,3]	[4,3,4,1]
Mean	2.50	2.25	5.00	2.25	3.00
State	[1,5]	[2,1]	[3,3]	[5,2]	[4,4]
Mean	3.00	1.50	3.00	3.50	4.00
Local*	[2,5,2,1]	[3,3,1,3]	[1,1,4,2]	[4,4,5,5]	[5,2,3,4]
Mean	2.50	2.50	3.40	3.40	3.40
Total Mean	2.60	2.20	3.40	3.40	3.40
* One response was provided after the deadline and not included in the initial analysis presented to participants in Survey Four					

Comments provided were generally clarifications of the stated ranking. One participant commented that all the issues were of importance, while another specifically noted anti-American perception and cost as the primary drivers. Two participants commented on the need for standard “green” labeling requirements to overcome information saturation concerns. Several other participants commented specifically on the cost and resource allocation issues or referred to the current state of the economy as having the most impact on program implementation decisions. Most of the comments provided included some method by which to address these issues.

Seventy percent of respondents chose either cost or perceived anti-American or anti-Economic overtones as having the greatest impact on decisions by an Agency/Office to implement a smart consumption education program. No further questions on smart consumption programs were included in the survey process.

4.2.3.3 Challenges to effective communication with stakeholders

As part of Survey Three, participants were provided with a list of potential challenges to effective communication with stakeholders, as generated by the group in Surveys One

and Two, and asked to rank the relative importance of each. The responses to Question 4 are summarized in Table 16.

Table 16: Survey Three – Challenges to Effective Stakeholder Communications (individual responses and means by level of government)					
<i>Question 4: Rank the relative impact each issue might have on an Agency's effectiveness in communicating with stakeholders. [1 is the highest, 5 is the lowest]</i>					
	Cost and Resources	Effective Leadership	Driving Personality	Engaged Public	Type of Media
Federal	[3,3,2,5]	[1,4,1,1]	[2,5,5,3]	[5,1,4,2]	[4,2,3,4]
Mean	3.25	1.75	3.75	3.00	3.25
state	[3,1]	[2,5]	[1,4]	[5,3]	[4,2]
Mean	2.00	3.50	2.50	4.00	3.00
local	[1,1,2,4]	[5,2,1,3]	[5,5,3,5]	[3,4,5,2]	[2,3,4,1]
Mean	2.00	2.75	4.50	3.50	2.50
Total Mean	2.50	2.50	3.80	3.40	2.90
<i>* One response was provided after the deadline and not included in the initial analysis presented to participants in Survey Four</i>					

Comments provided were generally clarifications of the stated ranking. Several comments on driving personalities were submitted particularly in regards to the interactions and overlap such personalities have with effective leadership. One participant noted that regardless of the issues facing an agency, encouraging a fundamental change in values was a lengthy process. Again, several participants mentioned the economy as an important issue. Three comments specifically noted a lack of marketing skills as a significant barrier to implementation.

Seventy percent of respondents ranked effective leadership or cost and resources as the most important issue impacting an agency's ability to effectively communicate with stakeholders. Due to the significant number of comments already received on cost, the question of effective leadership was chosen for further inquiry in Survey Four.

4.2.3.4 Challenges to targeting individuals

As part of Survey Three, participants were provided with a list of potential challenges targeting individuals for source reduction programs, as generated by the group in Survey Two, and asked to rank the relative importance of each. The responses to Question 6 are summarized in Table 17.

Table 17: Survey Three – Challenges to Targeting Individuals (individual responses and means by level of government)					
<i>Question 6: Rank the relative impact each issue might have on an Agency's decision to target individuals. [1 is the highest, 5 is the lowest]</i>					
	Lack of Institutional Knowledge	Less Opportunity for Impact	Cost and Resources	Lack of Outreach Channels	Number of Targets
Federal	[1,5,4,3]	[5,1,3,1]	[3,2,1,2]	[2,4,2,4]	[4,3,5,5]
Mean	3.25	2.50	2.00	3.00	4.25
State	[1,2]	[4,5]	[2,1]	[5,3]	[3,4]
Mean	1.50	4.50	1.50	4.00	3.50
Local*	[3,5,2,3]	[2,3,5,1]	[4,2,1,2]	[5,4,5,4]	[1,1,5,5]
Mean	3.25	2.75	2.25	4.50	3.00
Total Mean	2.90	3.00	2.00	3.80	3.60
<i>* One response was provided after the deadline and not included in the initial analysis presented to participants in Survey Four</i>					

Comments provided were generally clarifications of the stated ranking. One participant noted a general lack of understanding of how to motivate people and the costs, resources, and time necessary to affect change. Several participants noted that if individuals could be motivated to undertake source reduction that the result would be very significant. One participant commented on the logistical challenges of source reduction. One participant also noted that targeting business was not in direct conflict to targeting individuals as there was the potential for business owners and employees to apply lessons learned through targeted business initiatives in the home.

In general, the group was split fairly evenly between the choices provided (with the notable exception of outreach channels). All respondents did agree that targeting individuals was important. No further questions on targeting individuals were included in the survey process.

4.2.3.5 Outreach methods that target individuals

As part of Survey Three, participants were asked to list electronic outreach methods their agency had employed in the last year to communicate with stakeholders. The responses to Question 7 are summarized in Table 18.

Table 18: Survey Three – Outreach Methods that Target Individuals (number of responses)					
<i>Question 7: Mark outreach methods that your Agency/Office has used within the last year to target individuals.</i>					
	Web Based Video	Outreach at Venues	Social Media	Community Events	Other
Federal	4	3	2	2	1
State	0	1	0	1	2
Local*	3	4	3	4	4
Total	7	8	5	7	7
<i>* One response was provided after the deadline and not included in the initial analysis presented to participants in Survey Four</i>					

Comments provided were generally examples of outreach methods. Several participants specifically noted web based video contests. One participant pointed out the US EPA's current policy on social media.⁷⁵ One comment included examples of state conferences on sustainability and community green events tied to local recreational activities. One participant stated that a lack of funds had prevented outreach in the last year. Another comment provided stressed the importance of accessibility rather than any one individual event. Finally, one participant noted that outreach efforts were particularly challenging because source reduction officials were not generally trained in "advertising" or "communications" but were being asked to perform these roles. Several respondents also provided options not listed such as direct mailing list (both electronic and bulk mail), working with individuals at events hosted by other agencies, sponsoring contests, and visiting schools.

In general, with the one noted exception, all of the listed outreach methods had been utilized by participants in the past year. Additionally, no single resource appeared to be favored by the participants. In order to explore other avenues of communication, the comments on accessibility and public affairs skills were selected to move forward into Survey Four.

4.2.3.6 Lines of communication between agencies and communities and between agency officials at various levels of government

As part of Survey Three, participants were asked to rate lines of communication between agencies and communities and between agency officials at various government levels, in response to the noted emphasis the group place on community initiatives and information sharing in Survey Two. The responses to Questions 8 and 9 are summarized in Tables 19 and 20.

⁷⁵ US EPA. <http://www.epa.gov/epahome/socialmedia>.

Table 19: Survey Three – Communication Between Participants and local Communities (number of responses)					
<i>Question 8: Rate how well defined avenues of communication are between you and local communities.</i>					
	Very Well Defined	Somewhat Defined	Neutral	Somewhat Undefined	Very Poorly Defined
Federal	0	3	1	0	0
State	1	1	0	0	0
Local*	4	0	0	0	0
Total	5	4	1	0	0
<i>* One response was provided after the deadline and not included in the initial analysis presented to participants in Survey Four</i>					

Table 20: Survey Three – Communication Between Participants and Other Source Reduction Officials (number of responses)					
<i>Question 9: Rate how well defined avenues of communication are between you and other source reduction officials.</i>					
	Very Well Defined	Somewhat Defined	Neutral	Somewhat Undefined	Very Poorly Defined
Federal	0	4	0	0	0
State	0	0	1	1	0
Local*	4	0	0	0	0
Total	4	4	1	1	0
<i>* One response was provided after the deadline and not included in the initial analysis presented to participants in Survey Four</i>					

Only one participant provided any comments for either of the above questions. That participant provided detailed information on their network of contacts both with communities and with other officials. In general, the participant noted that the community network was much more clearly developed than the network of source reduction colleagues.

Ninety percent of participants stated that avenues of communication between themselves and local communities were either very well defined or somewhat well defined. In addition, 80% of respondents noted that lines of communication between themselves and other source reduction officials were either very well defined or somewhat well defined. Due to this overwhelmingly positive response, further questions on avenues of communication were put aside in favor of soliciting information on the type of resources used in addition to personal networks to remain up to date on current source reduction topics.

4.2.4 Survey Four

In the fourth and final survey, participants were asked to provide opinions on topics previously covered in Surveys One, Two and Three by answering questions about cost and resource allocation, leadership, authority and purview, accessibility of source reduction officials, public affairs skills, and source reduction resources. A copy of

Survey Four is included in Appendix B. It is important to note that Survey Four was the last of the scheduled surveys and no additional questions resulted from the responses submitted. Wherever a question resulted in a specific conclusion, it is noted here; however, refer to Section 5: Discussion for a full analysis of the results. Additionally, one respondent was not able to complete the final survey and is not included in the results.

4.2.4.1 Leadership as a method to address cost and resource allocation

As part of Survey Four, in response to numerous comments on cost and resource allocation as a barrier to source reduction program implementation, participants were asked to rate how likely they were to research innovative approaches to cost and resource allocation and approach leadership with this information. The responses to Question 1 are summarized in Table 21.

Table 21: Survey Four – Leadership as a Method to Address Cost (number of response)					
<i>Question 1: Rate how likely you are to research innovative Source Reduction programs specifically to locate programs that are done at little or no cost to the Agency and communicate your findings to your leadership</i>					
	Very Likely	Somewhat Likely	Neutral	Somewhat Unlikely	Very Unlikely
Federal	0	2	1	1	0
State	0	1	0	0	0
Local	1	2	1	0	0
Total	1	5	2	1	0

Comments provided were generally clarification of the rating provided. One participant noted that cost often did not include resource allocation. One participant stated that they investigated source reduction programs but not in any systematic manner. Another participant noted that agency priorities drove research priorities and thus they were more likely to research recycling initiatives.

Over half of the participants were at least somewhat likely to research programs in search of cost effective source reduction initiatives. This was the second time survey participants were asked to rate how likely they were to interact with management. Had further survey rounds been planned, additional questions about the nature of interactions between participants and leadership would have been posed.

4.2.4.2 Necessary augmentations to source reduction mandates

As part of Survey Four, participants were asked to clarify the types of additional legal authorities they deemed necessary to augment the authority of their agency in order to successfully implement source reduction programs. The responses to Question 2 are summarized in Table 22.

Table 22: Survey Four – Necessary Authority for Source Reduction Program Implementation (number of responses)					
<i>Question 2: Mark any of the following that is necessary to augment your Agency/Office's authority in order to accomplish source reduction implementation goals.</i>					
	New Federal Statutory or Regulatory Authority	New State Statutory of Regulatory Authority	New Local By Laws	Sufficient Authority; Need Resources	Other
Federal	4	1	1	1	0
State	1	0	0	0	1
Local	3	3	2	1	0
Total	8	4	3	2	1

Comments provided were generally clarification of the stated position. Several participants agreed with the need for a new federal mandate specifically for source reduction but cautioned against the issuing of unfunded mandates. One participant noted that while federal mandates simplify compliance issues, it also was important that additional resources be provided. One comment specifically advocated for stronger federal mandates in the form of product stewardship laws. The one participant who provided an example of other authority noted the additional need for engaged and effective leadership.

All but one participant (a local representative) noted the need for new federal mandates and over half of the survey panel chose more than one option. Had further survey rounds been planned beyond the four scheduled at the beginning of the process, additional questions about the role of federal mandates as opposed to other types of statutory or regulatory authority would have been explored.

4.2.4.3 Levels of effective leadership

As part of Survey Four, participants were asked to rank the levels of administrative leadership by their impact on source reduction efforts. The responses to Question 4 are summarized in Table 23.

Table 23: Survey Four – Levels of Effective Leadership (individual responses and means by level of government)						
<i>Question 4: Rank the relative importance of each level of public administration's Effective Leadership and how much of an impact their leadership has on Source Reduction efforts..</i>						
	Federal (Other than Environmental Officials)	Federal (Environmental Officials)	State (Other than Environmental Officials)	State (Environmental Officials)	Local (Other than Environmental Officials)	Local (Environmental Officials)
Federal*	[6,1,1]	[3,4,2]	[5,2,3]	[2,5,4]	[4,3,5]	[1,6,6]
Mean	2.67	3.00	3.33	3.67	4.00	4.33
state	[4]	[5]	[6]	[1]	[3]	[2]
Mean	4.00	5.00	6.00	1.00	3.00	2.00
local*	[6,5,1,1]	[4,1,1,2]	[5,2,1,3]	[3,3,1,4]	[1,4,1,1]	[2,6,1,1]
Mean	3.25	2.00	2.75	2.75	1.75	2.50
Total Mean	3.13	2.75	3.38	2.88	2.75	3.13
*NOTE: One respondent stated that they could not provide a ranking						

Comments provided were generally clarification of the stated ranking. One participant expressed the opinion that impact increased proportional to the change in administrative level from local to national leadership and that non-environmental leadership had a greater overall impact. One participant noted that turnover in leadership made true impact difficult and perhaps business or interest group leaders were a better gauge of effective leadership. Several respondents commented on the importance of local officials, whether environmental or not, as the ones most able to effect immediate change.

In general, ratings provided by participants were so diverse as to provide for no easy summary of group opinion. Had further survey rounds been planned, more specific questions about the impact of effective leadership at a single level (most likely local) and metrics to gauge effective leadership would have been explored.

4.2.4.4 Accessibility of Source Reduction Officials

As part of Survey Four, participants were asked to rate the accessibility of source reduction officials (broadly defined as government officials with responsibility for source reduction initiatives) to the public. For the purposes of the question, an accessible individual was clearly noted as a source reduction official with a direct email or telephone number provided in a publicly available directory or on the agencies web site. The responses to Question 5 are summarized in Table 24.

Table 24: Survey Four – Accessibility of Source Reduction Officials (number of responses)					
<i>Question 5: Rate how accessible you think Source Reduction officials are to the general public.</i>					
	Very Accessible	Somewhat Accessible	Neutral	Somewhat Inaccessible	Very Inaccessible
Federal	1	2	0	1	0
State	0	1	0	0	0
Local	0	0	1	2	1
Total	1	3	1	3	1

Comments provided were generally clarification of the stated rating. Several participants noted that accessibility was more a reflection of the individual than the role he/she performed. One comment noted that the individuals might be readily accessible but the term “source reduction official” was not generally used to designate them. One participant noted that more often than not they reached the wrong official when trying to contact colleagues, but that individuals within the correct office would generally be able to refer them to the source reduction contact. State organization and government malaise were also noted as affecting accessibility. Finally, one participant noted that while they considered themselves very accessible, the public did not generally reach out to them.

Participants were split evenly on characterizing source reduction officials as (somewhat) accessible or (somewhat) inaccessible. There were a number of questions about lines of communication, resources, and accessibility of officials as part of the survey process. Had additional survey rounds been planned, no further questions on these issues would have been posed.

4.2.4.5 Public Affairs Skills

As part of Survey Four, participants were asked to rate the relevance of “public affairs” skills, that is public outreach and communications, to their positions. The responses to Question 6 are summarized in Table 25.

Table 25: Survey Four – Relevance of ‘Public Affairs’ Skills to Source Reduction Officials					
<i>Question 6: Rate how relevant you think public affairs skills are to your position.</i>					
	Very Important	Somewhat Important	Neutral	Somewhat Unimportant	Very Unimportant
Federal	2	0	1	1	0
State	1	0	0	0	0
Local	4	0	0	0	0
Total	7	0	1	1	0

Comments provided were generally clarification of the stated rating. Comments in favor of public affairs skills noted the importance of communication, including crafting messages, to achieving source reduction goals. One neutral comment noted that regardless of an individual's skills, the public will choose to listen (or not) based on their own priorities. The one dissenting participant noted that public officials were as much gatekeepers of information as salesmen.

Participants strongly agreed that public affairs skills were very important to their position. This position is more relevant when placed within the context of the information provided in the background study on the general lack of environmental communications plans and the role of the official Public Affairs Office within the Agency/Office in question. Had additional survey rounds been planned, several additional questions would have been posed regarding environmental communications.

4.2.4.6 Source Reduction Resources

At the conclusion of Survey Four, participants were asked to provide two examples of resources, other than professional networking for current source reduction news and information. Eight of the nine panel members provided some resources. Their responses are summarized below.

- Online News Publications: Resource Recycling Magazine,⁷⁶ Waste & Recycling News,⁷⁷ BioCycle⁷⁸
- State Maintained Resource Lists⁷⁹
- Mailing Lists: Sustainable Consumption Research and Action Initiative (SCORAI) Listserv⁸⁰, County Source Reduction Listserv,⁸¹ state Recycling Laws Update⁸²

⁷⁶ Resource Recycling Magazine. <http://www.resource-recycling.com>.

⁷⁷ Waste & Recycling News. <http://www.wasterecyclingnews.com/headlines.html>.

⁷⁸ BioCycle. <http://www.jgpress.com/biocyclus.htm>.

⁷⁹ Washington Department of Ecology Waste 2 Resources. <http://www.ecy.wa.gov/programs/swfa/index.html>. Oregon Department of Environmental Quality Solid Waste. <http://www.deq.state.or.us/lq/sw/index.htm>.

⁸⁰ Sustainable Consumption Research and Action Initiative. <http://www.scorai.org/>.

⁸¹ King County EcoConsumer. <http://your.kingcounty.gov/solidwaste/ecoconsumer>.

⁸² State Recycling Laws Update. <http://www.raymond.com>.

- Roundtables and Conferences: National Pollution Prevention Roundtable,⁸³ National Environmental Partnership Summit,⁸⁴ state Chapters of Public Interest Groups
- Interest Group Web Sites: Product Stewardship Institute,⁸⁵ Northwest Product Stewardship Council⁸⁶

All examples and resources noted by participants during the survey process were made available in the form of a resources list, except where noted resources would compromise the confidentiality of a participant. Additional information on the examples and resources provided during the survey process is available in Appendix E.

4.3 Close Out

At the end of the survey process, the expert panel was asked to complete a brief survey evaluation. The evaluation form asked survey participants to rate the process and the topics covered in survey. A copy of the survey evaluation is available in Appendix E. A total of five evaluation forms were returned at the end of the study (50% response rate).

Participants were asked to comment on their experience by rating statements about the process on a scale of strongly agree to strongly disagree. All participants agreed that the study was well organized (80% strongly agreed, 20% somewhat strongly agreed). Participants also almost universally agreed that the Delphi process was a relevant method by which to conduct the study and was helpful in gathering information on the topic to aid in decision making (60% strongly agreed, 20% somewhat agreed, 20% neutral). The study group was in less agreement regarding the confidential nature of the study. One participant each strongly agreed, somewhat agreed, and somewhat disagreed that the confidential nature of the study was important to them; the remaining two responses were neutral. However, the participant that strongly agreed represented an agency with no solid waste source reduction program and whereas the other

⁸³ The National Pollution Prevention Roundtable. <http://www.p2.org>.

⁸⁴ The National Environmental Partnership Summit. <http://environmentalsummit.org>.

⁸⁵ Product Stewardship Institute. <http://www.productstewardship.us>.

⁸⁶ Northwest Product Stewardship Council. <http://www.productstewardship.net>.

participants represented strong federal or local offices. Without the guarantee of confidentiality, the process would not have included this important point of view.

The majority of participants were cautiously in agreement with or neutral about the statement that they revised their opinion on a topic after receiving information from the group during the survey process. One participant strongly disagreed with the statement. These findings are consistent with the noted results of the survey. All participants agreed that the topics presented were relevant to them (40% strongly, 60% somewhat), and that they were given sufficient opportunity to comment (80% strongly, 20% somewhat). All of the participants strongly agreed that the summary statements were inclusive of their opinion. Those participants who contacted the coordinator with questions also strongly agreed that the study coordinator was responsive to their requests. The remaining participants rated the responsiveness as neutral specifically because they had not had a need to contact the survey coordinator. Finally, the majority of officials polled indicated that the resources provided to them during the study and the study as a whole were helpful to them (80% strongly or somewhat agreed, 20% neutral). Eighty percent of respondents noted that they were at least somewhat likely to read the final report generated from the study.

Comments provided with the survey evaluation noted that participants found the process “relevant”, “professional,” “useful,” “though provoking,” and “interesting.” No comments were received specifically addressing motivations to discontinue participation in the process. Finally, one respondent specifically noted that the survey’s one week turnaround was particularly helpful in developing well thought out positions, while the confidential nature of the survey allowed for dissenting opinions and prevented “group think.”

Overall, most respondents noted satisfaction with the process and the results of the study. Additional discussion of the success of the modified policy Delphi technique and study participation is provided in Section 5: Discussion.

5 Discussion

The information gathered during the survey process and from the basic questionnaire led to several significant findings, including findings related to source reduction mandates and implementation priorities, the cost of funding source reduction programs and allocation of resources, the role of leadership in promoting source reduction initiatives, and methods of communication of source reduction goals. These findings are discussed in the following section, inclusive of the limitations of the study and an overview of pertinent resources and examples generated during the process.

5.1 Significant Findings on Authority and Implementation

This study was predicated on the assumption that national, state, and local environmental agencies play a key role in influencing the public's behavior with regards to environmental issues. Specifically, the study assumes that environmental agencies within the US have an obligation to educate the public on resource management issues such as source reduction and the legal authority to impose requirements on the American public for the management of solid waste in general and source reduction in particular. Research for this study confirmed that the US Congress has granted the US EPA authority to regulate the management of solid waste in the US and requires source reduction efforts be undertaken. States and localities derive authority for these programs both from these federal mandates and comparable state and local laws. It is important to note, however, that in addition to a statutory mandate, environmental agencies may derive authority from legislative requirements or Federal programs, neither of which exist with regards to the source reduction mandate.

The results of this study indicate that officials associated with federal, state, and local environmental agencies recognize this authority to mandate source reduction activities and have taken steps to implement these types of programs on a national, state, and local level. Through the survey process, these officials expressed both Agency and personal support for these types of programs; however, officials at the same time observed room for improvement on federal, state, and local authority for source reduction programs. Officials noted that the current mandate for action was not specific enough to source reduction activities and therefore contributed to uneven

implementation in the US (e.g., states or municipalities without source reduction programs or with poorly implemented programs). Officials strongly supported the creation of a strong federal mandate for source reduction through the passage of source reduction specific legislation. Officials did not, however, have a clear preference for increased statutory versus regulatory authority and it is assumed that either would be sufficient for the purposes of source reduction implementation. Finally, survey participants also supported to a degree the passage of state or local legislation for source reduction.

The new mandates were advocated specifically to address implementation issues on a state and local level. The results of this study indicate that the current mandates have resulted in a noticeable schism between federal environmental agencies and state and local agencies on the prioritization of source reduction programs. Specifically, the federal mandate for precedence being given to source reduction above and beyond all other management practices is not resulting in a corresponding implementation level by states and local agencies. This is noted in the lack of a national program for source reduction and a lack of federal regulations for source reduction goals and metrics. Instead, under the weak federal mandate for source reduction, when faced with implementation challenges, states and local units are choosing to prioritize recycling and recovery and composting programs as more important than source reduction programs. This study found that beyond the question of the strength of the legislative mandates, this difference in priorities was due most significantly to challenges posed by the cost of implementing source reduction programs and the need for effective leadership on source reduction issues (e.g., a vested interest in the status quo).

5.2 Significant Findings on Cost

Throughout the study process, officials consistently noted the challenges to implementation of source reduction programs imposed by cost (both as a function of monetary value and resource allocation). Cost was noted as a significant deterrent to implementation of source reduction programs, implementation of smart consumption education initiatives, and implementation of comprehensive communication and outreach efforts. The impact of cost constraints on implementation of source reduction

programs could be mitigated through a number of options including the use of innovative approaches to implementing source reduction programs. However, officials at every level of government appeared uninterested in this aspect. As shown by the results of the study, when presented an example of a cost effective program, officials were disinclined to change their previously stated positions and specifically noted in a number of cases that research into such programs was not a priority. While this result could certainly have been a function of the example provided, any instance in which an official disavows personal responsibility for addressing such a major challenge to program implementation is significant.

5.3 Significant Findings on Leadership

Throughout the study process, officials also consistently noted the challenges to implementation of source reduction programs imposed by the absence of effective leadership. Initial research into source reduction initiatives noted a few specific examples of effective source reduction leadership, particularly in regards to the State of Washington and the Cities of Seattle and Chicago; however, these examples were the exception rather than the norm. Unsurprisingly, survey participants noted effective leadership as having a significant impact on agency priorities in general and waste management program prioritization and implementation in particular. Officials noted that there was not only a need for effective leadership to champion source reduction goals, but also the need for consistent leadership. The systematic turnover in administrations on a national, state, and local level and the resultant change in priorities were seen as having a significant negative impact on the success of environmental programs. The results of this study show that while agency leadership rarely works directly against source reduction programs, the emphasis leadership places on other programs results in the same consequences.

Beyond agency leadership, the study notes the need for leadership from every level of government including administrative leadership beyond environmental agencies. It is also important to note that agency officials at every level of an organization, including the program specialists included in this study, have an obligation to exhibit leadership properties. This study included examples of individuals who exemplified the goals of

leadership by using their position to further source reduction goals in significant ways. Unfortunately, it also noted the frustrations and apathy some officials have towards individual leadership.

5.4 Significant Findings on Communication

This study also sought to explore the role of agency communication in source reduction efforts. Most significantly, this study found that communication is recognized as an integral function of environmental protection administration. Officials participating in the study universally recognized the importance of crafting effective messages and using diverse methods of communication to reach stakeholders. The study clearly documents efforts at affecting change through targeting businesses and manufacturers; although, it also notes challenges being faced by environmental officials in affecting change in individual behaviors. Of particular note is the finding that officials feel less confident in crafting messages and encouraging values in practice by the public. This lack of confidence is not surprising considering the noted lack in environmental communication policies and agency organizations that place the onus for crafting public outreach plans on individuals, rather than a public relations office or a combination of the two.

5.5 Significant Findings on Source Reduction Initiatives

Finally, one of the driving forces behind this study was a noted lack in data on source reduction efforts. This was noted in the absence of defined metrics and reported progress towards source reduction specific goals on a national or state level. The results of this study support this observation and officials noted on a number of occasions that the lack of metrics negatively impacted an agency or official's ability to advance source reduction program goals. The lack of metrics appears to be more of a secondary concern to officials as it did not rank particularly high when compared to other challenges but the number of comments that included some mention of metrics submitted by the survey panel does argue for its relevance.

It should be noted, however, that the lack of standardized metrics does not in any way correlate to a lack of source reduction initiatives on a state or local level. Rather this study makes it very clear, as documented by the level of comments and in the myriad examples of source reduction initiatives and resources provided by the expert panel,

that individual officials are making efforts to promote source reduction in spite of the challenges being faced by agencies. In general, officials were both knowledgeable of and experienced with successful source reduction initiatives, regardless of their agency's ability or inclination to implement these types of programs. Further, officials showed both a detailed understanding of issues, which included a well thought out analysis that demonstrated significant critical thinking, and a willingness to offer solutions and innovative approaches to meeting these challenges. This speaks to a remarkable level of self motivation and a passion for the subject matter that is particularly gratifying to see. As a whole, this study finds that source reduction officials, while frustrated with progress and constraints imposed by outside forces, are nonetheless making positive impacts, and actively seeking contacts within their community and resources they can leverage within their own agencies to promote source reduction goals, programs, and initiatives.

5.6 Significant Findings on the Modified Policy Delphi

As previously noted (Section 3: Methodology), there were a number of study methods in addition to Delphi considered for use in this study including interviews, teleconferences, and a traditional survey. In the final analysis, the Delphi method was chosen specifically because it allowed for both confidential participation and discussion of results as conducted through the solicitation of opinions and presentation of these opinions to the group for further discussion in subsequent surveys (a hallmark of a Delphi survey as opposed to a traditional survey method). As noted by study participants in the final survey evaluation, the decision to allow for confidential participation was important to several participants, with one specifically noting that they would not have otherwise participated. During the interim between Survey Three and Survey Four, one participant did comment on the difficulty of communicating complex issues via writing as opposed to face-to-face but the respondent continued with the process and did not submit a negative rating on the process. In sum total, the comments' confidentiality, the rated utility of the survey process, and the comments on the importance of summarized group opinions support the decision to use the Delphi method.

Beyond the question of the decision to use a Delphi survey, the study also finds that the modifications made to the study process did not in any manner hamper the study process and in some instances may have helped. As previously noted, the purpose of a policy Delphi is not to gain consensus on an issue, but rather to explore issues and gather information with an eye towards making an informed decision.⁸⁷ Even with the changes made to the methodology, this study was successful as an information gathering technique as substantiated both by the results generated by the survey and the positive response to the information gathering question in the survey evaluation. Further, the flexibility in developing questions allowed the study to be more responsive to participant comments, which in turn encouraged participants to continue to actively participate through the end of the process. By any count, the greater than ninety-five percent response rate to surveys is a significant achievement and denotes a high level of commitment and motivation on the part of the participants. On the whole, the study finds that the modified policy Delphi was both an appropriate tool for the study and conveyed several benefits including increased participation, flexibility of topics, and substantial data gathering.

5.7 Limitations of Findings

It is important to note that while these findings are significant, there are a number of limitations inherent to the study. These limitations are imposed both by the study methodology (e.g., the use of a Delphi survey) and by the sources of input (e.g., the study panel). First, as previously noted a policy Delphi is a decision-making tool originally developed to assist in the gathering of information to support an informed decision. As such, results derived from the use of the policy Delphi technique in this study are not considered to be a comprehensive, definitive statement on the nature of source reduction efforts in every locality, state, and the Nation as a whole. Rather the study provides a snapshot of the opinions of a single, limited group of individuals on the state of source reduction policy in the US.

⁸⁷ Turoff, 80.

Second, although the number of participants in the process was limited for the previously noted reasons, this did not automatically limit the relevance of the findings. The relevance of the survey was based on obtaining informed insight into the prioritization, implementation, and communication of source reduction policies and initiatives on a national, state, and local level in the US; a goal obtained in the survey process. While additional respondents may have contributed to the results of the survey or allowed for a geographical or position analysis, they were not necessary to validate the opinions of the final survey group.

Third, the sources of input for this study impose additional limitations on the study. The final subject matter panel is composed only of government individuals who showed both an interest in source reduction programs and had the immediate time to participate in the study. As such, there is an immediate bias towards the importance of source reduction efforts. A panel composed of non-government experts may certainly have resulted in different findings. Neither of these limitations negates the findings of the study, but any applications of the results should take these limitations into consideration.

5.8 Avenues for Additional Study

Taking into account the significant findings of this study and the study limitations, there are several topics for additional study suggested by the findings. First, the findings in Survey One support the conclusion that the disparity between federal and state and local waste management prioritization is a result of differing implementation priorities. Ineffective communication is more of a challenge to implementation than a contributing factor to the lack of consistent prioritization on a national, state, and local scale. Further, while the information provided in this study on communication is relevant it could certainly be augmented by a more focused study wherein the primary goal is to explore challenges to effective communication.

Second, the results of this study suggest that agencies weigh the importance of source reduction program outreach to businesses and manufacturers much more heavily than outreach to individuals – a finding that is consistent with environmental program implementation by the EPA as a whole and which might be considered an Agency bias.

This finding is particularly interesting when compared with the importance study participants placed on changing individual behaviors. Additional studies on the historical precedence for targeting business and how that precedence impacts an agency's ability to change public behaviors would certainly contribute to the understanding of environmental regulation in the US.

Additionally, environmental officials in this study provide a wealth of information on source reduction initiatives and methods to address current challenges to source reduction program implementation. Unfortunately, the logistics of the study significantly restricted the number of suggestions and examples that could be followed up on by the group. However, these resources and recommendations offer a real opportunity for further study. Of particular interest were the comments received on product stewardship, business as source reduction leaders, and "green" labeling. Studies into the need for and potential impact of these types of programs would only add to the number of tools available to officials to increase the chances of success of source reduction programs on state and local levels.

Finally, questions of sustainability goals and how resource management practices can help the US move towards a sustainable future were significant in developing the study but were not included in the survey process in order to manage the scope of the inquiry. While this choice did not limit the overall relevance of the study, it does provide for significant avenues for further research. Specifically, how the federal mandate for source reduction can inform, impact, and be integrated into sustainable society goals in the US would significantly contribute to both the study of source reduction's role in waste management and the larger study of environmental practices in the US.

6 Conclusion

As established by a Congressional mandate, the US Environmental Protection Agency ranks source reduction as the number one preferred resource management practice; however, current source reduction efforts in the US are overshadowed by other waste management practices. It was theorized that the source of this difference in prioritization might be (1) unequal implementation priorities on a federal, state, or local level, or (2) insufficient communication between environmental agencies and stakeholders. A panel of ten federal, state, and local waste management officials participated in a modified Delphi survey exploring the issues surrounding source reduction policy implementation and communication. The study resulted in a focused discussion of the value of source reduction and the challenges environmental agencies face in implementing source reduction policies. The study concludes that while the value of source reduction is not debated, there are several barriers to implementing these policies in the US including questions of authority, program implementation cost, lack of consistent and effective leadership, and challenges associated with developing effective communications.

Appendices

The Role of Source Reduction in Sustainability Goals and How Government Agencies Implement and Communicate Source Reduction Policy

Dear [Sir or Madam]:

We would like to invite you to participate in a new research study on resource management initiatives and sustainability goals. The purpose of the study is to investigate how government agencies implement source reduction policy and communicate goals to stakeholders. As a member of [your Agency/Office's waste management office], you have been identified as an important source of information on these policies and initiatives.

This study offers a unique opportunity for you to discuss source reduction initiatives in a controlled environment: learning about experiences with successful initiatives, discussing implementation strategies and priorities, and identifying resources available to you to help you achieve source reduction goals.

The study will be conducted over the course of four weeks and will involve completing four short surveys (one each week of no more than eight questions each). Each survey should take approximately twenty minutes to complete. All participants will remain confidential and you may choose to stop participating at any point.

This study is a part of a Master's Thesis research study [Environmental Applied Science and Management Program – Ryerson University] and will be released as part of a final dissertation. The final conclusion of the surveys and study will be made available to participants of the study immediately upon completion.

If you would like to participate in the research study, please read the detailed information below and provide a brief note via email to Ms Parson at the return address [jparson@ryerson.ca].

Thank you for your time and consideration,

Ms. Jessica L. Parson

Before you give your consent to be a volunteer, it is important that you read the following information and ask as many questions as necessary to be sure you understand what you will be asked to do.

Investigators: The study is being conducted by Jessica Parson, a masters degree student at Ryerson University. Ms. Parson has previously completed a Bachelor's degree in Environmental Science and Policy from Hood College (2000) and has worked professionally with several Federal environmental agencies. The study will be conducted under the supervision of Dr. Michal Bardecki, Director of the graduate programs in Environmental Applied Science and Management at Ryerson University.

Purpose of the Study: The purpose of the study is to investigate how government agencies implement source reduction policy and communicate goals to stakeholders. Participants for the study should work within or for a Federal, state, or local government agency or office whose stated mission includes resource management and/or source

reduction. A limited number of participants are being recruited to participate in the study (approximately 30). Participants were identified using publicly available Agency/Office organizational data, contact information provided in governmental publications on source reduction and recommendations from peers.

Description of the Study: The study will be conducted using a Delphi Survey. A Delphi Survey is an iterative survey composed of multiple rounds of questions in which the participants are asked to state an opinion and then clarify that opinion based on group feedback. Over multiple rounds, study participants generally reach a 'group consensus' on an issue. For the purposes of this study, the Delphi survey is composed of four rounds of questions. In round one a set of questions will be provided to participants asking them to rank the importance of and respond to questions related to certain source reduction policies and initiatives and provide examples. The results of round one will then be summarized and provided as part of round two where participants will be provided an opportunity to expand on previous responses or explore responses provided by the group. The process is then repeated; there are four rounds planned for this study. The survey will be emailed to participants at the beginning of each calendar week and each participant will be given a couple of days to respond by email to the study coordinator. Raw responses/results are **never** sent other participants. The survey should take approximately twenty minutes to complete each week.

At the end of the study, participants who have completed the entire study will be provided with a summary of the final results and invited to provide feedback on the process. Participants will also be provided with an opportunity to receive the final Master's Thesis resulting from the study.

What is Experimental in this Study: None of the procedures [or questionnaires, if applicable] used in this study are experimental in nature. The only experimental aspect of this study is the gathering of information for the purpose of analysis.

Risks or Discomforts: It is possible that you may know of or have worked with other participants in this survey. These individuals may work for Agencies or Offices higher or lower in your organizational structure. To mitigate this, all participants will remain confidential during the study and no raw data (opinions/quotes) will be provided to participants at any time.

It is in the nature of a Delphi survey and this study in particular to encourage discussion about the importance of certain aspects of source reduction. Participants will not always agree with the rankings provided or the summarized opinions of the group. However, all participant interactions will occur through the survey coordinator and every effort will be made to faithfully and tactfully communicate responses.

Please see the confidentiality statement below for additional information.

Benefits of the Study: This study will provide important insight into the setting of

resource management priorities, the development of new source reduction initiatives, and the communication strategies of Federal, state, and local government agencies. Additionally, this study offers a unique opportunity for resource management professionals to discuss source reduction initiatives in a controlled environment: learning about experiences with successful initiatives, discussing implementation strategies and priorities, and identifying resources available to help Agencies/Offices achieve source reduction goals. We cannot guarantee, however, that you will receive any benefits from participating in this study.

Confidentiality: All participants will remain confidential at all times during the study and participants are asked not to discuss the study directly with other professionals within the community. This is not to state that participants may not discuss the **topic of the study** or engage in debates on the **merits of policies or initiatives**, simply that they not identify themselves as participants or name the study specifically. Additionally, participants will **never** be provided with raw data from the study. All survey responses will be reviewed only by the investigators and any source reduction initiative examples provided to the group as part of the survey rounds will be edited to remove identifying information such as the originating Agency/Office or specific location. Opinions provided by participants will be presented only in the most general, summarized form if they are incorporated into survey rounds.

Responses from the survey will be used as supporting data for a final report exploring sustainability initiatives at different levels of government (e.g., local, state, and Federal). No identify information will be included in any reports or publications arising from this survey. All identifying data for this study will be stored on a non-networked back up drive maintained by the study coordinators. Identifying data will be maintained for the duration of the study or two years, which ever is shorter.

Incentives to Participate: Participants will not be paid to participate in this study.

Costs and/or Compensation for Participation: There are no anticipated costs to the participants for this study beyond a minor time commitment.

Voluntary Nature of Participation: Participation in this study is voluntary. Your choice of whether or not to participate will not influence your future relations with Ryerson University. If you decide to participate, you are free to withdraw your consent and to stop your participation at any time without penalty or loss of benefits to which you are allowed.

At any particular point in the study, you may refuse to answer any particular question or stop participation altogether.

Questions about the Study: If you have any questions about the research now, please ask. If you have questions later about the research, you may contact:

Ms. Jessica Parson or Dr. Michal Bardecki at (416) 979-5000 x6175.

Appendix A: Email Solicitation

If you have questions regarding your rights as a human subject and participant in this study, you may contact the Ryerson University Research Ethics Board for information.

Research Ethics Board

c/o Office of the Vice President, Research and Innovation

Ryerson University

350 Victoria Street

Toronto, ON M5B 2K3

416-979-5042

Agreement:

By returning a completed survey questionnaire, you are stating that you have read the previous information and are agreeing to participate in the research study.

Basic Questionnaire

How long have you been with the Agency/Office? How long have you held your current position?

If you were to draft a job announcement for your current position, what qualifications would you look for in the perfect candidate? [Level of education, professional qualifications, skills, etc.]

Does your office have an environmental communications policy? If so, how long has it been in place? (Please provide an online copy/link to the document, if possible)

Does your office have a communications or media expert(s)/team? In the past, has this team's skills been of use in a source reduction initiative?

Does your office support/promote a specific source reduction policy for implementation by outside stakeholders? If so, how long has it been in place? (Please provide an online copy/link to the document, if possible)

What is the final goal of your source reduction policy; what metrics are in place (how you measure progress); what is the timeline? (Please provide an online copy/link to any information on the current status of progress towards your source reduction policy goal, if possible)

Appendix C: Surveys

SURVEY ONE

*Instructions: The purpose of the following survey is to gain insight into source reduction policies and practices. Unless otherwise stated, the questions posed below ask you to clarify/expand on the **current state of source reduction policy/practice** in your Agency/Office. Whenever possible, please provide an explanation of your response - responses may be as detailed or brief as you like. Additionally, you are welcome to submit any published documents/reports available from your office to clarify your response.*

Responses should be submitted by choosing 'Reply to Sender Only' and entering your response in the appropriate section. Any additional documents you would like to submit as part of the survey may be appended to your response or included as an Internet link, where appropriate. Any questions on the survey or instructions may be submitted to the coordinators via e-mail and will be addressed as quickly as possible.

Source reduction is just one part of most modern resource management strategies. Please rank the following resource management strategies according to the implementation priority **currently supported** by your Agency/Office. [1 is the highest priority, 5 is the lowest priority]

- ☐ Source Reduction
- ☐ Recycling
- ☐ Recovery and Composting
- ☐ Combustion for Energy
- ☐ Disposal

Please rank the same resource management strategies according to what you personally feel the implementation priority **should be** based on your personal experience. Please provide a brief explanation of the basis for your ranking. [1 is the highest priority, 5 is the lowest priority]

- ☐ Source Reduction
- ☐ Recycling
- ☐ Recovery and Composting
- ☐ Combustion for Energy
- ☐ Disposal

SURVEY ONE (continued)

Source reduction initiatives encompass a number of objectives including:

Efficiency - Implementing or promoting practices that encourage increased production without increased resource usage.

Conservation - Implementing or promoting practices that encourage the smart use of natural resources while reducing byproducts/waste.

Smart Consumption - Implementing or promoting the manufacture/purchase of durable goods and repair services rather than disposal goods.

Stewardship - Implementing or promoting practices that recognize a Business's or Person's role in environmental efforts.

Innovation - Implementing or promoting efforts to explore new methods for creating goods or accomplishing goals.

Security - Implementing or promoting practices that reduce the dependence on non-National or vulnerable resources.

Other – Please specify.

Please choose the TWO most important objectives currently supported by your Agency/Office to communicate to stakeholders in order to ensure the success of a source reduction initiative. Please provide a brief description of the basis for your ranking.

Please chose the ONE least important objective currently supported by your Agency/Office to communicate to stakeholders in order to ensure the success of your source reduction initiative. Please provide a brief description of the basis for your ranking.

SURVEY ONE (continued)

There are a number of ways in which source reduction goals and policies can be communicated to stakeholders including the following:

Electronic media - Web sites, blogs, electronic newsletters, etc.

Meetings and Conferences - public meetings, town hall sessions, seminars/conferences, etc.

Print media - newspapers, magazines, flyers, billboards, etc.

Television and Radio - TV or radio announcements, local stations, educational films, etc.

Telephone - Call centers, information numbers, etc.

Other – Please specify.

Please choose the TWO most effective outreach methods currently employed by your Agency/Office to communicate source reduction goals. Please provide a brief description of the basis for your ranking.

Source reduction initiatives or outreach methods can be directed towards a target group such as ***Business owners, Manufacturers, Homeowners, Young professionals, Retired adults, School children, etc.***

If your Agency/Office currently supports a source reduction policy/initiative directed towards a specific target group, please list the TWO highest priority target groups for your Agency/Office along with a brief explanation of your ranking. (You may include a target group not listed here, if appropriate)

If your Agency/Office does not currently support a source reduction policy/initiative directed towards a specific target group, please provide a brief explanation as to why not.

SURVEY ONE (continued)

Source reduction initiatives may develop in a number of ways. Please rank the following by their importance to developing new initiatives/policies to be supported by your Agency/Office. [1 is the most important, 5 is the least important]

- ☐ Initiatives developed by other Agencies/Offices
- ☐ Voluntary business initiatives
- ☐ Community group initiatives
- ☐ School group initiatives
- ☐ Other (please specify)

Please provide a brief description of a source reduction initiative that has performed particularly well or particularly poorly in your jurisdiction. Please try to include information on who the target group was, if any, and how you communicated with them, what the timeframe for the initiative was, and how you measured success.

SURVEY TWO

*Instructions: The purpose of the following survey is to gain insight into source reduction policies and practices. Unless otherwise stated, the questions posed below ask you to clarify/expand on the **current state of source reduction policy/practice** in your Agency/Office. Whenever possible, please provide an explanation of your response - responses may be as detailed or brief as you like. Additionally, you are welcome to submit any published documents/reports available from your office to clarify your response.*

Responses should be submitted by choosing ‘Reply to Sender Only’ and entering your response in the appropriate section. Any additional documents you would like to submit as part of the survey may be appended to your response or included as an Internet link, where appropriate. Any questions on the survey or instructions may be submitted to the coordinators via e-mail and will be addressed as quickly as possible.

Survey 1, Questions 1 and 2: Ranking Source Reduction Implementation Priorities (Personal and Agency wide)

When asked to rank the implementation priority of different aspects of modern resource management strategies according to personal opinion, 80% of survey participants ranked Source Reduction as the number one priority. When asked to rank the implementation priority of the same resource management strategies by their Agency/Office, Federal respondents again ranked Source Reduction as the top priority. However, state and local representatives both ranked Source Reduction implementation by their Agency as secondary to Recycling.

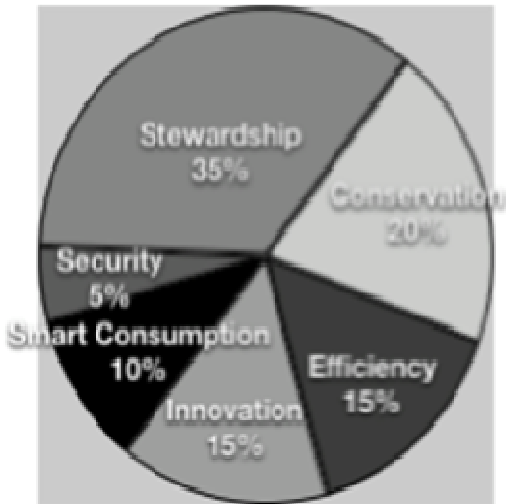
Average Score of Agency Implementation Priority of Management Practice			
	Source Reduction	Recycling	Recovery & Composting
Federal	1.5	3.0	3.0
state	3.0	1.5	3.0
local	2.8	1.3	2.0

1. From personal experience, please list the TWO most important underlying issues that might contribute to this discrepancy between Federal and state/local implementation priorities.

SURVEY TWO (continued)

Survey 1, Questions 3 and 4: Choosing the most and least important Source Reduction policy objective

Source reduction initiatives encompass a number of objectives. The following is the relative importance of several objectives as decided upon by the full group of respondents.



MOST Important Objectives



LEAST Important Objectives

Nearly the same number of respondents listed **Innovation** as one of the most important objective to communicate to shareholders as listed it the least important. Those in favor of innovation specifically noted the need to encourage businesses to find new ways of doing business and partnering with universities through the P2 Source Reduction Assistance program to look for innovative ways to reduce and conserve. However, those not in favor noted that results were inconsistent and hard to promote without strong product stewardship.

- From personal experience, please rate the importance of **Innovation** on a scale of 1 to 5 [where 1 is very important and 5 is very unimportant] as a source reduction objective and provide one argument or example to support your ranking.

- ☐ Very important
- ☐ Somewhat important
- ☐ Neutral
- ☐ Somewhat unimportant
- ☐ Very unimportant

SURVEY TWO (continued)

Equally, strong opinions were voiced over the concept of *Smart Consumption* as an objective for source reduction initiatives. Respondents noted that there is a general taboo against encouraging consumers not to make unnecessary purchases or to purchase durable/repairable products as opposed to disposable ones. Instead, less direct means of achieving a smart consumer base were mentioned including the Federal Government leading by example through procurement and encouraging energy efficiency and the general downturn in the economy as an impetus for consumers to buy smarter.

3. From personal experience, please rate the relevance of the concept of *Smart Consumption* on a scale of 1 to 5 [where 1 is very important and 5 is very unimportant] and provide one argument or example to support your ranking.

- ☐ Very important
- ☐ Somewhat important
- ☐ Neutral
- ☐ Somewhat unimportant
- ☐ Very unimportant

4. From personal experience, please list the TWO most important underlying issues that might prevent Agencies from implementing educational programs on *Smart Consumption*. Wherever possible, please suggest a method to address or mitigate the issue.

SURVEY TWO (continued)

Survey 1, Question 5: Choosing the two most effective communication medias

There are a number of ways in which source reduction goals and policies can be communicated to stakeholders. When asked to chose the two most effective methods of communicating with stakeholders, a full 80% of respondents listed electronic media as one of the most effective outreach methods, especially with regards to the emphasis placed on consumers accessing information specific to their needs in a timely manner. . A further 60% of participants noted the traditional effectiveness of speaking to a targeted audience face to face through meetings and conferences. Only 15% of participants chose **TV and Radio** or **Print Media** as one of the most effective ways to reach stakeholders.

Cost was most often noted as a major deterrent to use of **TV and Radio** but there are examples Nationally of programs that have shown great success with these media choices. For example, in King County, Washington, the King County Solid Waste Division has created the *King County EcoConsumer*, a multimedia source reduction outreach initiative. While the initiative makes use of electronic media, the major outreach methods include biweekly newspaper columns in the *Seattle Times*, weekly live EcoConsumer segments on Seattle radio stations and a monthly live segment on a local Seattle TV station. The King County Solid Waste Division estimates that in 2009 the *EcoConsumer* spots reached a targeted audience of over 22 million people.

[<http://your.kingcounty.gov/solidwaste/ecoconsumer>]

5. Although more costly, **Print Media** and **TV and Radio** are extremely effective ways of reaching consumers, especially with the newly emerging trend towards targeted, eco-conscious networks. In light of the King County example, how likely are you to re-evaluate the use of these types of media in for your Agency/Office's source reduction program?

- ☐ Very likely (I'll reach out to King County and work with leadership to promote this)
- ☐ Somewhat likely (I'll research it and talk to my direct boss about the option)
- ☐ Neutral (I'll look into it but I probably won't mention it to leadership unless asked)
- ☐ Somewhat unlikely (Maybe I'll check back in a couple of months)
- ☐ Very unlikely (TV and Radio are not a priority)

SURVEY TWO (continued)

Survey 1, Question 6: Source Reduction policy initiative Target Groups

Source reduction initiatives or outreach methods can be directed towards a target group. Eighty percent of respondents stated that Businesses and/or Manufacturers were one of their top priority target groups. The WasteWise Program was mentioned numerous times throughout the survey by respondents as a popular program for targeting businesses. Begun in 1994, the WasteWise Program supports and recognizes businesses that implement source reduction initiatives (especially with regards to targeted materials); however, the program is over 15 years old and was implemented under a very loose framework. Newer initiatives such as Chicago's Waste to Profit Network create a stronger framework by linking businesses locally to identify by-products that can be passed on at a profit to other companies rather than entering the waste stream. This emphasis on local linkages, non-traditional waste streams, and measurable diversion rates has created a strong source reduction initiative.

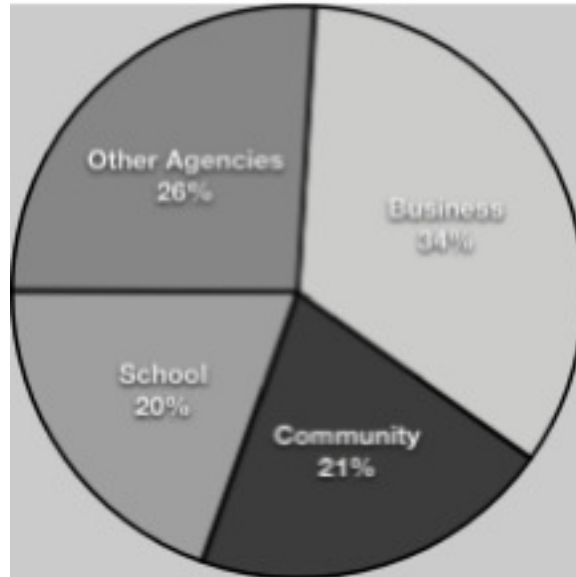
6. Considering the emphasis placed on ***Businesses*** and ***Manufacturers*** by the group, please rate how likely your Agency/Office might be to implement a program like Chicago's Waste to Profit Network.

- ☐ Very likely (We already have/are in the process of creating a program like this)
- ☐ Somewhat likely (We are actively looking at updating the WasteWise Program)
- ☐ Neutral (Maybe. I need to do more research.)
- ☐ Somewhat unlikely (WasteWise is sufficient but we're open to incorporating something new)
- ☐ Very unlikely (WasteWise is Nationally supported and works well in our area)

7. Targeting individuals (with the exception of students), was ranked very low by respondents [15% or less]. Please list ONE reason why your Agency/Office might be less likely to target individuals (***Retirees, Young Professionals, Women/Men by age group, Homeowners***).

SURVEY TWO (continued)

Survey 1, Question 7: Source Reduction policy initiative development



Source reduction initiatives may develop in a number of ways. The following is the relative importance of development groups as ranked by the full group.

Other Agencies was a prominent source of information for all respondents. However, Federal and state Agencies listed **Business** as the second most prominent source of information while local Agencies ranked **Community** resources before **Business** resources. It was even noted by a couple respondents that local Agencies have an important role as an advocate for **Community** initiative on a state and Federal level.

8. In your personal experience, please rate how much of an impact local Government advocacy/Community Initiatives should have on shaping state or National source reduction initiatives on a scale of 1 to 5 [where 1 is very high impact and 5 is very low impact] and provide one argument or example to support your ranking.

- ☐ Very important / local initiatives should be the number one resource on initiatives
- ☐ Somewhat important / Should highlight more Community initiatives
- ☐ Neutral / local Agencies already have an appropriate level of impact
- ☐ Somewhat low impact / Generally not applicable on a state or National scale
- ☐ Very low impact / Not relevant on a state or National scale

SURVEY THREE

*Instructions: The purpose of the following survey is to gain insight into source reduction policies and practices. Unless otherwise stated, the questions posed below ask you to clarify/expand on the **current state of source reduction policy/practice** in your Agency/Office. Whenever possible, please provide an explanation of your response - responses may be as detailed or brief as you like. Additionally, you are welcome to submit any published documents/reports available from your office to clarify your response.*

Responses should be submitted by choosing 'Reply to Sender Only' and entering your response in the appropriate section. Any additional documents you would like to submit as part of the survey may be appended to your response or included as an Internet link, where appropriate. Any questions on the survey or instructions may be submitted to the coordinators via e-mail and will be addressed as quickly as possible.

Survey 2, Question 1: Underlying issues that might contribute to this discrepancy between Federal and state/local implementation priorities.

The survey group was asked to speculate on the underlying issues that may contribute to the perceived discrepancy between Federal and state/local source reduction policies. While each answer was unique, several underlying themes emerged from the compiled responses. The following are presented in no particular order:

Authority and Purview - Waste management programs are implemented on a state and local level. The Federal government is therefore, not faced with the same pressures when making implementation decisions. Additionally, while the Federal mandate for recycling is clear, the statutory and regulatory authority for source reduction is less clear/proven.

Public Awareness - The public is increasingly aware of recycling options and places pressure on the state and local governments to expand recycling programs. By contrast, the public can be unreceptive and potentially hostile to government efforts at source reduction.

Lack of Source Reduction Metrics - Recycling programs have a clearly defined set of metrics for measuring success that is supported directly by Federal mandates. By contrast, the scope of source reduction activities is undefined (i.e., what activities are or are not included under the EPA's definition of source reduction) and there are, as a result, no clearly defined metrics by which to directly measure program success.

SURVEY THREE (continued)

Cost and Resource Allocation - The cost of creating a source reduction program or beginning a new initiative is prohibitive due to both the current state of the economy and the lack of National support (e.g., ‘canned’ programs which can be rolled out at any locality, grants and funding). Additionally, implementation prioritization does not always mirror resource allocation decisions.

Communication and Vision - No clear line of communication has been established between Federal, state, and local source reduction officials. Recycling contact lists are maintained (and available to the public) at every level of government, and these officials are linked through a Federally supported framework of mailing lists, conferences, and interest groups. By contrast, source reduction Officials are not individually recognized or marketed to by the EPA.

1. From personal experience, Please rank the relative impact of each of the issues proposed by the group might have on an Agency’s decision to implement Source Reduction initiatives. Please provide a brief explanation of the basis for your ranking. [1 is the highest impact, 5 is the lowest impact]

- ☐ Authority and Purview
- ☐ Public Awareness
- ☐ Lack of Source Reduction Metrics
- ☐ Cost and Resource Allocation
- ☐ Communication and Vision

*Survey 2, Questions 2: The importance of **Innovation***

Eighty-nine percent of survey participants rated **Innovation** as either Very Important or Somewhat Important. No participants rated it as unimportant. As one respondent stated, when not compared to the other objectives of Source Reduction, **Innovation** is very important; and the group strongly agrees with this statement. This supports the conclusion that the ranking of the original five stated objectives of Source Reduction was more a parsing of equal standards with stronger favorites than a true ranking of importance.

The group maintains that **Innovation**, while comparatively the least important of the provided choices, is still important both as a stand alone objective and as an enabling objective that makes other objectives achievable. It is this second function, the role **Innovation** plays in fostering **Stewardship**, promoting **Efficiency**, and making **Conservation** an easy choice, that defines the value of **Innovation**.

SURVEY THREE (continued)

2. There are no further questions on the objectives of Source Reduction. If you have any further comments you would like to express on the importance of objectives or defining the goals of Source Reduction, please feel free to enter them here, and they will be included as part of the final analysis.

*Survey 2, Questions 3 and 4: The relevance of **Smart Consumption***

Seventy-Eight percent of survey participants rated **Smart Consumption** as either Very Important or Somewhat Important. The remainder rated the objective as Neutral. As one respondent stated, the goal of Source Reduction is to change the way the public thinks about materials. This places **Smart Consumption** on par with the other listed objectives in the same manner as **Innovation**; an equal piece of the larger whole.

The survey group recognizes the role government plays in market development and how promoting ‘green practices’ like product stewardship, ‘green purchasing’, and sustainable product development can filter down to consumers. As another respondent paraphrased, overconsumption is the largest environmental issue today and the Government must recognize and address this. The group also acknowledges the challenges to promoting **Smart Consumption**.

The survey group was asked to speculate on the underlying issues that may contribute to the the lack of **Smart Consumption** education programs. While each answer was unique, several underlying themes emerged from the compiled responses. The following are presented in no particular order:

Perceived Anti-American/Anti-Economic - There is a high probability that the public will negatively perceive any efforts to promote **Smart Consumption** as ‘anti-American’ or ‘anti-Economic’ due to their focus on reducing consumption (e.g., purchasing practices). The concept can be viewed as in direct conflict to the American Dream (e.g., the pursuit of happiness through material goods). This is particularly relevant during the downturn in the economy when ‘Buy American’ and supporting blue collar America are prominent themes.

Cost - The cost of creating a **Smart Consumption** program or beginning a new initiative is prohibitive due to both the current state of the economy and the lack of National support (e.g., ‘canned’ programs which can be rolled out at any locality, grants and funding). This is particularly relevant when compared to the speed at which technologies and products change and adapt to the market (e.g., ‘green marketing’).

SURVEY THREE (continued)

Information Over Saturation - Educational programs to promote *Smart Consumption* have to compete for the attention of the public. The public is asked to make decisions based on increasingly more and more information obtained through increasingly diverse methods. This so called information over saturation, makes it difficult for Agencies to ensure that their message is heard and beginning new programs runs the risk of losing public attention to other or all environmental issues.

Authority and Purview - As previously noted, the mandate for Source Reduction programs is less clear/proven than other waste management activities (e.g., recycling, disposal). Programs to promote *Smart Consumption* may be seen as impinging upon the sovereignty of business or consumers.

Lack of Metrics - The scope of *Smart Consumption* activities is undefined (i.e., what activities are or are not included under the EPA's definition of source reduction) and there are, as a result, no clearly defined metrics by which to directly measure program success. This lack of metrics makes it difficult to justify program funding or highlight program successes both on a local level and on a National level (e.g., GPRA).

3. From personal experience, please rank the relative impact of each of the issues proposed by the group might have on an Agency's decision to implement *Smart Consumption* education programs. Please provide a brief explanation of the basis for your ranking. [1 is the highest impact, 5 is the lowest impact]

- ☐ Perceived Anti-American/Anti-Economic
- ☐ Cost
- ☐ Information Over Saturation
- ☐ Authority and Purview
- ☐ Lack of Metrics

SURVEY THREE (continued)

Survey 2, Question 5: Promoting Source Reduction through TV and Radio or Print Media

When presented with an example of an effective means of reaching out to the public through **TV and Radio** and **Print Media**, the survey group was asked to rate how likely they were to research the example and re-evaluate the use of that type of media outreach. Fifty percent of the respondents stated that they were either already using the media effectively or would do more research into the example provided. The other fifty percent reiterated that those forms of media outreach were not or could not be supported by their Agency for various reasons.

One reason put forward by a couple of respondents was the cost of outreach through TV, radio, and print media. Although most of the King County outreach methods are done for low or no cost (it is not considered advertising but rather run as local news), it is difficult to scale this approach up to a state-wide or National level without significant investment. Another reason provided was that the King County example relies on a number of factors that are not easily replicated in other locations or at higher levels, including a driving personality, an engaged public, and effective leadership. As one respondent noted, every administration has different priorities, which need to be balanced against the need for a consistent message.

The discussion on effective communication media has highlighted a number of issues that may affect the effectiveness of communication between government Agencies and the public including, the type of media chosen by the Agency, cost of the outreach media to the Agency, the effectiveness of Agency leadership, the level of public engagement, and the presence of a ‘driving personality’ within the Agency.

4. From personal experience, please rank the relative impact of each of the issues proposed by the group might have on an Agency’s effectiveness in communicating Source Reduction initiatives and goals. Please provide a brief explanation of the basis for your ranking. [1 is the highest impact, 5 is the lowest impact]

- ☐ Cost
- ☐ Effective Leadership
- ☐ Driving Personality
- ☐ Engaged Public
- ☐ Type of Media
- ☐ Other (Please explain)

SURVEY THREE (continued)

Survey 2, Question 6 and 7: Focus on Businesses and Manufacturers as a Target Group

When presented with an example of an targeting **Businesses** and **Manufacturers** through local by-product synergy system, the survey group was asked to rate how likely they were to research the example and evaluate the system for potential inclusion in their Source Reduction programs. Forty-two percent of the respondents stated that they were neutral towards the example provided, while an additional forty-two percent stated that they already had or were investigating such a program.

Respondents were indirectly encouraged to compare the Chicago example or their own examples to the National WasteWise Program. Each respondent who provided comments on the question that included this comparison remarked favorably on the impact of the WasteWise program in their state or locality. As one respondent noted, these programs are not in competition and achieve the same goal.

5. There are no further questions on the targeting **Businesses** and **Manufacturers** for Source Reduction initiatives. If you have any further comments you would like to express on the how Federal, state, of local Agencies target these groups for Source Reduction, please feel free to enter them here, and they will be included as part of the final analysis.

The survey group was asked to speculate on the underlying issues that may contribute to the the low importance placed on targeting individuals for Source Reduction initiatives. While each answer was unique, several underlying themes emerged from the compiled responses. The following are presented in no particular order:

Lack of Institutional Knowledge - Traditionally outreach programs have always targeted groups (e.g., Businesses, Manufactures, Interest Groups). There is therefore, a lack of institutional knowledge on how to reach out to and craft an effective messages for individuals.

Less Opportunity for Impact - One decision made by a Business or group can and will result in a larger impact on the waste stream than one decision made by an individual. There is therefore, less opportunity for change and impact when targeting individuals.

Cost and Resource Allocation - There is a greater perceived 'return on investment' in promoting change within organizations as opposed to individuals. It is therefore easier to justify cost and resource allocation within an Agency for these types of programs as opposed to individual outreach methods.

SURVEY THREE (continued)

Lack of Outreach Channels - Agencies maintain a strong network of connections with Businesses, Manufacturers, and Interest groups through targeted programs, mailing lists, and meetings and conferences. This same framework and established channels of communication does not currently exist for individuals.

Number of Targets - Because individual interests are harder to characterize than the interests of a Business or Manufacturer, each message must be individually tailored. This results in a significantly higher number of ‘targets’ and messages when trying to reach individuals.

6. From personal experience, please rank the relative impact of each of the issues proposed by the group might have on an Agency’s decision to target individuals in Source Reduction initiatives. Please provide a brief explanation of the basis for your ranking. [1 is the highest impact, 5 is the lowest impact]

- ☐ Lack of Institutional Knowledge
- ☐ Less Opportunity for Impact
- ☐ Cost and Resource Allocation
- ☐ Lack of Outreach Channels
- ☐ Number of Targets

Below is a list of outreach methods where the target is a single, interested individual. Each of these methods creates a one to one relationship between an Agency and the individual through which an Agency can promote Source Reduction initiatives. [As opposed to working with business sustainability offices, industry interest groups, or environmental interest groups who pass on the message through the filter of their group mission.]

7. Please check off each method that your Agency has used within the last year to reach individuals with a Waste Management (***Source Reduction, Recycling, Composting and Recovery, Disposal***) message.

- ☐ Web based video (e.g., webinars, YouTube)
- ☐ Outreach at Venues (e.g., stadiums, concerts, home and garden expos, conferences)
- ☐ Social Media (e.g., Twitter, blogs, Facebook)
- ☐ Hosting community ‘green events’ (e.g., bike to work, buy local, green your community)
- ☐ Other (Please explain)

SURVEY THREE (continued)

Survey 2, Question 8: Impact of local government advocacy and Community initiatives

Eighty-seven percent of survey participants rated Community and local Initiatives impact on shaping state and National initiatives as either Very Important or Somewhat Important. As one respondent stated, those community programs that work well should be both evaluated for scalability and recognized/publicized for the benefit of other communities. Most respondents also recognized that communities and local governments cannot act effectively without support from state and Federal Agencies. Change must be promoted at all levels in order to promote a fundamental, transformational change in public priorities and actions.

However, as one respondent noted, not all communities are equipped to promote Source Reduction and even those that are need support from higher levels of government. Part of empowering communities is ensuring that there are clear channels of communication between local governments, state officials and Federal Agencies.

8. In regards to your position within your Agency, how well defined are the avenues of communication between you and local Communities.

- ☐ Very Well Defined (I receive information on local community activities on a regular basis)
- ☐ Somewhat Well Defined (I have one or two avenues/contacts to get local community info)
- ☐ Neutral (This information is available to me but I don't generally access it)
- ☐ Somewhat Poorly Defined (I'm not sure how to obtain this information)
- ☐ Very Poorly Defined (This information is not available to me)

9. In regards to your position within your Agency, how well defined are the avenues of communication between you and other Source Reduction Officials in general.

☐ Very Well Defined (I am familiar with my colleagues and have contacts at, above, and below my level of government with which I share Source Reduction initiative information)

☐ Somewhat Well Defined (I am familiar with some of my colleagues and have a few contacts with which I share Source Reduction initiative information)

☐ Neutral

☐ Somewhat Poorly Defined (I'm not sure who I can network with to share Source Reduction information among colleagues)

☐ Very Poorly Defined (I operate entirely without information from colleagues on Source Reduction Initiatives)

SURVEY FOUR

*Instructions: The purpose of the following survey is to gain insight into source reduction policies and practices. Unless otherwise stated, the questions posed below ask you to clarify/expand on the **current state of source reduction policy/practice** in your Agency/Office. Whenever possible, please provide an explanation of your response - responses may be as detailed or brief as you like. Additionally, you are welcome to submit any published documents/reports available from your office to clarify your response.*

Responses should be submitted by choosing 'Reply to Sender Only' and entering your response in the appropriate section. Any additional documents you would like to submit as part of the survey may be appended to your response or included as an Internet link, where appropriate. Any questions on the survey or instructions may be submitted to the coordinators via e-mail and will be addressed as quickly as possible.

Survey 3, Question 1: Issues that may impact Agency decisions to implement Source Reduction Initiatives.

The survey group was asked to rank five potential underlying issues that may contribute to the perceived discrepancy between Federal and state/local source reduction policies. As calculated by average score, the group ranking is as follows:

Most Impact	<i>Cost and Resource Allocation</i>
	<i>Public Awareness</i>
	<i>Authority and Purview</i>
	<i>Lack of Source Reduction Metrics</i>
Least Impact	<i>Communication and Vision</i>

Over half of the respondents chose ***Cost and Resource Allocation*** as having the most impact on an Agency's decision to implement a Source Reduction program. The remaining participants were split between ***Public Awareness*** and ***Authority and Purview*** as having the most impact.

SURVEY FOUR (continued)

Throughout the survey *Cost* has been a reoccurring theme. However, there are examples of programs that have developed innovative ways to circumvent cost. For example, the King County example provided earlier in the survey is a program done with little cost to the King County Solid Waste Authority (the newspaper, radio, and TV spots are not advertising).

1. In your position with your Agency, how likely are you to research innovative Source Reduction programs specifically to locate programs that are done at little or no cost to the Agency and communicated your findings to your leadership? Please explain.

- ☐ ☐ **Very Likely** (I research programs at every opportunity and this is a reoccurring topic at leadership meetings)
- ☐ ☐ **Somewhat Likely** (I research programs when I can and meet with leadership occasionally)
- ☐ ☐ **Neutral** (I research programs but don't approach leadership)
- ☐ ☐ **Somewhat Unlikely** (I generally don't have the opportunity to research programs or speak with leadership)
- ☐ ☐ **Very Unlikely** (This is not a responsibility of my position)

Additionally, each respondent who commented on *Authority and Purview* both in Survey 3 and in previous surveys, used the phrase to cover different public administrative aspects. For example, respondents have referenced Federal laws (i.e., RCRA and the Pollution Control Act), state regulatory standards, and local by-laws as providing authority for their waste management programs. A number of respondents have commented on the need to augment this authority.

2. In your personal opinion, please chose any of following (you may chose more than one) that you feel are necessary to augment the *Authority* of your Agency to implement Source Reduction policies and initiatives. Please explain.

- ☐ ☐ New Federal Statutory Authority or Regulations mandating Source Reduction
- ☐ ☐ New state Statutory Authority or Regulations mandating Source Reduction
- ☐ ☐ New local By-Laws mandating Source Reduction
- ☐ ☐ We have sufficient Authority, we need additional Resources
- ☐ ☐ Other [Please specify]

SURVEY FOUR (continued)

*Survey 3, Questions 3: Rank issues that may impact Agency decisions to implement **Smart Consumption** education programs*

The survey group was asked to rank five potential underlying issues that may contribute to the lack of Smart Consumption education programs. As calculated by average score, the group ranking is as follows:

Most Impact	<i>Cost</i> and <i>Perceived Anti-American/Anti-Economic</i> [Tied]
	<i>Lack of Source Reduction Metrics</i>
	<i>Information Over Saturation</i>
Least Impact	<i>Engaged Public</i>



Sixty-six percent of respondents chose either ***Cost*** or ***Perceived Anti-American/Anti-Economic*** as having the most impact on an Agency's decision to implement a Smart Consumption education program. A further twenty-two percent of respondents chose ***Information Over Saturation*** as having the greatest impact on the decision to implement a Smart Consumption program.

In addition to ranking the issues surrounding Smart Consumption programs, survey participants were asked to propose ways to address these issues. The following messages and action items were proposed by the group as ways to approach Smart Consumption education programs.

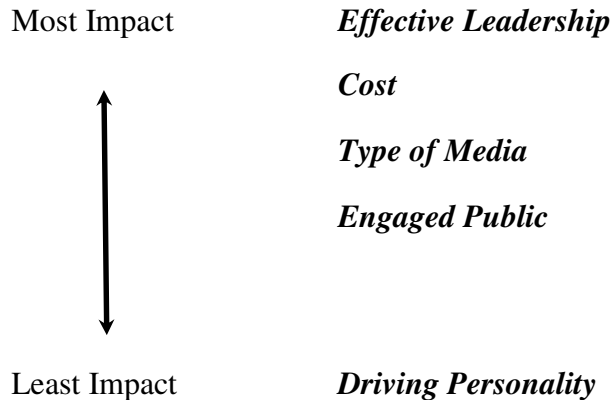
- Message: The Greenest Purchase you make is no purchase at all
- Action: Create/Endorse Green Label standard
- Message: Children's Health: Reduce toxins in the environment by buying smarter
- Message: Source Reduction saves money
- Message: Support local jobs and the environment, purchase used from your local second hand stores

SURVEY FOUR (continued)

3. There are no further questions on *Smart Consumption* education programs as part of Source Reduction initiatives. If you have any further comments you would like to express on the the importance of *Smart Consumption* or how to overcome barriers to implementation, please feel free to enter them here, and they will be included as part of the final analysis.

Survey 3, Question 4: Issues impacting the effectiveness of communication between Agencies and the public.

The survey group was asked to rank five potential underlying issues that may impact the effectiveness of communication between Agencies and the public. As calculated by average score, the group ranking is as follows:



Leadership is expressed at every level of public administration from the entry position through to the Administrator of the EPA and the President of the United states. Leadership also includes your personal leadership skills as an advocate for Source Reduction efforts.

4. From personal experience, please rank the relative importance of each level of public administration's *Effective Leadership* and how much of an impact their leadership has on Source Reduction efforts. Please provide a brief explanation of the basis for your ranking. [1 is the most important, 5 is the least important]

- [] Federal Officials outside of the Environmental Agency (e.g., the President)
- [] Federal Environmental Agency Officials (e.g., the Administrator of the EPA)
- [] state Officials outside of the state Environmental Agency (e.g., the Governor)
- [] state Environmental Agency Officials (e.g., the Director of the state DNR)
- [] local Officials outside of the Environmental Agency (e.g., the Mayor)
- [] local Environmental Officials (e.g., local Solid Waste Officials)

SURVEY FOUR (continued)

Survey 3, Question 6 and 7: Focus on Individuals as a Target Group

The survey group was asked to rank five potential underlying issues that may impact an Agency's decision to target individuals for Source Reduction initiatives. The group was split nearly evenly between the five choices (approximately 20% each) as to the most important issue. Although, respondents did universally agree that targeting individuals was important, it appears that the logistics of doing so were all equally challenging.

Additionally, the survey group was asked to note which method they had used in the last year to target individuals and again, the group responded that they had used no fewer than three and in some cases all five (including other) methods of outreach. Respondents noted the use of Video and Poetry contests, EPA's Pick 5 program, and EPA's social media outreach efforts.

One respondent proposed that the absolute most important aspect of targeting individuals is **Accessibility**. Specifically, making your contact information readily available and responding to inquiries as promptly and consistently as possible, regardless of the nature of the contact. This is particularly relevant to the survey group as it itself is composed of officials located through public means and contacted via e-mail; less than twenty percent of the officials contacted responded in any manner (positive or negative) to the request.

5. From personal experience, please rate how accessible you think Source Reduction officials are to the general public. [A very accessible individual is clearly noted as being a Source Reduction Official with their direct e-mail or telephone number listed either on the Internet or as part of another publicly available directory.] Please explain your rating.

- ☐ Very Accessible
- ☐ Somewhat Accessible
- ☐ Neutral
- ☐ Somewhat Unaccessible
- ☐ Very Unaccessible

Another comment provided was that outreach was particularly challenging because Source Reduction Officials are generally not trained in 'Advertising' or 'Communications' but are more often than not being asked to perform these types of roles. Prior to beginning the survey, each individual in the group was e-mailed a general questionnaire that asked whether their office had a communication plan, if they made use of the public affairs/outreach office, and what skills they needed to conduct their job. Each of these questions was meant to establish a baseline as to what public outreach and marketing experience a participant had or felt they needed for their job.

SURVEY FOUR (continued)

6. From personal experience, please rate how important ‘Public Affairs’ skills (e.g., crafting messages, developing communication plans, and reaching out to stakeholders) are to your position. Please explain your rating.

- ☐ Very Important
- ☐ Somewhat Important
- ☐ Neutral
- ☐ Somewhat Unimportant
- ☐ Very Unimportant

Survey 3, Question 8 and 9: Avenues of Communication between Source Reduction Officials

Survey participants were asked to rate how well defined avenues of communication were between themselves and other stakeholders. Nearly ninety percent of survey participants stated that avenues of communication between themselves and local Communities were either Very Well Defined or Somewhat Well Defined. Further, nearly ninety percent of survey participants stated that avenues of communication between themselves and Other Source Reduction Officials were either Very Well Defined or Somewhat Well Defined.

7. Discounting your personal network of contacts, please list your TOP TWO resources for staying up to date on Source Reduction initiatives, news, community examples, policies, etc. The compiled list will be shared with participants at the end of the survey process as part of the summary of findings.
8. There are no further questions for this study. If you would like to expand upon the topics discussed in this survey or previous ones, please feel free to enter your comments here and they will be considered in the final analysis.

Appendix D: Survey Evaluation

In order to assist us in gauging the success of this study, please give us your opinion on the study experience. Please rate the following questions according to how strongly you agree or disagree with the provided statement.

1. The study was well organized.
☐ Strongly agree
☐ Somewhat agree
☐ Neither agree nor disagree
☐ Somewhat disagree
☐ Strongly disagree
2. The Delphi Method (i.e., the process of iterative, confidential surveys) was a relevant method to explore the subject matter.
☐ Strongly agree
☐ Somewhat agree
☐ Neither agree nor disagree
☐ Somewhat disagree
☐ Strongly disagree
3. The confidential nature of the study/survey method was important to me.
☐ Strongly agree
☐ Somewhat agree
☐ Neither agree nor disagree
☐ Somewhat disagree
☐ Strongly disagree
4. I revised/re-evaluated my opinion on one (or more) of the topics discussed in response to the summarized opinion of the group.
☐ Strongly agree
☐ Somewhat agree
☐ Neither agree nor disagree
☐ Somewhat disagree
☐ Strongly disagree
5. I believe this type of survey method is a helpful tool for information gathering and decision making.
☐ Strongly agree
☐ Somewhat agree
☐ Neither agree nor disagree
☐ Somewhat disagree
☐ Strongly disagree
6. Summary statements made in the survey were inclusive of my reported opinion.
☐ Strongly agree
☐ Somewhat agree
☐ Neither agree nor disagree
☐ Somewhat disagree
☐ Strongly disagree
7. Topics covered by the survey were relevant to me.
☐ Strongly agree
☐ Somewhat agree
☐ Neither agree nor disagree
☐ Somewhat disagree
☐ Strongly disagree

Appendix D: Survey Evaluation

8. The study coordinator was responsive to my questions.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

9. I was given sufficient opportunity to provide my thoughts on study topics.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

10. Resources and examples provided during and at the conclusion of the survey were helpful to me.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

11. Overall, the study was beneficial to me.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

12. I plan on reading the final study when it is ready.

- ☐ Strongly agree
- ☐ Somewhat agree
- ☐ Neither agree nor disagree
- ☐ Somewhat disagree
- ☐ Strongly disagree

13. If at any point you thought about dropping out of the process, please list the reason here. Please also list the reason you decided to stick with the study.

14. Please provide any further comments you may have on the survey process here:

Appendix E: Source Reduction Initiative Resources Provided by the Survey Group

Table E1: Source Reduction Initiative Resources Provided by the Survey Group		
Examples of Source Reduction Initiatives		
Waste Synergy Networks	A by-product synergy program that links manufacturers with markets for their waste products. Chicago Waste to Profit Network: http://www.wasteforprofit.org Seattle Regional Industrial Materials Exchange: http://www.lhwmp.org/home/IMEX/listings.aspx Kansas City By-Product Synergy Group: http://www.bridgingthegap.org/	
WasteWise	A voluntary business partnership that focuses on source reduction within specific targeted waste streams. New Jersey state Waste Wise Business Network: www.nj.gov/dep/dshw/recycling/wastewise/brbn03.htm	
Recycle on the Go	An initiative to encourage recycling in public places such as parks, stadiums, convention centers, airports and other transportation hubs, shopping centers, and at special events Recycle on the Go: http://www.epa.gov/wastes/conserve/rrr/rogo/	
Federal Green Challenge	A voluntary partnership program for Federal facilities that focuses on source reduction goals within specific target areas. EPA Federal Green Challenge: http://www.epa.gov/federalgreenchallenge	
RecycleMania	A program that encourages friendly competition and benchmarking tool for college and university recycling programs to promote waste reduction activities to their campus communities RecycleMania: http://www.recyclemaniacs.org	
Pick Five	An interNational environmental connection effort cosponsored by EPA and the U.S. Department of state. Pick Five focuses encourages individuals to pick five ways they commit to five actions and share their experiences. Pick Five: http://www.epa.gov/pick5/	
Source Reduction Assistance Grants	EPA has approximately \$1.4 million to support the Source Reduction Assistance and the Pollution Prevention Information Network Centers grant programs. EPA Source Reduction Assistance Grants: http://www.epa.gov/p2/pubs/grants/index.htm	
Pay As You Throw (PAYT)	A program where communities impose fees based on the quantity of waste disposed of by residents. EPA PAYT Program: http://www.epa.gov/epawaste/conserve/tools/payt/	
Cut-And-Leave Grass Cycling	A backyard composting program specifically targeted at reducing the amount of grass clippings that enter the waste stream.	
King County EcoConsumer	A multimedia source reduction outreach program that utilizes electronic media, TV appearances, radio outreach, and print media to educate the residents of King County, Washington, on source reduction efforts. King County EcoConsumer: http://your.kingcounty.gov/solidwaste/ecocustomer	
Backyard composting education and outreach	Workshops and educational outreach to teach residents about backyard composting practices, including providing composting bins (at discounted cost)	
Northwest Yard Days	A program to encourage residents to practice natural yard care by purchasing and using natural yard care products. King County Northwest Yard Days: http://your.kingcounty.gov/solidwaste/naturalyardcare/yard-days.asp	
Source Reduction Outreach Examples		
Webinars and Web Based Video	http://yosemite.epa.gov/R10/homepage.nsf/information/webinars http://www.epa.gov/epawaste/wycd/video.htm	
Social Media	http://www.epa.gov/epahome/socialmedia.html	
Source Reduction News Resources		
Online News Publications	Resource Recycling Magazine	http://www.resource-recycling.com
	Waste & Recycling News	http://www.wasterecyclingnews.com/headlines.html
	BioCycle	http://www.jgpress.com/biocyycle.htm
Special Interest Mailing Lists:	Sustainable Consumption Research and Action Initiative (SCORAI)	http://www.scorai.org/
	state Recycling Laws Update	http://www.raymond.com
Roundtables and Conferences	National Pollution Prevention Roundtable	http://www.p2.org
	National Partnership Summit	http://environmentalsummit.org
Environmental Interest Groups	Product Stewardship Institute	http://www.productstewardship.us
	Northwest Product Stewardship Council	http://www.productstewardship.net

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Glossary

Combustion for Energy: As defined by the US EPA, refers to controlled burning of waste, in which heat chemically alters organic compounds, converting into stable inorganics such as carbon dioxide and water.

Composting: As defined by the US EPA, refers to the controlled biological decomposition of organic material in the presence of air to form a humus-like material. Controlled methods of composting include mechanical mixing and aerating, ventilating the materials by dropping them through a vertical series of aerated chambers, or placing the compost in piles out in the open air and mixing it or turning it periodically.

Disposal: As defined by the US EPA, refers to final placement or destruction of toxic, radioactive, or other wastes; surplus or banned pesticides or other chemicals; polluted soils; and drums containing hazardous materials from removal actions or accidental releases. Disposal may be accomplished through use of approved secure landfills, surface impoundments, land farming, deep-well injection, ocean dumping, or incineration.

Federal Environmental Agencies: Any Federal level Agency within the US tasked with protection of the environment. For the purposes of this study the term is used specifically to refer to the US Environmental Protection Agency and includes both Headquarters and Regional organizations.

Local Environmental Agencies: For the purposes of this study, the term local Environmental Agency is broadly defined to include any local government agency tasked with protection of the environment. The term includes but is not limited to City, County, Municipal, and Township level governments

Recycling: As defined by the US EPA, refers to recovering and reprocessing usable products that might otherwise become waste (.i.e. recycling of aluminum cans, paper, and bottles, etc.).

Solid Waste: As defined under RCRA, solid waste includes garbage, refuse, sludges from treatment facilities, select industrial wastes, and other discarded material.

Hazardous waste is considered a subset of solid waste.

Solid Waste Management: As defined by the US EPA, supervised handling of waste materials from their source through recovery processes to disposal.

Source Reduction: As defined by the US EPA, is the reduction of the amount of materials entering the waste stream from a specific source by redesigning products or patterns of production or consumption (e.g., using returnable beverage containers). Broadly defined the term includes any activity that prevents materials from entering the waste stream including, but not limited to, product stewardship and smart consumption.

State Environmental Agencies: For the purposes of this study, the term state Environmental Agency is broadly defined as any state government level Agency within the US that has the stated mission of protection of the Environment. This term is broadly used to incorporate state Health Agencies whose overall mission statement includes protection of human health through protection of the Environment.