Producer Responsibility Scenario Analysis

Product Stewardship in Oregon and Expected Implications for Metro's Hazardous Waste Program

Prepared for

Metro

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Seattle | Portland | San Jose
www.cascadiaconsulting.com

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Executive Summary

Extended producer responsibility (EPR) programs could substantially reduce the net costs of Metro's Hazardous Waste Program while increasing the quantities of household hazardous waste collected by Metro and retail or mail-back collectors. If extensive EPR programs can be implemented in Oregon over the next decade, and producer responsibility organizations (PROs) contract with Metro as a service provider, then Metro has the potential to continue reducing net costs while maintaining services. Through its partnership with the PaintCare program since 2010, Metro received annual payments of more than $1 million for paint recycling, reducing its net costs.

Metro and Cascadia Consulting Group developed **four scenarios with varying assumptions on when new EPR laws might take effect** in Oregon. Scenarios were analyzed to estimate the effects on quantities of hazardous waste collected by Metro as well as on net and total program costs.

In the scenario that assumes the strongest EPR programs, Metro's net annual costs are projected to decrease from the current $3.7 million to an estimated **$2.0 million** after 10 years.

Research Methods

To support the development and analysis of the EPR scenarios, Cascadia conducted background research including the following:

- Review of extended producer responsibility or product stewardship programs elsewhere.
- Interviews with regional and state stakeholders on opportunities and barriers regarding potential new EPR programs in Oregon.
- Analysis of Metro's program data on waste quantities, costs, payments, and customers.
- Assessment of potential synergies with programs in neighboring states.

Costs are divided into direct and indirect costs. **Direct costs** are labor, materials, and disposal costs directly attributable to specific wastes collected. **Indirect costs** are other operating costs not directly attributable to specific wastes. Currently, some of the program's direct costs are offset by payments received from small business customers (conditionally exempt generators) or by payments from PaintCare. Administrative and capital costs, which are handled through a separate process in Metro's budget system, are not included in the analysis.

The scenarios included **Limited EPR**, **Moderate EPR**, and **High EPR scenarios**, along with a **Status Quo** scenario that assumes no new EPR programs are added in Oregon. The four scenarios varied mainly as to what hazardous materials would be covered and how quickly legislation would be passed. Developing the scenarios required making assumptions regarding:

- The portion of covered products that would be handled by Metro's collection program as opposed to retail or mail-back collection by other entities.
- Rates of growth for the quantity of each waste type collected at Metro facilities each year, taking into account recent decreases in customer participation due to retail collection of paint since 2010.
- Opportunities to recover the costs of handling EPR-covered products as a collector contracted to PROs; the base assumption is that PRO payments would reimburse Metro for direct costs.

Key Findings

Based on the background research and assumptions, Cascadia projected waste quantities, costs, and customer counts for Metro's collection program over the next 10 years. **Figure 1** compares current costs and quantities with 10-year projections.

- **Quantities** of hazardous waste collected *by Metro* are expected to decrease in the short term and increase in the long term for all scenarios. Customer counts, assumed to scale with quantities, follow the same pattern.
- ***Total* operating costs** are also expected to decrease in the short term and increase in the long term for all scenarios.
- ***Net* operating costs**—after payments from PROs to Metro for serving as a collector—are expected to decrease substantially in the High and Moderate EPR scenarios, decrease slightly in the Limited EPR scenario, and increase slightly in the Status Quo scenario.

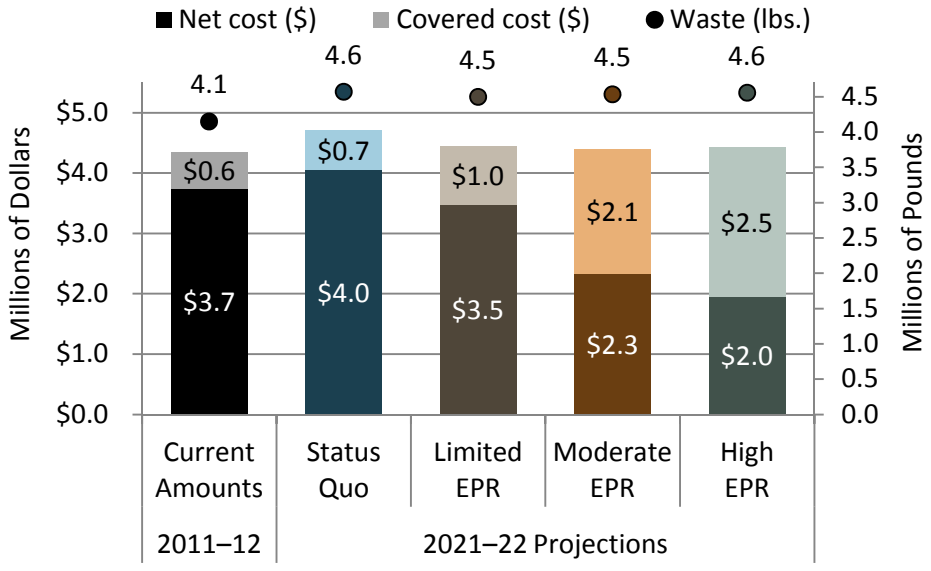
Recommended Next Steps

To prepare for a possible role as a service provider to additional producer responsibility organizations, Metro should consider the following steps:

- **Develop a written plan for achieving higher convenience levels**, which will likely be required under state EPR programs.
- **Continue to pursue efficiencies** that reduce operating costs while maintaining high safety standards.
- **Assess the implications of various PRO payment systems,** particularly those in which PROs do not pay for overhead costs or do not pay all of Metro's direct costs.

Also included are suggested steps for fostering the adoption of new stewardship legislation and specific ideas for evolving Metro's collection program to be part of future producer responsibility programs.

Figure 1. EPR Scenario Analysis Results: 10-Year Projections (2021–2022)



1. Study Overview and Key Findings

Metro commissioned Cascadia Consulting Group to analyze scenarios for extended producer responsibility (EPR) in Oregon over the next decade. With Metro's input, Cascadia identified four scenarios that vary in their coverage of hazardous household products, timing of new EPR programs, and expected levels of future collection at Metro. The report identifies 10 categories of products that are currently or have the potential to be covered by EPR programs. While some products are expected to be collected through retail sites and mail-back programs, Metro assumes that it will continue to collect the majority of household hazardous waste, likely under a contract with producer responsibility organizations (PROs).

Scenarios were developed using information gathered through a review of EPR approaches in use elsewhere in the United States and Canada; interviews with local stakeholders in government, the waste industry, and nonprofit organizations in the Northwest; and an assessment of potential synergies with EPR programs in Washington, California, and other key states.

The scenarios were analyzed using current program data on quantities collected, historical growth rates, program costs, and participation provided by Metro as well as additional information on Oregon's current paint EPR program from PaintCare's 2011 and 2012 annual reports and a legislative report prepared by the Oregon Department of Environmental Quality.

The analysis considered the operational implications of increased collection quantities and customers, options for increasing capacity, and the potential for Metro to expand its role as a contractor to PROs.

Existing Conditions

In the program year from July 2011 through June 2012 (2011–2012), Metro collected approximately **4,148,000 pounds of hazardous waste**, more than half of which was paint.[1] **Latex and oil-based paint** covered by an existing EPR pilot **composed nearly half (48%) of these materials**. Unlabeled paint not covered in the EPR pilot contributed another 3 percent of materials.

Total program operating costs were estimated at $4,349,000 in 2011–2012, consisting of:

- **$606,000 in direct costs to handle and dispose of waste covered** by an EPR program or brought by business customers (who pay Metro for the direct costs of their waste).
- **$2,220,000 in direct costs** to handle and dispose of waste not covered under EPR.
- **$1,524,000 in indirect costs** (not attributable to individual wastes).
- **Additionally, administrative and capital costs** totaled $1,200,000 in 2011–2012 but were not included in the scenario analyses; Metro's financial department calculates these costs each year based on operating budget, number of staff, full-time equivalent employees, and other factors.

Metro served nearly **58,000 household customers** in 2011–2012 and more than **800 business customers** (Conditionally Exempt Generators, or CEGs).

[1] Figures for waste quantities in pounds and for costs are rounded to the nearest thousand; as a result, individual figures may not sum to their totals.

Extended Producer Responsibility Scenarios

This report analyzed four extended producer responsibility (EPR) scenarios developed by Cascadia and Metro. The scenarios represent a range of possible futures in which Metro continues to serve as the primary collector of most household hazardous waste:

- **High EPR scenario**, with early and extensive EPR programs that eventually cover the vast majority of products collected by Metro. For some covered products, a portion of the total quantity is collected through retail locations or mail-back collectors.
- **Moderate EPR scenario**, with EPR programs that are somewhat less extensive and delay the coverage of some products. For some covered products, a portion of the total quantity is collected through retail or mail-back collectors.
- **Limited EPR scenario**, with more modest EPR programs that cover fewer products and delay coverage of some products. For covered products, a portion of the total quantity is collected through retail or mail-back collectors.
- **Status Quo scenario**, in which the current EPR program for paint continues, but no new EPR programs are initiated.

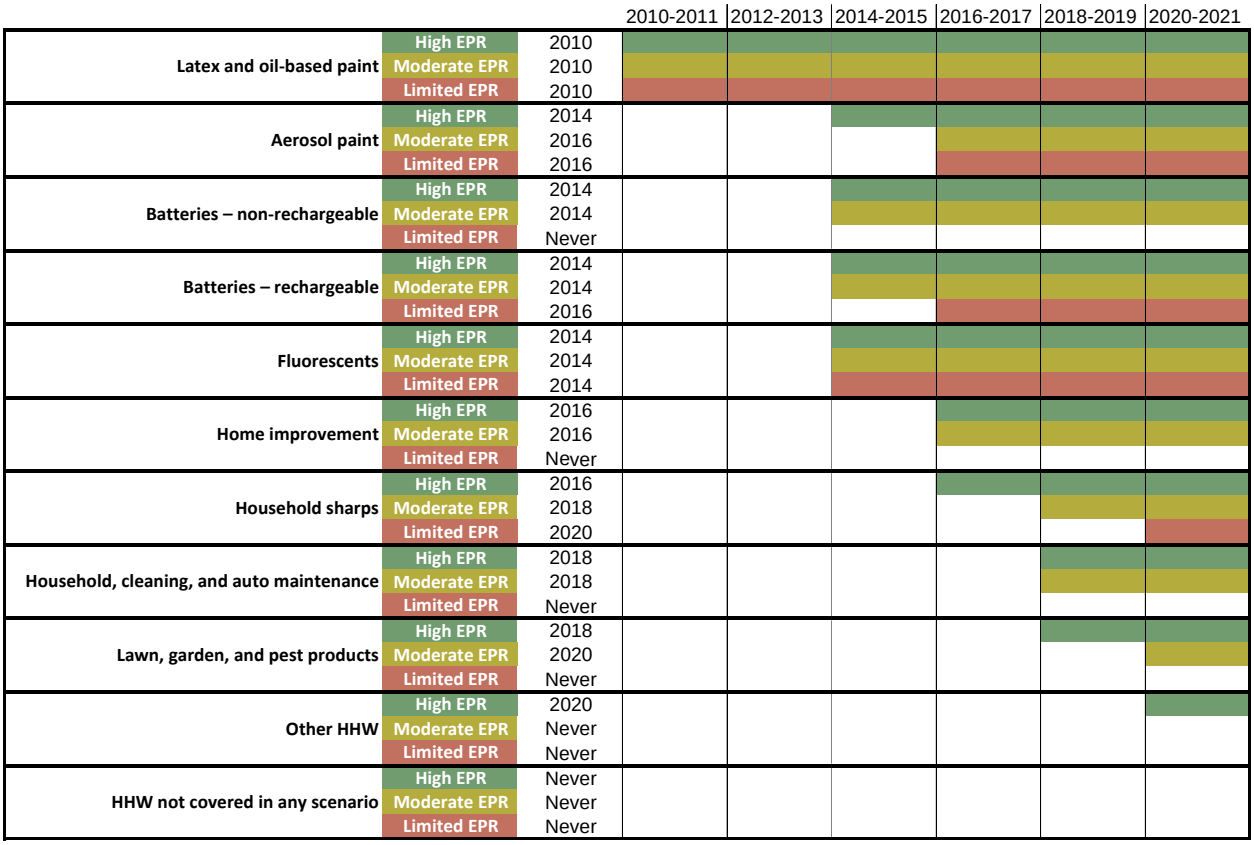
Table 1 presents assumptions made about the years in which EPR programs begin for each group of products covered under product stewardship; **Figure 2** displays this information graphically. Scenarios are also based on assumptions about which products may be collected through retail channels under EPR, the share of products collected through Metro versus retail channels, and growth rates for waste quantities collected at Metro's Hazardous Waste Program.

All scenarios use the same base growth assumptions that collected quantities of all materials continue the decrease seen in 2011–2012 through the 2013–2014 program year, stabilize in 2014–2015, and begin to grow again starting in 2015–2016. Eventually, EPR-covered paint and products not covered by EPR programs are expected to increase by 3 percent per year, while other EPR products grow by 5 percent per year.

Table 1. Year that EPR Assumed to Start for Each Product Stewardship Category in Each Scenario

Product Categories for Product Stewardship	Status Quo	Limited EPR	Moderate EPR	High EPR
Latex and oil-based paint	2010	2010	2010	2010
Aerosol paint	--	2016	2016	2014
Batteries – non-rechargeable	--	--	2014	2014
Batteries – rechargeable	--	2016	2014	2014
Fluorescents	--	2014	2014	2014
Home improvement	--	--	2016	2016
Household sharps	--	2020	2018	2016
Household, cleaning, and auto maintenance	--	--	2018	2018
Lawn, garden, and pest products	--	--	2020	2018
Other HHW	--	--	--	2020
HHW not covered in any scenario	--	--	--	--

Figure 2. Year that EPR Assumed to Start for Each Product Stewardship Category in Each Scenario



Analysis of Scenario Effects

- **Total quantities of HHW collected *by Metro* are expected to decrease in the short term and increase in the long term (by 2021–2022) for all scenarios** using the base growth assumptions. Compared to 2011–2012, projected quantities collected in 2014–2015 are expected to decrease by 9 to 12 percent (to 88% to 91% of 2011–2012 quantities). By 2021–2022, projected quantities are expected to be 8 to 10 percent higher than in the base year.
  - Total quantities collected by both Metro *and* retail sites under EPR program are expected to increase for all scenarios.
- **Total participation is expected to decrease in the short term and increase in the long term (by 2021–2022) for all scenarios**, as collection quantities change. Estimates for 2014–2015 range from more than 52,000 to more than 53,000 participants, while estimates for 2021–2022 range from more than 64,000 to nearly 65,000—compared with nearly 59,000 in 2011–2012.[2]
- ***Total* operating costs are expected to decrease in the short term and increase in the long term (by 2021–2022) for all scenarios** using the base growth assumptions. Compared to 2011–2012, projected total operating costs in 2014–2015 are expected to decrease by 5 to 9 percent (to 91% to 95% of 2011–2012 costs, in constant dollars). By 2021–2022, projected total operating costs are expected to be 1 to 8 percent higher than in the base year. *Note: this analysis excluded administrative and capital costs, assuming that Metro's existing facilities could handle the increase in collected quantities.*
- ***Net* operating costs—after payments from producer responsibility organizations (PROs) to Metro for serving as a contracted collector and from businesses using Metro's Conditionally Exempt Generator disposal program—are expected to *decrease* in the High and Moderate EPR scenarios, decrease slightly in the Limited EPR scenario, and increase slightly in the Status Quo scenario.** Costs vary significantly depending on the scenario and assumptions about contracted payments. Contracted payment amounts will depend on a variety of factors including but not limited to EPR legislation and the relationship of PROs to contracted collectors and regulators. These scenarios present a base case in which PROs pay all direct costs for EPR-covered products; however, contracted payments instead may cover only a portion of direct costs or, alternatively, could pay for all direct costs plus some portion of indirect costs.
  - In the **High EPR scenario**, if PROs pay all direct costs for EPR-covered products, Metro's net costs could *decrease* to approximately half of current net costs.
  - With alternative assumptions in the **High EPR scenario**, if manufacturers continue to cover all of Metro's direct costs for paint but pay only half of direct costs for other EPR-covered products, Metro's net costs would remain at nearly 80 percent of the current level.
  - In the **Status Quo scenario**, if the PRO for paint continues to pay all direct costs for EPR-covered paint, Metro's net costs could increase to approximately 108 percent of current net costs.

[2] Figures for projected participation are rounded to the nearest thousand.

Table 2 summarizes the estimated effects of EPR programs on participating customers, total pounds of waste collected by Metro, total program cost, and net program cost (assuming PROs pay all direct costs for EPR-covered products). **Figure 3** shows the net costs and total costs graphically.

Table 2. Summary of Effects of EPR Programs in 3 Years (2014–2015, short-term decrease) and 10 Years (2021–2022, long-term recovery)

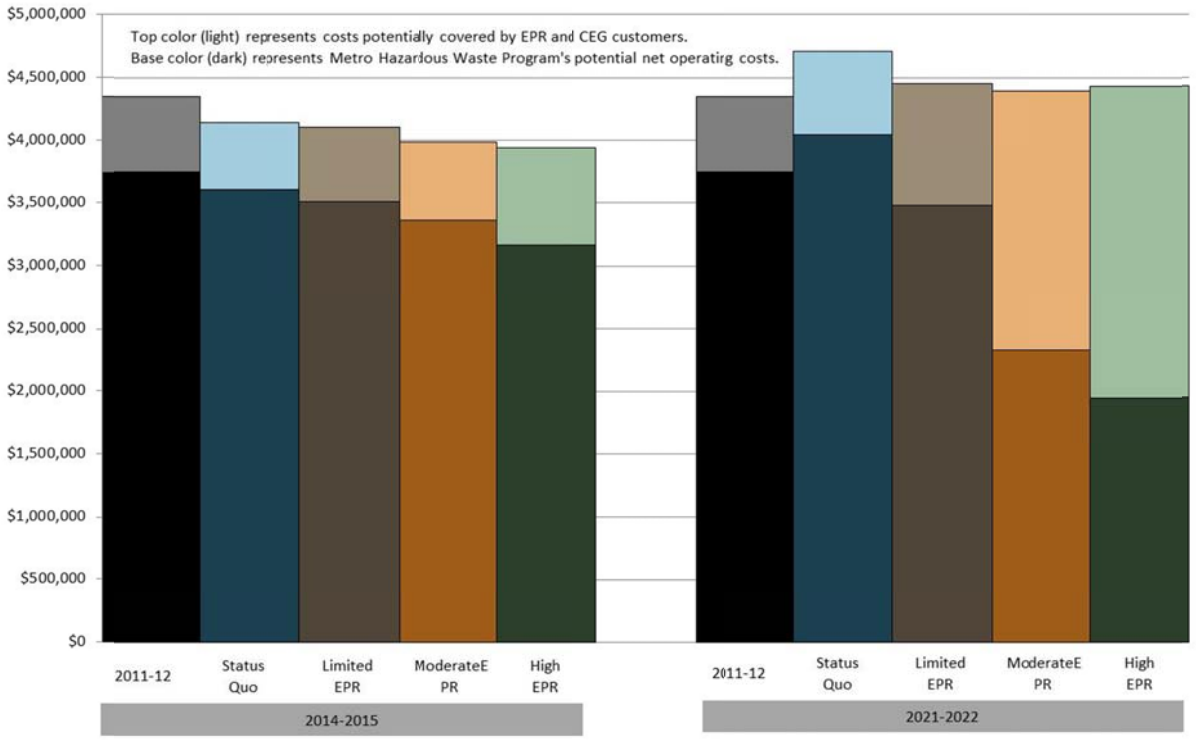
	2011–2012	2014–2015			
	Actual	Status Quo	Limited EPR	Moderate EPR	High EPR
Customers	58,800	53,400	53,200	52,200	51,800
Waste (lbs.)	4,148,000	3,770,000	3,753,000	3,682,000	3,652,000
Total cost*	$4,349,000	$4,146,000	$4,105,000	$3,987,000	$3,937,000
Net cost†	$3,743,000	$3,606,000	$3,507,000	$3,359,000	$3,171,000

	2011–2012	2021–2022			
	Actual	Status Quo	Limited EPR	Moderate EPR	High EPR
Customers	58,800	64,800	63,700	64,300	64,600
Waste (lbs.)	4,148,000	4,569,000	4,497,000	4,535,000	4,558,000
Total cost*	$4,349,000	$4,702,000	$4,450,000	$4,391,000	$4,432,000
Net cost†	$3,743,000	$4,048,000	$3,481,000	$2,330,000	$1,951,000

* *Includes only operating costs for the Hazardous Waste Program; administrative and capital costs are not included.*

† *Assumes PROs pay all direct costs for all EPR-covered products.*

Figure 3. Summary of Potential Net and Total Operating Costs



Operational Implications

Key findings regarding Metro's capacity to handle the expected changes in customers and collected waste quantities as well as its ability to become a service provider for producer responsibility organizations include the following:

- While Metro does not seek to compete when a local private service provider meets the same level of safety, Metro can offer PROs an existing, safe, efficient, and well-known HHW collection system.
- Metro's current infrastructure includes two permanent collection facilities, multiple mobile collection events, and very limited door-to-door collection services.
  - To mitigate the short-term decrease in participation, Metro could conduct an advertising campaign promoting the permanent collection facilities.
  - Options for increasing capacity in the long term include:
    - Relocating the Metro South Station to add capacity and opening both facilities on Sundays.
    - Expanding mobile collection events.
    - Adding satellite collection sites, which are estimated to have per-pound collection costs that are higher than permanent facilities but lower than mobile events.
    - Partnering with existing private or public sites permitted for solid or hazardous waste storage.
- EPR regulations may require PROs to meet requirements for performance, convenience, and collection quantities. PROs will likely be interested in the cost-effectiveness of potential service providers. Metro's ability to satisfy these potential requirements involves the following factors:
  - Metro has a strong performance record of handling materials in a manner that protects human health and the environment and that prioritizes recycling and recovery.
  - Metro may need to increase collection opportunities to meet EPR convenience requirements.
  - Metro's high service levels result in relatively high collection rates compared to other household hazardous waste programs, and additional promotion could increase collection further.
  - Metro has higher costs than some programs elsewhere because of its commitment to safety, customer service, and "one-stop shopping" convenience. Because PROs will consider service-provider costs, Metro should continue to pursue efficiencies and assess the acceptability of PRO payment systems that do not cover all direct and overhead costs.

Potential Next Steps

To prepare for a possible role as a service provider to PROs, Metro should consider the following steps:

- **Develop a written plan for achieving higher convenience levels**, which will likely be required under state EPR programs.
- **Continue to pursue efficiencies** that reduce operating costs while maintaining high safety standards.
- **Assess the implications of various PRO payment systems,** particularly those in which PROs do not pay for overhead costs or do not pay all of Metro's direct costs.

Beyond continuing to collect hazardous waste for EPR programs, Metro could play other roles such as:

- **Working with the Oregon State Legislature, state Department of Environmental Quality, and other groups** on new legislation and rulemaking regarding EPR programs.
- **Partner with regional and national entities on exploring EPR approaches**; such work could include **stakeholder outreach** to bring interested parties together to work collaboratively.
- **Providing premium collection services** beyond those available through EPR programs. For example, Metro could provide more convenient collection options or accept larger quantities per person than required by EPR regulations. (Note, however, that PROs may not pay for the additional costs of these services.)
- **Delivering education and outreach** to supplement efforts that may be required of EPR programs.
- **Serving as a model paint collection and recycling service provider** to other government agencies and private service providers, as EPR programs for paint are implemented in other states.

2. Analysis of Scenarios for Extended Producer Responsibility

Cascadia worked with Metro to develop four reasonably likely scenarios for extended producer responsibility (EPR) in Oregon over the next decade. The scenarios vary in coverage of hazardous household products, timing, and expected levels of future collection. The analysis identifies 10 categories of products that are or have the potential to be covered by EPR programs. While some products are expected to be collected through retail sites and mail-back programs, Metro assumes that it will continue to collect the majority of household hazardous waste, likely under contract with producer responsibility organizations (PROs).

Scenarios were developed using information gathered through a review of EPR approaches in use elsewhere in the United States and Canada (see Appendix A); interviews with local stakeholders in government, the waste industry, and nonprofit organizations (see Appendix B); and an assessment of potential synergies with EPR programs in Washington, California, and other key states (see Appendix C).

The scenarios selected for analysis represent ones that are both reasonably likely and reflect Metro's expected efforts with regard to extended producer responsibility legislation. The scenarios describe the hazardous waste products expected to be covered by potential future EPR programs, estimated timing for program implementation, and performance standards. For comparison purposes, we also developed a Status Quo scenario based on continuation of existing services in the absence of new EPR programs.

The scenarios were analyzed using program data on quantities collected, historical growth rates, operating costs, and participation provided by Metro (see Appendix D) as well as additional information on PaintCare's current EPR program from PaintCare's 2011 and 2012 annual reports and a legislative report prepared by the Oregon Department of Environmental Quality. Using these data, Cascadia developed assumptions for the four scenarios and used them to project changes in quantities collected under EPR. Key analysis assumptions are described in detail in the *EPR Scenarios Overview and Assumptions* section beginning on page 20.

The remainder of this chapter presents:

- ***Existing Conditions***, with data on collection quantities, program costs, and participation for Metro's Hazardous Waste Program as well as information on the current EPR program for paint.
- ***Scenario Overviews and Assumptions***, listing data sources and assumptions regarding collection quantities, growth rates, costs, and payment levels from producers.
- ***Detailed Scenarios and Analysis of Effects***, describing each scenario and estimating quantities, participation, and operating costs for each scenario after 3 and 10 years.
- ***Scenario Analysis Effects with Alternatives Ranges***, containing charts with side-by-side comparisons of key results for each scenario and with alternative ranges using different growth assumptions.

Existing Conditions

Metro's Current Hazardous Waste Program

- In the program year from July 2011 through June 2012 (2011–2012), Metro collected approximately **4,148,000 pounds of hazardous waste**.[3]
  - **Latex and oil-based paint** covered by an existing pilot EPR program **composed nearly half (48%) of this waste**. Unlabeled paint not covered in the EPR pilot contributed another 3% of waste.
- **Total program operating costs were estimated at $4,349,000** in 2011–2012, consisting of:
  - **$606,000 in direct costs to handle and dispose waste covered** by an EPR program or brought by business customers (who pay Metro for the direct costs of their waste).
  - $2,220,000 in direct costs to handle and dispose waste not covered under EPR.
  - **$1,524,000 in indirect costs** (not attributable to individual wastes).
  - **Additionally, administrative and capital costs** totaled $1,200,000 in 2011–2012 but were not included in the scenario analyses; Metro's financial department calculated these costs each year based on operating budget, number of staff, full-time equivalent employees, and other factors.
- Metro served nearly **58,000 household customers** in 2011–2012 and more than **800 business customers** (Conditionally Exempt Generators, or CEGs).

Collected Quantities

Metro's Hazardous Waste Program collected approximately 4,148,000 pounds of materials in program year 2011–2012. Of the materials collected, about 82 percent were delivered by household customers to the Metro South and Metro Central HHW facilities, while household customers delivered about 12 percent to mobile neighborhood collection events.

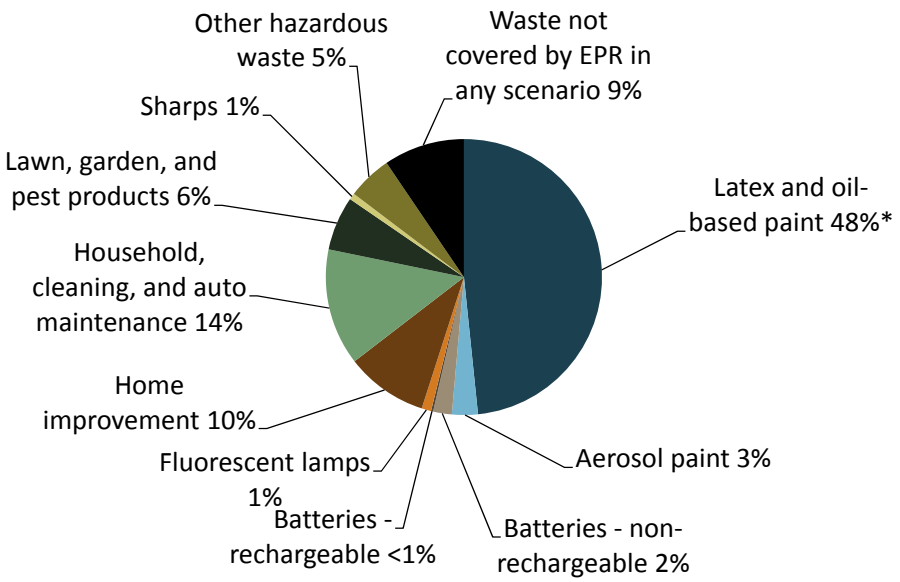
Approximately 7 percent of collected quantities were delivered by businesses participating in the Conditionally Exempt Generator (CEG) program. Metro's CEG program provides businesses that generate small quantities of hazardous waste a safe and convenient disposal option for a fee. Business customers pay the estimated direct costs that Metro incurs to collect, handle, and safely dispose of their hazardous waste.

Materials collected were organized based on their potential **product stewardship category**. As shown in **Figure 4**, nearly half (48%) of the materials collected are latex and oil-based paints, which are already covered by a pilot EPR program that began collection in July 2010.

Fluorescent tubes and CFLs also make up a disproportionately large volume of materials collected (requiring extra storage space), although they are relatively lightweight (46,000 pounds).

[3] Figures for waste quantities in pounds and for costs in dollars are rounded to the nearest thousand; as a result, individual figures may not sum to their totals.

Figure 4. Quantities Collected by Metro in 2011–2012, by Product Stewardship Category



* *An additional 110,000 pounds of combined latex and oil-based paint were not accepted by PaintCare (for example, unlabeled containers of paint); these quantities are included as "waste not covered by EPR in any scenario." (Metro may seek to negotiate with PaintCare in the future to cover this paint.)*

Program Costs and Cost Structure

Metro incurs three types of costs associated with its Hazardous Waste Program and the separate but related MetroPaint program; both programs also generate some revenues. For most wastes collected by the Hazardous Waste Program, Metro pays an outside contractor to dispose of the waste. In contrast, Metro transfers latex paint to MetroPaint, so the Hazardous Waste Program's disposal costs for latex paint are typically counted in the MetroPaint budget. For the scenario analysis, however, a per-gallon cost was estimated and included in the Hazardous Waste Program's estimated costs. Metro also receives some fees, contracted payments, and revenues. Previously, local hazardous waste programs elsewhere in the region paid MetroPaint to process their latex paint. PaintCare, the manager of the statewide EPR pilot program, currently has a contract that pays MetroPaint to continue its processing operations. The costs and revenues for the Hazardous Waste Program and MetroPaint fall into four main categories:

1. **Direct operating costs** are directly proportional to the quantities of waste collected or paint processed, such as staff time for directly handling paint and other hazardous waste.
2. **Indirect operating costs** cover materials and activities related to operations but that are not considered to rise or fall in a direct relationship with collection or processing quantities, such as staff time for training and facility maintenance.
3. **Administrative and capital costs** pay for administrative services, such as human resources, and for capital contributions toward renewal and replacement of facilities and vehicles. These services are required to support ongoing operations. These costs are not included in the scenario analysis.
4. **Fees, contracted payments, and other revenues** come from a variety of sources, including users of the Hazardous Waste Program, PaintCare, and purchasers of recycled paint.

Table 3 presents examples of each type of cost and payment. Because this analysis focuses on the Hazardous Waste Program rather than on MetroPaint, operating costs for MetroPaint are not divided into direct and indirect costs. Examples of administrative and capital costs are the same for the Hazardous Waste Program and MetroPaint.

Table 3. Cost and Revenue Examples

	Hazardous Waste Program	MetroPaint
Direct operating costs	▪ Staff time to remove waste from vehicles and package it for transport ▪ Supplies needed to package waste (such as drums, absorbent material, and personal protective equipment) ▪ Disposal costs	▪ Staff time to accept, separate, process, inspect, and sell recycled latex paint ▪ Supplies and equipment needed to process and sell recycled latex paint ▪ Facility lease and maintenance ▪ Utility and vehicle expenses ▪ Program outreach and advertising ▪ Payments to PaintCare (fees on paint sold) ▪ 7.5% excise tax on sales revenue and PaintCare payments (directed to Metro's general fund)
Indirect operating costs	▪ Staff time for daily facility housekeeping and checklists, training, and routine paperwork ▪ Supplies not related to disposal such as tools, hardware, lab supplies for identifying unknown materials, cleaning supplies, carts, totes, and cages ▪ Facility maintenance ▪ Utility and vehicle expenses ▪ Program outreach and advertising	
Administrative and capital costs	▪ Contributions to cover human resources, risk management, information technology (IT), legal, accounting, and other administrative services ▪ Contributions to a capital fund for renewal and replacement of facilities and vehicles	
Fees, contracted payments, and revenues	▪ Fees from businesses using the conditionally exempt generator (CEG) disposal program ▪ Fees from household customers (beginning August 2011)	▪ Recycling fees from jurisdictions outside Metro for MetroPaint to accept their latex paint for processing (before the EPR program) ▪ Contracted payments from PaintCare for processing latex paint and separating latex from oil-based paint (through the EPR program) ▪ Revenues from the sale of recycled paint, painting supplies, and scrap metal (empty paint cans)

The scenario analysis and the remainder of this section focus on the **operating costs for the Hazardous Waste Program**. MetroPaint's cost structure was described to provide context on this related program.

In 2011–2012, the *operating* costs for **Metro's Hazardous Waste Program** for households and CEG businesses were approximately $4,065,000, plus an additional estimated $284,000 for MetroPaint to process latex paint collected by the Hazardous Waste Program, for a total of **$4,349,000** in estimated operating costs, before accounting for contracted payments from PaintCare or fees from CEG business customers. **Table 4** presents the estimated direct operating costs (by product stewardship category), indirect operating costs, total operating costs, and administrative and capital costs for Metro's Hazardous Waste Program in program year 2011–2012.

Metro has calculated direct costs per pound for most waste types as part of the CEG program, so that Metro can charge fees to business customers for the costs of the waste they dispose. This scenario analysis used CEG prices as well as additional estimates provided by Metro for materials for which direct costs had not previously been calculated. Appendix D presents the estimated direct costs by waste type used in this analysis.[4]

Gross direct costs for collected waste were calculated by multiplying the quantities of each waste type collected by Metro in 2011–2012 by estimated direct per-pound costs. **In 2011–2012, gross direct costs were estimated to be $2,826,000** for the Hazardous Waste Program. Net direct costs were estimating by excluding direct costs for EPR-covered products (latex and oil-based paint) and for waste from CEG business customers. **Net direct costs were estimated to be $2,220,000** in 2011–2012.

Indirect operating costs for the Hazardous Waste Program in 2011–2012 were calculated by subtracting gross direct costs from total operating costs. **Indirect operating costs were estimated to be $1,524,000** in 2011–2012.

In 2011–2012, the **administrative and capital costs were approximately $1,200,000** for the Hazardous Waste Program. Projecting administrative and capital costs was beyond the scope of this analysis. Their calculation depends on complex formulas using inputs such as operating budget provided by Metro, number of employees, number of full-time-equivalent employees, age and condition of facilities and vehicles, and factors outside the Hazardous Waste Program.

In 2011–2012, **household and CEG business customers paid $204,000 in user fees**. Starting in August 2011, household customers began paying a flat fee of $5 to drop off their hazardous waste. CEG business customers pay variable fees—depending on the materials and quantities they bring—to cover the direct costs of handling and disposing their waste. Note that the scenario analysis does not use this figure for two reasons. First, to simplify the modeling, we estimated fees from CEG customers, which are based on material types and quantities disposed instead of number of participants. Second, the analysis model needed to apportion direct costs (theoretically equivalent to user fees) across specific material types. The model estimates the direct cost of each type of waste from CEG customers based on the estimated total quantities disposed by material type and a single unit price for each material type. The estimated direct per-pound cost of handling and disposing of CEG waste differs because the scenario analysis used aggregated waste quantities and costs for handling and disposal, while CEG customer fees are tailored to the specific products and container types delivered by each business.

[4] Estimating the direct cost for latex paint presented a special challenge because Metro does not pay an explicit disposal cost for this waste because it is transferred to MetroPaint for processing. This analysis estimated the disposal cost for latex paint by dividing MetroPaint's operating costs in 2011 by the pounds of paint recycled by MetroPaint in 2011. This disposal cost was added to an estimated handling cost to calculate a direct cost per pound for latex paint.

Table 4. Estimated Costs for Metro's Hazardous Waste Program, 2011–2012

Product Stewardship Category	2011–2012 Costs
Latex and oil-based paint*	$469,000
Aerosol paint	$205,000
Batteries – non-rechargeable	$153,000
Batteries – rechargeable	$17,000
Fluorescents	$110,000
Home improvement	$265,000
Household sharps	$177,000
Household, cleaning, and auto maintenance	$169,000
Lawn, garden, and pest products	$503,000
Other HHW	$357,000
HHW not covered in any scenario	$403,000
Direct Operating Costs for EPR-Covered Products and CEG Waste	**$606,000**
Direct Operating Costs for Products Not Covered	**$2,220,000**
Indirect Operating Costs	**$1,524,000**
Total Operating Costs	**$4,349,000**
↓	↓
Total Operating Costs	**$4,349,000**
Administrative and Capital Costs	**$1,200,000**
Customer Fees (CEG businesses and households)	**(204,000)**
Estimated PaintCare Fees for Metro-Collected Latex Paint	**(284,000)**
Total Hazardous Waste Program Costs Net of Fees	**$5,062,000**

* *The costs for latex and oil-based paints include the direct costs to handle both paints and to recycle latex paint that is both collected by Metro's Hazardous Waste Program and processed MetroPaint. For most materials, Metro's Hazardous Waste Program receives a bill from an outside vendor for processing. In contrast, for latex paint, Metro's Hazardous Waste Program transfers the material to MetroPaint (without receiving a bill); MetroPaint incurs operating costs to process the latex paint; and then MetroPaint receives fees from the PaintCare EPR program to "cover" the cost of recycling. To reflect the total operating cost that should be attributable to the handling and processing of latex paint collected by Metro's Hazardous Waste Program as well as the financial benefit from the EPR program for paint, these estimated covered costs ($284,000) were added to the Metro Hazardous Waste Program's actual expenditures in 2011–2012 ($4,065,000) to show what expected operating costs would be in the absence of EPR and were then subtracted again as fees paid by PaintCare to show actual net costs.*

Participation in Metro's Hazardous Waste Collection

In 2011–2012, Metro served nearly 59,000 customers. As shown in **Table 5**, these customers included:

- Approximately 58,000 **households** brought HHW to Metro Central Station, Metro South Station, and mobile neighborhood collection events.
- Approximately 800 **businesses** that are conditionally exempt generators (CEGs) brought hazardous waste to the Metro Central and Metro South stations.

Based on participation figures and quantities collected, household customers visiting the Metro Central and Metro South stations brought an average of 79 pounds of waste per visit, while household customers at mobile neighborhood collection events brought an average of 55 pounds each. CEG business customers brought an average of 337 pounds of waste per visit.

Table 5. Total HHW/CEG Customers Visits, 2011–2012

	Central Station	South Station	Mobile Event	Total
Households	19,146	30,048	8,798	**57,992**
CEG business	440	365	NA	**805**
Total	**19,586**	**30,413**	**8,798**	**58,797**

In 2011–2012, Metro's fixed facilities operated from 9 a.m. to 4 p.m. on Monday through Saturday except Thanksgiving, Christmas, and New Year's Day (312 days per year). Metro also held 34 mobile neighborhood collection events. The peak numbers of customers per day were 200 at the Metro South Station and 149 at the Metro Central Station. Metro estimates that each facility can currently serve approximately 225 customers per day.

Current EPR Programs Affecting Metro

Metro's Hazardous Waste Program is primarily affected by one EPR program: for **latex and oil-based architectural paint**. The program is managed by PaintCare, a producer responsibility organization (PRO), on behalf of paint manufacturers represented by the American Coatings Association. PaintCare, in turn, establishes agreements with Metro's Hazardous Waste Program, other hazardous waste programs, retailers, and others to implement collection, transportation, recycling, and disposal of leftover and unwanted paint in Oregon. Metro has an extensive role in the PaintCare program because it collects covered paint products, sorts latex from oil-based paint, processes latex paint into a recycled product, and sells recycled paint to the public and to retail paint stores in the region. While PaintCare does not pay for collection, the PRO pays for Metro to sort paint from hazardous waste, process latex paint, and manage recycled paint sales.

After the EPR program for paint began in July 2010, quantities of *latex* paint collected in the three-county region (Clackamas, Multnomah, and Washington) increased from an estimated 2,004,000 pounds collected by Metro in calendar year 2009 to an estimated 2,245,000 pounds collected by both Metro and retailers in program year 2010–2011.[5] In the second year of the EPR program, region-wide

[5] PaintCare, *Oregon Paint Stewardship Pilot Program Annual Report*, 2011, (using PaintCare's estimate that 75% of all covered paint collected is latex) and collection data for 2009 provided by Metro. PaintCare's figures for pounds collected are based on

quantities did not change significantly. Considering all paint covered by the EPR program in the Metro region, PaintCare reported that 2,876,780 pounds were collected in 2011–2012, compared to 2,866,760 pounds in the previous program year (a 0.3% increase).

While total regional quantities did not change, quantities collected by Metro's Hazardous Waste Program decreased dramatically, likely because customers diverted paint to retail drop-off sites. In 2011–2012, Metro collected 2,006,000 pounds of paint, a decrease of nearly 20 percent compared to 2010–2011 (before PaintCare began collection), when Metro collected 2,493,000 pounds. At the same time, collected quantities of other materials decreased by approximately 10 percent, and numbers of participants decreased by approximately 8 percent.

The decrease in collected quantities of other materials and participation is assumed to be related to the drop in latex paint quantities collected. The model assumes decreases in collection and participation were caused primarily by the introduction of the paint EPR program. Based on the limited experience of hazardous waste programs that have changed their program to stop collecting latex paint, the model assumes that both participation and quantities will decrease for three years before stabilizing and beginning to grow again. Following a recovery period, the quantities are expected to eventually increase at previous rates.

Paint is widely considered to be a loss-leader, distinctive in its ability to drive participation levels and quantities collected. For example, a 2006 survey of Metro mobile event customers found that 85 percent of participants had brought paint—25 percent had brought only paint, and another 60 percent had brought paint plus another waste type. Other materials that may be taken back at retail locations—such as batteries, fluorescents, and sharps—are not anticipated to create a significant decrease in Metro's participant levels.

The EPR program for paint had a significant effect on Metro's net costs for the Hazardous Waste Program and MetroPaint (including all operating costs, capital and administrative costs, and fees and payments). As shown in **Figure 5**, before the EPR program, the combined net costs for these two programs increased from about $5,689,000 in 2007–2008 to about $6,062,000 in 2009–2010.

In contrast, **combined net costs decreased significantly to about $4,923,000 in 2011–2012**, primarily as a result of contracted payments from PaintCare for sorting and recycling paint. **Table 6** presents additional detail on Metro's program costs for 2007–2008 through 2011–2012. **Table 7** presents information on the quantities accepted by each program and an estimated per-pound net cost.

assumptions on paint container fullness, number of containers per collection cage, and pounds per gallon. As a result, PaintCare's figures for Metro differ from Metro's self-reported quantities by about 5%. It is also important to note that both Metro and the Department of Environmental Quality have raised questions regarding site-level data and conversion factors used by PaintCare. Annual report, http://www.deq.state.or.us/lq/sw/prodstewardship/paint.htm.

Figure 5. Net Program Costs for Metro's Hazardous Waste Program and MetroPaint

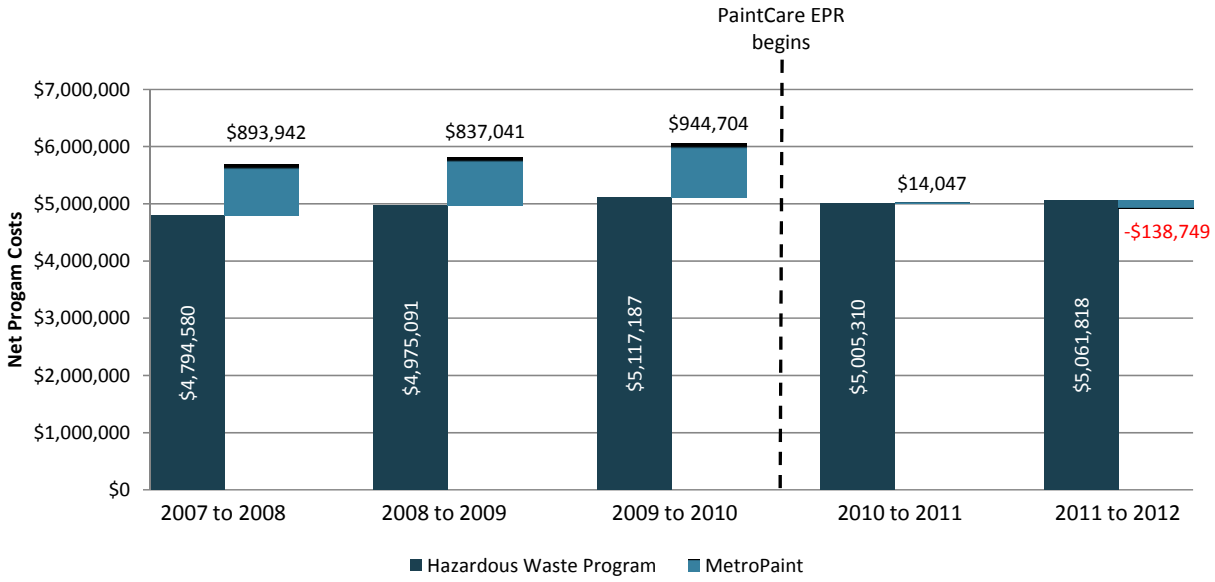


Table 6. Net Costs for Metro's Hazardous Waste Program and MetroPaint, 2007 to 2012

Year	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012
Hazardous Waste Program	**$4,794,580**	**$4,975,091**	**$5,117,187**	**$5,005,310**	**$5,061,818**
Operating Costs*	$3,636,332	$3,786,620	$4,065,573	$3,835,683	$4,065,375
Administration	$1,147,721	$1,168,798	$1,017,609	$1,146,708	$1,077,146
Capital Costs	$123,000	$123,000	$123,000	$123,000	$123,000
CEG and HHW Fees	($112,473)	($103,327)	($88,995)	($100,081)	($203,703)
MetroPaint	**$893,942**	**$837,041**	**$944,704**	**$14,047**	**-$138,749**
Operating Costs	$1,531,130	$1,610,376	$1,609,188	$1,587,070	$1,666,178
Administration	$325,917	$317,317	$309,157	$408,352	$385,814
Capital Costs	$68,500	$68,500	$68,500	$68,500	$68,500
Paint Sales Revenues	($696,678)	($810,867)	($816,427)	($836,759)	($997,290)
Other Sales Revenues	($134,992)	($173,976)	($151,397)	($104,969)	($53,172)
Excise Taxes	$0	$0	$0	$165,883	$182,501
PaintCare Payments	NA	NA	NA	($1,192,821)	($1,382,882)
Steel Recycling	($22,593)	($6,269)	$0	($3,989)	($8,398)
Recycling Fees (other than PaintCare†)	($177,342)	($168,040)	($74,317)	($77,220)	$0
Combined Net Costs	**$5,688,522**	**$5,812,132**	**$6,061,891**	**$5,019,357**	**$4,923,069**

* ***Hazardous Waste Program Operating Costs*** *for 2011–2012 exclude imputed disposal/recycling costs for latex paint. In this table, actual costs are included in operating costs for MetroPaint.*

† ***Recycling Fees*** *include payments from counties outside Metro for MetroPaint to accept their latex paint for processing (before the EPR program).*

Table 7. Quantities and Per-Pound Costs of Waste Accepted by Metro's Hazardous Waste Program and MetroPaint (including administration and capital costs), 2007 to 2012

Year	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012
Hazardous Waste Program					
Waste collected (lbs.)	4,762,265	4,545,532	4,651,433	4,876,498	4,155,469
Net cost per pound	**$1.01**	**$1.09**	**$1.10**	**$1.03**	**$1.22**
MetroPaint					
Paint from Metro (lbs.)	2,010,570	1,989,570	2,274,910	1,869,364	1,669,934
Paint from elsewhere (lbs.)	777,440	726,110	216,500	1,304,946	1,567,201
Net cost per pound	**$0.32**	**$0.31**	**$0.38**	**< $0.01**	**($0.04)**

The paint industry funds the PaintCare program through a legislatively permitted assessment fee on each unit of covered product sold. The assessment fee must be collected at the point of retail sale and passed back to PaintCare. (The retailer may choose to show or not show the fee to the consumer.) PaintCare must submit program plans, fee schedules, and program reports to Oregon's Department of Environmental Quality (DEQ) for approval. PaintCare must also meet standards for statewide convenience and for education and outreach. DEQ's one-year evaluation of PaintCare recommended the pilot program be made permanent but found that improvements in statewide convenience and education and outreach were needed.[6]

Oregon also has an EPR program for **electronic waste**, such as computers and televisions. Although e-waste is not accepted through Metro's HHW facilities, Metro's adjacent solid waste transfer stations do participate as contracted collectors.

Some manufacturers and retailers have developed voluntary take-back programs for **rechargeable batteries**, **cell phones**, and **compact fluorescent lamps** (CFLs). The manufacturer-funded Rechargeable Battery Recycling Corporation provides free Call2Recycle kits for collection sites to collect and ship rechargeable batteries and cell phones for recycling. Metro currently uses the Call2Recycle program and recently entered a new arrangement to be paid a small amount for each drum it ships through the program. Some retailers, including Home Depot, IKEA, and Lowe's, accept CFLs from residents; Metro has no current role in these programs.

[6] Oregon Department of Environmental Quality, "DEQ Legislative Report: Oregon's Paint Product Stewardship Law," 2011, http://www.deq.state.or.us/lq/sw/prodstewardship/paint.htm.

EPR Scenarios Overview and Assumptions

This section describes the four scenarios that Cascadia developed for analysis based on extensive input from Metro. The scenarios represent a range of possible futures and were calculated by combining several sets of assumptions:

- **EPR product coverage and timing** on the timing and category of products covered by EPR programs.
- **Metro collection** levels on the expected share of all products collected in the three-county region that Metro would collect in an EPR scenario (compared, for example, to collection by retailers).
- **Growth rates** on the expected growth (or decline) of quantities of each product collected by Metro's Hazardous Waste Program in each year.
- **Operating costs** based on operating costs for program year 2011–2012.
- **Payment levels from producers** on what share of direct costs Metro might expect producers to cover under an EPR program in which Metro acts as a collection service provider.

The four scenarios differ in assumptions on EPR product coverage and timing. Other assumptions remain the same across scenarios, although some possible ranges are presented within each scenario. For example, each scenario is analyzed using base growth rates, and in addition, a range of results is estimated using alternative high and low growth rates. Each scenario also presents several potential payment levels from producers, ranging from covering all direct costs to covering half of direct costs. The four scenarios are as follows:

- **High EPR scenario** with extensive EPR programs that cover many new products.
- **Moderate EPR scenario** with less extensive EPR programs that cover some products later than in the High EPR scenario.
- **Limited EPR scenario** with more modest EPR programs that cover fewer products than the Moderate EPR scenario.
- **Status Quo scenario** in which the existing EPR program for paint continues, but no other EPR programs are initiated.

The remainder of this section presents additional information on each set of assumptions. More detailed descriptions of each scenario (including the Status Quo scenario) and the analysis of scenario effects on collection quantities, participation, and costs are presented in the *Detailed Scenarios and Analysis* section beginning on page 35.

EPR Product Coverage and Timing

Table 8 and Figure 6 present assumptions on the year that each product type is assumed to start being covered by EPR programs in each EPR scenario. **Table 9** on page 23 summarizes the assumptions about the legislative and regional context for each scenario, which influenced the assumptions on the specific timing and products covered by EPR programs.

Table 8. Year that EPR is Assumed to Start for Each Product Stewardship Category in Each Scenario

Product Stewardship Category	High EPR	Moderate EPR	Limited EPR	Status Quo
Latex and oil-based paint	2010	2010	2010	2010
Aerosol paint	2014	2016	2016	--
Batteries – non-rechargeable	2014	2014	--	--
Batteries – rechargeable	2014	2014	2016	--
Fluorescents	2014	2014	2014	--
Home improvement	2016	2016	--	--
Household sharps	2016	2018	2020	--
Household, cleaning, and auto maintenance	2018	2018	--	--
Lawn, garden, and pest products	2018	2020	--	--
Other HHW	2020	--	--	--
HHW not covered in any scenario	--	--	--	--

Figure 6. Year that EPR is Assumed to Start for Each Product Stewardship Category in Each Scenario

			2010-2011	2012-2013	2014-2015	2016-2017	2018-2019	2020-2021
Latex and oil-based paint	High EPR	2010						
	Moderate EPR	2010						
	Limited EPR	2010						
Aerosol paint	High EPR	2014						
	Moderate EPR	2016						
	Limited EPR	2016						
Batteries – non-rechargeable	High EPR	2014						
	Moderate EPR	2014						
	Limited EPR	Never						
Batteries – rechargeable	High EPR	2014						
	Moderate EPR	2014						
	Limited EPR	2016						
Fluorescents	High EPR	2014						
	Moderate EPR	2014						
	Limited EPR	2014						
Home improvement	High EPR	2016						
	Moderate EPR	2016						
	Limited EPR	Never						
Household sharps	High EPR	2016						
	Moderate EPR	2018						
	Limited EPR	2020						
Household, cleaning, and auto maintenance	High EPR	2018						
	Moderate EPR	2018						
	Limited EPR	Never						
Lawn, garden, and pest products	High EPR	2018						
	Moderate EPR	2020						
	Limited EPR	Never						
Other HHW	High EPR	2020						
	Moderate EPR	Never						
	Limited EPR	Never						
HHW not covered in any scenario	High EPR	Never						
	Moderate EPR	Never						
	Limited EPR	Never						

Table 9. Scenario Overview and Context

	Scenario 1 High EPR Product Coverage	Scenario 2 Moderate EPR Product Coverage	Scenario 3 Limited EPR Product Coverage
Legislative Context	▪ Legislative support is strong, increases over time. ▪ Paint program is made permanent and expanded to include aerosol paints in 2013. ▪ Batteries, fluorescent lamps are covered in 2013. ▪ A broad HHW EPR law is passed in 2015, which phases in over five years to cover all major remaining HHW categories; household sharps are added separately. ▪ Strong convenience and performance standards are set.	▪ Legislative support is moderate, stays consistent. ▪ Paint program made permanent in 2013. ▪ Batteries, fluorescent lamps are covered in 2013, and new product groups are added each subsequent session. ▪ Strong convenience and moderate performance standards are set.	▪ Legislative support is variable. ▪ Paint program made permanent in 2013. ▪ Fluorescent lamps are covered in 2013; batteries and aerosol paint in 2015; and household sharps in 2019. ▪ Modest convenience standards and no performance standards are set.
Regional Context	▪ Support for EPR is strong nationally and expanding rapidly; many states are passing similar laws. ▪ At least one other state passes a broad HHW EPR law by 2014.	▪ Support for EPR is strong in regional pockets of the U.S. but pace of progress is slower. ▪ Oregon coordinates with other states in EPR coverage.	▪ Support for EPR is concentrated in a few states, faces strong opposition. ▪ Oregon follows other states in EPR coverage.

Note: This table lists assumptions regarding the year when each new program is designated for EPR by law (legislation passes); the program is assumed to be implemented starting in the following year.

Metro Collection Levels

In each scenario, PROs are assumed to contract with Metro as a collector of the hazardous waste products placed under EPR legislation in the Metro service territory. While Metro's service territory technically encompasses only the Metro boundary, the Hazardous Waste Program may also serve residents in rural areas of Clackamas, Multnomah, and Washington counties who live outside the Metro boundary. The percent of each product assumed to be collected by Metro is dependent on the product's unique characteristics and the likelihood of involvement of other collectors. These assumptions are informed by data from existing programs where available.

Metro is assumed to collect lower proportions of consumer batteries after EPR, but the assumed proportions for rechargeable and non-rechargeable batteries are different. Because of the existing voluntary stewardship system in place for rechargeable batteries, Metro's collection of rechargeable batteries currently accounts for only 20 percent of all rechargeable batteries collected in its service territory. As a result, Metro's proportion of rechargeable battery collection is expected to fall only slightly after EPR (to 80 percent of Metro's collection quantities before EPR). In contrast, Metro's collection of non-rechargeable batteries is expected to fall much more (to 20 percent of Metro's collection quantities before EPR) as these batteries begin to be accepted for collection by retailers and other convenient non-hazardous-waste facilities.

Metro is assumed to collect lower proportions of fluorescent lamps after EPR (60 percent of Metro's collection quantities before EPR), due to increased collection by retailers or through mail-back programs. This assumption is based on collection data from British Columbia, in which 38 percent of lamps are collected by retailers.

Under EPR, pharmacies, medical service providers, or mail-back programs are assumed to act as the primary collection channels for household sharps, and Metro is expected to collect much lower proportions (15 percent of Metro's collection quantities before EPR). This assumption is based in part on collection data from several pilot programs in California that take back sharps at pharmacies and other convenient non-hazardous-waste sites.

Metro is assumed to collect 74 percent of aerosol paint, based on the estimated proportion of all *latex and oil-based* paint that Metro collected in program year 2011–2012. For paint already collected under the PaintCare EPR program (latex and oil-based), no adjustments are made regarding the percent of each product collected by Metro versus retailers. Instead, quantities are estimated by applying growth rates directly to the quantities collected by Metro in 2011–2012.

For products where the producer responsibility organizations(s) would not likely engage retailers or other locations to be collectors, or where retailers or others would likely not be interested in collecting, it is assumed that Metro will continue to collect these products in the same proportions as it has previously (although total quantities collected may increase). This category includes more hazardous materials such as pesticides, which may be difficult to collect and manage safely outside of hazardous waste facilities.

Metro's collection levels under EPR for all products are shown below in **Table 10**. Metro's collection levels for latex and oil-based paint, which is covered in an existing EPR pilot program, were calculated as a share of all paint collected in the three-county region (Clackamas, Multnomah, and Washington). This percentage was also applied to aerosol paint. Metro's collection levels under EPR for other products

were calculated as a share of the quantities currently collected by Metro. Other entities are known to collect some of these materials (such as rechargeable batteries, fluorescent lamps, and motor oil), but we do not have a current estimate of total collection quantities for the three-county region.

Table 10. Assumed Percentage of Quantities Collected by Metro After EPR, Compared to Metro Collection Quantities Before EPR (or compared to total collection quantities for paint)

Product Stewardship Category	Metro's Collection under EPR Compared to…	
	Quantities Currently Collected by Metro	Total Quantities Collected in 3-County Region
Latex and oil-based paint		74%
Aerosol paint		74%
Consumer batteries – non-rechargeable	20%	
Consumer batteries – rechargeable	80%	
Fluorescent lamps	60%	
Home improvement	100%	
Household sharps	15%	
Household, cleaning, and auto maintenance	100%	
Lawn, garden, and pest products	100%	
Other hazardous waste	100%	
Waste not covered by EPR in any scenario	100%	

Collection Growth Rates

Collection quantities of all products collected by Metro are assumed to decrease in the short term due the diversion of customers to retail drop-off sites in the PaintCare program. Over time, collection quantities are expected to level off and begin growing again in line with their previous historical growth rates. This analysis developed three sets of growth rates for each program year from 2012–2013 through 2021–2022. Each scenario is analyzed using the set of base (moderate) growth rates, with possible ranges presented in *Scenario Analysis Effects with Alternative Ranges*, beginning on page 50, using a set of high growth rates and a set of low growth rates. Each set of growth rates is, in turn, composed of separate assumptions about the depth and strength of the **short-term decreases in quantities** and about the strength of the recovery of **long-term increases in quantities**. These separate assumptions are used to create the final set of **combined short- and long-term growth rates**.

Short-Term Decreases in Quantities

The PaintCare program to manage leftover paint under Oregon's stewardship law began collection in July 2010. Between program years 2009–2010 and 2010–2011, Metro's collection quantities for all HHW continued to grow, increasing by 4.8 percent. The following program year, 2011–2012, Metro's collection quantities for all HHW fell by 14.8 percent. In particular, quantities of EPR-covered paint collected fell by 19.6 percent, while quantities of other HHW materials fell by 9.8 percent.

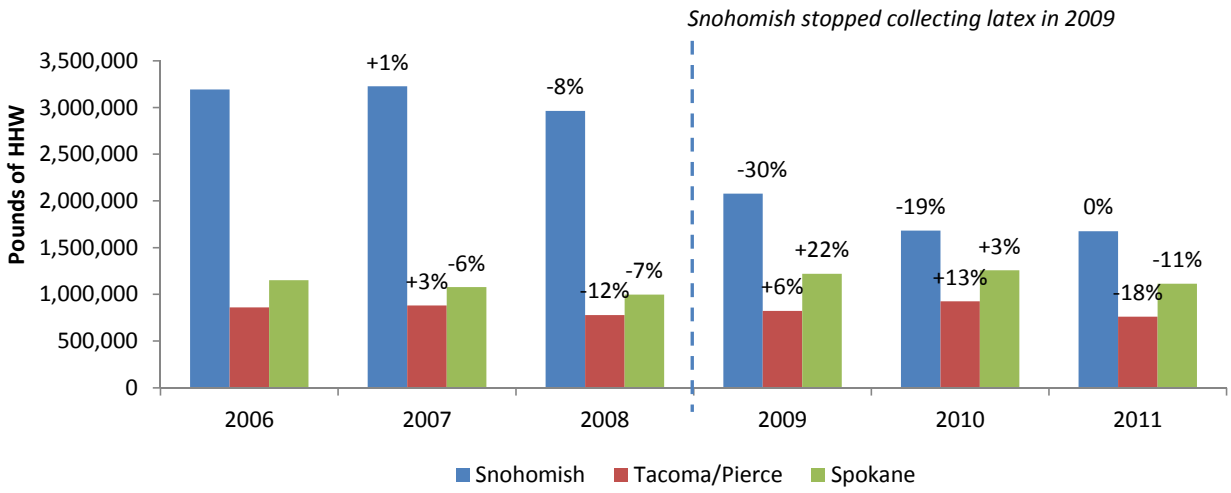
To estimate the expected length and degree of short-term declines due to changes in paint collection, we researched quantities collected and participation levels at jurisdictions elsewhere in the Northwest that stopped collecting latex paint. When **Snohomish County** stopped collected latex paint in 2009, quantities of non-latex HHW collected declined by 30 percent in the first year, declined by 19 percent in the second year, and did not change in the third year. HHW participants in Snohomish County declined by 18 percent in the first year, 29 percent in the second year, and 3 percent in the third year. These decreases may be due to both the change in accepting latex paint as well as reduced funds for HHW program promotion. Anecdotally, **King County** noted that when it stopped accepting latex paint at two of its collection points, both participants and quantities declined strongly in the first year (2008), did not change much in the second year (2009), and began growing slightly in the third year (2010).

For comparison purposes and to help identify the potential influence of economic factors, we also examined two programs in Washington State that did not change their collection of latex paint: a program run jointly by the City of Tacoma and Pierce County (Tacoma/Pierce) and a program run by the City and County of Spokane. Data indicate that that changing latex paint collection reduced overall quantities collected and participation; however, data also indicate that quantities collected in 2011 fell for the two comparison programs but not for Snohomish County or King County.

In 2008, the year King County stopped collecting latex paint, quantities of non-latex materials collected also declined at both comparison programs and in Snohomish County (which stopped collecting latex paint a year later, in 2009). The declines at the comparison programs and Snohomish County were smaller than King County's declines, suggesting that declines due to broader factors, such as the economic recession, were exacerbated by the change in latex collection.

Figure 7 presents pounds of hazardous waste (excluding latex paint) collected by Snohomish County, Tacoma/Pierce, and Spokane from 2006 through 2011. As shown in the figure, while Snohomish County experienced declines in 2009, the first year it stopped accepting latex paint, quantities collected in the same time period by Tacoma/Pierce and Spokane increased. Participation also fell at Snohomish County and increased at Tacoma/Pierce and Spokane. In 2010, Snohomish County continued to experience declines in both quantities collected and participation, while the Tacoma/Pierce and Spokane programs experienced declines in participation but increases in quantities collected. Because Snohomish County also cut funds for HHW program promotion in 2009, it is difficult to assess what share of the decline is due to decreased promotion versus the discontinuation of latex paint acceptance.

Figure 7. Pounds of HHW Collected 2006–2011 (excluding latex paint)



It must be noted, however, that data for 2011 present a complicated picture. In 2011, when Metro began experiencing significant drops in quantity collected, quantities collected by Snohomish County and King County did *not* decline, while quantities collected by the comparison programs fell: by 18 percent for Tacoma/Pierce and by 11 percent by Spokane. This discrepancy could indicate that the Spokane and Tacoma/Pierce programs are not suitably comparable to the Snohomish County and King County programs. It could also indicate that broader socioeconomic effects may have contributed in part to Metro's decline in quantities collected.

This analysis considers three scenarios for the initial short-term drop in collection:

- **Large, three-year drop** in which quantities decline in the second year (2012–2013) by the same amount as in the first year (2011–2012), decline in the third year by a quarter of the rate in the second year, and stabilize (neither decline nor grow) in the third year. Quantities start to increase again in the fourth year.
- **Moderate, three-year drop** in which quantities decline in the second year (2012–2013) by the half the rate as in the first year, decline in the third year by a quarter of the second year's rate, and neither decline nor grow in the third year. Quantities start to increase again in the fourth year.
- **Moderate, two-year drop** in which quantities decline in the second year (2012–2013) by half the rate as in the first year and neither decline nor grow in the third year. Quantities start to increase again in the third year.

Table 11 presents the approximate annual growth rates for 2011–2012 and for the following years until quantities stop declining. **Table 12** presents percentages representing the quantities collected in each year, compared to 2010–2011 as a base year, assuming no changes in products covered by EPR in those years. For example, in 2011–2012, Metro HHW collected approximately 80 percent of the paint quantities collected in the previous year and approximately 90 percent of the other hazardous waste quantities collected.

Table 11. Annual Growth Rate—Percentage Change Compared to the Prior Year (near-term)

		2011–2012 (approximate)	2012–2013	2013–2014	2014–2015
Large, 3-year drop	EPR-covered Paint	-20.0%	-25.0%	-6.3%	0.0%
	Other HHW	-10.0%	-11.1%	-2.8%	0.0%
Moderate, 3-year drop	EPR-covered Paint	-20.0%	-10.0%	-2.5%	0.0%
	Other HHW	-10.0%	-5.0%	-1.3%	0.0%
Moderate, 2-year drop	EPR-covered Paint	-20.0%	-5.0%	0.0%	Slight growth*
	Other HHW	-10.0%	-2.5%	0.0%	Slight growth*

* *Growth rates addressed in the following section:* ***Long-term Increases in Quantities****.*

Table 12. Percentage Quantity Collected Compared to 2010-2011 as a Base Year

		2011–2012 (approximate)	2012–2013	2013–2014	2014–2015
Large, 3-year drop	EPR-covered Paint	80%	60%	56%	56%
	Other HHW	90%	80%	78%	78%
Moderate, 3-year drop	EPR-covered Paint	80%	72%	70%	70%
	Other HHW	90%	86%	84%	84%
Moderate, 2-year drop	EPR-covered Paint	80%	76%	76%	NA*
	Other HHW	90%	88%	88%	NA*

* *Addressed in the following section:* ***Long-term Increases in Quantities****.*

Long-term Increases in Quantities

Prior to Oregon's EPR program for paint, quantities of hazardous waste collected at Metro increased annually, in part due to population growth and in part due to other factors. This analysis assumes that after the public has adjusted to the PaintCare program, Metro's growth in quantities will recover, reverting to a historical growth rate. As a result, annual collection growth rates for products not covered by EPR are based on the **historical changes in total pounds collected by Metro's Hazardous Waste Program.**

This analysis considers two different historical average growth rates. The years included when calculating historical rates have a significant effect on the average annual growth rate.

- Between fiscal years 2004–2005 and 2010–2011, collection quantities increased an average of **3 percent per year**.
- Between fiscal years 2005–2006 and 2010–2011, collection quantities increased an average of **1.6 percent per year.**

Because both of these rates could be considered accurate, the analysis includes scenarios that use both of these rates.

The scenarios in this analysis are intended to show a reasonable estimated range of future collection quantities. The analysis is able to show a wider, yet still reasonable, range by using the high growth rate (3%) in the set of high long-term growth assumptions and the lower growth rate (rounded to 1.5%) in the set of low long-term growth assumptions.

Collection quantities of products covered by EPR were estimated to increase at different rates, depending on the product type and on the anticipated effect of performance standards and other regulatory requirements included in each growth scenario.

Annual collection growth rates were estimated based on the **increase in overall latex paint collection after the PaintCare program began**. Between fiscal year 2008–2009 (before PaintCare) and fiscal year 2010–2011 (after PaintCare), the total quantity of latex paint collected in the Metro region—including at retail locations—is estimated to have increased by an average of 6.7 percent per year.[7] Although this collection growth rate is for paint only, it is assumed that other products will follow similar patterns of growth when they begin collection under EPR. Recently, however, the growth of *paint* collected in the three-county area has decreased; between 2010–2011 and 2011–2012, the total quantity collected through PaintCare increased by 0.3 percent.[8] In addition, the three-county area may be reaching a limit on how much paint can be collected. Based on EPA estimates that discarded paint quantities equal approximately 10 percent of paint sold, the three-county area is estimated to have had approximately 326,000 gallons, or nearly 3.3 million pounds, of latex and oil-based paint available for recycling in 2011–2012.[9] Based on these estimates, the PaintCare program is collecting more than 80 percent of the leftover paint assumed to be available for collection in the three-county area. As a result, a *lower* growth rate is used for paint, now that it can be considered a "mature" EPR product, no longer subject to extraordinary growth rates as a result of new and increased promotion and collection opportunities.

Collection data from other jurisdictions with EPR programs suggests that the growth rates for EPR-covered products may rise even higher when EPR programs mature. For example, between 2003 and 2010 in British Columbia—where EPR for paint, flammable liquids, and pesticides has been in place since the mid-1990s—collection rates for all materials increased, on average, by more than 10 percent per

[7] PaintCare, *Oregon Paint Stewardship Pilot Program Annual Report*, 2011, http://www.deq.state.or.us/lq/sw/prodstewardship/paint.htm and collection data for 2011 provided by Metro.

[8] PaintCare, *Oregon Paint Stewardship Pilot Program Annual Report*, 2012, http://www.deq.state.or.us/lq/sw/prodstewardship/paint.htm.

[9] Estimate based on:

- 7,583,946 gallons of paint were sold in Oregon from July 1, 2011, to June 30, 2012. (PaintCare, *Oregon Paint Stewardship Pilot Program Annual Report*, 2012.)
- 43 percent of Oregon's population lived in Clackamas, Multnomah, and Washington counties in July 2011. (Population Research Center of Portland State University, "2011 Annual Population Report Tables," March 28, 2012, http://www.pdx.edu/prc/annual-oregon-population-report.)
- 10 percent of paint sold in a given year is estimated to be ultimately discarded and, thus, available for recycling. (Abt Associates, Inc., for U.S. Environmental Protection Agency, "Quantifying the Disposal of Post-Consumer Architectural Paint," 2007, http://www.epa.gov/sectors/pdf/paint_quantity_report.pdf.)

year. Growth in collection exceeded expansion in collection infrastructure and occurred even in years in which sales of these products dropped.[10]

To present a range of alternatives, **rapid recovery rates**, used in the set of **high growth assumptions**, assume that collection rates for EPR-covered products (besides paint) will, in the long-term, increase at slightly higher rate (7%) than has occurred under the paint EPR program in the first year, due to strong performance standards and other regulatory requirements for all EPR programs in this scenario. Paint is assumed to increase at a lower rate of 5 percent per year.

Moderate recovery rates, used in the set of **base growth assumptions**, assume that rates will, in the long-term, increase at a somewhat lower rate (5% for EPR products except paint) than under the current paint EPR program in the first year, because of moderate performance standards and an assumed stabilization of paint collection at a slightly lower rate (3%) after an initial boost in collection at the beginning of the program.

Slow recovery rates, used in the set of **low growth assumptions**, assume that rates for all products, whether or not covered by EPR, will increase at lower rate (1.5%). This rate reflects the larger drop in annual collection growth after the initial boost in collection during the program's first year of operations. The low growth rate also assumes that a lack of binding performance standards and limited investment in consumer outreach will result in collection growth rates for products covered by EPR that are the same as those not covered by EPR.

Table 13 below shows the assumed growth rates for rapid, moderate, and slow recovery of quantities collected at Metro, following the decrease after the start of PaintCare in Oregon.

Table 13. Assumed Annual Long-term Growth Rates for Quantities Collected (after near-term drop)

	EPR-covered paint	EPR-covered other products	Products not covered by EPR
Rapid Recovery *High Growth Assumptions*	5.0%	7.0%	3.0%
Moderate Recovery *Base Growth Assumptions*	3.0%	5.0%	3.0%
Slow Recovery *Low Growth Assumptions*	1.5%	1.5%	1.5%

[10] Product Care, "BC Paint and Household Hazardous Waste (HHW) 2010 Program Year Annual Report," 2011, http://www.productcare.org/documents/bc-paint/PCA-Annual-Report-2010.pdf.

Combined Short-term and Long-term Growth Rates

The assumptions regarding potential short-term decreases and long-term recovery were combined to create three sets of growth rate assumptions, designed to show a range of potential total growth in waste quantities. All four EPR product coverage and timing scenarios are analyzed using the set of base growth rate assumptions:

- **Base growth assumptions**: moderate, three-year drop with moderate recovery growth rates presented in **Table 14**.

In addition, a range of alternative results were calculating by applying a set of high growth assumptions and a set of low growth assumptions.

- **High growth assumptions:** moderate, two-year drop with rapid recovery applied to the products in the High EPR scenario; growth rates presented in **Table 15**.
- **Low growth assumptions**: Large, three-year drop with slow recovery, applied to products covered in the Status Quo EPR scenario; growth rates presented in **Table 16**.

For the moderate recovery scenario, growth is assumed to resume for one year at the slow recovery rates before transitioning to the moderate growth rates. For the rapid recovery scenario, growth is assumed to resume for one year at the slow recovery rates and a second year at the moderate recovery rates before reaching the rapid recovery rates in the third year. In all sets of growth assumptions, it is assumed that quantities collected from CEGs drop and recover at the same rates as quantities collected from households (HHW customers).

Table 14, **Table 15**, and **Table 16** present the annual growth rates for each set of growth assumptions. **Table 17** presents the annual growth rates for each product stewardship category for each set of growth assumptions.

Table 14. Base Growth Assumptions (rates for a moderate 3-year drop, moderate recovery)

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
EPR-covered paint	**-20.0%**	-10.0%	-2.5%	0.0%	3.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Other EPR products	**-10.0%**	-5.0%	-1.3%	0.0%	1.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Other products	**-10.0%**	-5.0%	-1.3%	0.0%	1.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Table 15. High Growth Assumptions (rates for a large 3-year drop, slow recovery)

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
EPR-covered paint	**-20.0%**	-10.0%	-2.5%	0.0%	3.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Other EPR products	**-10.0%**	-5.0%	-1.3%	0.0%	1.5%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Other products	**-10.0%**	-5.0%	-1.3%	0.0%	1.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Table 16. Low Growth Assumptions (rates for a moderate 2-year drop, rapid recovery)

	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
EPR-covered paint	**-20.0%**	-5.0%	0.0%	3.0%	5.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Other EPR products	**-10.0%**	-2.5%	0.0%	1.5%	5.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Other products	**-10.0%**	-2.5%	0.0%	1.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Table 17. Annual Growth Rates by Product Category and Scenario

			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Latex and oil-based paint	High Growth	2010	95%	100%	102%	103%	105%	105%	105%	105%	105%	105%
	Base Growth	2010	90%	98%	100%	102%	103%	103%	103%	103%	103%	103%
	Low Growth	2010	75%	94%	100%	102%	102%	102%	102%	102%	102%	102%
Aerosol paint	High Growth	2014	98%	100%	102%	105%	107%	107%	107%	107%	107%	107%
	Base Growth	2016	95%	99%	100%	102%	105%	105%	105%	105%	105%	105%
	Low Growth	2016	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%
Batteries – non-rechargeable	High Growth	2014	98%	100%	102%	105%	107%	107%	107%	107%	107%	107%
	Base Growth	2014	95%	99%	100%	102%	105%	105%	105%	105%	105%	105%
	Low Growth	Never	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%
Batteries – rechargeable	High Growth	2014	98%	100%	102%	105%	107%	107%	107%	107%	107%	107%
	Base Growth	2014	95%	99%	100%	102%	105%	105%	105%	105%	105%	105%
	Low Growth	2016	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%
Fluorescents	High Growth	2014	98%	100%	102%	105%	107%	107%	107%	107%	107%	107%
	Base Growth	2014	95%	99%	100%	102%	105%	105%	105%	105%	105%	105%
	Low Growth	2014	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%
Home improvement	High Growth	2016	98%	100%	102%	103%	107%	107%	107%	107%	107%	107%
	Base Growth	2016	95%	99%	100%	102%	105%	105%	105%	105%	105%	105%
	Low Growth	Never	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%
Household sharps	High Growth	2016	98%	100%	102%	103%	107%	107%	107%	107%	107%	107%
	Base Growth	2018	95%	99%	100%	102%	103%	103%	105%	105%	105%	105%
	Low Growth	2020	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%
Household, cleaning, and auto maintenance	High Growth	2018	98%	100%	102%	103%	103%	103%	107%	107%	107%	107%
	Base Growth	2018	95%	99%	100%	102%	103%	103%	105%	105%	105%	105%
	Low Growth	Never	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%
Lawn, garden, and pest products	High Growth	2018	98%	100%	102%	103%	103%	103%	107%	107%	107%	107%
	Base Growth	2020	95%	99%	100%	102%	103%	103%	103%	103%	105%	105%
	Low Growth	Never	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%
Other HHW	High Growth	2020	98%	100%	102%	103%	103%	103%	103%	103%	107%	107%
	Base Growth	Never	95%	99%	100%	102%	103%	103%	103%	103%	103%	103%
	Low Growth	Never	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%
HHW not covered in any scenario	High Growth	Never	98%	100%	102%	103%	103%	103%	103%	103%	103%	103%
	Base Growth	Never	95%	99%	100%	102%	103%	103%	103%	103%	103%	103%
	Low Growth	Never	89%	97%	100%	102%	102%	102%	102%	102%	102%	102%

Operating Costs

Operating costs include both direct and indirect operating costs, as described in *Program Costs and Cost Structure* on page 12. Administrative and capital costs are not included in the analysis. Regarding fees, contracted payments, and other revenues, this analysis assumes that CEG customers will cover the estimated direct costs for their waste and that Metro will receive contracted payments for all waste categories under by EPR programs (whether delivered by households or CEG customers) covering between 50 percent and 100 percent of direct costs.

Scenarios assume that Metro Hazardous Waste Program's **direct operating costs increase in proportion to quantities collected**. This analysis holds Metro's **indirect operating costs constant**, as though Metro could continue to serve customers through its existing facilities and neighborhood collection events. Given the recent drop in participation, this assumption seems reasonable. However, in 2010–2011, according to Metro's program manager, the Metro South Station was at capacity, and the Metro Central Station was approaching capacity if collection volumes had continued to grow. Metro is currently conducting a capacity analysis of the South Transfer Station. **Potential costs of possible facility construction are not included in the analysis**; such cost estimates are expected to be part of more detailed future planning efforts. Similarly, the **analysis excludes administration and capital costs** that are charged to the Hazardous Waste Program because their calculation method is too complex to project into the future. Cost estimates for direct and indirect operating costs are presented in **2011–2012 dollars**, without adjustments for possible inflation.

Participation

Scenarios assume that participants continue to bring the same average quantities of waste *per visit* as they did in program year 2011–2012, meaning that Metro's **participation levels increase in direct proportion to quantities collected**. Average quantities of waste per participant for 2011–2012 are described in *Participation in Metro's Hazardous Waste Collection* on page 15.

Payment Levels from Producer Responsibility Organizations

Scenarios assume that producer responsibility organizations (PROs) pay 100 percent of Metro's direct costs for collecting and handling EPR-covered products. However, analyses also provide estimates of total costs to Metro if PRO payments only cover a portion of direct costs. This situation could result from non-payment of unlabeled or orphan products or from PRO contracts that do not pay for collection costs or that are otherwise set lower than Metro's direct costs. The payment levels used in this analysis (75 percent and 50 percent) are for demonstration purposes only and do not reflect expected payment levels. (Note that the way the analysis model is structured, payments from PROs and from CEGs are not separated for EPR-covered products; PROs are assumed to pay for waste from CEG business customers at the same rate that they pay for waste from household customers.)

In contrast, Metro may develop contracts with PROs in which PRO payments cover both direct costs and some or all of indirect costs. Although no estimates are presented for this situation, indirect costs are presented separately from direct costs to enable future calculations. Metro may consider examining its indirect costs to determine whether it can develop a reasonable way to attribute them to quantities collected, essentially converting indirect costs into direct costs that are more likely to be covered by PRO payments.

Detailed Scenarios and Analysis of Effects

This section presents a more detailed description of each EPR scenario followed by a summary of the analysis of the scenario's effects on quantities collected, participation, and costs. The analysis of the Status Quo scenario follows the three EPR scenarios (High, Moderate, and Limited EPR).

Scenario 1: High EPR Scenario

Detailed Scenario Description

This scenario assumes that EPR proponents are successful in advancing their legislative agenda across the U.S. in the near term and that EPR becomes a widely accepted policy approach within five years. Products selected for coverage under this scenario represent the priorities of EPR advocates and/or are already included or proposed for inclusion in EPR programs in other jurisdictions (including Canada).

Legislative Context	EPR legislation is introduced each session for several new product categories. Legislative support is strong and increasing over time. The paint program is made permanent and expanded to include aerosol paint in 2013. Two new programs, for consumer batteries and mercury-containing fluorescent lamps, are also established in 2013. In 2015, a broad HHW EPR law is passed, which phases in over five years to cover all remaining major HHW categories, beginning with home improvement products; following with household/auto cleaning and maintenance products, and lawn/garden/pest products; and finally expanding to gas/propane canisters and pharmaceuticals. Household sharps are covered separately in 2015. All laws include strong convenience and performance standards.	
Regional Context	Support for EPR is strong nationally and expanding rapidly, and many other states are passing EPR laws for both HHW and other material types. At least one other state passes a broad, phased HHW EPR law by 2014.	
Product Coverage and Timing*	**2013**/2014	▪ *Latex and oil-based paint*, **aerosol paint** ▪ **Consumer batteries** (rechargeable and not-rechargeable) ▪ **Mercury-containing fluorescent lamps**
	2015/2016	▪ **Home improvement products** (including solvents, caulks) ▪ **Household sharps**
	2017/2018	▪ **Household and auto cleaning and maintenance products** (including oven and drain cleaners, auto fluids, pool chemicals) ▪ **Lawn, garden, and pest products** (including indoor/outdoor pesticides, herbicides, fertilizers)
	2019/2020	▪ **Other major HHW categories** (including gas/propane canisters)

* Products listed in **bold** are new hazardous products covered; paint (in *italics*) is already covered by an existing EPR law.

Base Growth Assumptions	Moderate, three-year drop in which quantities decline in the second year (2012–2013) by the half the rate as in the first year, decline in the third year by a quarter of the second year's rate, and neither decline nor grow in the third year. Quantities start to increase again in the fourth year Moderate recovery in which EPR-covered paint grows by 3% per year, other EPR-covered products grow by 5% per year, and products not covered by EPR grow by 3% per year.
Metro's Share of Collection Quantities	Metro is assumed to collect only a portion of items that can be safely collected outside hazardous waste facilities, such as by retailers, at depot sites, or by mail. Metro is assumed to collect only 74 percent of all paint. Once EPR programs are in place, Metro is assumed to collect reduced quantities of the following products compared to its pre-EPR quantities: 20 percent of non-rechargeable batteries, 80 percent of rechargeable batteries, 60 percent of fluorescent lamps, and 15 percent of household sharps.

Analysis of Scenario Effects

In the High EPR scenario, collected volumes are expected to decrease in the short-term as more customers take paint to retail drop-off locations instead of disposing of all their wastes at Metro facilities. In the long-term, quantities revert to historical growth rates and increase due to effective education about EPR and early initiation of EPR programs. Depending on payment amounts from producers under EPR programs, Metro's *net* costs could decrease significantly.

Quantities: Compared to 2011–2012, Metro's collection quantities are estimated to decrease until 2014–2015 (to 88% of base year quantities) then recover to reach 110 percent of base year quantities in 2021–2022, as shown in **Table 18**.

Participation: Total participation is expected to decrease to below 52,000 in 2014–2015 then recover to reach more than 64,000 in 2021–2022, as shown in **Table 19**.

Total Operating Costs: Metro's total (direct plus indirect) operating costs are estimated to decrease until 2014–2015 (to 92% of base year costs) the increase to reach 105 percent of base year costs in 2021–2022, as shown in **Table 20**, assuming Metro can continue to use its current facilities.

Net Operating Costs: Depending on the payment amounts paid by producer responsibility organizations (PROs) to Metro as a contracted collector, Metro's *net* costs could decrease significantly, as shown in **Table 21**. If PROs pay all direct costs for EPR-covered products, Metro's net costs in 2021–2022 could decrease to approximately half (52%) of the current program costs. In contrast, if PROs pay all direct costs for paint but only half of direct costs for other EPR-covered products, then Metro's net costs could remain at nearly 80 percent their current level.

Table 18. High EPR Scenario Potential Collected Quantities (pounds)

Product Stewardship Category (EPR start year)	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
Latex and oil-based paint (2010)	2,006,000	1,760,000	2,133,000
Aerosol paint (2014)	126,000	87,000	119,000
Batteries – non-rechargeable (2014)	91,000	17,000	23,000
Batteries – rechargeable (2014)	10,000	7,000	10,000
Fluorescents (2014)	46,000	26,000	35,000
Home improvement (2016)	398,000	373,000	508,000
Household sharps (2016)	31,000	29,000	6,000
Household, cleaning, and auto maintenance (2018)	568,000	533,000	698,000
Lawn, garden, and pest products (2018)	263,000	247,000	323,000
Other HHW (2020)	216,000	202,000	255,000
HHW not covered in any scenario	393,000	369,000	447,000
Total Pounds of HHW	**4,148,000**	**3,652,000**	**4,558,000**

Note: Figures may not sum to totals due to rounding to the nearest thousand.

Table 19. High EPR Scenario Potential HHW/CEG Participation Levels

Participant Type	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
South Station (households)	30,000	26,500	33,000
Central Station (households)	19,100	16,900	21,000
Neighborhood Collection Events	8,800	7,700	9,700
CEG Program (businesses)	800	700	900
Total Customers	**58,800**	**51,800**	**64,600**

Note: Figures are rounded to the nearest hundred.

Table 20. High EPR Scenario Potential Total Costs

Product Stewardship Categories (EPR start year)	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
Latex and oil-based paint (2010)	$469,000	$411,000	$498,000
Aerosol paint (2014)	$205,000	$142,000	$193,000
Batteries – non-rechargeable (2014)	$153,000	$29,000	$39,000
Batteries – rechargeable (2014)	$17,000	$13,000	$17,000
Fluorescents (2014)	$110,000	$62,000	$84,000
Home improvement (2016)	$265,000	$248,000	$338,000
Household sharps (2016)	$177,000	$166,000	$34,000
Household, cleaning, and auto maintenance (2018)	$169,000	$159,000	$207,000
Lawn, garden, and pest products (2018)	$503,000	$472,000	$618,000
Other HHW (2020)	$357,000	$335,000	$421,000
HHW not covered in any scenario	$403,000	$378,000	$458,000
Direct Costs for EPR- and CEG-covered Products	**$606,000**	**$766,000**	**$2,481,000**
Direct Costs for Products Not Covered	**$2,220,000**	**$1,647,000**	**$428,000**
Indirect Operating Costs	**$1,524,000**	**$1,524,000**	**$1,524,000**
Total Operating Cost	**$4,349,000**	**$3,937,000**	**$4,432,000**

Note: Figures may not sum to totals due to rounding to the nearest thousand.

Table 21. High EPR Scenario Potential Metro Net Costs

Contracted Collector Payment Scenarios	2014–2015 (Year 3)	2021–2022 (Year 10)
PRO payment of 100% of direct costs for EPR-covered and CEG products	$3,171,000	$1,952,000
PRO payment of 100% of direct paint costs, and 75% of direct costs for other EPR-covered and CEG products	$3,260,000	$2,448,000
PRO payment of 100% of direct paint costs, and 50% of direct costs for other EPR-covered and CEG products	$3,349,000	$2,944,000

Note: Figures are rounded to the nearest thousand.

Scenario 2: Moderate EPR Scenario

Detailed Scenario Description

This scenario assumes that EPR proponents are moderately successful and that EPR is embraced by a subset of lawmakers but is more cautiously supported by others, making the legislative advances slower and narrower than EPR proponents would like. Products selected for coverage under this scenario represent EPR advocates' priorities and goals for new legislation and recognition of the likely political constraints of the legislative process.

Scenario Description	EPR legislation is introduced each session for several new product categories. Legislative support is moderate, and programs remain relatively narrow, although the state remains on the leading edge of EPR policy. The paint program is made permanent, and two new product categories—consumer batteries and mercury-containing fluorescent lamps—are covered in 2013. Home improvement products are covered in 2015, household/auto cleaning and maintenance products and sharps in 2017, and lawn/garden/pest products in 2019. All laws include strong convenience standards and require modest increases in collection rates.	
Regional Context	Support for EPR is strong in regional pockets of the U.S. such as the NW, NE and upper Midwest, but does not spread nationally, and pace of adoption of new laws does not accelerate. Oregon coordinates the introduction and passage of new laws with other states.	
Product Coverage and Timing*	**2013**/2014	▪ *Latex and oil-based paint* ▪ **Consumer batteries** (rechargeable and not-rechargeable) ▪ **Mercury-containing fluorescent lamps**
	2015/2016	▪ **Home improvement products** (including aerosol paints, solvents, caulks)
	2017/2018	▪ **Household and auto cleaning and maintenance products** (including oven and drain cleaners, auto fluids, pool chemicals) ▪ **Household sharps**
	2019/2020	▪ **Lawn, garden, and pest products** (including indoor/outdoor pesticides, herbicides, fertilizers)
Base Growth Assumptions	Moderate, three-year drop in which quantities decline in the second year (2012–2013) by the half the rate as in the first year, decline in the third year by a quarter of the second year's rate, and neither decline nor grow in the third year. Quantities start to increase again in the fourth year Moderate recovery in which EPR-covered paint grows by 3% per year, other EPR-covered products grow by 5% per year, and products not covered by EPR grow by 3% per year.	

* Products listed in **bold** are new hazardous products covered; paint (in *italics*) is already covered by an existing EPR law.

Metro's Share of Collection Quantities	Metro is assumed to collect only a portion of items that can be safely collected outside hazardous waste facilities, such as by retailers, at depot sites, or by mail. Metro is assumed to collect only 74 percent of all paint. Once EPR programs are in place, Metro is assumed to collect reduced quantities of the following products compared to its pre-EPR quantities: 20 percent of non-rechargeable batteries, 80 percent of rechargeable batteries, 60 percent of fluorescent lamps, and 15 percent of household sharps.

Analysis of Scenario Effects

In the Moderate EPR scenario, collected volumes are expected to decrease in the short-term as more customers take paint to retail drop-off locations instead of disposing of all their wastes at Metro facilities. In the long-term, quantities revert to historical growth rates and increase due to effective education about EPR and additional EPR programs. Depending on payment amounts from producers under EPR programs, Metro's *net* costs could decrease moderately.

Quantities: Compared to 2011–2012, Metro's collection quantities are estimated to decrease until 2014–2015 (to 89% of base year quantities) then recover to reach 109 percent of base year quantities in 2021–2022, as shown in **Table 22**.

Participation: Total participation is expected to decrease to approximately 52,000 in 2014–2015 then recover to reach more than 64,000 in 2021–2022, as shown in **Table 23**.

Total Operating Costs: Metro's total (direct plus indirect) operating costs are estimated to decrease until 2014–2015 (to 92% of base year costs) the increase to reach 101 percent of base year costs in 2021–2022, as shown in **Table 24**, assuming Metro can continue to use its current facilities.

Net Operating Costs: Depending on the payment amounts paid by producer responsibility organizations (PROs) to contracted collectors, Metro's *net* costs could decrease moderately, as shown in **Table 25**. If PROs pay all direct costs for EPR-covered products, Metro's net costs in 2021–2022 could decrease to approximately 62 percent of the current program costs. In contrast, if PROs pay all direct costs for paint but only half of direct costs for other EPR-covered products, then Metro's net costs could remain at nearly 83 percent their current level.

Table 22. Moderate EPR Scenario Potential Collected Quantities (pounds)

Product Stewardship Categories (EPR start year)	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
Latex and oil-based paint (2010)	2,006,000	1,760,000	2,133,000
Aerosol paint (2016)	126,000	118,000	119,000
Batteries – non-rechargeable (2014)	91,000	17,000	23,000
Batteries – rechargeable (2014)	10,000	7,000	10,000
Fluorescents (2014)	46,000	26,000	35,000
Home improvement (2016)	398,000	373,000	508,000
Household sharps (2018)	31,000	29,000	6,000
Household, cleaning, and auto maintenance (2018)	568,000	533,000	698,000
Lawn, garden, and pest products (2020)	263,000	247,000	311,000
Other HHW (not covered)	216,000	202,000	245,000
HHW not covered in any scenario	393,000	369,000	447,000
Total Pounds of HHW	**4,148,000**	**3,682,000**	**4,535,000**

Note: Figures may not sum to totals due to rounding to the nearest thousand.

Table 23. Moderate EPR Scenario Potential HHW/CEG Participation Levels

Participant Type	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
South Station (households)	30,000	26,700	32,900
Central Station (households)	19,100	17,000	20,900
Neighborhood Collection Events	8,800	7,800	9,600
CEG Program (businesses)	800	700	900
Total Customers	**58,700**	**52,200**	**64,300**

Note: Figures are rounded to the nearest hundred.

Table 24. Moderate EPR Scenario Potential Total Costs

Product Stewardship Category (EPR start year)	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
Latex and oil-based paint (2010)	$469,000	$411,000	$498,000
Aerosol paint (2016)	$205,000	$192,000	$193,000
Batteries – non-rechargeable (2014)	$153,000	$29,000	$39,000
Batteries – rechargeable (2014)	$17,000	$13,000	$17,000
Fluorescents (2014)	$110,000	$62,000	$84,000
Home improvement (2016)	$265,000	$248,000	$338,000
Household sharps (2018)	$177,000	$166,000	$33,000
Household, cleaning, and auto maintenance (2018)	$169,000	$159,000	$207,000
Lawn, garden, and pest products (2019)	$503,000	$472,000	$595,000
Other HHW (not covered)	$357,000	$335,000	$406,000
HHW not covered in any scenario	$403,000	$378,000	$458,000
Direct Costs for EPR- and CEG-covered Products	**$606,000**	**$628,000**	**$2,061,000**
Direct Costs for Products Not Covered	**$2,220,000**	**$1,835,000**	**$806,000**
Indirect Operating Costs	**$1,524,000**	**$1,524,000**	**$1,524,000**
Total Operating Cost	**$4,349,000**	**$3,987,000**	**$4,391,000**

Note: Figures may not sum to totals due to rounding to the nearest thousand.

Table 25. Moderate EPR Scenario Potential Metro Net Costs

Contracted Collector Payment Scenarios	2014–2015 (Year 3)	2021–2022 (Year 10)
PRO payment of 100% of direct costs for EPR-covered and CEG products	$3,359,000	$2,330,000
PRO payment of 100% of direct paint costs, and 75% of direct costs for other EPR-covered and CEG products	$3,413,000	$2,721,000
PRO payment of 100% of direct paint costs, and 50% of direct costs for other EPR-covered and CEG products	$3,468,000	$3,112,000

Note: Figures are rounded to the nearest thousand.

Scenario 3: Limited EPR Scenario

Detailed Scenario Description

This scenario assumes that EPR proponents are modestly successful, but that legislative advances are slow and constrained by strong political opposition and other political considerations. Products selected for coverage under this scenario represent likely successes among the priorities of EPR advocates, given precedents in other states and levels of opposition from various industry groups.

Scenario Description	EPR legislation is introduced each session for one or two new product categories, typically for products already covered by EPR in other U.S. states. Legislative support is variable, but at least one bill is passed every two years. In 2013 the paint program is made permanent in 2013 and fluorescent lamps are covered. Aerosol paint and rechargeable batteries are covered in 2015; sharps are covered in 2019. All laws include modest convenience standards but do not set binding performance standards.	
Regional Context	Support for EPR is concentrated in a few states and, even in those states, EPR faces strong opposition, making it difficult to pass new laws. Oregon follows the lead of other states, passing EPR laws that have been passed elsewhere first.	
Product Coverage and Timing* * Products listed in **bold** are new HHW products covered; paint (in *italics*) is already covered by an existing EPR law.	**2013**/2014	▪ *Latex and oil-based paint* ▪ **Mercury-containing fluorescent lamps**
	2015/2016	▪ **Aerosol paint** ▪ **Consumer batteries** (rechargeable only)
	2017/2018	
	2019/2020	▪ **Household sharps**
Base Growth Assumptions	Moderate, three-year drop in which quantities decline in the second year (2012–2013) by the half the rate as in the first year, decline in the third year by a quarter of the second year's rate, and neither decline nor grow in the third year. Quantities start to increase again in the fourth year Moderate recovery in which EPR-covered paint grows by 3% per year, other EPR-covered products grow by 5% per year, and products not covered by EPR grow by 3% per year.	

Metro's Share of Collection Quantities	Metro is assumed to collect only a portion of items that can be safely collected outside hazardous waste facilities, such as by retailers, at depot sites, or by mail. Metro is assumed to collect only 74 percent of all paint. Once EPR programs are in place, Metro is assumed to collect reduced quantities of the following products compared to its pre-EPR quantities: 20 percent of non-rechargeable batteries, 80 percent of rechargeable batteries, 60 percent of fluorescent lamps, and 15 percent of household sharps.

Analysis of Scenario Effects

In the Limited EPR scenario, collected volumes are expected to decrease in the short-term as more customers take paint to retail drop-off locations instead of disposing of all their wastes at Metro facilities. In the long-term, quantities revert to historical growth rates and increase due to effective education about EPR and additional EPR programs. Depending on payment amounts from producers under EPR programs, Metro's *net* costs could remain similar to 2011–2012.

Quantities: Compared to 2011–2012, Metro's collection quantities are estimated to decrease until 2014–2015 (to 90% of base year quantities) then recover to reach 108 percent of base year quantities in 2021–2022, as shown in **Table 26**.

Participation: Total participation is expected to decrease to approximately 53,000 in 2014–2015 then recover to reach nearly 64,000 in 2021–2022, as shown in **Table 27**.

Total Operating Costs: Metro's total (direct plus indirect) operating costs are estimated to decrease until 2014–2015 (to 94% of base year costs) the increase to reach 102 percent of base year costs in 2021–2022, as shown in **Table 28**, assuming Metro can continue to use its current facilities.

Net Operating Costs: Depending on the payment amounts paid by producer responsibility organizations (PROs) to contracted collectors, Metro's *net* costs may remain relatively similar, as shown in **Table 29**. If PROs pay all direct costs for EPR-covered products, Metro's net costs in 2021–2022 could decrease to approximately 93 percent of the current program costs. In contrast, if PROs pay all direct costs for paint but only half of direct costs for other EPR-covered products, then Metro's net costs could remain at approximately 99 percent of their current level.

Table 26. Limited EPR Scenario Potential Collected Quantities (pounds)

Product Stewardship Category (EPR start year)	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
Latex and oil-based paint (2010)	2,006,000	1,760,000	2,133,000
Aerosol paint (2016)	126,000	118,000	119,000
Batteries – non-rechargeable (not covered)	91,000	86,000	104,000
Batteries – rechargeable (2016)	10,000	9,000	10,000
Fluorescents (2014)	46,000	26,000	35,000
Home improvement (not covered)	398,000	373,000	453,000
Household sharps (2020)	31,000	29,000	6,000
Household, cleaning, and auto maintenance (not covered)	568,000	533,000	646,000
Lawn, garden, and pest products (not covered)	263,000	247,000	299,000
Other HHW (not covered)	216,000	202,000	245,000
HHW not covered in any scenario	393,000	369,000	447,000
Total Pounds of HHW	**4,148,000**	**3,753,000**	**4,497,000**

Note: Figures may not sum to totals due to rounding to the nearest thousand.

Table 27. Limited EPR Scenario Potential HHW/CEG Participation Levels

Participant Type	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
South Station (households)	30,000	27,200	32,600
Central Station (households)	19,100	17,300	20,800
Neighborhood Collection Events	8,800	8,000	9,500
CEG Program (businesses)	800	700	900
Total Customers	**58,700**	**53,200**	**63,700**

Note: Figures are rounded to the nearest hundred.

Table 28. Limited EPR Scenario Potential Total Costs

Product Stewardship Category (EPR start year)	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
Latex and oil-based paint (2010)	$469,000	$411,000	$498,000
Aerosol paint (2016)	$205,000	$192,000	$193,000
Batteries – non-rechargeable (not covered)	$153,000	$143,000	$174,000
Batteries – rechargeable (2016)	$17,000	$16,000	$17,000
Fluorescents (2014)	$110,000	$62,000	$84,000
Home improvement (not covered)	$265,000	$248,000	$301,000
Household sharps (2020)	$177,000	$166,000	$31,000
Household, cleaning, and auto maintenance (not covered)	$169,000	$159,000	$192,000
Lawn, garden, and pest products (not covered)	$503,000	$472,000	$572,000
Other HHW (not covered)	$357,000	$335,000	$406,000
HHW not covered in any scenario	$403,000	$378,000	$458,000
Direct Costs for EPR- and CEG-covered Products	**$606,000**	**$598,000**	**$969,000**
Direct Costs for Products Not Covered	**$2,220,000**	**$1,983,000**	**$1,957,000**
Indirect Operating Costs	**$1,524,000**	**$1,524,000**	**$1,524,000**
Total Operating Cost	**$4,349,000**	**$4,105,000**	**$4,450,000**

Note: Figures may not sum to totals due to rounding to the nearest thousand.

Table 29. Limited EPR Scenario Potential Metro Net Costs

Contracted Collector Payment Scenarios	2014–2015 (Year 3)	2021–2022 (Year 10)
PRO payment of 100% of direct costs for EPR-covered and CEG products	$3,507,000	$3,481,000
PRO payment of 100% of direct paint costs, and 75% of direct costs for other EPR-covered and CEG products	$3,554,000	$3,599,000
PRO payment of 100% of direct paint costs, and 50% of direct costs for other EPR-covered and CEG products	$3,601,000	$3,717,000

Note: Figures are rounded to the nearest thousand.

Status Quo Scenario

Detailed Scenario Description

This scenario assumes that the current PaintCare program continues, including retail collection, but no new products are covered by EPR programs. The Status Quo scenario uses the same growth assumptions as the Limited EPR scenario.

Scenario Description	No new EPR legislation is passed. The paint program continues but no other products are covered by EPR. No changes are made to the convenience or performance standards of the paint program.	
Regional Context	Not assessed	
Product Coverage and Timing* * Paint (in *italics*) is already covered by an existing EPR law.	**2013**/2014	▪ *Latex and oil-based paint*
	2015/2016	▪ No new products
	2017/2018	▪ No new products
	2019/2020	▪ No new products
Base Growth Assumptions	Moderate, three-year drop in which quantities decline in the second year (2012–2013) by the half the rate as in the first year, decline in the third year by a quarter of the second year's rate, and neither decline nor grow in the third year. Quantities start to increase again in the fourth year Moderate recovery in which EPR-covered paint grows by 3% per year and products not covered by EPR grow by 3% per year.	
Metro's Share of Collection Quantities	Metro is assumed to collect only a portion of items that can be safely collected outside hazardous waste facilities, such as by retailers, at depot sites, or by mail. Metro is assumed to collect only 74 percent of all paint.	

Analysis of Scenario Effects

In the Status Quo EPR scenario, collected volumes are expected to decrease in the short-term as more customers take paint to retail drop-off locations instead of disposing of all their wastes at Metro facilities. In the long-term, quantities revert to historical growth rates. Depending on payment amounts from producers under EPR programs, Metro's *net* costs could increase compared to 2011–2012.

Quantities: Compared to 2011–2012, Metro's collection quantities are estimated to decrease until 2014–2015 (to 91% of base year quantities) then recover to reach 110 percent of base year quantities in 2021–2022, as shown in **Table 30**. Quantities are slightly higher than in the Limited EPR scenario because no products (such as fluorescent lamps, rechargeable batteries, or and sharps) are diverted to retail or mail-back collectors.

Participation: Total participation is expected to decrease to approximately 53,000 in 2014–2015 then recover to reach nearly 65,000 in 2021–2022, as shown in **Table 31**.

Total Operating Costs: Metro's total (direct plus indirect) operating costs are estimated to decrease until 2014–2015 (to 95% of base year costs) the increase to reach 108 percent of base year costs in 2021–2022, as shown in **Table 32**, assuming Metro can continue to use its current facilities.

Net Operating Costs: In this Status Quo scenario Metro's *net* costs could increase, as shown in **Table 33**. If PROs pay all direct costs for EPR-covered products, Metro's net costs in 2021–2022 could increase to approximately 108 percent of the current program costs. In contrast, if PROs pay all direct costs for paint but only half of direct costs for other EPR-covered products, then Metro's net costs could increase to approximately 110 percent of their current level.

Table 30. Status Quo Scenario Potential Collected Quantities (pounds)

Product Stewardship Category (EPR start year)	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
Latex and oil-based paint (2010)	2,006,000	1,760,000	2,133,000
Aerosol paint (not covered)	126,000	118,000	143,000
Batteries – non-rechargeable (not covered)	91,000	86,000	104,000
Batteries – rechargeable (not covered)	10,000	9,000	11,000
Fluorescents (not covered)	46,000	43,000	52,000
Home improvement (not covered)	398,000	373,000	453,000
Household sharps (not covered)	31,000	29,000	35,000
Household, cleaning, and auto maintenance (not covered)	568,000	533,000	646,000
Lawn, garden, and pest products (not covered)	263,000	247,000	299,000
Other HHW (not covered)	216,000	202,000	245,000
HHW not covered in any scenario	393,000	369,000	447,000
Total Pounds of HHW	**4,148,000**	**3,770,000**	**4,569,000**

Note: Figures may not sum to totals due to rounding to the nearest thousand.

Table 31. Status Quo Scenario Potential HHW/CEG Participation Levels

Participant Type	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
South Station (households)	30,000	27,300	33,100
Central Station (households)	19,100	17,400	21,100
Neighborhood Collection Events	8,800	8,000	9,700
CEG Program (businesses)	800	700	900
Total Customers	**58,700**	**53,400**	**64,800**

Note: Figures are rounded to the nearest hundred.

Table 32. Status Quo Scenario Potential Total Costs

Product Stewardship Category (EPR start year)	2011–2012 (Year 0)	2014–2015 (Year 3)	2021–2022 (Year 10)
Latex and oil-based paint (2010)	$469,000	$411,000	$498,000
Aerosol paint (not covered)	$205,000	$192,000	$233,000
Batteries – non-rechargeable (not covered)	$153,000	$143,000	$174,000
Batteries – rechargeable (not covered)	$17,000	$16,000	$19,000
Fluorescents (not covered)	$110,000	$103,000	$125,000
Home improvement (not covered)	$265,000	$248,000	$301,000
Household sharps (not covered)	$177,000	$166,000	$201,000
Household, cleaning, and auto maintenance (not covered)	$169,000	$159,000	$192,000
Lawn, garden, and pest products (not covered)	$503,000	$472,000	$572,000
Other HHW (not covered)	$357,000	$335,000	$406,000
HHW not covered in any scenario	$403,000	$378,000	$458,000
Direct Costs for EPR- and CEG-covered Products	**$606,000**	**$540,000**	**$654,000**
Direct Costs for Products Not Covered	**$2,220,000**	**$2,082,000**	**$2,524,000**
Indirect Operating Costs	**$1,524,000**	**$1,524,000**	**$1,524,000**
Total Operating Cost	**$4,349,000**	**$4,146,000**	**$4,702,000**

Note: Figures may not sum to totals due to rounding to the nearest thousand.

Table 33. Status Quo Scenario Potential Metro Net Costs

Contracted Collector Payment Scenarios	2014–2015 (Year 3)	2021–2022 (Year 10)
PRO payment of 100% of direct costs for EPR-covered and CEG products	$3,606,000	$4,048,000
PRO payment of 100% of direct paint costs, and 75% of direct costs for other EPR-covered and CEG products	*Not applicable because only paint is covered by an EPR program*	
PRO payment of 100% of direct paint costs, and 50% of direct costs for other EPR-covered and CEG products		

Note: Figures are rounded to the nearest thousand.

Scenario Analysis Effects with Alternative Ranges

To allow for visual comparisons of analysis results across scenarios, the following charts present historical and projected program data on pounds accepted (**Figure 8**), number of participants (**Figure 9**), *total* operating costs (**Figure 10**), and *net* operating costs, assuming producer responsibility organizations cover 100 percent of direct costs for EPR-covered products (**Figure 11**). Historical program data are depicted in solid black bars while projections are presented in clustered bars using a different color for each scenario. Vertical lines with end caps present a range for each scenario using alternative—higher and lower—growth assumptions.

Several conclusions can be drawn from these charts and the detailed analysis of each scenario described in the previous section:

- **Projections for quantities collected by Metro are affected more strongly by assumptions regarding growth rates** than by assumptions regarding the categories and timing of products covered by EPR programs.
- **Projections for customer counts are based on quantities collected**, so they are also most strongly affected by assumptions regarding growth rates.
- **Projections for *total* operating costs are affected moderately by both growth and EPR program assumptions** because EPR programs divert relatively high-cost products from Metro to retailers. In the High EPR scenario (using moderate growth assumptions), Metro collects slightly fewer pounds of waste than in the Status Quo scenario because some additional covered products (beyond paint) are assumed to be also collected by retailers: aerosol paint, consumer batteries, fluorescent lamps, and sharps. This difference in *total* operating costs between the two scenarios caused by this change in collection quantities is intensified because the per-pound collection cost for these products diverted from Metro to retailers is relatively high. For example, in 2011–2012, direct costs were estimated to be $5.68 per pound of sharps, $2.40 per pound of fluorescent lamps, $1.75 for rechargeable batteries, $1.67 for non-rechargeable batteries, and $1.63 for aerosol paint. In contrast, direct costs are much lower for products for which Metro is assumed to be the only collector, averaging $0.92 per pound.
- **Projections for *net* operating costs are affected most strongly by assumptions about EPR product coverage and payment levels by producer responsibility organizations.** By 2021–2022, in the High EPR scenario, 90 percent of waste by weight collected by Metro is assumed to be covered by an EPR program, meaning Metro will receive payments to cover some or all of those direct costs. In contrast, in the Status Quo scenario, less than half the waste (paint only) is assumed to be covered by EPR—and thus the associated payments are proportionally lower.

Figure 8. Analysis Summary—Pounds Accepted by Metro, 2005–2022

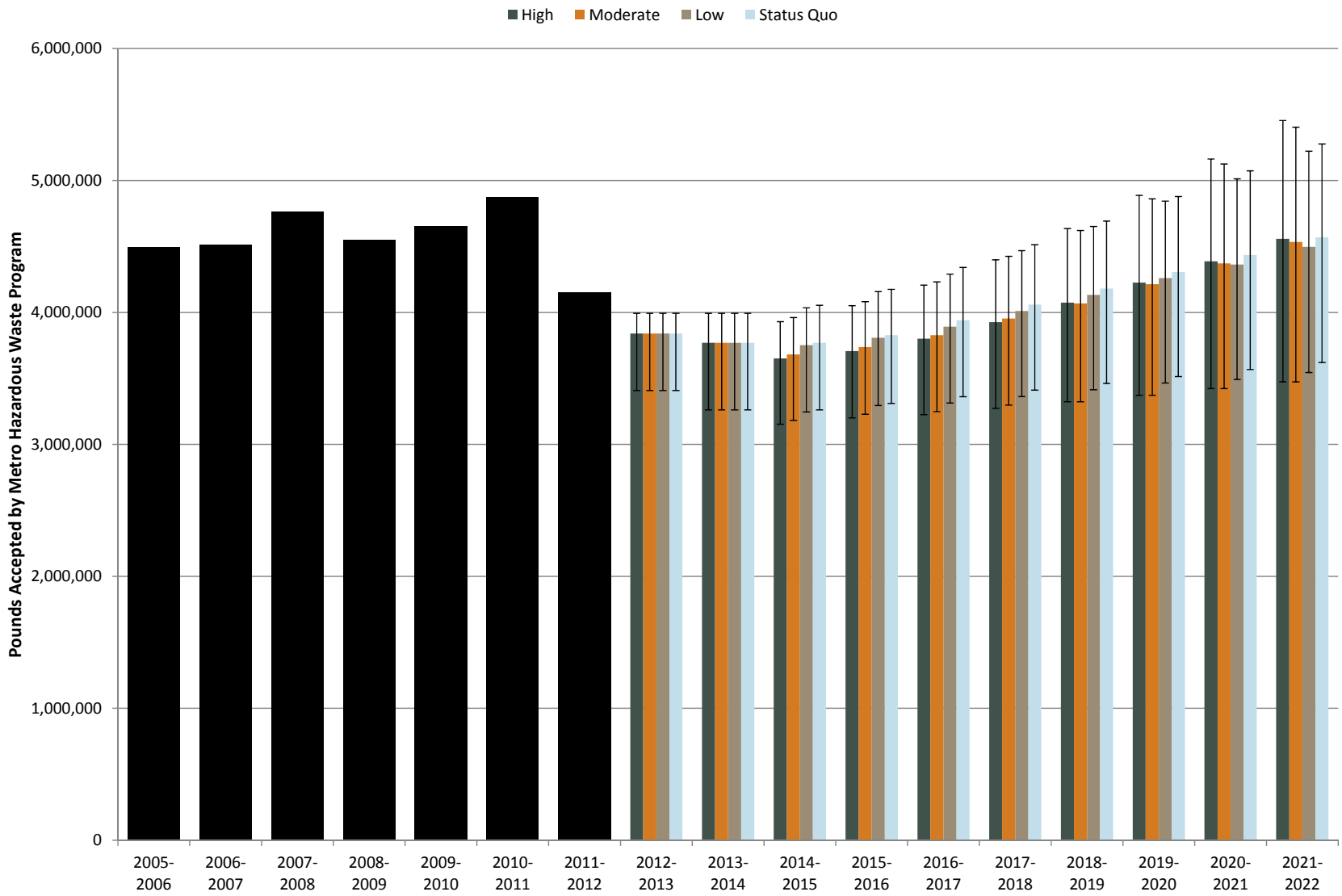


Figure 9. Analysis Summary—Metro Customers, 2005–2022

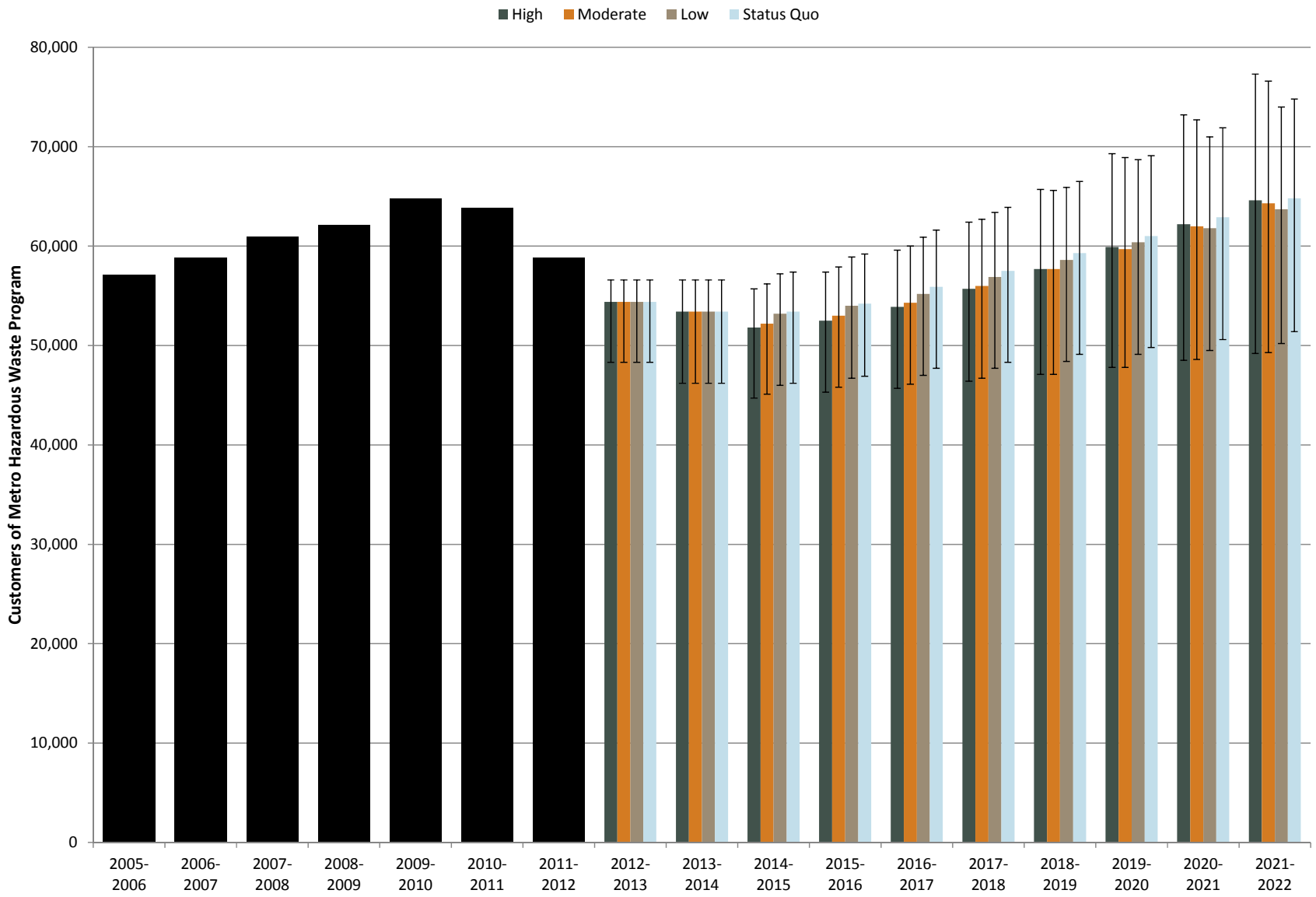


Figure 10. Analysis Summary—Metro Total Operating Costs, 2005–2022

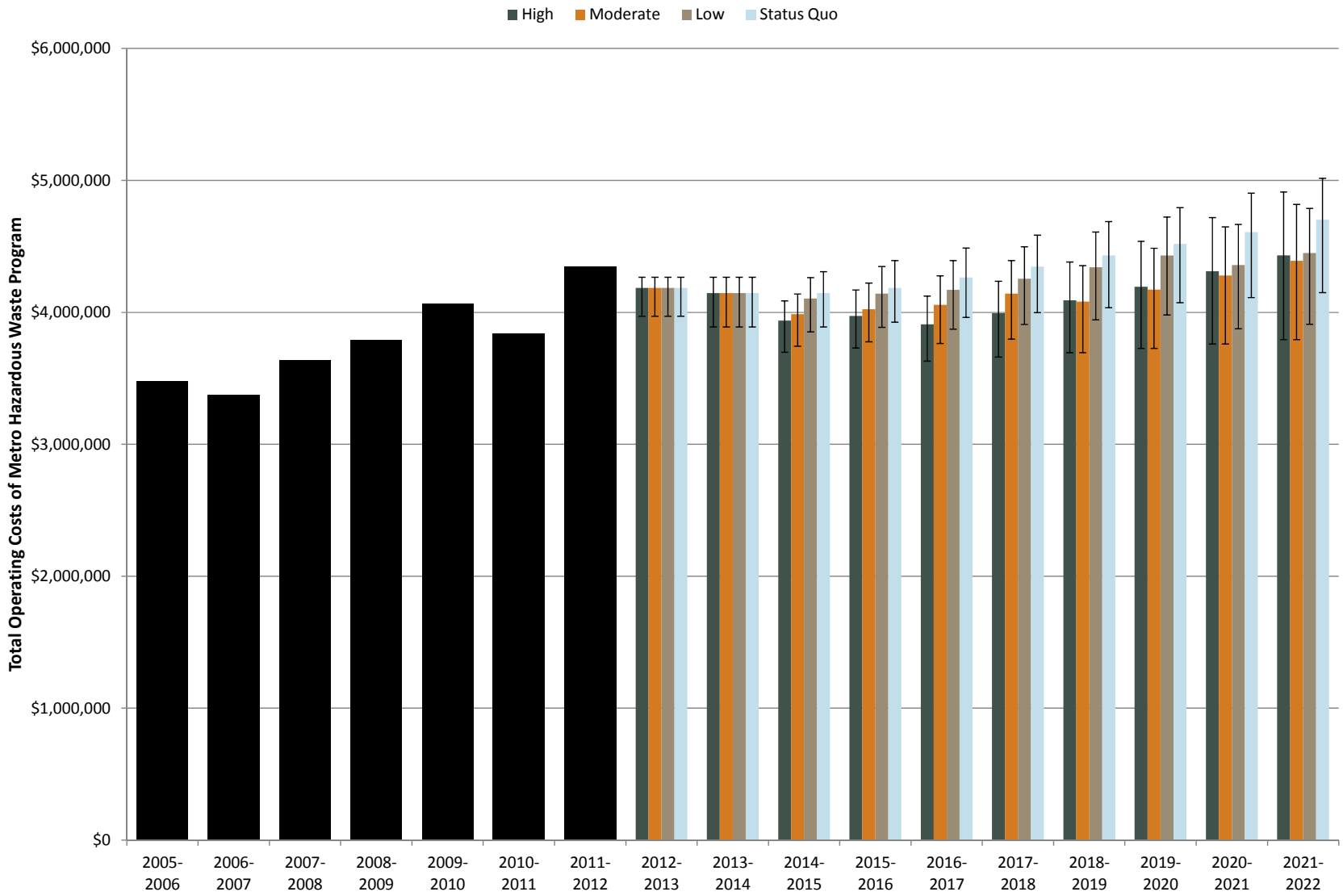
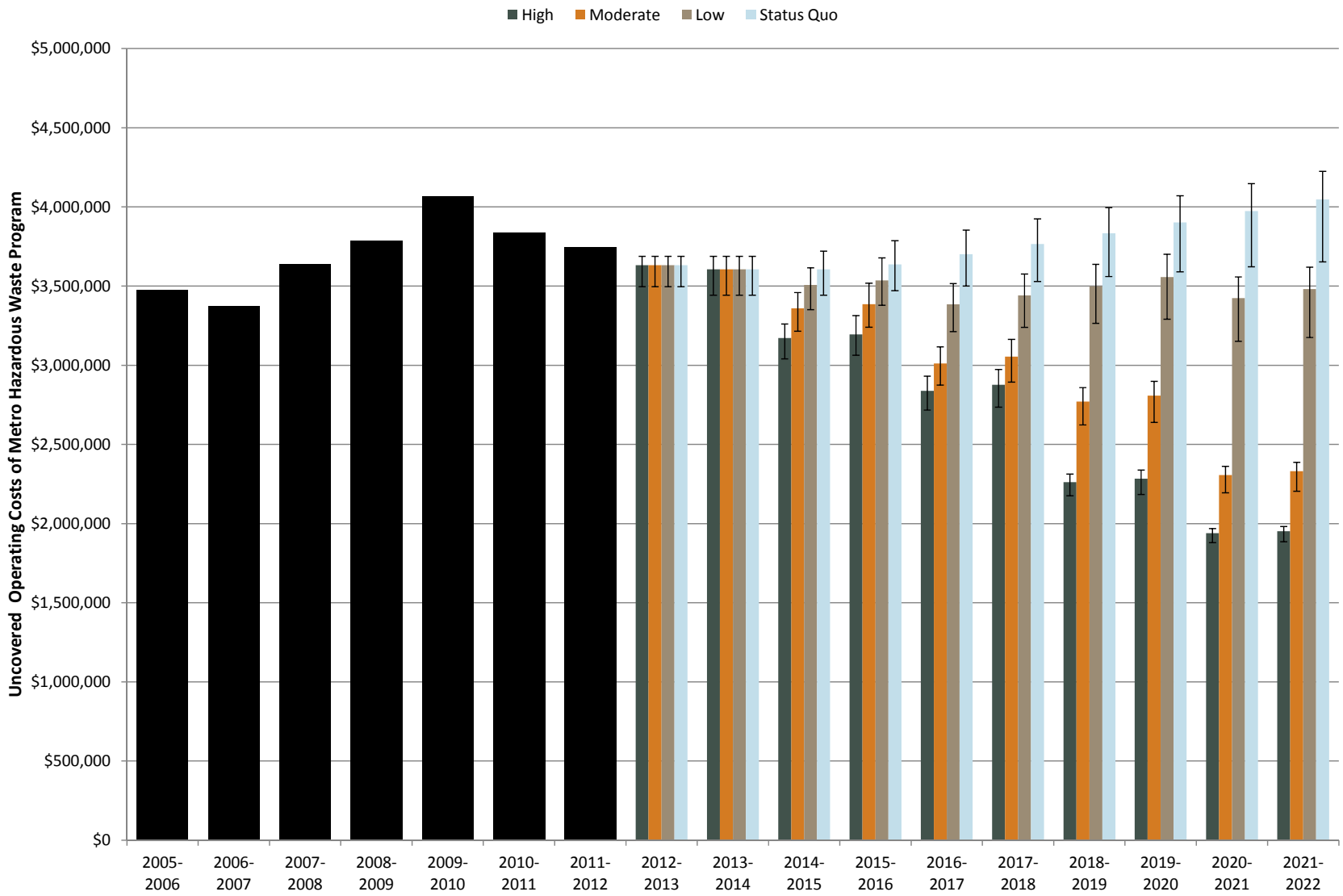


Figure 11. Analysis Summary—Metro Net Operating Costs, 2005–2022



3. Operational Implications of EPR Scenarios

This study examined potential operational implications of Metro acting as a collection service provider to one or more producer responsibility organizations and the estimated changes in quantities collected, participation, and operating costs across the different scenarios. Metro provided information on current operations and previous analyses of potential operational changes. This chapter presents:

- **Summary of considerations** if Metro were to act as a collection service provider.
- **Considerations for individual collection options**, such as opportunities to increase collection through permanent collection facilities, mobile collection events, satellite collection sites, or door-to-door collection service.
- **Metro's ability to meet potential criteria for service providers** that may be specified in EPR regulations or by producer responsibility organizations.

Summary of Considerations

In evaluating a potential future role as a collection service provider to one or more producer responsibility organizations (PROs), Metro takes account of the following considerations:

Metro as a service provider

- Metro does not seek to compete with the private sector when a local private service provider can fulfill the need at the same level of safety and a reasonable cost.
- Metro can offer PROs an existing, safe, efficient, and well-known collection infrastructure. Metro's transfer stations provide "one-stop shopping" convenience in which customers can dispose of all types of household hazardous waste products (whether or not covered by a product stewardship program) as well as trash and source-separated recyclables. Metro's transfer stations are also likely able to handle larger quantities of hazardous waste than typical retail locations, providing convenience for customers with large quantities and creating economies of scale for transportation to the final disposal location.
- Metro expects to continue operating a household hazardous waste collection program to help residents safely dispose of hazardous products and materials, though EPR programs may provide alternative collection options for some product categories.

Expanding demand for collection services

- To mitigate the short-term decrease in participation, Metro could conduct an advertising campaign promoting the permanent collection facilities.

Expanding collection services

- Metro does not plan to build a new permanent collection facility in addition to its current sites.
- Metro is considering relocating the Metro South facility to a larger location with space to support additional mobile collection events or satellite sites. A relocated facility would not be available for approximately five years.

- Metro may be able to expand mobile collection events, satellite collection sites, and door-to-door collection services.
- For limited public HHW collection, Metro may be able to partner with existing private solid waste sites (hazardous waste storage permits may be needed) or with existing industrial and government sites that are permitted for hazardous waste storage.
- **Appendix E** presents potential options to increase capacity along with screening-level assessments of potential operational impacts, feasibility, relative cost, and relevant products for each option.

Funding

- If EPR reduces the Hazardous Waste Program's net costs, some of the savings could be directed to modification or expansion of Metro Central, modification of Metro South if it does not move, or start-up costs for additional mobile roundup events, satellite sites, or door-to-door collections.

Timing

- Metro is unlikely to expand mobile roundup events or to initiate satellite sites or door-to-door collection with current program funding. PROs considering using Metro as a service provider, however, may prefer Metro to have expanded collections (to meet convenience standards) in place or fully planned before signing a collection contract.

Considerations for Individual Collection Systems

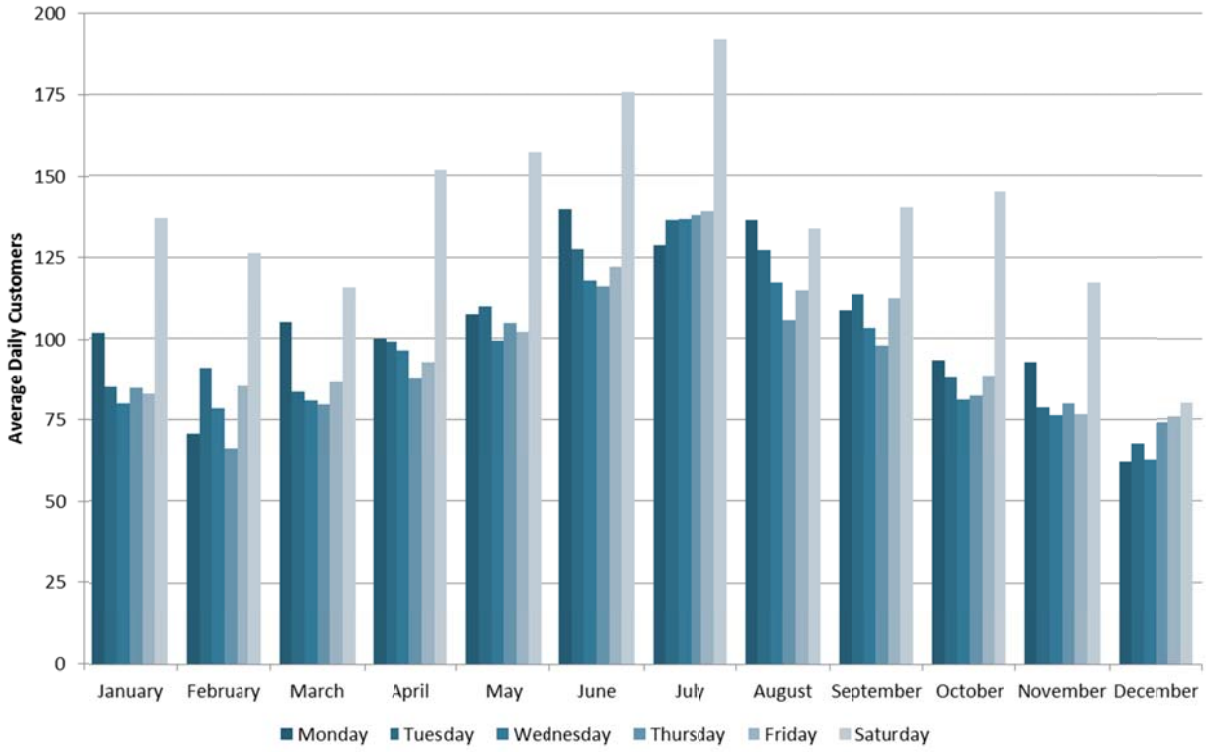
Permanent Collection Facilities

Metro South Hazardous Waste Facility

In 2011, the Metro South Station served 32,704 customers and collected nearly 2.3 million pounds of waste. On average, each customer brought 70 pounds of waste. As shown in **Figure 12**, Saturdays were typically the busiest day of the week at Metro South; the facility is closed on Sundays. The facility tends to be busier in summer than in other seasons.

The HHW facility staff can unload and serve only one vehicle at a time, and Metro considers the facility to be at its capacity on busy days. On its busiest day in 2011, the facility served more than 200 customers. Waste sorting and storage capacity also limit the amount of HHW materials that Metro South can handle. Additional staffing and waste pick-ups by hazardous waste transporters could increase throughput to some extent. The HHW facility has no room to expand at its current location.

Figure 12. Average HHW/CEG Customers Served at Metro South by Month and Day of Week, 2011



Metro is currently in the process of a two-year needs assessment for solid and hazardous waste services in the region near Metro South. One option under consideration is to move self-hauled solid waste and household hazardous waste collection to a new, larger location. If that option is recommended, the expanded facility would not be operational for several years due to the need for site selection, facility design, and facility construction.

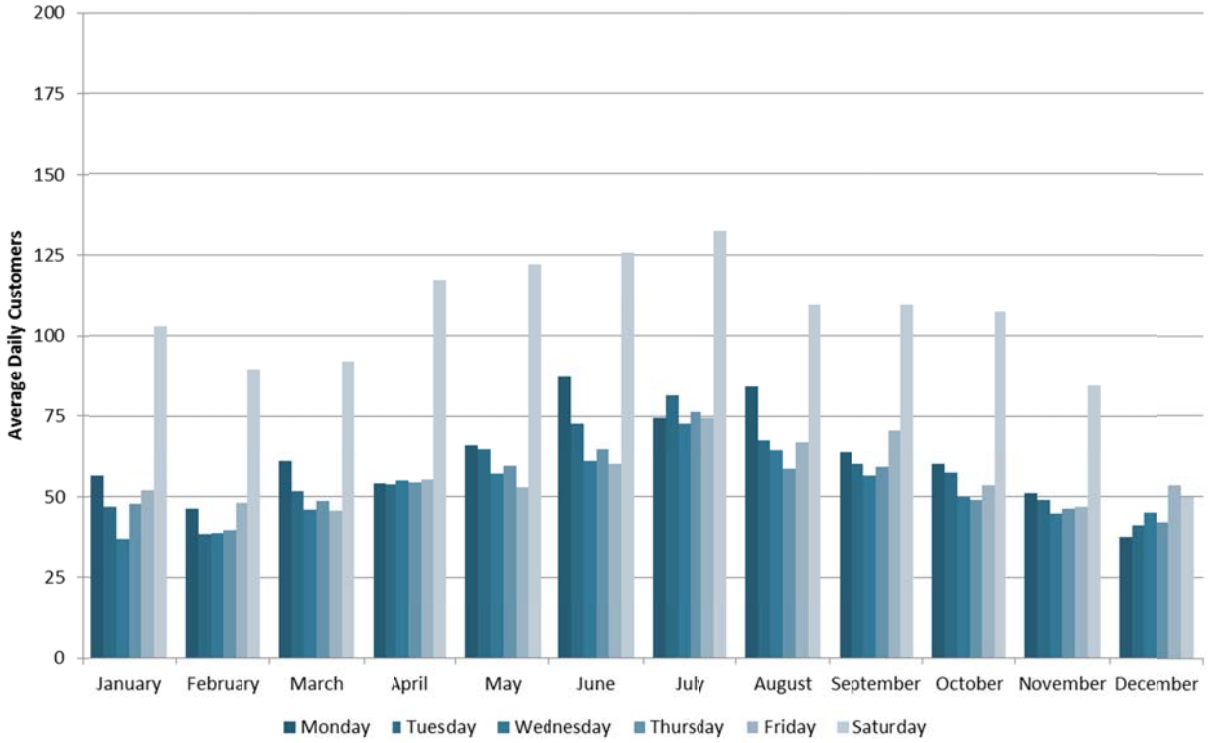
Metro Central Hazardous Waste Facility

In 2011, the Metro Central Station served 19,302 customers and collected nearly 1.7 million pounds of waste. On average, each customer brought 87 pounds of waste. As shown in **Figure 13** and similar to Metro South, Saturday was the busiest day of the week at Metro Central; the facility is also closed on Sundays. On its busiest day in 2011, Metro Central served nearly 150 customers.

Metro's mobile collection events (roundups) are staged and mobilized from the Metro Central Station. Metro considers Metro Central to have remaining capacity and the potential to expand if unused land adjacent to the current location can be acquired.

Customer visit patterns indicate that customers prefer to visit Metro South, however. A modified fee structure could create incentives for customers to shift from Metro South to Metro Central or to use facilities during off-peak days and times (such as free or reduced fees at off-peak times, days, and/or the Metro Central Station).

Figure 13. Average HHW/CEG Customers Served at Metro Central by Month and Day of Week, 2011



Mobile Collection Events

***Mobile collection events**, also called roundups, are temporary collection events that last one to three days; all waste and collection materials are removed from the site at the end of each event. Each site is used infrequently for collection, such as once a year.*

In 2011, Metro held 34 mobile collection events serving 8,492 household customers. More than 485,000 pounds of waste were collected at these mobile events, an average of 57 pounds per customer. Metro targets its event advertising to achieve desired participation rates, sending promotional materials to approximately 2,000 to 5,000 homes in postal routes immediately adjacent to the collection site. In 2011, about 250 customers on average participated in each roundup event.

Metro previously analyzed the cost of mobile events compared to permanent facilities, finding that mobile events are significantly more expensive because they incur additional labor, event advertising, and mobilization costs. Extra labor time is required for preparation before each event, travel, site set-up, waste loading for transport to the receiving facility, and site clean-up. Event mobilization costs include fuel, vehicle repairs, rental of drop-box waste containers, portable toilets, tents, security, and signage. Time spent receiving waste from customers and conducting preliminary waste sorting is not considered extra labor, as this work would also be required for waste collected at permanent facilities.

In an analysis of fiscal year 2004–2005, Metro estimated that each pound of waste collected a mobile events cost approximately 45 percent more than a pound of waste collected at permanent facilities. Updating this analysis would help Metro better assess the benefits and costs of expanding collection through increased mobile events.

Satellite Collection Sites

Satellite collection sites *are locations that contain some permanent infrastructure, such as storage for collection supplies and potentially storage for non-flammable wastes, but they are not full hazardous waste facilities. Satellite sites are used regularly for collection but not as frequently as permanent sites.*

Metro does not currently operate any permanent satellite collection sites, though they could be an option for expanding collection if needed. Satellite sites offer a collection alternative to permanent facilities or temporary mobile events. Like permanent facilities, satellite sites offer predictable collection location and schedules. Similar to mobile events, satellite sites require less capital investment.

In Washington State, King County recently established weekly collection at a satellite site in the southern part of the county, which had previously been underserved. Starting in July 2009, King County collected waste every first and third weekend (Friday, Saturday, and Sunday) at the Auburn SuperMall. In February 2012, the county expanded the service to occur on Saturdays and Sundays every week.

Previous Analysis (2006)

In 2006, Metro considered the potential to establish two satellite collection locations: one in Washington County and one in the Gresham area. Metro's previous findings are summarized below.

Siting

Satellite collection sites would need to include storage for equipment and some (non-flammable) waste to provide advantages over mobile roundup events. To provide the most convenient service to residents, a satellite site should be located roughly in the center of each respective service area. Obtaining an appropriate site and developing a facility permitted to store hazardous materials in well-populated areas could be a costly and contentious process, however. Alternatively, Metro could potentially locate satellite collection sites at existing private solid waste facilities such as transfer stations. Potential drawbacks include that transfer station may not currently be permitted to store hazardous materials and may not have space to store waste and equipment.

Frequency of service

Service at private solid waste facilities may be available only on Saturdays because the facilities are typically busy during the rest of the week. While customers prefer Saturdays to other days of the week, Metro likely would have difficulty staffing two satellite sites simultaneously. One option would be to alternate Saturday service between the two satellite sites.

If dedicated satellite sites (not at transfer stations) were acquired, Metro could provide more days of service, perhaps at least two to three days per week. Metro would need to hire more staff to manage these satellite sites, however, unless the sites were open on alternating days or weeks.

Anticipated attendance

If satellite collection sites were established at the Troutdale and Forest Grove transfer stations on alternating weeks from March through November, Metro estimated that customer attendance would likely be similar to attendance in the mobile event roundup program. Significant promotion may be required to achieve this level of attendance, given the less convenient locations of the transfer stations and limited days of operation.

If new satellite locations were established in the center of the service areas, such sites might see a significant increase in customers, especially if the facilities were open several days per week. While some customers are expected to shift from the permanent locations at Metro Central and Metro South, a significant number would likely be new customers. If so, this growth would result in substantial new costs to Metro's Hazardous Waste Program.

Cost

To the extent that satellite sites displace mobile roundup events, the sites could eliminate some costs such as planning and coordination of numerous mobile roundup event sites. Tent rental would not be needed if the satellite site included an indoor collection location.

If the satellite site included storage space for equipment and some wastes, transport costs could be somewhat reduced but not eliminated. Metro would still incur costs for preparation and transport of staff and of equipment and waste that cannot be stored. However, storage would allow Metro to collect certain wastes until a quantity suitable for contractor pickup was accumulated. On-site storage would *not* be feasible for solvent-based wastes, which need to be bulked in a safe bulking room at a permanent facility. At the time of the 2006 analysis, solvent-based wastes composed about 30 percent of collection.

In 2006, Metro estimated that satellite collection at a private transfer station could save approximately 25 percent of mobilization costs, and a dedicated permanent location could save as much as 50 percent. Consequently, satellite collection would be about 11 percent to 22 percent more expensive per pound than permanent facility collection. Metro estimated that if the budget for mobile roundup events were instead directed to two satellite sites, the Hazardous Waste Program could serve approximately 2 to 3 percent more customers each year.

Public response

At the time of Metro's analysis in 2006, many of customers attending mobile roundup events filled out comment cards. Many respondents were very pleased that Metro provided service in a location they considered convenient. Metro received many requests to return to mobile event locations two or more times per year. A single satellite location in the Gresham area or a single location in Washington County would likely be considered much less convenient than the mobile roundup events by some residents of those areas. Metro anticipated complaints to management and Metro Council. Metro also considered that some constituents of some Metro Council districts could consider satellite collection sites a reduction in service.

Door-to-Door Collection Service

Door-to-door collection *occurs by appointment at a customer's home. In one variation, collection staff members visit while the customer is home and may help the customer gather waste, particularly for seniors and other homebound customers. In another variation, Metro could drop off a specialized collection container at the customer's home to be collected on a specified later date.*

Metro's current use of door-to-door collection is limited to individuals who are unable to deliver their waste to Metro's collection sites because they are either elderly or homebound and do not have anyone to assist them. Door-to-door service is much more costly than other collection options and is currently limited to special cases, typically only once or twice a year. Metro has piloted more extensive door-to-door services in the past, but it discontinued the pilot due to high staff time and transportation costs.

Metro's Ability to Meet Potential Criteria for Service Providers

EPR regulations may require producer responsibility organizations to meet standards for performance, convenience, and collection. Before hiring Metro as a service provider, PROs may require Metro both to meet criteria ensuring that the resulting EPR program will satisfy regulatory requirements and that it will provide cost-effective services. Metro should consider the following potential service provider criteria:

Performance

EPR regulations could require PROs to ensure safe handling of collected materials in a manner that meets applicable state and federal regulations on the protection of human health and the environment. Regulations could also require that PROs meet additional specific guidelines, such as managing wastes in a manner that prioritizes reuse (where appropriate), recycling, or other management methods high on the waste management hierarchy.

Metro's performance: Metro has a strong track record of safely handling many different HHW materials over a number of years to protect human health and the environment in compliance with regulatory requirements and Metro's high standards for safety. Metro's Regional Solid Waste Management Plan uses the waste management hierarchy as a guiding principle. In 2011, Metro's Hazardous Waste Program sent approximately 3 percent of collected products for reuse, 54 percent for recycling, and 28 percent for energy recovery.

Convenience

EPR regulations may require PROs to provide "convenient" collection—which may be defined in detail with prescribed locations and hours of operation, defined more flexibly with a minimum number of sites per given population and a minimum total operating days per week, or without any specifications on the meaning of "convenient."

Metro's convenience: Metro's mobile roundup events provide collection service across most areas of the Metro region over time, but they have limited days and hours of operation. Metro's permanent facilities provide extensive hours of operation but in only two locations. Adding satellite sites or door-to-door collection would increase convenience but would also increase costs.

Collection

Some EPR regulations could require PROs to achieve a target collection quantity defined in pounds or target recycling percentage rate.

Metro's collection: Metro currently provides relatively high service levels, resulting in relatively high collection of targeted materials compared to other hazardous waste. Implementing additional mobile, satellite, or door-to-door services may be necessary to reach service levels required by EPR regulations. Promotion will also likely be an important factor in achieving required service levels.

Cost

PROs will likely seek the lowest-cost service provider that can help them meet regulatory requirements. PROs would pay only for their covered product(s), and they may be willing to pay for only a basic level of service. PROs may be willing to pay only direct collection costs (or a portion of them) and not any portion of the fixed costs required to support direct collection activities.

Metro's cost: Metro provides more extensive services than many HHW programs around the United States.[11] In addition, Metro provides high levels of customer service and adheres to high standards for safety and environmental protection. As a result, total program costs are higher than many programs elsewhere, which may deter PROs looking for the lowest cost service provider that will meet EPR requirements.

[11] Cascadia Consulting Group for Metro Solid Waste and Recycling Department, "Comparison of Household Hazardous Waste Programs," 2005, http://www.solidwaste.org/uploads/metrohhwrpt_full.pdf.

4. Potential Next Steps

To prepare for potential future EPR programs described in the scenario analysis and for a possible expanded role as a service provider to PROs, Metro should consider exploring the following next steps:

- **Develop a written plan for achieving higher convenience levels** that will likely be required under EPR programs, including specific logistical, cost, and participation details for enhanced mobile events, satellite sites, and/or door-to-door collection, using Metro's permanent facilities as hubs. Update the 2006 cost comparison analysis of mobile events, satellite sites, and permanent facilities.
- **Continue to pursue efficiencies** that lower operating costs while maintaining high safety standards.
- **Consider the acceptability of various PRO payment systems**, particularly those in which PROs do not pay for overhead costs or even do not pay all of Metro's direct costs. Internal discussions would be better informed if Metro updated its analysis of the assumptions underlying the direct costs attributable to each product category and examined systems for attributing indirect and administrative costs to individual product categories.

Beyond continuing to collect hazardous waste for EPR programs, Metro could play other roles such as:

- **Working with the State Legislature, Oregon DEQ, and other groups** on new legislation and rulemaking around EPR programs, as well as harmonization efforts among EPR legislation and program implementation efforts in multiple states.
- **Partner with regional and national entities on exploring EPR approaches**; such work could include stakeholder outreach to bring interested parties together to work collaboratively. Such efforts could include stakeholder outreach to bring manufacturers, Oregon DEQ, environmental groups, and other interested parties together to work collaboratively on developing approaches for managing hazardous household products.
- **Providing premium collection services** beyond those provided through EPR programs, such as additional neighborhood collection events, door-to-door collection, or collection from business customers. (Note that PROs may not pay for additional costs of these services, however.)
- **Delivering education and outreach** to customers and the general public to supplement efforts that may be required of EPR programs.
- **Serving as a model service provider for paint collection and processing** to other government agencies and private service providers, as EPR programs for paint are implemented in other states.

Appendix A. Review of EPR Approaches

Discussion Draft (December 2011)

Metro seeks to consider the potential impact that extended producer responsibility (EPR) programs may have on its household hazardous waste (HHW) collection services. Metro's services are comprehensive and represent a considerable investment of public resources in infrastructure. Maintaining the current level of service and the benefits it provides also requires a considerable, ongoing public expense.

Extended producer responsibility seeks to shift the responsibility for hazardous or difficult-to-handle waste from the taxpayer to the producer. To better understand the potential impact of EPR programs in Oregon on Metro's Hazardous Waste Program, Cascadia Consulting Group conducted research to identify alternative approaches to EPR through a review of existing EPR programs in eight jurisdictions in Canada and the United States, listed in **Table A-1**.

The programs included were selected either because they cover household hazardous waste, have a structure that reflects "cutting-edge" thinking on producer responsibility, or both. In addition, programs were selected that represent a range of approaches to EPR program design.

Individual EPR programs vary considerably from one another, and Canadian programs in general differ from U.S. programs in an important way: in Canada, each province has some type of EPR policy framework from which programs for specific products have been enacted, although the framework mechanism varies. (Some provinces use a single regulation, separate regulations for specific products, or a combination of legislation and regulation.) Three of the provinces reviewed for this research (British Columbia, Manitoba, and Ontario) have standard requirements for all EPR programs, while in two other provinces (New Brunswick and Québec) requirements for EPR vary by product, although the variations are minor.

In contrast, EPR programs for specific products in the United States have been established individually, directly through legislation, with no overarching framework guiding the policy goals, program design, or implementation of each separate program. Maine is currently the only state in the U.S. with EPR framework legislation in place. Maine's framework law empowers the state's Department of Environmental Protection to make recommendations about which products should be covered by an EPR program and to suggest legislative language for such a program. However, enactment of a new EPR program still requires action by the state legislature.

Table A-1. EPR Programs Included in Review

Jurisdiction	Covered Products	Authorizing Legislation	Bodies Responsible for Management	Selection Rationale
British Columbia	Paint, pesticides, flammables	BC Environmental Management Act Recycling Regulation (2004)	Product Care	Covers HHW, and the BC Recycling Regulation offers considerable flexibility to industry in designing programs.
Manitoba	Automotive antifreeze, automotive lead acid batteries, consumer paint products, fluorescent lamps (CFLS and tubes), pesticides, pharmaceuticals, waste household hazardous materials	Household Hazardous Material and Prescribed Material Stewardship Regulation under the Waste Reduction and Prevention (WRAP) Act (1995, 1997, 2006)	Implementation of the regulation is currently in process.	Covers HHW, and the regulation allows industry to develop programs, while allowing the government the flexibility to impose requirements.
New Brunswick	Paint; tires	Tire Stewardship Regulation (1996), replaced by Designated Materials Regulation under the Clean Environment Act (2008)	Minister of Environment, Recycle New Brunswick (tires, oversees paint); Product Care (paint)	The paint program internalizes costs and uses Product Care as its PRO. The changes from the tire program to the paint program reflect the changes in thinking about EPR.
Ontario	Paints and coatings; solvents; oil filters; oil containers of 30 liters or less; single-use batteries; antifreeze and containers; pressurized containers; fertilizers; pesticides and containers	Municipal Hazardous or Special Waste Program (2008) established under the Ontario Waste Diversion Act (2002)	Ontario Environment Minister, Waste Diversion Ontario, Stewardship Ontario	The program covers HHW, and the Ontario legislative and regulatory framework provides a unique model for product stewardship organizations.
Quebec	Used oil and containers, used filters	Quebec Environmental Quality Act Regulation respecting the recovery and reclamation of used oils, oil or fluid containers, and used filters (2004)	Recyc-Quebec, Société de Gestion des Huiles Usagées	Quebec's product stewardship regulations have evolved over time. The used oil regulation is the most recent regulation to cover HHW. The oil industry has harmonized programs to some extent across Canada.
Maine	Computer monitors, televisions, desktop printers, video game consoles, digital picture frames; mercury-added lamps (from households); "framework" legislation	Maine Electronic Waste Act (2004, amend. 2009, 2011); An Act to Provide for the Safe Collection and Recycling of Mercury-Containing Lighting (2009); An Act To Provide Leadership Regarding the Responsible Recycling of Consumer Products (2010)	National Electrical Manufacturers Association (NEMA) (lamps); ME Department of Environmental Protection (electronics); ME DEP and Joint Standing Committee on Natural Resources (framework)	Maine's electronics and lamps laws represent the diversity of approaches to EPR program design within a single state; the framework law is the first of its kind in the U.S. and indicates where future legislation on EPR may be headed.
Minnesota	Video display devices	Minnesota Electronics Recycling Act (2007, amend. 2009, 2011)	Minnesota Pollution Control Agency	U.S. example where industry had relatively more freedom to create a product stewardship organization.
Washington	Computer monitors, hard drives, and televisions	Electronic Product Recycling Act (2006)	Washington State Department of Ecology, WMMFA (E-Cycle Washington)	U.S. example, with a quasi-governmental product stewardship organization of manufacturers.

For this review, Cascadia researched extended producer responsibility programs in both the U.S. and Canada to present information about the broad range of approaches to EPR that have been taken so far. This research examined the following specific program elements:

1. **Program structure**
2. **Structure and responsibilities of producer responsibility organizations**
3. **Producer financing methods**
4. **Consumer fees**
5. **Local government contractor payments**
6. **Performance standards**
7. **Convenience standards**
8. **Collection standards**
9. **Selection of products**

Table A-2 below summarizes the range of approaches to these program elements within the EPR programs reviewed, and a discussion of each element follows. For some program characteristics, up to four approaches were identified. Other characteristics showed less variability, with only one or two options identified.

An important theme underlying differences across programs was the **roles and balance of power** between government and producers in creating and operating the program. For example, the review revealed a wide range of approaches to the flexibility allowed in the creation and implementation of programs. For some programs, enabling legislation specifies their characteristics in detail. For other programs, most details of the program are left for producers to decide. Between these extremes, program details are decided by a combination of producer proposals, public consultation, and government approval.

Similarly, in some programs, **fees** paid by the producers to the producer responsibility organization (PRO) are set in statute. In other cases, fees are proposed by the producers and approved by government. How the fees are structured and whether they are internalized by the producers or passed on to the customer at the point of retail sale may be decided by the government, the PRO, or by individual producers and their supply chains. If the fee is passed on at the point of retail sale, whether the fee is visible to the customer may be decided by the producers and their supply chains or left to the discretion of the retailers.

In some cases, local governments act as **collection service providers** for PROs. In these cases, some PROs have established clear, consistent rates for reimbursement, while other PROs have negotiated contracts individually with local governments. For other programs, local governments do not typically serve as collection facilities.

Specific **standards for performance, convenience, and collection** were, in some cases, set in law or regulation. In other cases, PROs proposed standards in program plans approved by the government. Other cases did not specify performance, convenience, or collection standards at all.

Finally, in determining the **selection of products** for EPR programs, Canadian provinces and U.S. states have taken different approaches. In Canada, the Canadian Council of Ministers of the Environment has prioritized a list of products for EPR programs in two phases. The U.S. lacks a similar coordinating effort, and EPR programs have been established individually by state legislatures.

Table A-2. Summary of Approaches to Extended Producer Responsibility Programs

Program Characteristic	Approaches			
	More Prescriptive →			*More Flexible*
Program structure	A producer responsibility organization is established by statute, with government members on the board. Government registers manufacturers, collectors, transporters, and processors. (WA electronics)	A quasi-government agency establishes a producer responsibility organization and helps develop a product stewardship plan. The plan is approved by government. (ON)	Producers are responsible for developing producer responsibility organizations and/or designing programs. Government sets parameters for programs and approves program plans. (BC, ME mercury-added lamps)	Producers register with government and are required to meet a collection goal. (MN)
Structure and responsibilities of producer responsibility organizations	The producer responsibility organization is created by a quasi-government agency at the direction of government. Producers sit on the board of the PRO. (ON)	Producers are required to have an approved product stewardship plan or follow guidelines for collection set in law. Producers may choose to form or join a third-party producer responsibility organization to develop and implement the plan. (BC, QB)		
Producer financing methods	Individual producers receive invoices from product consolidators for their share of collected products. Producers pay for handling, transport, and recycling; collection costs are not paid for by producers. (ME electronics)	All program costs are paid for by the PRO through fees on participating producers, established by statute. Producers are also required to pay fees to the overseeing government agency to cover the costs of administration and enforcement. (WA fluorescents)	All program costs are paid for by the PRO. Fees for participating producers to cover these costs are established by the PRO and approved by government. (ON)	The funding structure is decided by producers, with no oversight by government. (MN)

Program Characteristic	Approaches			
	More Prescriptive →			*More Flexible*
Consumer fees		No fee may be charged to consumers at the point of collection, except for "premium" collection services; producers decide whether fees will be charged at the point of sale. (WA)	Producers and their supply chains decide whether fees will appear as a visible charge or will be internalized into the cost of the product. If the PRO uses a fee at the retail level, it reports to the government. (BC)	Producers and their supply chains decide whether fees will appear as a visible charge or will be internalized into the cost of the product, with no involvement by government. (ON)
Local government contractor payments	Shared Responsibility Agreements are signed by participating municipalities with standardized reimbursement rates from the PRO. (ON)	PROs negotiate contracts individually with local governments. (BC, NB)	Most local governments do not provide collection services, although they may choose to participate as a service provider under the terms of the stewardship plan. (WA electronics)	
Performance standards	Minimum performance standards are set in law. (MN, WA electronics) Government develops additional voluntary "preferred" performance standards. (WA electronics)	Consolidators must certify that material handling meets state guidelines. (ME electronics)	Producers must plan for responsible management that complies with state regulations, approved by government. (ME fluorescents)	
Convenience standards	Location and hours of collection facilities specified in regulation. (BC - producers operating without an approved program plan)	Minimum convenience standard is specified in law. (WA electronics)	Producers propose a system for reasonable, free collection in a plan approved by government. (BC, MB, NB)	

Program Characteristic	Approaches			
	More Prescriptive →			*More Flexible*
Collection standards	Collection or reuse rate specified in regulation or law. (BC, MN, NB, QB) Standards increase after year one. (MN)	Producers propose goals in a program plan approved by government. (ON)		No specific collection rates are set. (WA, ME)
Selection of products	National prioritization of products for EPR programs. (Canada)	Framework legislation empowers state agency to recommend establishment of EPR programs, using guidelines from the framework law. Legislative process is still required to implement recommendations. (ME)	Individual EPR programs are proposed and established through the legislative process. (WA, MN)	

1. Program Structure

The program structure of extended producer responsibility programs is driven first by the law and, in some cases, the related regulation creating the program. One important difference is the role played by government relative to producers in designing and implementing programs. Four approaches are outlined below, listed in order from greatest to least government control.

A producer responsibility organization is established by statute, with government members on the board. Government registers collectors, transporters, and processors.

In Washington, the law creating the Electronic Product Recycling Program establishes requirements for manufacturers of televisions, computers, computer monitors, laptop computers, and e-readers. These products are referred to in the programs as "covered electronic products" or CEPs.

The *Department of Ecology* registers manufacturers, collectors, transporters, and processors. Two Ecology staff members sit on the board of the Washington Materials Management and Financing Authority as ex officio members. Ecology approves the program plan proposed by the WMMFA.

The *Washington Materials Management and Financing Authority (WMMFA)* is a manufacturer board-directed authority. Following guidelines in law and set by the Department of Ecology, it is responsible for creating a Standard Plan that manufacturers will participate in and finance. It coordinates collectors, transporters, and processors to recycle covered electronics. WMMFA then bills participating member manufacturers for the costs.[12]

Collectors must:

- Have a valid license to do business in Washington State.
- Accept CEPs from households, small businesses, school districts, small governments, and charities.
- Submit these CEPs to a Covered Electronic Product recycling plan.
- Register annually with Ecology and keep the registration up to date.
- Meet certain performance standards.
- Be listed as "in compliance" on the Department of Ecology's Collector Registration List.[13]

Transporters transport CEPs from collection sites or services to processors or other locations for the purpose of recycling through a recycling plan. To be approved to transport CEPs for a plan, a transporter must:

- Register annually with Ecology and keep the registration up to date.
- Meet the performance standards defined in law.
- Be listed as "in compliance" on the Transporter Registration List.[14]

[12] Washington Materials Management and Financing Authority, http://www.wmmfa.net/, viewed October 31, 2011.

[13] Department of Ecology, State of Washington, E-Cycle Washington, "Am I a Collector?" http://www.ecy.wa.gov/programs/swfa/eproductrecycle/collector.html, viewed November 2, 2011.

Direct processors contract with a CEP recycling plan to provide processing services to meet the requirements in law. Direct processors are required to:

- Have a contract with a CEP Recycling Plan.
- Be identified in an Ecology-approved CEP Recycling Plan.
- Register annually with Ecology.
- Update their registration information within 14 days of any changes.
- Meet the minimum performance standards.
- Comply with annual performance standard audits.
- Participate in sampling of CEPs for return share.

Direct processors can also obtain preferred status, meaning the direct processor conforms with the performance standards for electronic product recycling as described in Ecology's publication "Environmentally Sound Management and Performance Standards for Direct Processors."[15]

Local governments are required to provide their citizens with information about the recycling program through existing educational methods typically used by local government. This includes listing locations and hours of operation of local collection sites and services.[16]

A quasi-government agency establishes a producer responsibility organization and helps develop a product stewardship plan. The plan is approved by government.

In Ontario, under the Waste Diversion Act, the Minister of Environment initiates EPR programs by writing a letter to the quasi-government Waste Diversion Ontario, designating a material and instructing Waste Diversion Ontario to develop a program. The Minister's letter may include specific goals or criteria for the program. Waste Diversion Ontario then works with producers to form an "industry funding organization," which proposes a program plan and administers the program. Roles of collectors, transporters, and processors vary by program.

Minister of the Environment: As authorized by the Waste Diversion Act, the Minister may:

- Designate materials for which a waste diversion program can be required.
- Require that Waste Diversion Ontario develop a program for that material.
- Provide policy direction on what the program should include, such as diversion targets, and when it should be completed.
- Approve programs developed by Waste Diversion Ontario.
- Establish an industry funding organization through regulation.
- Charge industry finding organizations reasonable fees for enforcement activities.

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[14] Department of Ecology, State of Washington, E-Cycle Washington, "Transporters," http://www.ecy.wa.gov/programs/swfa/eproductrecycle/transporter.html, viewed November 2, 2011.

[15] Department of Ecology, State of Washington, E-Cycle Washington, "Are You a Processor?" http://www.ecy.wa.gov/programs/swfa/eproductrecycle/processor.html, viewed November 2, 2011.

[16] Department of Ecology, State of Washington, E-Cycle Washington, "Local Government," http://www.ecy.wa.gov/programs/swfa/eproductrecycle/government.html, viewed November 2, 2011.

Waste Diversion Ontario: Waste Diversion Ontario is a non-government organization that is run by a Board of Directors currently composed of industry, municipal, government, and non-governmental representatives. Waste Diversion Ontario works with industry funding organizations to develop, implement and operate waste diversion programs that drive the reduction, reuse, or recycling of wastes that are designated under the act. Waste Diversion Ontario reports to the Minister of the Environment.

Industry funding organizations: Industry funding organizations are composed of industry representatives for the designated material to be diverted. They develop, implement, and operate diversion programs, and are primarily responsible for:

- Identifying obligated producers.
- Establishing fees that individual producers pay.
- Collecting and distributing program funding.
- Providing education and outreach activities associated with diversion programs.

Producers are responsible for establishing producer responsibility organizations and/or designing programs to meet criteria set by government. Program plans are approved by government.

In British Columbia, the structure for EPR programs is established in the Recycling Regulation. Producers are responsible for designing programs to meet the criteria set in the Recycling Regulation. Program plans are approved by the Ministry of Environment. Producers organize their own PROs, and multiple PROs may be established for a single product stream. The roles of collectors, transporters, and processors are defined in program plans and vary by program.

The *Ministry of Environment's* role consists of reviewing annual reports and approving stewardship plans, providing assistance to producers in understanding the requirements of the Regulation, and compliance and enforcement actions where necessary.

Local governments may choose to participate in or assist a product stewardship program by:

- Providing facilities or operational services as a service provider at a landfill or other local site for product collection or processing.
- Helping to inform the public that the stewardship program is available.
- Assisting the producer or agency with local land use and business license issues relating to collection and processing facilities.
- Imposing bans on the landfilling of the relevant products when appropriate.

The *product producer* is principally the first seller of the product in the province. In practice, the producer is typically the product manufacturer, distributor, or brand owner. The producer could also be an importer, broker, or retailer who sells the product directly to a consumer, including through catalog or internet sales.

To sell or distribute the product in British Columbia, a producer must either have an approved Product Stewardship Plan and comply with the plan or comply with the requirements of producers without an approved plan. The Recycling Regulation allows producers the option of appointing an “agency” to carry out its duties under a product stewardship plan. If a producer chooses to appoint an agency, the

producer must notify the ministry in writing before the agency begins to carry out the duties of the producer.

An *agency* is appointed by a producer to act on its behalf to undertake duties that include, but are not limited to, preparing a plan, implementing a program, and reporting on progress.

A *retailer* may be a *producer*, with responsibilities outlined above. Retailers of certain products may also have an implementation role defined in the Regulation or in an approved stewardship plan. If there is no approved product stewardship plan, retailers are required to provide consumer information.

Even if not identified in the Regulation, retailers could participate in a stewardship program. Producers are encouraged to ensure that retailers are correctly informed about the program and can inform consumers of:

- The existence of the stewardship program.
- The location of the nearest collection point for the product.
- Any deposits charged in accordance with the Regulation and any refunds available.
- Any fee collected for the product to manage it at its end of life and that producer fees are not government taxes.[17]

Under Maine's *Act to Provide for the Safe Collection and Recycling of Mercury-Containing Lighting,* producers are given greater flexibility and control over program design. Producers may choose to meet their obligations for collection and recycling mercury-added lamps from households individually or collectively. Obligated producers submit their program plans to the state's Department of Environmental Protection, which solicits public comments before approving or denying plans on the basis of compliance with the program requirements established in the law. The law provides minimal additional guidance on program structure.

Producers register with government and are required to meet a collection goal. Government registers producers, collectors, and recyclers, collects fees, and provides education.

Minnesota's Electronics Recycling Act allows manufacturers the greatest freedom to decide how to meet their recycling obligation of any program reviewed. Manufacturers of video display devices (including televisions and computer monitors) must meet a recycling obligation each year. This obligation is based on the weight of the manufacturer's video display devices sold in Minnesota for the program year. Manufacturers must recycle, or arrange to have recycled, 80 percent of that weight. The obligation can be met by recycling a larger category of products, "covered electronic devices," which includes products like video cassette recorders and hard drives, from households and consumers in Minnesota. Manufacturers are not required to form a producer responsibility organization or develop a plan approved by the state.[18]

[17] British Columbia Ministry of Environment, "Product Stewardship: Frequently Asked Questions, http://www.env.gov.bc.ca/epd/recycling/resources/faq.htm, November 2, 2011.

[18] Minnesota Pollution Control Agency, "Minnesota's Electronics Recycling Act," http://www.pca.state.mn.us/index.php/topics/preventing-waste-and-pollution/product-stewardship/initiatives-in-minnesota/electronics/minnesota-electronics-recycling-act/minnesota-electronics-recycling-act-home.html?menuid=&redirect=1, viewed November 4, 2011.

The law requires *manufacturers* of video display devices (VDD) to register with the Minnesota Pollution Control Authority (MPCA), pay an annual registration fee, and meet a recycling obligation based on their program year (annual) sales of VDD.

Collectors receive covered electronic devices (CEDs) from Minnesota households and must register with the MPCA; there is no annual fee. Collectors are responsible for reporting the pounds they collect, the source of the material, and where the materials were sent for recycling.

Recyclers recycle CEDs and must register with the MPCA; there is no annual fee. Recyclers must report on the pounds they recycled. Recyclers must meet certain requirements in terms of regulatory compliance, necessary licensure, and insurance.

Retailers of video display devices can sell only registered brands to households; this includes online sales and catalog sales as well as physical retail outlets. The law does not apply to business or institutional sales. Retailers are required to provide recycling information to their customers.

State government: The *Minnesota Pollution Control Agency* is the lead agency for implementing the law in Minnesota, working with stakeholders and providing information and education. As directed by the Legislature, the MPCA provides analysis of the law and resulting program to ensure that it meets needs and expectations.

The *Minnesota Department of Revenue* collects fees from registered manufacturers. They administer manufacturers' reporting of recycling efforts and sales, as well as collect any fees if recycling obligations are not met. The Department of Revenue is able to keep sales data confidential.

Local government: Although there is no requirement for county or city governments to provide collection services for waste electronics, many offer service to residents. In some areas around the state, local government may be the sole provider of such services. One of the goals of the Minnesota law is shifting the responsibility of paying for collection services away from local governments while increasing opportunities for consumers to recycle their unwanted electronics.

Consumers: Minnesota's law does not require free recycling for consumer electronics, but there has been an increase in the number of collection opportunities, including many charging no fees for disposal.[19]

[19] Minnesota Pollution Control Agency, "Stakeholders and Roles," http://www.pca.state.mn.us/index.php/topics/preventing-waste-and-pollution/product-stewardship/initiatives-in-minnesota/electronics/minnesota-electronics-recycling-act/stakeholders/stakeholders-and-roles.html, viewed November 10, 2011.

2. Structure and Responsibilities of Producer Responsibility Organizations

The parameters for producer responsibility organizations (PROs) vary, with the most notable variable again being the extent of government control. In Ontario, Waste Diversion Ontario is a nonprofit that reports to the Environment Minister, who has the authority to establish industry funded PROs for specific materials. In British Columbia, industry-operated PROs report to the Environment Minister.

The PRO is established by a quasi-government organization at the direction of the government.

In Ontario, the Environment Minister directs Waste Diversion Ontario to create "industry funding organizations" (IFOs) for designated materials. Waste Diversion Ontario is a quasi-government organization that regulates IFOs. Stewardship Ontario is the industry funding organization (private and not-for-profit) that develops, funds, and operates Ontario's recycling programs for printed paper and packaging (Blue Box) and household hazardous and special waste (Orange Drop).

Stewardship Ontario collects fees from producers, called Stewards—that is, the first importers, manufacturers, or brand owners of materials that end up in curbside blue boxes or that are classified as household hazardous and special waste. Steward fees help to pay for the costs of collecting, transporting, recycling, and safely disposing of products and packaging throughout the province.

Both the Blue Box and Orange Drop program plans and fees are subject to public consultation prior to approval by Waste Diversion Ontario. Similarly, these program plans are submitted to Ontario's Environmental Bill of Rights process. This law requires that the public be given notice of a range of government proposals and decisions related to environmental matters through the web-based Environmental Registry.[20] All proposals on the Environmental Registry are required to have a 30-day public comment period. The relevant ministry is required to consider and respond to all comments. Following the public consultation processes, program plans are approved by the Ministry of the Environment.

Materials managed in Stewardship Ontario's programs must meet collection, recycling, and consumer accessibility targets set in program plans. Results are reported quarterly to Waste Diversion Ontario. Third-party audited financial statements are produced annually and included in Stewardship Ontario's Annual Report.

Stewardship Ontario audits Ontario businesses that sell designated materials into the marketplace to ensure proper reporting and sharing of responsibility among all companies who produce these materials.

Stewardship Ontario has environmental standards that all its service providers must meet and audits to ensure those standards.[21]

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[20] Ontario Environmental Registry, "The Purpose of the Registry," http://www.ebr.gov.on.ca/ERS-WEB-External/content/index2.jsp?f0=aboutTheRegistry.purpose&f1=aboutTheRegistry.purpose.value&menuIndex=0_2&language=en, viewed November 10, 2011.

[21] Stewardship Ontario, "Thinking beyond the Box: Who we are," http://www.stewardshipontario.ca/consumers, viewed November 5, 2011.

Producers are required to have an approved product stewardship plan or follow guidelines for collection set in law. Producers may choose to form or join a third-party producer responsibility organization.

As a first example of this approach, the Recycling Regulation in British Columbia allows producers to appoint "agencies" to fulfill their duties under the Recycling Regulation. An agency is, in essence, a third-party PRO. The BC Ministry of Environment states that agencies should be not-for-profit entities established under the British Columbia Society Act or federal legislation. The governance structure, operational systems, and fee structures of an agency are determined by the producers as members of the agency.[22]

Producers are considered the first seller of a product in British Columbia. In practice the producer is typically the product manufacturer, distributor, or brand-owner. The producer could also be an importer, broker, or retailer who sells the product directly to a consumer.[23] Producers must develop, implement, and report on a product stewardship plan approved by the Ministry of Environment. Alternatively, a producer may appoint an "agency" to carry out these duties. The Regulation defines an "agency" as "a corporation appointed by a producer to act as an agent on behalf of the producer."[24]

The governance structure, operational systems, and fee structures of an agency are determined by producers as members. The Ministry of Environment recommends that producers consider multi-stakeholder representation on the Board of Directors of the agency, such as consumer groups, environmental non-government organizations, and local governments. The Ministry of Environment further recommends that producers consider establishing an ongoing stakeholder advisory process, such as a standing stakeholder advisory committee to the Board, as part of the accountability and transparency structure of the organization. [25]

Product Care is an example of an agency. Product Care's members are "producers" (manufacturers, distributors, and retailers) obligated by the Recycling Regulation. Product Care operates programs for multiple products in British Columbia as well as paint programs in Nova Scotia, Saskatchewan, and New Brunswick. In British Columbia, Product Care operates programs for paint, flammable liquids, pesticides, waste gasoline, residential fluorescent light bulbs and tubes, small appliances, and smoke and carbon monoxide alarms.[26]

As a second example of this approach, in Quebec, the Société de Gestion des Huiles Usagées (SOGHU) is a nonprofit organization created to meet the requirements of the *Regulation Respecting the Recovery and Reclamation of Used Oils, Used Oil and Fluid Containers, and Used Filters*. According to the Regulation, every business that markets lubricating oils or oil filters under a trademark it owns or uses must put in place its own system of recovery and recycling of used oils, used oil or fluid containers, and used filters or must join an organization that will put in place such systems for its members. SOGHU is the only organization of its kind to have entered into an agreement with Recyc-Québec. Recyc-Québec is

[22] British Columbia Ministry of Environment, "Product Stewardship: Frequently Asked Questions," http://www.env.gov.bc.ca/epd/recycling/resources/faq.htm, viewed November 1, 2011.

[23] Recycling Regulation Guide, British Columbia Ministry of Environment, Environmental Protection Division, June 30, 2006, p.5, http://www.env.gov.bc.ca/epd/recycling/guide/pdf/recycling_regulation_guide.pdf.

[24] Recycling Regulation, Part 1.1, Definitions, http://www.qp.gov.bc.ca/statreg/reg/E/EnvMgmt/449_2004.htm.

[25] British Columbia Ministry of Environment, Product Stewardship: Frequently Asked Questions, http://www.env.gov.bc.ca/epd/recycling/resources/faq.htm, viewed October 2, 2008.

[26] Product Care, "About Product Care," http://www.productcare.org/About-ProductCare, viewed November 2, 2011.

a crown corporation that reports to the Minister of Environment. SOGHU is a member of the National Used Oil Advisory Council, working with other provincial used oil recycling organizations to coordinate to Canada-wide used oil recycling effort.[27]

SOGHU's members consist entirely of businesses that are covered by the Used Oil Regulation. For its members, SOGHU provides the following services:

- Establishes and operates a system to recover used oils, used oil, and fluid containers (50 liters or less), and used filters in cooperation with registered collectors.
- Establishes and operates a system to recycle used oil materials in cooperation with processors using the materials in accordance with Quebec regulations.
- Implements an information and awareness program for industrial, commercial, and private users.[28]

SOGHU is managed by a board of directors composed of 15 members, 14 of whom are elected by its membership of brand owners and the remaining member who is appointed by Recyc-Québec.

The SOGHU by-laws state that the board of directors will create and designate members of a Vigilance Committee, which will formulate recommendations to the Board of Directors on the development and implementation of measures intended to improve the operation of SOGHU's recovery and reclamation system. Members of the Vigilance Committee include:

- One representative of the minister of the environment (Ministère de l'Environment).
- One representative of Recyc-Québec.
- Two representatives of municipal associations.
- One representative of recovery businesses.
- One representative of reclamation businesses.
- One representative of Québec environmental associations.
- One representative of Québec consumer associations.
- One representative of the *Conseil québécois du commerce de detail*.

The General Manager is an ex-officio member of the Vigilance Committee. [29]

[27] Used Oil Management Association, http://www.usedoilrecycling.com/en/nuomac.

[28] SOGHU, http://www.soghu.com/en/members.aspx?prov=11&range=prov.

[29] SOGHU, "General By-Laws of Société des Huiles Usagées," Number 7. http://www.soghu.com/en/members/pdfs/08.04.22%20L94330002-acc-general%20by-laws%20_SOGHU_-MTL_LAW-847470-v7.pdf.

3. Producer Financing Methods

Differences exist in who sets and approves the budget for programs, how costs are shared among producers, and whether costs are internalized by producers or made transparent to customers at the point of sale.

Individual producers receive invoices from product consolidators for their share of collected products. Producers pay for handling, transport, and recycling; collection costs are not covered by producers.

Under Maine's Electronic Waste Act, responsibility for financing the stewardship system is shared among producers, consolidators, municipalities, and consumers. Under this system of shared responsibility, individual producers are responsible for directly paying consolidators for the recycling and disposal of a portion of covered devices collected attributed to them.

Recycling and disposal costs include:

- The reasonable operational costs of the consolidator attributable to the handling of all computer monitors and televisions for which the producer has legal responsibility of those that were generated as waste by households in the state, the transportation costs from the consolidation facility to a licensed recycling and dismantling facility, and the costs of recycling.
- A *pro rata* share of the relevant orphan waste generated by households in Maine and received at consolidation facilities in the state.

Consolidators are responsible for identifying each producer's share of waste generated—either directly or through a contract with the receiving recycler—and for invoicing producers accordingly.

This system—which was the first producer responsibility law for electronics established in the United States—does not require producers to finance the costs of collection. Those costs, and the responsibility for providing collection services, remain with local governments.

All program costs are paid for by the PRO through fees on producers, as established by government. Producers are also required to pay fees to government to cover administration and enforcement costs.

The Washington State law on mercury-added lamps includes highly specific language around program financing. The law requires producers to pay the "all administrative and operational costs associated with their program or programs" except for the provision of "premium" collection service (discussed in Section 4). The law directs the Department of Ecology to contract with a producer responsibility organization to act as the default program, and stipulates that producers should pay the department $15,000 to cover both the operating costs borne by the PRO and the administrative costs borne by the department.

The law also provides producers the option of proposing an independent plan. If approved, participating producers are responsible for developing their own system for financing program operations, but they are still required to pay a $5,000 fee to the department for administrative expenses.

All program costs are paid for by the PRO. Fees to producers to cover these costs are established by the PRO and reviewed by government.

Under Ontario's Waste Diversion Act, the Industry Funding Organization for an approved Program Plan may assess fees against companies designated as Stewards under the plan. Stewardship Ontario's guiding principles for the fee-setting process are as follows:

- The cost to manage municipal hazardous or special waste (MHSW) within each MHSW category under the Program will be determined by a transparent cost allocation methodology.
- Common and shared costs will be assessed across all Stewards in a fair and transparent manner.
- Stewardship Ontario accepts financial responsibility for products which no longer are supplied for use in Ontario (obsolete products) where an obligated steward for that product can be identified. Costs associated with the management of such materials will be attributed to stewards in a fair and reasonable manner.
- Fees will be applied to stewards based on the MHSW that stewards supply into the Ontario market, but will cover the costs identified under items 1, 2, and 3 above.
- Stewardship Ontario will allocate costs within material categories where appropriate to reflect different costs to manage them and to incentivize greater diversion of waste from disposal.[30]

IFOs submit audited financial statements in annual reports to Waste Diversion Ontario. In addition, each IFO presents quarterly or semi-annually reports to the Board of Directors of Waste Diversion Ontario.

The funding structure is decided by producers with no oversight by government.

In Minnesota under the Minnesota Electronics Recycling Act, producers can choose for themselves how to accomplish the recycling targets set by legislation. This includes setting the funding structure for any programs developed.

4. Consumer Fees

Whether or not the costs of stewardship should be internalized into product prices or distinguished as separate and visible fees—either at the point of sale or the point of end-of-life collection—is a topic of much contention, along with the question of whether government should be involved in establishing or approving fees. EPR programs have taken different approaches to this issue.

No fee may be charged to consumers at the point of collection, except for "premium" collection services; producers decide whether fees will be charged at point-of-sale.

Under both EPR laws in Washington State, producers are prohibited from charging fees to consumers at the point of collection, except in instances where "premium services" are provided. For electronics, premium services are defined as "at-location system upgrade services provided to covered entities and

[30] Stewardship Ontario, "Final Consolidates Municipal Hazardous or Special Waste Program Plan, Vol. 1," July 2009, p. 100, http://www.wdo.ca/files/domain4116/Consolidated%20MHSW%20Program%20Plan%20Volume%201%20July%2030%20final.pdf, viewed November 2, 2011.

at-home pickup services offered to households." 'Premium service' does not include curbside service."[31] For mercury-added lamps, premium services are defined as curbside or mail-back (postage pre-paid) programs.

Producers and their supply chains decide whether fees will appear as a visible charge or will be internalized into the cost of the product. If the PRO uses a fee at the retail level, it reports to the government.

In British Columbia, stewardship program funding is the responsibility of the producer. The Ministry of Environment's principle is that product management costs are borne by producers and consumers, not local governments or the general taxpayer.

A producer that chooses to use a fee that is charged at the retail level, and is shown on the consumer's receipt, must submit an independently audited financial statement showing revenues and expenditures based on the fee as part of its annual report.[32]

Product Care Association, the PRO for paint products, establishes, collects, and administers eco-fees for the products it manages. Eco-fees are charged at the retail point of sale and represent a price increase for the product. In some cases retailers recover the fee as a separate visible eco-fee to consumers. Because eco-fees are part of the product price, provincial sales tax and goods and service tax is charged on the eco-fee just as if it was internalized into the cost of the product.

Producers and their supply chains decide whether fees will appear as a visible charge or will be internalized into the cost of the product, with no involvement by government.

Stewardship Ontario does not dictate to companies that are obligated to remit fees on designated products how to manage these costs. It is up to individual companies and their supply chain partners, including retailers, to make the best decisions for their businesses. Some companies internalize the cost, while others may charge consumers an eco-fee at the point of purchase.[33]

In 2010, Stewardship Ontario expanded its program to include additional household hazardous materials. Some companies elected to pass on the added costs as eco-fees on the newly included products, resulting in public objection. Following a review period, the Environment Minister, responsible for approving EPR programs, suspended the program for the newly included products due to negative public response to the eco-fees.[34]

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[31] Washington State Legislature, "Electronic Product Recycling Act." http://www.leg.wa.gov/pub/billinfo/2005-06/Pdf/Bills/Session%20Law%202006/6428-S.SL.pdf.

[32] British Columbia Ministry of Environment, "Product Stewardship, Frequently Asked Questions," viewed November 1, 2011.

[33] Stewardship Ontario, "Thinking Beyond the Box: Eco Fees," http://www.stewardshipontario.ca/consumers/what-we-do/mhswenvironmental-fees?path[nid]=2, viewed November 2, 2011.

[34] Stewardship Ontario, "This is not Garbage: 2010 Annual Report," p. 14, http://www.stewardshipontario.ca/sites/default/files/SO_2010_Annual_Report_FINAL.pdf, viewed November 4, 2011.

5. Local Government Contractor Payments

The PRO negotiates contracts directly with governments for services.

Along with privately owned locations, local governments serve as depots in the paint programs in British Columbia and New Brunswick. Product Care, which operates both programs, negotiates contracts with local governments for their services individually, as it does with private collection contractors.[35]

Shared Responsibility Agreements are signed by participating municipalities with standardized reimbursement rates from the PRO.

Agreements are structured so that the body of the agreement is generic for all municipalities. Individual agreements contain information specific to each municipality, based on the municipality's collection infrastructure and services provided. Municipalities receive reimbursement for materials collected through municipal infrastructure.

In Ontario's Municipal Hazardous or Special Waste Program, municipalities are not required to provide services or participate with the Stewardship Ontario MHSW program; however, municipality that operate existing MHSW programs can enter into a Shared Responsibility Agreement with Stewardship Ontario.

In his letter creating the MHSW EPR program, the Environment Minister stated that Stewardship Ontario is responsible for program activities after the initial collection of covered materials at the MHSW or other collection facilities. Examples of appropriate activities include transportation of waste from collection facilities; processing, recycling and disposal of waste, and other related waste management activities; and promotional and public education activities.

Compensation for municipalities is set by Stewardship Ontario on a per-container basis. For a municipality with an existing MSHW program, Stewardship Ontario estimated that the MSHW program plan would cover as much as 80 percent of current municipal costs of managing covered materials.[36]

Most local governments do not serve as collection points for the EPR program, although they may choose to participate as service providers under the terms of the stewardship plan.

In some cases, local governments do not serve as primary collection points for products covered by EPR programs. This situation is the case in Washington State, where the majority of collection points for used electronics covered by the state's EPR programs are private, with only a small number of governments participating as collectors.[37]

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[35] Personal communication, Daniela Damoc, Product Care, November 3, 2011.

[36] Stewardship Ontario, Thinking beyond the Box: Municipalities," http://www.stewardshipontario.ca/faq/stewards/what-we-do/mhsw/municipalities, viewed November 2, 2011.

[37] Washington Materials Management and Finance Authority (WMMFA), "E-Cycle 2010 Annual Report." http://www.ecy.wa.gov/programs/swfa/eproductrecycle/docs/2010AnnualReportfromWMMFA.pdf.

6. Performance Standards

Performance standards ensure that products are managed in accordance with applicable federal, state, and local laws, and—in some cases—encourage practices go beyond regulatory requirements to achieve higher levels of environmental management.

Minimum performance standards are set in law, and government develops additional "preferred" performance standards.

Washington State's Electronic Product Recycling Act includes specific and rigorous performance standards for collectors, transporters, and processors. Additionally, the Washington Department of Ecology developed voluntary "preferred" performance standards for processors.

Collectors, transporters, and processors all register with the Department of Ecology. All must remain in compliance with minimum performance standards to remain listed on the Department of Ecology's website as eligible to participate in the Electronic Product Recycling Program.

To receive "preferred" status, a direct processor must receive certification from an auditor from an "accredited body" as documented in an annual performance audit report documenting that the processor meets all the preferred processor performance standards. For each recycling plan for which the direct processor provides processing services, the authority or authorized party must submit a plan, or plan update, that includes the initial annual performance audit report for the direct processor. After the initial report, subsequent audit reports must be submitted with the plan's annual report. Upon approval of the recycling plan, or a plan's annual report, Ecology will list the processor as in conformance with the preferred performance standards on the "Direct Processor Registration List" found on Ecology's web site.[38]

Recyclers must certify that material handling meets state guidelines.

Under Maine's electronics law, in which consolidators—not producers—are responsible for ensuring proper environmental management of materials, consolidators are directed to deliver collected materials to recycling facilities that provide sworn certification that its handling, processing, refurbishment and recycling meet guidelines for environmentally sound management published by the state's Department of Environmental Protection. Consolidators are required to maintain a copy of the certification for 3 years following delivery, and the department can request this information at any time.

Producers must include a plan for responsible management that complies with state regulations and is approved by government.

Under Maine's program for mercury-added lamps, producers are expressly required to ensure that materials collected through the program are recycled and/or otherwise managed according to the state's universal waste rules, but no additional specifications are included in the regulation.

[38] Washington State Department of Ecology, "Environmentally Sound Performance Standards for Direct Processors," Washington State Electronic Products Recycling Program, November 2007, p. 14, http://www.ecy.wa.gov/programs/swfa/eproductrecycle/docs/PreferredPerformanceStdsFinal2007.pdf, viewed November 10, 2011.

7. Convenience Standards

Government prescribes the location and hours of collection services.

In British Columbia, producers have the option to implement a collection plan without an approved product stewardship plan. If a producer does not have an approved product stewardship plan for its product, the Recycling Regulation requires that producers must operate a collection facility for "all products currently or previously sold, offered for sale, distributed, or used in a commercial enterprise in British Columbia that are within a product category in respect of which the producer sells, offers for sale, distributes, or uses in a commercial enterprise a product."[39]

The Recycling Regulation includes convenience standards for collection facilities:

- If a collection facility is operated at a location other than at the premises of a retailer who sells the producer's products, the producer must locate the collection facility:
  - within 4 kilometers by road from the retailer's premises if the retailer's premises are located in a municipality that has a population greater than 25,000, or
  - within 10 kilometers by road from the retailer's premises if the retailer's premises are located outside a municipality that has a population greater than 25,000.
- A producer must make its collection facility:
  - available without charge to any consumer who wishes to return unlimited quantities of products within the product categories it sells, offers for sale, distributes, or uses in a commercial enterprise, and
  - operate during regular business hours, 5 days per week, one day of which must be Saturday.[40]

Minimum convenience standards for collection are specified in law.

Both Washington EPR programs are required to provide convenient collection services, which is defined as services in all cities in the state with populations greater than 10,000 and in all counties of the state on an ongoing, year-round basis.

[39] Environmental Management Act, Recycling Regulation, Section 11, http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/449_2004#section11, viewed November 2, 2011.

[40] Environmental Management Act, Recycling Regulation, Section 11, http://www.bclaws.ca/EPLibraries/bclaws_new/document/ID/freeside/449_2004#section11, viewed November 2, 2011.

PROs propose a method of providing convenient collection services, approved by government.

In British Columbia, Manitoba, Ontario, and New Brunswick (under the New Brunswick Paint Regulation), stewardship plans must propose how the program will provide reasonable and free consumer access throughout the province. Plans are approved by government. In New Brunswick, this represents a change in approach from the New Brunswick Tire Stewardship program, in place since 1996. Program plans for New Brunswick's tire program must be submitted annually to the Environment Minister for approval by Recycle New Brunswick, a multi-material, quasi-government board. Requirements for the tire program plan are specified by the Environment Minister.[41]

8. Collection Standards

Collection or reuse rates are set by government.

In British Columbia, the Recycling Regulation requires programs to meet a 75 percent or greater recovery rate. In New Brunswick the regulation establishing its paint product stewardship program mandates a 70 percent reuse rate. In Québec, the regulations establishing the paint and oil product stewardship programs set mandatory graduated recovery rates over a period of years.

The Minnesota Electronics Recycling Act set a recycling requirement of covered electronic devices at 60 percent of product sales for the first year, and 80 percent of product sales for subsequent years. The Act allows producers to meet their annual obligations in part through recycling "credit" accrued in previous years through recycling quantities above the obligated amount and lays out a formula for calculating recycling credit. In 2009, the Act was amended to restrict the use of credits to 25 percent of a producer's annual recycling obligation.

Collection or reuse rates are proposed by PROs and approved by government.

In Ontario, industry funding organizations set their own recovery goals in their product stewardship plans, approved by government.

No specific standards are set.

No specific standards are set for collection for stewardship programs in Maine and Washington State. However, Maine's law for mercury-added lamps requires that producers provide an annual report on program performance, including the estimated percentage of mercury-added lamps available for recycling that were recycled under the program and the methodology for estimating the number of mercury-added lamps available for recycling.

Under Maine's framework law, the state's Department of Environmental Protection is directed to evaluate the effectiveness of all of Maine's existing stewardship programs and to make recommendations for increasing the recycling rates achieved, which could include recommendations for adding specific collection standards to existing programs.

[41] Designated Materials Regulation, NB Reg. 2008-54,27(1), http://canlii.ca/s/9rdd, viewed November 10, 2011.

9. Selection of Products

Provincial frameworks and national prioritization of products for EPR programs.

The Canadian provinces included in this review have each established or amended environmental enabling acts that provide a framework for developing product stewardship programs. To establish new programs, the provincial minister of the environment or the ministry's executive council must pass a regulation designating specific product categories under the relevant act. Manitoba, Ontario, and Quebec have established separate regulations for each product category designated, while British Columbia and New Brunswick have passed regulations covering multiple product categories.

British Columbia's Recycling Regulation is the most comprehensive designating regulation in Canada, and it includes a list of specific product categories designated for management through EPR, including:

- Beverage containers.
- Solvents and flammable liquids.
- Pesticides.
- Gasoline.
- Pharmaceuticals.
- Lubricating oils, empty oil containers, and oil filters.
- Paint.
- Electronics and electrical products.
- Tires.
- Packaging and printed paper.

In October 2009, the Canadian Council of Ministers of Environment (CCME) released a Canada-wide Action Plan for EPR. The Plan includes two lists of products that all provinces have committed work toward managing through EPR.

The Phase 1 list (for management by 2015) includes:

- Packaging and printed materials.
- Electronics and electrical products.
- Mercury-containing products, including lamps.
- Household hazardous and special wastes.
- Automotive products.

Phase 2 (by 2017) includes:

- Construction and demolition materials.
- Furniture, textiles and carpet.
- Appliances (including ozone-depleting substances, such as refrigerants).[42]

The product categories, and the products and materials themselves, were determined based on the level of regulatory and program activity across the country and based on an assessment of the areas of greatest concentration of effort and engagement. The selection was also based on the objective of building on existing successful programs and committing to bring these programs to jurisdictions that did not yet have such programs in place.

Selection of the Phase 2 product categories was based on the identification of certain waste stream categories which constitute a significant part of the municipal waste stream as measured by weight and/or volume, are particularly problematic in a traditional municipal waste management system, and/or have particular environmental impacts. For example, approximately 25 percent of municipal solid waste measured by weight could be identified as construction and demolition materials.

These priorities were confirmed with the assistance of the CCME EPR Evaluation Tool (see www.ccme.ca). The objective of the evaluation tool is to examine the relevance of EPR as an instrument for managing a product at the end of its useful life. The tool is designed to assist in identifying priority candidate products for an EPR program. Candidate products were evaluated using the tool with regard to environmental impact criteria, EPR criteria, and criteria for public and political interest and industry readiness.[43]

On its website, the British Columbia Ministry of Environment states that it is using these prioritized lists to consider new products for EPR programs. No specific mention of these lists was found in a review of other provinces.

Framework legislation empowers state agency to recommend new programs.

Maine was the first—and, so far, only—state in the U.S. to pass a framework law guiding the establishment of new EPR programs. Under Maine's law, the state's Department of Environmental Protection is directed to submit an annual report to a joint standing committee of the state legislature. The report may recommend changes to existing stewardship programs, and it may make recommendations for establishing programs covering new products. In either case, the department must include draft legislation for implementing the recommended changes.

To recommend establishing programs for new products, the department must determine that one or more of the following criteria are met:

- The product or product category is found to contain toxics that pose the risk of an adverse impact to the environment or public health and safety.

[42] British Columbia, Ministry of Environment, "Product Stewardship," http://www.env.gov.bc.ca/epd/recycling/history/index.htm, viewed November 3, 2011.

[43] Canadian Council of Ministers of the Environment, "Canada-Wide Action Plan for Extended Producer Responsibility," October 29, 2009, pp. 12–13, http://www.ccme.ca/assets/pdf/epr_cap.pdf, viewed November 4, 2011.

- A product stewardship program for the product will increase the recovery of materials for reuse and recycling.
- A product stewardship program will reduce the costs of waste management to local governments and taxpayers.
- There is success in collecting and processing similar products in programs in other states or countries.
- Existing voluntary product stewardship programs for the product in the state are not effective in achieving the policy goals laid out in the framework.

Following departmental submission of the annual report, the joint standing committee has authority to act on the recommendations, including submitting bills for consideration by the legislature. These bills are subject to the standard legislative process. Nothing in the framework law prohibits the legislature from considering other EPR laws proposed through other channels.

Since passage of the framework law in 2010, the department has submitted one annual report, in which it proposed several changes to existing bills—such as expanding the electronics and mercury-added lamps laws to cover small generators—and identified architectural paint, unused pharmaceuticals, and medical sharps as the first candidates for new EPR programs. To date, however, no new programs have been adopted under the framework law.

New programs are proposed and established through the legislative process.

All existing EPR programs in the U.S. have been created through the legislative process. Although each program has been designed and implemented separately, stakeholder groups have formed around the country in an effort to coordinate and communicate about advancing EPR legislation. Several of these groups have developed their own criteria for EPR programs, which they use to influence and advocate for bills developed through the legislative process.

Despite increasing coordination and engagement of stakeholders to create more harmonized approaches to implementing EPR in the United States, the creation of programs continues to be subject to the political will of state legislatures.

Conclusion

The approaches to extended producer responsibility programs identified in this paper are intended to inform Metro as to possible impacts of EPR programs on its Hazardous Waste Program. Given the variety of ways in which EPR programs can be implemented, the impact will clearly depend on choices made in program structure. For example, EPR programs exist in British Columbia, Ontario, and New Brunswick that use existing local government collection infrastructure, reimbursing the local governments for their services. These programs differ, however, in whether contracts with local governments are individually negotiated or provide consistent, publicly posted reimbursement for services. In contrast, Washington State's programs have led local governments to largely suspend collection services for covered products, with a new private collection infrastructure being established in its place. Maine's electronics recycling program relieves local governments of the cost of recycling covered products, but maintains local government involvement and expenditures in product collection by requiring that producers pay only for the costs of recycling and management after collection and not for collection services themselves.

The likely effects that EPR programs will have on Metro's Hazardous Waste Program will be shaped by the laws and regulations establishing them. By following these legislative and regulatory processes closely, Metro can evaluate how EPR programs are taking shape relative to its own priorities.

Appendix B. Stakeholder Interviews

Discussion Draft (December 2011)

To assess barriers and opportunities around extended producer responsibility (EPR) programs in Oregon and the Metro region, Cascadia conducted stakeholder interviews addressing political, logistical, and economic aspects of these programs. Specifically, stakeholders were asked about hazardous household products they would prioritize for collection under EPR programs, barriers and opportunities to additional programs in Oregon, roles for key program players, and performance goals and financing for programs. Nine stakeholders from the following state and local government, waste industry, and nonprofit organizations participated in interviews (additional stakeholders were contacted who did not participate in interviews):

- City of Portland
- Clackamas County
- Lane County
- Oregon Department of Environmental Quality
- Oregon Environmental Council (OEC)
- Oregon Refuse and Recycling Association (ORRA)
- Oregon State Legislature
- Product Care

Priority Hazardous Household Products

The most commonly mentioned product by far was **fluorescent light bulbs and lamps**. However, one stakeholder noted that fluorescents may become less of a priority as LED lights replace them. Other products mentioned included **pesticides** (mentioned by 4 individuals), **batteries** (2), and **pharmaceuticals** (2), cleaning products (1), toxic substances such as mercury (1), and other traditional hazardous materials (1).

Instead of listing specific products, the representatives of ORRA and OEC said that **products should be prioritized based on criteria**. ORRA has developed a set of Product Stewardship Principles. The OEC representative recommended prioritizing based on hazard, detriment to human and environmental health, and opportunities for product redesign.

Barriers

The most common barriers mentioned were around **resistance or lack of involvement from manufacturers**, including challenges coordinating industry-wide programs, and **political barriers**, including budget shortfalls.

Four interviewees cited **resistance or lack of involvement from manufacturers** as a main barrier. One mentioned that producers are a disparate group, which could make industry-wide coordination

challenging for many EPR programs. Another commented that determining how to allocate and enforce cost-sharing among manufacturers would pose a barrier.

Political barriers cited by three interviewees included a lack of political will at the state level, difficulty obtaining consensus among legislators that EPR is a priority, and state budget constraints limiting funding for EPR program oversight coupled with resistance to legislative proposals associated with fees. The DEQ interviewee noted that the savings from transferring HHW program costs to manufacturers accrue to local governments, while administrative costs accrue to DEQ.

Other barriers included safety concerns and, paradoxically, existing collection facilities. Contrasting paint and electronics with hazardous materials such as pesticides, one stakeholder mentioned potential **safety concerns** about collecting hazardous materials at retail locations. Another interviewee commented that people may ask why Oregon needs another HHW collection system in addition to the **existing collection facilities**.

Opportunities

The opportunity mentioned most frequently was to **build on existing infrastructure**. Four interviewees from local governments and ORRA suggested using existing infrastructure, while shifting the costs to manufacturers. Using existing HHW infrastructure as a starting point was suggested to be cost-effective and efficient as well as safer because these facilities already have trained staff and regulatory oversight. However, interviewees also saw a need to expand the existing infrastructure to create a broader collection system that better reaches rural areas and individuals with limited mobility. One interviewee suggested using pharmacies for a pharmaceutical EPR program because they already have security and safeguards in place. Other opportunities mentioned included:

- EPR program advocates should **select individual products that are very toxic and/or costly to local governments to collect**.
- EPR program advocates should **build on the success of the PaintCare program**: its financial benefits to local government and general success demonstrate that EPR works.
- **Working with other states** to create a unified, regional program could increase industry receptiveness to EPR more than individual state-by-state efforts.
- **Involving industries early in the process** could address their concerns at up front.
- **Metro could enact EPR regionally** if statewide action is not forthcoming.
- **Finding data on the full impacts (including manufacture and use) of products** would help prioritize products and facilitate a holistic product stewardship program.
- **Some manufacturers do want to think holistically about their supply chains.**
- **The public has a general awareness of sustainability** in Portland and Oregon.

Roles of Key Players

Program Design and Set-up

All interviewees stated that the **state and manufacturers should share the primary roles** in program design and set-up. Specifically, **the state should set program objectives and parameters, letting manufacturers design the actual EPR program**; the state would also provide oversight by approving the final design. Two interviewees expressed concerns about government being too prescriptive. However, another local government representative said that the state may want to be more prescriptive in the design of EPR programs for particularly hazardous products, given concerns about safe handling.

Several interviewees said that local governments should have an advisory role on program design and set-up, given their experience. Some also saw a role for retailers and consumers to provide input.

Program Operation and Oversight

Most interviewees said **that manufacturers should have the lead role in operating EPR programs with government oversight**; one noted that operation should be a partnership between manufacturers and government. Local and state government representatives were clear that manufacturers should completely bear the costs of the program, even when local government infrastructure is used for operations.

Several interviewees saw a **role for local governments as collection partners** or suggested **building on existing infrastructure**, which also includes waste haulers. Some qualified this suggestion, explaining that existing collection programs should be examined for efficiency, effectiveness, and safety. Several stakeholders said that **additional collection points may be needed, which could involve retailers**, barring safety concerns. One interviewee expressly said that retailers have some responsibility to provide collection.

While all interviewees said that the state should provide oversight, one local government representative also saw an oversight role for local governments in regulating land use and environmental protection at collection sites.

Other Comments on Roles of Key Players

Several stakeholders saw a role for **manufacturers, retailers, and local governments to provide education and outreach** on the EPR program and, for producers, on the products. Interviewees also saw roles for the following groups:

- **Non-governmental organizations** could advocate for establishing EPR programs.
- **Local governments**:
  - Play a role in data collection.
  - Could support the EPR program through ordinances and regulations (although the stakeholder opposed enacting bans or requirements).

  - Could provide and fund additional collection if they want more than the basic services provided by producers under the EPR program.

- **Groups that can address product redesign** could promote the possibilities and benefits of redesign.

Performance Goals

Goal-Setting

Most interviewees supported **performance goals, mainly around collection convenience and quantities**. However, several stakeholders noted **challenges with setting goals, particularly around quantity**. One stakeholder expressed mixed feelings about setting goals due to these challenges.

Comments on convenience goals included:

- Start with defining convenience as **every retail location**, and then scale down from there to what is feasible. One possibility is a hub-and-spoke system of **locations within a zone of commercial activity**.
- Convenience may mean **mobile events** rather than fixed sites.
- Convenience **depends on location**.

Comments on quantity goals included:

- Use baseline **data from Metro and waste assessments**.
- It depends on the product and could be the **overall percentage of the waste stream**.
- Return rates should **account for location, demographics, and type of material** collected.
- Collection goals could be **altered as products are redesigned** or the waste stream is reduced.

One stakeholder expressed concerns about performance goals. The interviewee said that while customer education should be evaluated, setting goals is difficult because programs take years to become effective; effective education can reduce collection quantities as people buy only what they need; and collection results can be affected by unknown variables or factors not known when goals are initially set. The stakeholder said that regulators should accommodate the potential that goals may be unrealistic due to these factors.

Most interviewees did not address **repercussions** for not meeting performance goals. The three stakeholders who discussed this issue suggested additional fees directed to improving the program or fines as penalties. They said that repercussions should be enforceable and not "draconian."

Financing EPR

Two stakeholders expressed a definite preference **integrating or embedding fees** into product costs; three had mixed feelings; and two had no opinion. Integrated fees were noted as easier to administer and demonstrating that EPR is a regular cost of doing businesses, similar to complying with other regulations such as health and safety requirements. While visible fees were described as more cumbersome, some stakeholders also explained they might educate customers that disposal has a cost and might help customers distinguish hazardous products (i.e., products with a fee) from safer alternatives (i.e., products without a fee).

Additional Information on Stakeholder Interviews

The following files, available separately, provide additional information on the stakeholder interviews:

- **Interview guide** (list of questions).
- **List of proposed interviewees**.
- **Summaries of individual interviews** (from those participants who agreed to share their comments shared directly with Metro); the answers were summarized by the interviewer and should not be considered verbatim responses.

Appendix C. Potential Synergies with States

Discussion Draft (March 2012)

Background and Context

Establishing an extended producer responsibility (EPR) program for a particular product in one state creates opportunities for other states to follow that lead. States can also coordinate their efforts to support EPR program harmonization and to engage stakeholders more effectively in the design and implementation of EPR programs. As part of its Household Hazardous Waste (HHW) Producer Responsibility Scenario Analysis project, Metro asked Cascadia to identify products that may be addressed through EPR in neighboring states over the next 5 to 10 years as well as to consider potential synergies that Metro could leverage to advance EPR in Oregon and throughout the region.

To determine likely products for producer responsibility in the region, Cascadia reviewed recent legislative activity in California and Washington. We also collected information about legislative priorities of leading EPR proponents, including the Northwest Product Stewardship Council (NWPSC), the California Product Stewardship Council (CPSC), and the Product Stewardship Institute (PSI). Cascadia also reviewed EPR legislation recently passed or introduced in other states around the country. Because the EPR landscape is rapidly evolving and the trajectory of EPR policy in the U.S. is uncertain, we narrowed the time horizon of our focus to the next 3 to 5 years.

Legislative and Policy Priorities for EPR

Our review found that **batteries**, **mercury lamps**, **household sharps**, **paint**, and **pharmaceuticals** are the **HHW** product categories currently receiving the greatest attention and legislative activity in California and Washington. Accordingly, we anticipate that these are the most likely HHW products to be covered by EPR within the next 3 to 5 years. Some non-HHW product categories are also the focus of efforts to advance EPR. **Carpet** is a high priority for proponents and lawmakers. **Packaging** is receiving attention from proponents and industry groups in Washington State (which, unlike Oregon, does not have a deposit-refund system for beverage containers), though packaging appears to be a longer-term priority for EPR. These priorities generally align with the priorities of other states that are leading EPR policy development in the United States.

Table C-1 indicates the current legislative priorities of EPR proponents as well as recent legislative activity on priority product categories in California, Washington, and other key states. The sections following the table provide brief descriptions of the priorities and activities by product category and (where appropriate) by state. Each section also identifies potential synergies and opportunities for Metro to support the development of a regional producer responsibility system.

Table C-1. Current Legislative Activities and Priorities for Extended Producer Responsibility in Washington, California, and Other Key States

Stewardship Organization	Batteries	Mercury Lamps	Sharps	Paint	Pharmaceuticals	Carpet
NWPSC (OR & WA)		✓		✓	✓	✓
CPSC (CA)	✓	✓	✓	✓		✓
PSI Priorities	✓	✓	✓	✓	✓	✓
State Legislation						
WA Legislature	Introduced (2012)	**Passed** (2010)	Introduced (2011-2012)	Introduced (2012)	Introduced (2011-2012)	Introduced (2012)
CA Legislature	Introduced (2010-2012)	Introduced (2011-2012)		**Passed** (2010)		**Passed** (2010)
Other States	**Passed** (NY - 2010) *rechargeable batteries only*	**Passed** (ME - 2009) (VT - 2011)		**Passed** (CT - 2010)		
	Introduced (RI - 2011)	Introduced (MA - 2012) (NY - 2012) (TX - 2011)	Introduced (ME - 2011) (RI - 2012)	Introduced (ME - 2011) (NY - 2012) (RI - 2012) (VT - 2011)	Introduced (FL - 2012) (NY - 2012)	Introduced (NY - 2012)

Batteries

CA Household batteries have become a top priority for EPR proponents in **California**, where legislation has been introduced since 2010 to establish a producer-financed and managed recycling system for all household batteries (rechargeable batteries were already covered under a 2006 law). Although alkaline battery producers do not support the California legislation, the industry has begun to engage in dialogue with proponents of EPR and other stakeholders and now intends to roll out a nationally harmonized voluntary take-back program for all household batteries, beginning in California in 2013. CPSC is supportive of the industry's plans, but the organization continues to work to advance battery EPR through legislation as well.

CPSC has recently completed several battery collection pilot projects in partnership with local governments, retailers, chambers of commerce, and the rechargeable battery industry-financed stewardship program (Call2Recycle), which it hopes will yield useful models and lessons for advancing battery stewardship. One outstanding challenge recognized by CPSC and other stakeholders is the current lack of an alkaline battery recycler in the region. Under all program models being advanced in California, retail stores play a major role in the take-back system.

WA In **Washington State**, battery EPR is currently focused on rechargeable batteries. Legislation for small rechargeable batteries was introduced in the 2012 session (SHB 2450) but did not advance beyond the committee level. The legislation was supported by the Rechargeable Battery Association and follows the "Call2Recycle" program model used in other states with existing EPR laws for rechargeable batteries.

Potential synergies

Although household batteries contribute only 2 percent by weight of the HHW that Metro collects, batteries are disproportionately costly to manage—representing nearly 6 percent of Metro's total direct costs for managing HHW. Because the large majority of these quantities and costs are for alkaline batteries, an EPR program for batteries that includes alkaline batteries could have a measureable effect on Metro's operations.

The commitment made by battery manufacturers to develop and implement voluntary EPR for all household batteries provides Metro an opportunity to be involved in the development of a harmonized program that includes alkaline batteries and to work with the battery industry to implement a program in Oregon. If battery recycling capacity is identified as a challenge in Oregon, Metro could also consider joining the efforts of the California Product Stewardship Council and other California stakeholders to attract an alkaline battery recycler to the region.

Mercury Lamps

CA Mercury-containing lamps have been banned from disposal by households in **California** since 2006, but a convenient and cost-effective infrastructure for lamp recycling does not yet exist in most areas of the state. EPR legislation for mercury-containing lamps was introduced in 2011 but has not been passed.

In October 2011, the California Product Stewardship Council convened a workshop to explore solutions for recycling mercury-containing lamps through EPR. At the workshop, stakeholders expressed general agreement that an EPR take-back system should be implemented in the state, but they continued to disagree over how to finance the system. NEMA, the trade association representing lighting and electrical equipment manufacturers, has developed an approach employing a financing mechanism similar to the American Coatings Association's paint EPR program. This model includes a fee added to the cost of lamps sold to finance the program; retailers are generally not supportive of this approach, however. CPSC is currently facilitating discussions to determine whether the existing legislative language can be agreed upon by all the stakeholders, and the organization is committed to advancing EPR legislation for mercury-containing lamps in 2012.

WA **Washington State** passed legislation containing elements of EPR for mercury-containing lamps in 2010 (RCW 70.275), becoming the second U.S. state to do so, following Maine in 2009. Washington's program is scheduled to begin collection by January 1, 2013. Because lighting manufacturers opted not to submit their own stewardship plan, the state Department of Ecology is moving forward with developing the lamp recycling plan for implementation in 2013. Lighting manufacturers may choose to submit their own plans for state approval in future years if desired.

New legislation (SSB 6538) was introduced in the 2012 legislative session to amend the existing EPR law for mercury-containing lamps to clarify financing structures for the stewardship program, including the use of an "environmental handling assessment." The bill did not receive a floor vote before the legislative deadline, and thus it died in the 2012 session.

Potential synergies

Mercury-containing lamps hold a similar position in Metro's operations as batteries, in that they represent a small portion of HHW collected (less than 1 percent by weight) with disproportionately higher costs (estimated at more than 3 percent of direct costs). Mercury-containing lamps require special handling, adequate space, and other resources from Metro's Hazardous Waste Program to collect, store, and transport. The effects of mercury lamp EPR on Metro's operations would depend in part on whether retail stores play a large role in collection under the EPR program and on whether manufacturers finance or provide incentives for collection under the program.

The outcomes of the policy and program development processes underway in California and Washington may strongly influence the options for lamp EPR in Oregon and other states. Industry (NEMA) is interested in preventing conflicts between state legislation, for example, on mercury content standards. Metro can stay updated about developments as they unfold, through NWPSC and CPSC, and may also be able to play a role in advancing lamps EPR legislation in Oregon based on the outcomes and lessons learned from California and Washington.

Household Sharps

Sharps disposed by households are a growing health and safety concern as well as a collection hazard and financial burden for local governments as well as waste and recycling companies. These stakeholders recognize that a permanent, sustainably funded management system for household sharps is needed, and they are beginning to support EPR as a solution. The Product Stewardship Institute facilitated a national stakeholder dialogue on sharps in 2008-2009, but pharmaceutical companies did not participate, and the other stakeholders did not reach a consensus on an appropriate funding mechanism for stewardship of sharps. In the absence of a unified national approach, the PSI group concluded that individual states would seek their own legislative solutions.

CA In **California**, there have been two bills passed related to the management of household sharps: a statewide disposal ban on home-generated sharps (SB 1305) and a requirement that drug manufactures submit plans describing what they do to help their customers safely dispose of their home-injected products (SB 486). Both bills passed with strong support from legislators, local governments, and waste processing companies like Waste Management. However, these legislative efforts have so far been unsuccessful in establishing a convenient, sustainably financed statewide system for safe management of household sharps.

The California Sharps Coalition, representing a diverse group of businesses, community groups, nonprofit organizations, and governments, is leading an effort to advance responsible stewardship of household sharps in California. The coalition has invited sharps manufacturers to work with them to develop an acceptable approach but has not yet received a response. The California Product Stewardship Council convened a workshop in January 2012 sharing results from local government pilot programs and continues to facilitate discussions about next steps for sharps management with stakeholders from across the state.

WA In **Washington**, EPR legislation for sharps was first introduced in the 2011 session and was carried over into 2012. The bill, supported in large part by Waste Management, would require pharmaceutical manufacturers of medication intended for self-injection at home to provide free and convenient collection of sharps, either through a mail-back program or through retail take-back options. Pharmaceutical companies oppose the bill, which did not advance in the 2012 session.

Potential synergies

Dialogue and planning to develop a path forward for sharps EPR in California and Washington is still underway. Although sharps compose only a small portion of the material Metro collects through its Hazardous Waste Program (approximately 34,000 pounds of sharps were collected in 2011, less than 1 percent by weight of total HHW collected), Metro spends about $22,000 annually to purchase empty sharps collection containers, in addition to disposal costs. The containers are distributed through Metro's exchange program, and they must be disposed of after a single use. Customer fees cover only a small portion of Metro's cost of managing sharps. In addition to the cost burden, sharps collection presents a substantial public relations challenge for the Hazardous Waste Program. Even though Metro's disposal option is less expensive than other options available, many customers disposing of sharps resent traveling to Metro's HHW facilities and paying disposal fees. Establishment of a sharps EPR program that offered more convenient collection options, such as return-to-retail, would relieve both the cost burden and public relations challenges of Metro's sharps collection.

Metro could engage with CPSC and the California Sharps Coalition, which are working together to identify and refine best practices, to ensure that dialogue around sharps stewardship in Oregon is informed by the pilot projects and advances already made in California. Metro could also work with NWPSC, Waste Management, and other proponents of sharps legislation in Washington State to coordinate and harmonize any legislative approach taken in Oregon.

Paint

A nationally coordinated effort involving multiple state governments and the American Coatings Association (representing paint producers) has been underway since 2003 to establish EPR for paint in the United States. As the first EPR program implemented in the country, Oregon's program was intended to be a demonstration project to test and guide the development of a harmonized EPR approach that could be rolled out sequentially in other states.

Since the passage of Oregon's program, **California** and **Connecticut** have passed paint EPR legislation similar to Oregon's law, with programs that will begin implementation in 2012 and 2013, respectively. So far in 2012, similar legislation has been introduced in **Washington**, **New York**, and **Rhode Island**, and proposed legislation in **Vermont** has been carried over from the 2011 session. The Washington legislation (SB 6145 and HB 2540) was introduced with the support of ACA. The bill had a hearing, where a number of issues arose including questions about the PaintCare pilot program in Oregon. The bill was not voted on before the deadline and died in the 2012 session.

Potential synergies

EPR for paint is in a favorable position, in that both EPR proponents and product manufacturers are interested in advancing EPR legislation. As a result, it is likely that paint EPR legislation will be adopted in other leading states soon and will be gradually rolled out more broadly across the country. Proponents have competing ideas, however, about how or if the approach should be modified based on the outcomes observed from Oregon's program. Thus, changes made in Oregon could influence the form and substance of paint EPR legislation put forward in other states. The process that unfolds around paint could be highly influential for other products, as other industry groups may come to recognize the benefits and seek models for achieving harmonized EPR legislation across multiple states (and for avoiding a patchwork of potentially conflicting legislation across multiple states).

Because Metro plays a large role in—and benefits significantly from—Oregon's paint EPR pilot program, it has an opportunity to share what it has learned through the program to help inform and refine the approach to EPR for paint being advanced nationally. Metro could also draw on its experience to suggest specific changes to the existing legislation in Oregon and to legislation introduced in subsequent states, so that the paint EPR approach delivers both harmonization and high performance.

In addition, Metro could serve as a model for entities interested in establishing paint recycling operations in areas where EPR is slated for implementation and where no paint recycling capacity exists. Sharing data about Metro's capital investments, operations, and costs could help other entities considering paint recycling options.

Pharmaceuticals

CA No state legislation has been introduced in **California**, but in 2010, the City of San Francisco considered an EPR ordinance for pharmaceuticals. The ordinance prompted the pharmaceuticals industry to fund and participate in an 18-month pilot take-back project. The City will revisit the ordinance once an evaluation of the pilot project is complete. Also in the Bay Area, Alameda County is currently considering a similar ordinance, and the county Board of Supervisors is expected to vote on the ordinance by June 2012. Meanwhile, several other jurisdictions in California have also organized pilot take-back efforts, and the California Product Stewardship Coalition provides coordination and support to pharmaceutical EPR proponents in the state.

WA EPR proponents in **Washington** have led regional efforts for producer responsibility for safe disposal of pharmaceuticals through the "Take Back your Meds" campaign. A pharmaceuticals EPR bill (SSB 5234) was introduced in the 2011 legislative session and reintroduced in the 2012 session. Drug manufacturers opposed the bill, which died in the 2012 session.

Potential synergies

Pharmaceuticals represent a very small portion of the material collected by Metro, with modest associated costs, so changes in their management would not substantially affect the costs or operations of Metro's Hazardous Waste Program. Along with their therapeutic benefits, however, some pharmaceuticals also bring risks of addiction, poisoning, and environmental contamination—highlighting the hazards that can result from improper handling of a product in the absence of a sustainable, convenient collection system. Metro's Hazardous Waste Program is driven in part by a mission to protect its residents and region from hazardous materials, and supporting EPR for pharmaceuticals aligns with this objective. In addition, establishing pharmaceuticals EPR could help to advance the use of EPR as a management strategy for other difficult-to-handle materials.

Carpet (non-HHW)

EPR is also being advanced as a materials management solution for certain non-HHW materials by proponents and lawmakers in California, Washington, and elsewhere. Carpet is the product category currently receiving the greatest legislative attention.

In 2002, the carpet manufacturing industry committed to voluntary stewardship efforts, and manufacturers and other stakeholders engaged in a dialogue process on improving carpet recycling for much of the last decade. The results have been disappointing, however, leading some states to take legislative approaches to achieve better outcomes. In **California**, EPR legislation for carpet was passed in

2010. The California Product Stewardship Council is involved in monitoring the implementation of California's programs. Carpet EPR legislation was introduced in **Washington** (SB 6341) and **New York** in the 2012 session. The Northwest Product Stewardship Council tracked legislation in Washington, but the bill died in the 2012 session. Proponents in both Washington and California have been involved in a dialogue with the carpet manufacturing industry, represented by the Carpet America Recovery Effort (CARE). The dialogue process has currently been suspended as CARE focuses on implementing the California program, though it could begin again as additional states become interested in advancing carpet EPR legislation.

Potential synergies

Although EPR legislation for non-HHW materials would not directly affect Metro's HHW operations, it could strengthen the advancement of EPR in general, providing lawmakers and the public with exposure to the concept and benefits of EPR as a policy approach. In addition, because some program design elements are similar across EPR programs, the lessons learned from existing EPR programs can help to refine best practices for future EPR programs, both for HHW and non-HHW materials.

Metro can support this process by sharing its experience from the Oregon paint EPR pilot program with leaders of EPR dialogues and campaigns for non-HHW materials. Conversely, Metro can follow or participate in EPR-related activities for non-HHW materials. By communicating and coordinating with EPR proponents across product categories, Metro can assist in developing a more harmonized and refined approach to EPR on the West Coast as well as in other regions.

Summary of Potential Synergies around EPR on the West Coast

Over the longer term, EPR proponents see EPR being implemented for a wide range of product categories, not just those that are hazardous, difficult, or costly to manage through current waste and materials management systems. They see a variety of cases where EPR may lead to product design changes that reduce environmental impacts.

The legislative developments of the next few years—and the program outcomes that result—will be critical for shaping the long-term direction of EPR policy in the U.S. in terms of product coverage, financing structure, and program design. The direction of legislation will be affected by whether and how industry representatives and governments work together in its development. Legislation with the support of both industry and government stakeholders may be more likely to pass.

Metro can provide support to these efforts by documenting and sharing information about the benefits and outcomes it achieves under Oregon's PaintCare pilot program, which is an example of industry and government working together to advance EPR. By supporting EPR policy development for the other current priority product categories, Metro has the opportunity to influence the future of EPR policy in the United States at the state and potentially national level.

Appendix D. Additional Supporting Data

Paint Cost Assumptions

Estimating the direct cost for latex paint presented a special challenge because Metro does not pay an explicit disposal cost for this waste because it is transferred to MetroPaint for processing. This analysis estimated the per-gallon disposal cost for latex paint by dividing MetroPaint's average operating costs from 2005 to 2011 (excluding 2009–2010, which was an unusual year) by the pounds of paint recycled by MetroPaint in 2011; results are shown in Table D-1. This disposal cost was added to the handling cost estimated by Metro to calculate a total direct cost per pound for latex paint, shown in Table D-2.

Table D-1. MetroPaint's Net, Unloaded Operating Costs per Gallon and per Pound, 2005–2011

MetroPaint's Net, Unloaded Operating Costs	Per Gallon	Per Pound
2005–2006	$1.90	$0.19
2006–2007	$1.40	$0.14
2007–2008	$1.79	$0.18
2008–2009	$1.66	$0.17
2009–2010	$2.28 (excluded)	$0.23 (excluded)
2010–2011	$1.77	$0.18
Average (excluding 2009–2010)	**1.70**	**$.017**

Source: Jim Quinn, MetroPaint Program Manager.

Table D-2. Metro Hazardous Waste Program's Direct Cost for Paint

Metro Hazardous Waste Program's Direct Cost for Paint	Per Pound
Disposal/Recycling Cost	$0.17
Handling Cost	$0.04
Total Direct Cost	**$0.21**

Source: Jim Quinn, Metro's Hazardous Waste Program Manager.

Paint Quantity Assumptions

In each scenario, PROs are assumed to contract with Metro to be the primary collector of the HHW products placed under EPR legislation in the Metro service territory. For paint (including latex, oil-based, and aerosol paint), Metro is assumed to continue to collect the same proportion of material in the service area as it did for Year 2 (fiscal year 2011–2012) of the paint EPR program, which is 74 percent, as shown in Table D-3.

Table D-3. Pounds of Latex and Oil-based Paint Collected in the Metro Region 2011-2012

Collector	Pounds	Percent
Metro HHW Program*	2,129,800	74%
Retailers through PaintCare	746,980	26%
Total	**2,876,780**	**100%**

** This calculation uses quantities collected by Metro and retailers as reported by PaintCare to calculate their relationship using date from a single source; however, all other analytical calculations use the quantity collected as reported by Metro directly because it is assumed to be more accurate and comparable with reported quantities of other HHW collected by Metro.*

Source: Pounds disposed through Metro and retailers in 2011–2012 from PaintCare, Oregon Paint Stewardship Pilot Program Annual Report, 2011, http://www.deq.state.or.us/lq/pubs/docs/sw/PaintProdStewardshipPilotPlanAnnualReportAppendix.pdf.

Adjustments to Quantities of Solvent-based Products and Paint

Approximately 5.2 percent of paint collected by Metro's Hazardous Waste Program is not covered by PaintCare either because it is unlabeled or is received from customers who are not Oregon residents or businesses.[44] This paint is consolidated with solvent-based products. This scenario analysis estimated the quantity of this non-PaintCare paint as 110,000 pounds in FY 2011–2012. This material was removed from Metro's reported quantities of solvent-based products and into a separate category under products not covered by EPR.

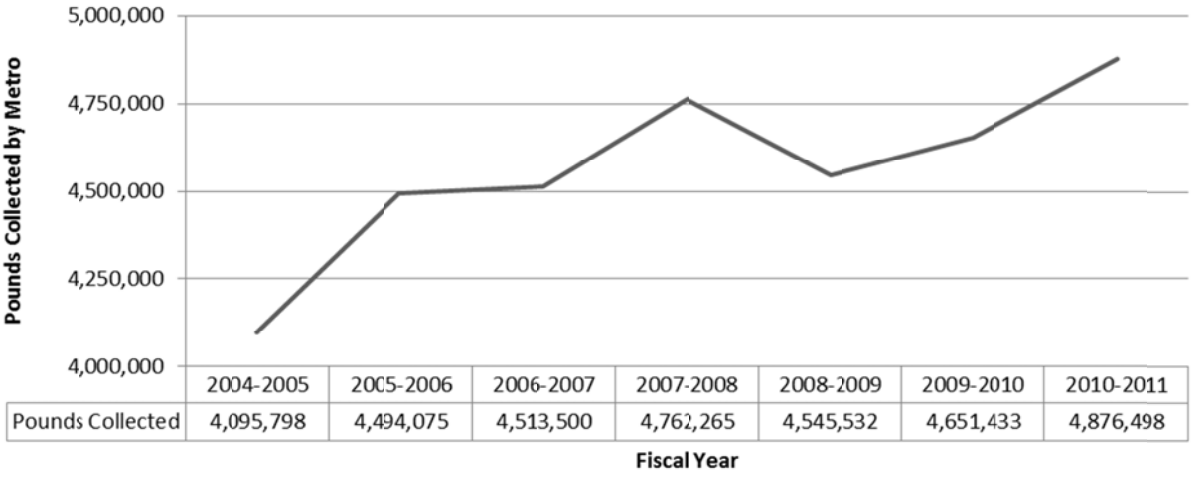
Solvent-based products include items in both the home improvement group and the household, cleaning, and auto maintenance group. These materials were divided equally between the two product stewardship categories.

[44] Jim Quinn, Metro's Hazardous Waste Program Manager.

Historic Metro HHW Program Collection Growth Rates

In the long-term collection quantities of all products collected by Metro are assumed to increase annually, in part due to population growth and in part due to other factors. Annual collection growth rates for products not covered by EPR are based on the **historic changes in total pounds collected by Metro's Hazardous Waste Program** before the 2011–2012 decline, shown in Figure D-1**.**

Figure D-1. Pounds of Hazardous Waste Collected by Metro



	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Pounds Collected	4,095,798	4,494,075	4,513,500	4,762,265	4,545,532	4,651,433	4,876,498

The average compound growth rates were calculated using the following formula:

$$Averaged\ annual\ growth\ rate = \left(\frac{Total\ pounds\ collected\ in\ FY2010-2011}{Total\ pounds\ collected\ in\ base\ year}\right)^{\left(\frac{1}{FY2010-2011\ -\ base\ year}\right)} - 1$$

This analysis uses two different historic average growth rates for two main reasons. First, the base year used when calculating historic rates has a significant effect on the average growth rate.

Between fiscal years 2004–2005 and 2010–2011, collection quantities increased an average of **3 percent per year**.

$$Averaged\ annual\ growth\ rate\ (base\ year\ 2004-2005) = \left(\frac{4{,}876{,}498\ \text{pounds}}{4{,}095{,}798\ \text{pounds}}\right)^{\left(\frac{1}{6\ years}\right)} - 1 = \mathbf{3}\%$$

Between fiscal years 2005–2006 and 2010–2011, collection quantities increased an average of **1.6 percent per year.**

$$Averaged\ annual\ growth\ rate\ (base\ year\ 2005-2006) = \left(\frac{4{,}876{,}498\ \text{pounds}}{4{,}494{,}075\ \text{pounds}}\right)^{\left(\frac{1}{5\ years}\right)} - 1 = \mathbf{1.6}\%$$

Because both of these rates could be considered accurate, the analysis includes scenarios that use both of these rates.

Historic Paint Collection Growth Rates

Annual collection growth rates were estimated based on the increase in overall latex paint collection after the PaintCare program began. Between fiscal year 2008–2009 (before PaintCare) and fiscal year 2010–2011 (after PaintCare), the total quantity of latex paint collected in the Metro region—including at retail locations—is estimated to have increased by an average of 6.7 percent per year, as calculated based on quantities presented in Table and Table. Although this collection growth rate is for paint only, it is assumed that other products will follow similar patterns of growth when they begin collection under EPR. Recently, however, the growth of *paint* collected in the three-county area has decreased; between 2010–2011 and 2011–2012, the total quantity collected through PaintCare increased by 0.3 percent.[45] As a result, a *lower* growth rate is used for paint, now that it can be considered a "mature" EPR product, no longer subject to extraordinary growth rates as a result of new and increased promotion and collection opportunities.

Table D-4. Estimated Pounds of Latex Paint Collected by Metro-region Retailers Through PaintCare

	FY 2010–2011
Gallons of paint collected by Metro-region retailers in Fiscal Year 2010–2011	49,950
Latex percentage of all paint collected (statewide)	75%
Estimated pounds per gallon of paint	10
Estimate Pounds of Latex Collected by Retailers	**374,625**

Source: PaintCare, Oregon Paint Stewardship Pilot Program Annual Report, 2011, http://www.deq.state.or.us/lq/sw/prodstewardship/paint.htm. (Appendix D – gallons collected; page 19 – percentage of latex; page 18 – conversion factor.)

Table D-5. Total Pounds of Latex Paint Collected in Metro Region

Collector	CY 2007	CY 2008	FY 2010–2011
Metro HHW Program	1,974,980	2,035,090	2,097,715
Retailers through PaintCare	--	--	374,625*
Total	**1,974,980**	**2,035,090**	**2,472,340**

Sources: Metro's disposal data for 2010–2011 provided by Metro's Hazardous Waste Program. Pounds disposed through Metro in 2007 and 2008 and through retailers in 2010–2011 from PaintCare, Oregon Paint Stewardship Pilot Program Annual Report, 2011, http://www.deq.state.or.us/lq/pubs/docs/sw/PaintProdStewardshipPilotPlanAnnualReportAppendix.pdf.

Table D-6. Total Pounds of Latex and Oil-Based Paint Collected in Metro Region

Collector	FY 2010–2011	FY 2011–2012	Change
Metro HHW Program	2,367,260	2,129,800	-10.0%
Retailers through PaintCare	499,500	746,980	+49.5%
Total	**2,866,760**	**2,876,780**	**+0.3%**

Sources: Pounds disposed from PaintCare, Oregon Paint Stewardship Pilot Program Annual Report, 2011 and 2012, http://www.deq.state.or.us/lq/pubs/docs/sw/PaintProdStewardshipPilotPlanAnnualReportAppendix.pdf and http://www.deq.state.or.us/lq/pubs/docs/sw/prodstew/PaintCareAnnualReport2012.pdf.

[45] PaintCare, *Oregon Paint Stewardship Pilot Program Annual Report*, 2012, http://www.deq.state.or.us/lq/sw/prodstewardship/paint.htm.

Product Stewardship Categories

Table D-7. Examples of Products in Each Product Stewardship Category

Product Stewardship Category	Example Products
Latex and oil-based paint	Latex and oil-based interior/exterior paint
Aerosol paint	Spray paint
Batteries – non-rechargeable	Alkaline and button cell household batteries
Batteries –rechargeable	rechargeable, lithium, and NiMH household batteries
Fluorescents	Fluorescent tubes and bulbs (CFLs)
Home improvement	Paint thinners, solvents, caulk, glues and adhesives
Household sharps	Medical syringes used in diabetes and other home medical treatments
Household, cleaning, and auto maintenance	Ammonia, bleach, motor oil, antifreeze, gasoline
Lawn, garden, and pest products	Fertilizers, herbicides, indoor and outdoor pesticides
Other HHW	Propane cylinders, other compressed gas cylinders, strong acids and bases
HHW not covered in any scenario	Automotive batteries, asbestos-containing materials, PCB-containing products, Freon

Metro Hazardous Waste Program Performance Measures

Table D-8. Metro Hazardous Waste Program Performance Measures, by Fiscal/Program Year

Measure	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
HH customers – South	26,685	27,770	27,274	28,600	30,761	33,965	33,787	30,048
HH customers – Central	16,088	17,465	17,447	19,215	20,380	21,256	20,323	19,146
HH customers – facilities combined	**42,773**	**45,226**	**44,721**	**47,815**	**51,141**	**55,221**	**54,110**	**49,194**
Peak customer day – South			188	184	193	202	221	200
Peak customer day – Central						173	173	149
Customers – Roundups	**9,556**	**11,363**	**13,320**	**12,296**	**10,209**	**9,004**	**8,832**	**8,798**
CEG customers – South			302	357	298	231	395	365
CEG customers – Central			437	431	411	344	415	440
CEG customers – combined	**484**	**521**	**739**	**788**	**709**	**575**	**810**	**805**
Pounds collected – South[*]	1,960,000	2,130,000	2,090,000	2,160,000	2,190,000	2,360,000	2,417,603	2,051,089
Pounds collected – Central[*]	2,030,000	2,380,000	2,470,000	2,560,000	2,340,000	2,410,000	2,458,895	2,099,155
Pounds collected – combined[†]	**4,095,798**	**4,494,075**	**4,513,500**	**4,762,265**	**4,545,532**	**4,651,433**	**4,876,498**	**4,155,469**
Cost – labor	$2,138,034	$2,261,997	$2,239,148	$2,332,010	$2,448,654	$2,549,547	$2,665,113	$2,814,355
Cost – disposal	$698,539	$584,381	$483,039	$557,003	$662,682	$832,362	$545,872	$616,739
Cost – materials & miscellaneous	$548,335	$629,242	$649,677	$747,319	$675,284	$683,664	$624,698	$634,281
Cost – operating	**$3,384,908**	**$3,475,620**	**$3,371,864**	**$3,636,332**	**$3,786,620**	**$4,065,573**	**$3,835,683**	**$4,065,375**
Cost per pound, gross	$0.83	$0.77	$0.75	$0.76	$0.83	$0.87	$0.79	$0.98
Cost for latex paint[‡]	$292,245	$412,713	$280,945	$390,808	$309,592	$474,049	$0	$0
Cost – total	**$3,697,534**	**$3,888,333**	**$3,652,809**	**$4,027,140**	**$4,096,212**	**$4,539,622**	**$3,835,683**	**$4,065,375**

[*] *South and Central subtotal may not add up to combined total, as latex paint figures are generated differently prior to FY10-11. Facility numbers were based on cages shipped, while combined figure was based on liquid volume actually processed at the Metro Paint facility.*

[†] Includes personal protective equipment (PPE) used by facility staff members; PPE quantities were excluded from the scenario analysis.

[‡] *Cost to deal with latex paint collected in the Metro region, based on net per-gallon operating cost of the latex facility. Starting FY10-11 this is zero, due to PaintCare.*

Source: Jim Quinn, Metro's Hazardous Waste Program Manager.

Metro-specific Codes		Product Stewardship		Pounds Disposed in 2011-2012		
Weight	Costs	Group	Waste Material Description	Households	Businesses	Total
GR	Latex	Paint (latex/oil-based)	latex- recycled	1,547,161	122,773	1,669,934
OBP	PAINT	Paint (latex/oil-based)	Paint, oil-based	317,441	18,431	335,872
QB	Q1	Aerosol paint	Aerosols- on site	123,303	2,415	125,718
I3b	I3	Batteries - non-rechargeable	Batteries- alkaline	85,559	5,441	91,000
IR	I RBRC	Batteries - rechargeable	Batteries- rechargeable	8,209	665	8,874
I5	I5	Batteries - rechargeable	Batteries- lithium	738	76	814
I1	I1	Batteries - non-rechargeable	Batteries- button cell	215	116	331
I2b	I7	Batteries - rechargeable	Batteries- NiMH	-40	40	0
I2a	I RBRC	Batteries - non-rechargeable	Batteries- Ni/Cd	0	0	0
IX	IX	Batteries - non-rechargeable	Batteries- mixed	0	0	0
I4	I4	Batteries - non-rechargeable	Batteries- mercury	0	0	0
I6	I6	Batteries - non-rechargeable	Batteries- silver oxide	0	0	0
E T	E T	Fluorescent lamps	fluorescent tubes	34,155	2,086	36,241
E C	FLO C	Fluorescent lamps	CFLs	9,442	188	9,629
AFM	AFM	Home improvement	A-Fuel mixed	156,705	0	156,705
AF2	AF2	Home improvement	A-Fuel Solids	74,609	8,271	82,880
GD	Gtrash	Home improvement	G- TS	78,261	3,471	81,732
Q2	Q2	Home improvement	Aerosols- corrosive/poison	34,868	132	35,000
AF1	AF1	Home improvement	A-Fuel Liquids	14,906	20,172	35,078
AFL-drum	AFL	Home improvement	Flammables, loosepack	2,671	3,829	6,500
Q1	Q1	Home improvement	Aerosols- flammable	200	0	200
AFL-skid	AFL	Home improvement	Flammables, loosepack	0	0	0
BFD	OIL	Household/cleaning/auto	BFD- brake fluid, etc.	148,207	4,465	152,672
AFM	AFM	Household/cleaning/auto	A-Fuel mixed	156,705	0	156,705
AF2	AF2	Household/cleaning/auto	A-Fuel Solids	74,609	8,271	82,880
GS	Gpolysorb	Household/cleaning/auto	G- solidifed	64,884	11,036	75,920
H	ANTIFREEZE	Household/cleaning/auto	Antifreeze	56,762	886	57,648
AF1	AF1	Household/cleaning/auto	A-Fuel Liquids	14,906	20,172	35,078
AFL-drum	AFL	Household/cleaning/auto	Flammables, loosepack	2,671	3,829	6,500
AFL-skid	AFL	Household/cleaning/auto	Flammables, loosepack	0	0	0
G/J	G/J	Household/cleaning/auto	Cleaners/water-based	1,000	0	1,000
N5	N5	Lawn/garden/pest	Fertilizer	96,204	96	96,300
N2 liq	N2 Liq	Lawn/garden/pest	Pesticides- liquid	102,997	4,703	107,700
N2 sol	N2 Sol	Lawn/garden/pest	Pesticides- solid	47,846	2,104	49,950
N1	N1	Lawn/garden/pest	Pesticides- flammable	7,303	947	8,250

Metro-specific Codes		Product Stewardship		Pounds Disposed in 2011-2012		
Weight	Costs	Group	Waste Material Description	Households	Businesses	Total
N4	N4	Lawn/garden/pest	Pesticides- PG I	564	36	600
N3	N3	Lawn/garden/pest	Pesticides- acidic	514	86	600
X3	Sharps	Sharps	Sharps	31,095	0	31,095
S1v	PR1empty	Other haz. waste	Propane -small, vent	41,506	66	41,572
L liq	L Liq	Other haz. waste	Alkalis- liquid	48,713	4,237	52,950
K3	K3	Other haz. waste	Acids- inorganic	31,602	4,998	36,600
S4	Fire Extng	Other haz. waste	Fire extinguishers	29,770	610	30,380
S2	PR2	Other haz. waste	Propane- large cylinders	13,580	760	14,340
K2	K2	Other haz. waste	Acids- organic	9,594	756	10,350
L sol	L Sol	Other haz. waste	Alkalis- solid	8,590	1,090	9,680
M sol	M Sol	Other haz. waste	Oxidizers- solid	4,621	629	5,250
M liq	M Liq	Other haz. waste	Oxidizers- liquid	4,337	313	4,650
S1	PR1	Other haz. waste	Propane -small cylinders	3,700	68	3,768
S3-PSC	S3-PSC	Other haz. waste	Compressed gases, misc.	3,310	0	3,310
S3-puncture	S3-other	Other haz. waste	Compressed gases, misc.	2,730	0	2,730
S3-Landeen	S3-other	Other haz. waste	Compressed gases, misc.	190	0	190
O	O	Other waste (not EPR)	Reuse materials	152,521	0	152,521
Y	I8	Other waste (not EPR)	Lead-acid batteries	105,399	1,281	106,680
AFM	AFL	Other waste (not EPR)	Non-PaintCare paint (disposed with AFM)	102,278	7,745	110,023
P1	P1	Other waste (not EPR)	PCB's- non-TSCA	7,815	3,585	11,400
F	F	Other waste (not EPR)	Asbestos-containing	5,425	0	5,425
X1	AMMO	Other waste (not EPR)	Explosives	3,433	22	3,455
R2	R2	Other waste (not EPR)	Water reactives	837	29	866
W2	HG1	Other waste (not EPR)	Mercury, metallic	610	355	965
U-cylinder	UCElowP	Other waste (not EPR)	Refrigerant Freon	436	94	530
P2-central	P2	Other waste (not EPR)	Ballasts- TSCA regulated	1,000	0	1,000
R1	R1	Other waste (not EPR)	Organic peroxides	122	16	138
U-can	U	Other waste (not EPR)	Refrigerant Freon	162	0	162
X2	X2	Other waste (not EPR)	Radioactives	2	0	2
P2-south	P2	Other waste (not EPR)	TSCA from South	0	0	0
V	V	EXCLUDED	PPE	EXCL	EXCL	EXCL
			Total	**3,876,953**	**271,391**	**4,148,344**

Metro-specific Codes		Product Stewardship		Estimated Direct Costs	
Weight	Costs	Group	Waste Material Description	Per Pound	Total Direct
GR	Latex	Paint (latex/oil-based)	latex- recycled	$0.21	$347,346
OBP	PAINT	Paint (latex/oil-based)	Paint, oil-based	$0.36	$121,250
QB	Q1	Aerosol paint	Aerosols- on site	$1.63	$204,501
I3b	I3	Batteries - non-rechargeable	Batteries- alkaline	$1.63	$148,330
IR	I RBRC	Batteries - rechargeable	Batteries- rechargeable	$1.40	$12,424
I5	I5	Batteries - rechargeable	Batteries- lithium	$5.58	$4,542
I1	I1	Batteries - non-rechargeable	Batteries- button cell	$13.03	$4,313
I2b	I7	Batteries - rechargeable	Batteries- NiMH	$2.58	$0
I2a	I RBRC	Batteries - non-rechargeable	Batteries- Ni/Cd	$1.40	$0
IX	IX	Batteries - non-rechargeable	Batteries- mixed	$6.47	$0
I4	I4	Batteries - non-rechargeable	Batteries- mercury	$0.00	$0
I6	I6	Batteries - non-rechargeable	Batteries- silver oxide	$1.88	$0
E T	E T	Fluorescent lamps	fluorescent tubes	$1.64	$59,435
E C	FLO C	Fluorescent lamps	CFLs	$5.28	$50,843
AFM	AFM	Home improvement	A-Fuel mixed	$0.41	$63,642
AF2	AF2	Home improvement	A-Fuel Solids	$0.36	$29,920
GD	Gtrash	Home improvement	G- TS	$0.38	$30,650
Q2	Q2	Home improvement	Aerosols- corrosive/poison	$2.99	$104,533
AF1	AF1	Home improvement	A-Fuel Liquids	$0.45	$15,829
AFL-drum	AFL	Home improvement	Flammables, loosepack	$3.02	$19,630
Q1	Q1	Home improvement	Aerosols- flammable	$1.63	$325
AFL-skid	AFL	Home improvement	Flammables, loosepack	$3.02	$0
BFD	OIL	Household/cleaning/auto	BFD- brake fluid, etc.	$0.08	$12,214
AFM	AFM	Household/cleaning/auto	A-Fuel mixed	$0.41	$63,642
AF2	AF2	Household/cleaning/auto	A-Fuel Solids	$0.36	$29,920
GS	Gpolysorb	Household/cleaning/auto	G- solidifed	$0.30	$22,776
H	ANTIFREEZE	Household/cleaning/auto	Antifreeze	$0.08	$4,612
AF1	AF1	Household/cleaning/auto	A-Fuel Liquids	$0.45	$15,829
AFL-drum	AFL	Household/cleaning/auto	Flammables, loosepack	$3.02	$19,630
AFL-skid	AFL	Household/cleaning/auto	Flammables, loosepack	$3.02	$0
G/J	G/J	Household/cleaning/auto	Cleaners/water-based	$0.34	$338
N5	N5	Lawn/garden/pest	Fertilizer	$2.04	$196,452
N2 liq	N2 Liq	Lawn/garden/pest	Pesticides- liquid	$1.43	$153,742
N2 sol	N2 Sol	Lawn/garden/pest	Pesticides- solid	$2.75	$137,363
N1	N1	Lawn/garden/pest	Pesticides- flammable	$1.43	$11,777

Metro-specific Codes		Product Stewardship		Estimated Direct Costs	
Weight	Costs	Group	Waste Material Description	Per Pound	Total Direct
N4	N4	Lawn/garden/pest	Pesticides- PG I	$4.44	$2,666
N3	N3	Lawn/garden/pest	Pesticides- acidic	$2.09	$1,253
X3	Sharps	Sharps	Sharps	$5.68	$176,620
S1v	PR1empty	Other haz. waste	Propane -small, vent	$1.32	$54,875
L liq	L Liq	Other haz. waste	Alkalis- liquid	$1.37	$72,277
K3	K3	Other haz. waste	Acids- inorganic	$2.04	$74,573
S4	Fire Extng	Other haz. waste	Fire extinguishers	$0.21	$6,501
S2	PR2	Other haz. waste	Propane- large cylinders	$0.05	$767
K2	K2	Other haz. waste	Acids- organic	$2.04	$21,088
L sol	L Sol	Other haz. waste	Alkalis- solid	$2.71	$26,233
M sol	M Sol	Other haz. waste	Oxidizers- solid	$3.00	$15,750
M liq	M Liq	Other haz. waste	Oxidizers- liquid	$2.31	$10,730
S1	PR1	Other haz. waste	Propane -small cylinders	$2.04	$7,687
S3-PSC	S3-PSC	Other haz. waste	Compressed gases, misc.	$20.00	$66,200
S3-puncture	S3-other	Other haz. waste	Compressed gases, misc.	$0.00	$0
S3-Landeen	S3-other	Other haz. waste	Compressed gases, misc.	$0.00	$0
O	O	Other waste (not EPR)	Reuse materials	$0.13	$19,828
Y	I8	Other waste (not EPR)	Lead-acid batteries	-$0.03	-$3,200
AFM	AFL	Other waste (not EPR)	Non-PaintCare paint (disposed with AFM)	$3.02	$332,270
P1	P1	Other waste (not EPR)	PCB's- non-TSCA	$0.54	$6,110
F	F	Other waste (not EPR)	Asbestos-containing	$0.10	$543
X1	AMMO	Other waste (not EPR)	Explosives	$7.04	$24,323
R2	R2	Other waste (not EPR)	Water reactives	$20.00	$17,320
W2	HG1	Other waste (not EPR)	Mercury, metallic	$0.00	$0
U-cylinder	UCElowP	Other waste (not EPR)	Refrigerant Freon	$1.21	$643
P2-central	P2	Other waste (not EPR)	Ballasts- TSCA regulated	$1.91	$1,910
R1	R1	Other waste (not EPR)	Organic peroxides	$20.00	$2,760
U-can	U	Other waste (not EPR)	Refrigerant Freon	$0.00	$0
X2	X2	Other waste (not EPR)	Radioactives	$0.00	$0
P2-south	P2	Other waste (not EPR)	TSCA from South	$1.91	$0
V	V	EXCLUDED	PPE	EXCL	EXCL
			Total	**NA**	**$2,825,531**

High EPR Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	1,805,225	1,760,095	1,760,095	1,786,496	1,840,091	1,895,294	1,952,153	2,010,717	2,071,039	2,133,170
Aerosol paint	2014	119,432	117,939	87,315	88,625	93,056	97,709	102,595	107,724	113,110	118,766
Batteries - not rechargeable	2014	86,764	85,680	17,136	17,393	18,263	19,176	20,135	21,141	22,198	23,308
Batteries - rechargeable	2014	9,204	9,089	7,271	7,380	7,749	8,136	8,543	8,970	9,419	9,890
Fluorescent lamps	2014	43,577	43,032	25,819	26,206	27,517	28,893	30,337	31,854	33,447	35,119
Home improvement	2016	378,191	373,463	373,463	379,065	398,018	417,919	438,815	460,756	483,794	507,984
Household sharps	2016	29,540	29,171	29,171	29,609	4,663	4,897	5,141	5,398	5,668	5,952
Household, cleaning, and auto	2018	539,983	533,233	533,233	541,232	557,469	574,193	602,903	633,048	664,700	697,935
Lawn, garden, and pest	2018	250,230	247,102	247,102	250,809	258,333	266,083	279,387	293,356	308,024	323,425
Other hazardous waste	2020	204,982	202,419	202,419	205,456	211,619	217,968	224,507	231,242	242,804	254,944
Waste not covered by EPR	NA	373,509	368,840	368,840	374,372	385,604	397,172	409,087	421,360	434,000	447,020
Total Pounds		**3,840,637**	**3,770,063**	**3,651,865**	**3,706,643**	**3,802,382**	**3,927,439**	**4,073,602**	**4,225,567**	**4,388,204**	**4,557,514**

Moderate EPR Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	1,805,225	1,760,095	1,760,095	1,786,496	1,840,091	1,895,294	1,952,153	2,010,717	2,071,039	2,133,170
Aerosol paint	2016	119,432	117,939	117,939	119,708	93,056	97,709	102,595	107,724	113,110	118,766
Batteries - not rechargeable	2014	86,764	85,680	17,136	17,393	18,263	19,176	20,135	21,141	22,198	23,308
Batteries - rechargeable	2014	9,204	9,089	7,271	7,380	7,749	8,136	8,543	8,970	9,419	9,890
Fluorescent lamps	2014	43,577	43,032	25,819	26,206	27,517	28,893	30,337	31,854	33,447	35,119
Home improvement	2016	378,191	373,463	373,463	379,065	398,018	417,919	438,815	460,756	483,794	507,984
Household sharps	2018	29,540	29,171	29,171	29,609	30,497	31,412	4,947	5,195	5,454	5,727
Household, cleaning, and auto	2018	539,983	533,233	533,233	541,232	557,469	574,193	602,903	633,048	664,700	697,935
Lawn, garden, and pest	2020	250,230	247,102	247,102	250,809	258,333	266,083	274,065	282,287	296,402	311,222
Other hazardous waste	NA	204,982	202,419	202,419	205,456	211,619	217,968	224,507	231,242	238,179	245,325
Waste not covered by EPR	NA	373,509	368,840	368,840	374,372	385,604	397,172	409,087	421,360	434,000	447,020
Total Pounds		**3,840,637**	**3,770,063**	**3,682,489**	**3,737,726**	**3,828,216**	**3,953,954**	**4,068,087**	**4,214,295**	**4,371,743**	**4,535,466**

Limited EPR Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	1,805,225	1,760,095	1,760,095	1,786,496	1,840,091	1,895,294	1,952,153	2,010,717	2,071,039	2,133,170
Aerosol paint	2016	119,432	117,939	117,939	119,708	93,056	97,709	102,595	107,724	113,110	118,766
Batteries - not rechargeable	NA	86,764	85,680	85,680	86,965	89,574	92,261	95,029	97,880	100,816	103,841
Batteries - rechargeable	2016	9,204	9,089	9,089	9,225	7,749	8,136	8,543	8,970	9,419	9,890
Fluorescent lamps	2014	43,577	43,032	25,819	26,206	27,517	28,893	30,337	31,854	33,447	35,119
Home improvement	NA	378,191	373,463	373,463	379,065	390,437	402,150	414,215	426,641	439,441	452,624
Household sharps	2020	29,540	29,171	29,171	29,609	30,497	31,412	32,354	33,325	5,249	5,511
Household, cleaning, and auto	NA	539,983	533,233	533,233	541,232	557,469	574,193	591,419	609,161	627,436	646,259
Lawn, garden, and pest	NA	250,230	247,102	247,102	250,809	258,333	266,083	274,065	282,287	290,756	299,479
Other hazardous waste	NA	204,982	202,419	202,419	205,456	211,619	217,968	224,507	231,242	238,179	245,325
Waste not covered by EPR	NA	373,509	368,840	368,840	374,372	385,604	397,172	409,087	421,360	434,000	447,020
Total Pounds		**3,840,637**	**3,770,063**	**3,752,851**	**3,809,143**	**3,891,946**	**4,011,271**	**4,134,303**	**4,261,162**	**4,362,892**	**4,497,003**

Status Quo Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	1,805,225	1,760,095	1,760,095	1,786,496	1,840,091	1,895,294	1,952,153	2,010,717	2,071,039	2,133,170
Aerosol paint	NA	119,432	117,939	117,939	119,708	123,300	126,999	130,808	134,733	138,775	142,938
Batteries - not rechargeable	NA	86,764	85,680	85,680	86,965	89,574	92,261	95,029	97,880	100,816	103,841
Batteries - rechargeable	NA	9,204	9,089	9,089	9,225	9,502	9,787	10,080	10,383	10,694	11,015
Fluorescent lamps	NA	43,577	43,032	43,032	43,677	44,988	46,337	47,727	49,159	50,634	52,153
Home improvement	NA	378,191	373,463	373,463	379,065	390,437	402,150	414,215	426,641	439,441	452,624
Household sharps	NA	29,540	29,171	29,171	29,609	30,497	31,412	32,354	33,325	34,324	35,354
Household, cleaning, and auto	NA	539,983	533,233	533,233	541,232	557,469	574,193	591,419	609,161	627,436	646,259
Lawn, garden, and pest	NA	250,230	247,102	247,102	250,809	258,333	266,083	274,065	282,287	290,756	299,479
Other hazardous waste	NA	204,982	202,419	202,419	205,456	211,619	217,968	224,507	231,242	238,179	245,325
Waste not covered by EPR	NA	373,509	368,840	368,840	374,372	385,604	397,172	409,087	421,360	434,000	447,020
Total Pounds		**3,840,637**	**3,770,063**	**3,770,063**	**3,826,614**	**3,941,413**	**4,059,655**	**4,181,445**	**4,306,888**	**4,436,095**	**4,569,177**

Upper High EPR Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	1,905,516	1,905,516	1,934,098	1,992,121	2,091,727	2,196,314	2,306,130	2,421,436	2,542,508	2,669,633
Aerosol paint	2014	122,575	122,575	92,109	96,714	103,484	110,728	118,479	126,772	135,646	145,142
Batteries - not rechargeable	2014	89,048	89,048	18,077	18,981	20,309	21,731	23,252	24,880	26,621	28,485
Batteries - rechargeable	2014	9,446	9,446	7,670	8,053	8,617	9,220	9,866	10,556	11,295	12,086
Fluorescent lamps	2014	44,723	44,723	27,236	28,598	30,600	32,742	35,034	37,487	40,111	42,918
Home improvement	2016	388,143	388,143	393,965	405,784	434,189	464,582	497,103	531,900	569,133	608,973
Household sharps	2016	30,318	30,318	30,772	31,696	5,087	5,443	5,824	6,232	6,668	7,135
Household, cleaning, and auto	2018	554,193	554,193	562,506	579,381	596,763	614,666	657,692	703,731	752,992	805,701
Lawn, garden, and pest	2018	256,815	256,815	260,667	268,487	276,542	284,838	304,777	326,111	348,939	373,365
Other hazardous waste	2020	210,376	210,376	213,531	219,937	226,535	233,332	240,331	247,541	264,869	283,410
Waste not covered by EPR	NA	383,338	383,338	389,088	400,761	412,783	425,167	437,922	451,060	464,591	478,529
Direct Costs		**3,994,490**	**3,994,490**	**3,929,721**	**4,050,514**	**4,206,638**	**4,398,763**	**4,636,410**	**4,887,706**	**5,163,375**	**5,455,377**

Upper Moderate EPR Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	1,905,516	1,905,516	1,934,098	1,992,121	2,091,727	2,196,314	2,306,130	2,421,436	2,542,508	2,669,633
Aerosol paint	2016	122,575	122,575	124,414	128,146	101,513	108,619	116,222	124,358	133,063	142,377
Batteries - not rechargeable	2014	89,048	89,048	18,077	18,981	20,309	21,731	23,252	24,880	26,621	28,485
Batteries - rechargeable	2014	9,446	9,446	7,670	8,053	8,617	9,220	9,866	10,556	11,295	12,086
Fluorescent lamps	2014	44,723	44,723	27,236	28,598	30,600	32,742	35,034	37,487	40,111	42,918
Home improvement	2016	388,143	388,143	393,965	405,784	434,189	464,582	497,103	531,900	569,133	608,973
Household sharps	2018	30,318	30,318	30,772	31,696	32,646	33,626	5,397	5,775	6,179	6,611
Household, cleaning, and auto	2018	554,193	554,193	562,506	579,381	596,763	614,666	657,692	703,731	752,992	805,701
Lawn, garden, and pest	2020	256,815	256,815	260,667	268,487	276,542	284,838	293,383	302,185	323,338	345,971
Other hazardous waste	NA	210,376	210,376	213,531	219,937	226,535	233,332	240,331	247,541	254,968	262,617
Waste not covered by EPR	NA	383,338	383,338	389,088	400,761	412,783	425,167	437,922	451,060	464,591	478,529
Total Pounds		**3,994,490**	**3,994,490**	**3,962,026**	**4,081,946**	**4,232,226**	**4,424,837**	**4,622,333**	**4,860,908**	**5,124,799**	**5,403,902**

Upper Limited EPR Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	begins	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Latex and oil-based paint (PaintCare)	2010	1,905,516	1,905,516	1,934,098	1,992,121	2,091,727	2,196,314	2,306,130	2,421,436	2,542,508	2,669,633
Aerosol paint	2016	122,575	122,575	124,414	128,146	101,513	108,619	116,222	124,358	133,063	142,377
Batteries - not rechargeable	NA	89,048	89,048	90,383	93,095	95,888	98,764	101,727	104,779	107,923	111,160
Batteries - rechargeable	2016	9,446	9,446	9,587	9,875	8,453	9,045	9,678	10,355	11,080	11,856
Fluorescent lamps	2014	44,723	44,723	27,236	28,598	30,600	32,742	35,034	37,487	40,111	42,918
Home improvement	NA	388,143	388,143	393,965	405,784	417,958	430,496	443,411	456,714	470,415	484,528
Household sharps	2020	30,318	30,318	30,772	31,696	32,646	33,626	34,635	35,674	5,726	6,126
Household, cleaning, and auto	NA	554,193	554,193	562,506	579,381	596,763	614,666	633,106	652,099	671,662	691,812
Lawn, garden, and pest	NA	256,815	256,815	260,667	268,487	276,542	284,838	293,383	302,185	311,250	320,588
Other hazardous waste	NA	210,376	210,376	213,531	219,937	226,535	233,332	240,331	247,541	254,968	262,617
Waste not covered by EPR	NA	383,338	383,338	389,088	400,761	412,783	425,167	437,922	451,060	464,591	478,529
Total Pounds		**3,994,490**	**3,994,490**	**4,036,250**	**4,157,882**	**4,291,409**	**4,467,609**	**4,651,579**	**4,843,687**	**5,013,296**	**5,222,144**

Upper Status Quo Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	begins	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Latex and oil-based paint (PaintCare)	2010	1,905,516	1,905,516	1,934,098	1,992,121	2,091,727	2,196,314	2,306,130	2,421,436	2,542,508	2,669,633
Aerosol paint	NA	122,575	122,575	124,414	128,146	131,990	135,950	140,029	144,230	148,556	153,013
Batteries - not rechargeable	NA	89,048	89,048	90,383	93,095	95,888	98,764	101,727	104,779	107,923	111,160
Batteries - rechargeable	NA	9,446	9,446	9,587	9,875	10,171	10,477	10,791	11,115	11,448	11,791
Fluorescent lamps	NA	44,723	44,723	45,394	46,756	48,159	49,603	51,091	52,624	54,203	55,829
Home improvement	NA	388,143	388,143	393,965	405,784	417,958	430,496	443,411	456,714	470,415	484,528
Household sharps	NA	30,318	30,318	30,772	31,696	32,646	33,626	34,635	35,674	36,744	37,846
Household, cleaning, and auto	NA	554,193	554,193	562,506	579,381	596,763	614,666	633,106	652,099	671,662	691,812
Lawn, garden, and pest	NA	256,815	256,815	260,667	268,487	276,542	284,838	293,383	302,185	311,250	320,588
Other hazardous waste	NA	210,376	210,376	213,531	219,937	226,535	233,332	240,331	247,541	254,968	262,617
Waste not covered by EPR	NA	383,338	383,338	389,088	400,761	412,783	425,167	437,922	451,060	464,591	478,529
Total Pounds		**3,994,490**	**3,994,490**	**4,054,408**	**4,176,040**	**4,341,163**	**4,513,233**	**4,692,556**	**4,879,455**	**5,074,268**	**5,277,346**

Lower High EPR Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	begins	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Latex and oil-based paint (PaintCare)	2010	1,504,355	1,410,332	1,410,332	1,431,487	1,452,960	1,474,754	1,496,875	1,519,328	1,542,118	1,565,250
Aerosol paint	2014	111,763	108,662	80,447	81,654	82,878	84,122	85,383	86,664	87,964	89,284
Batteries - not rechargeable	2014	81,193	78,940	15,788	16,025	16,265	16,509	16,757	17,008	17,263	17,522
Batteries - rechargeable	2014	8,613	8,374	6,699	6,799	6,901	7,005	7,110	7,217	7,325	7,435
Fluorescent lamps	2014	40,778	39,647	23,788	24,145	24,507	24,875	25,248	25,627	26,011	26,401
Home improvement	2016	353,907	344,086	344,086	349,247	354,486	359,803	365,200	370,678	376,238	381,882
Household sharps	2016	27,643	26,876	26,876	27,279	4,153	4,216	4,279	4,343	4,408	4,474
Household, cleaning, and auto	2018	505,311	491,288	491,288	498,658	506,137	513,730	521,435	529,257	537,196	545,254
Lawn, garden, and pest	2018	234,163	227,665	227,665	231,080	234,546	238,064	241,635	245,259	248,938	252,672
Other hazardous waste	2020	191,820	186,497	186,497	189,294	192,133	195,015	197,941	200,910	203,923	206,982
Waste not covered by EPR	NA	349,526	339,826	339,826	344,924	350,097	355,349	360,679	366,089	371,581	377,154
Total Pounds		**3,409,071**	**3,262,193**	**3,153,292**	**3,200,592**	**3,225,065**	**3,273,441**	**3,322,543**	**3,372,381**	**3,422,967**	**3,474,311**

Lower Moderate EPR Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	begins	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Latex and oil-based paint (PaintCare)	2010	1,504,355	1,410,332	1,410,332	1,431,487	1,452,960	1,474,754	1,496,875	1,519,328	1,542,118	1,565,250
Aerosol paint	2016	111,763	108,662	108,662	110,292	82,878	84,122	85,383	86,664	87,964	89,284
Batteries - not rechargeable	2014	81,193	78,940	15,788	16,025	16,265	16,509	16,757	17,008	17,263	17,522
Batteries - rechargeable	2014	8,613	8,374	6,699	6,799	6,901	7,005	7,110	7,217	7,325	7,435
Fluorescent lamps	2014	40,778	39,647	23,788	24,145	24,507	24,875	25,248	25,627	26,011	26,401
Home improvement	2016	353,907	344,086	344,086	349,247	354,486	359,803	365,200	370,678	376,238	381,882
Household sharps	2018	27,643	26,876	26,876	27,279	27,689	28,104	4,279	4,343	4,408	4,474
Household, cleaning, and auto	2018	505,311	491,288	491,288	498,658	506,137	513,730	521,435	529,257	537,196	545,254
Lawn, garden, and pest	2020	234,163	227,665	227,665	231,080	234,546	238,064	241,635	245,259	248,938	252,672
Other hazardous waste	NA	191,820	186,497	186,497	189,294	192,133	195,015	197,941	200,910	203,923	206,982
Waste not covered by EPR	NA	349,526	339,826	339,826	344,924	350,097	355,349	360,679	366,089	371,581	377,154
Total Pounds		**3,409,071**	**3,262,193**	**3,181,507**	**3,229,230**	**3,248,600**	**3,297,329**	**3,322,543**	**3,372,381**	**3,422,967**	**3,474,311**

Lower Limited EPR Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	begins	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Latex and oil-based paint (PaintCare)	2010	1,504,355	1,410,332	1,410,332	1,431,487	1,452,960	1,474,754	1,496,875	1,519,328	1,542,118	1,565,250
Aerosol paint	2016	111,763	108,662	108,662	110,292	82,878	84,122	85,383	86,664	87,964	89,284
Batteries - not rechargeable	NA	81,193	78,940	78,940	80,124	81,326	82,546	83,784	85,041	86,317	87,611
Batteries - rechargeable	2016	8,613	8,374	8,374	8,499	6,901	7,005	7,110	7,217	7,325	7,435
Fluorescent lamps	2014	40,778	39,647	23,788	24,145	24,507	24,875	25,248	25,627	26,011	26,401
Home improvement	NA	353,907	344,086	344,086	349,247	354,486	359,803	365,200	370,678	376,238	381,882
Household sharps	2020	27,643	26,876	26,876	27,279	27,689	28,104	28,526	28,953	4,408	4,474
Household, cleaning, and auto	NA	505,311	491,288	491,288	498,658	506,137	513,730	521,435	529,257	537,196	545,254
Lawn, garden, and pest	NA	234,163	227,665	227,665	231,080	234,546	238,064	241,635	245,259	248,938	252,672
Other hazardous waste	NA	191,820	186,497	186,497	189,294	192,133	195,015	197,941	200,910	203,923	206,982
Waste not covered by EPR	NA	349,526	339,826	339,826	344,924	350,097	355,349	360,679	366,089	371,581	377,154
Total Pounds		**3,409,071**	**3,262,193**	**3,246,334**	**3,295,029**	**3,313,661**	**3,363,366**	**3,413,817**	**3,465,024**	**3,492,020**	**3,544,400**

Lower Status Quo Scenario	Year EPR	Projected Pounds of Hazardous Waste Collected by Metro									
Product Stewardship Group	begins	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Latex and oil-based paint (PaintCare)	2010	1,504,355	1,410,332	1,410,332	1,431,487	1,452,960	1,474,754	1,496,875	1,519,328	1,542,118	1,565,250
Aerosol paint	NA	111,763	108,662	108,662	110,292	111,946	113,625	115,330	117,060	118,816	120,598
Batteries - not rechargeable	NA	81,193	78,940	78,940	80,124	81,326	82,546	83,784	85,041	86,317	87,611
Batteries - rechargeable	NA	8,613	8,374	8,374	8,499	8,627	8,756	8,887	9,021	9,156	9,293
Fluorescent lamps	NA	40,778	39,647	39,647	40,242	40,845	41,458	42,080	42,711	43,352	44,002
Home improvement	NA	353,907	344,086	344,086	349,247	354,486	359,803	365,200	370,678	376,238	381,882
Household sharps	NA	27,643	26,876	26,876	27,279	27,689	28,104	28,526	28,953	29,388	29,829
Household, cleaning, and auto	NA	505,311	491,288	491,288	498,658	506,137	513,730	521,435	529,257	537,196	545,254
Lawn, garden, and pest	NA	234,163	227,665	227,665	231,080	234,546	238,064	241,635	245,259	248,938	252,672
Other hazardous waste	NA	191,820	186,497	186,497	189,294	192,133	195,015	197,941	200,910	203,923	206,982
Waste not covered by EPR	NA	349,526	339,826	339,826	344,924	350,097	355,349	360,679	366,089	371,581	377,154
Total Pounds		**3,409,071**	**3,262,193**	**3,262,193**	**3,311,126**	**3,360,793**	**3,411,204**	**3,462,372**	**3,514,308**	**3,567,023**	**3,620,528**

High EPR Scenario	Year EPR	Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$421,736	$411,193	$411,193	$417,361	$429,882	$442,778	$456,062	$469,743	$483,836	$498,351
Aerosol paint	2014	$194,276	$191,848	$142,033	$144,163	$151,372	$158,940	$166,887	$175,231	$183,993	$193,193
Batteries - not rechargeable	2014	$145,011	$143,198	$28,640	$29,069	$30,523	$32,049	$33,651	$35,334	$37,101	$38,956
Batteries - rechargeable	2014	$16,117	$15,916	$12,733	$12,924	$13,570	$14,248	$14,961	$15,709	$16,494	$17,319
Fluorescent lamps	2014	$104,764	$103,454	$62,073	$63,004	$66,154	$69,462	$72,935	$76,581	$80,410	$84,431
Home improvement	2016	$251,302	$248,161	$248,161	$251,884	$264,478	$277,702	$291,587	$306,166	$321,474	$337,548
Household sharps	2016	$167,789	$165,691	$165,691	$168,177	$26,488	$27,812	$29,203	$30,663	$32,196	$33,806
Household, cleaning, and auto	2018	$160,512	$158,505	$158,505	$160,883	$165,709	$170,681	$179,215	$188,175	$197,584	$207,463
Lawn, garden, and pest	2018	$478,089	$472,113	$472,113	$479,195	$493,571	$508,378	$533,797	$560,487	$588,511	$617,936
Other hazardous waste	2020	$338,846	$334,611	$334,611	$339,630	$349,819	$360,313	$371,123	$382,256	$401,369	$421,438
Waste not covered by EPR	NA	$382,381	$377,602	$377,602	$383,266	$394,764	$406,606	$418,805	$431,369	$444,310	$457,639
Direct Costs		$2,660,824	$2,622,292	$2,413,354	$2,449,554	$2,386,328	$2,468,969	$2,568,224	$2,671,715	$2,787,279	$2,908,080
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$4,184,557**	**$4,146,025**	**$3,937,087**	**$3,973,287**	**$3,910,061**	**$3,992,702**	**$4,091,957**	**$4,195,448**	**$4,311,012**	**$4,431,813**

Moderate EPR Scenario	Year EPR	Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$421,736	$411,193	$411,193	$417,361	$429,882	$442,778	$456,062	$469,743	$483,836	$498,351
Aerosol paint	2016	$194,276	$191,848	$191,848	$194,725	$151,372	$158,940	$166,887	$175,231	$183,993	$193,193
Batteries - not rechargeable	2014	$145,011	$143,198	$28,640	$29,069	$30,523	$32,049	$33,651	$35,334	$37,101	$38,956
Batteries - rechargeable	2014	$16,117	$15,916	$12,733	$12,924	$13,570	$14,248	$14,961	$15,709	$16,494	$17,319
Fluorescent lamps	2014	$104,764	$103,454	$62,073	$63,004	$66,154	$69,462	$72,935	$76,581	$80,410	$84,431
Home improvement	2016	$251,302	$248,161	$248,161	$251,884	$264,478	$277,702	$291,587	$306,166	$321,474	$337,548
Household sharps	2018	$167,789	$165,691	$165,691	$168,177	$173,222	$178,419	$28,101	$29,506	$30,981	$32,530
Household, cleaning, and auto	2018	$160,512	$158,505	$158,505	$160,883	$165,709	$170,681	$179,215	$188,175	$197,584	$207,463
Lawn, garden, and pest	2020	$478,089	$472,113	$472,113	$479,195	$493,571	$508,378	$523,629	$539,338	$566,305	$594,620
Other hazardous waste	NA	$338,846	$334,611	$334,611	$339,630	$349,819	$360,313	$371,123	$382,256	$393,724	$405,536
Waste not covered by EPR	NA	$382,381	$377,602	$377,602	$383,266	$394,764	$406,606	$418,805	$431,369	$444,310	$457,639
Direct Costs		$2,660,824	$2,622,292	$2,463,169	$2,500,117	$2,533,062	$2,619,576	$2,556,954	$2,649,410	$2,756,213	$2,867,586
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$4,184,557**	**$4,146,025**	**$3,986,902**	**$4,023,849**	**$4,056,795**	**$4,143,309**	**$4,080,687**	**$4,173,143**	**$4,279,946**	**$4,391,319**

Limited EPR Scenario	Year EPR	Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$421,736	$411,193	$411,193	$417,361	$429,882	$442,778	$456,062	$469,743	$483,836	$498,351
Aerosol paint	2016	$194,276	$191,848	$191,848	$194,725	$151,372	$158,940	$166,887	$175,231	$183,993	$193,193
Batteries - not rechargeable	NA	$145,011	$143,198	$143,198	$145,346	$149,707	$154,198	$158,824	$163,588	$168,496	$173,551
Batteries - rechargeable	2016	$16,117	$15,916	$15,916	$16,155	$13,570	$14,248	$14,961	$15,709	$16,494	$17,319
Fluorescent lamps	2014	$104,764	$103,454	$62,073	$63,004	$66,154	$69,462	$72,935	$76,581	$80,410	$84,431
Home improvement	NA	$251,302	$248,161	$248,161	$251,884	$259,440	$267,223	$275,240	$283,497	$292,002	$300,762
Household sharps	2020	$167,789	$165,691	$165,691	$168,177	$173,222	$178,419	$183,771	$189,284	$29,812	$31,303
Household, cleaning, and auto	NA	$160,512	$158,505	$158,505	$160,883	$165,709	$170,681	$175,801	$181,075	$186,507	$192,103
Lawn, garden, and pest	NA	$478,089	$472,113	$472,113	$479,195	$493,571	$508,378	$523,629	$539,338	$555,518	$572,184
Other hazardous waste	NA	$338,846	$334,611	$334,611	$339,630	$349,819	$360,313	$371,123	$382,256	$393,724	$405,536
Waste not covered by EPR	NA	$382,381	$377,602	$377,602	$383,266	$394,764	$406,606	$418,805	$431,369	$444,310	$457,639
Direct Costs		$2,660,824	$2,622,292	$2,580,911	$2,619,624	$2,647,208	$2,731,246	$2,818,037	$2,907,673	$2,835,103	$2,926,371
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$4,184,557**	**$4,146,025**	**$4,104,644**	**$4,143,357**	**$4,170,941**	**$4,254,979**	**$4,341,770**	**$4,431,406**	**$4,358,836**	**$4,450,104**

Status Quo Scenario	Year EPR	Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$421,736	$411,193	$411,193	$417,361	$429,882	$442,778	$456,062	$469,743	$483,836	$498,351
Aerosol paint	NA	$194,276	$191,848	$191,848	$194,725	$200,567	$206,584	$212,782	$219,165	$225,740	$232,512
Batteries - not rechargeable	NA	$145,011	$143,198	$143,198	$145,346	$149,707	$154,198	$158,824	$163,588	$168,496	$173,551
Batteries - rechargeable	NA	$16,117	$15,916	$15,916	$16,155	$16,639	$17,139	$17,653	$18,182	$18,728	$19,290
Fluorescent lamps	NA	$104,764	$103,454	$103,454	$105,006	$108,156	$111,401	$114,743	$118,185	$121,731	$125,383
Home improvement	NA	$251,302	$248,161	$248,161	$251,884	$259,440	$267,223	$275,240	$283,497	$292,002	$300,762
Household sharps	NA	$167,789	$165,691	$165,691	$168,177	$173,222	$178,419	$183,771	$189,284	$194,963	$200,812
Household, cleaning, and auto	NA	$160,512	$158,505	$158,505	$160,883	$165,709	$170,681	$175,801	$181,075	$186,507	$192,103
Lawn, garden, and pest	NA	$478,089	$472,113	$472,113	$479,195	$493,571	$508,378	$523,629	$539,338	$555,518	$572,184
Other hazardous waste	NA	$338,846	$334,611	$334,611	$339,630	$349,819	$360,313	$371,123	$382,256	$393,724	$405,536
Waste not covered by EPR	NA	$382,381	$377,602	$377,602	$383,266	$394,764	$406,606	$418,805	$431,369	$444,310	$457,639
Direct Costs		$2,660,824	$2,622,292	$2,622,292	$2,661,627	$2,741,476	$2,823,720	$2,908,432	$2,995,684	$3,085,555	$3,178,122
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$4,184,557**	**$4,146,025**	**$4,146,025**	**$4,185,360**	**$4,265,209**	**$4,347,453**	**$4,432,164**	**$4,519,417**	**$4,609,288**	**$4,701,855**

Upper High EPR Scenario	Year EPR	Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$445,166	$445,166	$451,844	$465,399	$488,669	$513,102	$538,758	$565,695	$593,980	$623,679
Aerosol paint	2014	$199,389	$199,389	$149,830	$157,322	$168,334	$180,117	$192,726	$206,216	$220,652	$236,097
Batteries - not rechargeable	2014	$148,827	$148,827	$30,212	$31,722	$33,943	$36,319	$38,861	$41,582	$44,492	$47,607
Batteries - rechargeable	2014	$16,542	$16,542	$13,432	$14,103	$15,091	$16,147	$17,277	$18,487	$19,781	$21,165
Fluorescent lamps	2014	$107,521	$107,521	$65,480	$68,754	$73,567	$78,717	$84,227	$90,123	$96,431	$103,182
Home improvement	2016	$257,916	$257,916	$261,784	$269,638	$288,513	$308,708	$330,318	$353,440	$378,181	$404,654
Household sharps	2016	$172,204	$172,204	$174,787	$180,031	$28,895	$30,918	$33,082	$35,398	$37,875	$40,527
Household, cleaning, and auto	2018	$164,736	$164,736	$167,207	$172,223	$177,390	$182,711	$195,501	$209,186	$223,829	$239,497
Lawn, garden, and pest	2018	$490,671	$490,671	$498,031	$512,972	$528,361	$544,212	$582,306	$623,068	$666,683	$713,350
Other hazardous waste	2020	$347,763	$347,763	$352,980	$363,569	$374,476	$385,711	$397,282	$409,200	$437,844	$468,493
Waste not covered by EPR	NA	$392,444	$392,444	$398,331	$410,281	$422,589	$435,267	$448,325	$461,774	$475,628	$489,896
Direct Costs		$2,743,178	$2,743,178	$2,563,917	$2,646,014	$2,599,827	$2,711,929	$2,858,662	$3,014,169	$3,195,376	$3,388,148
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Cost		**$4,266,911**	**$4,266,911**	**$4,087,650**	**$4,169,746**	**$4,123,560**	**$4,235,662**	**$4,382,395**	**$4,537,902**	**$4,719,109**	**$4,911,881**

Upper Moderate EPR Scenario	Year EPR	Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$445,166	$445,166	$451,844	$465,399	$488,669	$513,102	$538,758	$565,695	$593,980	$623,679
Aerosol paint	2016	$199,389	$199,389	$202,380	$208,451	$165,128	$176,687	$189,055	$202,289	$216,449	$231,600
Batteries - not rechargeable	2014	$148,827	$148,827	$30,212	$31,722	$33,943	$36,319	$38,861	$41,582	$44,492	$47,607
Batteries - rechargeable	2014	$16,542	$16,542	$13,432	$14,103	$15,091	$16,147	$17,277	$18,487	$19,781	$21,165
Fluorescent lamps	2014	$107,521	$107,521	$65,480	$68,754	$73,567	$78,717	$84,227	$90,123	$96,431	$103,182
Home improvement	2016	$257,916	$257,916	$261,784	$269,638	$288,513	$308,708	$330,318	$353,440	$378,181	$404,654
Household sharps	2018	$172,204	$172,204	$174,787	$180,031	$185,432	$190,995	$30,655	$32,800	$35,097	$37,553
Household, cleaning, and auto	2018	$164,736	$164,736	$167,207	$172,223	$177,390	$182,711	$195,501	$209,186	$223,829	$239,497
Lawn, garden, and pest	2020	$490,671	$490,671	$498,031	$512,972	$528,361	$544,212	$560,538	$577,354	$617,769	$661,013
Other hazardous waste	NA	$347,763	$347,763	$352,980	$363,569	$374,476	$385,711	$397,282	$409,200	$421,476	$434,121
Waste not covered by EPR	NA	$392,444	$392,444	$398,331	$410,281	$422,589	$435,267	$448,325	$461,774	$475,628	$489,896
Direct Costs		$2,743,178	$2,743,178	$2,616,466	$2,697,143	$2,753,157	$2,868,575	$2,830,796	$2,961,931	$3,123,113	$3,293,967
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$4,266,911**	**$4,266,911**	**$4,140,199**	**$4,220,876**	**$4,276,890**	**$4,392,308**	**$4,354,529**	**$4,485,664**	**$4,646,846**	**$4,817,700**

Upper Limited EPR Scenario	Year EPR	Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$445,166	$445,166	$451,844	$465,399	$488,669	$513,102	$538,758	$565,695	$593,980	$623,679
Aerosol paint	2016	$199,389	$199,389	$202,380	$208,451	$165,128	$176,687	$189,055	$202,289	$216,449	$231,600
Batteries - not rechargeable	NA	$148,827	$148,827	$151,059	$155,591	$160,259	$165,067	$170,019	$175,119	$180,373	$185,784
Batteries - rechargeable	2016	$16,542	$16,542	$16,790	$17,293	$14,803	$15,839	$16,948	$18,134	$19,404	$20,762
Fluorescent lamps	2014	$107,521	$107,521	$65,480	$68,754	$73,567	$78,717	$84,227	$90,123	$96,431	$103,182
Home improvement	NA	$257,916	$257,916	$261,784	$269,638	$277,727	$286,059	$294,641	$303,480	$312,584	$321,962
Household sharps	2020	$172,204	$172,204	$174,787	$180,031	$185,432	$190,995	$196,725	$202,626	$32,522	$34,798
Household, cleaning, and auto	NA	$164,736	$164,736	$167,207	$172,223	$177,390	$182,711	$188,193	$193,838	$199,654	$205,643
Lawn, garden, and pest	NA	$490,671	$490,671	$498,031	$512,972	$528,361	$544,212	$560,538	$577,354	$594,675	$612,515
Other hazardous waste	NA	$347,763	$347,763	$352,980	$363,569	$374,476	$385,711	$397,282	$409,200	$421,476	$434,121
Waste not covered by EPR	NA	$392,444	$392,444	$398,331	$410,281	$422,589	$435,267	$448,325	$461,774	$475,628	$489,896
Direct Costs		$2,743,178	$2,743,178	$2,740,672	$2,824,202	$2,868,400	$2,974,365	$3,084,708	$3,199,634	$3,143,175	$3,263,942
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$4,266,911**	**$4,266,911**	**$4,264,405**	**$4,347,935**	**$4,392,133**	**$4,498,098**	**$4,608,441**	**$4,723,366**	**$4,666,908**	**$4,787,675**

Upper Status Quo Scenario	Year EPR	Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$445,166	$445,166	$451,844	$465,399	$488,669	$513,102	$538,758	$565,695	$593,980	$623,679
Aerosol paint	NA	$199,389	$199,389	$202,380	$208,451	$214,704	$221,146	$227,780	$234,613	$241,652	$248,901
Batteries - not rechargeable	NA	$148,827	$148,827	$151,059	$155,591	$160,259	$165,067	$170,019	$175,119	$180,373	$185,784
Batteries - rechargeable	NA	$16,542	$16,542	$16,790	$17,293	$17,812	$18,347	$18,897	$19,464	$20,048	$20,649
Fluorescent lamps	NA	$107,521	$107,521	$109,134	$112,408	$115,780	$119,253	$122,831	$126,516	$130,311	$134,221
Home improvement	NA	$257,916	$257,916	$261,784	$269,638	$277,727	$286,059	$294,641	$303,480	$312,584	$321,962
Household sharps	NA	$172,204	$172,204	$174,787	$180,031	$185,432	$190,995	$196,725	$202,626	$208,705	$214,966
Household, cleaning, and auto	NA	$164,736	$164,736	$167,207	$172,223	$177,390	$182,711	$188,193	$193,838	$199,654	$205,643
Lawn, garden, and pest	NA	$490,671	$490,671	$498,031	$512,972	$528,361	$544,212	$560,538	$577,354	$594,675	$612,515
Other hazardous waste	NA	$347,763	$347,763	$352,980	$363,569	$374,476	$385,711	$397,282	$409,200	$421,476	$434,121
Waste not covered by EPR	NA	$392,444	$392,444	$398,331	$410,281	$422,589	$435,267	$448,325	$461,774	$475,628	$489,896
Direct Costs		$2,743,178	$2,743,178	$2,784,325	$2,867,855	$2,963,199	$3,061,868	$3,163,986	$3,269,681	$3,379,085	$3,492,337
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$4,266,911**	**$4,266,911**	**$4,308,058**	**$4,391,588**	**$4,486,932**	**$4,585,601**	**$4,687,719**	**$4,793,414**	**$4,902,818**	**$5,016,070**

Lower High EPR Scenario	Year EPR	Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$351,447	$329,482	$329,482	$334,424	$339,440	$344,532	$349,700	$354,945	$360,269	$365,673
Aerosol paint	2014	$181,802	$176,757	$130,860	$132,823	$134,816	$136,838	$138,890	$140,974	$143,088	$145,235
Batteries - not rechargeable	2014	$135,700	$131,934	$26,387	$26,783	$27,184	$27,592	$28,006	$28,426	$28,852	$29,285
Batteries - rechargeable	2014	$15,083	$14,664	$11,731	$11,907	$12,086	$12,267	$12,451	$12,638	$12,827	$13,020
Fluorescent lamps	2014	$98,037	$95,316	$57,190	$58,048	$58,918	$59,802	$60,699	$61,610	$62,534	$63,472
Home improvement	2016	$235,166	$228,640	$228,640	$232,070	$235,551	$239,084	$242,670	$246,310	$250,005	$253,755
Household sharps	2016	$157,015	$152,658	$152,658	$154,948	$23,591	$23,945	$24,304	$24,668	$25,038	$25,414
Household, cleaning, and auto	2018	$150,205	$146,037	$146,037	$148,228	$150,451	$152,708	$154,998	$157,323	$159,683	$162,078
Lawn, garden, and pest	2018	$447,391	$434,976	$434,976	$441,500	$448,123	$454,845	$461,667	$468,592	$475,621	$482,756
Other hazardous waste	2020	$317,089	$308,290	$308,290	$312,914	$317,608	$322,372	$327,207	$332,115	$337,097	$342,154
Waste not covered by EPR	NA	$357,828	$347,899	$347,899	$353,117	$358,414	$363,790	$369,247	$374,786	$380,407	$386,114
Direct Costs		$2,446,762	$2,366,652	$2,174,149	$2,206,761	$2,106,181	$2,137,774	$2,169,841	$2,202,388	$2,235,424	$2,268,956
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Cost		**$3,970,495**	**$3,890,385**	**$3,697,882**	**$3,730,494**	**$3,629,914**	**$3,661,507**	**$3,693,574**	**$3,726,121**	**$3,759,157**	**$3,792,689**

Lower Moderate EPR Scenario	**Year EPR**	**Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)**									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$351,447	$329,482	$329,482	$334,424	$339,440	$344,532	$349,700	$354,945	$360,269	$365,673
Aerosol paint	2016	$181,802	$176,757	$176,757	$179,408	$134,816	$136,838	$138,890	$140,974	$143,088	$145,235
Batteries - not rechargeable	2014	$135,700	$131,934	$26,387	$26,783	$27,184	$27,592	$28,006	$28,426	$28,852	$29,285
Batteries - rechargeable	2014	$15,083	$14,664	$11,731	$11,907	$12,086	$12,267	$12,451	$12,638	$12,827	$13,020
Fluorescent lamps	2014	$98,037	$95,316	$57,190	$58,048	$58,918	$59,802	$60,699	$61,610	$62,534	$63,472
Home improvement	2016	$235,166	$228,640	$228,640	$232,070	$235,551	$239,084	$242,670	$246,310	$250,005	$253,755
Household sharps	2018	$157,015	$152,658	$152,658	$154,948	$157,272	$159,631	$24,304	$24,668	$25,038	$25,414
Household, cleaning, and auto	2018	$150,205	$146,037	$146,037	$148,228	$150,451	$152,708	$154,998	$157,323	$159,683	$162,078
Lawn, garden, and pest	2020	$447,391	$434,976	$434,976	$441,500	$448,123	$454,845	$461,667	$468,592	$475,621	$482,756
Other hazardous waste	NA	$317,089	$308,290	$308,290	$312,914	$317,608	$322,372	$327,207	$332,115	$337,097	$342,154
Waste not covered by EPR	NA	$357,828	$347,899	$347,899	$353,117	$358,414	$363,790	$369,247	$374,786	$380,407	$386,114
Direct Costs		$2,446,762	$2,366,652	$2,220,045	$2,253,346	$2,239,862	$2,273,460	$2,169,841	$2,202,388	$2,235,424	$2,268,956
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$3,970,495**	**$3,890,385**	**$3,743,778**	**$3,777,079**	**$3,763,595**	**$3,797,193**	**$3,693,574**	**$3,726,121**	**$3,759,157**	**$3,792,689**

Lower Limited EPR Scenario	**Year EPR**	**Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)**									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$351,447	$329,482	$329,482	$334,424	$339,440	$344,532	$349,700	$354,945	$360,269	$365,673
Aerosol paint	2016	$181,802	$176,757	$176,757	$179,408	$134,816	$136,838	$138,890	$140,974	$143,088	$145,235
Batteries - not rechargeable	NA	$135,700	$131,934	$131,934	$133,913	$135,922	$137,960	$140,030	$142,130	$144,262	$146,426
Batteries - rechargeable	2016	$15,083	$14,664	$14,664	$14,884	$12,086	$12,267	$12,451	$12,638	$12,827	$13,020
Fluorescent lamps	2014	$98,037	$95,316	$57,190	$58,048	$58,918	$59,802	$60,699	$61,610	$62,534	$63,472
Home improvement	NA	$235,166	$228,640	$228,640	$232,070	$235,551	$239,084	$242,670	$246,310	$250,005	$253,755
Household sharps	2020	$157,015	$152,658	$152,658	$154,948	$157,272	$159,631	$162,025	$164,456	$25,038	$25,414
Household, cleaning, and auto	NA	$150,205	$146,037	$146,037	$148,228	$150,451	$152,708	$154,998	$157,323	$159,683	$162,078
Lawn, garden, and pest	NA	$447,391	$434,976	$434,976	$441,500	$448,123	$454,845	$461,667	$468,592	$475,621	$482,756
Other hazardous waste	NA	$317,089	$308,290	$308,290	$312,914	$317,608	$322,372	$327,207	$332,115	$337,097	$342,154
Waste not covered by EPR	NA	$357,828	$347,899	$347,899	$353,117	$358,414	$363,790	$369,247	$374,786	$380,407	$386,114
Direct Costs		$2,446,762	$2,366,652	$2,328,525	$2,363,453	$2,348,600	$2,383,829	$2,419,586	$2,455,880	$2,350,834	$2,386,097
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$3,970,495**	**$3,890,385**	**$3,852,258**	**$3,887,186**	**$3,872,333**	**$3,907,562**	**$3,943,319**	**$3,979,613**	**$3,874,567**	**$3,909,829**

Lower Status Quo Scenario	**Year EPR**	**Projected Direct Costs for Hazardous Waste Collected by Metro (before EPR and CEG payments)**									
Product Stewardship Group	**begins**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**
Latex and oil-based paint (PaintCare)	2010	$351,447	$329,482	$329,482	$334,424	$339,440	$344,532	$349,700	$354,945	$360,269	$365,673
Aerosol paint	NA	$181,802	$176,757	$176,757	$179,408	$182,099	$184,831	$187,603	$190,417	$193,273	$196,172
Batteries - not rechargeable	NA	$135,700	$131,934	$131,934	$133,913	$135,922	$137,960	$140,030	$142,130	$144,262	$146,426
Batteries - rechargeable	NA	$15,083	$14,664	$14,664	$14,884	$15,107	$15,334	$15,564	$15,797	$16,034	$16,275
Fluorescent lamps	NA	$98,037	$95,316	$95,316	$96,746	$98,197	$99,670	$101,165	$102,683	$104,223	$105,786
Home improvement	NA	$235,166	$228,640	$228,640	$232,070	$235,551	$239,084	$242,670	$246,310	$250,005	$253,755
Household sharps	NA	$157,015	$152,658	$152,658	$154,948	$157,272	$159,631	$162,025	$164,456	$166,922	$169,426
Household, cleaning, and auto	NA	$150,205	$146,037	$146,037	$148,228	$150,451	$152,708	$154,998	$157,323	$159,683	$162,078
Lawn, garden, and pest	NA	$447,391	$434,976	$434,976	$441,500	$448,123	$454,845	$461,667	$468,592	$475,621	$482,756
Other hazardous waste	NA	$317,089	$308,290	$308,290	$312,914	$317,608	$322,372	$327,207	$332,115	$337,097	$342,154
Waste not covered by EPR	NA	$357,828	$347,899	$347,899	$353,117	$358,414	$363,790	$369,247	$374,786	$380,407	$386,114
Direct Costs		$2,446,762	$2,366,652	$2,366,652	$2,402,151	$2,438,184	$2,474,756	$2,511,878	$2,549,556	$2,587,799	$2,626,616
Indirect Costs		$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733	$1,523,733
Total Costs		**$3,970,495**	**$3,890,385**	**$3,890,385**	**$3,925,884**	**$3,961,917**	**$3,998,489**	**$4,035,611**	**$4,073,289**	**$4,111,532**	**$4,150,349**

Appendix E. Potential Options for Increasing Capacity

Discussion Draft (April 2012)

Operations Categories and Options	*Assessment Criteria*			
	Operations Impact	Feasibility	Relative Cost	Relevant Product(s)
A. Remodel Existing Facilities Design				
A-1. Remove unneeded walls to convert to more open work areas and storage area flexibility per current building/fire codes *NOTES:* • *Has potential to significantly improve overall materials handling without changing the footprint of the building.* • *Concern about cost; might take a long time to pay back.*	Improved materials handling	Moderate to high	Moderate to high	Increase ability to handle all product types
A-2. Expand footprint and/or build second story over some areas to provide additional storage of supplies add offices and open up materials handling area. *NOTES:* • *Concern about cost.* • *The roof is already handling a lot (HVAC, etc.).* • *Expanding footprint at Metro Central may be possible (vacant neighboring brownfield site, remediated Superfund site, Metro could potentially acquire).* • *No expansion possible at existing Metro South Station; a new, relocated facility could be larger.*	Improved materials handling and additional storage and support for supplies, staff and office functions	Would require an assessment of structure and possible subsoil investigation	High	Increase ability to handle all product types

Operations Categories and Options	*Assessment Criteria*			
	Operations Impact	Feasibility	Relative Cost	Relevant Product(s)
B. Operating Hours				
B-1. Increase open hours and shifts per week (extended hours, evenings, Sundays). *NOTES:* • *Yes, consider. Customers would like them to be open on Sundays, evenings.* • *Would need to ship wastes more often (currently shipping 3x/week at Metro South in busy season; PSC handles along with PaintCare materials).* • *Increased labor costs. Need additional staff time after facility closes to customers. Currently work 6am-4pm x 4 days/week (staggered shifts).*	Increase staff levels and pressure on staff support functions that are already tight	High, but would stress already tight operations. If facilities remodeled could alleviate tight quarters	Increase in operations costs, but likely offset by product stewardship.	Increase ability to handle all product types
C. Customer Service and Receiving Procedures				
C-1. Expand receiving area to accommodate two lanes of traffic *NOTES:* • *Not really possible within existing footprint.* • *Using area under canopy for staging materials as they are unloaded (need all that space).* • *Not enough room for another lane and staging.*	More queuing space needed	Low (no space)	?	All
~~**C-2.** Require able customers to unload their waste to carts for acceptance screening~~ *NOTES:* • ***DROP**—risks outweigh benefits. No self-serve now; customer does not get out of car. No extra room in current configuration. Space is major constraint.* • *Could some (batteries, paint) be self-serve? But that would still need to be under cover. Sometimes problems occur with used oil, but self-serve works well with batteries, etc.* • *Metro concerns about risk management perspective; obtaining buy-off on this approach would be difficult (DEQ approval may be needed too). Could also have problems with people putting materials in the wrong place.*	More queuing space needed	Moderate	Low (but liability concerns)	All

Operations Categories and Options	*Assessment Criteria*			
	Operations Impact	Feasibility	Relative Cost	Relevant Product(s)
~~**C-3.** Require able customers to unload to carts and push into receiving area for acceptance screening~~ *NOTES:* • ***DROP**—risks outweigh benefits.* • *Follow up to check on Boulder HHW facility status in future? (Their program that uses this method is new.)*	More queuing space needed	Moderate	Low (but liability concerns)	All
C-4. Have staff unload 2 to 3 cars at a time while they are queuing, rather than only one at a time *NOTES:* • *Could work at least one car ahead in line, unloading two cars at a time. (Metro uncertain if it would work to do more cars than that at the same time.)* • *Viable option; could do this now, though more staff would be needed.* • *Currently, a team of people serves each vehicle (talk with driver, collect fee, check load, unload).*	Low to moderate	Moderate	Low	All
D. Sorting Procedures and Equipment				
D-1. Provide mechanical assist for heavy items such as 5-gal. buckets *NOTES:* • *No good options for getting materials out of the vehicle besides the human body. Metro hasn't found anything that works well for unloading all different types of vehicle configurations.* • *Metro is already using some mechanical assistance inside.*	Reduce repetitive motion stress	Moderate	Low to moderate	Bulk and heavy products
D-2. Evaluate options for alternative packaging and related costs of disposal and packaging *NOTES:* • *Metro includes packaging/shipping efficiencies in their RFP process.* • *Metro is "on top of this one" (already doing it).*	Potential reduction in ops costs	High	Low	All

Operations Categories and Options	*Assessment Criteria*			
	Operations Impact	Feasibility	Relative Cost	Relevant Product(s)
E. Processing Procedures and Equipment				
~~**E-1.** Evaluate existing electric service for adding additional loads~~ *NOTES:* • ***Not a standalone option**; this would be part of the engineering feasibility study of a proposed facility change or replacement.* • *If needed; depends on what new equipment options might be desirable and cost-effective.*	Determine options with existing infrastructure	Unknown	Low	All
E-2. Evaluate Beacon aerosol crusher compared to TeeMark *NOTES:* • *Beacon crusher has automated loading from an "accumulation table"; automatically ejects, captures propellant and liquid.* • *Metro's current TeeMark system is somewhat labor-intensive (must be loaded by hand).* • *Aerosols are not a high volume now, however; more automated equipment could be useful if their volumes grow (e.g., with renewal of paint product stewardship and expansion to aerosol paints).* • *Follow up regarding experience of CA facility that is planning to install a Beacon crusher (per Dave Nightingale).* • *Propane tanks (BBQ-size): handled by vendor, not likely to change because current vendor is low-cost. (The Beacon crusher would NOT handle these.)* • *Propane tanks (camping size): if empty, Metro marks them for handling as scrap metal; if they still contain propane, they are shipped out for management. (The Beacon crusher would NOT handle propane tanks.)*	Increase throughput to reduce labor hours	Moderate	Low to moderate	Aerosol products

Operations Categories and Options	*Assessment Criteria*			
	Operations Impact	Feasibility	Relative Cost	Relevant Product(s)
F. Handling and Storage Procedures and Equipment				
F-1. Evaluate options for lift/tilt tables *NOTES:* • *Metro uses some lift tables already.* • *Do additional options exist?*	Improved ergonomics and maximize use of storage	High	Low to moderate	All
F-2. Evaluate roller conveyors from customer vehicle into sorting area *NOTES:* • *Metro currently stages materials near the vehicles (conveyor is not needed).* • *Sites do not have extra room elsewhere for staging/storing instead.* • *Consider for facility redesign (at a new Metro South Station)?*	Improved ergonomics and maximize use of storage	High	Low to moderate	All
F-3. Evaluate options for vertical storage *NOTES:* • *What about pallet racks and forklifts? Can't use a regular forklift inside. Much of the flooring is grating over sumps, and current grating does not have sufficient load capacity for forklifts.* • *Grating replacement might be possible or use of smaller, lighter electric furniture lifts with current floor grating, assuming space and safe operations can be accommodated.* • *This might have more potential for inclusion in a new or remodeled facility.*	Improved ergonomics and maximize use of storage	Moderate to High	Low to moderate	All

Operations Categories and Options	*Assessment Criteria*			
	Operations Impact	Feasibility	Relative Cost	Relevant Product(s)
G. Alternative Collection Options (e.g., roundups, mobile services, etc.)				
G-1. Review convenience versus cost and customer usage of mobile vs. facility operations. (e.g., Los Angeles County, Sonoma County, King County) *NOTES:* • ***More possibilities here to explore further.*** *Options for mobile service, satellite collections, door-to-door?* • *Only for products covered under EPR?* • *Limited material collections (e.g., antifreeze, oil, batteries)?* • *Nonprofit currently handles elderly, shut-ins, etc.* • *Metro handles a couple of mobile pick-ups per year for special circumstances (very limited; used to have more formal program).*	Unknown	NA	Low	All
G-2. Evaluate effectiveness of mobile collection by level of service in different areas of the region. *NOTES:* • *Metro takes a fresh look every year. The neighborhood roundups do not serve any locations within 15-20 minutes of current facilities. Metro seeks to balance service to different parts of the region (e.g., Washington County, east county/Gresham area).* • *Site constraints limit the options—most roundups are currently held at churches, schools, some commercial (e.g., Fred Meyer, shopping centers).* • *Have not conducted formal service level studies. Metro coordinates with local governments on where to provide service.* • *Already nearly every Saturday (Mar-Nov). More labor would be needed to increase roundup days (e.g., adding Sundays).* • *More equipment/labor/sites/etc. would be needed if held roundups at two sites at once (e.g., east and west).* • *Might have constraints on how much material could be stored/staged at Metro Central. Would need to see if contractor could pick up materials between Saturday and Sunday events to accommodate expanded volumes.*	Unknown	NA	Low	All

Operations Categories and Options	*Assessment Criteria*			
	Operations Impact	Feasibility	Relative Cost	Relevant Product(s)
H. New Facility Design				
H-1. Examine "turnkey" contracting for full facility development process *NOTES:* • *Need a better understanding of the benefits of this approach and how it would work logistically.* • *Metro values engaging the community in the siting/facility development process and is unlikely to relinquish this role.* • *Follow up with Bill Pollack in Alameda County, CA, to learn more about how the county used this approach successfully?*	None	Yes	High	All
H-2. Create conceptual design for an idealized facility function and form *NOTES:* • *Could involve a more flexible, open design with fewer internal walls than existing facilities; use automated conveyors, etc.* • *Depends on what happens with Metro South… (if a new facility will be built)*	None	Yes	Low	All