Economic and Environmental Performance

of

Alberta's Used Oil Program

A Discussion Paper
Prepared for Environment Canada

For Presentation to the Organisation for
Economic Co-operation and Development
Workshop on the Economics of Extended Producer Responsibility

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Table of Contents

Executive Summary

The Economic and Environmental Performance of Alberta's Used Oil Recycling Program

Used oil is the largest single source of hazardous recyclable material in Alberta and poses a significant environmental problem if not managed effectively. One litre of used oil can contaminate up to one million litres of fresh water. Used oil filters and used plastic oil containers may also contain residual amounts of oil that are harmful to the environment.

In order to avert the potential damage to the environment that could be caused by the inappropriate disposal of used oil materials, a "Made in Alberta" program was developed under the direction of the Alberta Used Oil Management Association (AUOMA). The purpose of the program is to recover used oil materials (used oil, used oil filters and used plastic oil containers) in order to protect the environment. These materials include:

- Any petroleum or synthetic crankcase oil, engine oil, hydraulic fluid, transmission fluid, gear oil, heat transfer fluid or other fluid used for lubricating purposes in machinery or equipment.
- Any spin-on or element oil filter used in hydraulic, transmission or internal combustion engine applications - includes diesel fuel filters but does not include gasoline fuel filters.
- Any plastic container with a capacity of less than 30 litres that is manufactured to hold oil.

In addition to avoiding negative impacts on the environment, the used oil recycling program in Alberta provides a vehicle for recovering materials from the filters and containers that have a residual value after their primary use.

This study was conducted to provide an account of the environmental and economic efficiency of a Canadian Extended Producer Responsibility (EPR) program for presentation at the OECD Workshop on the Economics of EPR to be held at the Tokyo International Forum December 10-11, 2002 in Japan. The Alberta Used Oil program was selected by Environment Canada as a case study for the following reasons:

- It is a relatively mature industry program.
- The industry management association has a high degree of public transparency.
- The program has a good historical record of data.
- The environmental and economic performance of this program undergoes third-party verification.
- A high degree of environmental significance is associated with the product regime targeted.

Environment Canada contracted with The Corporate Link, Management Consultants, in St. Albert, Alberta to conduct a study, in cooperation with the Alberta Used Oil Management Association and the Alberta Government, Department of Environment, with the express objectives of reviewing and evaluating the program's environmental performance, cost effectiveness and other significant socio-economic impacts. To facilitate comprehension of performance results it was deemed necessary to include a brief description of how the program works, an overview of the Alberta Used Oil Management Association and an account of challenges the program will likely face in the future.

The review and evaluation consisted of assessing the actual program performance against the goals and performance measures articulated in AUOMA's business plan. As stated in the business plan, the key goals to be accomplished by AUOMA are:

1. To increase the recycle rate (percentage of used oil materials generated, that are being recycled in an environmentally sound manner) of used oil, oil filters and oil containers in Alberta.
2. To ensure all areas of the province are achieving adequate recycle rates.
3. To encourage the development of a strong, competitive, private sector used oil materials collection and recycling industry in Alberta.
4. To encourage environmentally sound methods that reduce or eliminate used oil materials going to landfill, or other unacceptable disposal methods.
5. To maximize the flow-through of Environmental Handling Charge that is directed to program costs.

Other significant socio-economic impacts were evaluated to assess the overall success of the program including:

- Impact on Taxpayers
- Government Costs and Benefits
- Impact on Consumer Prices
- Regional Employment and Industry Development
- Impact on Second Level of Competition in Post-Consumer Waste Sector
- Impact on Production Efficiency
- Impact on Market Access
- Impact on Dynamic Efficiency
- Impact on Trade Activity
- Impact of Free-riders
- Impact on Design for Environment

The results of this study suggest that Alberta's Used Oil program has been an extremely successful collaboration between government and industry and has produced a number of positive environmental and socio-economic impacts in a cost-effective manner.

The environmental performance of the program shows a 5-year continuous improvement in return rates for used oil materials, as evidenced by the following 2001/2002 figures:

- 64,839,740 litres of used oil, a recovery rate of 71% of used oil available for recycling
- 5,973,939 used oil filters, a recovery rate of 86%
- 1,083,615 kg of used plastic oil containers, a recovery rate of 43%

The number of collection facilities operating within the parameters of the program has grown from 225 to 640 and is providing province wide access to all participants for recycling all used oil products.

The economic performance of the program is highlighted by the following:

- Overall program costs are consistent with pre-program disposal costs of about $13 million annually.
- The per unit cost of recycling used oil materials is decreasing over time.
- Administrative costs are being held in check at approximately 4% thereby maximizing the amount of Environmental Handling Charge that is available for direct programming.
- The overall cost of the program is very small in comparison to the cost of remediating contaminated water supplies.

Other socio-economic impacts are highlighted by the following results:

- With less waste being disposed through the municipal waste management infrastructure, taxpayer costs have been reduced.
- Although the provincial government bears some costs for monitoring the program the burden on government has been reduced with the program responsibility being moved outside of government.
- Consumers are generally responsible for paying the Environmental Handling Charge associated with the program.
- A strong and vibrant recycling industry is supported by results that show an increase in the number of collectors, transporters and processors involved with the program, a significant increase in the number of collection facilities available and the emergence of new and innovative products being developed from the returned used oil materials.

The program has also triggered the creation of a regional used oil program across western Canada.

In June of 2001, the program received the prestigious Emerald Award from the Emerald Foundation for Environmental Excellence for demonstrating leadership in addressing environmental issues in Alberta. This Alberta-based foundation recognizes organizations that show leadership in addressing Alberta's environmental issues.

Not withstanding the successes to date, the biggest challenge facing the program is improving the overall performance for recovering used plastic oil containers, which now have a return rate of 43%. A priority strategy for the program this year is to conduct a comprehensive field study of sales and recycle/reuse rates of oil containers by major industry sector and selectively adjust awareness and return incentive (RI) programs to increase recovery rates.

Other priorities for the program in the short term will be:

- To increase public relations and communications activities to increase public awareness.
- To raise the bar on environmental standards and performance by collectors and processors by working with government to establish new compliance protocols.
- To continue to work with the remaining provinces in Canada to develop a consistent national program that will create a Canada-wide used oil materials program that is seamless across all provincial borders.

History of the Program

Described as "government initiated and industry driven", the AUOMA Program began with a request made in 1988 by the Canadian Council of Ministers of Environment (CCME) to the Canadian Petroleum Products Institute (CPPI) for assistance in quantifying the environmental impact of used oil. In response to a "white paper" developed by the CPPI on this issue, the Government of Alberta decided to initiate action and established the necessary supporting framework and environment that would facilitate a coordination of efforts between industry, government and stakeholders.

An extensive consultation process involving over 100 different stakeholder groups was launched in June 1992, including members of the recycling industry.

Early in the consultation process stakeholders identified a need to first proceed with a pilot project to determine the feasibility of developing a program to return used oil, filters and containers without the incentive of a deposit.

The pilot allowed for fine-tuning of the program, and demonstrated the feasibility of a non-deposit return program for used oil, oil filters and oil containers. The tangible results achieved also provided support to the earlier momentum achieved through the stakeholder consultation process, and supported subsequent approval of the Lubricating Oil Materials Recycling and Management Regulation in April 1997, which established the Alberta Used Oil Recycling Program.

This regulation created a level playing field by ensuring that all "first sellers" of oil products must register and be part of the program.

The Government of Alberta expected the program to reduce the amount of waste going to landfills, preserve non-renewable resources through effective recycling programs and remove

hazardous materials from Alberta's air, land and water while maintaining an arms length relationship with government.

How the Program Works

The heart of the program is a Return Incentive (RI) paid to private sector collectors, transporters and processors to recover used oil materials from the environment. The funding mechanism for this RI is an Environmental Handling Charge (EHC) that must be remitted to AUOMA by the first sellers of lubricating oil materials, and which is generally applied at the point of sale.

Currently Alberta has 53 independent return depots, or EcoCentres, and 587 other collection facilities. This network of facilities is located throughout the province for the purpose of providing convenient access for individuals and organizations wishing to recycle used oil materials.

Return Incentives are paid on the basis of volume of oil, weight of filters, and weight of containers collected.

Alberta Used Oil Management Association (AUOMA)

The AUOMA is a not-for-profit organization of wholesale suppliers of lubricating oil materials in Alberta created to develop and manage programs that encourage responsible environmental handling and recycling of used oil materials (used oil, oil filters and oil containers) in all markets in Alberta. Partners and stakeholders include all first sellers of oil and oil filters, as well as collectors, transporters and processors of used oil materials. AUOMA is an entity outside of government and is referred to in Alberta as a Delegated Administrative Organization (DAO). AUOMA is accountable to the Alberta Minister of Environment, its members and all stakeholders.

AUOMA has established the following vision for their program:

- Every litre of used oil and related materials that can effectively be collected are recycled or reused in an environmentally acceptable manner.
- The collection and recycling of used oil materials is done through private industry, operating without subsidization.
- Albertans are aware of the hazards of improper disposal of these used oil materials and cooperate fully in their recycling and reuse.

AUOMA has developed a three-year rolling business plan, which they are required to submit annually to the Alberta Minister of Environment.

On an annual basis the program prepares a comprehensive Annual Report that highlights the performance of the program.

1.0 Background

This study was conducted to provide an account of the environmental and economic efficiency of a Canadian EPR program for presentation at the OECD Workshop on the Economics of EPR to be held at the Tokyo International Forum December 10-11, 2002 in Japan. The Alberta Used Oil program was selected by Environment Canada as a case study for the following reasons:

- It is a relatively mature industry program.
- The industry management association has a high degree of public transparency.
- The program has a good historical record of data.
- The environmental and economic performance of this program undergoes third-party verification.
- A high degree of environmental significance is associated with the product regime targeted.

1.1 History of the Program

Used oil is the largest single source of hazardous recyclable material in Alberta and poses a significant environmental problem if not managed effectively. Currently, the private sector recovers and properly manages about 65 million litres of used oil each year. However, an estimated 26 million litres is disposed of improperly, along with millions of oil filters and containers. The potential damage is staggering – one litre of used oil can contaminate up to one million litres of fresh water.

In order to avert the potential damage to the environment that could be caused by the inappropriate disposal of used oil materials, a "Made in Alberta" program was developed under the direction of the Alberta Used Oil Management Association. The purpose of the program is to recover used oil materials (used oil, used oil filters and used plastic oil containers) in order to protect the environment. These materials include:

- Any petroleum or synthetic crankcase oil, engine oil, hydraulic fluid, transmission fluid, gear oil, heat transfer fluid or other fluid used for lubricating purposes in machinery or equipment.
- Any spin-on or element oil filter used in hydraulic, transmission or internal combustion engine applications - includes diesel fuel filters but does not include gasoline fuel filters.
- Any plastic container with a capacity of less than 30 litres that is manufactured to hold oil.

In addition to avoiding negative impacts on the environment, the used oil recycling program in Alberta provides a vehicle for recovering materials from filters and containers that have a residual value after their primary use.

Described as "government initiated and industry driven", the AUOMA Program began with a request made in 1988 by the Canadian Council of Ministers of Environment (CCME) to the

Canadian Petroleum Products Institute (CPPI) for assistance in quantifying the environmental impact of used oil. In response to a "white paper" developed by the CPPI on this issue, the Government of Alberta decided to initiate action coordinated between industry, government and stakeholders.

Consultation

At the outset, significant stakeholder consultation was considered to be critical to success. An extensive consultation process involving over 100 different stakeholder groups was launched in June 1992, commencing with one large meeting to first generate issues. This meeting included as many parties as could be identified as being either directly or indirectly connected with used oil, including governments, health authorities, and private sector companies in industries such as automotive services and those currently in the collection and recycling industry. As a result of this initial meeting, a Steering Committee and a number of working committees were established to build consensus within stakeholder groups and develop recommendations for program implementation. The AUOMA Program was consequently developed through a consultation process with Alberta stakeholders that involved municipalities, non-government organizations (such as the Recycling Council of Alberta and consumer associations), industry and members of the public in the development and testing of many innovative proposals. The consultation process and program development is considered by those involved as a "model" for government/industry partnership.

The most significant risk that AUOMA faced during start-up was the potentially intrusive nature of the program on the existing private sector, free market recycling industry. A vibrant recycling industry is critical to the success of this program. While active in collection and recycling, this industry is still relatively new. Significant apprehension existed within the industry, which viewed this organization as "pseudo-government", potentially holding significant power over the industry. To offset this apprehension, this industry sector was included as part of the stakeholder group from the beginning, and are now very satisfied with the role AUOMA is currently playing.

Pilot Project

Early in the consultation process stakeholders identified a need to first proceed with a pilot project to determine the feasibility of developing a program to return used oil, filters and containers without the incentive of a return. In April 1993 the Alberta Used Oil Management Association was incorporated to facilitate construction and operation of an Alberta pilot project. This pilot project was jointly funded by government and industry. Funds were collected from industry partners on a voluntary basis, with gold, silver and bronze contribution levels identified based on volume of sales. While not all industry partners participated, 50% of the costs for the pilot project were funded in this manner. Industry partners were subsequently reimbursed for their contributions to the pilot project.

The pilot project consisted of design and construction of six recycle centers (or EcoCentres) that were set up at existing bottle depots in central Alberta (Red Deer, Sylvan Lake, Ponoka, Lacombe, Rocky Mountain House, Stettler). Clustered together within this centralized

geographic location it was possible to utilize common newspapers and other media to promote the program and truly determine the impact of the pilot project. Funds were used to buy the capital facilities and provide a retainer for participating depots. Collectors volunteered to pick up materials returned by consumers and businesses at no cost throughout the pilot project.

During the test period of just under two years, consumers returned over 128,000 litres of used oil, 23,000 used oil filters and the equivalent of 166,000 used one-litre containers. Returns increased dramatically as awareness of the program and EcoCentres increased among consumers. The popularity of the pilot project created a demand by the communities to continue to run the depots beyond the original pilot project timelines.

The pilot allowed for fine-tuning of the program, and demonstrated the feasibility of a non-deposit return program for used oil, oil filters and oil containers. The tangible results achieved also provided support to the earlier momentum achieved through the stakeholder consultation process, and supported subsequent approval of the Lubricating Oil Materials Recycling and Management Regulation in April 1997, which established the Alberta Used Oil Recycling Program.

Government Expectations

The Alberta Used Oil Management Association carries out programs that contribute directly to the Government of Alberta's Department of Environment's goals of reducing the amount of waste going to landfills, preserving non-renewable resources through effective recycling programs and the removal of hazardous materials from Alberta air, land and water.

The Alberta Government believes that in order for the used oil program to be successful AUOMA must take ownership of the performance measures that they adopt. As a result of this belief, the Government works cooperatively with AUOMA and other stakeholders to develop program expectations that are articulated in the Association's annual business plan that is submitted to the Alberta Minister of Environment on an annual basis.

In addition to an annual business plan, the Association is required under legislation to submit an annual report to the Alberta Minister of Environment.[1] The government conducts an annual assessment and evaluation of the annual report within the parameters described under an Accountability Framework for Delegated Administrative Organizations that has been adopted by the Government of Alberta, and sets the standards for monitoring and evaluating all stewardship boards in Alberta.[2] Feedback on the results of their annual assessment is provided back to the Association to be used as part of its continual improvement process and subsequent strategy adjustment.

[1] Government of Alberta. *Lubricating Oil Materials Recycling and Management Regulation.* April 1997.
[2] Government of Alberta. *Accountability Framework for Delegated Administrative Organizations.* November 1998.

Within the broad goals established by the Alberta Department of Environment, officials of the department work closely with AUOMA to achieve progress in the following areas of concern to government:

- Ensuring that adequate recycle targets are being achieved.
- Ensuring that there is a high level of public awareness of the benefits of recycling used oil materials.
- Ensuring a high level of public and industry satisfaction with the program.
- Ensuring that all Albertans have access to used oil material recycling locations.
- Ensuring that all wholesale suppliers of used oil materials are participating in the program and are complying with standards set by the program.
- Ensuring that the program demonstrates fiscal responsibility in the handling of all financial resources.
- Ensuring that the recycling industry is sustainable over time while reducing or eliminating the EHC.
- Ensuring that the Association implements good governance practices.

The government facilitates and promotes its partnership with the program by having a senior official in the Alberta Department of Environment sit on the Board of Directors of AUOMA. This provides ready access to government policy and direction and provides a very important link to the Alberta Minister of Environment in designing and delivering Association programs.

1.2 How the Program Works

Stakeholders considered several options including deposit refund programs and mandatory return programs for the return of used oil. The AUOMA program as it is currently defined is designed to encourage responsible recycling, to increase the capture rate of used oil related waste materials and to further support the development of the private sector recycling industry in the province of Alberta.

Early consensus was reached by the stakeholders that enhancements to collection and recycling would occur through incentive programs designed to expand the reprocessing infrastructure developed by the recycling industry and to address the market areas that had not been fully developed.

The heart of the current program is a Return Incentive (RI) paid to private sector collectors and container processors to recover used oil materials from the environment. Previously, generators paid a fee to collectors for disposal of these materials. The AUOMA program stimulates the return of material by providing a RI to collectors and/or container processors at a level that allows the collectors to compensate return depots and large generators for their handling and storage activities. By converting products previously considered waste into commodities with a value, the program provides an incentive to collectors to pick up materials, and to operators to save the materials rather than disposing them as a hazardous waste. While the RI level is fixed, it may not be the sole source of revenue for collectors. Collectors still operate in a free market

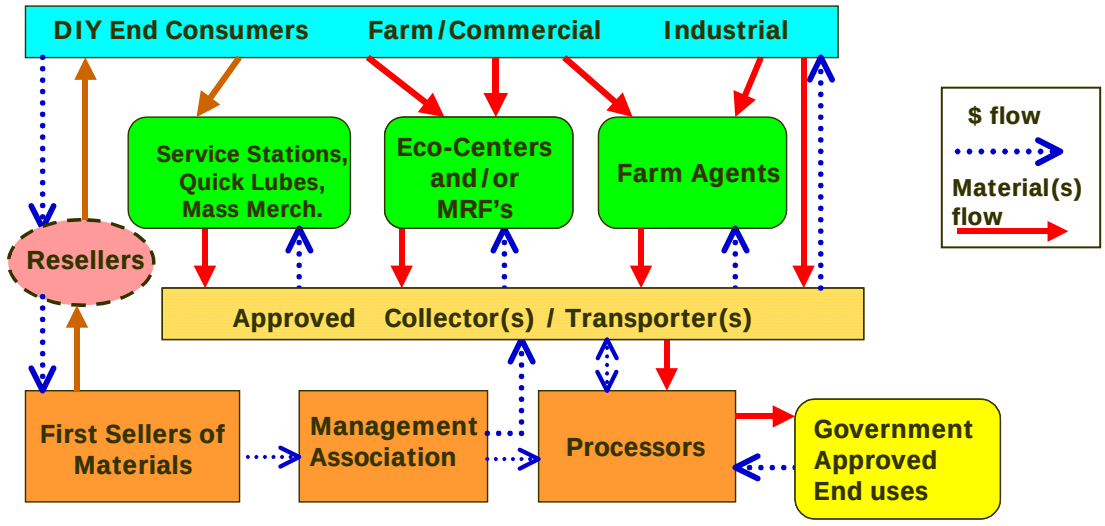
system, and the actual amount paid and received for used oil materials is dependent upon market demand.

Careful consideration was given to the level of RI required to make the program viable. To determine the appropriate level, a survey was first conducted of what the current charges to generators were in different zones. Input was also sought from collectors regarding what they thought the incentive should be in each zone, to ensure a viable business opportunity existed and that the program did not negatively impact the existing recycling industry. All of this input was used to establish a baseline for the initial RI levels in each zone. Coverage across the diversity of the province is assured in all markets through Freight Equalized Zone Pricing for RIs.

The funding mechanism for this RI is an Environmental Handling Charge (EHC), which applies to most sales of new oil and filters. Previously, the cost of recycling used oil materials was incurred at the end of the cycle, when operators paid to have materials removed. Rather than increasing the overall costs to operators, the AUOMA program has resulted in a change in the timing of these costs, in that they now occur at the front end of the transaction at the point of sale. Each litre of oil, each oil container, and each oil filter has an EHC applied to it by the "first seller" at either the manufacturer, wholesaler, major retailer or importer level. The EHC is fixed for all of Alberta and is currently set at 5 cents per litre for oil, 50 cents for a filters less than 203 mm (8") in length and $1 for a filter 203 mm or more in length, and 5 cents per litre of container size. The EHC has remained stable over the life of the program and there is no immediate plan to change the rate.

The following diagram illustrates the flow of material and funds under this program: [3]

Figure 1: Flow of Materials and Funds in Alberta Used Oil Program



Key Features

[3] Alberta Used Oil Management Association. *Program Schematics.* 2002.

Some key features of the management framework developed during the consultative process include the following:

- The AUOMA program is based on a user pay concept. The program ensures that a fair distribution of the costs associated with collection and recycling of used oil related materials are tied to the point of sale for the consumer/generator, rather than on the material return.
- AUOMA supports only those end uses that provide landfill diversion and environmentally sound recycle/reuse options. Road oiling and landfilling are not acceptable end uses under this program.
- AUOMA is not a regulatory authority, nor will the Association become involved in or own collection and recycling facilities. The AUOMA will in practical terms represent an administrative function that will encourage increased collection and recycling activity within the province of Alberta through the administration of incentive based programs.

Product Collection, Storage and Transport

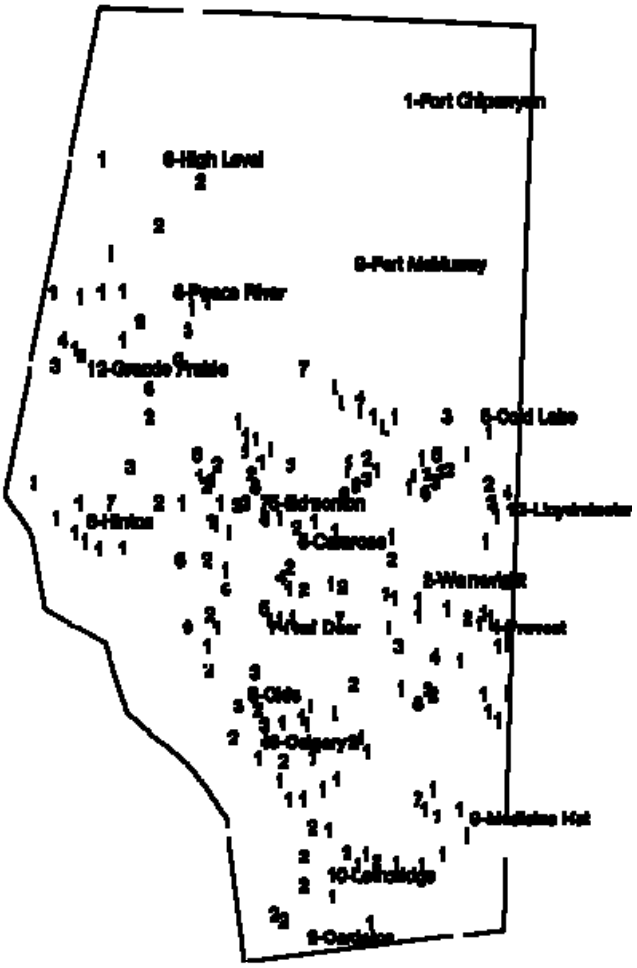
Currently Alberta has 53 independent return depots, or EcoCentres, and 587 collection facilities. This network of facilities is located throughout the province for the purpose of providing convenient access to individuals wishing to recycle used oil materials. There has been a significant increase in the number of independent return depots since the program began, as a result of the increased market demand and inherent value in used oil materials.

It is estimated that the cost of building an EcoCentre ranges from $23,000 to $25,000.

Under the terms of a collection facility agreement with the Alberta Used Oil Recovery Corporation (AUORC) and the Alberta Bottle Depot Association (ABDA), AUOMA is charged a fee for provision and management of the EcoCentre network. AUORC oversees 46 EcoCentres that are operated by ABDA members and seven that are operated by municipalities. The terms of the agreement allow AUOMA to set the standards of operations for the facilities. Since the independent return depots do not directly profit from the sale of the oil and filter products they require another economic drive to exist. As part of the agreement and to increase used oil material recycling, AUOMA has developed Supplemental Return Incentives (SRI) for collection facilities. Another important part of the agreement is that AUOMA provides funding for liability insurance for the 53 EcoCentres. At no time in the collection process does AUOMA take ownership of used oil materials. Therefore, product storage and transport is not the responsibility of this organization.

The following Figure 2 illustrates the number and geographic distribution of total used oil material collection depots across the province: [4]

Figure 2: Map of Used Oil Material Collection Depots



Reuse and Recycling of Materials

Used oil materials that are recovered are eventually reused and recycled into the following:

- Recycled oil is used extensively in the production of asphalt for roads and highways and can also be burned for energy.
- Oil filters are shredded, heated to a molten state and the metals re-used as material for other metal products such as rebar, nails and wire.
- Empty plastic oil containers can be recycled into new containers, plastic flowerpots, plastic pipe, fence posts and plastic patio furniture.

[4] Alberta Used Oil Management Association. *Used Oil Material Depots.* 2002.

Program Registration

The AUOMA requires that each participating collector and processor register with the Association by submitting the appropriate forms and providing documentation verifying that the company has the required government approvals with respect to their specific operations. Examples of such documentation for a collector would be copies of the company's Alberta Safety Fitness Certificate and verification that the company drivers maintain current transport of dangerous goods (TDG) training. Processing facilities could be required to provide a copy of their Alberta Environment Operating Approval if this was appropriate for their type of business, or copies of valid permits or licenses from other governing jurisdictions.

As indicated earlier, AUOMA is not a licensing or regulatory body. The Association relies on existing government approvals, licenses and permits to screen eligible industry participants under the AUOMA program. AUOMA does undertake compliance audits of all registered collectors/transporters and processors to ensure external program compliance and that each registrant complies with AUOMA regulations, bylaws and policies. This audit protocol also applies to out of province processors.

Remittance of EHC is mandatory in Alberta, and is applied at the first sale of oil materials in the province to a person or organization not registered with AUOMA. First sellers then must make a determination as to whether they will absorb the EHC or whether they will apply a surcharge to the consumer of the product.

Under the authority of Regulations enacted by the Government of Alberta, wholesale suppliers failing to register or remit EHC may be subject to significant fines and removal of business licenses. It is the responsibility of the province to take such action as is deemed necessary in the event of violation of Regulations.

Public Awareness

A critical factor in AUOMA's success is being present in the community and sharing the used oil message with Albertans. Communications activities are based upon the philosophy that more understanding equals more recycling, which in turn equals less waste. This is supported by research recently commissioned in partnership with the Saskatchewan Association for Resource Recovery Corporation (SARRC) and the Manitoba Association for Resource Recovery Corporation (MARRC) on public and target stakeholder awareness about used oil recycling. Key findings of this research stress the need to find ways of educating key stakeholders about the importance and ease of used oil material recycling.

Some of the key communication, education and awareness activities undertaken by AUOMA include the following:

- Management of a call centre and maintenance of a website.
- Participation in a province-wide EcoDay to increase public awareness and encourage used oil material recycling. This includes placing advertisements in every daily and

weekly newspaper in Alberta, features on radio stations, and promotional activities via direct mail drop to farms and acreages.

- Partial sponsorship of a program called "Recycling 101", which travels to Alberta municipalities to teach municipal stakeholders about recycling options and ways to improve their individual recycling programs.
- Development of a program called "Let's Recycle" as part of the grade four school curriculum. This program, designed to reach a younger audience and educate children about the impact of used oil material recycling, was developed in partnership with the Recycling Council of Alberta (RCA) and Alberta Environment.
- AUOMA's mascot, Mr. Oil Drop, appears throughout the year at several community events and parades around the province.
- Various pieces of literature have been produced to support communication activities at point of sale and collection facilities, as well as at a variety of industry trade shows.

Partners in this communication role include member companies; municipalities; schools; EcoCentres and other collection facilities; provincial government; media; and related used oil recycling associations in Saskatchewan and Manitoba (SARRC and MARRC).

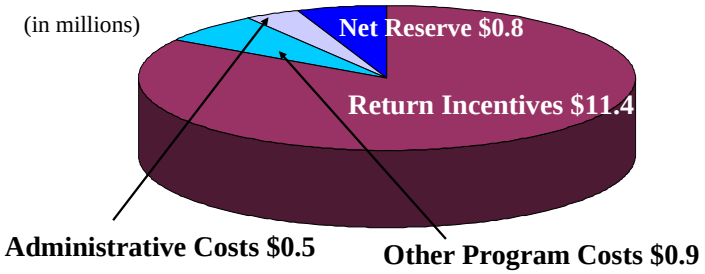
1.3 Sources of Revenue and Expenditure

Ongoing Financial Requirements

Figure 3 below summarizes revenue and expenditures for fiscal year 2001/2002. These figures are generally representative of the ongoing fiscal operations of the program. Table 1 represents a more detailed account of fiscal year 2001/2002 revenues and expenditures.

Figure 3: Disposition of Revenue Collected

April 1, 2001 – March 31, 2002



Revenue

EHC Collected =	$13.4 million
Interest and Other =	$ 0.2 million
Total Revenue	$13.6 million

Table 1: Statement of Revenue & Expenditures [5]
For Fiscal Year ended March 31, 2002

	($000's)
Revenue:	
Environmental Handling Charge	13,372
Investment Income	254
Registration Fees	2
	13,628
Expenditures:	
Program Costs:	
Return Incentives	11,443
Eco-Centre Service Contract	402
Communications and Public Relations	315
Management/Administration Contracts	50
Consulting	50
Compliance Reviews	36
Professional Fees	26
Eco-Centre Engineering and Training	3
	12,324
Administrative Costs:	
Management/Administration Contracts	328
Board Expenses	49
Office and General Expenses	44
Professional Fees	35
Amortization	34
Rent	34
	525
Total Expenditures	**12,848**
Current Year Revenue over Expenditures	**779**

[5] Alberta Used Oil Management Association. *Annual Report 2001-2002.* Fall 2002.

Net Reserve

Figure 3 above indicates that a portion of the annual revenues collected is allocated as Net Reserve. AUOMA maintains a reserve fund to:

- Wind up the Association's programs
- Handle any unanticipated changes to the Association's programs and mandate
- Deal with any unforeseen claims or events

The following are the major features of AUOMA's planned reserve fund:

- It is managed by AUOMA's Board of Directors.
- The Environmental Handling Charge (EHC) is the only source of funding.
- The Growth of Reserve Fund diminishes with the success of program.
- The EHC is a form of advance disposal fee (ADF).
- The life cycle of products managed is six to nine months and therefore the ADF financial commitment is $6 to $9 million.
- Other uses of the fund are controlled by policy.
- The Business Plan projects that the fund will top out at $7.0 million.
- AUOMA Bylaws call for this fund to be paid over to another non-profit recycling organization if AUOMA is wound-up.

Payment of Return Incentives

As indicated in Figure 3, the majority of costs under this program relate to payment of Return Incentives.

To receive payment of Return Incentives, collectors must submit recycle or summary dockets signed by the processor, and processors must be registered with AUOMA. Return Incentives are paid on the basis of volume of oil, number of drums of filters, and weight of containers collected. The volume of oil collected is determined by tank gauging, and the rate paid is discounted by the amount of contamination by water and other solids. Originally RIs for filters were based on drum size, but this has recently changed to payment based on weight, as is the case for containers. This weight is verified through submission of a printed weight scale ticket.

It was decided early on in the program to minimize disruption to the current recycling industry by maintaining historical measures. However, AUOMA found that measurement of filters based upon drum size was far too elastic, and had the potential to grow without verification.

Similarly, in hindsight, a weight measurement system that considers weight and specific gravity of used oil may provide for greater checks and balances, though no change to the current measure based on volume of oil is anticipated.

Although EHC's are fixed across the entire province, Return Incentives vary by region. Recognizing that transportation costs are a key component of used oil material collection, the AUOMA has established six freight-equalized zones within Alberta, and separate RI rates are set for each of these zones. The freight-equalized zones are based on primary and secondary road systems; the volume of used oil related materials available for collection; and provincial demographics. The freight-equalized zones are required to ensure that collectors are appropriately reimbursed for costs associated with collection, and to promote enhanced capture rates and recycling of used oil related materials in market segments which have historically not been fully developed.

Table 2 below shows the Return Incentives paid by zone and Figure 4 describes the six collection zones.

Table 2: Return Incentive Payment Schedule by Zone

Zone	Used Oil ($/litre)	Used Oil Containers ($/kg)	Used Oil Filters ($/kg)
1	0.08	0.87	0.68
2	0.10	1.09	0.76
3	0.10	1.09	0.76
4	0.10	0.98	0.85
5	0.12	1.09	0.94
6	0.17	1.10	1.19

Figure 4: Collection Zones

The following guiding principles are used in the setting of RIs for all three products:

- Return Incentives are set to achieve collection objectives, and EHCs are set to provide the required funding.
- RIs will be paid for specific performance only.
- RIs paid to oil container processors will require reporting of inventory levels.
- Only one RI per product will be set for each zone for all participants.
- RIs will be adjusted in a timely fashion with the objective of causing minimal disruption to the normal course of business.
- All information provided by participants will be held in strictest confidence and will be released only in aggregate form.
- The AUOMA Board of Directors will make all final decisions relative to the RIs.

As this is a relatively new program, the effectiveness of RI incentives is monitored very closely. Changes are made as required to meet AUOMA's objectives. The triggers of change are:

- Economic impacts to the private sector recycling industry
- Used oil materials collected vs. plan
- Dollars spent vs. plan
- Changes in business economic fundamentals
- Input from all stakeholders
- Inflation and increased costs associated with collection and recycling operations

The portion of the Return Incentive that flows back to generators can also be used as an indicator of program maturity. Once all of the RI flows completely back to the generator, this will indicate that an incentive is no longer required to maintain the level of recycling of used oil material, and the AUOMA program should then cease to exist.

1.4 Program Integration

To make the program as unobtrusive and as easy to follow as possible, AUOMA has developed procedures and forms for registration and remittance that are consistent with those used by programs operated in Saskatchewan and Manitoba. This is especially useful to program registrants operating in more than one province in Canada.

AUOMA is also currently working with the remaining provinces in Canada to develop a consistent national program that will create a Canada-wide used oil materials program that is seamless across all provincial borders.

2.0 Alberta Used Oil Management Association

2.1 Organization Overview

AUOMA is a not-for-profit organization of wholesale suppliers of lubricating oil materials in Alberta. The Association's mission is to develop and manage programs that encourage responsible environmental handling and recycling of used oil materials (used oil, oil filters and oil containers) in all markets in Alberta. Partners and stakeholders include all first sellers of oil and oil filters, as well as collectors, transporters and processors of used oil materials.

Vision

AUOMA has established the following vision for their program:

- Every litre of used oil and related materials that can effectively be collected are recycled or reused in an environmentally acceptable manner.
- The collection and recycling of used oil materials is done through private industry, operating without subsidization.
- Albertans are aware of the hazards of improper disposal of these used oil materials and cooperate fully in their recycling and reuse.

This vision is supported by the following beliefs that direct the day to day operations of the program:

- Used oil material collection performance will meet environmental expectations of society.
- Used oil material collection programs will progressively eliminate indiscriminant disposal of used oil materials.
- Program results are best achieved through the private sector recycling industry.
- Industry, government and the public will support fair programs that are efficient, and cost effective.
- Stakeholders value ongoing dialogue and active involvement.
- Sound environmental protection practices make good business sense.
- Measurement is necessary to evaluate our performance.

Although AUOMA does not directly fund research, technology and innovation, it exists to nurture an environment conducive to the advancement of technology and innovation by the private sector.

2.2 Governance

While industry was actively involved in developing this program, a significant benefit was seen in having participation legislated to ensure equal involvement of all parties. This desire to ensure that a level playing field existed was the key driver for the Alberta Government to pass the Lubricating Oil Material Recycling and Management Regulation in 1997 for an initial five-year period. The legislation has been amended to extend the program for an additional 7 years through 2009.

AUOMA is accountable to the Alberta Minister of Environment as well as to its members and all stakeholders. It is incorporated under the Societies Act of Alberta, managed by a board of directors drawn from its members, retailers, two levels of government and other non-government organizations.

AUOMA has developed comprehensive operational and Directors' manuals for use by board and staff members. The Director's manual includes policies and guidance on all matters of significance to Board members including:

- Incorporation and By-laws
- Legislation
- Business plans and annual reports
- Code of Conduct
- Conflict of Interest
- Confidentiality
- Investment Policies
- Board Remuneration
- Committees
- Directors Insurance

Association Management and Staffing

The Association is managed by an Executive Director supported by program staff that provide financial, information technology, communications, public relations and other administrative services.

In order to maintain industry members and public confidence over the financial activities of the Association, a decision was made to contract the financial management of the organization to an internationally recognized financial services group, BearingPoint, Inc., formerly KPMG Consulting, Inc. This provided members with the confidence associated with having a reputable international financial services company managing the accounting function, combined with a built-in oversight function by having program staff report to a senior partner in BearingPoint rather than to the Executive Director of AUOMA.

As required, other services are also obtained on a fee for services basis to meet emerging needs.

Given that the program required many competing companies to come together and to provide competitive information to the program, one of the largest challenges facing the Association was to develop a highly professional organization that was above reproach.

A key issue for AUOMA is the need to maintain the confidentiality of market share information. All information gathered is very sensitive, and must reach the public only in aggregate form. Confidentiality is key to addressing competition issues internally; each staff member is required to sign a confidentiality agreement, since information maintained by AUOMA could be used by both recyclers and suppliers to gain market intelligence that could give them an unfair competitive advantage. Maintaining the confidentiality of this information even from the Board itself (which includes as its members individuals working within the industry) is critical to maintaining the integrity of the program.

To date there have been no breaches of confidentiality and Association members consider the staff to be of the highest professional quality.

2.3 Operations

Planning

AUOMA has developed a three-year rolling business plan, which they are required to submit annually to the Alberta Minister of Environment. As a result of this business planning process, AUOMA has developed the following core businesses and goals:

Core Businesses:

- Program Management – AUOMA develops and implements programs that encourage the private sector to collect and process used oil materials in an environmentally acceptable manner.
- Communications – AUOMA informs stakeholders in all market sectors of the need and benefit of returning used oil materials for recycling.
- Funds Management – AUOMA effectively manages Environmental Handling Charge (EHC) and Return Incentive (RI) funds to fulfill its mandate.

Goals and Performance Measures:

The following goals define AUOMA's priorities and provide a basis to measure program performance:

Goal	Performance Measures
1. To increase the recycle rate (percentage of used oil materials generated, that are being recycled in an environmentally sound manner) of used oil, oil filters and oil containers in Alberta.	• Projected volumes and percentages to be recycled based on volumes available.
2. To ensure all areas of the province are achieving adequate recycle rates.	• Province wide recycle rates versus objective set in Goal 1. • Rural recycle rates as a percentage of the total compared to long-term objective.
3. To encourage the development of a strong, competitive, private sector used oil materials collection and recycling industry in Alberta.	• Volume of used oil materials collected, by product. • Number of Collectors and Processors registered. • Amount of Return Incentives paid to collectors and transporters. • Number of collection facilities providing a no-charge service in the province.
4. To encourage environmentally sound methods that reduce or eliminate used oil materials going to landfill, or other unacceptable disposal methods.	• Increase in the percentage of used oil materials that are recycled.
5. To maximize the flow-through of EHC that is directed to program costs.	• Administrative costs as a percentage of Environmental Handling Charge (EHC) should not exceed 6% of EHC collected.

Monitoring, Evaluating and Reporting

Detailed data is collected and maintained on the volumes of used oil material collected, the amount of EHC collected and the Return Incentives paid. This information is critical to monitor the results of the program. In order to be able to respond as quickly as possible to program performance, monthly monitoring reports are prepared and presented to the Board of Directors. This information is used to evaluate performance and make adjustments to program strategies as required.

As part of the ongoing program operations, AUOMA undertakes the following activities to ensure external program compliance:

- Perform compliance audits of all registered suppliers of lubricating oil materials. Procedures performed to ensure that EHC collected and remitted is complete.
- Complete procedures to ensure all suppliers of lubricating oil materials have been identified and are registered with AUOMA.
- Perform compliance audits of all registered collectors / transporters and processors. Procedures performed to ensure that each registrant complies with AUOMA regulations, by-laws and policies.

On an annual basis the program prepares a comprehensive Annual Report that highlights the performance of the program. This report is submitted to the Alberta Minister of Environment and AUOMA's membership. The report is tabled by the Minister in the Legislative Assembly and becomes public information available to all citizens in the Province of Alberta.

Annual financial statements, as prepared by an independent audit, of the revenues received and the expenditures incurred by the stewardship program are included in the annual report required by the Minister.

As well as ensuring an audit is completed on revenues received and expenditures incurred, an independent audit is also conducted on AUOMA's key performance indicator (volume of used oil materials collected) as part of ensuring accountability to its stakeholders. This audit includes examining, on a test basis, evidence supporting the information, and evaluating the overall presentation of the information. The Auditors' Report on Schedule of Used Oil Materials Collected is included in AUOMA's annual report.

An annual assessment of the internal operations of the program is conducted by ensuring that the administrative costs of the program do not exceed 6% of the EHC collected and a formal review of the Executive Director's performance in leading the association and its programs is conducted by the Board of Directors.

The annual report contributes significantly to an environment of open and transparent communication between the program, its members and the public, which has been deemed essential to the success of the program.

Review and Improvement

Based upon monthly and annual performance monitoring and evaluation activities undertaken by the program and the Board of Directors the Association has created an environment of continual improvement.

Each and every year strategies are updated and adapted to improve upon performance from the previous evaluation and reporting cycle. Performance measures are also reviewed and updated if required. These updated strategies and performance measures are developed and approved by

the Board of Directors and included in the upcoming three year Business Plan. Program staff then design new programs to be implemented.

In response to the evaluation of current program, a number of new strategies are being implemented over the next three fiscal years for AUOMA including:

- Conduct a comprehensive field study of sales and recycle/reuse rates of oil containers by major industry sector and selectively adjust awareness and return incentive (RI) programs to increase recovery rates.
- Evaluate the cost and benefit of oil container only facilities at bottle depots by means of a pilot test.
- Increase public awareness of all collection facilities through targeted advertising in daily and weekly newspapers.
- Fine tune new weight based collection reconciliation system for filters while maintaining recovery rate in 80% range.
- Improve public awareness through continued advertising with increased emphasis on partnerships and outreach programs.
- Use growing database of collections by zone to analyze geographic performance and tie to known events key indicators and urban/rural split objectives.
- Finalize AUOMA involvement in Regulatory Compliance and present as a model for program expansion across Canada.
- Maintain close ties with stakeholders through the use of a toll free hot line, website, survey and questionnaires and encouraging input in all communications.

2.4 Risk Management

Risk management has emerged as a very significant issue for all Extended Producer Responsibility Organizations. In particular, dealing with a hazardous waste such as used oil, created a number of sensitive issues to be dealt with early on in the program.

The number one issue was how to handle potential oil spills and the resultant contamination. This issue was primarily resolved by making a decision early on that the Association would not implement any programs whereby they took possession of the product. Instead, the Association designed programs that promoted the collection and processing of used oil materials by the recycling industry. As such, the existing private sector collectors and processors were in the best position to utilize their experience and expertise to minimize the threat of spills, including obtaining necessary insurance to cover the possibility of a spill. Effectively, under the programs designed by AUOMA the risk for spills continues to be a responsibility of the private sector generators, collectors (both EcoCentre and other collection facilities) and processors.

Further risks for the Association are being addressed by maintaining a reserve fund to assist with:

- Winding up the Association's programs
- Any unanticipated changes to the Association's programs and mandate
- Any unforeseen claims or events

Directors' insurance is also maintained to protect Board members from potential claims against them as a result of carrying out their duties as Board members.

AUOMA conducts board training for all of its Directors on an annual basis to keep the Board current on its ongoing responsibilities and emerging issues. Recently the Board examined the risks that Directors face in the boardroom, which has lead to a review of the appropriate level of "due diligence" to ensure that anyone who receives funds from the program is in regulatory compliance with standards set by the government. This may include the requirement for a letter of compliance from a regulatory environmental auditor.

3.0 Performance Evaluation of Alberta Used Oil Program

3.1 Environmental Issues

As previously indicated, used oil is the largest single source of hazardous recyclable material in Alberta and poses a significant environmental problem if not managed effectively. Improperly discarding used oil materials in fields, ditches, sewage drains, on roadsides or simply thrown in the garbage to end up in landfills contributes to environmental pollution and wastes non-renewable natural resources.

Used oil materials contain small quantities of substances that could contaminate air, soil and ground water. They may contain trace metals, chlorinated solvents, gasoline, polynuclear aromatic hydrocarbons, glycols and PCBs. An undrained oil filter can contain between 250 millilitres (1 cup) to 1 litre of recyclable used oil and residual amounts of oil cling to the plastic and remain inside used oil containers.

What are the negative effects on the environment if used oil materials are not properly disposed of?

- One litre of used oil can contaminate up to one million litres of fresh water.
- Improperly discarded used oil can contaminate ground and surface water and reduce soil productivity, impacting our agricultural production of plants and livestock.
- Oil in sewers can disrupt treatment plants and contaminate waterways.
- Related materials such as plastic oil containers and used oil filters are not biodegradable and take up valuable landfill space.

More than 40 million litres of used oil that could be recycled goes missing in Western Canada each year. That's enough to fill an ocean-going supertanker. This could produce enough energy to heat and light 60,000 homes each year, or could provide close to 39 million litres of high-quality motor oil.

On the other hand, if used oil materials are properly disposed of and recycled the following positive outcomes can occur:

- Recycling used oil extends the life of a non-renewable natural resource.
- Re-refining used oil completely restores the original lubricating properties of the oil and takes about one-third of the energy of refining crude oil to lubricating quality.
- A litre of used oil contains up to two-thirds of the energy equivalent of a litre of new oil, making it a readily available source of heating fuel. Using proper methods,

contaminants in used oil can be destroyed during combustion and not released into the air.

- Recycled oil is also used extensively in the production of asphalt for roads and highways.

- It can also be recycled to produce new oil for cars.

- Approximately 85% of a used oil filter is steel. Oil filters are shredded, heated to a molten state and the metals re-used as material for other metal products such as rebar, nails and wire.

- Empty plastic oil bottles can be recycled into new containers, plastic flowerpots, plastic pipe, guardrails, fence posts and plastic patio furniture.

3.2 Methodology

The AUOMA maintains a very comprehensive data management system that collects and tracks a variety of program information including product sales, environmental handling charges collected, volumes of product collections and return incentives paid. The Association produces audited financial statements that account for its financial activities and are included in its annual report. The Association also produces an audited Schedule of Used Oil Materials Collected that provides independent, third party verification of the volumes of used oil materials collected.

The above noted data and information sources were used to verify and create the various figures and tables presented in this study.

The trends that were identified through examination of this data were used to analyze, evaluate and draw conclusions as to the environmental and economic success of the program.

Where specific data did not exist or could not be obtained, such as with many of the socio-economic impacts, anecdotal information from the professional program staff and Government of Alberta environmental representatives were used to draw conclusions.

3.3 Environmental Performance

How effectively the program is performing is measured by the following major performance measures:

- Percentage of used oil recovered
- Percentage of used oil filters recovered
- Percentage of used plastic oil containers recovered

Performance targets for used oil and used oil filters are expected to reach levels in excess of 80% when the program reaches maturity.

Unlike used oil and used oil filters, targets for used plastic oil containers have been more difficult to establish due to a lack of specific information available regarding sales and recycle/reuse practices for used oil containers.

Used Oil

In calculating the percentage of used oil collected, it must be noted that not all oil that is sold can be collected. In Alberta, based upon industry experience and expertise, it is estimated that 35% of all oil that is sold will be consumed during its normal usage. As a result, only the remaining 65% is available for collection.

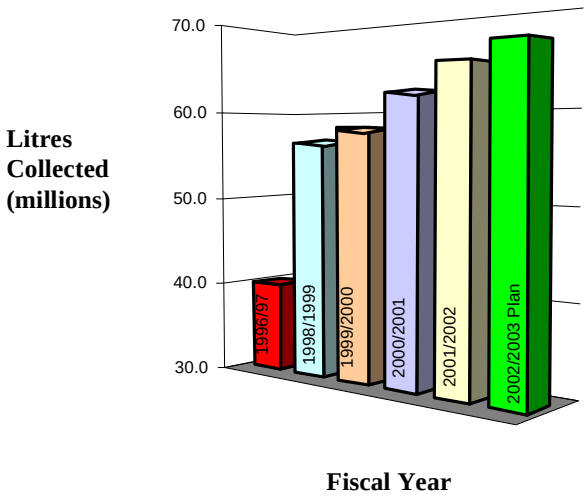
Table 3 below and Figure 5 on the following page illustrate the trends in the collection of used oil over the life of the program.

Table 3: Historical and Planned Program Recovery of Used Oil

Year	Available for Collection (millions of litres)	Actual Quantity Collected (millions of litres)	Recovery Rate (%)
1996/97 pre-program estimates	Not available	40.0	Not available
1997/1998 (annualized)*	90.8	47.4	52
1998/1999	83.2	54.9	66
1999/2000	87.6	58.7	67
2000/2001	91.2	61.1	67
2001/2002	91.0	64.8	71
2002/2003	91.4 (plan)	66.7 (estimate)	73 (estimate)
2003/2004	91.6 (plan)	68.7 (estimate)	75 (estimate)
2004/2005	93.0 (plan)	70.7 (estimate)	76 (estimate)

**Program began October 1, 1997 and operated for only 6 months (October 1, 1997 to March 31, 1998) in the first fiscal year. Figures have been annualized to provide for ease of comparison with pre-program estimates and subsequent yearly actuals.*

Figure 5: Volume of Used Oil Recycled



Each year since the beginning of the program, the volume and percentage of used oil collected has increased. However, a number of challenges exist to improving recovery rates as used oil nears product maturity under the program. These challenges include:

- The remaining used oil is located in more remote locations and is more difficult to find. Transporters and processors first pick up used oil that is in convenient locations.
- The remaining oil is generally of lower quality. Transporters and processors are economically motivated to pick up the highest quality oil first.
- Developing improved communications and public relations programs to improve public awareness. The cost of these programs can be a significant portion of the overall program budget and in some cases may be cost prohibitive.

Used Oil filters

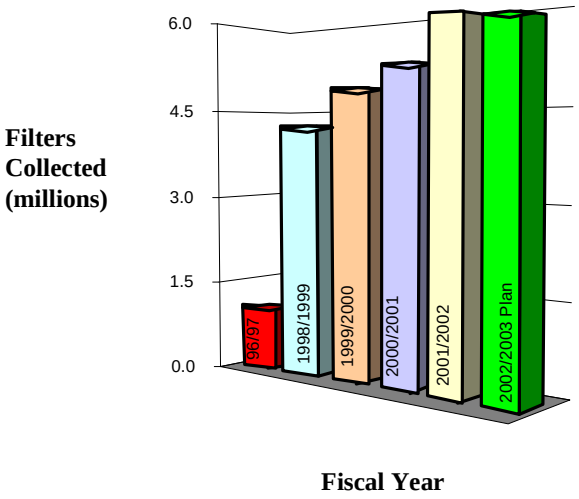
Table 4 and Figure 6 on the following page illustrate the trends in the collection of used oil filters over the life of the program.

Table 4: Historical and Planned Program Recovery of Used Oil Filters

Year	Available for Collection (millions)	Actual Quantity Collected (millions)	Recovery Rate (%)
1996/97 pre-program estimates	Not available	1.00	Not available
1997/1998 (annualized)*	5.41	3.14	58
1998/1999	6.11	4.28	70
1999/2000	6.42	5.01	78
2000/2001	6.86	5.35	78
2001/2002	6.94	5.97	86
2002/2003	6.82 (plan)	5.80 (estimate)	85 (estimate)
2003/2004	6.94 (plan)	5.90 (estimate)	85 (estimate)
2004/2005	6.94 (plan)	5.90 (estimate)	85 (estimate)

**Program began October 1, 1997 and operated for only 6 months (October 1, 1997 to March 31, 1998) in the first fiscal year. Figures have been annualized to provide for ease of comparison with pre-program estimates and subsequent yearly actuals.*

Figure 6: Volumes of Used Oil Filters Recycled



The volume and recovery rates for used oil filters have increased each year and this product stream is now considered a mature product line within the program.

Communication, awareness and education campaigns will continue to be used to ensure that recovery rates are maintained.

Used Plastic Oil Containers

Pre-program data indicates that the historical collection of used plastic oil containers was extremely low, with estimates of only 200,000 kilograms (the equivalent of 3,000,000 one litre used oil containers) being collected.

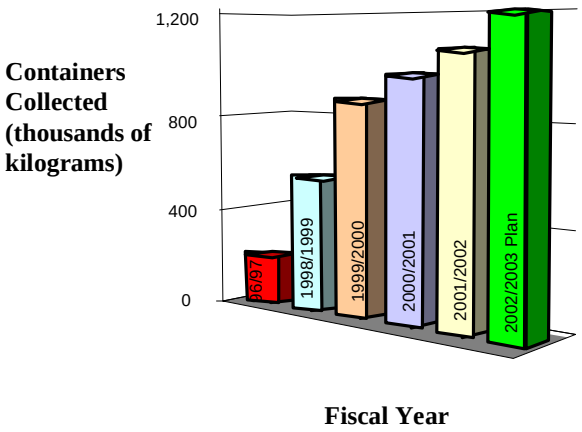
Table 5 and Figure 7 below illustrate the trends in the collection of used plastic oil containers over the life of the program.

Table 5: Historical and Planned Program Recovery of Used Plastic Oil Containers

Year	Available for Collection (millions of kilograms)	Actual Quantity Collected (millions of kilograms)	Recovery Rate (%)
1996/97 pre-program estimates	Not available	0.20	Not available
1997/1998 (annualized)*	3.37	0.40	12
1998/1999	3.00	0.57	19
1999/2000	2.59	0.88	34
2000/2001	2.61	0.99	38
2001/2002	2.51	1.08	43
2002/2003	2.67 (plan)	1.20 (estimate)	45 (estimate)
2003/2004	2.60 (plan)	1.30 (estimate)	50 (estimate)
2004/2005	2.59 (plan)	1.40 (estimate)	54 (estimate)

**Program began October 1, 1997 and operated for only 6 months (October 1, 1997 to March 31, 1998) in the first fiscal year. Figures have been annualized to provide for ease of comparison with pre-program estimates and subsequent yearly actuals.*

Figure 7: Volume of Used Plastic Oil Containers Recycled



With the inception of the program, collection of used plastic oil containers doubled in year one and have increased in both volume and rate each year thereafter. However, the recovery of used plastic oil containers continues to be a major challenge for the program in Alberta. Although few benchmarks exist for comparative purposes, collection of used oil containers in Saskatchewan and Manitoba are averaging between 18% and 20% and in California, recovery rates for used plastic oil containers are mandated at 25%. Alberta currently exceeds these rates and is considered a world leader in the recovery of plastic oil containers.

The major obstacle in improving recovery rates appears to be that there is no inherent call to action with used plastic oil containers. Unlike used oil and used oil filters, plastic containers do not look hazardous. There may also be a lack of understanding as to the recyclable nature of the plastic.

Number of Collectors, Transporters and Processors

The number of professional collectors, transporters and processors increased from 34 in 1997/98 to 87 by the end of fiscal year 1998/99, and currently stands at 94.

To date none of the registrants have left the program, indicating a strong and viable used oil material industry in Alberta.

Number of Collection Facilities

The number of collection facilities in Alberta has grown from 225 in 1997 to 640 in 2002. Of the 640 facilities, 53 are EcoCentres and 587 other collection facilities. These facilities are spread across the entire province and provide easy access for all program participants.

Public Awareness and Perception

AUOMA recognized early on that a high level of public awareness was essential for the program to be successful. AUOMA continues to develop promotional programs that are aimed at increasing public awareness. Some of the results of these programs include:

- Over 1.3 million visits to the web site in 2001/2002 and the average time for each visit is increasing.
- Over 1300 calls in 2001/2002 for information were made to the AUOMA call center.
- Eco-Day promotions and festivities in a number of Alberta communities have resulted in an increased number of visits to the web site and an increased duration in the length of visits.
- An enthusiastic response by young people to the new “Eco School” component of the web site that was introduced in 2000/2001.

- 400,000 people attended trade shows and community events that the programs Recycling Ambassadors were in attendance
- Over 200,000 farms and acreages in Alberta in 2001/2002 received a direct mailing in an effort to promote the used oil recycling program.

A survey conducted in 2001/2002 found that 66% of the Alberta target audience (comprised of farmers, small commercial businesses and do-it-yourselfers) were aware of the program to recycle used oil in their areas, and that over 99% of all those surveyed indicated that they felt it was important to recycle used oil products.

The public's satisfaction with access to collection facilities is monitored by the number of complaints received. To date no complaints have been received that have not been satisfactorily resolved.

Overall, the environmental performance of the used oil program in Alberta can be summarized as being very successful as illustrated by the following:

- The program has experienced 5 years of continuous growth in recovery volumes and rates for all product streams.
- Numbers of collectors, transporters and processors continue to increase.
- The number of collection facilities has grown from 225 to over 600.
- Stakeholder awareness and perception of the value of the program are high.
- The program earned an Emerald Award from the Emerald Foundation for Environmental Excellence in June 2001. This Alberta-based foundation recognizes organizations that show leadership in addressing Alberta's environmental issues.

3.4 Economic Performance

The overall economic performance of the program was looked at from the following perspectives:

- Overall program costs
- Recovery costs per unit of product
- Administrative costs as a percentage of revenues collected
- Disposition of revenues collected

Overall Program Costs

One of the objectives of the AUOMA program was to ensure that the overall program costs associated with the post regulation time-frame were no greater than those costs before the introduction of the program for those generators who were already involved in the collection and recycling of used oil materials. For those generators who were now required to be part of the

program and had not previously paid for the disposal of the used oil materials in an appropriate fashion, the Environmental Handling Charge is a new cost to them.

Prior to the program, generators paid to have the hazardous waste removed. Not only was there a cost to remove the waste, the cost of collection and storage was a disincentive for generators to responsibly handle used oil materials. However, now with the EHC applied at the front end of the program there is an opportunity for generators to earn some small revenues by collecting and storing used oil materials and being paid more for the used oil materials by collectors and processors than the upfront cost of the EHC.

Industry estimates placed the pre-program costs of removing used oil materials at roughly $13 million. This cost was being borne by the generators of the waste. Under the current program, the costs of the program are being paid from the revenues generated by the EHC, which is generally included in the product cost or absorbed by generators.

Table 6 below illustrates the trends in revenues being collected through the EHC that are used to fund the program.

Table 6: Revenues from the Environmental Handling Charge

Fiscal Year	EHC Collected ($)
1997/1998*	6,875,845
1998/1999	12,696,211
1999/2000	12,947,763
2000/2001	13,425,382
2001/2002	13,371,889

**Figures are for a six-month period only*

As can be seen from this summary of EHC revenues, the overall costs to generators in the form of EHC's have remained relatively constant at approximately $13 million dollars per year. This is comparable to the annual pre-program cost to generators to dispose of the waste.

Recovery Costs per Unit of Product

One of the principles that the Alberta Used Oil program is built upon is that there will be no cross-subsidization of costs across product streams. As a result, specific financial information is maintained by product type and programs are designed and adjusted to ensure that each product stream is self-sufficient.

Table 7 represents the cost per unit for used oil collected under the program:

Table 7: Costs per Unit of Used Oil Collected

Fiscal Year	Volumes Collected (litres)	Return Incentives Paid ($)	Share of Program and Admin costs ($)	Total Costs ($)	Cost per litre ($)
1997/1998*	23,532,178	2,181,597	286,126	2,467,723	0.105
1998/1999	54,911,957	5,065,088	294,547	5,359,635	0.098
1999/2000	58,672,383	5,681,385	418,313	6,099,698	0.104
2000/2001	61,066,329	5,759,396	487,498	6,246,894	0.102
2001/2002	64,839,740	6,108,527	468,666	6,577,193	0.101

***Although previous tables have shown 1997/98 figures annualized, these figures are actuals.*

The cost of recovering used oil has remained constant at around 10 cents per litre of used oil.

Table 8 represents the cost per unit for used oil filters collected under the program:

Table 8: Costs per Unit of Used Oil Filters Collected

Fiscal Year	Volumes Collected (number of filters)	Return Incentives Paid ($)	Share of Program and Admin costs ($)	Total Costs ($)	Cost per filter ($)
1997/1998*	1,552,980	1,290,410	286,126	1,576,536	1.015
1998/1999	4,279,730	3,560,276	294,547	3,854,823	0.901
1999/2000	5,009,294	4,176,619	418,313	4,594,932	0.917
2000/2001	5,351,624	4,493,730	487,498	4,981,228	0.930
2001/2002	5,973,939	4,037,401	468,667	4,506,068	0.754

***Although previous tables have shown 1997/98 figures annualized, these figures are actuals.*

The costs of collecting used oil filters have decreased significantly (approximately 25%) over time as the program has evolved due increased economies of scale.

Table 9 represents the cost per unit for used plastic oil containers collected under the program:

Table 9: Costs per Unit of Used Plastic Oil Containers Collected

Fiscal Year	Volumes Collected (kg)	Equivalent 1 litre Containers* (number of containers)	Return Incentives Paid ($)	Share of Program and Admin Costs ($)	Total Costs ($)	Cost per 1 litre Equivalent Container ($)
1997/1998**	201,863	3,027,945	195,449	286,126	481,575	0.159
1998/1999	569,721	8,545,815	601,913	294,547	896,460	0.105
1999/2000	882,281	13,234,215	1,035,758	418,313	1,454,071	0.110
2000/2001	992,062	14,880,930	1,167,816	487,498	1,655,314	0.111
2001/2002	1,083,615	16,254,225	1,297,258	468,667	1,765,925	0.109

**Note: One kilogram of plastic is equivalent to 15 one litre plastic oil containers*
***Although previous tables have shown 1997/98 figures annualized, these figures are actuals.*

The per unit cost of recovering used plastic oil containers has decreased by almost 5 cents per 1 litre equivalent container as a result of increased economies of scale.

Administrative Costs

In order to maximize the flow-through of Environmental Handling Charge (EHC) that is directed to program costs, AUOMA attempts to minimize its administrative costs. Original targets for administrative costs were pegged at 9% of the Environmental Handling Charge (slightly less than the 10% forecast for similarly run recycling and not for profit programs in Alberta). This target has been subsequently reduced to 6%.

Table 10 below illustrates the trends in the expenditures for administration that have occurred over the life of the program.

Table 10: Administration Costs as a Percentage of Environmental Handling Charge

Fiscal Year	Administration Costs ($)	EHC Collected ($)	Admin. Costs as Percentage of EHC
1997/1998*	449,230	6,875,845	6.53
1998/1999	485,419	12,696,211	3.82
1999/2000	493,657	12,947,763	3.81
2000/2001	562,500	13,425,382	4.19
2001/2002	524,636	13,371,889	3.92

***Although previous tables have shown 1997/98 figures annualized, these figures are actuals.*

Administrative costs in year one totaled 6.5% of the EHC. This represents about a 2% higher cost for administration over ongoing administration costs as a result of a number of one time legal and consulting costs to develop policies, procedures, protocols and templates. These policies, procedures and protocols have subsequently been used as models for other jurisdictions resulting in lower start-up costs for these jurisdictions.

Disposition of Revenues Collected

The following table is a summary of disposition of revenue for each full year of operations.

Table 11: Disposition of Revenues by Fiscal Year

Description	1997 / 1998* ($000's)	1998 / 1999 ($000's)	1999 / 2000 ($000's)	2000 / 2001 ($000's)	2001 / 2002 ($000's)
Return Incentives	3,667	9,227	10,894	11,420	11,443
Program Costs	410	399	761	900	881
Admin Costs	449	485	494	563	525
Net Reserve	2,404	2,713	1,021	852	779
Total	**6,930**	**12,824**	**13,170**	**13,735**	**13,628**

***Although previous tables have shown 1997/98 figures annualized, these figures are actuals.*

This table identifies that program and administrative costs are being contained to allow for a reserve fund to be established to mitigate risks associated with the program and to allow for the successful wind-up of the program if required.

The overall economic performance of the program has maintained overall systems costs while generally decreasing individual per unit product costs.

Efficiencies are being realized as a result of easier access to materials through more collection facilities, more competition in the market place and continuing high demand for used oil and metals from filters. The current suppressed market for plastic continues to negatively impact the recovery rate for used plastic oil containers.

The administrative cost burden as a result of implementing this program is extremely low and much below similar not for profit programs that are averaging 9% - 10% administrative costs.

Although specific data is not available, the costs of recovering used oil materials is very small compared to the potential costs of remediating contaminated water supplies, which could run into the hundreds of thousands of dollars.

Other economic benefits achieved as a result of having adequate fresh water supplies include:

- Improved agricultural products and livestock
- Improved visitor and tourism trade
- Improved recreational opportunities such as swimming, fishing and boating

3.5 Other Socio-Economic Performance Measures

Other socio-economic impacts can be measured as follows:

Impact on Taxpayers

- As a result of the program's implementation, less used oil, containers and filters are being disposed of through the municipal waste management infrastructure or directly into the environment. This has reduced the costs borne by taxpayers.
- The program is now fully self-funded and receives no revenue from any level of government.

Government Costs and Benefits

- The successful creation and implementation of a used oil materials recycling program in Alberta under the auspices of the Alberta Used Oil Management Association has moved the responsibility for recycling used oil materials outside of government.
- Although AUOMA works closely with all levels of government to ensure the success of the program, industry has effectively taken full responsibility for recycling used oil materials.
- The provincial government bears some of the monitoring costs associated with the program's operations.

Impact on Consumer Prices

- Most retailers recoup the Environmental Handling Charge at the point of purchase.
- In general, consumers are responsible for paying the Environmental Handling Charge.

Regional Employment and Industry Development

- There is no official quantitative data that delineates the employment opportunities made available by this program. However, it is evident that it has a beneficial impact. As the need for recycling rises, staffing levels in the processing and recycling industry increase to handle the larger volumes of materials.

- Although a private sector recycling industry for used oil materials existed in Alberta prior to the implementation of AUOMA's programs, the programs that have been put into place have encouraged industry to enhance the collection system infrastructure and have provided an environment for maintaining and improving recycling opportunities for used oil materials. This is evidenced by an Alberta "first" – the development of plastic highway guardrails made from used oil materials.

- Recycled oil is used extensively in the production of asphalt for roads and highways and can also be burned for energy.

- Oil filters are shredded, heated to a molten state and the metals re-used as material for other metal products such as rebar, nails and wire.

- Empty plastic oil containers can be recycled into new containers, plastic flowerpots, plastic pipe, fence posts and plastic patio furniture.

- A stable and strong used oil materials recycling industry means continued regional employment in the face of other economic downturns.

- The location of depots and EcoCentres to handle used oil products complements and supports other recycling initiatives such as the beverage container recycling program.

Impact on Second Level of Competition in Post-Consumer Waste Sector

- Collected oil can be recycled into an oil with the same quality level as the original. The used oil that is collected supports Canada's two re-refining businesses (Safety-Kleen in Ontario and Mohawk in British Columbia). Newalta in Alberta produces a No. 4 diesel fuel. The collection of containers has also created new recycling opportunities for plastic recycling companies in western Canada. [6]

Impact on Production Efficiency

[6] Environment Canada. *An Inventory of Waste Diversion Programs in Canada*. 2001.

- Production efficiency is defined as the efficiency with which inputs (of material, labour and capital) are allocated to produce the desired output (also known as technical efficiency). The program has had no measurable impact on the efficiency of production. However, the program may impact the use of plastic for containers (for example, some producers are choosing to use post-consumer resin in the manufacturing of their bottles). This may be a result of the program, but there is no direct evidence to support it. [7]

Impact on Market Access

- By changing the conditions for market entry, environmental stewardship programs can impose barriers to entry. For example, if a small jurisdiction imposes take-back requirements that effectively favor one type of container (e.g., glass bottles versus aluminum cans), the increased costs of complying with different requirements may prevent foreign producers from entering the market as well as limit consumer choice. This can be a particular problem for small and medium sized enterprises. Since participation in the program is mandatory under the Lubricating Oil Material Recycling and Management Regulation, there is no impact on market access.[8]

Impact on Dynamic Efficiency

- Dynamic efficiency refers to the development of new technologies or processes (e.g., to enhance productivity, reduce the resource intensity or products, etc.). The impact of this program is viewed as minimal. However, there may be an increased use of post consumer resin in oil containers and a shift to bulk packaging.[9]

Impact on Trade Activity

- There is no known impact on trade activity.

Impact of Free-riders

- Although it may be possible for cross-border shipments of used oil materials to take place in order to receive a return incentive for materials collected in other jurisdictions, collusion and fraud would have to take place between the generator and a collector to produce a recycle docket that would be reimbursed from the program. There has been no evidence to date that this is happening.

[7] Environment Canada. *An Inventory of Waste Diversion Programs in Canada*. 2001.
[8] *Ibid*.
[9] *Ibid*.

- It might also be possible for sales of original product to take place by sellers who are not registered in the program. However, other sellers would quickly become aware of the competitive price advantage and lower selling prices that could be offered as a result of not paying the EHC. There has been no evidence of an issue with this in Alberta.

Impact on Design for Environment

- Although there has been no evidence of design for environment initiatives, the program is able to heavily penalize anyone that designs products that would negatively impact the success of the program. An example would be the introduction of a new product that would require additional sorting or processing that increased the overall costs of the program.

4.0 Conclusions

The used oil material recycling program in Alberta has been highly successful in contributing to a healthy and safe environment for all Albertans and reducing waste from landfill.

The program has been a successful collaboration of government, the lubricating oil industry and the recycling industry.

The program has had many significant impacts in terms of environmental, economic and other socio-economic performance indicators.

Environmental Performance

- For five consecutive years, the program has improved its performance by collecting and recycling more used oil, oil filters and plastic oil containers highlighted by 2001/2002 recovery rates of 86% for filters, 71% for used oil and 43% for used plastic oil containers.

- The number of professional collectors, transporters and processors of used oil materials continues to grow and provide a strong base for the used oil material recycling industry in Alberta.

- The number of collection facilities in Alberta has grown from 225 in 1997 to 640 in 2002. These facilities are spread across the entire province and provide easy access for all program participants.

- Through the use of a website, call center and various promotional, communications and public relations activities, a 2001/2002 survey found that 66% of target audiences were aware of the program and over 99% of all those surveyed indicated that they felt it was important to recycle used oil products.

Economic Performance

- Overall the program is self-sufficient and cost-effective. Total program costs have not increased and have maintained a desired level of stability in the industry.

- Individual per unit product costs for filters and containers have decreased as a result of overall program efficiencies and economies of scale.

- Administrative costs for the program continue to be low, therefore maximizing the amount of funding available for program costs.

- Overall program costs are being contained, resulting in the ability to build an adequate reserve fund to offset potential future costs associated with program risks and to provide for a successful wind-up of the program if required.

- Total program costs are relatively insignificant compared to the potential cost of remediating contamination that could be caused by used oil materials.

Other Socio-Economic Performance

- As a result of the program's implementation, less used oil, containers and filters are being disposed of through the municipal waste management infrastructure or directly into the environment. This has reduced the costs borne by taxpayers.

- The successful creation and implementation of a used oil materials recycling program in Alberta under the auspices of the Alberta Used Oil Management Association has moved the responsibility for recycling used oil materials outside of government.

- In general, consumers are responsible for paying the Environmental Handling Charge.

- A vibrant and stable recycling industry that has developed new ways of processing and cleaning plastic containers and introduction of new recycle products including plastic highway guardrails.

- Used oil can be recycled into an oil with the same quality level as the original

- A series of checks and balances inherent in the program protects against free-riders from both a products sales and a collection perspective

The success of this program is further demonstrated by the fact that in June 2001 AUOMA received an Emerald Award from the Emerald Foundation for Environmental Excellence. This Alberta-based Foundation recognizes organizations that demonstrate leadership in addressing Alberta's environmental issues.

5.0 Future Directions

The Alberta Used Oil Program continues to grow and improve and is leading the way as a model for other used oil materials recycling programs across Canada. Other jurisdictions are now inquiring about the program, and this may lead to use of the model in other global markets.

Many of the start up issues facing the program have now been taken care of. With two of the product streams having or nearly reached maturity levels, and while maintaining the program's view towards continual improvement, the focus of the program is moving to address new and emerging program needs.

Over the next few years the priority focus for the program will be on the following:

- The recovery of plastic oil containers continues to improve each year but remains the greatest single challenge for the program. Conducting a comprehensive study of sales and recycle/reuse rates of oil containers by major industry sector, and adjusting awareness and return incentive programs will be the first step in increasing the return rates for used oil containers. This study will identify where containers are used, recycling habits, impediments to recycling and strategies to tailor programs to address issues identified.

- Now that the growing pains of establishing the program are complete, the continuing improvement in recovery of used oil and filters will be dependent upon a priority focus on awareness and communication activities. AUOMA's business plan for 2002/2003 identifies an ongoing need to improve public awareness through partnering with key stakeholders including sister associations across the prairie regions.

- In light of the fact that the remaining uncollected used oil is located in more remote locations and is difficult to find and of a lower quality, the program may need to be revised to provide additional incentives to reach higher levels of collection.

- Raising the bar on environmental standards and performance by collectors and processors by working with government to establish new compliance protocols.

- Examining the viability of expanding the product streams within the program to include products such as windshield washer fluid containers and anti-freeze.

- The program triggered the creation of a regional used oil program across western Canada. AUOMA will continue to work with the remaining provinces in Canada to develop a consistent national program that will create a Canada-wide used oil materials program that is seamless across all provincial borders.

- Working with other interested global jurisdictions such as Australia and New Zealand to develop and implement used oil material recycling programs.

6.0 References

Alberta Used Oil Management Association. *2002-2005 Business Plan* and *Annual Reports (1997-1998 to 2001-2002)*.

Alberta Used Oil Management Association. *Implementing a Used Oil Material EPR in the Prairie Provinces*. March 2002.

Alberta Used Oil Management Association. *Increasing Recovery Through Innovation – Annual General Meeting Presentation.* September 2002.

Alberta Used Oil Management Association. *Lubricating Oil Material Product Management Program – Manual for Collectors and Processors*. February 2002.

Alberta Used Oil Management Association. *Program Stewardship Review forAlberta's Minister of Environment*. August 2002.

Alberta Used Oil Management Association. *Update for Western Canada Taskforce*. April 2002.

Environment Canada. *An Inventory of Waste Diversion Programs in Canada*. 2001.

Environment Canada. *Guidance Manual for Establishing, Maintaining and Improving Producer Responsibility Organizations in Canada*. 2001.

Government of Alberta. *Accountability Framework for Delegated Administrative Organizations*. November 1998.

Government of Alberta. *Lubricating Oil Materials Recycling and Management Regulation*. April 1997.

Websites:

- Alberta Environment: www.gov.ab.ca/env
- Alberta Used Oil Management Association: www.usedoilrecycling.com
- Environment Canada, Extended Producer Responsibility and Stewardship: www.ec.gc.ca/epr

7.0 Glossary of Terms

Term	Definition
Accountability	An obligation to explain or account for one's actions to a variety of audiences, including members, stakeholders and the public.
Annual Report	An annual summary of results achieved produced for use of stakeholders in assessing the performance of a PRO.
Benchmarking	Developed in such areas as Total Quality Management (TQM), benchmarking involves the comparison, ranking or rating of different business processes, units or companies against standards. The aim: to identify ways of improving the performance of operations, systems, processes.
Business Plan	A plan that communicates the direction being followed by a PRO to its various audiences and provides day-to-day direction to the management and staff of the PRO itself. Components may include: organizational history; mandate; vision statement; mission statement; organizational principles; core businesses; strategies; outcomes; resource plan; performance measurement criteria and targets.
Eco-fees	Fees charged to support the recycling program. Also referred to as an "Environmental Handling Charge"
EcoCentres	Places that accept materials for recycling.
Extended Producer Responsibility	An environmental policy approach in which a producer's responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product's life cycle. There are two key features of EPR policy: (1) the shifting of responsibility (physically and/or economically, fully or partially) upstream to the producer and away from municipalities, and (2) to provide incentives to producers to take environmental considerations into the design of the product.

Stakeholders	The broadest definition of 'stakeholder' brings in anyone who affects or is affected by a company's operations. The key new perception is that companies need to expand the range of interests considered in any new development from customers, shareholders, management and employees to such people as suppliers, local communities and pressure groups.
Stewardship	The act of entrusting the careful and responsible management of the environment and natural resources to one's care for the benefit of the general community.

Acronym	**Description**
ABDA	Alberta Bottle Depot Association
AUOMA	Alberta Used Oil Management Association
AUORC	Alberta Used Oil Recovery Corporation
CCME	Canadian Council of Ministers of the Environment
CEO	Chief Executive Officer
CPPI	Canadian Petroleum Products Institute
DAO	Delegated Administrative Organization (may be used interchangeably with PRO)
DIY	Do-it-yourselfers
EHC	Environmental handling charge
ELC	Equivalent litre container
ENGO	Environmental non-governmental organization
EPR	Extended Producer Responsibility
FOIP	Freedom of Information and Protection of Privacy
MARRC	Manitoba Association for Resource Recovery Corp.
MLA	Member of the Legislative Assembly
MOU	Memorandum of Understanding
NGO	Non-governmental organization
OECD	Organization for Economic Cooperation and Development
PRO	Producer Responsibility Organization
RCA	Recycling Council of Alberta
RI	Return Incentive
SARRC	Saskatchewan Association for Resource Recovery Corp.
TDG	Transport of Dangerous Goods