productcare RECYCLING

NOVA SCOTIA LAMP PRODUCT STEWARDSHIP PROGRAM

Submitted to:

Minister of Environment and Climate Change
Department of Environment and Climate Change, PO Box 442, Halifax, NS B3J 2P8

2024 Annual Report
Submitted on May 30, 2025

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1. EXECUTIVE SUMMARY

Product Care's Nova Scotia Lamp Product Stewardship Program ("Program") was launched on August 1, 2024 as approved by the Nova Scotia Department of Environment and Climate Change ("ECC"), pursuant to the amended Nova Scotia Solid Waste-Resource Management Regulations N.S. Reg. 25/96 ("Regulation"), under section 102 of the Environment Act. This report has been prepared in accordance with section 18AM(1) of the Regulation. This report covers the Program's operations from August 1 to December 31, 2024, pursuant to the 2024-2029 approved Program Plan ("Program Plan").

2. PROGRAM OUTLINE

2.1. ABOUT PRODUCT CARE RECYCLING

The Program is administered and operated by Product Care Association of Canada ("Product Care"). Product Care, on behalf of its members, oversees the administration, collection, transportation, recycling, and management of regulated post-consumer lamp products in Nova Scotia. Product Care is a federally incorporated, not-for-profit producer responsibility organization formed in response to extended producer responsibility regulations and is governed by a multi-sector industry board of directors. Product Care has developed and managed lighting products, paint, smoke, CO alarms, and household hazardous and special products stewardship programs since 1994.

Product Care's members are the "brand owners" (manufacturers, distributors, and retailers) of "lamp products" as defined pursuant to the Regulation. A current list of Product Care members can be found on Product Care's website.

2.2. ACCEPTED PRODUCTS

The Program collects and manages end-of-life intact lamp products from all sectors, whether marketed for residential, industrial, or commercial purposes. To be accepted in the Program, the product must be an easily replaceable light source (including those which are integrated into a product) that produces light from electricity. Lights included in the Program are sold as replacement lights or are integrated into another product (such as a fixture, a flashlight, string lights, etc.).

Accepted products include but are not limited to:

- fluorescent tubes
- compact fluorescent lamps (CFLs)
- high intensity discharge (HID) lamps
- incandescent lamps
- halogen lamps
- light-emitting diode lamps and tubes

For the purposes of this annual report, these will collectively be referred to as "Program Products".

Depending on the lamp product technology type, Program Products may or may not contain mercury. The Program's entire collection network accepts lamps regardless of the mercury content. A limited amount of incidentally broken lamps is accepted by the Program, provided the broken lamps are packaged in accordance with the requirements of the Program. There is no fee for returning eligible lamps to any of the Program's collection facilities, although quantity limits may apply.

2.3. NON-PROGRAM PRODUCTS

Non-program materials are products other than the lamp products as defined in Section AG(1) of the Regulation. Minimization of non-program material is achieved through a comprehensive program of public education, signage, and collection facility staff training. Non-program material includes, but is not limited to, the following:

- All fixtures
- Ballasts
- Lights integrated into products that are not intended for easy removal/replacement by end users
- Christmas lights and string lights (replaceable light bulbs are accepted if removed from the string lights)
- Lights included in transport vehicles (i.e. lights in new cars, boats, ATVs) that are not intended for easy removal/ replacement by end-users.
- Intentionally crushed lamps (e.g. from drum-top operations)

3. COLLECTION SYSTEM

3.1. LAMP PRODUCTS COLLECTED

In accordance with section 18AM(1)(a) of the Regulation, the Program is required to report on the total number of lamp products and the total number of mercury-containing lamp products collected in the province.

In 2024, the Program collected 45,251 units[1] of Program Products. Table 1 presents a summary of the collection data, as reported by the processor, as received for processing.

Table 1. Program Products Collected

Program Product Category	Units
Mercury-Containing Lamps[2]	44,371
Total Lamps Collected	**45,251**

3.2. RECOVERY RATE

Recovery rates are calculated as the ratio of products collected to products sold within a given year. While Section 18AM(1)(d) of the Regulation requires programs to report on whether recovery rate targets in the Stewardship Plan have been met, the Program's approved Plan did not establish specific recovery rate targets. As noted in the approved Plan, recovery rate is not an appropriate performance metric for lamp products, due to the influence of product lifespan, product type, and consumer disposal behaviour. The Program did commit to calculating and reporting recovery rates annually for both mercury-containing and non-mercury-containing lamps.

[1] Weight to units conversion factors, developed by Ontario's Resource Productivity and Recovery Authority (RPRA) were used to estimate the unit of lamps collected.

[2] Mercury-containing lamps defined as CFLs, fluorescent tubes, and HIDs.

The tables below present the 2024 recovery rate data for both mercury-containing and non-mercury-containing lamps.

Table 2. Recovery Rate of Mercury-Containing Lamps

	Units
Mercury-Containing Lamps Collected	44,371
Mercury-Containing Lamps Sold	64,220
Recovery Rate (%)	**69.09%**

Table 3. Recovery Rate of Non-Mercury-Containing Lamps[3]

	Units
Non-Mercury-Containing Lamps Collected	880
Non-Mercury-Containing Lamps Sold	1,096,391
Recovery Rate (%)	**0.08%**

Considering that this is a new program, the initial recovery rate of mercury-containing lamps has benefited from years of public messaging and regulated handling in other contexts, including the collection of mercury-containing lamps prior to the launch of the program.

In contrast, the recovery rate for non-mercury-containing lamps remains low. These products, such as LEDs, generally have longer lifespans, meaning many of the units sold have not yet reached end-of-life, other technology, such as incandescent lamps, have very limited, if any, sales. Additionally, public awareness of the recyclability of these products is still developing. As the Program matures and more consumers become familiar with which products are accepted and where to bring them, recovery rates, particularly for non-mercury lamps, are expected to improve. Product Care is committed to supporting this progress through targeted education efforts and promotion of the collection network. Of note, it is important to recognize that recovery rates can fluctuate year to year due to factors beyond program control.

3.3. COLLECTION LOCATIONS AND SERVICES

The Program is committed to having and maintaining a minimum of 60 collection sites by the end of 2026. As of December 31, 2024, 40 collection sites participated in the Program. The current network of collection sites include:

- Retailers
- Return Depots
- Municipalities
- Landfill sites
- Waste transfer stations

While these sites currently provide coverage to a substantial portion of the province, the Program continues to expand the collection network, with a focus on addressing underserved areas to ensure reasonable accessibility for Nova Scotians by providing service across both urban and rural communities.

[3] Non-mercury-containing lamps defined as incandescent, halogen, and light emitting diode (LED).

In addition to a system of permanent collection sites, the program provides collection services through a free direct pick-up service for large volume generators (LVGs) of Program Products, subject to minimum quantities. LVGs are entities/companies that generate large quantities of Program Products. Examples of LVGs include:

- Wastewater treatment facilities
- Lighting retrofitters
- Warehousing

In accordance with section 18AM(1)(f) of the Regulation, APPENDIX 1 provides the locations of the collection sites and their operating hours.

4. MATERIAL MANAGEMENT

4.1. LAMP PRODUCTS MANAGEMENT PROCESSES

Product Care contracts with its service providers to ensure that Program Products are managed in a responsible manner that protects human health and the environment.

All collection sites and large volume generators (LVGs) are supplied with standardized collection containers, such as cardboard boxes and plastic liners of various sizes to collect whole lamps. Once containers are full, Program Products are collected and transported to processors from both collection sites and LVGs, where they are dismantled for further processing. The Program's processors are required to conform to Product Care's Processor Standards.

Details of the processes used to manage lamp products as required by section 18AM(1)(c) and (e), are outlined below.

4.1.1. REUSE

The program is intended to handle lamps that are no longer functional and have reached the end of their life cycle. Consequently, none of the lamps are reused.

4.1.2. RECYCLE

At the lamp processing facilities, collected containers are opened, sorted, counted, and processed. The lamps are dismantled in a controlled environment, where they are separated into individual components. This process also ensures the removal of hazardous residues, such as mercury and mercury phosphor, from the other materials. Recyclable materials, including glass, ceramic, poly-coating, and metal, are recovered and repurposed for various applications, such as metal smelting, plastic recycling, glass manufacturing, and aggregate. The glass is tested to ensure that mercury levels are below regulatory limits and meet acceptance standards.

Although technologies exist for recycling mercury phosphor powder and liquid mercury, the U.S. ban on mercury exports, along with the reduced demand for mercury in other manufacturing processes, has significantly diminished the feasibility of recycling mercury. As a result, alternative disposal methods, like management via secured landfills, have become necessary.

4.1.3. LANDFILL

During the separation process, mercury phosphor powder from CFLs, fluorescent tubes, and HIDs is collected and sent to a waste management company, where it undergoes physical and chemical treatment to render it non-hazardous before being disposed of in a secure landfill. Liquid mercury is either chemically treated, stabilized, and sent to a secure landfill.

In 2024, a total of 4,588.56 Kg of Program Products were processed.

Table 4. Material Processing

Material	Sub-Component	Downstream Processing	End-Fate
Lamps (all technologies)	Liquid mercury	Chemical treatment, stabilization	Securely landfilled
	Phosphor powder with mercury		
	Metal	Physical treatment	Sold for smelting
	Glass	Physical treatment	Recycled as aggregate
	Ceramic	Physical treatment	Recycled as aggregate
	Plastic	Physical treatment	Recycled as aggregate
			Recycled as commodity

Table 5. Material End-Fate

Material	End-Fate	% of Material
Lamps (all technologies)	Reused	0%
	Recycled	96%
	Landfilled	4%

4.2. LAMP PRODUCTS PROCESSING

In accordance with Section 18AM(1)(b) of the Regulation, the table below presents the quantity of Program Products processed in 2024.

Table 6. Program Product Processed

	Units
Mercury-Containing Lamps	44,371
Total Lamps Processed	**45,251**

4.3. CONSOLIDATION AND PROCESSING LOCATIONS

This section outlines the consolidation and processing locations in accordance with Section 18AM(1)(g) of the Regulation.

Table 7. Location of Processing or Consolidation Facilities

Facility Type	Facility Name	Facility Location
Consolidation	Aevitas	Ayr, Ontario
Processing / Recycling	Dan-X	Dartmouth, Nova Scotia

4.4. ENVIRONMENTAL SUSTAINABILITY: PRODUCER EFFORTS TO REDUCE WASTE IN PRODUCT LIFECYCLE

Lighting producers are actively reducing environmental impact through innovative design and technology, emphasizing durability, reusability, and recyclability across the product lifecycle. Adoption of energy efficient technologies like LEDs has revolutionized industry, slashing energy use and fostering sustainability.

Here are some trends reflecting environmental sustainability within the lighting industry:

SHIFTS IN INDUSTRY TREND TOWARDS MORE DURABLE PRODUCTS

In recent years, the lighting industry has shifted its focus from traditional lighting technologies to the development and adoption of energy-efficient and long-lasting lamp technology. As an example, the advancement of LED lighting technology is having a significant impact on the lighting market. Manufacturers are now focusing most of their efforts on this type of product and are no longer spending research energy on expanding any of the traditional product lines, such as fluorescent, HID, incandescent or halogen.

MINIMIZE ENERGY CONSUMPTION DURING THE IN-USE PHASE

1. Market-Driven Transition to New Lighting Technologies:
    - The adoption of new lighting technologies brings forth numerous benefits, as evidenced by various life cycle assessment studies. A pivotal advantage lies in recognizing that energy consumption during the use phase significantly impacts the overall environmental footprint of lighting products throughout their life cycle. Specifically, this energy use constitutes 80-90% of the total impact. By embracing these advanced technologies, the lighting industry effectively reduces electricity consumption and mitigates pollution associated with energy generation.
2. LEDs: Durability and Environmental Favourability:
   LEDs (Light Emitting Diodes) stand out due to their durability and positive environmental impact. Consider the following:
    - Extended Lifespan: LEDs last approximately 15,000–25,000 hours, significantly outlasting CFLs (8,000 hours), incandescent bulbs (1,000 hours), and halogen lamps (3,000 hours). This longer lifespan reduces the frequency of replacements, lowering both consumer costs and environmental waste.
    - Reduced Replacement Frequency: Sales data from 2020 to 2024 indicate a 29% decline in LED sales and a 43% drop in non-LED lighting products. This downward trend suggests that LED technology's durability has reduced the need for frequent replacements, leading to a lower environmental impact from manufacturing, distribution, and disposal.
    - Mercury-Free and Energy Efficiency: LEDs contain no mercury and are highly energy-efficient, making them a safer and more sustainable lighting choice. The industry continues to drive LED adoption, with market share increasing from 49% to 55% between 2020 and 2024, further emphasizing the shift toward environmentally friendly lighting solutions.

3. Lighting as a Service (LaaS):
    - Beyond LED efficiency, the lighting industry embraces the "Lighting as a Service" (LaaS) model to optimize energy consumption. LaaS involves integrating and managing lighting systems as part of facility management. Intelligent controls collect data, enabling efficient lighting control based on occupancy, activity patterns, and daylight levels. This strategic approach contributes to improved energy and carbon management performance.

DEVELOPING A CIRCULAR ECONOMY IN THE LIGHTING INDUSTRY

The lighting industry is actively implementing product design strategies rooted in circular economy principles, thereby promoting a more sustainable and environmentally friendly approach. Here are the key initiatives:

1. Enhancing Reusability:
    - Lighting product manufacturers prioritize increasing the reusability of their products. By creating items that can be upgraded for different purposes, they reduce the need for consumers to purchase new products. This shift contributes significantly to minimizing the environmental impact associated with frequent replacements.
    - Additionally, producers focus on designing products with easily replaceable parts, such as drivers, controls, and LED boards. These improvements not only enhance product durability but also facilitate disassembly, repair, and recycling.
2. Packaging Waste Reduction:
    - Lighting companies are actively redesigning their packaging to minimize waste. Innovative packaging design and technology allow them to achieve this goal while maintaining the necessary protection for their products.
    - Sustainable materials, including those with recycled content or bamboo, are increasingly used in packaging. These choices further reduce the environmental footprint associated with packaging materials.

In summary, the lighting industry is transitioning to more sustainable practices by embracing energy efficient technology, phasing out traditional lighting technologies, adopting low impact service models, and focusing on reducing product impact and improving reusability and recyclability. These efforts are not only promoting a more sustainable future but also drive innovation in the industry.

5. PUBLIC EDUCATION MATERIALS

Consumers play a central role in the success of any recycling program. Informed consumers are more likely to participate in recycling efforts, which in turn supports the safe and responsible end-of-life management of Program Products. As such, clear and accessible communications are essential to ensure that Nova Scotians:

1. Know that light bulbs and tubes (all technologies) can be recycled; and
2. Understand how and where to recycle them.

In accordance with the requirements of Section 18 AM(1)(h) and (i) of the Regulation, the following outlines the initiatives undertaken to raise consumer awareness.

5.1. STRATEGY

Given the mid-year launch of the Program, public education efforts in 2024 focused on digital-first activities to efficiently reach Nova Scotians actively seeking recycling information. A foundational goal of the strategy was to ensure visibility of the program's digital assets, direct residents to collection site information, and begin establishing awareness of the Program. As the Program matures, public education activities will evolve to include broader multi-channel efforts.

5.2. ACTIVITIES

5.2.1. ONLINE INFORMATION HUB

The Program is featured on productcare.org, Product Care Recycling's national consumer website (see APPENDIX 2). The website acts as a centralized and mobile-friendly hub where Nova Scotians can access:

- An interactive recycling locator that displays all registered collection sites in Nova Scotia, with up-to-date details such as hours of operation and contact information.
- A clear list of accepted and non-accepted lighting products.
- Information about Environmental Handling Fees (EHFs) and how the Program is funded.
- Educational videos that help consumers understand the recycling process and the environmental importance of proper light bulb disposal.

5.2.2. GOOGLE SEARCH ADVERTISING

To complement organic search efforts, a Google Search advertising campaign was launched shortly after the Program became operational (see APPENDIX 2). This campaign was designed to capture user intent by targeting Nova Scotians who are actively searching for how to recycle light bulbs and tubes. Ads directed users to the program landing page to find local collection site information and recycling guidance. This approach allowed for targeted reach during the early stages of the Program, supporting awareness building in a cost-efficient and measurable way.

5.2.3. PRINTED EDUCATIONAL ASSETS (POINTS OF SALE AND POINTS OF RETURN)

To support in-store and on-site education, Product Care made available a suite of printed educational materials (see APPENDIX 2) for retailers and collection sites participating in the Program. These materials included:

- Posters promoting light recycling
- Rack card outlining accepted products

Materials were offered free of charge through an online ordering system on the website and were distributed to early participating partners in Nova Scotia.

5.3. CONSUMER AWARENESS

As outlined in the Stewardship Plan, the Program will carry out its first consumer awareness survey in 2026. This timing allows for a more accurate baseline, as the Program is still currently in its early stages. After the 2026 baseline survey, follow-up surveys will be conducted every two years to track changes in awareness.

6. FINANCIAL INFORMATION

A summary of the Program's financials for the 2024 reporting year is provided in Table 8.

Table 8. 2024 Financial Summary

2024 Revenue and Expenses (August 1 to December 31)	$
Total Revenue	**283,810**
Program Operation	65,321
Program Administration	45,640
Education, Public Awareness & Communications	309
Total Operating Expenses	**111,270**
Surplus / Deficit	172,540
Cumulative Surplus (Reserve)	172,540

APPENDIX 1: COLLECTION NETWORK

The Program is committed to having and maintaining a minimum of 60 collection sites by the end of 2026. As of December 31, 2024, 40 collection sites participated in the Program.

Collection Facility	City/Town	Address	Hours of Operation
Adam's Bottle Exchange	Chester Basin	5962 Hwy 3, Gold River Road	Mon-Fri 9am-5pm, Sat 9am-1pm, Closed Sundays
Bluenose Bottle Exchange Ltd.	Dartmouth	99 Woodlawn Road	Mon-Sat 8am-5pm, Closed Sundays
Camdon Recycling Limited	Edwardsville	345 Gulf Crescent, Sydport Industrial Park	Mon-Fri 8am-4:30pm, Sat 8am-4pm, Closed Sundays
Comeau's Bottle Exchange	Meteghan Centre	8659 Highway 1	Mon-Fri 9am-4pm, Sat 9am-1pm, Closed Sundays
Construction & Demolition Debris Disposal Site	Goose Lake	1138 Highway 103	Mon-Fri 8am-4pm, Sat 8am-12pm, Closed Sundays
Dingwall Transfer Station	Dingwall	99 Dump Road	Tues-Sat 8am-4pm, Closed Sun-Mon
East Hants Waste Management Centre	Hants County	1306 Georgefield Road	Mon-Fri 8am-4pm, Sat 8am-2pm, Closed Sundays
Elite Trucking Bottle Exchange	Dartmouth	12a Rosedale Drive	Mon-Sat 8:30am-4:30pm, Closed Sundays
Giffin's Depot	Ingramport	8134 St. Margaret’s Bay Road	Tues-Sat 9am-5pm, Closed Sun-Mon
Glace Bay Recycling Ltd.	Glace Bay	204 Reserve Street	Mon-Sat 9am-4pm, Closed Sundays
Halifax Household Hazardous Waste Depot	Halifax	20 Horseshoe Lake Drive Bayers Lake Ind. Park	Saturdays Only 9am-4pm
Home Hardware Port Hood (North End)	Port Hood	8783 Hwy 19	Mon. - Fri. 7:30am - 5:00pm
Jim Bradley Recycling Depot	Baddeck	445 Old Margaree Road	Tues-Sat 8:30am-3:30pm, Closed 12pm - 12:30pm, Closed Sun-Mon
John Ross & Sons Ltd. (Halifax)	Halifax	171 Chain Lake Drive	Mon-Fri 7am-5pm, Sat 7am-12pm, Closed Sundays
Kaizer Meadow Environmental Management Centre	Chester	451 Kaizer Meadow Road	Mon-Sat 8am-4pm, Closed Sundays

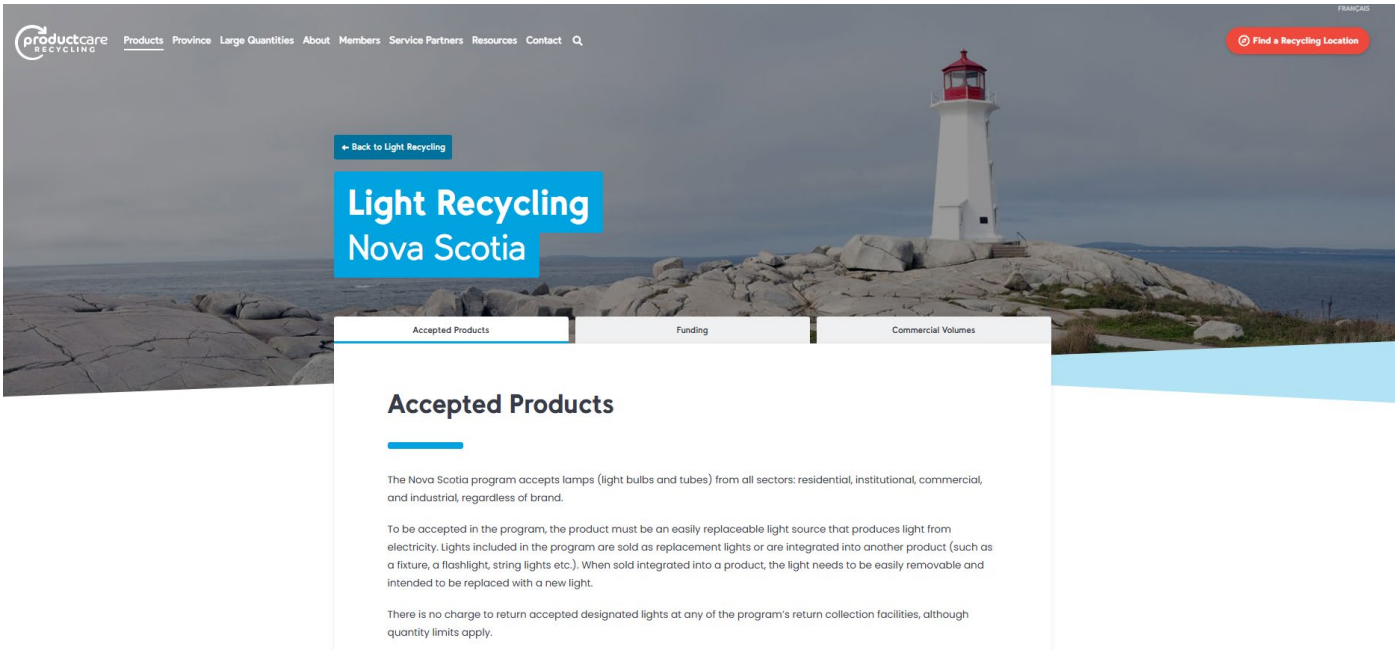
Keep Garbage Beneficial Inc.	Pugwash	8868 Highway 6	Mon-Sat 10am-5pm, Closed Sundays
L.W. Layton Salvage Ltd.	Canning	3239 Highway 358	Tues-Sat 8am-5pm, Closed Sun-Mon
Lequille Enviro Depot	Lequille	9313 Highway 8	Mon-Fri 9am-3:45 pm, Sat 9am-2:45pm, Closed Sundays
Lunenburg Regional Community Recycling Centre	Whynotts Settlement	908 Mullock Road	Summer (Apr 1-Nov 30): Mon-Fri 8am-4:30pm, Sat 8am-2pm, Closed Sundays. Winter (Dec 1-Mar 31): Mon-Fri 8am-4:30pm, Sat 8am-12pm, Closed Sundays
M&R Recycling	Springhill	37 Junction Road	Mon-Fri 10am-5pm, Sat 9am-1pm, Closed Sundays
Moore Nickels & Dimes for You Recycling	Oxford	7627 Birchwood Road	Tues-Thurs 9am-4pm, Sat 9am-12pm, Closed Mon & Fri
Municipal Recycling Facility Strathlorne	Strathlorne	15109 Route 19	Mon-Fri 7am-4pm, Sat 7am-12pm, Closed Sundays
Municipality of Colchester - Clean Harbors Drop off	Debert	640 MacElmon Road	1st Saturday of each month (excluding January)
Municipality of the District of Clare	Meteghan	919 Bonnie Road	Mon-Fri 8:30am-5pm, Sat 8:30am-12:30pm, Closed Sundays
Municipality of the District of Shelburne	Shelburne	243 Sandy Point Road	1st & 3rd Monday of each month (Tues if Mon a holiday) 9am-1pm & 2pm-4pm
New Germany Enviro Center	New Germany	124 Copeland Road	Mon, Tues, Fri 9am-4pm, Sat 9am-1pm. Closed Wed, Thurs & Sun
Pictou County Solid Waste	Mount William	220 Landfill Road	Mon-Fri 8am-4pm, Sat 8am-12pm, Closed Sundays
Queen's Enviro Centre	Brooklyn	3965 Hwy 3	Tues, Thurs, Fri 9am-4pm, Sat 9am-1pm. Closed Wed & Sun
RONA - Pierceys Almon	Halifax	6055 Almon Street	Mon-Fri 7am-9pm, Sat 8am-6pm, Sun 8am-5pm
Rona - Pierceys Elmsdale	Elmsdale	84 Mason Lane	Mon-Fri 7am-9pm, Sat 8am-6pm, Sun 8am-5pm
Rona - Pierceys Upper Tantallon	Upper Tantallon	3680 Hammonds Plains Road	Mon-Fri 7am-9pm, Sat 8am-6pm, Sun 8am-5pm
Subway Bottle Exchange Ltd.	Truro	25 Pictou Road	Mon-Fri 8am-5pm, Sat 8am-12:30pm

Tanner's Enviro Depot	Halifax	6393 Bayne Street	Mon-Sat 8am-4pm, Closed Sundays
The Recycle Market	Lake Charlotte	11470 Nova Scotia Trunk 7	Thurs & Sat 10am-3pm
TNT Recycling	Shubenacadie East	20711 Highway 2	Wed-Fri 10am-5pm, Sat 10am-4pm
Total Recycling Ltd.	Sydney	85 Industrial Drive	Mon-Sat 9am-4pm, Closed Sundays
Valley Waste - Eastern Waste Management Centre	Kentville	100 Donald Hiltz Connector Road	Mon-Fri 8am-4pm, Sat 8am-12pm, Closed Sundays
Valley Waste - Western Waste Management Centre	Lawrencetown	343 Elliott Road	Tues-Fri 8am-4pm, Sat 8am-12pm, Closed Sun-Mon
Webber's Bottle Exchange	Digby	18 Queen Street	Tues, Wed, Thurs 9am-4pm, Fri 9am-2pm, Sat 9am-12pm
Yarmouth County Solid Waste Management Authority	Yarmouth	1936 Hardscratch Rd.	Mon-Fri 8am-4pm, Sat 9am-3pm, Closed Sundays

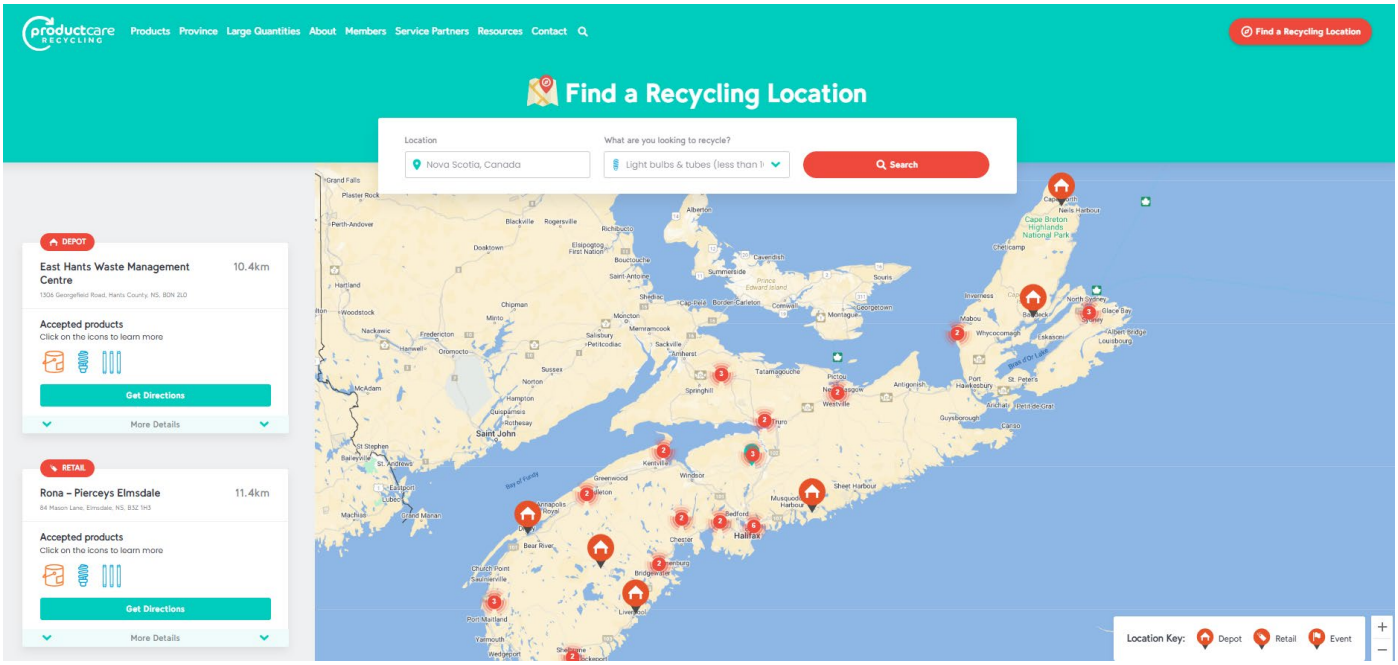
APPENDIX 2: PUBLIC EDUCATION MATERIALS

8.1. WEBSITE

8.1.1. PROGRAM PAGE



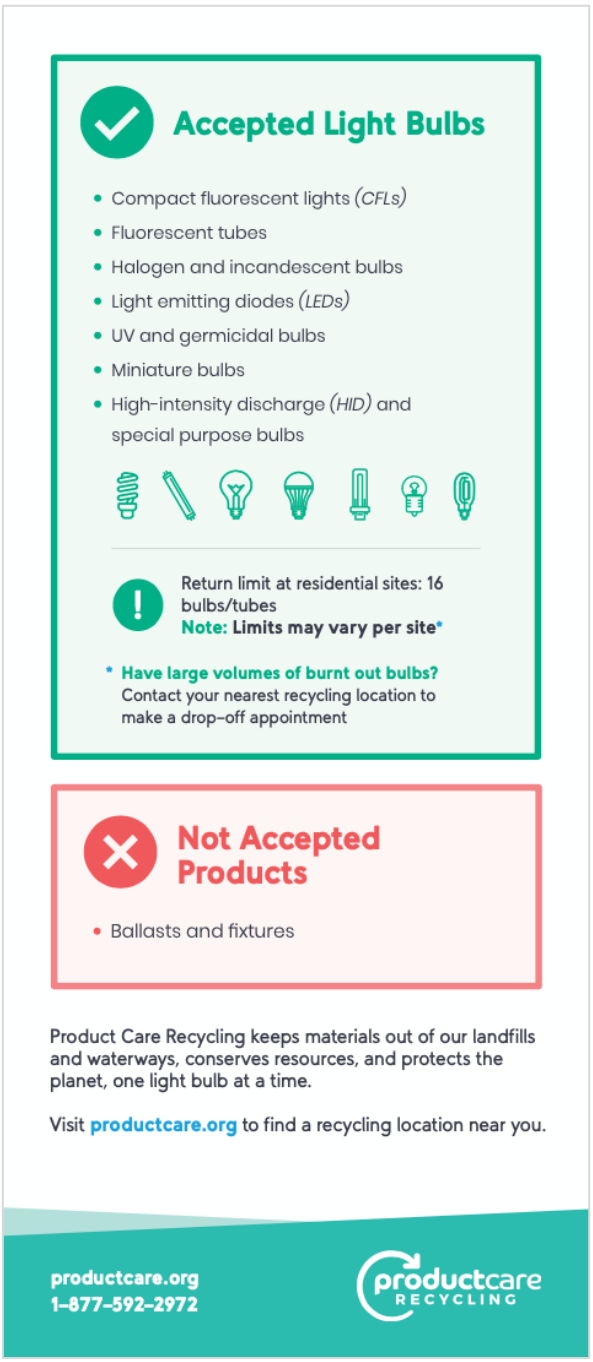
8.1.2. RECYCLING LOCATOR



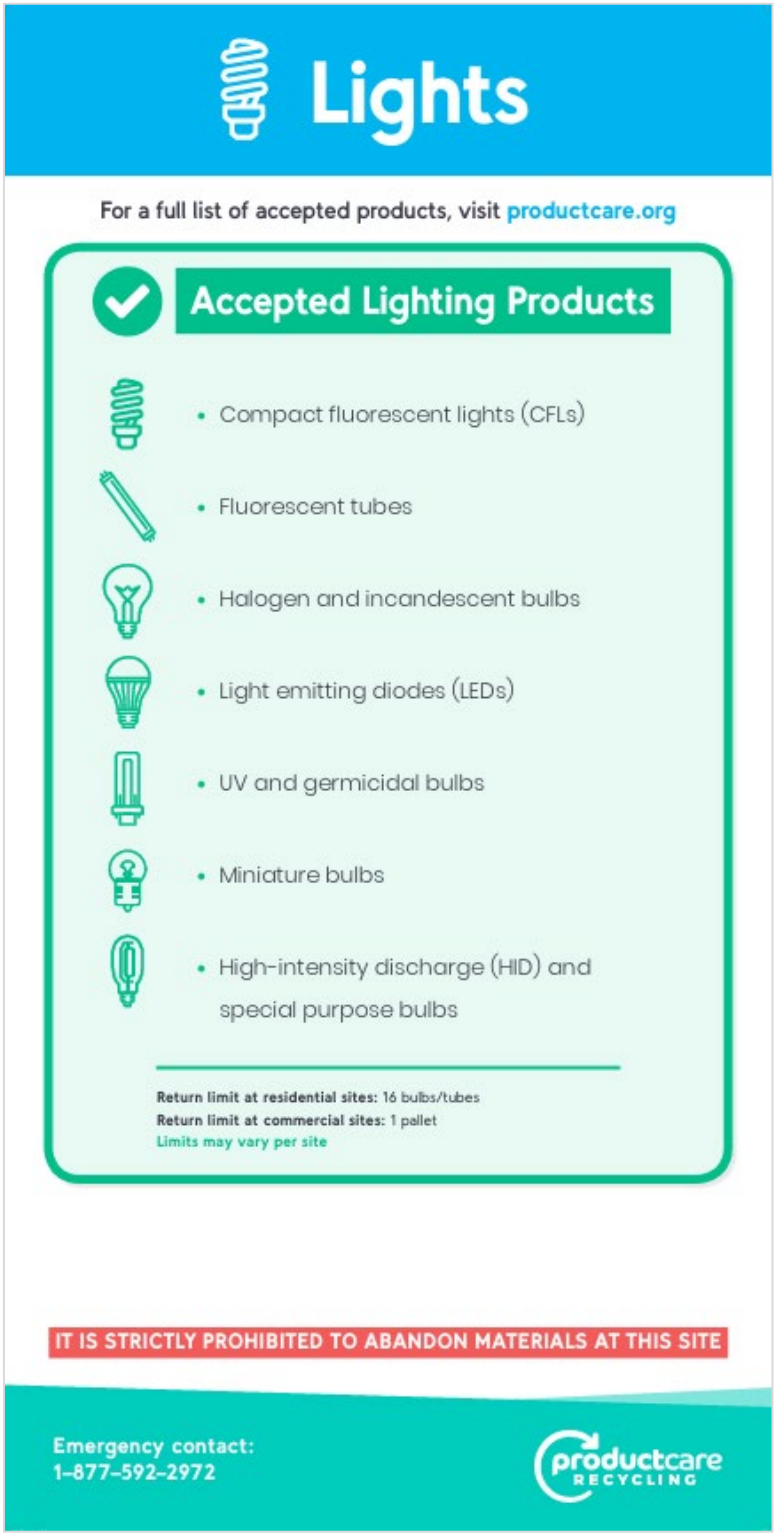
8.2. PRINT MATERIALS

8.2.1. POSTERS

8.2.2. RACK CARDS



8.2.3. COLLECTION SITE SIGNAGE



8.3. ADVERTISING

8.3.1. TEXT ADS (GOOGLE SEARCH)