Preliminary Evaluation Findings and Learning for the Paint Product Stewardship Initiative’s Oregon Pilot Program

*September 19, 2011*

# Evaluation Question 1: Collaboration

**To what degree was the pilot program, from planning to implementation, a collaborative process?**

* **How was the collaborative process viewed by different groups involved in the process?**
* **What tools and strategies (including communication) were used to foster collaboration, and how effective were those tools?**

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***Tool and Strategies Used***

* Prior to PPSI, PSI’s state and local governments identified leftover paint as one of its top five waste management issues. PSI interviewed stakeholders during 2002 to 2004 to define the problem and identify basic facts in order to start a national dialogue. Its efforts resulted in the publication of *A Background Report for the National Dialogue on Paint Product Stewardship* (March 2004) to provide a technical foundation. At the same time, PSI also released *Product Stewardship Action Plan for Leftover Paint* (March 2004)*,* which outlined the key issues and potential solutions related to leftover paint management. Funding came from a variety of sources, almost all state and local government including “seed money” from Massachusetts Office of Energy and Environmental Affairs, an EPA grant for one meeting, and a foundation grant to partially support another meeting.
* In December 2003, PSI facilitated the first of four in-person dialogue meetings to establish relationships and build trust among stakeholders. An outcome of these meetings was to establish workgroups to focus on specific issues (e.g., market for recycled paint, education efforts). Industry and government stakeholders volunteered to lead some of these work groups and provide funding to support the group’s efforts.
* Throughout the process, PSI acted as a facilitating organization, supported by contributions from stakeholders after the initial grants were expended. PSI’s philosophy for facilitation is based on collaboration and consensus and hence is interwoven through all aspects of the Initiative [Cassel, 2011].
* PSI used the following strategy to foster collaboration:
  + Established PPSI goals through a consensus process.
  + Developed a detailed work plan during the first year to:
    - Determine major tasks and timelines
    - Identify potential pilot opportunities
    - Identify staffing and funding requirements
    - Identify challenges and barriers
    - Draft agreement language
  + Crafted Memoranda of Understanding (MOUs) to define purpose and scope of projects; goals and objectives; and commitments by stakeholders.
  + Set-up smaller groups to focus work on specific projects. These groups were not given decision-making authority. The groups included:
    - Steering Committee
    - Education Workgroup
    - Infrastructure Workgroup
    - Market Workgroup
    - Life Cycle Benefits and Costs Committee
    - Demonstration Project Committee
    - Evaluation Committee
  + Throughout the process, PSI provided agenda and background materials prior to meetings and calls; meeting and calls were summarized and participants were given an opportunity to comment.
  + Specific tools that PSI used to foster collaboration were:
    - Monthly PPSI briefing conference calls
    - PPSI conferences (once or twice a year)
    - Website featuring status of projects, reports, and posting of agenda, participant lists, meeting/call presentations, and meeting/call minutes
* The PPSI did not formally document the strategy and tools the PPSI would use to foster collaboration but the intent to support collaboration is set out in several key documents. The 2nd MOU signed October 24, 2007, established the following agreement with participants:
  + “The …PPSI participants agree to work collaboratively over the next three years to do the following:
    - Continue the dialogue through regular meeting and workgroup conference calls.
    - Design, implement, and evaluate a demonstration project.
    - Pursue a voluntary multi-stakeholder approach for the demonstration project while addressing mechanisms to avoid anti-trust implications.
    - Support and implement strategies to effectively change consumer behavior.
    - Pursue completion of a life cycle assessment and cost benefit analysis (LCA/CBA) project.
    - Collect baseline data on aerosol paints.”
  + Although some of the items listed were not completed, the MOU did establish a framework for continued participation in collaborative efforts.
  + The framework was continued through the development of a draft work plan for the Minnesota Demonstration project. The work plan described the consensus among participants on the mission, method, goals and objectives of the project while establishing the roles of those participants.
* The Evaluation Committee was an active group during the process and held several meetings. The Evaluation Committee used the following strategy to foster collaboration within itself:
  + Established a committee with limited participants, but that represented a cross section of PPSI perspectives.
  + Conducted calls and meetings, with call summaries published for those unable to attend.
  + Presented information on the methods and goals of program evaluation, the level of effort and resources required for measuring and evaluating a program, the benefits of building measurement into the design of a program, and the costs of data collection during conference calls and conferences in order to recruit interest and support for an evaluation. The goal of this effort was to raise awareness of the value of evaluation in the context of the PPSI while managing expectations of what is feasible in a collaborative organization.
  + Used a participatory development of documents with ongoing input and feedback mechanisms to document their views and values and an opportunity to ask and answer questions are tools of collaboration.
  + Developed a website (<http://www.paintstewardshipprogram.com/>) as the primary tool for posting materials and communicating results. The site use a diagram to illustrate the entire paint management system to communicate to all actors and stakeholders how the different parts of the program are related to each other and to the program goals.

***Effectiveness of Tools/Strategies***

* A survey of PPSI participants asked respondents to indicate how effective they thought the periodic briefing calls were with the following results:
  + 27% (15 of 55) indicated the calls were “effective.”
  + 40% (22 of 55) indicated they were “somewhat effective.”
  + 22% (12 of 55) indicated they were “neither effective nor ineffective.”
  + 9% (5 of 55) indicated they were “somewhat ineffective.”
  + 1 of the 55 respondents indicated the calls were “ineffective.”
  + 0 of the 55 respondents described the calls as “very ineffective.”
* A survey of PPSI participants asked respondents to indicate how effective they thought the conferences were with the following results:
  + 22% (10 of 46) indicated the conferences were “very effective.”
  + 28% (13 of 46) indicated the conferences were “effective.”
  + 28% (13 of 46) indicated they were “somewhat effective.”
  + 17% (8 of 46) indicated they were “neither effective nor ineffective.”

*“From the start, collaboration should be more purposeful with clearer goals for collaboration that define and drive the type, level, and timing of collaborative effort necessary from various groups and individuals…If collaboration were more directed at achieving particular goals, resources (time, money, staff) could be more efficiently distributed across the overall effort to make the PPSI more effective.” [Duke, 2010, p.73]*

* + 1 of the 46 indicated they were “somewhat ineffective.”
  + 1 of the 46 respondents indicated the conferences were “ineffective.”
  + 0 of the 46 respondents described the conferences as “very ineffective.”
* Program stakeholders viewed the role of the MOU differently according to interviews. For example, OR DEQ viewed the MOU and the legislation drafted from it for Minnesota as a starting point for negotiations on issues specific to the Oregon system; while industry stakeholders felt that the Oregon government was changing its position on items that previously had been negotiated in the MOU.
* PSI’s role in the process was not to be an independent facilitator, but to act as an objective facilitator and at times PSI acted as an advocate for the paint stewardship. In interviews the Evaluation Team conducted with stakeholders, all agreed that PSI provided a vital role in the sharing of information and identifying state contacts. Additionally, one stakeholder felt that PSI’s lack of impartiality was a benefit to the process since PSI worked actively to push the process along.

*“…the time and resources committed to getting to this point were great and not likely replicable for other specific product areas. This…in my mind doesn’t provide a viable model…for other product areas.” [Duke, 2010, p.74]*

* In the survey of PPSI participants, two open-ended comments indicated that the process for achieving collaboration should have been outlined from the start so participants were informed of how they were to be engaged. Two other open-ended comments in PPSI participant survey pointed out that the process was costly.

**How was the collaborative process viewed by different groups involved in the process?**

* The survey of PPSI participants found that:
  + Local and federal government respondents had the most positive perception of collaboration, whereas private businesses responded less positively.
  + Government representatives were more active participants in terms of call and meeting participation and felt more strongly that collaboration contributed to achieving PPSI goals.
  + To a lesser degree, those who funded the program attributed more importance to the collaborative effort than those that did not.
  + Respondents did not feel significantly torn between meeting the needs of their own organization and the needs for the collaboration. Those working for private companies felt the most hindered.

**To what degree was the pilot program, from planning to implementation, a collaborative process?**

* PPSI participants were asked to rate the extent to which they agreed that the PPSI was collaborative [Duke, 2010]:
  + 19% of respondents “strongly agreed” that the PPSI was collaborative
  + 40% “agreed” it was collaborative
  + 25% “somewhat agreed” it was collaborative
  + 10% were “neutral” about whether it was collaborative
  + 6% did not agree the process was collaborative.
* PPSI participants were also asked to rate five aspects of collaboration: governance, administration, mutuality, norms, and autonomy. The overall rating from respondents for governance, administration, mutuality, and norms was a "neutral" response. For autonomy, the overall response was a positive assessment. [Duke, 2010].
* Collaboration appears to have been strong during the planning. However, collaboration broke down once the Initiative moved to the development of legislation and then into implementation. In an interview, ACA indicated that the legislation was a compromise of all the parties. PSI noted that it was its intention that the entire process, including development of legislative language, would be collaborative [Cassel, 2011]. However, in the survey of PPSI participants [Duke, 2010], 10 respondents indicated that they did not see the legislation as collaborative in the open-ended comments on the survey. Additionally, six of the 42 open-ended comments on collaboration indicated their rating of collaboration was lower when the Initiative moved into the implementation stage. For example:
* *“Some organizations tend to work at cross purposes. There was also a point where ACA and OR were sealed off in negotiations and the rest of the group was sealed out.” [Duke, 2010, p.71]*
* *“…there was not collaboration by the group on the actual text of legislation.” [Duke, 2010, p.72]*
* *“In Minnesota, the collaboration was extremely effective until the issue reached the required legislation to implement it.” [Duke, 2010, p.73]*
* *“It was a collaborative effort from a planning standpoint – but has been much less collaborative in its actual implementation.”[Duke, 2010, p.72]*
* *“I don’t think implementation has been a collaborative effort with the PPSI nor the legislative process. The dialogue and keeping the PPSI informed as well as the roll-out I strongly agree has been a collaborative process.” [Duke, 2010, p.72]*
* HHW programs echoed the breakdown in collaboration. In interviews conducted by the Evaluation Team, some HHWs indicated they wished they could have contributed so the program tied in the existing solid waste infrastructure. One HHW interviewee specifically commented that they would have liked to have an opportunity to provide meaningful input into the organization of the program; they had attempted to participate early in the implementation process but felt as though they were getting in the way.
* PSI indicated that the vetoes in Minnesota influenced the loss of collaboration:
  + The group lost momentum (i.e., lost a year and half of work)
  + Funding for PSI was limited, which resulted in less communication
  + State officials in Oregon were less involved in the discussions in PPSI [Cassel, 2011].
* In reviewing the OR legislation and the resulting program plan, the Evaluation Team was able to identify work performed by the PPSI during the collaborative process. Thus, though PPSI participants perceived a breakdown in collaboration, the products and artifacts of collaboration (e.g. relationships, research, formal agreements, and committees) influenced legislation and planning in Oregon.

**Learning**

* At its inception in 2003, the PPSI embraced a collaborative approach to achieving its goals. Collaboration can provide clear benefits. Much of the work, developed collaboratively, under the Minnesota program carried over to OR and much of that work found its way into the OR legislation and plan. The collaborative effort resulted in a pilot program that reflected the needs of diverse stakeholders. This evaluation and much of the data collection and analysis are a product of the collaborative process.
* The products and artifacts of the PPSI process (e.g. relationships, research, formal agreements, goals, committees) prior to conception of the Oregon pilot provided the background and baselines for legislation and planning in Oregon.
* Without open communications about fundamental changes in the collaborative process as the PPSI transitioned to the implementation stage, PPSI participants lost confidence in the process and their ability to contribute to the process. To maintain participants’ confidence and engagement in the process, the anticipated level of collaboration desired and feasible should, at all stages of the process (implementation, drafting legislation) be agreed upon and documented. Collaboration has its place but that may not be everyplace. Collaboration decreased during the legislative process and during program design as legislative requirements gave actions and decisions strict timelines during which ACA and OR DEQ worked independently of the PPSI.
* Effective collaboration requires sustained commitments to a facilitator, funding and communication. Declining collaboration coincided with decreased PPSI funding, loss of the facilitator to lead the process and overall reduced communications amongst PPSI participants.
* Because collaboration requires commitments of increasingly scarce resources (money, time, etc.) for local and state governments, if collaboration is determined to be a core component of achieving paint stewardship goals, an explicit strategy set to achieve clear goals (e.g., equity, cost efficiency, diversity) will help to manage expectations throughout the process. Groups need to decide early in the process if collaboration is important and for which aspects of program it is of greater priority. Roles should be clearly defined up-front and clearly documented. During the process, open discussions, led by facilitators or those requesting changes, should accompany any significant unanticipated adjustments to levels and types of collaboration

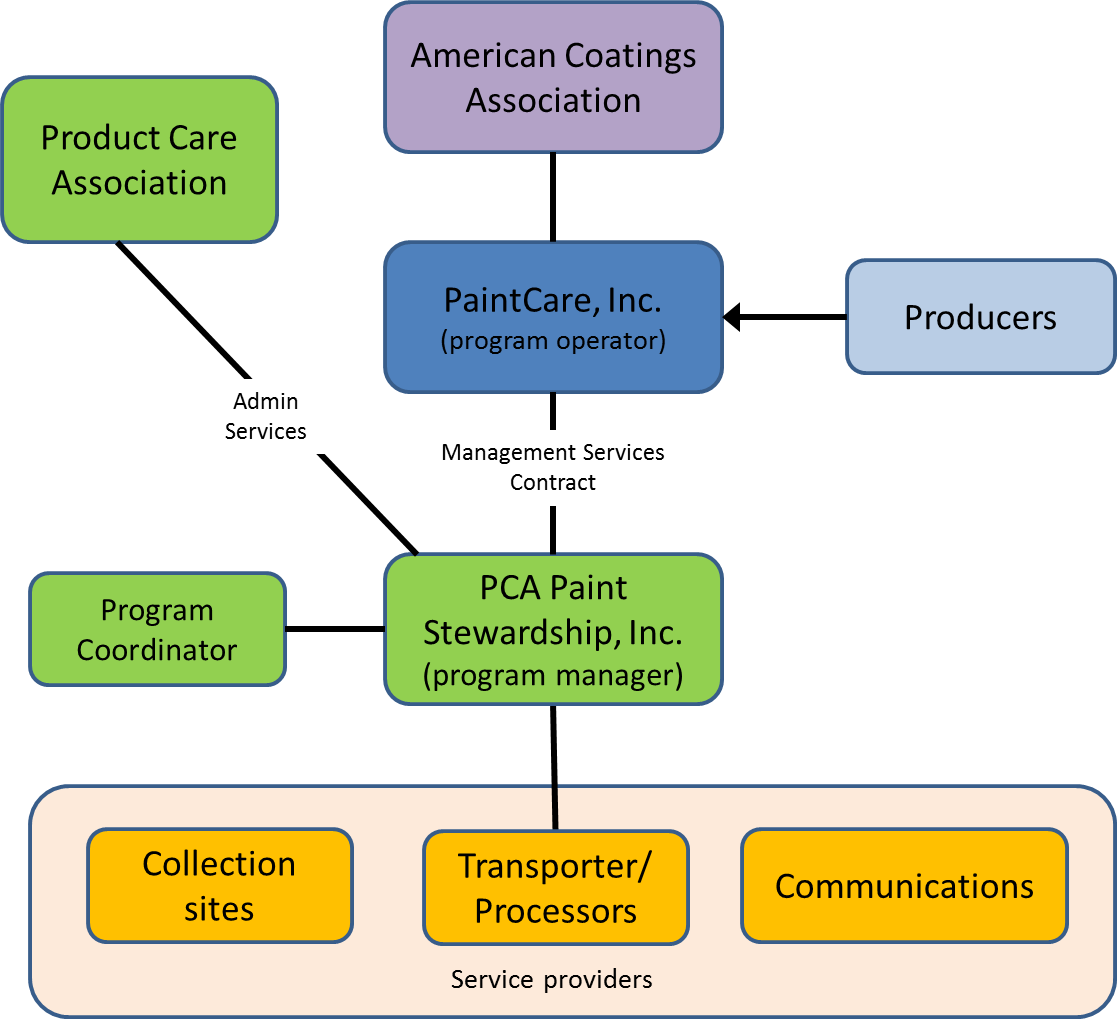
# Evaluation Question 2: Paint Stewardship Organization (PSO)

**Describe the Paint Stewardship Organization (PSO) (PaintCare), including its funding mechanism and infrastructure.**

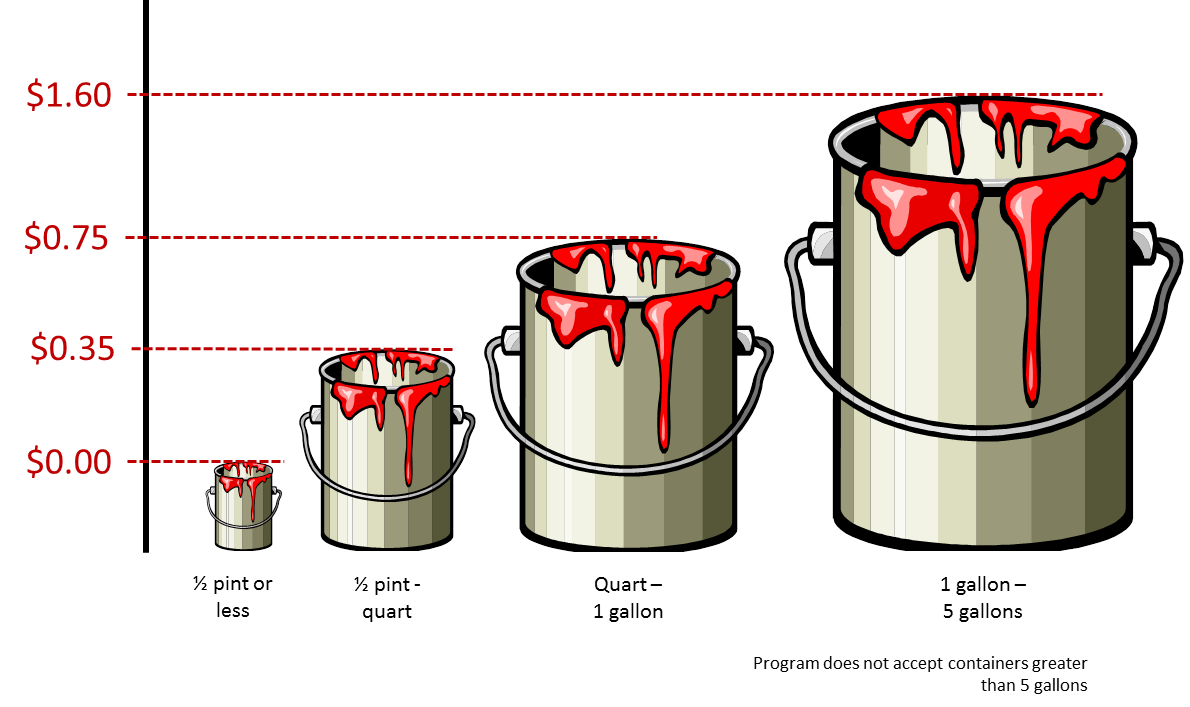
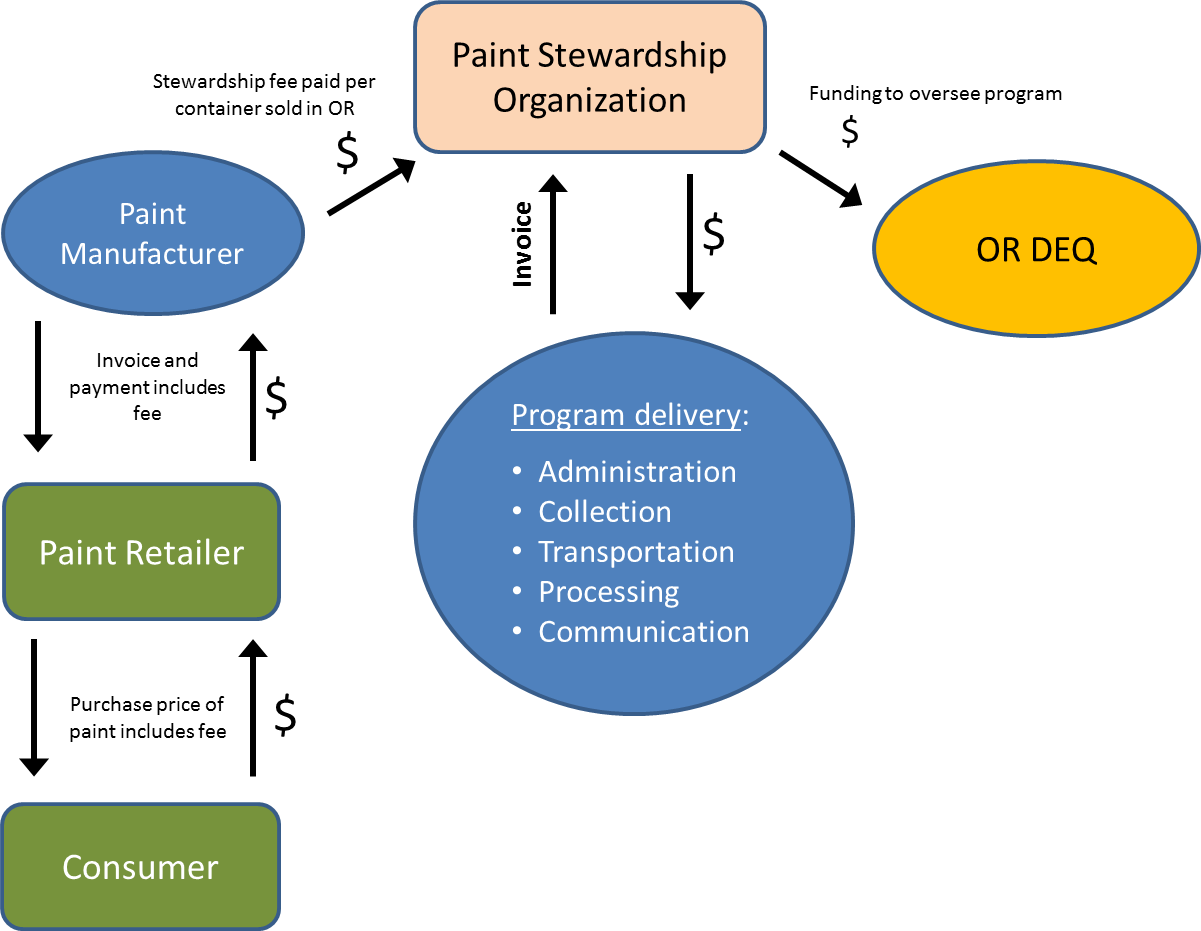
* **What factors contributed to its infrastructure choices?**
* **Was the funding mechanism clearly defined, transparent, and complete?**
* **What are the lessons learned?**

**Describe the Paint Stewardship Organization (PSO) (PaintCare), including its funding mechanism and infrastructure.**

***Infrastructure***

* The figure to the right provides an overview of the structure of the program.
* ACA created PaintCare as a 501(c) (3) non‐profit paint stewardship organization (PSO) to manage the reuse, recycling, and proper disposal of unused paint as mandated by the Oregon legislation. The Board of PaintCare consists of nine non-paid representatives of architectural paint manufacturers.
* PaintCare contracted with Product Care, which has experience implementing similar stewardship programs, to implement and manage the Oregon program.
* PaintCare selected PSC and Metro as transportation and processing vendors. These organizations had been part of the pre-program infrastructure.
* Metro, PSC, and Amazon Environmental are the service providers for processing of latex paint.
  + Metro collects recyclable paint from its locations and accepts recyclable latex collected from the remainder of the state from PCS’s consolidation center. This paint is made into new recycled content paint, then sold or distributed.
  + Non-recyclable latex paint collected by Metro is disposed of by biodegradation at Columbia Ridge Landfill in Arlington, OR. Through a research permit the paint is mixed with wastewater and pumped into the landfill to improve degradation of wastes and recovery of landfill gas.
  + Non-recyclable latex paint collected and consolidated by PSC is processed into recycled content paint, PWP (a biomass fuel product) and PLP (an alternative raw material for cement manufacture) by Amazon Environmental.
* Oil-based paint is collected and processed for fuel blending by PSC.
* PaintCare’s strategy to set-up the collection infrastructure was to:
  + Incorporate pre-program collection infrastructure (i.e., HHW facilities).
  + Reach out to paint and independent hardware retailers to fill gaps in underserved areas.
  + Send a letter to retailers of paint and decorator trade association list informing them of the program and an opportunity to be a collection site.
  + Conduct web searches and review yellow pages to reach out to additional paint retailers in gap areas.
* The collection program began with 45 collection sites in July 2010 and, as of August 2011, there were a total of 98 sites collecting paint. The following figure demonstrates the distribution of these sites in at each of those two points in time. As of August 2011, all HHW facilities that collected latex paint prior to the program (also referred to as “existing” HWW facilities) are collection locations in the PaintCare program. None of PaintCare’s 98 collection locations are paid for collection services.
* The program provided each collection site with the following :
  + Collection Site Procedures Manual that includes the following information:
    - Collection site standards
    - Screening procedures for Conditionally Exempt Small Quantity Generators
    - Accepted and non-accepted program products
    - Management of the Paint Exchange program including required waiver forms
    - Reporting requirements
    - Management requirements and operational procedures
  + Program training on collection site operation, customer service, environmental risk reduction, visual inspection of post-consumer paint containers, and placement of collected paint in program containers.
  + Compliance visits to confirm the site is following program requirements and to investigate complaints; PaintCare conducted 76 compliance visits during the first year of the program.
* During the first year of the program, collection events were used to collect paint in rural locations. PaintCare anticipates completing arrangements with permanent locations in order to reduce costs.
* PaintCare provided additional collection services through large volume direct pickups and collection events.
  + Between July 1, 2010 and June 30, 2011 the program provided direct pickup service to 19 institutional, commercial, and industrial entities such as trade painters, apartment complexes, housing authorities and other private businesses that meet the criteria for conditionally exempt small quantity generators.
  + By September 1, 2011the program had participated in 57 HHW collection events and 2 PaintCare sponsored events.
* The program transportation service provider places collection containers at each collection site; collection sites schedule a pickup by calling the transportation service provider when the collection containers are approximately 50% full.
* PaintCare offers a reuse program though Metro and several ReStores where good, usable paint in containers that are at least half full are offered to the public for free or at a discounted price.
* The program identified opportunities for recycling plastic pails and steel paint cans from the Metro program; during the first year the program recycled 47.1 tons of plastic and 64.8 tons of metal paint cans.

***Funding mechanism***

* PaintCare collects a recovery fee from paint producers on all architectural paint sales to fund the program. This was authorized in the legislation and the fee is approved by the Director of the Oregon Department of Environmental Quality. The assessment rate is summarized in the figure to the right.
* PaintCare’s budget and fee were developed based on the estimated sales of architectural paint in Oregon, estimated proportions of leftover paint available for collection, and volume and cost data from the Metro program and Oregon DEQ (non-metro areas). According to the 2010 Program Plan and additional explanation by a PaintCare representative:
  + Revenue was estimated by pro-rating the national architectural paint volume sold by population. This volume was compared with ProductCare sales data from British Columbia and will continue to be refined as PaintCare receives actual sales data from program participants. The final number multiplied by an average cost per container produced the initial revenue estimate.
  + Program costs include:
    - Projected collection volumes estimated from: Rates of leftover paint derived from research; Metro and non-metro paint collection volumes; and, assumptions about the amount of paint available for collection (10%), the recovery rate of program products sold (7.1%), capture rate (71%), and anticipated growth in collection volumes per year (6%).
    - Administrative fees.
    - Vendor pricing to provide services based on projected collection volumes.
  + The values were estimated for a four year budget, then used as inputs into a spreadsheet model which was used to model collection fees under several scenarios (i.e. per container fee, per gallon fee, flat fee, and graduated fee) to identify the scenario and the fee amounts that would best cover budgeted costs.
* A graduated fee was developed, (i.e., less costly per gallon as container volume increases) based on the assumption that less waste paint is typically generated from those purchasing a 5 gallon container and that a higher volume of oil-based paint, which is more expensive to manage as waste paint, is sold in smaller containers [Keane, 2011].
* The figure to the right provides an overview of how the fee is transmitted between different actors in the program.
* Producers report monthly sales and pay the assessment directly to PaintCare through a secure online filing system, electronic fund transfer or check. The assessment is passed through to a distributer or retailer who must add the fee to the final sales price of their products [PaintCare Annual Report, 2011].
* Retailers are responsible for collecting the fee from consumers and transferring to paint producers who are responsible for paying the fee to PaintCare.
* The legislation provides retailers the option to show or not show the fee on the consumer’s sales receipt—this decision was a compromise among PPSI stakeholders.

**What factors contributed to its infrastructure choices?**

* PaintCare reported that the phrased roll-out of collection locations worked well, however they underestimated how long it would take to negotiate the 100 individual contracts [Keane, 2011].
* PaintCare’s coverage goal was to provide a permanent collection site within 15 miles for more than 70 percent of Oregon’s population and was a primary driver in determining the collection site locations.
* Initially, PaintCare did not add additional locations in an area (i.e., estimated as the area within a 15 mile radius of a population center) where a collection point was already established. However, at the request of a local retailer, a state representative encouraged PaintCare to reassess this approach. PaintCare’s current policy is to add additional collection locations near another location only if no significant costs are incurred [Keane, 2011].
* PaintCare used a request for proposals process to determine transportation and processing vendors. Those selected already provided these services as part of the pre-program infrastructure, which allowed them to provide a lower cost and to provide institutional knowledge of the pre-program process to the program [GSU, 2011].

**Was the funding mechanism clearly defined, transparent, and complete?**

* In the Annual Report the program estimates that most retailers show the fee on receipts. However, for some, reprogramming their computer system acted as a disincentive to show the fee as a separate line item on the receipt.
* Stakeholders were asked to assess the clarity, transparency, and completeness of the funding mechanism in a series of interviews. In those interviews stakeholders indicated that:
  + Legislation clearly details funding mechanisms in terms of manufacturer responsibility, and that consumers will pay a fee at the time of a paint purchase.
  + Program brochures and the PaintCare website communicate the details of the funding mechanism.
  + Implementing a graduated fee based on container size as opposed to flat fees was viewed positively by the public and paint contractors.
  + Transparency was dependent on the interviewee’s point of view. Those involved with PaintCare felt that a publically available budget meant it was transparent, while other interviewees felt the lack of broken out costs made it less apparent.
* In the 2011 Annual Report, PaintCare states that despite the first year deficit projected in the program plan and lower than estimated sales the project actually produced a surplus of $259,911 due to lower than estimated expenses. This surplus, however, was not sufficient to reduce assessment costs and will be carried over to year 2 and used for program costs. [PaintCare Annual Report, 2011].
* The July 2011 survey of consumers found that 11% of respondents were aware of the fee. Interviews conducted by the Evaluation Team with retail and HHW programs support the July 2011 survey finding of low consumer awareness and two HHW interviewees reported some consumers confusing the fee with a bottle deposit (i.e., by returning the empty container the fee would be refunded).

**Learning**

Infrastructure

* The OR program was built upon existing institutional knowledge and experience, relationships, and infrastructure, resulting in reduced need for training and upfront costs. Other states and municipalities will have varying levels and types of infrastructure to accomplish similar goals. The efficiency and feasibility of program design and implementation will benefit from initial thorough assessments of existing infrastructure, including transportation, reprocessing capacity, and related knowledge and experience.
* A collaborative and/or strategic process for selecting collection sites may improve efficiency of planning and implementation. Opportunities include clear statements of process steps, criteria for site selection and designated opportunities for specific stakeholders (retailers, HHW operators) to provide input in the process.

Assessment fee

* One goal of the Oregon paint legislation is that consumers are aware of the fee. In July 2011, few (11%) recent purchasers of paint were aware of the fee. Fee awareness may be increased through a more strategic and targeted education and outreach campaign (see Learning under Question 3 below). Future iterations of paint legislation may consider whether consumer fee awareness is a necessary policy goal. In August 2010, most OR residents (73%) indicated that the fee was reasonable with few (23%) indicating it was not reasonable.
* The process used to set the fee/design fee structure is a baseline model for other states; it covered costs in the first year of the program. Notably, lower than expected collection of oil-based program products contributed to the one-year surplus.

# Evaluation Question 3: Education and Outreach

**How did education materials and strategies affect consumer awareness and behavior?**

* **Which messages were most effective with which target audiences?**
* **What materials/strategies were developed and what were the goals and target audience of those materials/strategies?**
* **Did other factors besides the program influence consumer behavior and awareness?**
* **What are the lessons learned?**

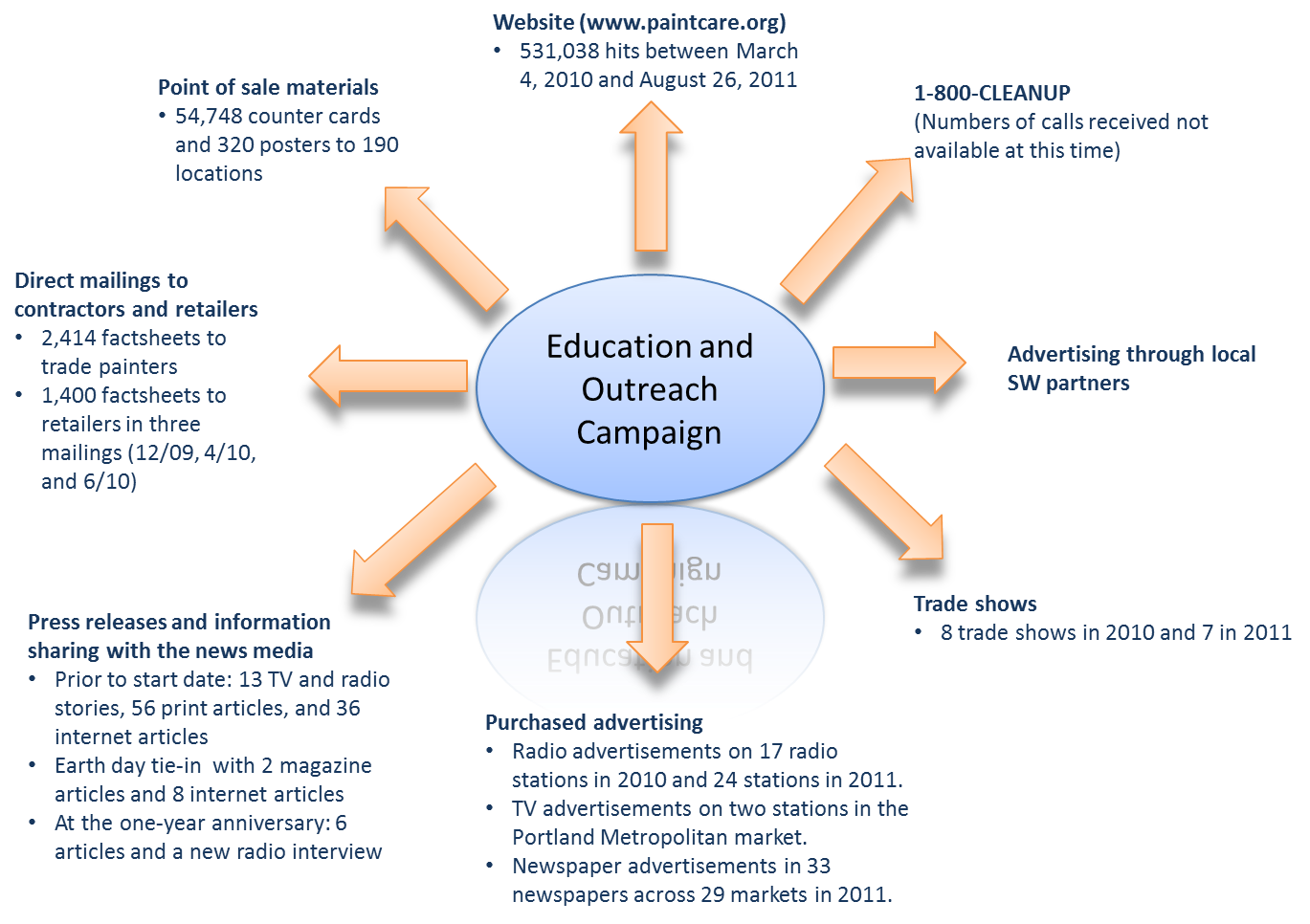
**What materials/strategies were developed and what were the goals and target audience of those materials/strategies?**

**Which messages were most effective with which target audiences?**

Findings

**Objectives of the education and outreach campaign**

* + Build consumer awareness.
  + Identify program products.
  + Identify collection site locations.
  + Emphasize the environmental impact of poorly managed leftover paint.
  + Emphasize the importance of purchasing the correct amount of paint.
  + Promote paint reuse.
  + Promote recycling and proper disposal of leftover paint.
* The communication firm chosen by ACA developed an outreach and education strategy with messages consistent with the themes of ACA’s “Be Paintwise” program and targeted to all Oregon consumers. The educational materials used brief taglines such as - “From Storage to Spectacular,” “From Garage to Glorious,” and “From Basement to Beautiful” – to catch the attention of consumers. These messages appeared with supporting text that highlighted the following themes:
  + The name of the program and its website.
  + The advantages (cost savings, environment, storage space) of recycling leftover paint.
  + The availability of information on purchasing the correct amount of paint and managing and disposing of paint properly on the program website.
  + The recovery fee.
* The program website ([www.paintcare.org](http://www.paintcare.org)) also featured educational information while providing additional detail on each of the messages and on the program itself (e.g., collection locations).
* Key education materials and delivery mechanisms for the outreach and education materials messages included:
  + Point of sale materials such as posters, counter or “rack” cards, optional producer container labeling, and “paint calculators” distributed to retail locations. Some materials, such as counter cards, were also distributed to other collection sites that are not retailers. These materials were provided free of charge and restocked on request; in total the program sent 54,748 counter cards and 320 posters to 190 locations.
  + Direct mailing of targeted fact sheets to contractors and retailers:
    - 2,414 factsheets to trade painters.
    - 1,400 factsheets to retailers in three mailings in December 2009, April 2010, and June 2010.



* + Advertising and municipal mailings through local partners in solid waste programs.
  + Website ([www.paintcare.org](http://www.paintcare.org)) with information about the program. Between March 4, 2010 and August 26, 2011 there were 531,038 hits to the website.
  + 1-800 CLEANUP number offering information on collection site locations through a zip code locator. However, the number of calls received for the OR program at this number was not available at the time of this report.
  + Media awareness through a public relations campaign including press releases and other information sharing with the news media.
    - Leading up to the start date of the program this strategy generated 13 TV and radio stories, 56 print articles, and 36 internet articles with an estimated publicity value of $175,000.
    - The program leveraged consumer awareness of Earth Day to raise program awareness by coordinating with the Portland, OR Mayor on a press release supporting paint recycling (Bradshaw, April 19, 2011). This resulted in 2 TV stories, 2 magazine articles, and 8 internet articles with an estimated publicity value of $65,000.
    - In response to the one year anniversary of the program the campaign has resulted in 6 articles and a news radio interview.
  + Purchased advertising through television, radio and newspapers.
    - Radio advertisements about the program, website and availability of the paint calculator on 17 radio stations in 2010 and 24 stations in 2011.
    - Television advertisements on two stations in the Portland Metropolitan market.
    - Newspaper advertisements in 33 newspapers across 29 markets in 2011.
  + Trade shows: Program representatives presented materials at 8 trade shows in 2010 and 7 trade shows in 2011.
* The outreach and education campaign did not identify or target specific audiences. The messages, materials and delivery mechanisms were designed to have broad appeal and reach as many Oregon residents, particularly those interested in purchasing paint, as possible.
* Data collected during the 1st year of the program did not directly address the effectiveness of specific messages. To address this question would require linking viewing specific messages to the actions taken by consumers in response to viewing those messages. The data for this evaluation did not include which messages were viewed by survey respondents but provides some insight into which groups were most receptive to the outreach approach:
  + The 2010 survey found:
    - Respondents in Central/Eastern Oregon and those over the age of 65 years reported the highest levels of awareness of the program (32% and 28%, respectively), and were most likely to learn about the program from a newspaper (25% and 36%, respectively).
    - Southern Oregon residents (72%), female respondents (68%), and those aged 55 – 64 (66%) were most likely to indicate that a program for recycling paint is “very important.”
    - Respondents over age 65 (46%), Central/East Oregon residents (38%), and female respondents were most likely to indicate that the fee is “very reasonable.”
    - Residents of Southern Oregon (60%), respondents aged 35-44 (68%), and female respondents (61%) most commonly reported that the existence of the program makes them “more likely” to recycle their paint.
  + The 2011 survey found:
    - Respondents who are college graduates or higher (37%), over age 65 (36%), and residents of the Portland Metro area (35%) are most likely to recall seeing advertisements for the program. Respondents who recently purchased paint (36%) and those who paint for pay (28%) are also more likely to recall ads than those who have not purchased paint.
    - Among individuals who have purchased paint, 56 percent recall seeing the ads in the newspaper; individuals who paint for pay recalled hearing ads on the radio (46%) more often than newspapers (42%).
    - Respondents with income over $100,000 (20%), those residing on the Oregon Coast (17%) and respondents with post-graduate education (14%) are most likely to report awareness of the fee. Individuals who have purchased paint are most likely to be aware of the fee (26%).
    - Respondents who reside in Central Oregon (47%), those with an income over $100,000 (42%), and those over age 65 (39%) are most likely to report awareness of drop-off locations.

**How did education materials and strategies affect consumer awareness and behavior?**

* Awareness – existence of the program.
  + In the August 2010 survey 22% of respondents report being “aware” or “very aware” of the program.
  + In the July 2011 27% of respondents recall seeing or hearing ads for the program;
* Awareness - types of products covered
  + The August 2010 survey did not ask respondents about their knowledge of program scope (e.g., latex paint is accepted, paint thinners and rusty cans are not.).
  + Little information in consumer outreach materials that covered the types of products that would be covered or not covered under the program. The rack card contained a question and answer section that indicated the types of products covered and the program website covers types of products.
  + The July 2011 survey asked respondent to identify which types of products were covered by the program with the following results (PaintCare 2011). The graph that follows indicates the percentages that correctly and incorrectly identified which products were and were not covered by the program.
* Awareness – site locations
  + A January 2008 survey of Oregon residents found that 67% of respondents have taken leftover or unwanted household products to a collection event or facility in the past. Oregon DEQ indicated in the report that this may be an overestimate of actual usage because it includes any leftover household products it may also be an overestimate of baseline awareness of sites that accept leftover paint.
  + The August 2010 survey did not ask consumers about their awareness of site locations
  + In reviewing the outreach materials, several provided information on collection sites or at least on how to find out where to find collection sites.
  + The July 2011 survey found that 31% of respondents who purchased paint were aware of a collection site
* Awareness – environmental impacts of paint
  + The August 2010 survey found that 61% of respondents indicated it is “very important” and 31% indicated it is “somewhat important” to have a program that accepts unneeded, leftover paint for reuse, recycling and proper disposal (Bradshaw 2010).
  + The program and accompanying education materials do not provide consumers with information about the environmental impacts of leftover paint. Two exceptions include: the rack card entitled “Why Everyone Should Get with the Program” indicates one benefit of recycling paint as “[e]liminating storage hazards where you live” and a page on the web site (<http://www.paintcare.org/>) indicates that leftover paint may find its way into landfills and frames this as an environmental issue. The July 2011 survey did not address this aspect of awareness, so there is no indication of whether awareness improved.
* Behavior – consumer use of best practices for purchasing paint
  + The program included a few messages related to reducing the amount of paint purchased, These messages encourage consumers to buy the right amount to:[[1]](#footnote-1)
    - Save money: buying the correct amount reduces the amount of money spent on paint
    - Save the environment: reducing leftover paint reduces the amount of paint that might find its way into landfills
    - Save storage space: less leftover paint means more garage and basement storage space for consumers
    - Reduce the risk of exposure to hazardous materials: storing paint in home can pose exposure and fire risks.
  + The paint calculator was the primary tool of the program for assisting consumers in buying the right amount of paint. In the July 2011 survey, 15 out of 84 (18%) of respondents reported being aware of the paint calculator, and 3 of those respondents indicated using the paint calculator to determine how much paint to purchase. However, neither survey directly addressed whether consumers understood the calculator.
* Behavior – paint management
  + In the August 2010 survey, when respondents were asked about what they would likely do with leftover or unneeded paint. The chart to the right summarizes these data.
  + In the August 2010 survey, respondents were also asked whether the existence of the program would affect the likelihood that they would recycle (see Chart below). However, both of these data points should be interpreted in the context of the January 2008 survey that found that 67% of residents had taken materials to a collection event or facility in the past. That is, the 40% where it makes “no difference” may still be willing to recycle paint and the 56% may include some of that one-third that had not taken materials to an event or facility in the past.
  + The outreach materials placed an emphasis on telling consumers how and where to recycle their leftover paint. The data from the July 2011 survey, however, show that (PaintCare 2011):
    - No respondents recycled or donated leftover paint.
    - 72% of respondents would store the paint for later projects or touch-ups
  + ACA suggests, based on anecdotal evidence, that the program taken as a whole, including the education campaign, had little effect on consumers’ practices.
  + The surveys conducted as part of the program did not collect information on amounts of leftover paint. However, previous studies of leftover paint have found that 2.5 to 16 percent of paint sold may remain as leftover paint, and the average amount of leftover paint per household ranges from 0.15 to 0.6 gallons (PaintCare Program Plan, 2010, p.8)
  + The evaluation was unable to collect data on how consumers store leftover paint. The program did not include questions on storage practices.

**Did other factors besides the program influence consumer behavior and awareness?**

* The economy may have influenced markets for paint products and thus reduced Metro collection volumes. ACA tabulated quarterly Census Bureau data on gallons sold which indicated a decline from 153.2 million gallons in the first quarter of 2010 to 146.8 million gallons in the first quarter of 2011.
* Another potential influence is the value Oregon residents place on recycling programs in general. Prior to the program Metro had a well-established, organized and effective recycling program in the Portland metro area that is home to 48% of OR residents. Though 25% of consumers were aware of the program in the August 2010 survey, 56% of respondents indicated that the existence of the program made it more likely that they will recycle leftover paint and 92% said it is “very important” or “somewhat important” to have this type of program.

**What are the lessons learned? (Learning)**

* The existing culture and infrastructure related to recycling in a state or regions can inform the design, implementation and emphasis placed on an education and outreach campaign. In Oregon an existing strong culture of recycling coupled with existing infrastructure was helpful to the program. Furthermore, a well-organized existing program that is centralized with respect to the state population, such as Metro, increases the efficiency of program roll out and transitioning a large segment of state population toward recycling paint.
* Understanding and honing the effectiveness of various messages, materials, communications tools and strategies of education and outreach for various target audiences (consumers by age and geography, retailers, producers, recyclers, etc.) is key to creating information to inform future planning and systematic improvement of the Oregon program and subsequent similar programs. During the first year of the program, the consumer surveys were not explicitly designed to achieve these purposes; however, the second survey is more relevant than the first and begins to set baselines that could be tested for change given follow up of the same or similar survey. Replication of either of the surveys may provide information about the effects of the program on fee awareness and recall of advertisements through specific delivery modes, but because neither survey that was implemented was explicitly designed to test the effectiveness of the education campaign, future efforts should consider designing new instruments using past surveys as points of learning.
* In the August 2010 survey of homeowners, 10% indicated they would put the leftover paint in the garbage, but in the July 2011 survey of those that had painted recently, no respondents indicated they had disposed of the leftover paint in the garbage. Though it is possible that the program contributed to this outcome, it is not possible to attribute this change to the program because, for instance, there may be a lag time between recent painting projects and time of disposal not accounted for in the survey. A consumer’s lack of site awareness does not automatically translate to not recycling paint. Consumers with leftover paint may attempt to locate a site to drop off paint when the need arises. Although awareness of a drop-off location in the July 2011 survey was 31 percent, a January 2008 survey found that 67 percent of OR residents had brought items to a drop-off location or event. This suggests that consumers who intend to recycle their paint know that drop-off locations are available and they need easy access to information about specific locations when they are ready to recycle; in other words, it may not be important that a consumer is aware of the program or is able to name collection sites on demand as long as they intend to recycle and are able to access information about where and how to recycle. Going forward, the Oregon program and similar programs may use education campaigns to prioritize behavior change (e.g. recycle paint rather than storing it) and accessibility of information over messages of general awareness.
* The education and outreach campaign used a broad approach to spreading its messages and did not strategically aim its messages at specific target audiences (variety of consumers like who has the most paint, contractors, retailers, etc.) with specific means of communication (TV, website, social media, radio, etc.). Consumers of paint can be segmented into various groups (new versus long-time homeowners, homeowners versus contractors, age and other demographics). The most effective ways of reaching each group may differ. For future outreach consider determining which groups are the largest purchasers of paint or who has the most leftover paint and target messages with appropriate means of communication at those groups. For example, the best ways of reaching consumers who are aged 60+ may differ from the best ways of reaching consumers under 30 (newspaper, retailer, Facebook, twitter, etc.).
* Paint recycling programs should prioritize the goals of outreach products. For instance, is the goal of a particular message or product to increase consumer awareness of the program or increase the number of consumers returning paint? These two goals may be related or mutually exclusive. That is, a consumer may find out about the program and then decide to recycle paint or they may find a collection location and return paint and be unaware of a “PaintCare Program”, related legislation or a collection fee. Focusing on getting consumers to drop-off sites may be more important than program awareness. However, using education campaigns to ensure consumers purchase the right amount of paint (possibly eliminating leftover paint) may be more effective at reducing waste paint than, after purchasing surplus paint, helping consumers identify drop-off locations. Setting priorities and focusing outreach on those priorities will present opportunities to improve effectiveness and efficiency of marketing campaigns and the program as a whole.
* A balanced approach to setting and prioritizing education and outreach is key and requires ongoing measurement and evaluation of the efficacy of the chosen approach. Too much focus on getting consumers to reduce the amount of paint purchased may lead to consumers with leftover paint who do not know what to do with it, while focusing too heavily on collections may cause consumers to not worry about the amount purchased since the drop-off locations provide an outlet for their unused paint (e.g., “whatever I don’t use, I’ll just drop off”). Measuring the effectiveness of education and outreach materials and strategies on consumer behaviors in the context of the paint management system can provide the information necessary to maintain balanced progress toward program goals.

# Evaluation Question 4: Consumer Purchasing Decisions

**How has the program affected consumers’ purchasing decisions and management of paint prior to drop-off at paint recycling facilities?**

* **How did the fee assessment affect consumer behavior?**

**How has the program affected consumers’ purchasing decisions and management of paint prior to drop-off at paint recycling facilities?**

* ***Purchasing decisions***
  + The July 2011 survey found that:
    - 93% of respondents indicated that information about the program had no influence on the amount of paint purchased.
    - Only 15 respondents (out of 84 total respondents who were asked) recalled seeing the paint calculator and among those 15 respondents, only 3 used the calculator to decide how much paint to purchase.
* ***Management of paint prior to drop-off***
  + Neither survey nor any of our other data sources addressed how /where the consumers stored the paint and how long they stored it prior to drop off. The surveys did, however, address what consumers planned to do or did with paint (see discussion under Question #3 on page 20).
  + In the August 2010 survey, respondents were also asked whether the existence of the program would affect the likelihood that they would recycle (Bradshaw 2010):
    - 56% of respondents indicated that they are more likely to recycle leftover paint
    - 40% reported that the program makes “no difference.”

Learning

* There is no indication that the OR program has influenced the consumers’ paint purchasing decisions. If consumers continue to purchase the same amount of surplus paint, there will be no change in the volume per capita eventually destined for the paint management system (i.e. returned to collection sites, transported for disposal and reprocessing, recycled, thus requiring expenditure of more resources than if consumers purchased amounts of paint that more closely matched their needs. Reducing surplus (waste/leftover) paint purchased by consumers would reduce subsequent resources required for a statewide paint management system.
* The outreach materials focused on the recycling aspects of the program (i.e., where to bring leftover paint) and not on reusing leftover paint or reducing the amount of paint purchased. The purpose of the paint calculator provided at paint retailers is to improve the accuracy of the amount of paint purchased but consumers were generally unaware of it, did not use it and so it was not effective at reducing volumes of post-consumer paint. If improving the consumers’ ability to purchase the correct amount of paint is to be considered a viable option to achieving the program and policy goal of reducing leftover paint, effort should be focused on understanding and improving the effectiveness of the tools being used to achieve this goal (e.g., paint calculator, retailer training, consumer assistance).
* To achieve goals of reducing the generation of post-consumer architectural paint, paint management programs and policies may explicitly document the relative emphasis they want to place on aligning the paint management system with the existing waste hierarchy. For instance, prioritize options such as reuse of leftover paint, reducing leftover paint through improving accuracy of paint purchases (less leftover) and increasing volumes of managed post-consumer paint. Organizing these priorities will provide a structure to prioritize outreach strategies, messages, materials and effort.

**How did the fee assessment affect consumer behavior?**

Findings

* When asked about the fee assessment in the August 2010 survey, 33% indicated the fee assessment was “very reasonable”, 40% found the fee “somewhat reasonable,” and 23% indicated that the fee was “not reasonable at all.” (Remaining respondents were in the refused/don’t know categories.)
* In the July 2011 survey of recent painters (PaintCare 2011):
  + 11% of respondents indicated that they are aware of the fee.
  + 93% of respondents said the fee had no impact on the quantity of paint they purchased. this survey covered those that had recently purchased paint. There may be a set of consumers that chose not to buy paint at the fee-inflated price, but who would have purchased paint at the price of paint without the fee added.
* PaintCare reports that approximately 50% of retailers show fee but know of at least one big box store that does not show fee.
* The fee is listed on the retail rack cards and posters advertising the program.

Learning

* OR residents’ value this program. Ninety-two percent of respondents indicated the need for this type of program was “somewhat important” or “very important.” OR residents’ acceptance of the fee may be linked to the inherent value they place on the goals and services provided by such programs. The degree to which consumers value such programs may indicate their willingness to pay a certain fee. This information may be used in refining fee structures within and across states. Understanding and leveraging consumer attitudes may also prove useful in navigating the legislative process, where, as the PPSI learned in MN, without evidence of public opinion and providing evidence of the public’s willingness to pay a fee, legislation based on a fee mechanism may be rejected by executive or legislative leadership even with broad bipartisan legislative support.
* A full understanding of the impact of the fee would assess whether some consumers were deterred from buying paint due to the higher cost associated with the added fee. The fact that consumers are deterred at the margin may or may not be a good thing. On the one hand, a higher price may reduce the total amount of paint demanded by consumers and affect paint retailers revenues. On the other hand, reducing the total amount of paint purchased reduces the total amount of leftover paint that would have to be managed by the program in the future.

# Evaluation Question 5: Post-Consumer Paint Collection

**How has the program affected the collection of post-consumer paint in terms of volume, cost, environment, convenience, and infrastructure?**

* **What other factors have affected the amount of leftover paint?**

**How has the program affected the collection of post-consumer paint?**

***Volume***

* In the first year of the program, PaintCare collected 469,665 gallons of paint. Of this total, 352,136 gallons (75%) were latex paint and 117,529 gallons (25%) were oil-based paint. Metro collected 50.4% of the total [PaintCare Annual Report, 2011].
* Overall the program collected approximately 3% more pounds of paint than was collected by OR DEQ in 2008 (assuming a volume to weight conversion of 10 lbs per gallon for paint collected under the program) [PaintCare Annual Report, 2011, p.18]. However, PaintCare notes in its report that there may be issues in comparing the two volume estimates due to conversion factors. In addition, PaintCare collected approximately 24,000 gallons of paint where collection was not previously available.

469,665 total gallons collected

* PaintCare collected less paint than anticipated in the projected budget—31,969 gallons of latex (8% less than projected) and 47,088 gallons of oil-based (29% less than projected) [PaintCare Annual Report, 2011]. PaintCare indicated that the discrepancy in oil-based is a result of a miscalculation in how much oil-based paint was being collected prior to the program start [Keane, 2011]. Additionally, PaintCare moved to a weight-based system to more accurately reflect collected volumes.
* For Metro, the number of households dropping off paint decreased under the program by 2% from the previous year and the number of non-households (e.g., contractors) dropping off paint increased significantly. Metro believes the increase in non-household consumers reflects the fact that disposal of paint is now free for these organizations [Quinn, 2011], whereas prior to the program non-households had to pay to drop off the program. Metro also reported that the volume of latex paint collected was down 9% over the previous year. There was an initial spike in volumes during the first few months, but overall the total volumes were down. [Quinn, 2011]. Metro also indicated that they collected a large number of unlabeled containers of paint, which are classified as non-program materials and as such were the responsibility of Metro to handle [Quinn, 2011].

***Costs***

* PaintCare reported that the cost of managing paint collected under the program is $7.03 per gallon [PaintCare Annual Report, 2011]. This metric does not include collection costs, such as labor and storage space, incurred by collection sites. In an Oregon paint recycling pilot program conducted in 1997-1998, OR DEQ-sponsored collection events were reported to cost $13.86 per gallon (inflated to 2011 dollars) and the pilot program cost $11.32 where collection was done at retailers [Cascadia, 1998]. Without more detailed analysis, these estimates are not appropriate for use as baseline, but they do indicate cost savings relative to the 1997-1998 program design.

***Environment***

* The PPSI Lifecycle Workgroup (2005-2009) consisted of representatives from government and industry. ACA funded contractors to conduct a lifecycle assessment (LCA) of six options for managing leftover paint (e.g., dry and dispose at home to centrally collecting and processing into recycled paint). LCA is a tool for the systematic evaluation of the environmental impacts of a product through all stages of its life cycle, which include extraction of raw materials, manufacturing, transport and use of products, and end-of-life management (e.g., reuse, recycling and/or disposal). The PPSI LCA scenarios were developed prior to the enactment of any legislation and therefore not based on the Oregon pilot. The purpose of the LCA was to aid in selecting specific leftover paint management methods that minimize overall environmental impact. However, the full LCA was never completed.
* Initial LCA modeling results were found to depend crucially on the amount of virgin paint that consumers replaced with recycled paint. If consumers were assumed to replace all virgin paint with recycled paint, then recycling proved to be the more environmentally beneficial outcome. However, if no virgin paint was assumed to be replaced, then producing recycled paint was found to have a larger environmental impact than just having consumers dry out and dispose of the latex paint in their household trash. Agreement between industry and government representatives on what percentage of virgin paint is avoided could not be reached and the Workgroup disbanded. Funding also was depleted and a sensitivity analysis to identify other assumptions and parameters that had a major impact on the modeled results was not completed.
* ACA’s conclusion as reported in the *PaintCare Annual Report* (2011) was “[t]he [LCA] results demonstrate that unless and until recycled content paint is marketable at the same or similar rates as virgin paints...the environmental...cost [and] benefits or recycling paint do not outweigh drying and disposing of such." The draft LCA is available as appendix J in their report. Some members of the workgroup had anticipated that the Oregon pilot could provide real world data to refine the LCA model to complete PPSI’s goal of better understanding the societal impacts of latex paint management approaches. The modeling results could help with the planning and selection of appropriate paint management methods in light of environmental benefits weighed against costs.

***Convenience and Infrastructure***

* The program has 98 collection sites with 10 of these sites offering paint exchange (as of September 1, 2011). Sites are open to the public, on average, 6 days a week for a total of 58 hours per week.
* The following table highlights the increased amounts of the OR population living with 15 mile radius or a 15 mile drive of a drop-off location. The program has resulted in a 38.5 percent increase in the percent of the population living within a 15 mile radius of a drop-off location. Additionally, based on a GIS analysis using June 2011 sites, 95% of OR residents live within a 15 mile drive of a drop-off location.

|  |  |  |  |
| --- | --- | --- | --- |
| Time Period | Percent of OR residents living in incorporated cities, towns, and CDPs who are within a 15 mile **radius** of a collection site [a] (PaintCare, 2011) | Percent of all OR residents living within 15 mile **radius** of collection site (PaintCare, 2011) | Percent of all OR residents living within a 15 mile **drive** of a collection site  (Strickland, 2011a,b) |
| Pre-program (date unknown) | 69.2% | 51.2% | - |
| January 2011 | - | - | 91% |
| June 2011 [b] | 95.9% | 70.9% | 95% |
| Change between pre-program and June 2011 | 38.5% | 38.5% | - |

[a] CDP = Census Designated Places

[b] The analysis performed for the PaintCare report on the percent within the 15 mile radius and the analysis performed by Strickland are seemingly contradictory. Specifically, the percentage within a 15 mile radius should exceed the percentage within a 15 mile drive. The Evaluation Team provided Strickland with the set of sites listed as being the June 30, 2011 sites. There may be some analytical details that account for some of the discrepancy. For example, Strickland’s analysis uses the percentage of roads in a Census block group that are within the 15 mile drive as a proxy for the percentage of the population within that Census block group.

* Comparing the pre-program network of collection sites to the June 2011 network, PaintCare notes:
  + The number of HHWs offering collection increased from 15 to 18.
  + The number of counties served by events only decreased from 6 to 4.
  + The number of counties with no service decreased from 17 to 2.
  + The number of retailers serving as collection locations increased from 3 to 70.
* PaintCare provided 19 large volume direct pickups to institutional, commercial and industrial entities between July 1, 2010 and June 30, 2011; collecting approximately 4,050 gallons of paint..
* 63 percent of respondents to a July 2011 consumer survey who purchased paint recently think their nearest collection site is convenient.

**What other factors have affected the amount of leftover paint?**

* Factoring into baseline considerations is that the quantities of latex paint delivered at DEQ events fell significantly after consumers were discouraged from bringing latex paint to collection events starting in 2008. DEQ’s HHW Report 2008-2009 found that in 2007, an average of 21 pounds of latex was dropped off per vehicle to an average of 10 pounds per vehicle in 2009. No data are available to determine how consumers managed their leftover latex paint (e.g., stored; dried and disposed). Data indicates approximately 233,127 fewer pounds of paint were collected in 2009 compared to 2008 (HHW Report 2008-2009).

**How has the program affected transportation of paint from collection sites to other facilities in terms of volume, environment, and cost?**

* Efficiencies are critical to maintaining a competitive advantage in a business with a significant transportation component.  In the Oregon model, the contractor (PSC) is minimizing transportation costs by designing milk-run transportation routes with software designed by Red Prairie [O’Donnell, 2011]. The trucks service PaintCare locations as well as other clients that fall along the transportation route.
* PSC reported that transportation costs are similar pre- and post-program since the primary cost driver is diesel fuel price [O’Donnell, 2011].
* Without collection of OR pilot program data (before and after the program start) the Evaluation Team was not able to make an assessment on changes of transported volumes or the environmental impacts.

**How has the program affected retailers’ behavior?**

* Retailer interviewees note that the program had little effect on their practices in terms of marketing or sales. Key challenges included:
* Programming the fee assessment into pricing and invoicing computer systems.
* Preparing staff for program rollout. The challenge for the larger retailers was to make sure staff are aware of and understand the program, putting materials out, and are able to answer customer questions. Time for internal outreach and education, magnitude of time/resources needed is related to number of employees.

**Learning**

* PaintCare’s preliminary reporting used paint container fullness assumptions for calculating volume of paint collected. This assumption proved to underestimate gallons collected, and PaintCare found that a weight-based measurement was more accurate and more common for HHW reporting to OR DEQ [Keane, 2011].
* The Evaluation Team heard mixed second hand information about contractors and the amount of waste paint they generate. One interviewee stated that contractors should not be subject to the recovery fee because they don’t generate waste paint. Additionally, Metro saw an increase in non-households dropping off paint because under the program no fees were collected for drop-off. Contractors were not a stakeholder group participating in PPSI and the amount of leftover paint they generate was not quantified in EPA’s *Quantifying the Post-Consumer Architectural Paint (*April 2007). PPSI could further explore if they are significant contributor of paint to the management system and therefore need different and more audience-specific messaging about reducing waste paint, etc.
* Follow-up needs to be conducted on the amount of unlabeled paint containers that consumers are attempting to turn in. Consumers know the unlabeled container has paint, but collection sites are instructed to treat unlabeled paint containers as a non-program product and to not accept it. If a significant volume of leftover paint is being excluded from the program, this may be area for reexamination of the policy for these types of items.
* The cost of $7.03 per gallon can be used as a starting point for other states. However, the reported PaintCare system costs do not reflect the true costs of a leftover paint management system. PPSI’s *Paint Product Stewardship Initiative Infrastructure Project*, which modeled comprehensive system to manage leftover paint, that the collection step in the process costs $1.98 per gallon—however, this is not an apples to apples comparison (e.g., the Infrastructure report included transportation to aggregate facility as part of the collection step). Efforts are underway in Washington to estimate local government costs associated with collection of waste paint, which includes a methodology and development of a tool for local governments to collect data [Salvi, 2011]. Furthermore, as noted under Q4, the OR program had a relatively established paint recycling infrastructure in the Portland metro area prior to this pilot program. Thus, program costs per gallon for other states may be higher.
* Non-reimbursement of collection costs continues to be a controversial issue among stakeholders [Boudouris, 2011]. This was a topic that PSI had anticipated further collaborative discussion on as part of detailed work plan for the implementation stage. [Cassell, 2011]
* An uncompleted task of the lifecycle workgroup was to conduct a sensitivity analysis for the LCA which could have identified other assumptions with large environmental effects. For example, the initial results indicated that the virgin offset made the largest impact, but transportation could be another factor. For example, Metro’s less desirable recycled paint colors are being sent to Asia (for a fee, paid by Metro). Does that change the environmental benefits of a recycled paint management system if paint is shipped across the globe? With the key assumptions and parameter data identified, future evaluations and ongoing examination of program performance information could collect groundtruthing data (e.g., virgin paint offset; miles traveled) to improve the ability to model a paint management system. The LCA is a tool to estimate a wide range of environmental and social impacts, and interpreters of its results will have to determine which impacts (e.g., GHGs, water usage, air toxics) are the most important when selecting a management approach. LCA can be integral to future program design and planning, and requires funding for complete development and interpretation of the model.

# Evaluation Question 6: Paint Reprocessing, Recycling, and Energy Recovery

**How has the program affected used paint reprocessing, paint recycling, and paint-related energy recovery in terms of volume, infrastructure, and cost?**

***Reprocessing***

* 28% of latex paint (98,600 gallons) was processed for biodegradation; the paint is mixed with waste water and injected into a landfill in order to improve degradation of landfilled wastes and increase gas recovery.
* 8% of latex paint (28,000 gallons) was processed into Amazon PLP, a cement additive.
* An established reprocessing infrastructure existed in OR prior to the pilot program.
* Information on costs for reprocessing was not available.

***Recycling/Reuse***

* 57% of latex paint (approximately 201,000 gallons) was recycled as paint by Metro and Amazon.
* Metro’s peak volume of paint processed into recycled product increased after program implementation from approximately 280,000 to 325,000 gallons. Metro has additional processing capacity available.
* 3% of latex paint (approximately 10,000 gallons) and 5% of oil-based paint (approximately 3,500 gallons) was reused by consumers.
* PaintCare provided collection locations an incentive of $0.25 per “reuse” gallon to reflect avoided transportation and processing costs. An organizational representative notes that no sites took advantage of this incentive; sites that were already offering reuse had systems in place and considered it an important service.
* Less than 10% of collection locations have shelves for paint exchange; PaintCare did not recruit retail sites for paint reuse due to concerns about liability [Keane, 2011].
* Approximately 47 tons of plastic paint pails and 65 tons of metal cans were recycled [PaintCare Annual Report, 2011, p.17]. Assuming that each plastic pail weighed about 1.6 pounds, and each metal can weighed about 1.4 pounds then this tonnage translates to approximately 93 thousand metal paint cans and 59 thousand plastic pails. Data on the total number of containers collected is not available so there is no available estimate on the percent of collected containers that were recycled.

***Energy Recovery***

* 97% of oil-based paint was bulked for energy recovery (fuel blending).
* 4% of latex paint went to Amazon Biomass; the paint is used to bind materials with high BTU value (e.g., sawdust) for energy recovery.

***All***

* PaintCare’s selected vendor for transportation and disposal management, PSC, provided these services to a majority of HHW programs prior to the program.

Learning

* The presence of existing latex paint recyclers with available processing capacity allowed recycling as paint to be the dominant method of processing leftover latex paint.
* Recycling is lower on the waste hierarchy than reuse, but there are barriers to increasing paint reuse. Furthermore, recycling results in higher costs (management, environment) compared to reuse. More information is needed to better understand the barriers (e.g., liability, space) to retailer facilitation of paint reuse.
* One option to increasing reuse, suggested by OR DEQ, is for PaintCare to coordinate with the ReStores and local government to redistribute reusable paint collected from the collection sites. This option, however, also creates costs/environmental effects (e.g., additional transportation and labor).
* Legislation that directly addresses reuse and liability is another option for clarifying program priorities and management. PaintCare incurred $2.4 million in transportation and processing costs to collect 469,665 gallons of paint, or $5.13 per gallon; a value 20 times more than the reuse incentive offered ($0.25 per gallon), indicating a potential cost savings in a shifting more paint to reuse and room to increase the reuse incentive.

# Evaluation Question 7: Household Hazardous Waste Programs

**What was the impact of the program on the HHW facilities in terms of the types of paint collected, costs, and the way in which the facilities operate?**

***Overview of HHW Programs in Oregon***

* The OR DEQ solid waste program website ([www.deq.state.or.us/lq/sw/hhw/index.htm](http://www.deq.state.or.us/lq/sw/hhw/index.htm)) lists event and facility information for 17 HHW programs in the state. These programs accept common household hazardous wastes (e.g., oil-based paint, pesticides, mercury thermometers) from households and conditionally exempt small quantity generators (often by appointment or special event) and then sort the various products for recycling, reuse, energy recovery, or proper disposal.
* The HHW programs use a variety of mechanisms in order to provide services to residents, for example:
  + Rural county local government solid waste or public health programs may offer periodic collection events.
  + The Tri-County Hazardous Waste and Recycling program coordinates collection facilities and events for Hood River, Sherman and Wasco counties.
  + Several counties hire companies that specialize in hauling, disposal, and recycling to provide HHW collection opportunities; for example Jackson and Josephine counties offer biannual events through Rogue Disposal.
* The number of customers served by a program varies, for example:
  + One HHW interviewee noted that they serve 85 – 140 cars at each monthly event.
  + One HHW interviewee reported that for 2009 and 2010 their permanent facility served approximately 4,000 customers.

***Types of paint collected at HHW facilities***

Findings

* Detailed data on the volumes of different types of paint collected at HHW facilities and events is limited. In some cases the program only captures total volume of paint collected at an event or per month.
* Interviewees noted that they had not observed a significant change in the total gallons of latex or oil-based paint collected since the PaintCare program began; however, two interviewees reported that the first event or month following the program start collected very high volumes that then tapered off through subsequent events. In most cases the interviewees reported that they were able to accommodate the higher volumes with a few adjustments; however, one HHW faced delays in finalizing the contract with PaintCare and needed to store collected paint until the contract was in place and the paint could be picked up.
* One interviewee noted a shift towards collecting a higher proportion of latex than oil-based paint. Another interviewee observed increased traffic from paint contractors because the county charged a fee for large volumes prior to the program. After the program began, one HHW site ceased collecting paint entirely while another program began collecting latex paint again after a long hiatus.

Learning

* Change in volume and types of paint collected at HHW sites will vary depending on the convenience and availability of prior opportunities for consumers to return paint.
  + Some HHW programs stopped collecting latex paint prior to program rollout due to resource constraints and so experienced a spike in paint volume when the program began.
  + A GIS analysis could assist HHWs anticipate the increased volume of paint under a recycling program. However, the most effective version of this type of analysis would also include paint purchasing data related to demographics. For example, GIS can be used to map and analyze the demographics of an area (age, homeownership, etc.) in the context of paint purchasing behavior. Combining this with data on demographics with paint sales in the area could identify the potential quantity of paint that an HHW could expect.

***Changes in the amounts of or capacities for other products***

Findings

* Interviewees reported no significant changes in the amounts of other HHW products and moderate shifts in available capacity for processing other HHW products.
* Three HHWs saw an increased capacity to handle other products because they were able to reassign staff from crushing paint cans and bulking the material for disposal to other tasks; one HHW site stopped collecting paint.

Learning

* Paint, latex in particular, has historically been a significant percentage of the volume of material collected by HHW programs. Shifting processing of the paint to another entity frees up resources for the HHW to handle other materials. However, in other states with limited infrastructure for paint collection the HHW might experience the opposite effect: capacity to process other products may decrease significantly as customers bring in a relatively high volume of legacy paint (especially if dropped off with other materials at same time).

***Costs for HHW facilities to take in and process paint***

Findings

* Interviewees noted that HHW programs do not have a sophisticated system in place for detailed cost tracking; staff may simply compare monthly internal costs (e.g., labor, overhead) to external costs from vendor invoices (e.g., hazardous waste hauler). Additionally, these costs are not likely to be tracked by task or material type, such as paint processing versus other hazardous materials. As a result, the interviewees were not able to provide detailed cost data, but many were able to provide estimates of the changes in costs following implementation of the program.
* Five of seven of the interviewees reported significant cost savings resulting from the program even when accounting for increases in customer traffic and material volume. The cost savings are reported to result from the avoided labor, disposal, and transportation costs associated with handling oil-based and unusable latex paints. Some examples of avoided costs from interviewees include:
  + Saving $1500 per month out of a $100,000 annual budget due to avoided paint disposal costs.
  + Cumulative savings of $45,000 to 50,000 resulting from less paint handling by staff and avoided disposal, landfill, and transportation costs.
  + A cost decrease of 40% from pre-program costs due to avoided disposal costs associated with oil-based paints.
  + Avoided costs of $75,000 to $100,000 per year out of an annual budget of approximately $300,000 due to avoided costs of disposal and transport of paint.
* Two interviewees found that the avoided costs of processing the paint offset the costs stemming from an increase in customers or paint volume.
* Two interviewees thought that the HHW should be compensated by the program for collecting the paint.
* A separate cost reported by three interviewees was the need for HHW staff to conduct outreach and education before and during paint collection. These interviewees felt that the efforts by the program did not achieve sufficient reach within their county. One interviewee supplemented the program efforts with additional, locally targeted promotion around the beginning of the program. Of particular interest to these interviewees was providing additional information to customers on the location of the nearest collection site, the types of materials that would be accepted, and the purpose of the fee.
  + Two interviewees reported that some customers mistook the fee for a bottle deposit and returned empty cans in the hopes of getting the fee returned.
  + Another interviewee reported that customers were bringing in materials that did not fit the criteria for program products; for example, some customers were bringing in materials, such as asphalt sealant, that are applied with a brush.

Learning

* Labor and oil-based paint disposal costs are the key cost elements for HHW. States with limited pre-existing infrastructure for paint collection may experience initial spikes in labor needs at HHWs as customers bring in relatively high volumes of legacy paint; however, the program should mitigate the costs of sorting, bulking, and disposal. Areas with well-established infrastructure and steady paint volume collected could see significant cost savings.
* There is a lack of detailed cost information for HHWs which represent a significant set of program stakeholders. Without knowing the costs incurred to process paint at HHWs and the cost avoided from paint recycled, the full cost effectiveness of the program cannot be judged.
* The education and outreach campaigns for future roll-out states should include information that will be relevant for HHWs. This can be done by including HHWs as stakeholders in the development of the education and outreach program.

***Cost of managing other products***

Findings

* Data on the costs of managing other HHW products is limited for the reasons described above. Two of the interviewees commented on the costs of handling non-program materials returned by customers (in those cases significant), which is particularly relevant to this evaluation.
* When asked about the challenges associated with rollout of the program, two interviewees noted that correctly identifying program materials and non-program materials was challenging at first; and, that the volume of unacceptable items, such as unlabeled or rusty cans, can be significant

Learning

* Collecting non-program materials imposes costs on HHW and the amount of these materials may be significant. HHWs may need additional support from the program to ensure that these materials are correctly identified and sorted separately from program materials.
* States with limited prior infrastructure should anticipate collecting older, deteriorated (e.g., “rusty”), and unlabeled cans of paint and be prepared to sort them from program paint.

# Evaluation Question 8: Cost Effectiveness

**How cost effective is the program?**

Findings

* A primary driver of PPSI was the burden of waste paint on local governments to manage. Thus the Evaluation Committee defined cost-effectiveness as cost per gallon at various stages of the paint management system (e.g., cost per gallon to be collected; cost per gallon to be recycled). The intent was to address the financial efficiency of the program.
* Actual PaintCare program costs for the first year were $7.03 per collected gallon, excluding collection costs. PaintCare’s initial projection of program costs—which excluded collection costs at permanent facilities—was estimated to be $8.26 per collected gallon in the first year with a decreasing cost of $7.30/gallon in year 2, $7.27/gallon in year 3, and $7.18/gallon in year 4 [PaintCare Program Plan, 2010]. The primary reasons for the lower costs compared to pre-program projections was a higher percentage of latex paint collected compared to oil-based, which is more expensive to handle; and less non-program materials were collected, so overall disposal costs for these items were less. [Keane, 2011b]. Despite the overall lower than expected costs, some initial year expenses were higher than expected. For example, start-up costs (e.g., legal and banking fees) and cost for education and outreach efforts were higher than expected [Keane, 2011].
* PPSI’s *Paint Product Stewardship Initiative Infrastructure Project*, which modeled a comprehensive system to manage leftover paint, estimated a $7.46 per gallon cost for managing leftover paint [SCS and Cascadia, 2007]. The goal of the Infrastructure project was to determine the elements of a cost-effective and efficient infrastructure to collect, reuse, consolidate, transport, recycle, and dispose of leftover paint, and then estimate the average cost to develop that infrastructure nationally.
* PPSI’s life cycle workgroup was scoped to have a full cost-benefit analysis conducted on the same management scenarios as were modeled in the LCA. Such an effort would have examined cost effectiveness from a social perspective, accounting for additional costs such as consumer time to drop off paint and externalities associated with environmental impacts (e.g. air emissions, GHGs, water use).
* PPSI had a diversity of goals for the pilot program that it could have considered in terms of cost-effectiveness but the PPSI focused on cost/gallon for this issue. Other approaches are available and there are other goals to focus on but PPSI did not actively pursue or commit resources to investigating those alternatives.

Learning

* The exclusion of HHW collection costs from the total program costs is significant. Even though it appears that costs decreased for HHWs, gauging total program cost effectiveness is not possible without knowing collection costs for HHWs. Calculating a value for collection costs is complex. Some variables such as estimating the cost of labor are relatively straightforward, while other items such as valuing the loss in building space that is used for storing waste paint and the percent of overhead expenses (e.g., insurance, administrative) that should be attributed to the collection are more challenging to estimate.
* Future evaluations should broaden the scope of cost-effectiveness by also factoring in environmental benefits. The cost-effectiveness measure here is the cost per gallon collected. A more comprehensive measure would translate the gallons into environmental benefits and then also include other management options (e.g., reuse, etc.) as well as the cost-effectiveness of reducing leftover paint by convincing consumers to “buy the right amount.” Completion of a full life cycle cost-benefit analysis could supply some of this information. The key is to develop a measure of the environmental benefit associated with different paint management options.
* Beyond expanding cost effectiveness considerations to environmental benefits, future evaluations should consider the cost-effectiveness associated with program development including the costs of collaboration. Collaboration for this program involved significant time and effort on the part of several stakeholders. However, what did this achieve relative to a less collaborative approach? Addressing this question would allow for a more complete assessment of this type of program and for developing programs through a collaborative approach.

# Evaluation Question 9: Waste Hierarchy

**How was the program designed and implemented to move consumers up the waste hierarchy?**

* **With respect to moving customers up the waste hierarchy, what were the program’s obstacles, opportunities, and decisions?**

*Note: This question has been taken on by graduate student at Tufts University as part of her master’s thesis. The student is currently working on developing the method for this question. What we can present at this point is the method we laid out in the method document and some initial findings related to the waste hierarchy from other questions.*

**From the Method Document**

A “waste management hierarchy” classifies waste management options according to their desirability. PPSI considers reducing leftover paint to be the preferred management option, followed by reuse, recycling (including energy recovery), and disposal. A key goal of the program is to encourage greater reliance on the most preferred strategies in the hierarchy and less reliance on least preferred strategies (i.e. “moving up” the hierarchy). This question assesses how well the program has achieved that goal. Many obstacles stand in the way of waste reduction. Thus, the question also considers the obstacles, opportunities, and decision-making related to moving up the hierarchy. Oregon and other states can use this information to design paint stewardship programs that more efficiently encourage reliance on most preferred management options.

The Evaluation Committee will develop a matrix that categorizes each program component into the four waste hierarchy categories and compiles information on the following: obstacles, opportunities, decisions, and relative emphasis. The matrix may look something like the following:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Component** | **Waste hierarchy category** | **Decision made** | **Obstacles** | **Opportunities** | **Relative emphasis** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

The Evaluation Committee will explore the degree to which the paint stewardship program emphasizes waste reduction over others as reflected in educational materials, convenience, infrastructure, and performance. The Committee will compare the effectiveness of waste reduction messages to others, resources devoted to waste reduction compared to other management methods, and the number of paint exchanges and volumes exchanged before and after paint stewardship.

**Preliminary Findings from Other Questions**

|  |  |
| --- | --- |
| Learning in Question 4 | * To achieve goals of reducing the generation of post-consumer architectural paint, paint management programs and policies may explicitly document the relative emphasis they want to place on aligning the paint management system with the existing waste hierarchy. For instance, prioritize options such as reuse of leftover paint, reducing leftover paint through improving accuracy of paint purchases (less leftover) and increasing volumes of managed post-consumer paint. Organizing these priorities will provide a structure to prioritize outreach strategies, messages, materials and effort. |
| Finings in Question 6 | * 57% of latex paint (approximately 201,000 gallons) was recycled as paint by Metro and Amazon. * 3% of latex paint (approximately 10,000 gallons) and 5% of oil-based paint (approximately 3,500 gallons) was reused by consumers. * PaintCare provided collection locations an incentive of $0.25 per “reuse” gallon to reflect avoided transportation and processing costs. An organizational representative notes that no sites took advantage of this incentive; sites that were already offering reuse had systems in place and considered it an important service. * Less than 10% of collection locations have shelves for paint exchange; PaintCare did not recruit retail sites for paint reuse due to concerns about liability [Keane, 2011]. |
| Learning in Question 6 | * Recycling is lower on the waste hierarchy than reuse, but there are barriers to increasing paint reuse. Furthermore, recycling results in higher costs (management, environment) compared to reuse. More information is needed to better understand the barriers (e.g., liability, space) to retailer facilitation of paint reuse |
| Unintended consequence in Question 12 | * The private-public partnership and the waste hierarchy model (reduce, reuse, recycle) were at odds in this program. The public preference in the waste hierarchy model is for reduction and reuse. There were opportunities to stress both reduction and reuse under this program. However, the program as-designed tended to focus more on collection and recycling. Other state programs should consider a clear articulation of the program priorities ensure alignment with existing program and policy goals and reduce the potential confusion amongst consumers. |

# Evaluation Question 10: Market for Post Consumer Paint

**How has the market for post-consumer paint been affected by the program?**

* **What aspects of the program have had an impact on the market and how?**
* **What market and products represent potential opportunities for post-consumer paint products?**

**How has the market for post-consumer paint been affected by the program?**

* As part of the first PPSI MOU, stakeholders identified the need to develop post-consumer paint markets as a key issue. Three projects were suggested:
  + Market Development Strategy: Research potential markets for recycled paint and develop model procurement policies. Only initial funding was provided.
  + Recycled Paint Marketing Guide for Distributors: Developing a marketing guide for both public and private distributors, targeting a variety of market segments. This project was placed on hold until the Recycled Paint Certification System was completed and additional funds were raised.
  + Recycled Paint Standard and Certification System: Working with Green Seal,PPSI developed guidelines and performance specifications for recycled paint, along with a system for certifying specific recycled paint products. In August 2006, this project was completed.
* There are three types of paint that fall into the category of post-consumer or recycled paint and that can be considered part of the post-consumer/recycled paint market:[[2]](#footnote-2)
  + Leftover paint: paint that is dropped off and could be used as-is by another consumer. This is the type of paint offered for paint exchange by PaintCare through ReStores in OR. According to the PaintCare report, 3% of latex collected under the program and 5% of the oil-based paint collected under the program was available (supply) as leftover paint.
  + Consolidated paint: a small amount of virgin paint and additives (2% or less of total volume) are combined with leftover paint. Metro sells consolidated paint under the name MetroPaint. According to the PaintCare report, 53% of the latex collected under the program was sent to Metro to become consolidated paint. Metro sold 122,705 gallons of paint between July 1, 2010 and June 30, 2011. During that time, 94% of the paint Metro took in came from the OR program. Thus, approximately 115,343 gallons of paint (25% of all paint collected by PaintCare) taken in by the program between July 1, 2010 and June 30, 2011 were sold by Metro as post-consumer paint.
  + Recycled paint: a minimum of 50% post-consumer paint for darker colors and a minimum of 25% post-consumer and 50% total recycled content for whites and pastels are combined with virgin paint. Amazon Environmental Inc. sells recycled paint with 95% post-consumer content. According to the PaintCare report, 4% of latex collected under the program was sent to Amazon to become recycled paint. Amazon, Inc. considers its sales figures to be proprietary and thus were not provided for inclusion in this evaluation report. However, Amazon, Inc. indicated that only a small percentage of their paint sales stem from paint collected through the OR program.
* Nationally, the annual potential market for post-consumer latex paint products is $1.2 billion and includes environmentally conscious adults ($540 million) and contractors ($230 million), and governments ($420 million) (Hult, 2011). According to the 2010 Census, OR represented 7.6% of the U.S. population. Using this percentage to adjust the national numbers, the annual potential market in OR would be approximately $90 million.
* The OR pilot program’s primary focus has been on collection and management of leftover paint and has not focused on developing a market for post-consumer paint. The education materials developed under the program focus on the collection aspects of the program and not on consumer reuse or purchasing.
* Metro has been selling post-consumer paint (MetroPaint) since 1992 and consumers can purchase MetroPaint at more than 45 retailers throughout Oregon and Washington. Metro indicated that the program had no effect in their sales of post-consumer paint. For the past several years, independent of the Oregon pilot program, Metro increased sales of post-consumer paint by expanding the number of outlets offering its paint [Quinn, 2010]. Metro reported that demand for light color recycled paint exceeds the program’s supply. The opposite is true of darker colors. [Quinn, 2011] During the first year of the program, Metro began selling darker color post-consumer paint overseas. PaintCare was not involved in overseas markets other than initially encouraging Metro to find a use for leftover paint higher up the waste hierarchy (i.e., produce recycled paint over landfill biodegradation) [Quinn, 2011].

**What aspects of the program have had an impact on the market and how?**

* The OR program has an indirect impact on developing post-consumer paint markets by:
  + Increasing the supply of leftover paint. By encouraging consumers to return the paint, the program is developing the supply side of the market. The centralized collection of paint by the program is funneling more than 200,000 gallons of leftover paint to be recycled into paint for resale to consumers.
  + Promoting recycling over other management options (e.g. disposal).
  + Metro, as a vendor in the PaintCare system, calculated its fee for recycling based on its ability to sell MetroPaint. If it generated more revenue than anticipated from its sales, it is contractually obligated to refund the money to PaintCare.

**What market and products represent potential opportunities for post-consumer paint products?**

* Metro, Amazon Environmental, and Lincoln County solid waste district produce recycled latex paint under the pilot program. These organizations were producing these products prior to program implementation.
* Currently there are two post-consumer non-paint products being produced from Oregon leftover paint: Amazon Environmental’s cement additive called processed latex pigment (PLP) and a binding material for biomass that Amazon Environmental uses to fuel their recycled paint facility.
* The sale of recycled latex paint is challenged by the technical limitations of recycled paint colors and consumer perceptions on quality [Hult, 2011].

**Learning**

* One components of determining the effect of the program on the market for post-consumer paint is by tracking data on post-consumer paint sales, including both the price and amounts sold. OR should begin tracking this information to better understand the market.
* One role that a paint recycling program can fulfill is to develop a market for post-consumer paint. In OR, a market existed already to some degree with Metro selling MetroPaint since 1992. However in states without a market for post-consumer paint, the paint recycling program would need to work to develop the market. This would include identifying potential paint reprocessing or recycling facilities and capacity and identifying retail outlets for the paint. Additionally, work would need to be done to get consumers to begin using post-consumer paint.
* The market outcomes for paint should be viewed in a full cost accounting framework. Market price, quantity sold, and profitability are limited measures of the success of a market for post-consumer paint. A broader view would take into account the avoided costs of managing the leftover paint and the reduced environmental impacts of recycling the paint.
* The paint market in OR encompasses consumers, retailers, and producers, but also PaintCare and OR DEQ. In building the market for post-consumer waste, the program will have an impact on each set of actors. However, we have little information on how the OR program has impacted each group. Some of the impacts and key questions to consider include:
  + Consumers: The post-consumer paint market will offer a lower-priced alternative to virgin paint. Will the availability of a lower-priced alternative impact the price consumers pay for virgin paint? Will the post-consumer paint be of sufficient quality that consumers accept it was a viable alternative?
  + Retailers: Will retailers begin to stock post-consumer paint? Will the availability of a lower-priced alternative reduce sales of virgin paint? How will profitability of retail paint sales be affected?
  + Producers: Will the availability of post-consumer paint affect producers’ sales of virgin paint? Will producers consider expanding their product lines into the post-consumer market and begin offering post-consumer paint?

Providing answers to these questions will require extensive and more detailed research into the impacts of post-consumer paint on paint markets in general.

* Information is needed on consumer acceptance of leftover and post-consumer/recycled paints as a viable product for them to use. This basic level of market research would provide a baseline for the potential size of the market and also help to identify specific concerns that consumers may have. These concerns could then be addressed as part of an education and outreach campaign to promote the use of post-consumer paint as a viable alternative to virgin paint. Furthermore, an education and outreach campaign that targets messages to different audiences may be more effective at increasing acceptance by consumers. Although the PPSI Recycled Paint Standard and Certification System project was completed, stakeholders have not funded the Recycled Paint Marketing Guide for Distributors project. The intended purpose of that guide is to educate buyers about the nature of recycled content paint, including its quality and performance.
* Some consideration should be given to balanced pricing for leftover paint. A low price for leftover paint may encourage consumers to purchase too much leftover paint, leading to the paint being leftover again. This needs to be balanced against the cost of new paint. In short, leftover paint should be priced at a level that both represents a significant discount compared to new paint (i.e., it’s an imperfect substitute), but not too low that it encourages consumers to purchase “extra” paint they may not need. Currently, little information on paint markets exist to determine that tipping point and some research into consumer preferences may be needed to determine a balance.

# Evaluation Question 11: Transferability

**Based on the OR experience, what implementation and outcome-related information is required for other states to develop and implement leftover paint management systems?**

* **To what extent are the performance measurement and evaluation systems transferable to other states?**
* **What are the best ways to communicate the results of the evaluation?**

**What implementation and outcome-related information is required for other states to develop and implement leftover paint management systems?**

* States developing paint management systems should start with reliable baseline data. This would include:
  + Volume data on paint: baseline data on paint sales, amounts of paint that are managed through various methods in the state (recycling, conversion to energy, etc.), and amounts disposed.
  + Current infrastructure : document the extent of current infrastructure (recycling facilities, locations, processing facilities, events, transportation etc.), including
    - Information on the capacity (amount of paint that could be processed or collected).
    - The knowledge of and experience with working with leftover paint of those who would be working with the leftover paint.
    - Attitudes toward recycling and waste reduction among consumers and those who would be working with the leftover paint.
    - Ideally, this data would be linked to the volume data to determine the amounts being collected, processed, or transported within different parts of the infrastructure.
  + A system map. Developing a map of how paint is currently processed in the state provides a useful starting point to developing a new system.
  + Cost information: information on the costs that entities that process paint currently incur, including costs for HHWs to process paint.
  + Awareness: information on consumer awareness of disposal and paint recycling options, paint-related environmental issues and hazards, and information on where consumers get their information.
  + Consumer, behavior, attitudes, and practices: information on how consumers decide on how much to buy, what they currently do with leftover paint, and how much leftover paint they currently have stored in their homes. Additionally, information on attitudes toward recycling and the environment would provide useful information that can be used to develop outreach and education (e.g., a consumer base that has strong preferences for recycling and preserving the environment may not need convincing that recycling paint for environmental reasons is a good idea).
* As California and other states with robust infrastructure roll out leftover paint management systems, ensure that plans incorporate pre-existing infrastructure into the program first. Unlike Oregon where little infrastructure existed before the PaintCare program, California has a robust infrastructure with which PaintCare hopes to partner. [Keane, 2011c]
* OR DEQ allocated a quarter time employee for its program responsibilities. OR DEQ indicated that this would have been sufficient, except for the extra demands generated by being the first state (e.g., participating in the Evaluation Committee; requests from other states for information, etc.) [Boudouris, 2011].
* In interviews, Oregon program stakeholders identified the following gaps in the implementation and outcome information currently available to them:
  + The cost to local governments (e.g., permanent HHW facilities and events) to act as collection sites; including cost of labor and the opportunity cost of storage space. One interview raised the concern that the costs by PaintCare may not capture the full costs of the program, and that local governments may be “subsidizing” some of the costs by providing labor for paint collection.
  + The proportion of program costs attributable to overhead and PSO structure. In the Annual Report, PaintCare notes that revealing some vendor costs would result in a breach of contract; however, at least one stakeholder expressed an interest in the cost-effectiveness of employing “layers” of contractors in order to implement the program.
  + The best approach to recruit retail collection sites. PaintCare used targeted mailings to retailers to recruit them as potential collection sites; as a result, the initial list of retail collection sites was primarily based on retailer self-selection into the program rather than site location. In an interview, a PaintCare representative observed that upon inspection some of the initial sites were not suitable to act as collection sites and that in the future, the organization should visit each site before designating it as a collection site. Another stakeholder interviewee expressed interest in a more strategic approach to recruiting sites.
  + How to best measure convenience. The Annual Report focuses on the percent of Oregon residents that live within a certain radius of the nearest collection site as a measure of convenience. A more comprehensive measure would include the considerations addressed by Strickland (2011a) that included drive time and driving distance to collection sites. Although the GIS analysis to develop the drive-time and driving distance measures is more complex, Strickland has provided an approach that could be replicated in other states by GIS experts.
* PSI said a majority of inquiries it receives relate to the fee. Thus, other states developing these programs should consider providing outreach related to the fee structure.

**To what extent are the performance measurement and evaluation systems transferable to other states?**

* The framework for the evaluation (Evaluation Committee, evaluation questions, methods, and measures) – was developed collaboratively by the PPSI evaluation committee to evaluate pilot program initially planned for Minnesota. When the Minnesota legislation was not signed into law, the focus of PPSI shifted to Oregon. The Minnesota framework was used to develop the full methodology for evaluating the Oregon program and could be transferred to other states as well. In short, the model for this framework involves:
  + Working collaboratively with all stakeholders to define the goals of the program using the PPSI goals as a starting point, but adapting those goals to the needs of the state.
  + Draft evaluation questions that are relevant for the program based on those goals. The evaluation questions that were developed for OR are a starting point, but other states may have other issues to explore. The Evaluation Committee began with 27 questions and narrowed that number to 12 through a participatory prioritization process (Appendix A of Evaluation of Methodology) while maintaining the core topics included in the 27 original questions. Because the Committee was focused on the opportunity to maximize learning from the OR pilot, a new and untried approach to paint stewardship, for the benefit of the PPSI and future state-wide paint management programs, it was ambitiously comprehensive in its approach to evaluating this program. Other states may benefit from narrowing the scope of questions and focusing effort and resources on developing comprehensive information about the issues most critical to the success of a similar program in that particular state.
  + Determine the measures and data necessary to answer the evaluation questions and design collection methods for obtaining those data. The Evaluation Committee was ambitious in its design of measures and some were not or only partially activated because
    - The program was in the design phase and the level of information that would be available throughout implementation was an unknown.
    - By articulating what would be measured, the Evaluation Committee hoped to influence what would be done and what information would be provided.
    - The measures designed are, the evaluation committee believes, the measures necessary to answer the questions, so even if the measures were not activated for the OR pilot, they might be a starting point for future similar programs.
  + Thus, other states may want to consider identifying the key measures for each evaluation question and work to ensure those data are collected. This requires collaboration and explicit agreements between the stakeholders to ensure that the data is collected, credible, accessible, and timely. The evaluation method document is designed as flexible starting point; interested states should identify key areas of interest and prioritize matching evaluation questions and measures, and plan data collection accordingly. Thus, the evaluation framework is transferable to other states. The key caveats include: evaluation priorities must be customized to the interests of each state’s stakeholders and full development of the methodology requires commitment of resources (time, funding) to be successful. Additionally, fully integrating evaluation into program design requires close coordination and integration of Evaluation Committee with the design, planning and implementation teams and efforts.
  + This evaluation committee created a web based model (referred to as a “fuzzy logic model” by the evaluation team) of the OR pilot program to depict the program and related systems, organizations, processes and products as well as the role of measurement and evaluation in the program. Other states should consider this approach to depicting the program and its evaluation design. For one, a model allows the evaluation team to develop a depiction of the program that can convey a sense of what the program is intended to accomplish and how it is intended to operate. Second, a web-based model allows the program to maintain communication with program participants about performance, results and outcomes. This web-based model of the paint program embraces a fluid and flexible conceptualization of the program’s design to improve the capacity of program stakeholders to navigate the inherent complexity in this program. The web-based presentation of the model integrates web 2.0, graphic design and data visualization to create opportunities to account for this complexity and expand access and use of the evaluation process to a greater diversity of stakeholders over a longer period of time.
* States should also consider using a dashboard reporting system and to incorporate frequent reporting of results. A dashboard system could be incorporated into the web-based program model and would involve the state reporting a few key results on a frequent basis (e.g., volume of paint collected, number of collection sites, number of leftover paint gallons sold).
* Performance measurement and evaluation can be costly. Building data collection into program operations and creating partnerships offer opportunities to reduce costs and increase the efficiency of data collection and performance management.
  + For example, evaluation questions related to the impact of the education and outreach campaign required baseline and follow-up surveys of aspects of consumer awareness and behavior. The Evaluation Committee expected to receive the necessary data to determine impact of education and outreach from surveys implemented by PaintCare, but the baseline survey performed in August 2010 did not contain some data elements that were needed to assess impact. Additional resources for evaluation would have allowed for baseline and follow-up surveys to have been implemented and conducted based on the evaluation’s needs.
  + Also for efficiency and to reduce costs, the Committee partnered with Duke University, Georgia State University, and two graduate students to perform analyses and data collection. This approach worked well and allowed for data collection and analysis despite funding constraints.

**What are the best ways to communicate the results of the evaluation?**

* The Evaluation Team spent time up front during this project to identify the information needs of different stakeholders. This helped clarify what was needed for effective communication. However, the Evaluation Team was also operating under tight resources and tight deadlines. To effectively communicate to stakeholders, the Team developed the fuzzy logic model and the web site to communicate to the stakeholders. The model and its web-based presentation are described above. Their purpose was to provide a way of communicating evaluation results from this complex program.
* Based on the findings under Evaluation Question 1, PPSI participants prefer to use conference calls and email to receive and communicate information about the program. Participants also expressed a preference for face-to-face meetings when possible. The best modes for communicating evaluation results likely include:
  + Conference calls briefing stakeholders on the results.
  + Emails summarizing results in the format of a newsletter or fact sheet.
  + Presentation of results during a conference or other in-person meetings.
* The findings under question 1 also suggest that the use of a website is an underutilized mode for information communication. During the PPSI the website provided fairly limited information for use (i.e. minutes from the most recent meeting) and no opportunities for providing feedback or otherwise interacting with the information. This mode could become a useful venue for sharing evaluation results with a few changes:
  + Provide more information on a regular basis.
  + Allow readers the opportunity to interact with and respond to the information.
  + Update the information strategically. Add new resources and materials to the website around a focal point, such as a conference call or reporting date, when the material is most relevant to readers.
* Paintstewardshipprogram.com is a visualization of the program incorporating functional features that provide deep and diverse information about the program. It illustrates program implementation as well as the performance measurement and evaluation system and could be an effective tool for sharing information on an ongoing basis. A website may be accessible to a wider audience than other communication modes (e.g., conference calls) and would allow diverse audiences to focus on different components of the system (e.g., education and outreach materials, costs, environmental impacts).

# Evaluation Question 12: Unexpected Results

**During the program and for each of its primary components, what were the primary external, unexpected and/or unintended influences and consequences?**

External

* Minnesota Governor Tim Pawlenty twice vetoing the bill to create an industry-managed statewide paint stewardship and recycling program after the MN legislature had passed legislation twice by near-unanimous margins. His rationale was that the bill would put a double burden on the public, since it authorized a new fee to fund the program, and local governments currently spend public funds to dispose of and recycle paint. The PPSI organized collective support from industry, local governments, USEPA, and environmental organizations for the Minnesota legislation; the politics in blocking the program was unanticipated and delayed the implementation of a pilot program for 1.5 years.

Unexpected

* Effective collaboration was more time consuming and costly – more meetings, calls, committees – than was expected (See Question 1).
* Some retailers declined to show the fee on the receipt. Retailers were expected to want to show the fee to indicate the extra amount was not part of their price.
* Without funding for a facilitator/champion, the process became less collaborative, creating a gap between industry’s work in Oregon and, some stakeholders who feel not all the issues have been resolved as the system rolls out to other states.
* There were a large number of unlabeled and/or rusty cans of paint that cannot be accepted by program. The collection sites are instructed to not open the cans of paint and those cans are treated as non-program materials which must be managed by OR. (See Question 5)
* PPSI had limited representation from retailers and so the fact that they play a large role in the Oregon paint collection infrastructure was surprising [Elman, 2011]. Additionally, large retail chains (Loews, Home Depot, Walmart) declined to participate.
* The paint dialogue started in 2003 as a way for local governments to recoup the cost of managing leftover paint, but after initial discussions with various stakeholders the group recognized that was too narrow a focus which led to the larger PPSI goals [Elman, 2011].

Unintended

* The private-public partnership and the waste hierarchy model (reduce, reuse, recycle) were at odds in this program. The public preference in the waste hierarchy model is for reduction and reuse. There were opportunities to stress both reduction and reuse under this program. However, the program as-designed tended to focus more on collection and recycling. Other state programs should consider a clear articulation of the program priorities ensure alignment with existing program and policy goals and reduce the potential confusion amongst consumers.
* The reliance on retailers as collection locations had a negative impact on the program’s ability to divert high quality leftover paint for reuse, which is ranked as a preferred use. Further exploration into this topic—what are the obstacles (e.g., liability; competition for the sale of virgin paint) and solutions (e.g., redistribution to HHW collection locations or Reuse type stores)—is needed.

1. <http://www.paintcare.org/index.php>. [↑](#footnote-ref-1)
2. The categories below do not represent official definitions, but reflect the Evaluation Team’s view of the types of products on the market. [↑](#footnote-ref-2)