Department of Resources Recycling and Recovery
Paint Product Stewardship Program Case Study
British Columbia, Canada (2008)

December 14, 2009

I. Overview

In 1994, the British Columbia Ministry of the Environment (MOE) estimated that paint comprised up to 70 percent of household hazardous waste and determined that British Columbia needed a safe collection and management method for paint.

Overview of Impacts: Paint Product Stewardship Program: British Columbia, Canada (2008) (Full table on pg. 7)	
Total program cost ($) per unit	$6.13/gal[1] (US $)
Total program cost($)/capita	$0.99
Percent collected (from available for collection)	77%
Percent Reused	2.1%
Percent Recycled	68%
Percent Recovered for Energy	29.9% (oil-based paint only)
GHG emissions	Unknown
Job impacts	Jobs increased for producers, recyclers, haulers, and collectors
Program effectiveness: Exceeding goals for number of collect depots & events, meeting goal for % paint collected.	

As a result, the MOE passed the Post-Consumer Paint Stewardship Program Regulation (200/94) (Recycling Regulation) effective September 1994 under the Waste Management Act. The regulation required the producers and consumers of paints to take responsibility for the management of leftover paint. The program requires paint producers to take full responsibility for the management of their products collected at HHW facilities and events.

The program evolved by the MOE adding products to the Recycling Regulation in 1997 and on July 8, 2004 the regulations were put under a single statute governing environmental protection in British Columbia known as the Environmental Management Act. The new act incorporated provisions allowing for the development of innovative and modern regulatory schemes such as the Recycling Regulation (BC Reg.449/04). The Recycling Regulation was then enacted in October 2004 and replaced and combined the Post-Consumer Paint Stewardship Program regulation and several other product-specific regulations. The Recycling Regulation provides the statutory basis for the existing paint product and other product stewardship programs and the legal basis for new programs. The Regulation also addresses other products: solvents and flammable liquids, gasoline, and pesticides; pharmaceuticals; beverage containers; tires; used lubricating oil, filters, and containers; electronic waste; lead-acid batteries; and mercury-containing bulbs and thermostats.

There are two separate Paint Product Stewardship Programs in BC, managed by different product stewardship organizations: the Tree Marking Paint Stewardship Association, which specializes in aerosol

cans at remote forestry sites, and Product Care, which is a province-wide consumer-oriented program that handles all other kinds of paint, representing the bulk of paint generated and collected in the province. This case study focuses on the paint managed by the Product Care program.

Under the Recycling Regulation, producers (defined as either the producer, or the owner of the trademark under which the product is sold, or an importer) may organize themselves into one or more programs, subject to meeting the regulatory requirements (e.g. province-wide collection system to develop a Stewardship Plan that obtains MOE approval). Product Care's members are the "producers" (manufacturers, distributors and retailers) obligated by the Recycling Regulation (B.C. Reg. 449/2004).

The Recycling Regulation requires product producers, either independently or as a member of a product stewardship organization (PSO) such as Product Care, to develop stewardship plans to manage their products. The stewardship plans are submitted to the MOE for approval. Each year Product Care must also submit an annual report and audited financial statements to MOE for review.

Table 1. Stakeholder Roles & Responsibilities: BC Paint Stewardship Program

Stakeholder	Role & Responsibility	Performance Goal(s)
Producer	Chooses to become a member of Product Care and participates in Product Care activities including setting of the eco-fees or prepares its own Stewardship Plan for their product. May pay eco-fees to Product Care, or delegates this responsibility to retailers. (Producers who choose not to join Product Care are obligated to set up their own program or join another stewardship organization. So far, this has not happened.)	Yes
Product Stewardship Organization (Product Care)	Product Care fulfills the responsibilities outlined in the Recycling Regulation on behalf of their members.	Yes
Retailer	Collect eco-fees from consumers and remit them to Product Care, if the Producer is not already doing so. Responsible for some program outreach by posting visible signs with program information.	None
Consumer	Pays visible or invisible eco-fee on each liter of paint purchased. In addition, there is a disposal ban on paint thereby requiring the consumer to return the paint to depots.	n/a
Local Government	May choose to participate in the Product Care program through individually-negotiated contractual arrangements.	None
Government of British Columbia – Ministry of Environment (MOE)	Adopts regulations that designate products and creates stewardship requirements. Allows individual producers or Product Stewardship Organizations to establish programs to meet requirements. MOE reviews annual reports and audited financial statements, approves stewardship plans, provides assistance to producers in understanding the regulations and performs compliance and enforcement actions where necessary.	None
Depots/Collectors	Accepts leftover paint from the public. Promotes paint reuse via	None

	swap meets.	
Transporters	Transports the product to the various reuse/recycling depots.	None
Recyclers	Remanufacture the paint, if possible, and residuals are properly managed.	None

II. Materials Collected

The following products are accepted province-wide and available to the commercial and household sectors (source: Product Care website):

- Interior and exterior latex, alkyd, enamel, and oil-based consumer paints
- Porch, floor, and deck paints
- Interior and exterior paints and varnishes and urethanes
- Primers, undercoats, and sealers
- Marine enamels
- Wood finishing oils, stains, and shellac
- Latex driveway sealers
- Rust paint, decorative metal paints
- Fence, barn, and swimming pool paints
- Empty paint containers

III. Collection Infrastructure

Product Care collects the fees and funds the management system outlined in the stewardship plan, which addresses consumer education, number of products sold and collected, number of collection sites, product management, green design efforts, and program measures. In 2008, Product Care operated 110 collection depots across the province for consumers to return paint with no end-of-life (EOL) fee charged. Eighty-four of those depots offered exchange programs where usable leftover paint was offered free to the public. The final disposition of latex and oil-based paint by volume collected by Product Care in 2008 was 2.1% reused, 68% recycled, and 29.9% of the oil-based paint was utilized for energy recovery. All plastic paint pails (5 gal. size) and plastic gasoline containers were recycled. Plastic (polypropylene) one US gallon size paint cans and plastic solvent containers were utilized for energy value as solid fuel in permitted incinerators. No paint was landfilled.

Table 2. Product Care Depots in 2008

	2007 Actual	**2008 Target**	**2008 Actual**
Paint Only [1]	59	62	**61**
Paint Plus[2]	45	47	**49**
Total Depots	104	109	**110**
Events	19	12	**15**

[1] Accept paint only
[2] Accept paint, flammables, pesticides and gasoline

IV. Funding

Fees are paid to Product Care by its members who are producers, distributors, and retailers of paint products and are based on unit size. Product Care states that product sector eco-fees are adjusted based

on costs to manage the leftover paint. The fees fund the collection, processing, and recycling of leftover or expired products. Product Care's members usually recover the fee through the distribution chain as a separate charge. Retailers have the option of showing the charge to the consumer as a visible or invisible eco-fee which is added to the cost of each new paint container sold. The end result is a transfer of the cost to manage leftover paints from the taxpayers to the consumer and producer. Producers may ask retailers to pay them to recover costs and retailers may pass costs on to customers with a visible or invisible eco-fee. Collection depots and other points may or may not be paid by the PSO as these agreements are individually arranged.

Because of the flexibility of the system, fees are able to be adjusted in order to meet the needs of the program. For instance, in March 2005 the eco-fees dropped 14 percent for the paint sector due to improvements in the cost-effectiveness of the program. However, in August 2009 the fees were increased due to a steady increase in volume and decrease in revenue. This is the first fee increase since the program began in 1994.

Table 3. BC Paint Eco-Fees effective August 1, 2009

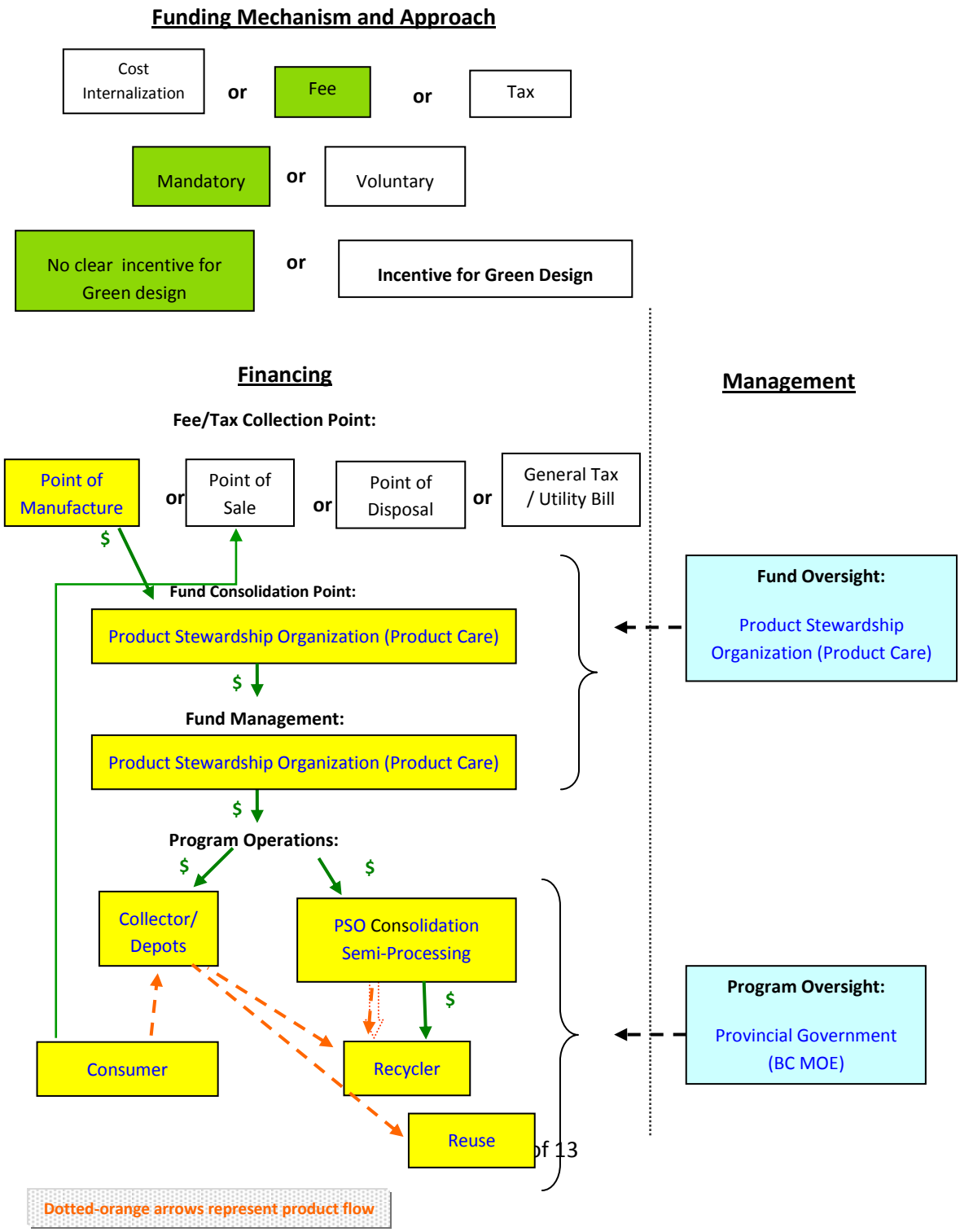
Container size/type	Fee per unit ($)
100 ml to 250 ml	0.20
251 ml to 1 litre	0.25
1.01 litres to 5 litres	0.50
5.01 litres to 23 litres	1.25
Aerosol paint	0.25

Table 4. Program Funding: British Columbia Paint Product Stewardship Program

Program Funding Element	Option employed by Element				Stakeholder
Funding Mechanism	Cost Internalization	Fee	Tax		Product Care (PSO)
Funding Approach	Mandatory	Voluntary			Producer
Incentive for Green Design	Incentive for green design	No clear incentive			
Funding Collection Point	Point of Manufacture	Point of Sale	Point of Discard	Public Funding	Producers
Fund Consolidation Point	PSO				Product Care
Fund Oversight	PSO				Product Care
Fund Management	PSO				Product Care

V. Program Flow Diagram. This flowchart corresponds to the program Elements and stakeholder roles and responsibilities sections (Sections II and III, respectively).

British Columbia Paint Product Stewardship Program



VI. Education/Communications

- Point of purchase education (posters, brochures available to retailers and regional districts (RDs) (aka local government)
- Advertise in Yellow Pages directories
- Participate in tradeshows
- Recycling Council of British Columbia (RCBC) toll-free recycling information hotline
- RCBC materials exchange program
- Local government partnerships
    - Surveyed RDs by telephone (25 of 27 were contacted) to discuss effectiveness of the Product Care program in the local area, to explore synergies for promotion and education, and potential expansion of the collection system using RD infrastructure.
    - Advertising in all municipal garbage collection/recycling calendars
    - Local government website linkages
- Partnership with local Ambassador Program
- Actively maintain Product Care website
    - Depot locations including a convenient "drill down" depot finder system and information
    - regarding hours of operation and products accepted.
    - o Description of products accepted by the program.
    - o Eco-fee reporting schedule.
    - o Annual reports, other program information and audited financial statements.
    - o Information for consumers on buying the right amount of paint as well as the safe
    - storage and handling of program products.
- Active linkages to Product Care website from local government websites (25 of the 27)
- Listed in several reuse websites

V. Governance

From 1994, when the first regulation was passed, to 2004 when the updated Recycling Regulation was adopted, there was a fundamental shift in the government's role in the process. The government moved away from prescribing the type of management system industry was to develop to asking the industry to design a system that is results-based, but letting the industry determine how to meet the goals. This has resulted in the MOE asking product producers to submit stewardship plans in accordance with the requirements of the regulation including the need to establish collection targets and report on system performance. Performance measurements can include recovery rates, the number and distribution of collection facilities, the amount of product versus collected, and consistency with the pollution prevention hierarchy. In short, the provincial government has moved away from (provincial or local) government mandated and taxpayer financed waste management programs to producer financed and managed systems that are performance-based. Program oversight and enforcement is not funded by Producers.

Section 8 of the Recycling Regulation requires producers to submit an annual report to the director by July 1st each year and to post a copy of the report on the program's website. The report should document the performance in adherence to the stewardship plan and specify what the producers will do to reduce or eliminate any gap between actual and projected performance. Topics typically reported on annually include educational materials and strategies, collection facilities, recovery rates, reducing environmental impacts, and consistency with the pollution prevention hierarchy, to name a few.

According to Product Care, tools used by Product Care Association that may have an impact on product life cycle include:

- Variable eco fees which increase with the size of the container.
- Adjustment of product sector eco fees based on cost of managing the leftover product.
- Consumer material including promotion of the "B.U.D." rule, i.e. Buy what you need, Use what you buy and Dispose of the remainder responsibly.
- Participation with the Product Stewardship Institute (http://www.productstewardship.us/) and National Paint and Coatings Association, which are conducting a lifecycle analysis study, expected to be completed in 2009.
- Operating a paint exchange program whereby leftover paint is made to the public free of charge. The paint exchange is available at 84 depots and Product Care's Surrey facility.

VI. Impacts

Table 5. Paint Product Stewardship Program: British Columbia, Canada (2008)

Population (2008)	4,381,603
Total program cost (US $)	$4,379,247
Cost ($)/capita	$0.99
Cost ($)/gal	$6.13[1]
Education/Communications (% of total program costs)	Unknown
EOL materials management (% of total program costs)	Unknown
Program administration (% of total program costs)	2.7%[2]
Governance (program oversight) (% of total program costs)	Unknown
Environmental	
Materials management[3]	
Product sold (gal)	9,303,285
Product collected (gal)	714,396[4]
Product sold that is available for collection (gal)	930,329
Percent collected (from available for collection)	77%
Percent Reused	2.1%
Percent Recycled	68%[5]
Percent Incinerated (fuel blending)	29.9%[6]
Percent Landfilled	0%
GHG emissions	Unknown
$ invested in product design R&D	Unknown

[1] CIWMB Comparison of CA Paint Collection Program Costs, Traditional Gov-Operated vs. Anticipated EPR Producer-Operated analysis, 2009. Adjusted for US currency and volume.
[2] http://www.productcare.org/documents/Product%20Care%202008%20Annual%20Report%20(Amended)%20full.pdf
[3] Includes latex and oil-based paint.
[4] 492,179 gallons of latex paint and 221,124 gallons of alkyd paint were collected.
[5] 100% of latex paint and 2.2% of alkyd paint was recycled.
[6] 0% of latex paint and 97.8% of alkyd paint was incinerated for energy recovery.

Staff Analysis

Program effectiveness	
Progress against goals and targets[7]	• 77% collection. • Exceeded target for # of depots and # of collection events. • 2011 target is a 50% increase in program awareness compared to 2007 as measured by a consumer awareness survey. • Maintain rate of 100% recycling of metal and #2 plastic paint containers. Met goal. • Maintain rate of 95% of #5 plastic paint containers for energy value. Met goal.
Regulatory non-compliances	Unknown
Demonstrated improvements in product design	None
Public awareness	Conducts consumer surveys to find out how many have these products in their homes[8]
Public participation	Through participation in waste audits, Product Care determined that the program is functioning well for the residential users of the program products but in-dicates the potential for improve-ments in servicing and awareness in the commercial sector. Public can also participate in the consultation process.
Total job change from goernment-run to EPR (+/-/=)	Base year used for comparison: 2004
Local Government	=
Product Stewards	+
State Government	=
Materials processors & manufacturers	=
Collectors & Recyclers	+
Retailers	+

VII. Highlights/Successes

- Diversion rate is more than double the current CA diversion rate (77% vs. 33%, respectively).
- Product Care estimates less than 1/10th of a percent free riders in the system, due primarily to the fact that it's a specialized product, it's hard to sell on the internet, and there are not many manufacturers.[9]

[7] See 2008 Annual Report, pg. 18-19 for full list of performance targets.

[8] Product Care's 2007 consumer survey of British Columbia households indicated that 60% of those surveyed had leftover paint in their homes and 58% had unused solvents, pesticides or gasoline.

VIII. Lessons Learned

- Modifications in product design have not been realized through this program.
- Management of leftover latex paint as a non-hazardous waste (as opposed to California, for example) is a likely factor in its economically-efficient management.

IX. Considerations for Next Steps in the Transition to Full Product Stewardship

- Consider the environmental impact of the paint product when setting the fees. Differential fees could encourage green design/environmentally preferable products.
- Consider to what extent local jurisdiction provide in-kind support to programs.

X. Program Contact Information

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[9] Mark Kurschner, Product Care. Personal Communication, 4/3/09.

Appendix 1: Element Descriptions[10]

Element 1 – Funding Mechanism. The means by which funding for a product management program is obtained. There are three primary Funding Mechanisms: cost internalization, fees (government and PSO fees), and taxes.

Cost internalization. Cost internalization occurs when the producer of a covered product internalizes the costs of implementing the stewardship program into the cost of the product. There is no separate line item on a receipt between any of the stakeholders involved.

Fee. **Government Fee.** A fee is a charge that, if collected by government, must be dedicated to, and used for, the governmental purpose related to the use of the item on which the fee is imposed. Fees may cover the full or partial cost of the service or program. Examples include advance disposal/recycling fee, franchise fee, solid waste tipping fee, utility fee, etc.

PSO Fee. A fee that is collected by a Product Stewardship Organizations (PSOs) that may cover the full or partial cost of the service or program. Examples include visible and invisible eco-fees.

Tax. A tax is a compulsory payment to government by consumers, producers, or retailers. Products or services paid for with taxes do not necessarily have anything to do with the product or item on which the tax is charged.

Element 2 – Funding Approach. The Funding Approach is the way by which a Funding Mechanism is implemented. There are two funding approaches that can be utilized: voluntary or mandatory.

Voluntary Funding. A voluntary Funding Approach is when there is no government requirement for any party to pay for the collection, transport, and recycling of a product. It relies on the voluntary participation of entities such as producers to pay for the cost to collect, transport, and recycle the product.

Mandatory Funding. A mandatory Funding Approach is when a public agency (city, county, state, or federal government) requires that an entity, such as a producer or consumer, pay for the cost to collect, transport, and recycle the product. Depending on how the fee/tax amount is established, the full cost to start and operate a collection program may or may not be covered.

Element 3 - Incentive for Green Design. Product stewardship programs can be design to provide incentives for green design, that is, product/packaging design that reduces a product's impact on the environment.

No clear incentive. When a fee is applied to all products within a product category, regardless of its environmental impact or cost to manage, then it doesn't provide an incentive to modify the product as no cost reduction is realized.

[10] Adapted from *Framework for Evaluating End-of-Life Product Management Systems in California*, R3 Consulting Group, 2007.

Incentive for green design. Applies if a producer is able to lower product stewardship program costs through product modification. For example, if a product stewardship program fee structure charges a producer less, if its product is less expensive to manage or easier to recycle.

Element 4 – Funding Collection Point. The Funding Collection Point describes any of the three points during a product's life where the fee/tax can be levied:

Point of Manufacture (POM). The producer pays the fee/tax. The fee/tax, if paid at this point, is generally built into the cost of the product as an invisible fee. For the purposes of this exercise, the POM collection point is defined as the first person or entity in the state to take title to the product.

Point of Sale (POS). The consumer pays the fee/tax when the product is purchased. The retailer remits the money on behalf of the consumer to the entity consolidating the funds for program activities.

Point of Discard (POD). An entity, typically the consumer, pays the fee/tax to the collector or recycler when the product is disposed.

Public Funding. The funds are collected from the general taxpayer or ratepayer, at points other than POM, POS, or POD, such as via property tax or utility bill.

Element 4 – Fund Consolidation Point. The Fund Consolidation Point refers to the entity responsible for receiving the taxes/fees collected either at the Point of Manufacture, Point of Sale, or Point of Disposal. The entity managing the Fund Consolidation Point may be different from the entity responsible for Fund Oversight and Fund Management.

Element 5 – Fund Oversight. Fund Oversight is carried out by the entity responsible for ensuring that the collected money is being used by the program as intended. Responsibilities may include ensuring the transparency of fund allocations through fiscal audits and review of annual reports.

Element 6 – Fund Management. Fund Management is carried out by an entity responsible for managing the administrative duties related to the disbursement of funds that support program activities.

Appendix 2: Comparison of Government-run vs. Product Stewardship Paint Management Approaches, California vs. British Columbia, Canada

	Government-run CA Status Quo, California Paint Program	Product Stewardship BC Status Quo, British Columbia Paint Program	Projected CA Program Costs Unchanged and Product Stewardship (BC) Diversion Rate Achieved	Projected CA Program Costs with Product Stewardship (BC) Costs and Current CA Diversion Rate	Assumptions/ Notes
Paint Sold (gal)	84,540,332	9,303,285	84,540,332	84,540,332	CA gal sold = 2.3 gal sold /person (PPSI Infrastructure Report) * CA 2008 population of 36,756,666 (US Census 2008 estimate). BC paint sold data from Product Care annual reports, 2004-2008, based on the average paint sold since using avg cost/gal, below.
Amt Paint Available for Recovery (gal)	8,454,033	930,329	8,454,033	8,454,033	All figures based on amt of paint available for recycling = 10% of paint sold, 2007 PPSI Infrastructure report http://www.productstewardship.us/displaycommon.cfm?an=1&subarticlenbr=131. BC based on avg as noted above.
Total Cost/Gal	$7.66	$6.13	$7.66	$6.13	$7.66 based on FY 02-03 local jurisdiction survey data with adjustment for decreased disposal costs observed in 2009 data. Includes direct costs + 40% operating costs; median cost of raw data. $6.13 based on 2008 collection costs/gal, e-mail from Mark Kurschner, 7/30/09. BC total cost/gal includes space at collection site, bins, drums, collection svc, transp, bulking, processing, communications, educ., admin. CA total cost/gal includes salary, indirect costs, pub ed/outreach, materials & supplies, insurance, contractor costs, labor, transp, set-up/mobilization, & equip/svcs.
Gal Collected	2,856,526	714,396	6,509,606	2,856,526	CA gal collected using conversion factor of 10 lbs/gal for latex and oil-based FY 07-08 Form 303 data. BC data based on 2008 gallons collected, e-mail from Mark Kurschner, Product Care, 7-30-09.
Diversion Rate	34%	77%	77%	34%	Based on amt collected/amt available for recycling.
Total Cost Per Capita	$0.60	$0.99	$1.36	$0.48	CA population of 36,756,666 (US Census, 2008 estimate). BC population of 4,381,603 (2008; BC Government website, http://www.bcstats.gov.bc.ca/data/cen06/profiles/detailed/ch_prov.asp)
Total Program Costs	**$21,880,989**	**$4,379,247**	**$49,863,579**	**$17,510,504**	Equal total cost/gal * gal collected.
Difference in Total Program Costs as Compared to CA Status Quo			$27,982,589	-$4,370,485	negative number shows a savings, positive shows a cost

Staff Analysis

Appendix 3: Summary of Estimated Job Impacts for British Columbia, Canada, Paint Product Stewardship Program[11]

Region covered: British Columbia, Canada	PRIVATE SECTOR						PUBLIC SECTOR						
Category of jobs in BC	**Product stewards**	**Materials process-ing & Manf.**	**Recyclers/ collectors / PRIVATE**	**Retailers**	**Sub total private sector**		**Local gov**	**State gov**	**Recyclers/ collectors / PUBLIC**	**Sub total public sector**		**Net Change**	**Totals**
Materials extraction/mining processing	0	-1	0	0	-1		0	0	0	0		-1	Decrease
Research & design	0	0	0	0	0		0	0	0	0		0	No Change
Manufacturing	0	1	0	0	1		0	0	0	0		1	Increase
Marketing / education	1	0	0	0	1		0	0	0	0		1	Increase
Customer Service	0	0	1	1	1		0	0	0	0		1	Increase
Recycling/SW facility operators	1	0	1	0	2		0	0	0	0		2	Increase
Truck drivers/ transporters	0	0	1	0	1		0	0	0	0		1	Increase
Administration	1	0	1	0	2		0	-1	0	-1		1	Increase
Compliance managers / oversight / enforcement	1	0	0	0	1		0	1	0	1		2	Increase
Sub totals	4	0	4	1	8		0	0	0	0		8	Increase

[11] Positive number indicates increase in jobs; negative number indicates decrease; 0 indicates no change.