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Tire Stewardship Plan

2013 to 2017

For

Passenger and Light Truck tires (PLT)

Medium Truck tires (MT)

Agricultural tires (AG)

Logger/Skidder tires (LS)

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A. Regulatory Basis for this Plan

This Stewardship Plan (Plan) for the period 2013 to 2017 is filed by Tire Stewardship BC Association (TSBC) with the Ministry of Environment (Ministry) pursuant to the requirements of the Recycling Regulation, B.C. Reg. 449/2004 (the “Regulation”), for the tire product category identified in Schedule 4 of the Regulation as currently in effect. For the purposes of this Plan, these tires are referred to as “*regulated*” and are described in detail in Section I of [Appendix I – Schedule A: Tire Definitions, Advance Disposal Fees \(ADF\) and Interest Schedule](#). The tire types currently regulated are commonly referred to as Passenger and Light Truck tires (PLT), Medium Truck tires (MT), Agricultural tires (AG) and Logger Skidder tires (LS).

This Plan describes the current program for regulated tires and the priorities for the next five year period in the context of the approval criteria set forth in the Regulation. Once approved by the Ministry, this Plan will supersede and effectively cancel the Stewardship Plan currently in effect.

In addition to currently regulated tires, this Plan also references certain Off-the-Road (OTR) tires. These tires are explicitly excluded in Schedule 4, Section 2 (d) of the Regulation. For the purposes of this Plan, these tires are referred to as “*unregulated*” and are described in more detail in Section II e) of [Appendix I – Schedule A: Tire Definitions, Advance Disposal Fees \(ADF\) and Interest Schedule](#).

The Ministry’s letter of December 20, 2010 instructed TSBC to include the results of recent research on recycling OTR tires in this Plan and to “establish clear commitments in relation to OTR tire stewardship in the future.” While TSBC’s OTR tire research remains a work in progress, the status of completed research is summarized in [Appendix III – Research on Recycling BC’s Off the Road \(OTR\) tires](#).

B. Overview of Existing Program

TSBC is the provincial not-for-profit society responsible for operating BC’s scrap tire recycling program in accordance with its Ministry-approved Tire Stewardship Plan and the Regulation.

Since January 1, 2007, TSBC has been accountable to the retailers, other stakeholders and the public for the collection, processing and environmentally sound disposal of all currently regulated tires. Going forward, TSBC will continue to be the stewardship agency on behalf of each registered retailer (producer) in the province and will comply with Part 2 of the Regulation

in respect of the duties referred to in paragraph (a). The current list of retailers (producers) that TSBC represents is available at <http://tsbc.ca/pdf/registeredretailers.pdf>

The society is governed by a Board, comprised of seven directors representing the four member organizations:

- Retail Council of Canada;
- Western Canada Tire Dealers Association;
- The Rubber Association of Canada; and
- New Car Dealers Association of BC.

TSBC also consults with the Advisory Committee, comprising representatives from the Recycling Council of BC (Chair), retailers, scrap tire generators, haulers, processors, manufacturers, and local government. The committee meets at least annually or as needed to provide advice on program policy and operations. This forum is considered essential to the ongoing success of the program and will be maintained. The current membership is posted on the website at <http://www.tsbc.ca/aboutus.php#committee>.

TSBC collects an Advance Disposal Fee (ADF), commonly referred to as an eco fee, from registered retailers on the sale of every new tire including replacement tires and tires on new vehicles. These fees are used to pay for transporting and recycling BC's scrap tires in environmentally responsible ways thereby discouraging them from entering the waste stream. None of the eco fees collected go to government. All of the money is used in the operation and enhancement of the tire recycling program in BC.

A more complete description of the current program can be found on TSBC's website at <http://tsbc.ca/> and in the 2011 Annual Report at <http://tsbc.ca/pdf/TSBC-AnnualReport2011.pdf>

TSBC has recorded many significant accomplishments since "industry got behind the wheel":

- Smoothly transitioned the tire recycling program from government to industry.
- Eliminated tipping fees charged by some haulers and processors for collection and disposal resulting in the removal of any incentive for illegal dumping.
- Diverted virtually 100% of the regulated scrap tires available for collection.
- Launched the [Return to Retailer Program](#) (R2R) to provide even more options for consumers to dispose of their orphan tires and reduce costs at taxpayer funded landfills.
- Implemented a compliance process to ensure all retailers "pay their fair share" by correctly reporting and remitting eco fees on all new tires sold in BC.

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- Initiated a Manufacturer Incentive Program to stimulate the use of BC recycled rubber by BC manufacturing companies.
 - Introduced the [Community Grant Program](#) to support communities in their use of BC recycled rubber in projects such as playgrounds and other recreational facilities.
 - Completed a baseline study of greenhouse gas (GHG) emissions from BC's recycling and energy recovery operations.
 - Conducted research on the sources and volumes of Off-the-Road (OTR) tires used in BC, from small industrial tires to the giant haul truck tires used in BC's open pit mines. This essential research is being used as the basis for determining the economic and environmental feasibility of incorporating OTR tires into the program.
 - Introduced a voluntary province-wide program to recycle bicycle tires and tubes.

Going forward, TSBC has established its vision, mission, and goals, as amended from time to time, which guide the development of this Plan.

VISION

All scrap tires are transformed to the environmental, economic, and social benefit of BC's citizens.

MISSION

To administer a sustainable Extended Producer Responsibility program for the stewardship of all BC scrap tires designated under the BC Recycling Regulation.

GOALS

- *To support the environmentally friendly and sustainable collection and management of 100% of regulated scrap tires available for collection.*
- *To sustain or reduce the "average" Advance Disposal Fee.*
- *To maintain TSBC financial stability.*
- *To foster and support innovation and research relative to higher valued solutions within the industry.*
- *To assist the industry in building sustainable markets for recycled rubber products.*
- *To support community projects that use BC recycled rubber.*
- *To support the pollution prevention hierarchy as referenced in the BC Recycling Regulation.*
- *To provide public education on the benefits of maintenance and inflation of tires to extend tire life thereby avoiding scrap tires entering the waste stream.*

C. Plan Components

1. Program Structure [Section 5 (1)(c)(i)]

The plan adequately provides for the producer collecting and paying the costs of collecting and managing products within the product category covered by the plan, whether the products are currently or previously sold, offered for sale or distributed in British Columbia.

For every new tire sold, TSBC-registered retailers remit an ADF, commonly referred to as an eco fee, to TSBC. Details are provided in [Appendix I – Schedule A: Tire Definitions, Advance Disposal Fees and Interest Schedule](#).

ADFs are set by TSBC on Passenger and Light Truck tires (PLT), Medium Truck tires (MT), Agricultural tires (AG), and Logger/Skidder tires (LS). The fee rates, listed on the TSBC website, vary by tire type to compensate for the higher costs of collecting and disposing of larger tires. Other Off-The-Road (OTR) tires have been excluded from the Recycling Regulation and the stewardship program because no viable recycling solution for these larger tires has been identified.

All the eco fees collected go towards the operation of the scrap tire program, for example:

- Financial incentives are paid to BC processors for the transportation and processing of the scrap tires and to BC manufacturers to use BC crumb rubber in their consumer products.
- Grants are paid to support communities building or renovating eligible facilities using BC recycled rubber.

To ensure everyone pays their fair share of the cost to manage these tires at their end of life, TSBC has a compliance program to check that all eco fees due to TSBC have been remitted.

2013 to 2017

TSBC will maintain the existing operational structure.

On the other end of the size spectrum, TSBC implemented a recycling program for bicycle tires and tubes on June 1, 2011. The program piggybacks on the existing automobile scrap tire and collection infrastructure. With the help of Western Rubber Products, used bicycle tires and

tubes can be incorporated into rubber recycling streams. There is neither an eco fee to the consumer nor a disposal fee charged to bicycle shops.

This program was developed with the assistance of industry (automobile and bicycle), various non-profit organizations and the general cycling community. The long-term success of this recycling program is dependent on a chain of voluntary actions involving the public, bicycle tire retailers and the many stakeholders already involved in automotive tire recycling. Full particulars can be found at <http://tsbc.ca/bike.php>.

2. Consumer Access to Collection Facilities [Section 5 (1)(c)(iii)]

The plan adequately provides for reasonable and free consumer access to collection facilities.

Unlike other product recycling programs where consumers must choose between putting their end of life product into the waste stream or taking it to a collection depot for recycling, most motorists exchange their old tires for new ones at the time of purchase. Retailers take back one old tire for every new tire sold and arrange for haulers to collect and transport the tires to processors. In BC there are over 1700* retailers that take back consumers' scrap tires when new tires are purchased.

* As the tire program is a retailer based collection system, TSBC has historically defined a collection facility as a registered tire retailer location where consumers can drop off a scrap tire for every new tire purchased. However, for purposes of reporting on collection facilities in the Annual Report and as an auditable performance target, TSBC amended the definition to reflect that not all tire retailers are in a position to take back a scrap tire for every new tire sold. An example is Home Depot, which may sell a trailer with new tires even though their primary business is not selling tires or equipment with new tires. TSBC is therefore now defining a collection facility as *"a TSBC registered retailer that, in the normal course of business, will accept one scrap tire for every new tire sold."* The amendment to the definition has resulted in a change to the number of collection facilities from 2,260 in 2011 to 1,733 in 2012, reduced primarily by the number of retailers that in the normal course of business do not accept scrap tires from their customers.

Some motorists choose to take their old tires home rather than leave them with the retailer for disposal. Many of these orphan tires end up at a landfill where they are held for collection by haulers. Recognizing this as a cost and logistical problem for some landfills, TSBC provides alternative disposal options to reduce this burden:

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- The Return to Retailer (R2R) program provides consumers a free option to return these orphan tires to participating retailers. This is a year round program for consumers to drop off up to four passenger or light truck tires, clean and off rim, during the retailer's business hours (<http://www.tirestewardshipbc.ca/pickupdropoff.php>).
 - Since 2009, TSBC has piloted eight Tire Round-Ups as another convenient option for disposing of orphan tires as well as tires on rims. Tires on rims are a significant cost and inconvenience issue for many consumers.
 - TSBC conducted several more Tire Round-Ups in 2011, in partnership with retailers and Regional Districts. As a pilot, some of the 2011 events were conducted jointly with other stewardship agencies including Electronic Stewardship Association of BC, Product Care, and BC Used Oil Management Association. These events were widely promoted to make it more convenient and efficient for consumers to dispose of their recyclables. They also provided another opportunity to inform the public on what happens to the eco fees they pay and the products they discard.

The collection and transportation of scrap tires from source locations throughout BC to processors is well established, efficient and effective. Over the five years of operation starting January 2007, the estimated **Collection Rate (actual number of scrap tires collected / estimated number of scrap tires available for collection) has been 100%**. This means that virtually 100% of the scrap tires available for collection at retailers or scrap tire generators (e.g., landfills and auto wreckers) were collected for recycling, energy recovery or reuse. There are no known stockpiles, and collection complaints from retailers, generators and consumers are extremely rare, demonstrating the effectiveness of the collection system and TSBC's confidence in the estimated number of scrap tires available for collection.

However, the common measure of effectiveness of stewardship programs as required by the BC Recycling Regulation is the "Recovery Rate", the actual number of scrap tires collected divided by the actual number of new tires sold. In the five years of operation (2007 to 2011), TSBC's annual Recovery Rates ranged from 76% to 90% with an average of 84%¹. The annual rates vary according to the number of new tires sold or scrapped in any year, both of which are sensitive to changes in BC's economy, weather and population.

Additional factors outside of TSBC's influence must be taken into account to explain why the average Recovery Rate at 84% may never approach 100%. The most significant factor is the export of partially worn tires not yet at their end of life to markets outside BC for reuse, never to return as scrap tires in BC. The more tires exported for reuse, the better the result according to the Pollution Prevention Hierarchy (reduce, reuse, recycle, recover) – but the lower the Recovery Rate. Further, as the total number of vehicle registrations continue to increase with

¹ These numbers reflect the new method of calculating Recovery Rate to meet new audit requirements.

BC's population, and with the greater use of snow tires (and enforcement by police agencies on certain highways), there is an ever increasing number of tires "in use" or "in storage and ready for use" further reducing the number of scrap tires in BC.

Both the Recovery Rate and Collection Rate measures are needed to properly describe TSBC's performance in this area.

2013 to 2017

TSBC will:

- Monitor distribution of R2R retailers throughout the province to demonstrate the extent to which each region is being served and continue to recruit new retailers where needed into the Return to Retailer program.
- Continue to conduct Tire Round-Ups in regions according to need (e.g., sparsely populated regions or where tires are banned from landfills) as identified in collaboration with key stakeholders.
- Participate in Regularly Scheduled Collection Events as defined by the Stewardship Agencies of BC where it makes sense for TSBC's stakeholders.
- Track and report the Recovery Rate and explain the variance between the volumes collected versus volumes sold, and any significant variances in the trend.

3. Consumer Awareness [Section 5 (1)(c)(iv)]

The plan adequately provides for making consumers aware of the producer's product stewardship program; the location of collection facilities, and how to manage products in a safe manner.

TSBC uses a variety of methods to raise consumer awareness of the program: TSBC website; information brochures at the point of sale; information available through the Recycling Council of BC (RCBC) Recycling Hotline; and media attention from special events. TSBC also conducts an annual education and communications campaign to encourage proper tire inflation and maintenance to save fuel; reduce emissions and improve safety; and to create awareness of the environmental and economic benefits of tire recycling in BC. A related focus is the [BuyBlackGoGreen](#) message that explains that buying recycled rubber from BC for projects makes good economic and environmental sense. Similarly, TSBC's [Community Grant Program](#) supports the use of BC recycled rubber in community projects such as playgrounds and other recreation facilities that are wheelchair and publicly accessible.

TSBC also works with other stewardship agencies and the RCBC in joint initiatives to improve overall public awareness and interest in recycling. Initiatives include:

- [BC Stewards.com](http://BCStewards.com) – a common website for information about BC’s stewardship programs.
- [Recycling Handbook](#) – a common brochure that describes all of BC’s stewardship programs.
- [Recyclepedia](#) – an enhanced web tool residing on the RCBC website, downloadable to Smart Phones, for consumers wanting to know where to recycle certain materials.

2013 to 2017

TSBC will:

- Continue to work with key stakeholders, including other stewardship agencies and the Recycling Council of BC, in joint initiatives to improve overall public awareness and interest in recycling.
- Through initiatives such as [BuyBlackGoGreen](#), community grants and Tire Round-Up events, continue to promote the economic, environmental and social benefits of recycling tires.
- Work with Regional Districts to reduce issues of abandoned tires, and report annually on measures taken.

4. Management of Program Costs [Section 5 (1)(c)(v)]

The plan adequately provides for assessing the performance of the producer's product stewardship program and the management of costs incurred by the program.

TSBC’s financial statements are audited annually and published on its website as part of its [annual report](#) to the Ministry. TSBC’s non-financial information (e.g., number of collection sites, numbers of tonnes collected and tonnes recycled, etc.) was reviewed by Chartered Accountant firms for 2008 and 2010 and will be reviewed annually in the future.

Over its first five years of operation, administration costs accounted for less than 8% of total revenues, which is in line with similar organizations. Approximately 80% of the revenues were paid out in program incentives to: collect, transport, and process scrap tires; manufacture new products; and provide community grants. The remainder was allocated to build reserves for ongoing financial stability and research and development activities.

2013 to 2017

TSBC will:

- Continue to manage program costs to the economic, social and environmental benefit of BC's citizens.
- Maintain TSBC's financial stability while fostering and supporting innovation and research relative to higher valued solutions within the industry.
- Assist the industry in building sustainable markets for recycled rubber products.
- Support community projects that use BC recycled rubber.
- Continue to provide public education on the benefits of maintenance and inflation of tires to extend their life.

5. Management of Environmental Impacts [Section 5 (1)(c)(v)]

The plan adequately provides for assessing the management of environmental impacts of the program.

There are many environmental benefits from diverting tires from landfills and the environment in general: reduced fire hazard and the potential for air, water and land pollution; fewer breeding habitats for West Nile Virus-carrying mosquitoes; and the recovery of rubber and steel that are very energy intensive materials to obtain raw, and consequently major contributors of greenhouse gases (GHG).

Recent studies have shown that the net effect of tire recycling on GHG is positive. In 2009, a baseline inventory of GHG emissions commissioned by TSBC for BC's 2008 tire recycling and energy recovery operations was completed. The report concluded that a total of 27,196 tonnes of carbon dioxide equivalents (CO₂e) were emitted as a result of transporting and processing 40,000 tonnes of scrap tires and shipping the recycled rubber to market:

- 90.5% of the emissions occurred as a result of processing (including recycling and energy recovery) the scrap tires.
- 5.2% were due to transporting the scrap tires.
- 4.3% were from shipping the recycled rubber to market.

These numbers tell only part of the story. As the study did not include the more complex analysis of GHG emissions avoided from the extraction of virgin materials, TSBC looked to other studies for evidence. A [recent analysis in the US](#) by the Institute of Scrap Recycling Industries

(ISRI) suggests that recycling four tires saves the energy equivalent of 18 gallons of gasoline and reduces the GHG emissions by 323 lbs. of CO₂e. Translated for BC, this study suggests that processing 40,000 tonnes of scrap tires (equivalent to 4 million passenger tires) would reduce GHG emissions by over 146,500 tonnes. In other words, these findings suggest that for every tonne of CO₂e emitted by tire recycling and energy recovery operations, 5 tonnes are avoided in the resource extraction process.

2013 to 2017

TSBC will:

- Continue to look for other studies that will help TSBC refine the analysis of GHGs avoided by its tire recycling program.
- Update the GHG baseline inventory and report the results in 2016 for 2015 data.

6. Tire Management per Pollution Prevention Hierarchy [Section 5(1)(c)(viii)]

The plan adequately provides for the management of the product in adherence to the order of preference in the pollution prevention hierarchy.

TSBC endeavors to manage collected products in accordance with the “pollution prevention hierarchy”, i.e., reuse (2R) before recycle (3R) before energy recovery (4R) before residual disposal (5R). TSBC incents the processing of scrap tires into higher value added products by providing higher financial incentives to recycle a tire than to use a tire for energy recovery. Beyond primary processing, TSBC promotes the use of BC’s recycled rubber in products manufactured in BC through a Manufacturing Incentive.

Consistent with the Ministry’s practice since 1991, TSBC tracks the annual ratio of 3R to 4R. From 2007 to 2011, the average distribution by tire weight was:

- Recycle (3R) – 74% of tires were recycled into tire derived products (TDP), primarily crumb rubber, granules of rubber with the steel and fiber removed. The crumb was used to create a variety of products including: athletic tracks, synthetic turf fields; landscaping mulch and playgrounds; colourful, resilient flooring in recreational facilities; flooring and mats for agricultural and industrial use; and asphalt rubber. The steel was recycled and the fiber was used in a cement kiln as fuel. All residuals and any scrap tires unable to be processed were landfilled.

- Energy Recovery (4R) – 26% of tires were used as tire derived fuel (TDF) to recover the energy, an eligible end use since 1991.

TSBC has maintained the Ministry program stability strategy by supporting both TDP and TDF markets. This mix ensures there are markets for all BC scrap tires so ultimately tires don't back up at retailer and generator sites. The policy of allowing some tires to be used as a fuel supplement is economically sound as it is a lower cost alternative, which helps TSBC contain eco fee levels. As well, all TDF usage has appropriate environmental permits.

TDF usage is market driven and varies from year to year. In 2012, TDF usage was at an all-time low at 14.5% due to economic conditions in the cement industry and a record high demand for TDP. However, increased use of tires for energy recovery can occur when TDP markets decline, such as the economic downturn in 2008 to 2010. TSBC anticipates further reduction in TDF usage when a TDP solution for the fibre component is developed (fibre is currently used as an energy supplement in a cement kiln).

As noted in Section 10, going forward, Performance Measures and Targets reported annually will include the percentage of total tonnes processed into the 3R, 4R, and 5R categories, and these percentages will be audited starting in the 2014 reporting year (2013 data). The classification of which materials will be counted as 3R, 4R or 5R has been refined and the weights reallocated in accordance with the Recycling Regulation Guide, April 2012 edition. For clarity, the "old" percentages (i.e., as reported in 2007 to 2011 Annual Reports) are restated in the new categories in the following tables:

"Old" %	2007	2008	2009	2010	2011	Average
3R	80	70	63	71	88	74%
4R	20	30	37	29	12	26%

Restated % to align with the "New" measures	2007	2008	2009	2010	2011	Average
3R	64	56	51	53	71	59%
4R	29	40	42	35	20	33%
5R	7	4	7	12	9	8%

TSBC's focus is to reduce the 5R percentage by moving it up to 3R or 4R.

2013 to 2017

TSBC will:

- Find a solution to reduce the tonnage of materials going to landfill (5R) such as Agricultural tires (AG) and Logger/Skidder tires (LS) that currently do not meet the specifications (Off-Spec tires) for cost-efficient processing into TDP or TDF.
- Estimate the volume of tires collected, culled, and sent to reuse markets (2R) outside BC. Note: The scope of Reuse (2R) volumes includes only those tires collected by program participants and determined suitable for reuse in domestic and international markets. Reuse through private sales of tires (e.g., through Craigslist) are not included in this reported 2R segment.
- Report the actual volume of processing waste and Off-Spec tires being landfilled (5R).

7. Product Life Cycle Management [Section 5 (1)(c)(vii)]

The plan adequately provides for eliminating or reducing the environmental impacts of a product throughout the product's life cycle.

Managing tires at their end of life is important, but lengthening their life so that fewer are used is essential. Tire manufacturers are making progress: since 1981 the average tire life has gone up 56% (from 46,000 km to over 72,000 km). Also, average tire rolling resistance has decreased by more than 25% simply by making the tires lighter and stronger. Manufacturers also recognize the need to balance environmental concerns with tire safety and customer satisfaction. TSBC works in partnership with The Rubber Association of Canada and Natural Resources Canada in their annual [Be Tire Smart](#) campaign which focuses on educating the motoring public on the benefits of proper tire inflation and maintenance.

2013 to 2017

TSBC will:

- Continue to work with The Rubber Association of Canada and Natural Resources Canada in supporting "Be Tire Smart – Play Your PART," a national public education campaign designed to encourage Canadian motorists to adopt good tire maintenance practices to increase vehicle fuel efficiency, reduce harmful emissions, save money and make vehicles safe.

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- Work with the [Canadian Association of Tire Recycling Agencies](#) (CATRA) to encourage manufacturers to invest in research and development to further improve the environmental design of tires, or to report on initiatives underway.

8. Dispute Resolution [Section 5 (1)(c)(vi)]

The plan adequately provides for a dispute resolution procedure for disputes that arise between a producer and person providing services related to the collection and management of the product during implementation of the plan or operation of the product stewardship program.

TSBC's strategy has been to avoid disputes and our success has been achieved by taking a partnership approach with program service providers. This entails:

- Having written contracts with all participants who receive financial incentives from TSBC.
- Managing key contracts with regular and frequent partnership relationship meetings to keep communication and trust levels high.
- Tracking and monitoring tire collection complaints from retailers and generators.

There have been no disputes since TSBC implemented the program but in the event of a dispute, TSBC has set out a dispute resolution procedure in its contracts with participants.

2013 to 2017

TSBC will:

- Continue to manage relationships with service providers.

9. Stakeholder Consultation on Plan Implementation and Operation [Section 5 (1)(b)]

The producer has undertaken satisfactory consultation with stakeholders prior to submitting the plan for approval and will provide opportunity for stakeholder input in the implementation and operation of the product stewardship program.

Stakeholders were invited to attend public consultation meetings for the review of four BC product stewardship plans: [Tire Stewardship BC](#), the [Electronic Products Recycling Association British Columbia](#), [Product Care Association](#), and the [Health Products Stewardship Association](#).

The joint consultation sessions were held as follows:

- Prince George – Wednesday May 25, 2011 – Ramada Inn
- Kelowna – Friday May 27, 2011 – Coast Capri Hotel
- Nanaimo – Monday May 30, 2011 – Coast Bastion Inn
- New Westminster – Tuesday May 31, 2011 – Inn at the Quay

Interested parties could register online and download copies of each agency's product stewardship plan from their websites. TSBC's Stewardship Plan was posted and available for public comment on May 18, 2011 with the deadline for submission of written comments by June 30, 2011.

Advance notifications were sent on April 18, 2011 to 329 common stakeholders such as senior government, stewardship associations, ENGOs including RCBC, Regional Districts and municipalities. In addition, a notice was sent to TSBC's 2,200 registered retailers on May 16, 2011.

A total of 84 individuals participated in the four consultations, the majority of which attended the TSBC session as it was the first session of the day. Three written submissions were received on June 30, 2011. In addition, TSBC consulted with its Advisory Committee separately from the public and their input is included in the summary report.

The consultations included PowerPoint presentations, with TSBC's available in [Appendix Iii](#). TSBC's presentation provided an overview of the Plan as well as opportunities to ask questions and provide feedback. [Appendix Iiii](#) includes a summary of questions and comments received through the consultation process and TSBC's responses. Where relevant, the feedback received has been incorporated in the Plan to provide greater clarity on how the program will operate.

10. Performance Measures and Targets [Section 5 (1)(a)(i),(ii),(iii)]

The plan will achieve, or is capable of achieving within a reasonable time:

- a 75% recovery rate or another recovery rate established by the director;
- any performance requirements or targets established by the director; and
- any performance requirements or targets in the plan.

TSBC commits to achieving the following annual targets:

Performance Measures		Annual Targets																																										
Operational																																												
1	Report on total tonnes collected broken down by Regional District	For information only																																										
2	a) Recovery Rate (Total # Units <u>Collected</u> / Total # Units <u>Sold</u>) b) Collection Rate (Total # Units <u>Collected</u> / Total # Units <u>Available for Collection</u>) * See Section 2 for a details of why these rates differ	a) 84%. Results for each tire type will be reported and explained if below 75%. b) 100%																																										
3	The percentage of total tonnes of scrap tires (i.e., all rubber, steel and fibre) <u>processed and shipped</u> : a) 3R – Tire Derived Product b) 4R – Tire Derived Fuel c) 5R Waste – Landfill of residuals from 3R d) 5R Off- Spec – Landfill of regulated tires that cannot be processed into 3R or 4R by TSBC’s Processors (e.g., oversize tires)	<table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr style="background-color: #e0e0e0;"> <th></th> <th>2013</th> <th>2014</th> <th>2015</th> <th>2016</th> <th>2017</th> </tr> </thead> <tbody> <tr> <td>3R</td> <td>71%</td> <td>71%</td> <td>83%</td> <td>83%</td> <td>83%</td> </tr> <tr> <td>4R</td> <td>21%</td> <td>21%</td> <td>13%</td> <td>13%</td> <td>13%</td> </tr> <tr> <td>5R-Waste</td> <td>7%</td> <td>7%</td> <td>3.5%</td> <td>3.5%</td> <td>3.5%</td> </tr> <tr> <td>5R-Fibre</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5R-Off Spec</td> <td>1%</td> <td>1%</td> <td>0.5%</td> <td>0.5%</td> <td>0.5%</td> </tr> <tr style="border-top: 2px solid black;"> <td></td> <td>100%</td> <td>100%</td> <td>100%</td> <td>100%</td> <td>100%</td> </tr> </tbody> </table>		2013	2014	2015	2016	2017	3R	71%	71%	83%	83%	83%	4R	21%	21%	13%	13%	13%	5R-Waste	7%	7%	3.5%	3.5%	3.5%	5R-Fibre						5R-Off Spec	1%	1%	0.5%	0.5%	0.5%		100%	100%	100%	100%	100%
	2013	2014	2015	2016	2017																																							
3R	71%	71%	83%	83%	83%																																							
4R	21%	21%	13%	13%	13%																																							
5R-Waste	7%	7%	3.5%	3.5%	3.5%																																							
5R-Fibre																																												
5R-Off Spec	1%	1%	0.5%	0.5%	0.5%																																							
	100%	100%	100%	100%	100%																																							
Accessibility																																												
4	Number of collection sites (# registered retailers that will take back a scrap tire from the consumer at the time a new tire is sold)	1,700																																										

Performance Measures		Annual Targets
5	<ul style="list-style-type: none"> Total number of retailers and generators in BC that take back orphan tires (R2R) Number of R2Rs in each Regional District 	<ul style="list-style-type: none"> 500 province wide at least 2 per Regional District
6	Number of collection events, including any Regularly Scheduled Collection Events as defined by the Stewardship Agencies of BC, in which TSBC participates	15
7	Report on measures taken to reduce issues of abandoned tires	Status report delivered to the Ministry with TSBC's Annual Report
Stakeholder Engagement and Satisfaction		
8	Number of legitimate collection complaints received by TSBC from registered retailers and generators	Less than 24
9	Number of program complaints from consumers	Less than 12
Financial		
10	Program cost per Passenger Tire Equivalent - \$/PTE	Under \$5/PTE
11	Stabilization Reserves on hand to ensure program stability	No less than 6 months operational costs
Environmental		
12	GHG Inventory Report	A GHG Inventory Report updated in 2016 for 2015 data
Program Structure – Unregulated Tires		
13	Annual OTR Processing Options Report (ongoing consultations with industry to pursue OTR tire processing options)	Status report delivered to the Ministry with TSBC's Annual Report

Appendix I – Schedule A: Tire Definitions, Advance Disposal Fees (ADF) and Interest Schedule



Revised: April 01, 2013

SCHEDULE A
Tire Stewardship B.C.

Tire Definitions, Advance Disposal Fees (ADF) and Interest Schedule

SECTION I: TIRE PRODUCT CATEGORIES INCLUDED (ADF applicable)

Tire Type	ADF	Definition
Passenger Tires, Small RV Tires and Light Truck Tires	\$5.00	<p>Passenger tires are designed for use on passenger cars, light trucks, small recreational vehicles(RVs) and multipurpose passenger vehicles (MPVs), including sport utility vehicles (SUVs) and crossover utility vehicles (CUV's), and to comply with Canadian Motor Vehicle Safety Standard (CMVSS No. 109).</p> <p>The light truck tire category is tires designed for use on consumer or commercial light trucks, under 10,000 lbs. Gross Vehicle Weight, and comply with Canadian Motor Vehicle Safety Standard (CMVSS No. 119).</p> <p>Codes found on the sidewall of light passenger and light truck tires are P (Passenger) and LT (Light Truck). Temporary spare tires are marked T (Temporary).</p>
Motorcycle, Golf Cart and All Terrain Vehicle Tires	\$5.00	Includes all tires specifically designed for on/off highway motorcycles, motorcycle sidecars, motor bikes, mopeds, mini-cycles, golf carts and all terrain vehicles.
Forklift, Small Utility and RV Trailer Tires, Bobcat/Skid Steer Tires	\$5.00	Includes pneumatic forklift tires, Bobcat/Skid Steer tires measuring 16" and under, as well as RV (Recreational Trailer) and utility trailer, tires marked ST (Special, Trailer).
Agricultural Tires (Small)	\$5.00	Includes drive and free rolling farm and implement tires up to 16" deemed for use on farm equipment.
Medium Truck Tires	\$9.00	Also commonly known as Commercial Truck Tires – Truck and Bus tires including Wide Base or Heavy Truck tires designed for truck/bus applications and Larger RV (Recreational Vehicle) tires not marked "P or LT" (Passenger or Light Truck), all of which comply with Canadian Motor Vehicle Safety Standard (CMVSS No. 119).
Agricultural Drive Tires (Medium)	\$15.00	Includes drive wheel tires used on tractors and combine equipment. These tires are normally identified with a sidewall marking with suffix letters R (Radial Ply) or HF (High Flotation) and are 16.5" – 25.5". These tires are listed in The Tire and Rim Association Inc. annual yearbook Section 5 Agricultural.

Tire Type	ADF	Definition
Forklift, Bobcat/Skid Steer Tires	\$15.00	Includes pneumatic forklift tires, Bobcat/Skid Steer Tires measuring 16.5" and over.
Logger/Skidder Tires, Agricultural Drive Tires (Large)	\$35.00	Tires used on tree harvesting equipment and normally identified with a sidewall marking with suffix letters LS.(Logger/Skidder) These tires are listed in The Tire and Rim Association Inc. annual yearbook Section 5 Agricultural. This section would also include Agriculture Drive Tires measuring 26" and up.

For the purpose of determining eligible tire sizes within the tire type category, TSBC will deem the following reference material as the reference authority - 2005 Tire and Rim Handbook of the Tire & Rim Association of the United States as amended from time to time.

SECTION II: TIRE PRODUCT CATEGORIES EXCLUDED (ADF not applicable)

The Recycling Regulation specifically excludes certain types of tires including

- a) *tires designed for use on cycles, wheelchairs or three-wheeled motorized devices designed for the transportation of persons with physical impairment;*
- b) *tires designed for use on an aircraft or wheelbarrow;*
- c) *tires that ordinarily have a retail value of less than \$30;*
- d) *recapped and retreaded tires; and*
- e) *tires designated with a tread code of C,E,G,L, IND in the 2005 Tire and Rim Handbook of the Tire and Rim Association of the United States, as amended from time to time."*

TSBC Explanatory Note: Tires with tread code C (Compactor), E (Earthmoving), G (Grader), L (Loader), IND (Industrial) or NHS (Not for Highway Service) are generally referred to as Grader/Loader or Small-Off-The-Road or Large-Off-The-Road tires. A further distinction for clarity purposes is as follows:

Small Off-the-Road (Industrial Equipment) Tires

Tires of truck type construction for off road applications without DOT approval. Conventional sizes smaller than 16.00" cross section and wide base sizes smaller than 20.5" cross section. These tires are listed in The Tire and Rim Association Inc. annual yearbook Section 4 Off-the-Road.

Large Off-the-Road Tires

Tires of truck type construction for off road applications without DOT approval. Conventional sizes 16.00" and larger cross section, and wide base sizes of 20.5" and larger cross section. These tires are listed in The Tire and Rim Association Inc. annual yearbook Section 4 Off-the-Road.

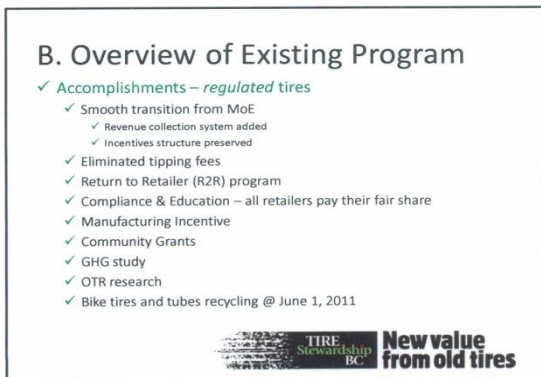
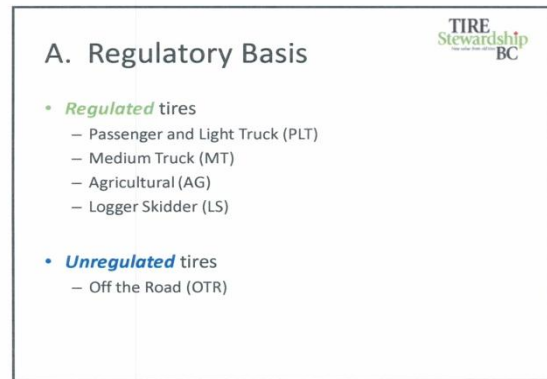
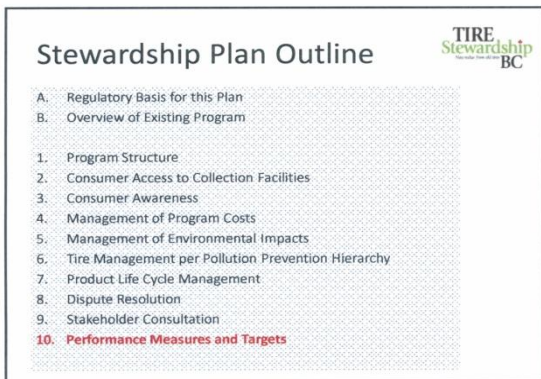
Industrial Tires

Industrial tires identified with a sidewall marking of "IND" (Industrial), "NHS" (Not for Highway Service) Solid and Press-On tires (commonly found on forklifts) These tires are listed in The Tire and Rim Association Inc. annual yearbook Section 6, Industrial. This does not apply to bobcat/skid steer tires.

SECTION III: INTEREST

Interest charges will be applied at a rate of 1% per month (12.6825% annually) compounded monthly and calculated from the date the interest became payable.

Appendix III – TSBC PowerPoint Presentation for May 25-31, 2011 Public Consultations

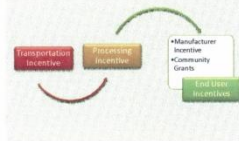


1. Program Structure

- Financial Incentives
 - Transportation
 - Processing
 - Manufacturing
- Community Grants
- Compliance program

2012 to 2016

- Maintain the existing operational structure



2. Consumer Access

- ~400 R2R
- Piloted 12 round ups
 - Including tires on rims
- Recovery rate 87%: factors
 - Culls exported for reuse
 - Tires in use
 - Tires available for use
- 100% of tires available for collection are collected

2012 to 2016

- Monitor distribution of R2R retailers and recruit new where needed
 - Target - 400 R2Rs
- Conduct tire round ups according to need
 - Target - 15 per year
- Report and explain the recovery rate
 - Target - 87%

Rounding up tires...



3. Consumer Awareness

- Website
- Brochures
- RCBC hotline
- Earned media
- BuyBlackGoGreen
- Be Tire Smart

2012 to 2016

- Joint initiatives to improve overall public awareness and interest in recycling
- Promote the economic, environmental, and social benefits of recycling tires.



4. Program Costs

- Financial statement audits
- Non-financial data audits

2012 to 2016

- Continue to manage program costs to the economic, social and environmental benefits of BC's citizens.
- Assist the industry in building sustainable markets for recycled rubber products.
- Support community projects that use BC recycled rubber.
- Continue to provide public education on the benefits of maintenance and inflation of tires to extend their life.
- Maintain TSBC's financial stability while fostering and supporting innovation and research relative to higher valued solutions within the industry.
 - Target - reserves of at least 6 months operational costs

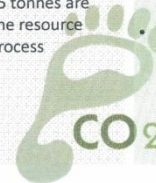


5. Environmental Impacts

- 27,196 tonnes CO₂e
- ISRI study showed that for every tonne of CO₂e emitted by tire recycling operations, 5 tonnes are avoided in the resource extraction process

2012 to 2016

- Refine the analysis of GHGs avoided
- Monitor for potentially significant improvements
- Update the GHG baseline
 - Target - one GHG update over 5 year plan



6. Pollution Prevention Hierarchy

- Recycle (3R) - 69%
 - 2R and 5R numbers are currently buried in this number
 - Energy Recovery (4R) - 31%
- 2012 to 2016**
- Find a recycling solution for AG & LS tires that do not meet the specifications (off-spec tires) for cost-efficient processing into TDP or TDF
 - Estimate the volume of tires collected, culled, and sent to reuse markets (2R) outside BC
 - Report the actual volume of processing waste and off-spec tires being landfilled (5R)
 - > 5R target - under 7%



7. Product Life Cycle

- Manufacturers continuously lengthening their life so that fewer tires are used
- 2012 to 2016**
- Support the "Be Tire Smart – Play Your PART" to encourage Canadian motorists to adopt good tire maintenance practices



8. Dispute Resolution

- No disputes
 - Success achieved by taking a partnership approach with our service providers
- 2012 to 2016**
- Continue to manage relationships with service providers.



9. Stakeholder Consultation

- Advisory Committee - Done
- Public - In progress



10. Performance Targets

Performance Measures	Targets
Operational	
1 Total tonnes collected for BC broken down by Regional District	For information only
2 Rolling Average 4 year Recovery rate (Actual # units collected / # units sold)	~87%
3 Collection rate (tonnes collected/tonnes available for collection)	~100%
4 Percentage of tonnes diverted to: Reuse (2R); Tire Derived Product (3R); Tire Derived Fuel (4R); Waste to Landfill (5R)	2R, 3R, 4R for information only; 5R target of under 7%
Accessibility	
5 Number of collection sites (# registered retailers)	For information only
6 Percentage of retailers that take back one scrap tire for every new replacement tire sold	~100%
7 Total number of retailers that take back orphan tires (R2R)	400
8 Number of collection events per year (the process to select sites is TBD)	15



10. Performance Targets

Performance Measures	Targets
Stakeholder Engagement & Satisfaction	
9 Number of legitimate collection complaints per year from retailers, generators	Less than 12
10 Number of program complaints per year from consumers	Less than 12
Financial	
11 Program cost per Passenger Tire Equivalent - \$/PTE	Under \$5/PTE
12 Percentage of total revenue used to collect, transport and process scrap tires	77%
13 Stabilization Reserves on hand to ensure program stability	No less than 6 months operational costs
Environmental	
14 GHG Emissions Baseline Report update	One update over the 5 year Plan
Product Life-Cycle Management	
15 Recyclability rate (# units recyclable / # units sold)	~ 100%



Appendix Ilii – Summary of Feedback from Public Consultations with Associated Responses

“Since establishing itself as an industry stewardship agency, TSBC has proven to be very proactive in terms of establishing a vast collection network, developing local recycling markets, achieving high diversion rates, and researching opportunities to recycle tires that aren’t currently regulated... We offer these comments in the spirit of working together towards our common interest of reducing tires in the waste stream.”

“The Program has been highly effective at collecting and managing scrap tires in BC. The Program should also be commended for two initiatives:

- 1. The Community Grant Program is an effort to promote the use of, and create market demand for recycled rubber in value-added products in BC. Programs like this, which build resilience into the markets for recycled material should be undertaken by all product stewardship programs.*
- 2. The Be Tire Smart Campaign shifts emphasis upstream to promote consumer actions to help prolong the use of tires, as well as helping to reduce GHG emissions. “*

These quotes from written submissions by the City of Vancouver and Metro Vancouver are indicative of the tone and content of the discussions at all of the consultation sessions. The TSBC representatives felt the comments and questions were consistently positive, constructive and in the spirit of collaborating towards a better overall program.

The following is a summary of the questions and comments received. The categories align with the sections of the Stewardship Plan which in turn align with the approval criteria set forth in the BC Recycling Regulation. In distilling four hours of discussion and three written comments into the following table, TSBC’s intent is to capture the essence of the public input without distortion. Where possible, direct quotes are used to convey comments from one or more individuals.

Participant Questions and Comments	TSBC Response or Actions
Program Structure	
Shouldn't TSBC have a financial relationship with depots to aid in resource recovery by making it more convenient to consumers?	<p>TSBC is a return to retailer-based program unlike any other stewardship programs, most of which are depot-based.</p> <p>TSBC will examine the relationship of consumer convenience to overall program performance as part of its commitment to explore other program enhancement opportunities discussed below.</p>

Participant Questions and Comments	TSBC Response or Actions
Some landfills comment that they do not always receive collection services equivalent to those provided to retailers.	<p>The haulers give priority to retailers because retailers are the stewards of the program and typically have much less storage space, especially in the snow season when tire changeovers produce high volumes of scrap tires for collection.</p> <p>TSBC will work with the industry and the landfill managers to look for ways to mitigate impacts of heavy volume periods.</p>
<p>We would like to see the voluntary bicycle tire recycling program described in the Plan.</p> <p>We would also encourage TSBC to engage bicycle tire producers to formalize bike tire recycling as an Extended Producer Responsibility (EPR) program under the Recycling Regulation so that life cycle responsibility is assumed by the producers.</p>	<p>A brief description of the bicycle tire and tube recycling program has been added to the Plan.</p> <p>The pros and cons of a mandatory versus voluntary program for bicycle tires and tubes were thoroughly considered and TSBC concluded that a free, voluntary program is the most cost effective approach at this time.</p> <p>TSBC will monitor the results and re-evaluate in due course.</p>
Wages and fuel costs climb continually. Are transportation incentives adjusted and is the program still viable?	Fuel and other related transportation costs are reviewed and adjusted regularly to ensure the program remains viable and sustainable.
In accordance with the Recycling Regulation, we request that TSBC include a commitment to pay a financial incentive to local governments, depots and retailers that participate in the R2R program, to compensate them for accepting orphan tires for transportation to processing facilities. Of all the participants in TSBC’s management chain (collectors, haulers, processors and manufacturers), only collectors do not receive a financial incentive from the program so currently have no incentive to collect tires.	<ul style="list-style-type: none"> • The Recycling Regulation defines collection facility for tires as “a collection facility established by the <u>producer</u>”. For tires, “producer” translates to TSBC registered retailers only. TSBC is not obligated to pay others that voluntarily accept tires as part of their normal operations. • TSBC introduced the voluntary R2R program and the Tire Round-Up program to divert orphan tires from landfills altogether by providing consumers with additional convenient, no cost disposal options. • TSBC supports landfill bans for all regulated tires, recognizing that not all landfill operators are willing and/or ready to implement such bans at this time on tires or other products under stewardship. • Depots and landfills that accept orphan tires do so voluntarily. Most charge their customers a fee for the convenience of dropping off tires that otherwise could be dropped off at R2R sites for free. • R2R retailers participate voluntarily, recognizing they

Participant Questions and Comments	TSBC Response or Actions
	<p>have a commercial interest in attracting potential new customers to their stores as well as an environmental interest in making tire disposal convenient and effective.</p> <ul style="list-style-type: none"> • TSBC is committed to increasing the number of R2R locations significantly to 500 and will consider some form of tangible benefits to retailers as an incentive to enroll and participate enthusiastically. • TSBC is working closely with other BC Stewards and the Ministry of Environment to enhance BC’s Extended Producer Responsibility model, the scope of which includes the challenges of tires and other regulated products that are handled by local governments.
Consumer Access to Collection Facilities	
<p>What is the process to determine where new Return to Retailer (R2R) locations are needed? Currently some rural areas are under-represented.</p>	<p>TSBC recognizes that local personnel such as Regional District staff and tire retailers have knowledge that may be useful in determining whether more R2R locations are needed and that these resources may be helpful in recruiting more retailers into the program. TSBC will work with local resources to develop a process and a recruitment plan.</p>
<p>Similarly, what is the process to determine where and when special collection events such as Tire Round-Ups and joint collection events (i.e., with other product stewardship associations) are needed and how best to promote the events?</p>	<p>Similarly, TSBC recognizes that local personnel have knowledge that is useful in determining the relative need for special collection events and how best to deploy them. As noted under Section 10, “Performance Measures and Targets,” the process is still to be determined. TSBC will work with local resources and other stewardship agencies before spring 2012 to develop a collection event scheduling and deployment process.</p>

Participant Questions and Comments	TSBC Response or Actions
<p>What is the estimated cost per tire for the Tire Round-Up program?</p>	<p>No estimates were done for the 2011 program.</p> <p><i>Note: Tire Round-Ups are not only a means of collecting orphan tires but play an integral part in the consumer education component of the program.</i></p> <p>TSBC will be analyzing the actual results of the full program for 2011 in the fall once all are completed, including the joint collection events, to help establish the most cost effective program for next year.</p>
<p>Tires on rims are a problem for consumers, retailers and others involved in the collection, transportation and processing of tires due to the extra cost to de-rim before processing can occur.</p> <ul style="list-style-type: none"> • Are retailers allowed to charge the consumer for this service? • Some haulers are charging landfills to de-rim tires before accepting tires. Will this continue? 	<p>TSBC is responsible only for the costs to collect, transport and process scrap tires, not including the metal rims. Some retailers may be charging the consumer and some haulers may be charging the retailer for de-rimming services they provide to get the tire to a condition where it can be processed.</p> <p>However, TSBC recognizes the general confusion and extra effort related to tires on rims and the impact these factors have with stakeholder satisfaction. Consequently, since 2009, TSBC accepts tires on rims at all its Tire Round-Up events at no charge to the consumers. TSBC commits to developing a policy in 2013 dealing with the ongoing collection of tires on rims which will be posted on the website, communicated to all affected stakeholders, and reported in the Annual Report for 2013.</p> <p>Note: The metal rims are also recycled.</p>
<p>Hauler refuses to take cut up tires. Do they have to and if not, why not?</p>	<p>TSBC’s processor has worked to identify who is generating this waste and to require proper handling and de-rimming practices so they may qualify for free pick up with other scrap tires. This process has been successful and the volume of cut tires has decreased. While TSBC does not endorse the practice of cutting tires it will work with the processor and generators in the clean-up of cut material.</p>
<p>Provide options for Off- the- Road (OTR) tire returns.</p>	<p>OTR tires are not a regulated product at this time and there is no processing solution for OTR tires in BC. TSBC has committed in the Plan to deliver a report to the Ministry of Environment in 2012.</p>

Participant Questions and Comments	TSBC Response or Actions
Consumer Awareness	
<p>The costs of retrieving and storing of <u>illegally dumped / abandoned</u> tires (and other products such as electronics, mattresses, furniture) is an expense borne by taxpayers and is not covered by the tire stewardship program. We respectfully request that TSBC include a commitment in the Plan to work with local governments (both urban and rural) and other product stewards to research the problem of abandoned waste and develop a strategy to address it. Once the research is complete and the nature and extent of the problem is understood, the Plan should commit to developing relevant performance targets and report annually on progress to reduce.</p>	<p>This is a consumer awareness and consumer behaviour issue.</p> <p>TSBC supports the idea of working with other stewardship programs and the Regional Districts to determine the nature and extent of the abandoned wastes in general and abandoned tires in particular. TSBC will work with Regional Districts to find ways to reduce the impact of abandoned tires on their waste management operations, and report progress annually.</p>
<p>We encourage the BC stewards to develop education programs for targeted audiences in the general public.</p> <p>We also encourage TSBC to include a commitment to using social media in the Plan, to showcase the program and show consumers where to recycle their tires.</p>	<p>TSBC will continue to explore the most cost effective mechanisms for getting the word out. As noted above we will raise this suggestion to the BC stewards group.</p> <p>TSBC is considering the use of social media as part of its communications and education program.</p>
<p>Retailers are calling the ADF a government tire tax. Is there a plan for the education of retailers and their front line staff? What about having an Ambassador program like the used oil program?</p>	<p>This issue is apparently common to many other stewardship programs. TSBC has been working in partnership with all the other BC stewards in developing and deploying educational materials, including the BCStewards.com website, on a range of topics to a broad range of stakeholders.</p> <p>TSBC also deploys a revenue compliance review team to visit retailers around the province each year to check compliance with ADF policies and to educate retailers on how to remit the ADF completely and accurately. They also try to be TSBC's ambassadors in the field but admittedly their efforts have been directed to retail management versus front line staff.</p> <p>TSBC will bring this forward both in its collaborative work with BC's other stewards and as a priority message to the</p>

Participant Questions and Comments	TSBC Response or Actions
	front line staff.
Management of Program Costs	
Is the eco fee for all tires sold in BC?	The eco fee is in effect for all regulated tires, including tires on cars imported into BC from the USA. Regulated tires include Passenger and Light Truck (PLT), Medium Truck (MT), Agricultural (AG) and Logger Skidder (LS) tires.
For the sake of clarity, it should be explained in the Plan that “reuse (2R)” has a scope of only those tires collected by the program participants and determined as suitable for reuse in domestic and international markets. Reuse through private sales of tires (e.g., through Craigslist) are not included in this reported 2R segment.	The Plan has been updated accordingly.
Management of Environmental Impacts	
What is the greenhouse gas impact of the TSBC program?	A 2009 baseline GHG study concluded 27,196 tonnes CO ₂ e were emitted during the collection and processing of 40,000 tonnes of scrap tires and shipping the recycled rubber to market. A 2010 study by ISRI (Institute of Scrap Recycling Industries) suggests that for every tonne of CO ₂ e emitted by tire recycling operations, 5 tonnes are avoided in the resource extraction process.
We encourage TSBC to assess other life cycle impacts such as eco-toxicity and air quality associated with managing tires at each level of the hierarchy.	TSBC works with CATRA (Canadian Association of Tire Recycling Agencies) in identifying and conducting studies such as these that benefit all Canadian tire recycling programs.
Does TSBC support the West Nile program?	TSBC works with local governments that approach it for support.
Does 27,000 tonnes of greenhouse gases reported in the 2009 Annual Report include emissions by cement kilns?	Yes, this figure includes all emissions generated from the transportation of scrap tires to processors’ sites, the processing as well as the transportation of products to market.
Are cement kiln emissions troublesome to TSBC?	No, not as long as the regulators approve the use of tire derived fuel (TDF) in BC. Since the Ministry of Environment initiated the program in 1991, TDF has been

Participant Questions and Comments	TSBC Response or Actions
	a valuable end use, a relief valve of sorts to keep BC's scrap tires flowing from collection through to markets.
Tire Management per Pollution Prevention Hierarchy	
In the Central Okanagan, a waste composition study gave TSBC the best score for diversion of material (in the mid 90% range) for diversion of tires from landfills.	TSBC is also aiming to improve on this measure by diverting oversize tires from landfills (5R) to tire derived product (3R).
What products are currently made from tire rubber?	Crumb rubber is the primary product from recycling scrap tires in BC. Crumb is granules of rubber that are free of steel and fiber. It is typically used in the manufacturing of other products like all-weather playing fields, agricultural and industrial mats and playgrounds. Scrap tires are also processed into shred for landscaping mulch. The recovered steel is sent to metal recyclers and the recovered fiber to a cement kiln for energy recovery.
Does any crumb rubber get used as Tire Derived Fuel?	In BC, a percentage of whole tires are consumed in a cement kiln as a fuel supplement and some tire shred is consumed in a pulp mill as a fuel. No crumb rubber in BC is produced for use as a fuel.
Can recycled tire rubber be used in asphalt?	Yes, there are established markets for asphalt rubber in North America, particularly in Arizona and California where the technology was originally developed. The markets in Canada are not as well established and the BC market is virtually zero. TSBC recently explored the viability of promoting asphalt rubber in BC and concluded that due to the poor results from pilot projects in western Canada and competition from the hot-in-place asphalt recycling industry in BC, TSBC will not be actively promoting its use.
How does TSBC allow for the reuse of tires?	Some haulers cull out tires in good condition that are then resold for reuse. Some are sold to consumers in BC and some are sent outside of BC, primarily to southern California. TSBC does not pay a Transportation Incentive on tires culled for reuse.
Product Life Cycle Management	
Has TSBC considered promoting nitrogen filled tires as part of its Be Tire Smart	Some retailers advocate inflating tires with nitrogen which may provide certain benefits compared to air

Participant Questions and Comments	TSBC Response or Actions
campaign to encourage proper tire inflation and maintenance?	inflated tires. Consumers interested in nitrogen inflation should evaluate the cost/benefits by consulting a tire specialist. The key message TSBC promotes is: “Whether tires are inflated with air or nitrogen, measuring tire pressure at least once a month is critical.”
We recommend the Plan commit to encouraging manufacturers to invest in research and development to further improve the environmental design of tires or report on initiatives already underway.	TSBC will work with CATRA (Canadian Association of Tire Recycling Agencies) to deliver these messages to tire manufacturers.
Dispute Resolution	
There were some questions and challenges from a party whose application to become a TSBC registered processor was denied in 2008.	The party was invited to submit a new application.
Stakeholder Consultation on Plan Implementation and Operation	
When is the deadline for submitting written comments on the Plan?	June 30, 2011.
Performance Measures and Targets	
Operational. The difference between collection rate and recovery rate is somewhat confusing as “tires available for collection” is not clearly defined. Collection rate should either be more clearly defined or discontinued.	Agreed. The issue is how to define and measure the number of tires available for collection. The Plan includes a surrogate measure of retailer and generator satisfaction by way of the number of complaints – the lower the complaints, the higher their satisfaction with tire collections.
Accessibility. If the target of 400 R2R retailers is not sufficient for adequate access, will the target be increased?	TSBC is committed to work with Regional Districts as well as retailers to discuss strategies to encourage additional participation from both retailers and other generators in the R2R program. The target has been increased to 500 R2R retailers to recognize that some communities are currently under-represented.
Stewards need to fund regular waste audits as one indicator for their targets.	TSBC is working with other stewardship organizations and Regional Districts on a program of waste audits.

Participant Questions and Comments	TSBC Response or Actions
Regarding target #15 in the PowerPoint presentation, we are unclear what is meant by a 100% recyclability rate.	A recyclability rate of 100% in a BC context means that all regulated tires (PLT, MT, AG, LS) can be recycled in BC, i.e., that technology exists and is available to process these tires.
Other	
What is the scale of the OTR tire issue in BC?	An estimated 10,000 tonnes of scrap OTR tires are generated annually. The majority of these tires are the giant haul truck tires that operate in BC's open pit mines. A survey is currently underway to determine the volume of stockpiled OTR tires.
Will TSBC address scrap tires, especially OTR tires that are sitting on private property?	For orphaned regulated tires, this is being dealt with through the tire collection events mentioned earlier where TSBC, in its advertising and promotion of the event, stresses the safe management of tires because they are a fire hazard and breeding habitats for West Nile virus-carrying mosquitoes. Also, as part of its OTR research, TSBC is targeting the tire owners with similar messages to ensure safe management practices.

Appendix III – Research on Recycling BC’s Off-the-Road (OTR) Tires (As at September 2011)

Except for the Agricultural and Logger/Skidder discussed in this Plan, Off-the-Road (OTR) tires are excluded from the BC Recycling Regulation because there is currently no viable recycling solution for these larger tires. However, TSBC committed to researching the feasibility of establishing an OTR tire recycling solution for BC in its current Stewardship Plan. Research began in earnest in 2010 in partnership with the Canadian Association of Tire Recycling Agencies. In 2011 the research re-focused on BC’s specific requirements and this essential research will be ongoing.

Key Findings:

- **What are the problems / opportunities?** At the moment, there appears to be no consensus on the nature and extent of the problems caused by scrap OTR tires. While scrap OTR tires pose similar health and environmental issues inherent in regulated tires (e.g., breeding ground for pests, fire hazard), OTR tires tend to be somewhat removed from the urban environments, posing potentially lower risks. On the other hand, OTR tires contain significant quantities of rubber and steel. The more compelling opportunity to protect the environment might be to recover the valuable resources they contain thereby conserving natural resources and avoiding the energy costs and related greenhouse gas (GHG) emissions associated with harvesting virgin natural resources.
- **How big are the problems / opportunities?** Approximately 10,000 tonnes of OTR tires are generated annually in BC (roughly equivalent to 25% of the tonnage of regulated tires).
 - About 85% of the tonnage is from the Giant tires (>39” rim size) weighing up to several tonnes each, used on the open-pit haul trucks which require “giant” sized equipment to transport and recycle.
 - Approximately 70% of the tonnage is generated in the southern regions of the province where the concentration of high production open pit mines is greatest. This information will be useful to prospective processors in situating a processing facility to minimize transportation costs of scrap tires and recycled rubber products.
- **Can OTR tires be recycled and at what cost?** Due to their size, weight and the quantity of steel they contain, Giant OTR tires are reported to be significantly more costly to handle, transport and process than regulated tires. While some companies outside BC are able to recycle small volumes of the Giant tires, no company is currently recycling

anywhere near the number of Giant tires that BC generates. A processing facility with the capability and capacity to handle the volume of Giants that BC generates would be unique and precedent setting but TSBC understands that industry (retailers, processors - existing and prospective, manufacturers) is researching solutions to meet the challenge in BC. On the other hand, the research also suggests that BC's OTR volume alone may not offer enough scale for a viable made-in-BC solution; a regional solution may be necessary.

Summary Conclusions:

- There is no technical solution available at this time to recycle the volume of BC's Giant OTRs.
- The way OTRs are disposed of now does not pose any pressing environmental or health concerns. However, there is a concern for the waste of valuable resources inherent in tires and the environmental business case for pursuing a recycling or energy recovery solution appears to be positive.
- The full costs to collect, transport and process BC's OTRs, which ultimately must be borne by producers or consumers, are unknown but are likely quite significant on a per unit basis.
- It appears that a voluntary (unregulated), industry-driven approach to diverting OTRs is gaining traction.

TSBC Strategy:

- TSBC does not recommend regulating OTRs at this time.
- TSBC will support and encourage industry in developing a voluntary, unregulated solution for BC's OTRs to the economic, environmental and social benefit of BC's citizens.
- TSBC will continue researching improvements to the processes for currently regulated tires, including higher end products made from recycled rubber, to continuously improve environmental results.