

Materials Exchange Guidance Document

A Review and Case Study

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in partnership with



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Further information

CMEX hopes that this guidance document will be useful, and encourages readers to contact us if there are any questions or feedback. Sharing additional successes or program ideas will help to create a network of materials exchanges where everyone can benefit from collective experience.

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Acronyms Glossary

CCA – Clean Calgary Association

CMEX – Calgary Materials Exchange

CND – Canadian Dollars

GIS – Geographic Information Systems

ISC – Industry Steering Committee

MDF – Medium Density Fibreboard

OSB – Oriented Strand Board

PA – Program Assistant

PC – Program Coordinator

TAC – Technical Advisory Committee

USD – United States Dollars

WRS – Waste and Recycling Services

1.0 Introduction

The purpose of this document is to provide guidance to any agency in Canada that plans to operate a community-based industrial waste diversion initiative.

This Guidance Document recounts the experiences and lessons learned of a group of people in Calgary, Alberta that established and continue to operate the Calgary Materials Exchange (CMEX). The objective of the CMEX is to divert industrial waste from Calgary landfills by facilitating the exchange of waste products between companies using a community-based social marketing approach. The focus of this document is strategies that worked and did not work during the eighteen-month pilot phase of the CMEX. The Guidance Document also describes the direction the project has taken based on the results of the pilot phase.

It is very important to recognize that each agency reading this document is focussed on an industrial area with a unique set of characteristics and inherent challenges. Industrial parks differ by age, size of area covered, geographic location, proximity to other parks and cities, type of industry, diversity of industry, culture, sense of community, presence of an industrial association, leadership, relationship with municipality, history of environmental issues, and propensity for change. This matrix of features will factor heavily into determining the most effective approach for each agency. Due to these differences, the recommendations in this Guidance Manual are by no means prescriptive. We encourage the reader to pick, choose, and modify the information and advice that is applicable for you're their particular situation.

In addition to lessons learned from the implementation and operation of CMEX, this document includes a review of 11 existing North American material exchanges (Section 3.0, Appendices A, B, C, D and E). Through Internet research and telephone interviews, this review touches on information such as types of materials handled, basic statistics, and lessons learned.

2.0 Terminology

Passive Materials Exchange is an on-line materials exchange that stands alone, and provides listings for material available or wanted for businesses to view. It is not supported with personal contact and follow-up.

Active Materials Exchange is an exchange of materials between businesses for the purpose of reuse and recycling. The materials exchange website is a program tool, however almost all exchanges are a result of personal contact and facilitation by the program staff who maintains on-going and frequent communication with companies. Personal contact between staff and businesses is essential.

By-product Synergy is a 'step up' from active waste exchange in that one company's waste stream is used by another as a feedstock. By-product synergy overlaps with and occupies a vast space between active waste exchange and industrial ecology and is characterized by an evolution of the complexity of relationships and interdependence between businesses. The United States Environmental Protection Agency's definition of by-product synergy, as stated in Radian International LLC (1997), is "the synergy among diverse industries, agriculture, and communities resulting in profitable conversion of by-products and waste to resources promoting sustainability". According to Radian International LLC (1997), synonyms for this conceptual term include 'green twinning', 'industrial symbioses', 'zero waste/zero emission/100% product operations' and 'cradle-to-cradle eco-efficient manufacturing'.

Industrial Ecology incorporates the ideas of materials exchange and by-product synergy into a big picture 'systems perspective' whereby a framework is designed to integrate energy and materials flow to achieve high efficiency. These systems aim to reduce waste and pollution by creating resource loops within and between companies. Eco-industrial parks are based on this philosophy.

The waste exchanges, by-product synergy and industrial ecology concepts are interrelated, with each one seeking to minimize waste by 'closing the loop' of resource use.

3.0 Review of Existing North American Materials Exchanges

This section examines 11 industrial and business exchanges currently operating in North America. Information on material exchange categories, basic statistics, guidelines, promotional techniques, lessons learned and future direction are reviewed for each of the following materials exchanges:

Canada

- Calgary Materials Exchange
- Nova Scotia Materials Exchange
- Ontario Waste Materials Exchange
- Recycling Council of British Columbia Material Exchange

United States

- Business Material Exchange of Wisconsin
- California Materials Exchange
- Industrial Materials Exchange – Washington, Oregon, Idaho, Alaska
- Massachusetts Material Exchange
- Minnesota Materials Exchange
- New York Wa\$te Match
- Resource Exchange Network for Eliminating Waste - Texas

3.1 Methodology

The primary source for the literature search was the Internet. This allowed numerous organizations to be identified and contacted for information relating to materials exchanges.

Informal telephone interviews were conducted with material exchanges throughout North America. The list of materials exchanges initially selected for interviews was based on the targeted waste sector (e.g., industrial, business) and number of recent material listings observed on materials exchange websites during the literature search. The original list of six materials exchanges expanded to include noteworthy materials exchanges that were obtained during the interview process.

In total 11 materials exchanges were interviewed, with locations represented in Figure 1. Contact information for the exchanges is presented in Appendix A. A more extensive list of industrial/business materials exchanges in Canada, the United States and internationally is found in Appendix B.

Figure 1: Geographical Locations of Interviewed Materials Exchanges**Canada**

- A. Calgary Materials Exchange
- B. Nova Scotia Materials Exchange
- C. Ontario Waste Materials Exchange
- D. Recycling Council of BC Material Exchange

United States

- E. Business Material Exchange of Wisconsin
- F. California Materials Exchange
- G. Industrial Materials Exchange - WA, OR, ID, AK
- H. Massachusetts Material Exchange
- I. Minnesota Materials Exchange
- J. New York Wa\$te Match
- K. Resource Exchange Network for Eliminating Waste - TX

All materials exchange websites were used to collect background information for each exchange and gaps were filled during the telephone interviews that included the following:

- Verification that website information is current
- Statistical analysis (e.g., number of exchanges, tonnage diverted, savings)
- Capital and operational costs
- Lessons learned
- Future directions

3.2 Existing Documents

3.2.1 Materials Exchanges

Initially it was anticipated that existing materials exchange guidance documents would be relatively easy to locate, however this was not the case. Through extensive Internet searching and communication with materials exchange coordinators the following documents were found:

- 1) Center for Sustainable Business Practices Bryant University, 2005. *Marketing Plan – Cost-effective Opportunities for Northeast Materials Exchanges*. 75p.
SUMMARY: Discusses materials exchanges marketing options including development, low/no cost marketing strategies, potential partnerships, funding mechanisms and recommendations.
- 2) Cornell Waste Management Institute, 1998. *New York City Materials Exchange Roundtable*.
SUMMARY: Describes business motivation; users and generators; open and closed listings; technologies for organizing listings and matchmaking; results and evaluations; liability, confidentiality and regulatory issues; and revenue generation options from participants.
- 3) Lewis, M, R. Clark, J. Vandalland, and N. Seldman, 1995. *Reuse Operations: Community Development Through Redistribution of Used Goods*. 60p.
SUMMARY: Documents 67 reuse operations. The report covers materials targeted; warehouse, brokering and listing services; warehouse and truck parameters and employment practices. It also addresses financing reuse enterprises.
- 4) New York City Department of Cultural Affairs and Department of Sanitation, 1993. *Starting a Materials Donation Program – A Step-by-step Guide*. 58p.
SUMMARY: Discusses the Materials for the Arts waste reduction/reuse program and operational procedures which diverts unwanted materials from individuals and businesses into the hands of non-profit cultural organizations, social service, health, education, and community organizations with arts programming and individual artists working on public programs.
- 5) United States Environmental Protection Agency, 1994. *Review of Industrial Waste Exchanges*. EPA530-K-94-003. 72p.
SUMMARY: Describes waste exchanges that provide a mechanism for recycling and reusing industrial waste. Reviews the current activities and status of North American waste exchanges, characterizes wastes and the customers of waste exchanges and discusses funding mechanisms and relative market position of waste exchanges. Examines waste exchanges and environmental liability issues and provides recommendations for encouraging greater levels of reuse and recycling through waste exchanges.

3.2.2 By-product Synergy

Numerous documents on by-product synergy were found on the Hatch Group website (www.hatch.ca). Examples of Canadian documents include:

- 1) Applied Sustainability LLC, 1999. *Alberta By-product Synergy Project*. 47p.
SUMMARY: This report documents approximately 25 synergy opportunities. It also describes the background, process, potential by-product synergies, barriers and drivers, project outcomes, lesson learned and the next steps. One potential synergy between

Weyerhaeuser and Husky corporations expected to save \$300,000 per year by reusing a caustic by-product that Husky disposed by injecting it into a deep well disposal tank.

- 2) Hatch Associates, 2002. *Golden Horseshoe By-product Synergy Project for the Southern Ontario Region*. 32p.

SUMMARY: Dofasco Inc. of Hamilton, Ontario championed the Project. Representatives from three levels of government, Columbian Chemicals, Petro-Canada and Xerox participated in the project. Successfully implemented synergies include the use of by-product iron oxide from the steel making process as a raw material source in cement production.

- 3) Hatch Associates Ltd., 2001. *Montreal By-product Synergy Project – Participate Edition*. 44p.

SUMMARY: Noranda acted as the Project's industry champion. Corporate participation included Abitibi Consolidated, Air Liquide Canada and Shell Canada. By the end of 2000, four synergies had successfully been implemented, including the use of spent caustic from a refinery in a smelter as a desulfurizer and fluxing agent in place of limestone.

3.3 Materials Exchanges Highlights

The first task involved reviewing existing North American materials exchanges (Appendix B). Appendix C contains information on the exchange type, exchange initiation, statistical information, material categories, material guidelines, disclaimers, cost to user, and on-line availability was collected. Appendix D contains sample promotional materials.

Not all materials exchanges promote material guidelines or disclaimers on their website. Guidelines can cover acceptable listings, unacceptable listings, lister responsibilities, special services, right to reject and compliments and complaints. Disclaimers generally state that a materials exchange is not responsible for any mishap in the event of using the exchange (e.g., accuracy of information regarding materials, no warranty for services or products offered through the materials exchange). Appendix E outlines the California Materials Exchange and Minnesota Materials Exchange guidelines and disclaimers.

3.4 Capital and Operational Costs

Most of the individuals interviewed began working in their respective jobs after the materials exchange had already been initiated and so they were not aware of the capital costs to start the exchange. In many cases, the database and website were developed by internal staff so the actual cost was hidden. Other exchanges hired consultants to perform these tasks.

Operational costs primarily consist of salaries, website hosting, office space and utilities when applicable and program outreach and promotion. One exchange spent \$48,000 USD last year printing and mailing 10,000 catalogues to businesses six times while another spends \$100 USD per month to host their website. Total staff salaries ranged anywhere from \$32,000 to \$155,000 USD annually. Typical programs that occur involve database and website upgrades which can easily cost \$20,000 USD.

A detailed budget for capital and operational costs from the 18-month pilot project of the Calgary Materials Exchange is found in Section 5.7.

3.4.1 Staffing Requirements

The initiation stage of a materials exchange is the most labour intensive and can consume two or more full-time equivalent staff. When this stage is over and the program is in operational mode. That is, interviewed exchanges range from 1/10 time of one full-time staff member for a passive materials exchange to 1 ½ full-time equivalents for an active materials exchange.

In several cases, the materials exchange utilizes someone half-time and that individual works on other programs the other half-time.

3.5 Funding Opportunities and User Fees

Existing organizations suggested that a minimum of two years of funding be secured to start an active materials exchange. It takes at least one year for the Program Coordinator to obtain significant business buy-in, create promotional materials, set-up the database and develop the website.

Government and industry sponsorship are both sources for materials exchange funding. Additionally, for non-profit organizations there are numerous opportunities available throughout Canada to assist with labour costs or in-kind donations for environmental programs. For example, Environment Canada's EcoAction website (www.ec.gc.ca/ecoaction/before_e.html), has tools and resources that can assist with program planning. It also has the Green Source Funding Database (2003) that can aid with financial support. Internet searches can also be used to identify suitable funding sources.

User fees are another way to assist with expenses once the program is operational. In 2005, the Calgary Materials Exchange started to encourage users to purchase a \$100 CAD annual membership. The Massachusetts Materials Exchange requests participants to contribute a portion of the savings (Table 1) resulting from any exchanges. Meanwhile, New York Wa\$te Match accepts donations.

Table 1: Massachusetts Materials Exchange Guidelines for Contributions

If a business takes your material and:	Then you contribute 20% of your:
You were discarding it	Disposal savings
You were discarding it, and recipient pays you	Disposal savings and revenue
You were not discarding it, and recipient pays you	Revenue
If you receive material and:	Then you contribute 20% of your:
You pay less than you normally pay for that material	Purchasing savings

3.6 Frequently Asked Questions

Several materials exchanges have a Frequently Asked Questions section on their website for users. This section also assists the Program Coordinator as it reduces the number of questions the Coordinator responds to and frees their time to complete other work.

Typical questions include the following:

General

- What is a materials exchange?
- Why should my business be interested in using a materials exchange?
- What types of products can I find on the materials exchange?
- How quickly can I expect a match to be made?
- I do not have an email address, does this exclude us from using the materials exchange?
- Is the materials exchange list ever released for commercial use?
- Can individuals use this service?
- How do I update my user information?
- Can I promote the materials exchange?

Membership/Registration

- Why do I need to register?
- How do I become a member?
- What choices do I have as a member?
- What if I forget my password?
- How do I sign in?

Cost

- Is there a charge to use this program?
- Can I receive a tax deduction for my exchange?

Post Listing/Search Listing

- How do I post my available/wanted listing?
- What if there is more than one product I would like to list?
- How do I search the materials exchange?
- I have an available/wanted item on the materials exchange. How do people contact me?
- What if I do not find what I am looking for?
- Can I place my listing confidentially?
- What is a confidential message thread system?
- What materials are and are not allowed to be posted?
- How do I edit my listing?
- How do I remove my listing?
- How do I extend my listing?
- I am having a problem using the materials exchange. What do I do?

Material Storage and Transportation

- Does the exchange store and transport the materials listed?

Material Exchange Successes

- Why is it important for the materials exchange to know when I have made a successful exchange?
- Why do you ask for an item's weight and value?

Paper Catalogue

- How much does it cost to receive the catalogue?
- How often is the catalogue updated?

Communication

- Why do I need an email account?
- What are electronic updates and when are they sent?
- When are the newest listing emails sent?
- How do I make inquiry about the materials exchange?
- I still have questions, what should I do?

3.7 Materials Exchange Closures

Through the interview process it was noted that several materials exchanges have closed over the years. On most occasions the name of the exchange could not be recalled, however the reasons behind the closures are two-fold. Closures primarily took place due to a lack of funding. All materials exchanges contacted stated the importance of having secure funding. Closures also occurred due to a lack of staff energy. In one case, the Program Coordinator moved on to a new position and the new coordinator did not have the enthusiasm required to continue the exchange.

Additionally, an 'active' outreach strategy involving personal contact and relationships between the Program Coordinator and businesses is essential for a materials exchange to succeed. In cases where the materials exchanges relied entirely on the existence of a website alone, or responsibility for the exchange is added to an individual's full plate of responsibilities, the exchanges did not prosper.

3.8 Lessons Learned

Lessons learned during the implementation and operation of materials exchanges in other regions were identified during the telephone interviews. Many respondents provided suggestions and insights that may prove useful in developing a materials exchange program; their comments are listed below:

General

- It is better not to be involved in every material transaction; develop contact between businesses only.
- Ensure that businesses realize that the materials exchange does not assist with storage or transportation of materials.
- Focus on an industrial area with 'heavier' industry and diverse sectors.

Research

- If a materials exchange already exists in the area, work together rather than having several materials exchanges; it is counterproductive to compete for users and funding.
- Conduct background research on materials exchange implementation and industrial buy-in.

Funding

- It is important to establish continuous funding for materials exchange.
- Ensure that organization operating the materials exchange has a similar mission to its funder.
- Balance the time spent obtaining sponsorship with the sponsorship amount.

Relationship with Businesses

- Be pro-business and consider setting up a business directory on the website or business links.
- Reach businesses through direct contact, based on proven social marketing techniques rather than 'passive' outreach strategies.

Cost to User

- Consider charging a fee for the listing service - this assists with decreasing the number of difficult customers.

Membership/Registration

- Requiring businesses to register to a materials exchange before having access to search the website means they will be less inclined to use the website.

Liability

- Beware of chemical substances.
- Ensure businesses recognize that the materials exchange has no liability.

Staffing

- It is easier to have one dedicated full-time position rather than two part-time positions.

Website

- Introduce a strong website interface from the program outset.
- Shop around for a website developer.
- Do not give the developer too much control as they may design the website to their discretion and not to the materials exchange needs.
- Ensure that the Program Coordinator is computer savvy (e.g., can update website as required).

Database

- Work with only one database - more than one is too complicated.
- Develop or purchase a database with room for future expansion.
- Allocate significant time for data management, including data entry and analysis.
- Avoid multiple databases that require cross-referencing by hand.

Post Listing / Search Listing

- A 'wanted' material listing is not very effective. Consider eliminating the 'wanted' list and replacing it with an online business directory.
- Ensure that listings are descriptive so there is no confusion between businesses.
- Follow-up with users to verify that listings are current after a predetermined amount of time.

Materials Exchange Successes

- It is difficult to measure program success as not all exchanges are documented.
- It is extremely labour intensive to track exchanges; try to find a way to decrease tracking time. One option is to not track statistical information (e.g., number of exchanges, tonnes diverted, cost savings) if funding agency is willing; instead track number of website visitors, number of registered companies and/or business satisfaction with materials exchange.
- Businesses report exchanges that are unsuccessful, but typically do not report successful exchanges.
- When businesses register with the materials exchange, notify them immediately that they will be asked to submit information regarding successful exchanges.

Promotion

- Don't underestimate the benefits of forming a partnership with the media.
- Have photographs of recyclable materials available before contacting the media.

Printed Catalogue

- A printed catalogue is too costly and goes out of date quickly.

Communication / Education

- It is effective to email listing updates bimonthly to businesses.
- Businesses appreciate receiving automatic email notices when a material match is available; materials exchange staff appreciate it too as they are not required to do the search. Database conducts search and sends email notification automatically.
- It takes more time than one anticipates to educate businesses about materials exchanges.
- It is beneficial to have a direct email link from the website to the materials exchange for user questions.

3.9 Future Direction

Future direction of the interviewed materials exchanges varied. The following list summarizes responses from Program Coordinators:

Database

- Make the database available to others for a minimal charge.
- Add an option that allows businesses to create listings directly to the database.
- Create automatic weight assessment calculations (e.g., total by material, year) in the database so the coordinator is not required to make the calculations separately.

Geographic Area

- Restructure geographical area of exchange.
- Form an alliance with other materials exchanges in the same geographic area and eventually have one search engine cover the geographic area.

Website

- Customize website to better meet the needs of businesses.
- Clean up website (e.g., minimal text, more graphics).
- List material exchange policy on website.
- Add option that sends businesses an automatic email when requested material is available.
- Encourage businesses to use the website to make the exchange more self-sufficient.

Other

- Eliminate paper catalogue in favour of a .pdf version.
- Publicize success stories.
- Continue passive materials exchange unless funding is available for programs.
- Look at a more proactive approach; contact companies directly (e.g., cold calls).
- Move towards promoting overall sustainable business practices.

4.0 Calgary Materials Exchange – Overview

The remainder of this Guidance Document focuses on the Calgary Materials Exchange (CMEX) 18-month pilot program, formerly called the Foothills Waste Exchange Project. It also presents highlights from 2005, however this content is not as detailed as that presented for the pilot project. CMEX's objective is to divert industrial waste from Calgary landfills by facilitating the exchange of 'waste' products between companies using a community-based social marketing approach.

Over the 18-month pilot, ending December 31, 2004, the following results were reported:

- 139 businesses participated
(total number of industrial businesses in SE Calgary: over 1000)
- 62 businesses formed partnerships
- 410 materials exchanges took place
- 1,044,806 kilograms of materials were diverted
(total industrial waste produced in southeast Calgary: over 100,000,000 kilograms)
- \$89,117 of financial savings to companies (waste suppliers and recipients)
- 2,345 tonnes of carbon dioxide equivalent of greenhouse gas savings

4.1 Foothills Waste Exchange Project Concept Development

In 2002, the Recycling Council of Alberta's Industrial, Commercial and Institutional Waste sub-committee addressed the need for waste reduction in the industrial sector. In Calgary, the industrial, commercial and institutional sector accounts for roughly 1/3 of waste going to Calgary landfills, while the construction and demolition and residential sectors produce about 1/3 each (UMA Engineering Ltd and EBA Engineering Consultants Ltd., 2001). This committee discussion initiated the concept of an industrial waste exchange in the City of Calgary.

4.2 Program Objective, Strategy and Philosophy

4.2.1 Program Objective

CMEX's objective is to divert industrial waste from landfills by facilitating materials exchanges.

4.2.2 Program Strategy

Many materials exchanges are unsuccessful for two interrelated reasons:

- Lack of funding
- Lack of personal contact and communication between participants and the Program Coordinator

A 'passive waste exchange' simply provides materials available or wanted listings for companies to view on-line or in a directory and there is no personal contact or follow-up by program staff. Multiple closed passive waste exchanges demonstrate that this type of exchange is not effective for community-based waste diversion programs.

CMEX took an alternative approach to avoid this pattern by developing an ‘active waste exchange’ that integrates community-based social marketing techniques. This strategy emphasizes personal contact between staff and participating businesses in order to provide easy access to information, support and follow-up. Businesses have someone to contact for questions, difficulties and unique waste situations, which ultimately results in more exchanges.

4.2.2.1 Community-Based Social Marketing

Community-based social marketing “draws heavily on research in social psychology that indicates that initiatives to promote behavior change are often most effective when they are carried out at the community level and involve direct contact with people. The emergence of community-based social marketing over the last several years can be traced to a growing understanding that programs that rely heavily or exclusively on media advertising can be effective in creating public awareness and understanding of issues related to sustainability, but are limited in their ability to foster behavior change” (McKenzie-Mohr and Smith, 1999).

For more information on community-based social marketing and to learn more about the psychology that underlies changes in behavior as they relate to environmental issues, visit <http://www.cbsm.com/members/signon.lasso>.

CMEX utilizes an ‘active’ community-based social marketing approach that places the Program Coordinator in the field developing relationships with and among businesses through continuous personal contact and by telephone. This personal approach allows for adaptability as the program develops. Ineffective techniques defined by industry participants, the Industry Steering Committee and the Technical Advisory Committee are discontinued and successful ones are enhanced and expanded.

It is important to base program strategy on research and what potential participants suggest. Additionally, program components are iterative and assessed throughout the program. One can remove activities that do not work to free time to implement new ideas that may be more effective.

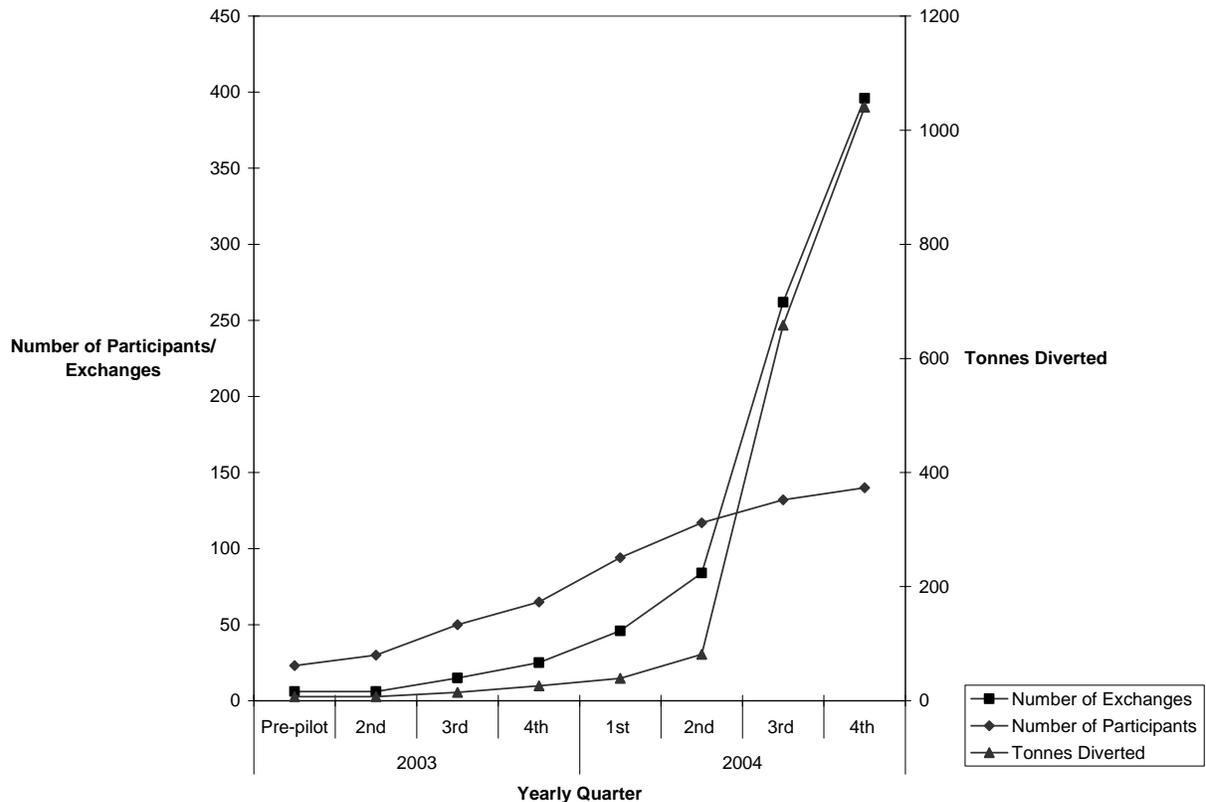
For example, CMEX’s original program design included participant newsletters. Initially this was a good idea, however, participants were not interested in newsletters at that point in time. Meanwhile, with 60 participants on board, the Program Coordinator required a Program Assistant to handle administrative tasks. Rather than move forward with newsletters, a letter was written to one of the funders explaining the situation and requesting a reallocation of funds. The funder granted the request and a Program Assistant was hired. This proved to be a wise decision, as the Program Coordinator could not compile the pilot program results alone.

4.2.3 Program Philosophy

CMEX’s program philosophy centres on patience and perseverance being essential to foster social change and mindset adjustments relating to waste in the industrial community. Social change takes place over time and cannot be rushed; it takes time for impacts of the materials exchange to develop and significant quantitative results may not be seen immediately. As the Program Coordinator builds relationships with businesses, a network based on personal relationships grows and the material exchanges follow. As connections multiply and strengthen within the industrial community, materials exchanges grow and successful exchanges reinforce business relationships.

Figure 2 summarises CMEX program growth during 2003-2004. Note that it took the Program Coordinator over a year of one-on-one meetings and telephone calls before the materials exchange activity started to rise. It was not until the fifteenth month mark that the tonnes diverted increased significantly. Timing of materials exchange growth is unpredictable, so it is important not to be discouraged at the onset.

Figure 2: Calgary Materials Exchange Program Growth 2003-2004



Personnel changes and the economic climate can influence how materials exchanges progress. In order for exchanges to flourish and adapt, two to three years of funding are necessary and advisors and staff must be prepared to invest this time.

CMEX avoided setting quantitative targets (e.g., kilograms of waste diverted) where possible in funding proposals. Results were presented from other materials exchanges, however each industrial park has varying cultures and industry mixes which can lead to unreasonable expectations by the funding agencies.

4.3 Performance Indicators

Performance indicators are essential for Program Coordinators and almost always required by funding agencies. However, each agency is typically interested in a slightly different set of results and impacts. All indicators to be measured must first be identified, after which mechanisms to gather, manage and report this data are built into the program strategy and work plan.

4.3.1 Performance Indicator Selection

CMEX uses the following indicators:

- Number of businesses participating
- Type of participating businesses
- Number of business partnerships formed
- Number of materials exchanges resulting from partnerships (e.g., continuous and one-time)
- Tonnage of waste diverted from materials exchanges
- Total financial savings to businesses (e.g., waste suppliers, recipients) from materials exchanges in terms of landfill tipping fees, waste bin pick-ups, reduced cost of raw materials and market value of commodities
- Greenhouse gas savings from material exchanges

Website traffic statistics are used to determine site activity, including what issues or events spur interest in CMEX via the Internet. This information has not been requested by any CMEX funding agency. Internet service providers use different software packages to measure website traffic, so it is important to understand the meaning of the statistics provided.

4.3.2 Performance Measurements

Tracking and reporting performance is extremely time consuming. To lighten the load, once performance indicators and reporting requirements are determined, a database can be developed that meets the exchange's long-term needs. This makes it easier to design and implement the right database early in the process and to include it in the budget.

Data management was not a high priority for CMEX at the start and this caused significant difficulty, frustration and additional work. Initially, MS Excel spreadsheets were used, then the information was transferred to MS Access, but it soon became apparent that this software was not being utilized effectively or efficiently. Currently a database overhaul is taking place, which includes on-line reporting from the website to participating businesses.

The CMEX database includes the following information:

- Company contact information
- Company communications (e.g., telephone or visit)
- Company waste streams and inputs
 - Material description
 - Quality
 - Quantity: weight or volume
- Exchange logistics
 - Pick-up or drop-off information
 - Material sorting
 - Warehouse space or outdoor bins
- Results of exchanges (measurable impacts)
 - Commodity exchanged
 - Companies involved
 - Material weight
 - Market value of material (which can fluctuate) or landfill tipping rate
 - Commodity associated CO₂ equivalence for material (varies with reuse or recycling)

This information is listed, but needs to be included in a mechanism to query and match material from waste generators with recipients. The information is recorded and calculated from commodity and business perspectives and summarized quarterly, which can complicate data management.

Data collection comes from administrative calculations for greenhouse gas emissions, as well as submitted business exchange results. A sample Impact and Exchange Results Form that CMEX requests businesses to complete is shown in Appendix F.

4.3.2.1 Targets

The industrial sector of Calgary generates an estimated 340,000 tonnes or 40% of the city's total waste stream, estimated at 340,000 tonnes annually, offering a significant waste diversion opportunity (UMA Engineering Ltd and EBA Engineering Consultants Ltd., 2001). CMEX 2005 targets included a total of 300 participating businesses and 500 possible material exchanges as determined by the Technical Advisory Committee.

4.4 Key Elements for Program Success

Revisiting the objectives, strategy and philosophy on a regular basis is important. It is a challenge to explain the program's dynamics and long-term nature to potential participants, funders, media and the public if the fundamental drivers are not well understood.

Key elements that are important to consider for new programs include the following:

- Clear objectives
- Program philosophy
- Community-based social marketing
- Sufficient time for pilot program
- Long-term funding
- Dedicated full-time Program Coordinator with the right set of skills, passion and personality
- Effective strategy and program design
- Database that meets long-term needs
- Defined geographic area
- Clear understanding of resources required (e.g., human, financial, temporal)
- Industrial park comprised of diverse industry
- Regularly available, diverse Technical Advisory Committee
- Dedicated Industry Steering Committee
- Support from local municipality and environmental organizations

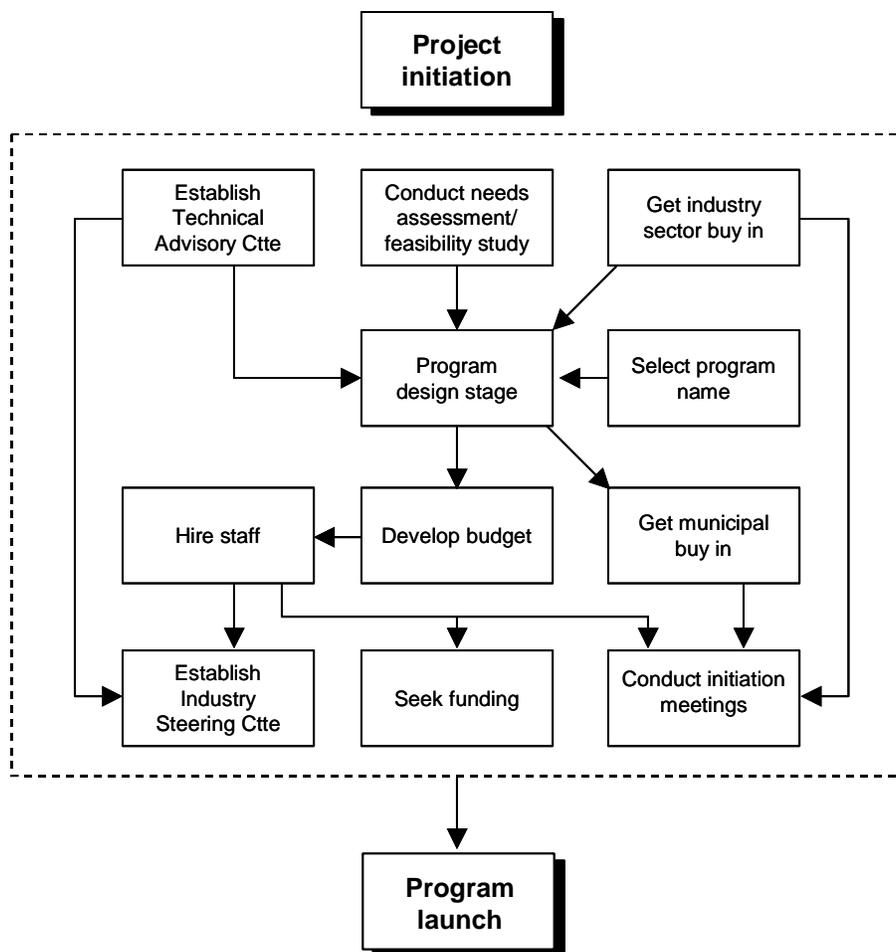
5.0 CMEX – Managing the Initiation and Launch of the Materials Exchange

5.1 Program Initiation Process

Figure 3 represents a schematic of CMEX project initiation activities from conducting a needs/feasibility study, program design, budget development and funding to committee establishment, program buy-in and hiring staff. All of these activities are important components of the program initiation process that leads to the program launch.

The remainder of Section 5.0 provides detailed information on each of these activities.

Figure 3: Calgary Materials Exchange Program Initiation Activities



5.2 Background Research / Feasibility Study

The first step in developing a materials exchange is to conduct a “needs assessment” to determine if materials exchanges already exist in the immediate area.

If no materials exchange is in operation the next step is to research existing materials exchanges in the region. Type, diversity and volume of industrial activity, as well as geographic location make industrial areas unique and require that significant information is collected before the materials exchange starts. This information can be cross-referenced with any local studies that focus on:

- Waste generation
- Waste diversion initiatives
- Implementation of waste exchanges, by-product synergy and/or industrial ecology
- Community-based social marketing

Prior to designing CMEX, the TAC conducted research on local waste generation and the potential for by-product synergy in Alberta so that CMEX would be informed and based on current information rather than assumptions.

5.3 Program Philosophy, Approach, Design, Strategy and Measurables

Once initial research and feasibility studies were conducted, the materials exchange scope was determined. Pre-pilot research led to the following conclusions:

- Diversity of industry in Alberta lends itself to by-product synergy
- Focus program on a defined geographic area or diverse industry
- Long-term viability of materials exchange depends on a fundamental shift in perceptions of waste by industry senior management
- Shift in perceptions and behaviour takes a long time
- Dedicated full-time Program Coordinator is required to make the exchange active and viable
- Community-based social marketing has proven that for a shift in behaviour to occur, ongoing personal contact is required

All of the above were taken into consideration when identifying the southeast Calgary Foothills Industrial Area as the program location. This Calgary industrial park houses over 1,000 businesses belonging to a variety of industrial sectors such as manufacturing, recycling, wholesale, logistic and engineering companies and construction as well as retail and service businesses. Most of the industry levels range from light to medium and when combined produce over 100,000 tonnes of waste annually (UMA Engineering Ltd and EBA Engineering Consultants Ltd, 2001 and Whitfield, 2003).

5.4 Formation of the Technical Advisory Committee (TAC)

The Technical Advisory Committee:

- Develops concepts and designs the program strategy
- Oversees and guides program
- Hires, supervises and evaluates program staff's performance

Ideally, the TAC is comprised of a diverse group of individuals with a varying range of skills, expertise and community contacts. The recommended skill set includes: business, fundraising, public relations, waste management/recycling, recruiting and community-based social marketing.

The CMEX TAC is comprised of four members: two representing industry (private sector), one from Alberta Environment (public sector), and one from the Clean Calgary Association (non-profit sector). The TAC provides on-going support to the materials exchange staff, which in turn keep the TAC current on program activities.

Initially, the Program Coordinator met with the TAC monthly to discuss operational activities, with the meeting frequency subsequently being reduced to approximately once every two months. At the beginning the TAC met independently of the Industry Steering Committee (ISC - see below).

In 2005, the TAC merged with the ISC. The TAC was formed to assist with program start-up functions, while the ISC's purpose was to provide ongoing feedback and program modification suggestions.

5.5 Industry Sector Buy-in

At the program outset, the TAC and the Program Coordinator worked together to form the ISC, which is comprised of senior management from industrial businesses that support CMEX. Not only does ISC provide vital insight into the challenges that industry faces in terms of materials exchange, it also gives suggestions on how to approach and work effectively with businesses.

If CMEX proves to be valuable to industry over the long-term, it is anticipated that the financial accountability and operation of the materials exchange will ultimately become the ISC's responsibility.

5.5.1 Industry Buy-in Meeting

In order to establish buy-in from the industrial community, senior managers of industrial businesses were invited to attend a meeting. The invitation consisted of a telephone call and an information package that described the program concept and potential benefits, identified which agencies supported the initiative and listed several industrial participants. A meeting time, place, and agenda were included and the Program Coordinator followed-up with each business to confirm attendance. Approximately 70% of the 22 invited businesses attended.

5.5.2 Industry Steering Committee/First Participants

In order to further coalesce industry buy-in, 16 senior managers were invited to the January 2003 inaugural steering committee meeting to formally introduce the program and discuss potential interest in a waste exchange. Numerous businesses provided letters of support to funding agencies and several attendees formed the ISC.

The creation and participation of the ISC is imperative. Involvement of senior managers lends credibility to the program in the eyes of prospective funding agencies and participants. Businesses react positively when their neighbours, clients and suppliers have 'signed-up' for the initiative. This also provides an opportunity for reference checking with colleagues. CMEX has benefited from ISC insight regarding business culture and specifically what will or will not work in terms of industry enrolment. ISC members are a source of referrals to other businesses and identify important issues and industrial 'champions'.

In addition to word of mouth, when the Program Coordinator visits businesses, they start to recognise potential program champions (e.g., action-oriented leaders who understand the concept and see its potential). Industrial senior managers are extremely busy and although they may whole-heartedly support the program, they may not be available for all ISC meetings. Because of this, ISC members should be encouraged to designate alternate representatives to replace them for meetings when they are unavailable to attend. It is important to anticipate ISC membership changes and seek to build its strength (e.g., number of members and level of involvement) over time.

CMEX holds one-hour ISC meetings roughly every two months and all participants signed a commitment statement to attend meetings regularly. One of the participating businesses provides a meeting room for CMEX on an on-going basis.

In 2005, ISC sub-committees for strategic planning and funding were developed. These sub-committees meet as required and consist of approximately four people, plus the Program Coordinator.

5.5.3 Participant Recruitment

Companies have learned of CMEX through a variety of channels over the pilot period: news media, CMEX website, workshops, phone calls, site visits, referrals and membership in associated organizations. Figure 4 shows the recruitment options through which companies became aware of and subsequently participated in CMEX. The most important shift noted is that referrals from other companies have become more prevalent over time, demonstrating that the success of one company can influence another.

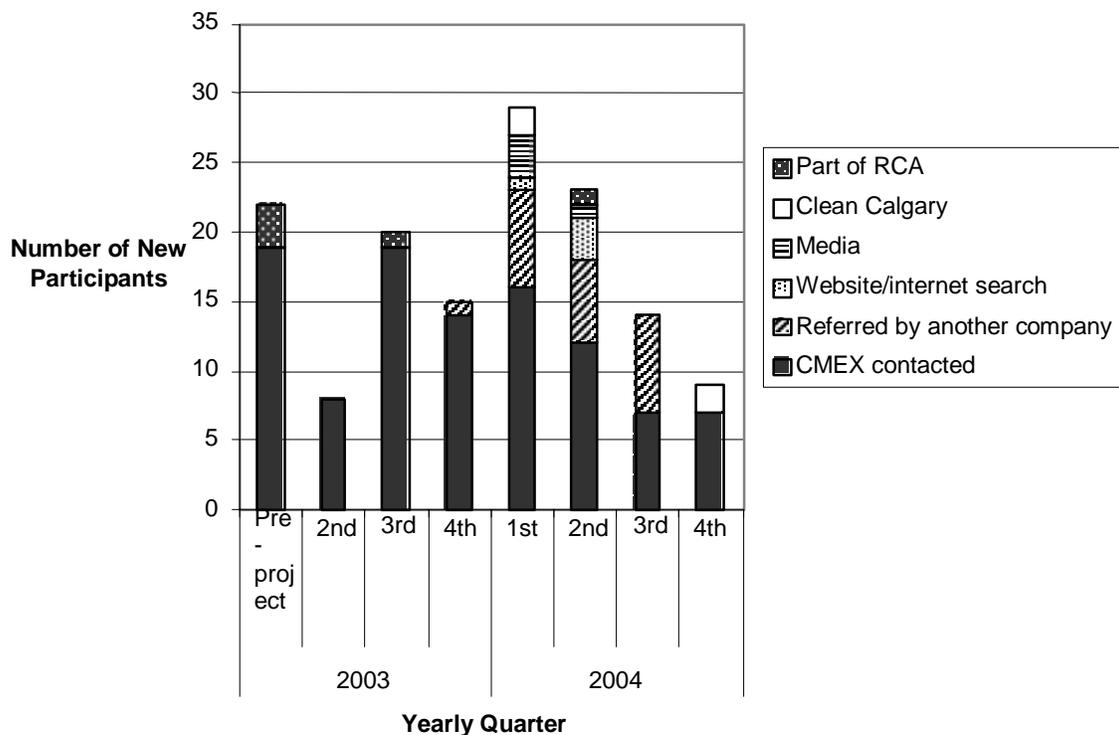
At the program start, it is important to enlist businesses in order to gain momentum. With companies on the participation list, it is easier to sign up new businesses, as they feel more comfortable considering participation if they see clients, customers and/or neighbours already taking part.

In order to obtain initial company support, the most 'enthusiastic to be involved' companies in the target area should be considered first. Look for businesses that would likely sign up with the least amount of work on the part of the Program Coordinator. Suggestions for initial target participants include the following:

- Industrial company representatives on the Technical Advisory Committee
- Technical Advisory Committee contacts
- Industrial companies that belong to local or provincial environmental organizations
- Industrial companies that represent themselves as environmentally friendly
- Companies that have already been matched to exchange materials

CMEX was fortunate to have two material exchanges take place before it was officially launched. Wood 2x4s were exchanged between a manufacturer of laminate board and a manufacturer of conveyor equipment, and glass was exchanged between a furniture manufacturer and a glass recycler. Both examples show material exchange benefits and provided a company that became a participant and joined the ISC.

Figure 4: Calgary Materials Exchange Company Recruitment 2003-2004



Initial company support provided leverage when speaking to new businesses. CMEX was initially excited with the prospect of having 16 participants - now there are well over 100 businesses taking part.

At the start, the database was built from information supplied by potential participants, listing all communications and activities related to materials exchanges. Ideally, the database should list the following information for all industrial companies in the target area:

- Company name, address and phone number
- Industry type(s)
- Company size
- Contact name, with department, title and direct telephone number
- Type and volume of company material and/or raw material requirements

CMEX started with a list of approximately 20 companies from an Alberta Economic Development database. This list was by no means exhaustive, but it did include company and contact names. Although the list was relatively recent, some of the contact names were no longer at the listed businesses. Various municipal departments were contacted to determine if industrial company information was gathered at City Hall, however this information was either not collected or was not available to CMEX. A copy of the Canadian Business Directory was located at the downtown library, and it was from this database that CMEX was able to collect target area companies by postal code.

Many materials exchanges spend considerable time conducting research and feasibility studies on exchange materials available and potential solutions or recipients for the materials prior to implementing the program. It is important to have an understanding of the potential exchanges available, but by taking a more active approach and having companies involved from the start, initiating exchanges can demonstrate success and give the program merit.

For more detailed information about recruiting new participants, see Section 6.3.

5.6 Municipal Buy-in

Municipal contact ideally takes place during the initial research and feasibility study. This relationship is extremely important given the significant role municipalities play in waste management services. Municipalities may have valuable information to share from experience, surveys, studies and reports, and they may also be sources of funding and/or other resources. Determine what, if any, industrial, commercial and institutional initiatives the municipality has underway and its position on a materials exchange.

The City of Calgary, through Waste and Recycling Services (WRS), has strong ties with CMEX's administrator, the Clean Calgary Association (CCA). WRS provided financial support and waste composition information utilized by CMEX to seek pilot program funding in 2002. It monitored CMEX progress closely in 2003 and 2004, reviewed the pilot program results and committed to providing program funding for 2005. Continued support from WRS depends on CMEX demonstrating that the materials exchange is producing significant results for the investment made and that the initiative is financially supported by industry and other Alberta environmental agencies.

5.7 Budget

It can be difficult to identify all expenses of a materials exchange before starting. Each organization administering a program has different needs, demands and opportunities to acquire funding. Table 2 provides a budget used in the CMEX pilot phase and for 2005.

Table 2: Calgary Materials Exchange Budget (CND)

Item	18-Month Pilot Phase	2005
Salary	\$51,600	\$90,000
Benefits	N/A	
Program Operations	\$10,000	\$9,000
Administration	\$6,000	\$12,000
Rent and Utilities	N/A (donated)	\$18,000
Office Equipment	N/A (donated)	\$10,000
Professional Development and Resources	N/A	\$4,000
Education and Resources	\$12,600	\$18,000
Website	\$6,634	\$100
Data Collection and Entry	\$10,600	\$5,650
Total	\$97,434	\$166,750

The main difference between the pilot and 2005 budget is attributed to salary increases. During the pilot phase, the budget allowed for one full-time contract and one summer student, whereas the 2005 budget covers salaries and benefits for two full-time staff and one summer student. Changes include the addition of professional development in 2005 and a decrease in website costs as the website was developed the first year and does not require a significant investment in 2005. Other differences include a 12-month time frame versus 18 months, as well as a general increase in budget costs to accommodate increased program activity.

In the pilot phase, \$7,000 that was originally designated for newsletters (under Education and Resources) was reallocated to the Program Assistant's salary. The Data Collection and Entry budget was also used for the Program Assistant.

Note that some requirements and needs are not obvious at the beginning of the program, therefore including surplus budget with room for additional services is advantageous.

5.8 Start-up Funding

Most materials exchanges are partially or wholly funded through municipal, provincial, county or state governments and may be complemented by non-profit administration. Occasionally, materials exchanges are funded through outside grants, website sponsorship, university affiliation or by a percentage of profits from exchanges. Environmental organizations or foundations also fund such initiatives depending on how the exchange fits their mandate and specified criteria. Where the program was conceived and who benefits determines what funding sources to pursue.

Many exchanges fail due to lack of funding at critical stages of development. Ideally, building a long-term strategic plan for ongoing funding from renewable sources is imperative. Achieving financial sustainability may be difficult for materials exchange initiatives, so government or external funding is necessary at the beginning. It is important to ensure that the exchange fits the funder's criteria when submitting proposals and that the funding agency has financial resources to give. The original objective, strategy and philosophy should not be compromised by trying to accommodate the funding agencies' vision. Rather, funders should be sought out that share similar mandates and goals.

Another strategy is to involve businesses that stand to profit from the success. CMEX membership fees and industry sponsorship were implemented in 2005 to confirm industry support to funders and to work towards becoming financially sustainable.

CMEX received initial financial support from the City of Calgary WRS and the Recycling Council of Alberta for a Program Coordinator to work towards securing 18 months of pilot program funding. This took time, as the primary funding agency, Action Plan 2000 on Climate Change's Enhanced Recycling Program (administered by Natural Resources Canada), required detailed information about the amount and type of industrial waste being landfilled in the program area and requested industry buy-in from the Foothills Industrial Park. To meet these requirements, the Program Coordinator conducted waste characterization research and organised a meeting for 16 senior managers of industrial businesses to introduce the concept of a materials exchange, assess buy-in from industry and form the ISC. Once funding was in place, sponsorship from Alberta Ecotrust Foundation, Alberta Environment, Suncor Energy Foundation, and Shell Environmental Fund followed.

Six months passed before funding arrived. In order to move forward, the CMEX TAC found an unemployed individual who was interested in the program and agreed to be the Program Coordinator. This individual volunteered part-time until the funding was secured.

5.9 Human Resources

5.9.1 Program Administrator

Program administration requires managing finances and ensuring that all reports for the project are well-written and submitted in a timely manner. The agency that plays this role can expect to be involved with the program to a far greater degree than other members of TAC and must be capable and interested in delivering a community-based social marketing approach.

One of the TAC members is the Executive Director of CCA, a not-for-profit urban environmental charitable organization. CCA was selected to administer the materials exchange due to its experience managing grassroots environmental programs and its status as a charitable organization, which opened up funding opportunities. Additionally, CCA provides a workspace and equipment for the Program Coordinator and Program Assistant.

5.9.2 Program Coordinator

A Program Coordinator job description can be found in Appendix G.

The candidate's personality is equally as important as their skills, education and background in environmental issues. The Program Coordinator's personality aids greatly with business relationships. For any material diversion to occur, company employees must engage in a series of actions that takes time away from their current responsibilities. A charismatic, easy-to-work-with Program Coordinator who is finely attuned to the fact that people are extremely busy at work and only make time for new worthwhile initiatives is ideal. This requires that the Program Coordinator adeptly shift the emphasis, message and brevity of the communication upon sensing the reaction and needs of the business.

The Program Coordinator's activities, approaches and communications often resemble that of a salesperson. Though the concept being sold is quite unique and may eventually have very

practical benefits for the participants, the environment and the community, it is important to realize that a program of this nature requires rigorous marketing, sales and perseverance.

The Program Coordinator ideally should have a solid grasp of the materials exchange concept, strong interpersonal skills, background knowledge in waste management and recycling and program management experience.

Qualities to look for include a broad knowledge base, high energy level, openness, flexibility, pleasant face-to-face and telephone manner, excellent written communication skills and computer skills with multitasking and prioritizing capabilities. The successful candidate must be at ease in industrial, government and non-government organization settings and easily adapt to understand the issues and challenges inherent to each sector. They must also respect privacy and confidentiality.

It is essential that the Program Coordinator be equipped with safety gear including a hard hat, safety glasses, steel-toed boots and a safety vest. Additionally, clothing with a logo or name is a good way to promote the program with businesses.

5.9.3 Program Assistant

As the number of material exchanges increase, so does the administrative workload. Recording results for each exchange requires information gathering and processing, which is time consuming. It is challenging for the Program Coordinator to contact and meet with potential participants, facilitate exchanges and gather and manage data.

Administration and tracking tasks consumed the CMEX Program Coordinator's time entirely with 100 participants. At that time, TAC supported a four-month contract for a Program Assistant to give the Program Coordinator more field time. By the end of the four-month contract it was apparent that a full-time Program Assistant was required for data gathering and processing, research, newsletters and workshop organization.

Ideally, the Program Assistant will have an environmental background, strong communication skills, database application knowledge and attention to detail and data management skills. A Program Assistant Job Description can be found in Appendix H.

5.9.4 Additional Assistance

In 2005, one student and one researcher contract position assisted with contacting more companies, workshop organization, expanding target industrial sectors and newsletter and progress report circulation.

5.10 Office Location, Set-up, Telephone and Equipment

Office space, equipment and resources must be included in the project budget.

Prior to securing office space, the Program Coordinator worked from home while writing and submitting initial funding proposals. Then, one TAC member provided office space for the Program Coordinator at their office in the industrial area, which was convenient for meeting with program participants. After six months, the business expanded and no longer had space for the Program Coordinator, so the Clean Calgary Association offered a workspace. As of November 2005, the Program Coordinator and Program Assistant continue to work out of the Clean Calgary Association office.

5.11 Program Image

5.11.1 Program Name

Selecting a program name at the beginning is imperative as it provides a reference for the program when discussions take place in the preliminary stage. Additionally, it is important to choose a name to which program partners and participants can understand and relate. If the name suggests something complicated, then businesses may be less receptive. A program name should be based on scope and potential without overstating the nature of the activity.

A program name that clearly identifies what the program does and the community/area/region in which it operates can help to provide recognition. Likewise, a brief, simple name is easier for businesses to remember and for staff to use. It is also important to consider logo design and a website domain name when establishing a program identity.

Initially the program was called a 'waste exchange' for three reasons:

- 1) Location was an established industrial park and a logical way to introduce 'closed loop systems' is to start at the beginning with a waste exchange. Simple waste exchanges would initiate a network of relationships between businesses that would not otherwise be in contact. The overriding plan was to change people's perceptions and behaviours by developing 'waste exchange' relationships through positive reinforcement (e.g., successful exchanges, patience, time, participant interaction).
- 2) 'Waste exchange' clearly states the nature of the program in simple language, while 'by-product synergy' is more difficult to understand.
- 3) Nature of the program activity is not overstated.

At the end of the pilot phase the program name switched from Foothills Waste Exchange Project to Calgary Materials Exchange for the following reasons:

- 1) 'Foothills' was changed to 'Calgary' due to a citywide expansion.
- 2) 'Waste' was switched to 'materials' to reflect the change in perception that by-products are not simply garbage.
- 3) 'Project' was removed as the pilot phase was completed and it gives a more permanent name.

5.11.2 Logo

Logos are important to market businesses and a materials exchange is no exception. They assist with creating a program identity and can be used for written communications, business cards, clothing and websites. The logos developed for the program are shown in Figure 5.

Figure 5: Foothills Waste Exchange and Calgary Materials Exchange Logos



5.11.3 Business Cards

It is vital for the Program Coordinator to have business cards to give to industry participants and to enhance program credibility. Printing the program logo on business cards gives a professional appearance.

5.12 Data Management

5.12.1 Website (<http://www.cmex.ca/>)

CMEX designed and implemented a website (Figure 6) as a tool to facilitate materials exchanges, by providing industry with a user-friendly method for exchanging material on-line. The website allows businesses to list material in specific categories, as wanted or available, with a description and contact information.

The website was not intended to be the sole materials exchange mechanism as research clearly indicates that websites alone are not sufficient for a materials exchange program to be successful. Instead, the website was designed to complement the personal services of the Program Coordinator.

In practice, materials exchanges are taking place almost exclusively as a result of direct efforts, communications and facilitation by the Program Coordinator; not by participants only using the website. This can change over time, but may not occur until there is a convergence of advanced website functions, a comfort level on the part of participants using the on-line mechanism, a critical mass of users and the right mix of materials to be exchanged.

A significant website-related issue CMEX identified is that users tend to be eager to post materials they want to get rid of, but do not spend time browsing the site for materials they could reuse. As such, many postings are under the 'available' listings, while limited activity occurs under the 'wanted' listings. Additionally, a match may be overlooked due to a lack of browsing. To remedy this situation, CMEX is emailing participants periodically regarding material availability.

Numerous passive materials exchange websites exist with limited support. A website host that specializes in materials exchanges can assist in development and technical support, but it needs to be recognized that this takes considerable time.

CMEX uses the i-Waste Not system (www.i-wastenot.com) which was developed by a Canadian business that specializes in industrial material exchange website applications. The team developed a program that was specific to CMEX's needs and provided a personalized service that is under development as demands change. Support services offered with the website enhance the performance and the on-line discussion forum with other website administrators offers an interactive search for solutions.

The website introduces CMEX, how it works, who can be involved and lists participants and current news. Material searches by 'category', 'wanted', 'available' or 'new' exist along with business contact information and a description of the material. The ability to post directly on the website is available but is password protected.

The website is now capable of attaching photographs to listings and offers statistical packages as add-ons. The Program Coordinator can turn extra features on or off and has access to all

accounts. Website administrators are currently fine-tuning the site to address specialized needs of the program, including altering the website to be ‘business-based’ rather than ‘individual user-based’. The system is also preparing to accommodate data such as on-line results reporting and progress report generation.

Figure 6: Calgary Materials Exchange Website Home Page



Website development takes time. There are many materials exchange website hosts and applications available to manage the site, most at a reasonable cost, which saves developing and constructing. Adding costs for a website licence, development and hosting in funding proposals is important.

The CMEX website was originally planned to launch two months into the pilot, however it was not implemented until the six month mark due to extensive site design, technical glitches and verification that existing functions met the needs of participating businesses. The pilot project was launched in May 2003 and website launched in November 2003. As well, having some material listings on the on the site for the inaugural launch is very important.

5.12.2 Database

Database design is an important component of a materials exchange for two reasons:

- 1) It assists with effectively matching businesses as both waste stream and contact information is located in the database.
- 2) It provides accurate results and measurables so funding agencies can assess the exchange's performance and impacts.

Developing a database at the program initiation sets a structure for information collection and alleviates data transferring at a later date. The database needs to be designed to incorporate program requirements (e.g., information, calculations, names, totals), in addition to funding agencies' needs. A solid understanding of the resources needed to ensure effective data management (e.g., data entry, results, analysis) from program onset is important. Initially, CMEX focussed on material exchanges, while data management was rarely considered until it became problematic.

Data analysis can become overwhelming once the exchange starts, particularly if the database is not effective. Data collection and input is relatively straightforward, however organizing retrieval totals, business or commodity breakdowns or historical data can be complicated. It is important that the database meets querying and reporting needs and can accommodate future expansion.

Currently CMEX uses Access and two Excel spreadsheets as the budget did not include funds for a specialized database:

- Access - company contact information, current waste and commodity status and communications with each company.
- Excel Spreadsheet #1- Impact Sheet used to analyze the results/impacts of exchanges. This information is complex due to intricate company relations and exchanges, tracking reuse versus recycled material and one-time versus continuous exchanges. This also includes calculations for financial and Greenhouse Gas savings.
- Excel Spreadsheet #2 - Exchange status and business follow-up. Potential exchanges are recorded along with company referrals and 'next actions'.

In order to increase the database functionality, the Program Assistant attended a MS Access database course to learn more about tracking capacity, recording and analysis.

6.0 CMEX – Managing Ongoing Operations of the Materials Exchange

6.1 Strategic Plan

A three-year strategic plan was developed to provide structure, focus and guidance for future program direction. This plan presents program strengths, and provides direct tangible goals, targets and the strategies to achieve them. This plan is continually revisited to ensure that CMEX is on track.

6.2 Securing On-going Funding

The program should be positioned for additional funding early in the process to ensure adequate time is allowed to identify and secure the necessary funds, without jeopardizing program continuity.

Environmental programs typically face funding challenges, as many agencies do not fund for longer than a year, and many do not provide repeat funding, even for a successful program. This presents sustainability difficulties and non-profit organisations often find themselves perpetually seeking funds, which is an exhausting task that takes resources away from programming.

CMEX started looking for additional funding ten months before it was required. Despite considerable time and effort spent writing proposals, funds were not secured when the pilot program ended. Since that time, City of Calgary WRS, which provided pre-pilot funds, followed the materials exchange's progress through its pilot phase and committed significant funding for 2005 along with contributions from Alberta Environment and industry (corporate sponsorship and annual membership fees).

6.2.1 Corporate Sponsorship and Membership Fees

In 2005, CMEX implemented company participation levels, as outlined below, through corporate sponsorship and annual membership fees to show industry buy-in and increase program value and responsibility:

- **Sponsor:** includes a membership, promotional material and business logo on the website www.cmex.ca. Suggested sponsorship is based on number of employees:
 - \$500/year for <50 employees
 - \$1000/year for 51-200 employees
 - \$2000+/year for >200 employees.
- **Membership:** \$100 annual fee, includes materials referrals, access to research, access to the website and posting listings, quarterly newsletters, progress reports, and access to workshops
- **Partners:** non-profit organizations that are involved with CMEX, includes membership benefits.
- **Participant:** free trial for new companies, includes materials referrals and waste issues, with no extra benefits. This level allows companies to ensure the service is useful and of value to them, it also avoids the barrier for companies that are doubtful of potential success, as CMEX tracks progress and follows up with the company.

All levels of involvement, including 'considering' companies receive a monthly update via email, which includes CMEX news and hot new listings (material available or wanted).

CMEX members also become Clean Calgary Association members, with additional CCA benefits including a 10% discount on all regular priced EcoStore merchandise and a periodic CCA newsletter.

6.2.2 Funding Agency Reports

A comprehensive database makes it easier to report results to funding agencies. It is important to clearly identify measurables required by supporters at the beginning of the program, so these can be incorporated into the data collection/reporting process. For example, the primary funder of the pilot phase of the materials exchange was the Enhanced Recycling Program of Action Plan 2000 on Climate Change (Natural Resources Canada). Because the objective of this program is to reduce the greenhouse gas emissions through increasing the recycling of materials, they required the project to track material diversion and express it in terms of avoided greenhouse gas emissions (tonnes of carbon dioxide equivalent). The methodology for calculating GHG reduction through diversion from landfill (or incineration etc.) can be found in the report *Determination of the Impact of Waste Management Activities on Greenhouse Gas Emissions 2005 Update* (ICF Consulting, Environment Canada, and Natural Resources Canada, 2005).

6.3 Continued Participant Recruitment

6.3.1 Initial Contact

Often the first company contact is over the telephone and the Program Coordinator literally has 15 seconds to convey the program idea simply and clearly so that the employee is 'hooked' and willing to listen. Advice given by the ISC is to never use the word 'survey' when you call a company, as they are typically adverse to it. CMEX immediately mentions that it is a non-profit organization and that there is no fee for the service. This was the most effective approach during the pilot program when no fee existed. Now that exchanges have demonstrated value, CMEX feels more pressure to become financially sustainable and a membership fee is being implemented.

For businesses to implement operational change, awareness that 'waste' could actually be a resource to another company must be established at the upper management level. As a rule, contact with senior managers in decision-making positions is imperative. Otherwise, the individual has the challenge of explaining the program structure and benefits succinctly to a supervisor and that may halt potential involvement.

In order to schedule a face-to-face meeting, the following procedure should be considered:

- Gather references from the TAC and ISC, if established. Once those references are exhausted the next step is cold calls.
- Make a list of companies from business databases (e.g., Canadian Business Directory) to cold call. Prioritize the companies - for instance, manufacturers with multiple waste streams (e.g., steel and wood). In order to correlate the target area, query on postal codes, company names, contact information and industry type.
- Cold call the company in question to determine to whom the introductory letter/package should be sent. It is important to obtain a name, not just a job title. Send the letter or

deliver the package and indicate that a phone call follow-up will occur.

- The goals of the follow-up phone call are as follows:
 - assess whether the correct person has been contacted
 - gain attention of the person in question
 - adeptly convey program purpose and participation benefits
 - determine if the program is currently of interest to the company
 - secure an in-person meeting to follow-up and take a tour of the facility

6.3.2 Information for Potential Participants

The information package delivered to potential participants must be concise and informative, but not overwhelming. The CMEX portfolio includes the following:

- **Introductory sheet:** Provides information about CMEX including the mission and vision, participation benefits, materials list, sponsors, contact information and participation fee.
- **Participants list:** All participating companies, so potential participants can review companies that they recognize as high profile, clients, customers, suppliers, competitors, friends' companies and neighbours.
- **Membership sheet:** Presents company involvement levels including sponsorship, membership, participant and/or partnership and associated benefits and fees.
- **Success sheet:** Examples of successful materials exchanges demonstrate how the membership fee pays for itself.
- **Registration form** (see Appendix I): Allows businesses to review participation levels and 'sign-up or check' the appropriate category. Company information is collected on this form, including contact information, company type and description, and then the form is returned to CMEX staff via fax or email for database input. It is also used to invoice businesses for the appropriate amount, depending on the category selected.
- **Business cards:** Program Coordinator contact information.

When the time comes to collect company waste stream data, additional technical forms are distributed as required.

In 2005, an updated portfolio was compiled for new companies containing information about CCA and CMEX. This portfolio raises the CMEX profile, allows brand recognition and keeps company CMEX information organized.

6.3.3 First Meeting with Potential Participants

At the in-person meeting, the Program Coordinator should be sure to include the following:

- Explain the objective of the program and its supporting agencies
- Explain the Program Coordinator's role
- Explain benefits of program participation
- Garner company trust and confidence
- Immediately follow through on commitments, large or small, requested by the company
- Accurately assess the companies' needs for material disposal and input
- Mentally assess if the individual has leadership skills and interests that would make them a good candidate for the ISC
- Ask if the individual could refer any colleagues in other companies who might also be interested in the program

Information collected from meetings should be entered into the database as soon as possible to accurately capture discussions and comments.

Taking facility tours is important as it gives a better understanding of the company's processes, waste collection systems and provides time to get to know the contact.

Often senior managers are not as aware of waste streams, processes and collection systems as one would expect. Getting them out onto the 'floor' is a good exercise and questions may lead to managers discussing and clarifying waste issues with their colleagues. As such, it is not surprising that additional information arises with subsequent visits/conversations as the manager gathers more data. The Program Coordinator should also not hesitate to have more than one contact person (e.g., Warehouse Manager, Environmental Health and Safety Manager), especially at larger companies.

Businesses participate at different levels, depending on their waste demand. Some companies take initiative on their own, while others may decline to participate altogether. Reasons why companies decline to participate in CMEX include insignificant amounts of waste generated or everything generated is already recycled. Approximately 60 out of 380 companies contacted declined participation in CMEX.

6.3.4 Participant Commitment

At the CMEX outset, a Statement of Participation was developed to ensure formal business commitment. The Statement described the program, commitment to confidentiality and the fact that CMEX is not liable for any of the facilitated materials exchanges. This step created such difficulty, that after six months the practice was discontinued. When requesting a signature, one is entering into legal territory and effectively creating a potential barrier to participation. Many individuals were not able to or did not want to obtain a signature from their superior and lost interest in the program. In a few cases, the person with authority to sign was located in an office outside of Calgary or even Canada.

Once the Statement of Participation was eliminated between CMEX and participants, relationships were based on verbal agreements. So far, there have been no difficulties with confidentiality or liability, but to alleviate liability the CMEX website includes a disclaimer.

As of January 2005, with the implementation of a membership fee, a formal registration form (Appendix I) is provided to the potential participant. This form is accepted by businesses as it does not require a signature, but allows companies to provide CMEX with the necessary information and participation level.

6.3.5 CMEX-Participant Relationships

Once participation is established, an assessment of the company's waste streams (output), diversion challenges and raw materials (input) takes place. This provides the information required to make 'matches' between companies that have use for each others' waste products.

The assessment of the company's waste stream may occur at the initial meeting, or may require a second meeting. This assessment is accomplished through interviewing the appropriate people, as well as a site tour (e.g., warehouse or yard) to obtain a visual estimate of waste types and volumes. This may include looking into company waste bins – with their permission. Waste streams that are already reused or recycled may also be identified.

Estimating waste volumes and/or quantities can be difficult for businesses, but it is essential for potential recipients. Most companies do not immediately know this information, nor do they have the research resources to locate it. Additionally, they may lack general interest, which can become a barrier to implementing materials exchanges.

CMEX uses a company commodity checklist to record information (Appendix J) and assists companies with estimating their waste quantities by examining variables such as the percentage of waste that fills the garbage bin, bin size and how often it is emptied.

Once two businesses are identified for a potential materials exchange, contact information is exchanged. It is the businesses' responsibility to get in touch with each other to arrange the logistics and any monetary payment.

After a reasonable period of time, the Program Coordinator or Program Assistant makes follow-up calls to matched companies to ensure the company has the necessary information and to determine if an exchange has taken place. If an exchange has occurred, the companies (e.g., generator and recipient) are required to report the results (e.g., value of the exchange to them).

Businesses often have difficulty reporting exchanges. This may be due to a lack of motivation or time. A great deal of time is spent gathering exchange results. Currently, an Impact Form (Appendix F) is provided to participants to complete and fax or email to the Program Coordinator. This system works to a certain extent, but CMEX hopes to implement an on-line report system in the near future that offers a more user-friendly system for participants.

CMEX systematically and continually contacts companies by telephone, site visits and other forms of communication, in addition to program news and updates. Each business is unique and CMEX must be able to adjust to fit each company's specific needs and barriers, making it easier for them to implement changes.

6.3.6 *Communicating with Participants and Gathering Results*

Participant communication, providing essential services and collecting exchange results are important parts of the program. Even businesses with initiative to participate may not feel any urgency to report results or may experience difficulty quantifying their results and thus avoid reporting entirely, while others are eager to provide results.

Prompting businesses to report is also a mechanism for participants to follow through on exchanges. Arranged exchanges do not automatically take place – the companies in question have to take the exchange from concept to practice, which sometimes does not happen without follow-up. Knowing that someone is going to follow-up can serve to motivate individuals to complete the exchange.

The CMEX Program Assistant undertakes material research and generates program updates for participants, which includes information on materials available or needed, and emphasises the importance of reporting. These activities provide essential support to the Program Coordinator who is in the field contacting businesses.

In 2005, CMEX produced a materials research document that included a list of recyclable and non-recyclable materials, types of companies that generate the waste, businesses that accept

waste for recycling, issues and barriers to recycling each material locally and elsewhere and suggested recommendations. This document is distributed to interested parties.

6.3.6.1 Workshops

Workshops have focussed on finding ways to successfully exchange challenging materials and are also excellent networking opportunities that facilitate personal contact and relationship building.

CMEX holds ISC meetings from 4:30-5:30 pm, typically every two months, and has held workshops over the lunch hour (providing lunch to participants) to ensure that workshops/meetings do not cut into the attendees' day.

Participants should have input into topics, and selected topics need to be specific enough to address solutions and next steps, with exchanges ideally taking place as a result. Sending all participants an agenda prior to the meeting focuses the discussion. Additional items can be added to the agenda as required and it can be approved at the beginning of the meeting. A good facilitator can be very helpful in keeping workshops on-topic, and ensuring maximum results are achieved.

CMEX hosted two workshops during the pilot phase to discuss issues and barriers surrounding recycling or reuse of wood pallets and plastic commodities. The discussion involved businesses that generate the material/waste stream in question and those that process the material. Solutions were discussed and exchanges resulted from partnerships developed at the workshop.

In the past, businesses with vested interest in the topic were asked to sponsor the workshop, and several companies were amenable as it provided a promotional opportunity. Workshop costs are now built into the overall budget.

In 2005, outreach opportunities included hosting workshops on plastic packaging, electronic recycling, wood pallets and organics/commercial composting.

6.4 Website Maintenance

The website is a tool that complements the actions of the Program Coordinator, by providing a place for participants to list company materials that are available or wanted.

The Program Coordinator maintains the website, which includes the following activities:

- Signing up new participants with user names (e.g., email address) and passwords. Rather than letting businesses sign up themselves, CMEX modified the feature to initiate personal contact with the Program Coordinator. It is extremely important that communication occurs with participants to ensure the best possible service, track who is joining the exchange and report exchanges.
- Emailing the 'user name' and password to the business. The Program Coordinator chooses to email this information directly to the business to continue personal contact, however this information can also be sent directly to the participant in a form letter explaining the website and its use.

- Companies can post listings on the website, however occasional maintenance (e.g., photo postings) is required.
- Updating news, participant lists, results or information needs. An on-line form is used for this task, which prompts the addition or a response from the web developer.
- Updating website postings. Clarification on whether materials are still wanted, available, or have been exchanged is required. A 'stale-dating' feature can erase listings after a predetermined period of time but CMEX decided to remove this function and rely on personal communication to determine how participants prefer their material handled.

Website developers are adapting the technology to meet the needs of industrial materials exchanges as the original design was for residential exchanges. Modifications take time and feature change requests must be designed and tested (e.g., changing from an individual-based user to a company-based user). Another significant change is access - previously the general public could enter the site, but only participants could post listings. Now, the general public has access only to view the postings, whereas participants have access to business contact information.

The website will eventually include a main database with only a supplemental MS Access database. This involves entering all data into forms that can be queried, analyzed and reported. Most of this occurs behind the scenes by the website developers, but does require communicating CMEX needs to them and testing changes. Currently reporting is completed by submitting a form, but shortly, companies will be able to report exchanges on-line. The website is constantly altered to meet CMEX's needs, making it more efficient and user-friendly.

In January 2005, the domain name changed from www.foothillswasteexchange.com to www.cmex.ca. A new logo was designed, sponsor logos were added and website text was altered accordingly. Additional website development increased capacity for administrators to record data on-line, including company communications, waste inventory, referrals and results.

6.5 Managing Material Exchanges

The ease and size (e.g., weight, volume) of the material to be exchanged should be identified and prioritized. Early exchanges demonstrate business successes, provide case studies and allow re-evaluation of the program for necessary strategy modifications.

Some exchanges are easily arranged and continue on their own, while others require extensive support and guidance until the one-time exchange is completed. Differences in exchanges fluctuate and result in variable amounts of material diverted from disposal. The key is to not be discouraged by the modest exchanges or overzealous about the big ones. Assisting companies and guiding a change in behaviour demonstrates the true success.

A business may have a specific waste issue that has been difficult to address. Simple solutions that are presented should be explored to achieve an initial success, while researching the original concern. For instance, office furniture is not an expected commodity to exchange, but it is handled in some cases, which then leads to other materials being exchanged.

Table 3 lists the range of commodities CMEX targets for reuse and recycling.

Table 3: Calgary Materials Exchange Commodity Types and Descriptions

Commodity	Description
Electronics/Electrical Equipment	Computers and accessories, office equipment, electrical components
Equipment/Vehicles	Forklift, industrial equipment
Glass	Windows, sheets, bottles, glass block, ceramic
Liquids/Chemicals/Gases	Paint, solvents, sludge, fluids, chemicals
Metal	Cut-offs, drums, piping, shavings, beams, parts
Minerals	Concrete, asphalt, silica sand, gypsum
Oils/Petrochemicals	Used oils, absorbent, rags, oil containers, fluids, filter
Organics	Unprocessed foods, scraps
Paper/Cardboard	Office paper, newspaper, cardboard boxes, boxboard, rolls
Plastic	Shrink wrap, packaging, piping, cut-offs, strapping, foam, drums
Rubber	Cut-offs, pieces, tire, hose
Textiles	Fabric, strapping, cut-offs
Wood	Pallets, crates, cut-offs, boards, beams, shavings

Some commodities can be reused or recycled without difficulty, but companies lack this information. Other commodities do not have existing or obvious solutions due to technology restraints, economics of recycling or geography. Table 4 lists examples of difficult to manage CMEX materials.

Program area and industry type determines the range of possible exchanges (e.g., heavy versus light industry may offer different options). Many businesses have materials to offer, but locating recipient companies for materials may require recruiting companies to utilize available materials.

There is always some difficult-to-manage material with no obvious solution. Strategies must be developed for such materials. For instance, TAC and ISC expertise can be used for insight and knowledge. Another option is developing partnerships with educational institutes, which may have access to problem-solving resources.

Table 4: Calgary Materials Exchange Difficult to Recycle Commodities

Commodity	Description	Reason
Composite wood	MDF, OSB, particle board, laminate board	Resins and glues in composite restrict chipping and reprocessing of wood, no other reuse applications.
Silica sand	Used sandblasting sand	Limited uses, contaminated with paint/metal particles, cannot be put in ground or mixed with other aggregates.
Gypsum	Drywall	Insufficient material to collect in Alberta for a processing plant to be viable.
Metal	Rebar	Metal recyclers accept in limited quantity and size, as it damages the machines due to tensile strength.
Composite products	Plastic/ wood products	Two different materials cannot be separated and therefore not recycled by either commodity processor.
Composite products	Hydraulic hose	Metal and rubber composite, cannot be separated and recycled by either processor. Limited reuse applications due to liability.
Plastics	Various types (e.g., plastic pails)	Multiple types, sorting an issue. Limited value added products to process into (e.g., composite lumber). Contamination and residue is an issue. Not always cost effective due to weight of plastic.
Plastic foams	Polyurethane, polyethylene, polystyrene	Not cost effective to transport due to light weight, difficult to process as regular plastic, specialized processing plant not locally available.
Plastic/ metal pails	Plastic 45 gallon drums	Used oil residue/contamination, large container not accepted by AUOMA program.
Rubber	Cut-offs, pieces, hose, tire	Limited reprocessing facilities, other than for tires. Different rubber types affect final product quality.

6.6 Promotion and Marketing

6.6.1 Partnering with Educational Institutes

CMEX is developing partnerships with the Mount Royal College Industrial Ecology Program and the University of Calgary to expose students to local, real-life situations, practical industrial waste issues and experiences that can be applied to their studies. This also provides the CMEX with the following:

- Access to expertise, research and new ideas
- Education and knowledge base
- Program promotion

Partnership development was explored through class presentations, student group programs, and research into reuse of specific problematic materials. These relationships are expected to evolve over time, possibly leading to a student practicum at CMEX or participating companies.

The internationally renowned Burnside Eco-efficiency Centre in Dartmouth, Nova Scotia, which is several years ahead of CMEX, has two practicum students.

In 2005, there was continued relationship development with educational institutions, including presenting to the Introduction to Industrial Ecology, Directed Field Studies Preparation and Market Based Initiatives classes at Mount Royal College.

Several marketing techniques can be used to promote the program to potential participants. In addition to raising the program's profile and drawing participants, promotion is of interest to funding agencies for recognition.

6.6.2 Marketing Mechanisms

6.6.2.1 Company Newsletters

Employees who develop internal company newsletters are always looking for positive stories to increase company morale. If companies have newsletters or bulletins, the Program Coordinator may want to introduce themselves to the editor. Not only might this lead to additional participants through word of mouth, it can be an opportunity to request membership fees or sponsorship money. CMEX has appeared in Shell, AllWaste Systems and Recycling Council of Alberta newsletters.

6.6.2.2 Email Updates

Regular email updates to participants about developments and any new, interesting materials that are available or wanted can be a useful tool. Company contacts should also be prompted to forward these messages, as what is not interesting to them may be of interest to others in the company.

6.6.2.3 Program Newsletters

CMEX's initial plan involved circulating newsletters to participants that included news, updates, and information about waste and recycling. However, it was determined that a pilot phase newsletter was not the most effective way to promote exchanges. Direct contact is more effective coupled with informal monthly emails, which are cost and labour-effective in comparison to newsletters.

With the initiation of corporate sponsorship and membership fees in 2005, a quarterly newsletter was developed.

6.6.2.4 Program Recognition

Applications to local, provincial and national environmental awards can lead to significant program promotion. In 2005, CMEX was a not-for-profit finalist for the Alberta Emerald Award, a provincial environmental excellence honour.

6.6.2.5 Trade Shows

In 2005, CMEX hosted a booth at the CanWest Woodworking Tradeshow to increase profile and educate attendees and companies about wood recycling options. It was determined that this trade show helped raise profile, but did not increase participation or exchanges.

6.6.2.6 Website

Websites provide Internet presence, an introduction to the materials exchange concept and complement the Program Coordinator's personal contact. Businesses post material listings in various categories with contact information. A website is an important marketing tool as it is available for the general public to view, but the ability to post listings is limited to program participants.

6.6.2.7 Word of Mouth

Word of mouth/personal referrals, is likely the most important promotional tool. Essentially, colleagues recommend program participation to business partners, suppliers and/or clients. This lends credibility to the initiative and assists with network building. Prompting participants to 'spread the word' and providing them with materials (e.g., business cards, brochures) to make the job easier is important.

6.6.2.8 Print Media

When on a strict budget, it is more effective to obtain articles for print media than to pay for advertising. Advertising is expensive and typically does not provide the space to elaborate on program highlights, successes and opportunities. CMEX has appeared in the Foothills Bizness Bits, Calgary Herald, Alberta Construction Magazine and Alberta Venture Magazine.

7.0 CMEX – Future Direction

7.1 Funding

CMEX received funding for 2006-2008 from the City of Calgary Waste & Recycling Services. This is the first time the program has received multi-year funding, which allows CMEX to plan more than one year at a time. CMEX 2006 funding includes a 25% increase from industry contributions, associations and funding agencies.

7.2 Participation Fees

Company participation levels will remain the same in 2006, including sponsorship levels and annual membership fees, however small and large corporate membership levels may be added. These participation levels will have a time limit to avoid companies stagnating if materials exchanges do not take place.

7.3 Committees

The ISC will continue meeting throughout 2006 and sub-committees will form as required. Committee members will be reassessed during the year and new members may have the opportunity to join.

7.4 Staffing

A third full-time member will be added to the CMEX team in 2006. The existing positions will shift slightly to accommodate more field time and program enhancement.

7.5 Data and Website

Website development work is continuing, including adding capabilities for companies to report results on-line and to transfer data to an on-line database.

7.6 Public Outreach

A marketing plan will be developed in 2006 and material workshops will be organized as requested.

7.7 Annual Report

A 2005 Annual Report will be provided to funding agencies in January 2006.

7.8 Geographic Information Systems

Initially, CMEX thought that Geographic Information Systems (GIS) would play an important role in mapping potential pickup routes for reusable/recyclable commodities. Small volume waste streams can be problematic in terms of collection, so a computer generated pickup route was considered a possible solution. As the program progressed, it was determined that GIS was not a deciding factor for materials exchanges. In terms of expected results, the time and money (e.g., software, data, training, labour) invested in initial set up and maintenance of a GIS system was determined to not be justifiable for CMEX.

8.0 Recommendations

A variety of business materials exchanges are currently active throughout North America. Literature searches, telephone interviews (Section 3.0) and the detailed analysis of the Calgary Materials Exchange (Sections 5.0 and 6.0) contributed to the following recommendations for new materials exchanges:

8.1 Research

- Conduct extensive research before program starts (e.g., materials, businesses and software)

8.2 Funding / Funding Agency Expectations

- Guarantee strong management and financial support
- Reporting time should be addressed with funding agencies at the beginning of the program to ensure that budget is available for this task
- Carefully select quantitative targets at the beginning in order to meet funding agency deliverables

8.3 Relationships with Businesses and Partners

- Establish strong relationships with businesses (e.g., directory on website to promote businesses)
- Work closely with environmentally-minded organizations and waste haulers
- Form partnerships with the media

8.4 Website

- Consider website design and development an early priority
- Ensure website database is user-friendly (e.g., simple, clean interface)
- Include a 'Frequently Asked Questions' section to the website
- Ensure that the website allows material photographs
- Staff should be aware of website statistic measurements and their importance to the materials exchange

8.5 Database

- Database should have materials search and listing creation capabilities
- Include cost for a database specialist to select appropriate database application and design database in the pilot budget

8.6 Promotion

- Promote success stories immediately
- Continuous promotion to target audience (e.g., businesses)
- Develop creative, unique, eye-catching promotions
- Prompt participants to 'spread the word' by providing them with business cards and brochures

8.7 Meeting / Workshops

- Consult participants regarding desired topics, and the most convenient time and location to attend meetings/workshops
- Ensure that meetings/workshops are well-organised, prepare discussion questions in advance and finish meetings on time

9.0 References

- Applied Sustainability LLC, 1999. *Alberta By-product Synergy Project*. 47p.
http://www.hatch.ca/Sustainable_Development/Articles/CALGARY_BPS.pdf
- Brown, L., 2005. Personal Communication. Industrial Materials Exchange Program Assistant. September 30, 2005.
<http://www.govlink.org/hazwaste/business/imex/>
- Center for Sustainable Business Practices Bryant University, 2005. *Marketing Plan – Cost-effective Opportunities for Northeast Materials Exchanges*. 75p.
<http://www.nerc.org/documents/marketingplan.html>
- Cornell Waste Management Institute, 1998. New York City Materials Exchange Roundtable.
<http://cwmi.css.cornell.edu/wastred/matlexch.html>
- Crawford, P., 2005. Personal Communication. Nova Scotia Materials Exchange Program Coordinator. October 3, 2005.
<http://www.nsmaterials.com/>
- Environment Canada, 2003. Green Source Funding Source Database
http://www.ec.gc.ca/ecoaction/grnsrc/index_e.cfm
- Hatch Associates Ltd., 2002. *Golden Horseshoe By-product Synergy Project for the Southern Ontario Region*. 32p.
http://www.hatch.ca/Sustainable_Development/Projects/FinalReport-GH-BPS.pdf
- Hatch Associates Ltd., 2001. *Montreal By-product Synergy Project – Participate Edition*. 44p.
http://www.hatch.ca/Sustainable_Development/Articles/Montreal_bps.pdf
- Henderson, M., 2005. Personal Communication. Recycling Council of British Columbia Material Exchange Former Coordinator. September 30, 2005.
<http://www.rcbc.bc.ca/>
- ICF Consulting, Environment Canada and Natural Resources Canada, 2005. *Determination of the Impact of Waste Management Activities on Greenhouse Gas Emissions 2005 Update*.
- Jones, S., 2005. Personal Communication. Ontario Waste Materials Exchange Program Coordinator. October 3, 2005.
<http://www.owe.org/>
- Kretchmar, E., 2005. Personal Communication. New York Wa\$te Match Program Manager. October 7, 2005.
<http://wastematch.org/>
- Lewis, M, R. Clark, J. Vandalland, and N. Seldman, 1995. *Reuse Operations: Community Development Through Redistribution of Used Goods*. Institute of Local Self-Reliance. 60p.
<http://www.ilsr.org/pubs/pubsalist.html>
-

Loudenbeck, A., 2005. Personal Communication. Business Materials Exchange of Wisconsin Director. October 5, 2005.
<http://www.bmex.org/home.php?exsite=bmex>

MacNeil, S., 2005. Personal Communication. Nova Scotia Materials Exchange Program Assistant. October 3, 2005.
<http://www.nsmaterials.com/>

Majercak, J., 2005. Personal Communication. Massachusetts Materials Exchange Former Coordinator. October 3, 2005.
<http://www.materialsexchange.org/>

McArthur, G., 2005. Personal Communication. Resource Exchange Network for Eliminating Waste Coordinator. October 4, 2005.
<http://www.tceq.state.tx.us/assistance/P2Recycle/renew/renew.html>

Mellem, S., 2005. Personal Communication. Minnesota Materials Exchange Coordinator. September 30, 2005.
<http://www.mnexchange.org/>

New York City Department of Cultural Affairs and Department of Sanitation, 1993. *Starting a Materials Donation Program – A Step-by-step Guide*. 58p.

Odd, N., 2005. Personal Contact. Calgary Materials Exchange - Former Coordinator. October 7, 2005.
http://www.cmex.ca/exchange/?news_id=32

Radian International LLC, 1997. *By-product Synergy: A Strategy for Sustainable Development – A Primer*.
http://www.hatch.ca/sustainable_development/articles/bps_strategy_for_sd_primer.htm

Rivera, D., 2005. Personal Communication. California Materials Exchange Program Coordinator. September 30, 2005.
<http://www.ciwmb.ca.gov/calmax/>

UMA Engineering Ltd. and EBA Engineering Consultants Ltd, 2001. *City of Calgary ICI/CRD Waste Composition Study*. Prepared for City of Calgary Solid Waste Services. 181p.

United States Environmental Protection Agency (USEPA), 1994. *Review of Industrial Waste Exchanges*. EPA530-K-94-003. Washington, DC. 72p.
<http://nepis.epa.gov/Exe/ZyNET.exe/10000MNG.txt?ZyActionD=ZyDocument&Client=EPA&Index=National%20Environmental%20Publications%20Info&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=pubnumber%5E530K94003&QFieldYear=&QFieldMonth=&QFieldDay=&UseQField=pubnumber&IntQFieldOp=1&ExtQFieldOp=1&XmlQuery=&File=D%3A%5CZYFILES%5CINDEX%20DATA%5CNEPIS%5CTXT%5C000000O%5C10000MNG.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=10&FuzzyDegree=0&ImageQuality=r75q8/r75q8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=-1&ZyEntry=1>

Whitfield, D., 2003. Personal Contact. Alberta Environment.

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Appendix B: Existing Materials Exchanges

Appendix C: Researched North American Materials Exchanges

Appendix D: Promotional Samples

Appendix E: Guidelines and Disclaimers

Appendix F: Impact Form – Exchange Results

Appendix G: Program Coordinator Job Description

Appendix H: Program Assistant Job Description

Appendix I: Registration Form

Appendix J: Company Commodity Checklist

Appendix A: Researched North American Materials Exchange Contact List

Material Exchange	Contact/Title	Organization/Address	Phone/Fax	E-mail/Website
Canada				
Calgary Materials Exchange (CMEX)	Sarah Begg Coordinator Natalie Odd Former Coordinator	Clean Calgary Association 809 - 4th Avenue SW Calgary, AB T2P 0K5	T SB: (403) 230-1443 ext. 226 T NO: (403) 230-1443 ext. 229 F: (403) 230-1458	sarah@cleancalgary.org natalie@cleancalgary.org http://www.cmex.ca/
Nova Scotia Materials Exchange	Peggy Crawford Program Coordinator Sean MacNeil Program Assistant	Eco-Efficiency Centre Burnside Industrial Park 2 Vidito Drive Dartmouth, NS, B3B 1P9	T: (902) 461- 6704 F: (902) 461- 6703	kpcrawfo@dal.ca seanmacneil@dal.ca eecentre@dal.ca http://www.nsmaterials.com/
Ontario Waste Materials Exchange (OWME)	Stacey Jones Program Coordinator	Ontario Centre for Environmental Technology Advancement 2070 Hadwen Road, Unit 201A Mississauga, ON L5K 2C9	T: (905) 822-4133 ext. 236	owe@oceta.on.ca http://www.owe.org/
Recycling Council of British Columbia Material Exchange (MEX)	Harvinder Gill Program Coordinator Michelle Henderson Former Coordinator	Recycling Council of British Columbia #10-119 West Pender St. Vancouver, BC V6B 1S5	T HG: (604) 683-6009 ext. 308 T MH: (604) 683-6009 ext. 313 F: (604) 683-7255	harv@rcbc.bc.ca michelle@rcbc.bc.ca mex@rcbc.bc.ca http://www.rcbc.bc.ca/
United States				
Business Material Exchange (BMEX) of Wisconsin	Amy Loudenbeck Director	Business Materials Exchange of Wisconsin 520 E. Grand Ave. Beloit, WI 53511	T: (608) 364-1131 F: (608) 364-1161	amy@bmex.org http://www.bmex.org/home.php?exsite=bmex
California Materials Exchange (CALMAX)	Diana Rivera Program Coordinator	California Integrated Waste Management Board 1001 I Street 13 th Floor P.O. Box 4025 Sacramento, CA 95812	T: (916) 341-6611 F: (916) 319-7641	DRivera@CIWMB.ca.gov calmax@ciwmb.ca.gov http://www.ciwmb.ca.gov/calmax/
Industrial Materials Exchange (IMEX) – Washington, Oregon, Idaho, Alaska	Jeff Ketchel IMEX Coordinator Larry Brown IMEX Historical Info	King County First Interstate Center 999 3 rd Avenue, Suite 700 Seattle, WA 98104-4039	T: (206) 296-4899 F: (206) 296-3997	jefferson.ketchel@metrokc.gov larry.brown@metrokc.gov imex@metrokc.gov http://www.govlink.org/hazwaste/business/imex/
Massachusetts Material Exchange	Amy Johns Coordinator John Majerack Former Coordinator	Center for Ecological Technology 112 Elm St. Pittsfield MA 01201	T: AJ (413) 445-4556 ext. 14 T JM: (413) 586-7350 F: (413) 443-8123	amyj@cetonline.org johnm@cetonline.org info@MaterialsExchange.org http://www.materialsexchange.org/contact.htm
Minnesota Materials Exchange	Suzy Mellem Materials Exchange Coordinator	University of Minnesota Minnesota Technical Assistance Program 200 Oak Street S.E., Suite 350 Minneapolis, MN 55455	T SM: (612) 624-5119 T: (612) 624-1300 F: (612) 624-3370	mnexchange@umn.edu mellem@umn.edu http://www.mnexchange.org/
New York Wa\$te Match	Ellen Kretchmar Program Manager	Industrial & Technology Assistance Corporation 253 Broadway, Room 302 New York, NY 10007	T: (212) 442-5219 F: (212) 442-4567	ekretchmar@itac.org info@wastematch.org http://www.wastematch.org
Resource Exchange Network for Eliminating Waste (RENEW) - Texas	Gary McArthur RENEW Coordinator	Texas Natural Resource Conservation Commission MC 112, P.O. Box 13087 Austin, TX 78711-3087	T GM: (512) 239-1917 F: (512) 239-31659	GMcarthu@tceq.state.tx.us recycle@tceq.state.tx.us http://www.tnrcc.state.tx.us/exec/oppr/renew/renew.html

Appendix B: Existing Materials Exchanges

Organization	Phone	Website
Canada		
Calgary Materials Exchange (CMEXX)	(403) 230-1443	http://www.cmex.ca/
Nova Scotia Materials Exchange	(902) 461-6704	eecentre@dal.ca http://www.nsmaterials.com/
Ontario Waste Materials Exchange	(416) 778 - 4199	owe@oceta.on.ca http://www.owe.org/
Recycling Council of British Columbia Material Exchange (MEX)	(604) 683-6609	mex@rcbc.bc.ca http://www.rcbc.bc.ca/resources/matexchg.htm
United States		
Alaska Materials Exchange	(907) 278-7827	info@greenstarinc.org http://www.greenstarinc.org/ame/ameindex.php
Business Material Exchange (BMEX) of Wisconsin	(608) 364-1131	http://www.bmex.org/home.php?exsite=bmex
California Materials Exchange (CALMAX)	(916) 341-6611	calmax@ciwmb.ca.gov http://www.ciwmb.ca.gov/calmax/
Industrial Material Exchange Service - Illinois	(217) 782-0450	http://www.epa.state.il.us/land/imes/
Indiana Materials Exchange	(317) 232-8172	imx@dem.state.in.us http://www.in.gov/idem/imx/
Industrial Materials Exchange (IMEX) – Washington, Oregon, Idaho	(206) 296-4899	http://www.govlink.org/hazwaste/business/imex/
Kentucky Materials Exchange	(502) 852-0965	http://www.kppc.org/KIME/
Massachusetts Material Exchange	(413) 445-4556 ext. 14	info@MaterialsExchange.org http://www.materialsexchange.org/contact.htm
Minnesota Materials Exchange	(612) 624-5119	mnexchange@umn.edu http://www.mnexchange.org/
Montana Material Exchange	(406) 994-3451	http://www.montana.edu/mme/
New York Wa\$te Match	(212) 442-5219	info@wastematch.org http://www.wastematch.org
North Carolina Waste Trader	(919) 715-6500	http://www.ncwastetrader.org/home.aspx
Ohio Materials Exchange (OMEx)		tryomex@aor-omex.org http://aor-omex.hyperactiveinc.com/omex/
Resource Exchange Network for Eliminating Waste (RENEW) - Texas	(512) 239-1917	recycle@tceq.state.tx.us http://www.tnrcc.state.tx.us/exec/oppr/renew/renew.html
Tennessee Materials Exchange	(865) 974-9058	cis@tennessee.edu http://www.cis.utk.edu/TME/
Vermont Business Materials Exchange (VBMX)	(802) 823-9399	http://vbmex.org/index.php
International		
European Recycler's Exchange (EUX)		http://euro.recycle.net/exchange/
GARWER European Waste Stock Exchange – Italy	+39 (0)51 4200322/3	mp@wastex.it http://www.wastexchange.it/frame/home.php?lang=en
Global Recycle	(250) 479-7850	http://www.globalrecycle.net/
RENEW Resource Exchange – New Zealand		http://www.renewwasteexchange.org.nz/wastex/wastex.jsp?url=/uploads/22154/links.html
Waste Change - England		admin@wastechange.com http://www.wastechange.com/

Appendix C: Researched North American Materials Exchanges

Materials Exchanges			Materials Exchanges Highlights						
Organization/ Exchange Type	Started/ Waste Sector(s)	Exchanges/ Tonnage Diverted/Savings	Material Categories	Material Guidelines	Disclaimer	Cost to User	Promotion	On-line Availability	Other
Canada									
Calgary Materials Exchange (CMEX) Active	- 2003 - Industrial - Commercial - Institutional	- During the 18 month pilot program, 396 exchanges have taken place diverting 1,040,135 kgs of material with a purchase and disposal savings of \$84,000	- 15 main categories (e.g., electronics, equipment/vehicles, glass/ fiberglass, insulation, liquids/chemicals/gases, metals, minerals, miscellaneous, oils/petrochemicals, organics, paper, plastics, rubber/tires, textiles, wood) - 63 subcategories	- Yes	- Yes	- Users are encouraged to pay a \$100 annual membership fee (introduced in 2005)	- Industry publications - Personal contact - Website - Workshops	- Available listing by main category - Wanted listing by main category - Newest listings	- Responsibility of the materials recipients and sellers to arrange for payment terms and logistics - Website help section
Nova Scotia Materials Exchange Active	- 2001 - Business	-Do not track statistics, unless used for a success story (e.g., wood pallets, electronics)	- 11 categories (e.g., building, electronics, equipment, metals, miscellaneous, organic, packaging, paper, plastic/rubber, textiles/leather, wood)	- No	- Yes	- No charge	- Newsletter - Newspaper articles - Tradeshows/ conferences - Website	- Available listing by category - Wanted listing by category - Keyword search - Recent postings	- Questions and answers - Regulations - Business directory
Ontario Waste Materials Exchange (OWME) Passive	- 1985 - Industrial	- Do not track statistics	- 28 categories (e.g., appliances, batteries, building materials, cardboard, carpet, chemicals, chemical coatings, chemical organics, computer/electronics, construction/demolition, fluorescent tubes, glass, hazardous waste, household items, medical equipment, metals, mineral by-products, office equipment, oil/grease, organics, other, paint, paper, plastics, robber, soil, textiles, wood)	- No	- No	- No charge	- Brochure - E-mail - Website	- Available listing - Wanted listing - Search by category, location or service sector - Create listing	- Help section - Success stories
Recycling Council of British Columbia Material Exchange (MEX) Active	- 1985 - Industrial	- In 2003, the RCBC MEX helped keep 3,319 tonnes of waste out of BC landfills - Since 1995 MEX has helped keep over 2800 tonnes of plastic out of BC landfills.	- 18 categories (e.g., appliances, batteries, building materials, electronics, equipment, furniture, glass, inorganic chemicals, metal, oils/waxes, organic chemicals, organic materials, other bulky items, paints/coatings, paper products, plastics, rubber textiles)	- Yes	- No	- No charge	- Catalogue - Website - Public events - Tradeshows/ conferences - School outreach program	- Available listing by category - Wanted listing by category Listing additions accepted by telephone	- Help section - Success stories

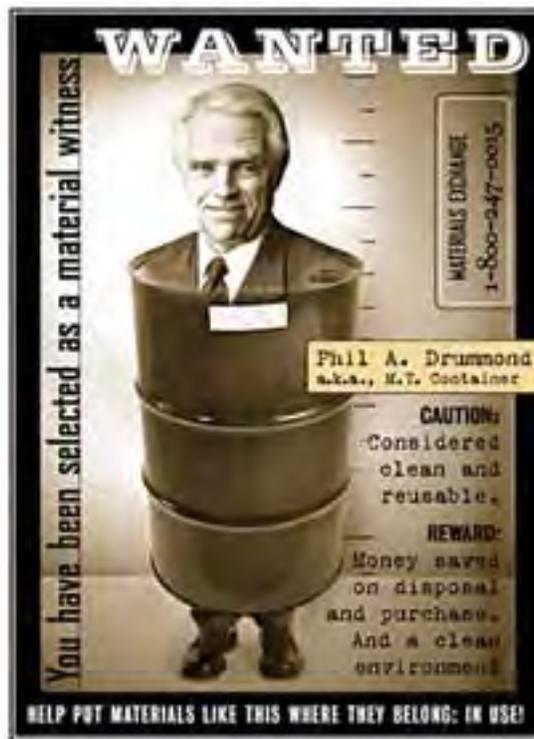
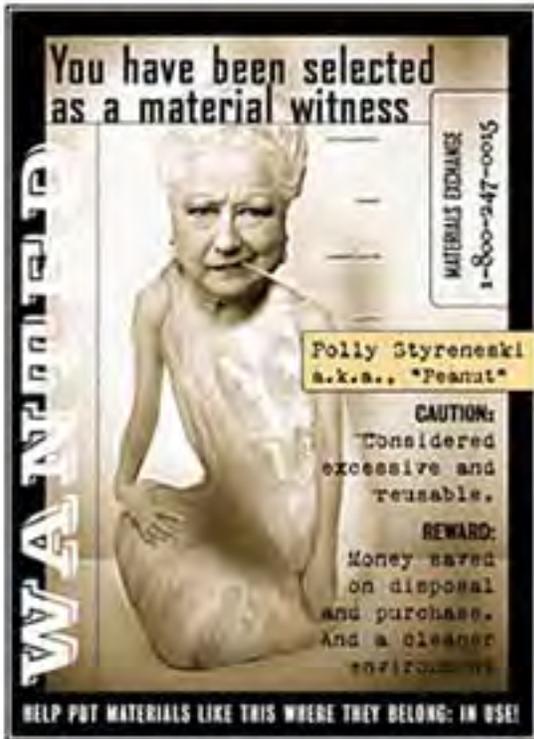
Materials Exchanges		Materials Exchanges Highlights							
Organization	Started/ Waste Sector(s)	Exchanges/ Tonnage Diverted/Savings	Material Categories	Material Guidelines	Disclaimer	Cost to User	Promotion	On-line Availability	Other
United States									
Business Material Exchange (BMEX) of Wisconsin Passive	- 1997 - Business	- Since 1997 diverted over 17,488,000 pounds	- 19 categories (e.g., aggregate/ash/slag/fill, agricultural products, chemicals (commercial only), computers/electronics, construction/salvage, containers/packaging, food/organics (commercial only), furniture/appliances, glass/fiberglass, equipment/machinery, metal/metal sludges, oils/waxes/lubricants, paint/coatings, plastics/rubber, textiles/leather, wood/paper, other materials, school/office, tax deductible items for non-profits)	- Yes	- Yes	- No charge - In the past charged \$100 per year for keyword search and automatic e-mail replies when match was found	- Brochure - E-mail newsletter - Newspaper articles - Postcards - Public events - Website	- Available listing by category - Wanted listing by category Keyword search	- Most materials are free or minimal cost - Not responsible for storage or transportation - Frequently asked questions
California Materials Exchange (CalMAX) Active	- 1992 - Industrial - Commercial - Institution	- Since 1992 over 1 million tons of materials have been diverted saving an estimated \$6 million (disposal and purchasing costs)	- 15 categories (e.g., construction, containers, durable goods, electronic, glass, metals, miscellaneous, organics, paint/wax, pallets, paper, plastic, rubber, textile, wood)	- Yes	- Yes	- No charge	- Bookmark - Brochure - Catalogue (quarterly) - E-mail (biweekly) - Newspaper articles - Power point presentation - Public events - Tradeshow - Website	- Search listings by category, county, region, keyword - Create listing	- KidMAX program for schools http://www.ciwmb.ca.gov/calmax/Kidmax.htm
Industrial Materials Exchange (IMEX) – Washington, Oregon, Idaho, Alaska Passive	- 1989 - Industrial	- Since 1989, 2925 known exchanges have taken place diverting over 9,172 tons of material with a purchase savings of over \$22.7 million and disposal savings of over \$4.3 million	- 16 categories (e.g., acids, alkalis, building materials, computers/electronics, industrial and other equipment, lab chemicals/equipment, metals/metal sludges, miscellaneous, oils/waxes, other inorganic chemicals, other organic chemicals, paints/coatings, plastic/rubber, solvents, textiles/leather, wood/paper)	- No	- Yes	- No charge	- E-mail - Newspaper articles - Presentations - Tradeshow - Website	- Available listing by category - Wanted listing by category - Keyword search - Create listing	- Help section - Frequently asked questions - Report successful exchanges
Massachusetts Material Exchange Passive	- 1995 - Business	- In the past four years, the Massachusetts Materials Exchange has moved over 2,000 tons of materials, saving participants more than \$100,000 in avoided disposal and purchasing costs.	- 17 categories (e.g., appliances, cardboard, construction/demolition, crafts, electronics, equipment/machinery, furniture, glass, medical, metal, miscellaneous, organics, packaging, paper, plastic, textiles, wood)	- Yes	- Yes	- Participants are asked to contribute a portion of the savings achieved by using the Materials Exchange (typically 20% of their savings or more)	- E-mail - Postcards - Newspaper articles - Trade shows and magazines - Website	- Available listing by category - Wanted listing by category - Keyword search - Create listing	- Success stories - Privacy statement

Materials Exchanges		Materials Exchanges Highlights							
Organization	Started/ Waste Sector(s)	Exchanges/ Tonnage Diverted/Savings	Material Categories	Material Guidelines	Disclaimer	Cost to User	Promotion	On-line Availability	Other
United States continued									
Minnesota Materials Exchange Active	- 1995 - Business	- Since 1995, 3216 known exchanges have taken place diverting over 10,816 tons of material with a savings of over \$7 million	- 14 categories (e.g., boxes/packaging, chemicals/cleaners, construction materials, containers/pallets, electronics, equipment/machinery, furniture, miscellaneous, office/art supplies, paints/stains, paper, plastics/rubber, textiles/leather, wood)	- Yes, under Policy	- Yes	- No charge	- E-mail (bimonthly) - 'Materials Exchange Most Wanted' postcards - Newspaper articles - Presentations - Tradeshows/conferences - Website	- Available listing by category, keyword, county - Wanted listing by category, keyword, county - Search by listing number	- Frequently asked questions - Success stories - Most things are available free or at a low cost
New York Wa\$te Match Active	- 1997 - Focuses on industrial, however accepts commercial, nonprofit, school and residential	- Since its inception in 1997, NY Wa\$teMatch has diverted over 20,000 tons of materials from landfills and helped program participants save over \$3.3 million in material costs	- 17 categories (e.g., building materials, computers/electronics/office equipment, containers/packaging, equipment/fixtures, furniture, glass, materials not elsewhere classified, metals, miscellaneous reusable articles, organics, paper/cardboard, plastics/rubber, textiles/fabric/leather, transportation/equipment/parts, wood, food, office/art supplies)	- Yes, under Terms and Conditions	- Yes, under Terms and Conditions	- No charge	- Dedicated outreach programs - Newsletter - Public events - Tradeshows/conferences - Website	- Available listing by category, date, keyword, borough, city - Wanted listing by category, date, keyword, borough, city - Create listing	- Listed items may be free or they may have a fixed or negotiable price
Resource Exchange Network for Eliminating Waste (RENEW) – Texas Active/Passive ²	- 1988 - Industrial	- Since 1988, 418 known exchanges have taken place diverting over 866 million pounds of material with a purchase savings of over \$8 million and disposal savings of over \$11 million	- 19 categories (e.g., acids, alkali, construction/demolition, electronics, glass, laboratory chemicals, metal and metal sludge, miscellaneous, oil, other inorganic chemicals, other organic chemicals, paints/coatings, paper, plastic, rubber, solvents, textile/leather, wax wood)	- No	- No	- No charge - Donations accepted	- Catalogue (twice a year) - List serve - Public events - Website	- Available listing by category - Wanted listing by category	- Success stories - Create listing by sending form to RENEW

¹Information compiled through researching materials exchange websites and contacting the program coordinator

²RENEW is somewhere between active and passive materials exchanges. It is not just a passive, web only program. Two catalogues are published per year along with two updates to keep subscribers current on listings. Businesses are not allowed to post directly to the web site. They must submit their listing to the Texas Commission on Environmental Quality who reviews the content and then obtains agreement from the business before posting. Additionally, RENEW allows confidential listings which means the interested party must contact RENEW to arrange a transaction. The contact information is then relayed to the confidential lister who must contact the interested party. RENEW does not actively arrange or negotiate exchanges, it is the facilitator.

Appendix D: Promotional Samples



Minnesota Materials Exchange – Materials Wanted Postcards

The image shows a brochure for the Business Material Exchange of Wisconsin (BME_x). The top left features a large graphic with the text "BME_x" in a grey box, with "Browse," "Match," and "Exchange" written in red below it. A red circle highlights this section. To the right, another graphic shows "BROWSE MATCH EXCHANGE" in a grey box, also circled in red. The central logo is a circular arrow icon with "BME_x" below it. The main text describes the program's goal to reduce waste and costs. Contact information for the Business Material Exchange of WI is provided at the bottom, including the address (520 E. Grand Ave, Beloit, WI 53501), phone (608.354.1131), fax (608.354.1161), email (bme@bme.org), and website (www.bme.org). A small logo at the bottom left identifies BME_x as a program of the Greater Beloit Chamber of Commerce.

BME_x
Browse,
Match,
Exchange

BME_x is a material exchange program that promotes the reuse of materials by connecting individuals or organizations that have reusable products or supplies available with those who can use the materials. The goal is to reduce the amount of waste sent to landfills while providing an opportunity for participants to reduce costs associated with disposal and raw material purchases.

In July 2004 the Beloit Material Exchange will be launched to service the Greater Beloit, Wisconsin area. This new service will complement the existing Business Material Exchange of Wisconsin program which has been connecting waste generators and end-users across the country and around the globe since 1996. Both programs aim to reduce waste, extend the life of usable materials and improve economic performance and quality of life for participants.

BME_x

Business Material Exchange of WI
Beloit Material Exchange
520 E. Grand Ave
Beloit, WI 53501
voice: 608.354.1131
fax: 608.354.1161
bme@bme.org
www.bme.org

BME_x

www.bme.org

BME_x is a program of the Greater Beloit Chamber of Commerce

Business Material Exchange of Wisconsin – Materials Exchange Brochure, Page 1 of 2

[BROWSE, MATCH, EXCHANGE.]

WHAT IS REUSE?

Reuse is the second priority (after waste reduction) on the national solid waste management hierarchy. Reuse is the redistribution of materials from those who no longer need them to those who can still find utility in the materials. Reuse conserves valuable natural resources, reduces the amount of water/air pollution and greenhouse gases and is a means of getting excess materials to environmentally-conscious and financially prudent people and organizations. Reuse can reduce the amount of solid waste entering landfills and increase the material, educational and occupational well-being of participating individuals and organizations. Reuse often supports local community social programs and provides participating businesses with tax benefits and reduced disposal costs.

WHAT IS A MATERIAL EXCHANGE?

A material exchange is a reuse tool. It is a valuable service that can help to:

- Capture the value of byproducts and surplus materials
- Reduce disposal costs
- Reduce purchasing costs
- Reduce storage and staff costs
- Reduce waste, save landfill space and resources
- Enhance the environmental image of your company

Reuse opportunities are limited only by the imaginations of BMEx participants!

BUSINESS MATERIAL EXCHANGE OF WISCONSIN

The Business Material Exchange of Wisconsin (BMEx) is a material listing service designed as a clearinghouse to match companies, organizations and individuals that need materials with those that have reusable, surplus or by-product materials available. The range of organizations currently served by BMEx is as diverse as the materials exchanged. Users of BMEx include manufacturing, commercial, construction and retail businesses, as well as non-profit organizations, agricultural entities and individuals. A state-of-the-art website (www.bmex.org) allows users from across the country and around the world to easily place materials on the exchange, as well as to search for and respond to materials already listed.

BELOIT MATERIAL EXCHANGE

The Beloit Material Exchange (BMEx) is a regional material exchange for the Greater Beloit, Wisconsin area. This program will be available in mid-2004 and will serve as a model for other Wisconsin communities. Residential, retail, commercial, industrial, institutional, municipal, agricultural and non-profit organizations are all welcome to participate in this material exchange. However, in order to minimize transportation costs associated with potential exchanges, users of the service must be located within 20 miles of Beloit, Wisconsin. Communities within the radius include Clinton, WI; Footville, WI; Janesville, WI; South Beloit, IL; Rockton, IL; Roscoe, IL and neighboring townships.



If you are interested in browsing BMEx listings or setting up a posting for yourself or your organization, simply log onto www.bmex.org and click on the instructional tabs. In order to post a material or to obtain information on a posting that interests you, there is a simple registration process that must be completed. Online registration is FREE for all users of BMEx at this time!

Please contact Amy Loudensbeck, Director or Kate Niman, Program Assistant if you have any questions or require additional information.

Business Material Exchange of WI
 Beloit Material Exchange
 520 E. Grand Ave.
 Beloit, WI 53510
 phone: 608.364.1001
 fax: 608.364.1001
 email: bmex@bmc.com
www.bmex.org

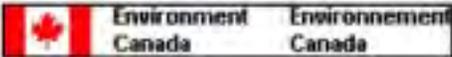
Business Material Exchange of Wisconsin – Materials Exchange Brochure, Page 2 of 2

Funding Partners

 Toronto Economic Development

 **VOLUNTEER ACTION**
ORDINARIUS SINGENDI
ALTERNATIVIS

 Khal Environmental Fund

 Environment Canada / Environnement Canada

Ontario Waste Materials Exchange
63 Polson Street, 2nd Floor
Toronto, ON M5A 1A4

OWME
Environmental Information Network

AVAILABLE MATERIALS | BUSINESS DIRECTORY | WANTED MATERIALS

REGISTER Free
MEMBER SECTION
LOGIN IN

SUCCESS STORIES
LINK & LOGO
BULLETIN BOARD
E-LIST
EDUCATIONAL RESOURCES
FACT SHEETS
NEWSLETTERS
PARTNERS
LINKS
OCETA

ONTARIO WASTE MATERIALS EXCHANGE

Operated by OCETA

Ontario Waste Materials Exchange – Waste Materials Exchange Brochure, Page 1 of 2

<p style="text-align: center;">History</p> <p>The Ontario Waste Materials Exchange (OWME) has been in operation since the mid 1980s. The Exchange has assisted companies in diverting thousands of tonnes of waste materials from landfill. Originally managed by ORTECH, operational responsibility was transferred to the Ontario Centre For Environmental Technology Advancement (OCETA) in December 1997.</p> <p style="text-align: center;">What is the OWME</p> <p>The Exchange is a service designed to facilitate the reuse and recycling of industrial by-product materials. The purpose is to create a network that allows waste products or outputs of one industry to become the raw material inputs of another. Through the Exchange network, generators are provided with access to reuse and recycling markets, and users with access to material suppliers.</p>	<p style="text-align: center;">On-Line Information Resources</p> <p>The final stage in the electronic evolution of the Exchange is now complete. Users simply logon to the website, register and gain instant access to a wealth of information.</p> <p style="text-align: center;">Business Directory</p> <p>An updated database of waste management, reuse, recycling and composting service providers. The directory is searchable by material type, company name, geographical location and service.</p> <p style="text-align: center;">Available & Wanted Materials</p> <p>Users seeking end-markets or supply sources can now post and create their own material profiles directly on-line. Users can also browse and view information posted by others.</p>	<p style="text-align: center;">Other Services</p> <p>Other OWME services include:</p> <ul style="list-style-type: none"> • The e-List, an e-mail information source; • Bulletin Board, a question/answer posting service; • Fact Sheets, a source of environmental information; • "Use It Reuse It" guide, developed by Toronto Environmental Alliance. <p style="text-align: center;">Sponsorship Opportunities</p> <p>For a minimal annual fee, companies that post their information in the Business Directory can also include a logo and a link to their website.</p> <p style="text-align: center;">Contact Information</p> <p>Ontario Waste Materials Exchange 63 Polson Street 2nd Floor, Toronto Ontario M5A 1A4 416-778-4199 or 1-888-845-9038 owe@oceta.on.ca www.owe.org Operated by OCETA www.oceta.on.ca</p>
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Ontario Waste Materials Exchange – Waste Materials Exchange Brochure, Page 2 of 2

Appendix E: Guidelines and Disclaimers

California Materials Exchange

<http://www.ciwmb.ca.gov/calmax/Netiquet.htm>

Guidelines

Acceptable "Available" Listings

1. Businesses, government, or institutions/organizations interested in placing items that are potentially reusable to someone else, but currently with little to no market value. Examples include business overruns, seconds, outdated inventory, empty containers, etc. Individual exceptions may be made for marketable items being offered for free or below market value to schools or nonprofit organizations.
2. Businesses, government, or institutions/organizations interested in placing large and/or recurring quantities of recyclable (scrap) materials for which recycling markets are not yet established (such as some types of paper, plastics). These materials may be useable as feedstock for manufacturers, recyclers, or brokers. To determine if there are established recycling markets in your area, contact your local city/county recycling coordinator, or check the yellow pages under Recycling Services.
3. Individuals interested in offering items at significantly below market value or free for reuse by schools or non-profit organizations.

Acceptable "Wanted" Listings

1. Businesses, government, or institutions/organizations seeking used items. Examples include used office equipment, building materials, office and art supplies, etc.
2. Manufacturers who are interested in obtaining feedstock materials for the manufacturing of their products.
3. Professional recyclers and brokers interested in obtaining scrap materials.

Unacceptable "Available" Listings

1. Manufacturers/distributors/retailers of recycled content products interested in listing their products. These listers may place a free listing in the California Integrated Waste Management Board's Recycled Content Product database. Professional recyclers and brokers interested in listing their products. Individual exceptions may be made for items that are not scrap materials, such as a closeout on containers, hangers, fixtures, or some other reusable item, especially if they are free, or free to schools.
2. Businesses or individuals interested in selling used items at market value, such as appliances, furniture, automobiles, etc. Those items with established resale markets would be better served by utilizing local advertising options.
3. Businesses or individuals interested in placing recyclable (scrap) materials with established recycling markets, such as cardboard and white office paper. These listers would be better served by contacting the local city/county recycling coordinator, or check the yellow pages under Recycling Services. Exceptions include those materials suitable in form and quantity for reuse in arts and education applications.

Special Services

CalMAX will continue to list specialized reuse and recycling services if they are: free public services; nonprofit organizations; companies that donate a significant portion of their materials for reuse by nonprofits (or act as a conduit for such donations); or if they offer unique information services to assist Californians in the reuse and recycling of specialized materials; or if they cater to specialized industries.

Lister Responsibilities

Please respond to all inquiries, even if only to say that you are not interested. CalMAX will only work if listers are responsive. If complaints are received that you are not returning phone calls and the problem is not resolved in a timely manner, your listing (s) will be removed. If the number in your listing is on an answer phone or voice mail system, please be sure your full name, and/or business name, as stated in your listing, is mentioned on your outgoing message. Otherwise, respondents have no way of knowing if they have reached the right party.

Listers should notify CalMAX if their listing is no longer valid. CalMAX will contact listers at least quarterly to verify listings. Failure to respond will result in the listing being removed.

Please take the time to report any SUCCESSFUL EXCHANGES by sending an e-mail to CalMAX at calmax@ciwmb.ca.gov and/or calling CalMAX toll-free at (877) 520-9703. You may also request removal of your listing if a match is made. This feedback is absolutely critical to justify the continuation of this program.

Complaints and Compliments

We appreciate any constructive feedback that you would like to offer, be it a compliment or a complaint. Every one of your good ideas is implemented, as long as it is possible to do and benefits CalMAX overall. Your calls and letters are our only way of knowing what does and does not work in the real world of CalMAX. Please do not hesitate to tell the CalMAX coordinators what you think and how we can help. Tell us how we can serve you better.

Disclaimer

<http://www.ciwmb.ca.gov/calmax/Disclaim.htm>

The CalMAX exists as an informational forum to foster the lawful exchange, reuse and recycling of otherwise waste materials. Information provided through CalMAX, its catalog or its website is supplied by the listing party. Neither CalMAX, the California Integrated Waste Management Board, its contractors, nor any advisor, agent, or employee thereof is liable for any information, error, or representation, or makes any warranty, expressed or implied, as to the accuracy of the information regarding materials, services or products/equipment offered through CalMAX. CalMAX does not verify whether parties listing in CalMAX are in compliance with any rules and regulations applicable to the listed materials.

CalMAX is not responsible for the determination of what may constitute a hazardous substance or create a hazardous situation. CalMAX reserves the right to not list a material, or to edit information provided by the listing party. Some nonhazardous waste materials, such as tires, are governed by rules and regulations that restrict their transfer or transportation. Other materials, such as electronic discards, or e-waste, are subject to rapidly evolving rules. It is the responsibility of CalMAX users to be familiar with any legal limitations that may exist on the exchange of any listed materials.

Minnesota Materials Exchange

<http://mnexchange.org/listings/guidelines.htm>

Guidelines

Acceptable Listings

- Business-related items in good, usable condition (e.g., business overruns, seconds, outdated inventory, empty containers and office furniture).
- Large and/or recurring quantities of materials that can no longer be used by the lister but may be able to be used by others (e.g., chemicals, machinery and industrial by-products).
- Large and/or recurring quantities of recyclable scrap materials for which recycling markets are not yet established (e.g., some types of paper and plastics). These materials may be useable as feedstock for manufacturers, recyclers or brokers. To find recyclers, contact your local city/county recycling coordinator, or check the yellow pages under Recycling Services.
- Wish list items or "wanted" listings submitted by businesses, organizations or schools.

Fees: Items may be sold for a nominal fee. Fees must be specified and be 20 percent or less than the value of an item. An item's value must be based on its current condition.

Top 10 Most Frequent Materials Exchanged

- 1) Wood pallets
- 2) Plastic drums
- 3) Office furniture
- 4) Packing peanuts
- 5) Plastic buckets
- 6) 3-ring binders
- 7) Cardboard boxes
- 8) Office supplies
- 9) Bubble wrap
- 10) Photocopiers/printers

Unacceptable Listings

For unacceptable listings, the Materials Exchange program will try to redirect listers to more appropriate venues

- Selling used or new items at market value (e.g., appliances, equipment and furniture). Those items with established resale markets are better publicized with local advertising options.
- An item being sold for more than 20 percent of its value.
- Household items, motor vehicles, live animals, firearms and plants.
- Recyclable, scrap materials with established recycling markets (e.g., cardboard and white office paper). Outlets for materials can be found by your local city/county recycling coordinator, or checking the yellow pages under Recycling Services. Exceptions include materials suitable in form and quantity for reuse in arts and education applications.
- Businesses interested in listing their service.
- Individuals may not submit "wanted" listings.

Lister Responsibilities

Please respond to all inquiries, even if only to say that you are not interested or that an item is no longer available. Materials Exchange will only work if listers are responsive. If complaints are received that you are not returning phone calls or e-mails and the problem is not resolved in a timely manner, your listing(s) will be removed.

Listers should notify Materials Exchange if their listing is no longer valid. Materials Exchange will contact listers periodically to verify that listings are still current. Failure to respond will result in the listing being removed.

Please report any successful exchanges by completing the Report a Success form, sending an email or calling 612/624-1300 or 800/247-0015. You may also request removal of your listing if a match is made. This feedback is critical to justify the continuation of this program.

Right to Reject

Materials Exchange reserves the right to reject any listing deemed inappropriate. The lister may be contacted by Materials Exchange if clarification is needed prior to approving a posting.

Minnesota Materials Exchange Disclaimer

<http://mnexchange.org/register/disclaimer.html>

Information provided through this Web site is supplied by the lister of the material. The Minnesota Technical Assistance Program (MnTAP), the other Minnesota Materials Exchange Alliance local program contributors and the Minnesota Office of Environmental Assistance (OEA) are not responsible for any warranty, expressed or implied, as to the accuracy of the material description, the suitability of a particular use, or the saleability of any material offered through this catalog. It is the legal responsibility of each party to determine whether a listed material is a hazardous waste or a hazardous material. Both hazardous and solid wastes must be managed in accordance with all relevant regulations and laws. The exchange programs that contribute listings to this catalog are not responsible for determining what may constitute a hazardous material or hazardous waste or may create a hazardous situation. The OEA, MnTAP and/or the local programs reserve the right not to list a material, to delist a material, or to edit information provided by the listing party.

Appendix F: Impact Form – Exchange Results

In order to accurately assess the impact of the Calgary Materials Exchange Program, we request that participating companies keep a record of any materials exchanges (re-use or recycling) that are facilitated by the Calgary Materials Exchange Program Coordinator. This enables the Program Coordinator to determine the cumulative amount of landfill diversion and financial savings to companies that are associated with the program, as well as our funding agencies. The information you provide will be kept confidential. Please report any exchanges that occur by phone, email or fax. Your assistance in calculating program impacts is greatly appreciated.

Date	Providing Company	Receiving Company	Material	Weight (kg / tonne)	Volume (description of load)	Provider Financial Savings (1)	Receiver Financial Savings (2)	Comments

Please use whatever formula is most relevant to your operations (if there is a different method you use to calculate your savings feel free to use it but please explain your methodology).

- 1) Calculation A: Savings in landfill tipping fees = \$38/tonne * commodity weight; or,
Calculation B: Savings in garbage bin pick-up = Cost/pick-up of bin * number of fewer bin pick-ups resulting from exchange
- 2) Calculation A: Value of commodity = Market value * weight of commodity exchanged; or,
Calculation B: Value of commodity = Price of buying item new – actual price paid for the item.

Appendix G: Program Coordinator Job Description

Foothills Waste Exchange Program Coordinator Duties

With the goal of minimizing the amount of industrial waste going to Calgary landfills, the Program Coordinator (PC) is responsible for all aspects of program management including:

- Promotion of waste exchange and recycling through communication, meetings and relationship building with the senior management of businesses located in the S.E. industrial area of Calgary
- Building business awareness and participation in the program
- Marketing and promotion of the Foothills Waste Exchange Project, including the website
- Facilitating waste exchanges, maintenance and development of the program website
- Arranging meetings, when needed, with the Technical Advisory Committee and the Industry Steering Committee
- Communicating with program funding agencies and partners
- Researching exchange and recycling issues as identified by program participants
- Creating a program database that includes business names, number and types of business in the industrial area as well as their by-products and associated disposal methods
- Measuring program impacts
- Writing program reports for sponsors to account for program impacts and budget expended (e.g., Final Report and Guidance Document)
- Providing monthly accounting of program expenses

Appendix H: Program Assistant Job Description

The Program Assistant (PA) provides support to the Program Coordinator (PC) in terms of daily activities and operations, in addition to administrative support.

The main functions of the PA include:

- Communications with new and participating companies, including: introducing the program, setting up appointments for the PC, researching recipients for waste material, following-up on exchanges, providing contact information (referrals) and collecting results (impact sheets). Occasional site visits to companies actively exchanging materials may also take place.
- Data management of information and results, including: updating the database as information is acquired (company input/output sheet), working with the website data and analysis of impact sheet (e.g., calculating tonnage of waste diverted, provider/receiver cost savings, Greenhouse Gas savings, number of exchanges and participants). Analysis also includes calculating the measurables over time broken down by commodity and providing tables, charts and graphs as required.

The PA will have weekly meetings with the PC to discuss activities, workload and any program development issues. The PA is required to attend committee meetings (e.g., Technical Advisory Committee and Industry Steering Committee) and assist with input and taking notes for meeting minutes. Additionally, the PA attends relevant workshops and seminars.

The PA will research relevant issues as required (e.g., recycling materials, other waste exchanges), assist with preparations of workshops, prepare handouts (e.g., fact sheets, company/recycler referrals, company input/output, steps of procedures) and assist in preparation of quarterly newsletter.

Other duties will be discussed with the PC as necessary to decide what activities the PA will perform.

Appendix I: Registration Form

Please fill out and return by **fax** 230-1458 or **email** sarah@cleancalgary.org. Thank you.
All information provided will be kept confidential, unless authorized by the parties below.

Please check the appropriate box to be invoiced accordingly:

- I would like to **Sponsor** CMEX, please invoice for the following amount \$_____
- I would like to register as a **Member** of CMEX and be invoiced the \$100 membership fee
- I would like to register as a **Participant** with CMEX
- I would like to become a **Partner** of CMEX
- Please provide me with a Charitable Tax Receipt

Date:	
Company Name:	Mailing Address:
Company Type: (check as many as apply)	
<input type="checkbox"/> Construction	<input type="checkbox"/> Manufacturer
<input type="checkbox"/> Engineering Services	<input type="checkbox"/> Recycler
<input type="checkbox"/> Logistics	<input type="checkbox"/> Retail
<input type="checkbox"/> Other (pls. specify _____)	<input type="checkbox"/> Service
	<input type="checkbox"/> Waste Management
	<input type="checkbox"/> Wholesaler
Company Description:	
Company Size: (estimated # of employees)	Fax #:
Company Telephone:	Company Website:

Primary Contact:	Position:
Contact Telephone:	Contact Email:

Alternative Contact Person:	Position:
Alternative Contacts Telephone:	Alternative Contacts Email:

Appendix J: Company Commodity Checklist

Company: _____

Contact: _____

Date: _____

Waste

Waste disposal company Y / N

Recycling company Y / N

of bins _____

Commodities _____

Size of bins _____

Size of bins _____

Volume when emptied _____

Volume when emptied _____

% of different waste materials _____

Inputs

Fixed Source	Exchange Potential	Other	Commodity	Volume	Continuous or One-time
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____

Outputs

Recycled	Reused I E	Landfilled	Commodity	Volume	Continuous or One-time
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	_____	_____	_____

Referrals

Commodity	Companies Referred To
_____	_____
_____	_____
_____	_____
_____	_____