

NYC Materials Exchange Roundtable

Held on November 14, 1997

Conducted by The Cornell Waste Management Institute

Sponsored by The U.S. Environmental Protection Agency Region 2

On behalf of The New York City Department of Sanitation

Final Report

February, 1998 - Internet Version

<http://cwmi.css.cornell.edu/WastRed/MatlExch.html>

ACKNOWLEDGEMENTS

The success of this New York City Materials Exchange Roundtable was largely due to the enthusiastic participation of the attendees who shared their knowledge and ideas. Those who came from as far as California or as near as the adjacent office in Cornell Cooperative Extension all provided perspectives that will be useful in maximizing the impact of the NY WasteMatch program.

The commitment of the New York City Department of Sanitation to waste reduction and in particular the efforts of Dave Kleckner and Patty Tobin in the Bureau of Waste Prevention, Reuse and Recycling, were key to the development and implementation of this Roundtable. Ivan Braun of ITAC also provided important input. Without the assistance of EPA, Region II and the enthusiastic support of John Filippelli, the Roundtable would not have been possible. Finally, the assistance of the staff of Cornell Cooperative Extension-NYC Programs, particularly Sol Agosto, in providing an atmosphere conducive to productive interaction and the logistical support of Karen Rollo (and Peter Borst behind the scenes in Ithaca) is much appreciated.

Many thanks to all involved - Ellen Harrison, Director

The Cornell Waste Management Institute (CWMI) was established in 1987. CWMI addresses the environmental and social issues associated with waste management by focusing University resources and capabilities on this pressing economic, environmental, and political issue. Through research, outreach, and teaching activities, CWMI staff and affiliated researchers and educators

work to develop technical solutions to waste management problems and to address broader issues of waste generation and composition, waste reduction, risk management, environmental equity, and public decision-making. The focus for such work is on multi-disciplinary projects that integrate research and outreach. Working in collaboration with Cornell faculty and students from many departments and with cooperators in both the public and private sectors, issues ranging from management of sewage sludges to enviroshopping are the focus of on-going programs.

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BACKGROUND

A Plan to Phase Out The Fresh Kills Landfill was issued by the Task Force established by New York State Governor George Pataki and New York City Mayor Rudolph Giuliani during November of 1996. Central to this plan are strategies intended to maximize the amount of New York City waste that is prevented and recycled, in order to minimize the need to export waste when the Fresh Kills Landfill on Staten Island closes at the end of 2001.

The Fresh Kills Landfill has long been an inexpensive solid waste disposal option for the City. However, the City's reliance on this landfill is being dramatically reduced over the next five years. Concurrently, New York City is increasing its reliance on waste reduction initiatives, recycling, composting, and out-of-City disposal.

The U.S. Environmental Protection Agency (EPA) participated in the Task Force established by the Governor and Mayor. In the Task Force Plan, EPA offered to fund roundtable meetings with the City to address waste reduction issues. The Task Force recommended and the City agreed that the roundtable meetings would include representatives of various City, State, local, and private organizations who have studied or implemented waste reduction strategies, and who could share information and experiences at these meetings.

The New York City Department of Sanitation (DOS), Bureau of Waste Prevention, Reuse and

Recycling (BWPRR) proposed to EPA Region 2 that a roundtable be convened to provide a forum for materials exchange program sponsors from throughout the nation, including New York City program operators and interested parties. The purpose was to discuss issues critical to the success of materials exchange operations, that were also being tackled by the new NY WasteMatch Program launched by DOS in April of 1997. NY WasteMatch is a materials exchange service that facilitates transactions between participating firms, and does not provide material storage services.

DOS provided EPA Region 2 with a proposal setting forth the respective roles of the two agencies. EPA agreed to this arrangement, and subsequently provided funding for the Cornell Waste Management Institute (CWMI) to provide the needed services. These included providing input regarding the agenda and selection of invited participants, sending out invitations and following up as necessary to recruit participants, providing meeting space and refreshments, moderating the session, writing this summary report, and related services. CWMI and DOS worked closely in developing the agenda and selecting participants.

The Roundtable provided all participants with a networking and learning experience to assist program development, refine and improve materials exchange programs, and maximize program effectiveness. Experts from throughout the country participated in the session, as well as representatives of local organizations that do not currently provide matchmaking services. These included New York State agency and local development corporation representatives. They were invited in recognition of their role as potential service providers and promoters of NY WasteMatch (described below). The meeting also provided them with an opportunity to determine whether and how they may want to tap into or promote the program, use the database, or even establish satellite programs to augment the WasteMatch service.

DOS also directed CWMI to invite observers to attend the session. These invited guests included representatives of the Citywide Recycling Advisory Board, Solid Waste Advisory Boards from each Borough of the City, the Chair of the City Council's Environmental Committee, the Mayor's Office of Operations, the Mayor's Office of Construction, and the NYC Department of Business Services.

The Roundtable was an all day session, convened on November 14, 1997. The meeting space was provided by the Cornell Cooperative Extension, New York City Programs.

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NY WASTEMATCH

NY WasteMatch was launched during the spring of 1997 by the NYC Department of Sanitation, in partnership with the City University of New York (CUNY). DOS designed, funds, assists, and oversees implementation of NY WasteMatch. Matchmaking services are provided through contracts managed by CUNY with the Industrial Technology Assistance Corporation (ITAC), and Long Island City Business Development Corporation (LICBDC). CUNY is also responsible for developing the computer system/database for the program.

NY WasteMatch is designed to help businesses save money by providing a brokering service for industrial scraps, packaging, and other items that are potentially reusable, but for which there are not well-established recycling markets. The program is similar to others operating throughout the country, and builds on successful local programs in Long Island City and East Williamsburg, NY, which save businesses money by promoting reuse of materials that would otherwise be discarded. While reuse is the primary objective, some transactions involve recycling when reuse outlets are not available.

Goals and Objectives

1. Reduce DOS-Collected Waste. It is anticipated that NY WasteMatch will reduce the amount of waste collected and disposed of by the Department of Sanitation. Although the initial primary focus of the program is on the City's industrial sector, either the source or recipient of a listed material may be a government agency or institution that receives DOS collection service. And, DOS expects the program to expand over time to directly target organizations that receive DOS collection and disposal services.

2. Increased regional waste disposal capacity. The entire City, including the Department of Sanitation, benefits from waste reduction, regardless of the source of the waste. As DOS moves towards exporting a larger portion of the waste that the agency collects, the agency will be competing for the same regional waste disposal capacity as the private sector. Therefore, to the extent that NY WasteMatch leads to a reduction in waste generated by businesses for export by private haulers, there will be increased capacity for waste disposal at existing facilities in the region. This can be expected to help minimize the distance DOS will need to transport waste that remains after waste prevention, recycling, and composting. Furthermore, reduced competition for limited waste disposal capacity within the region may ultimately minimize tipping fees charged by waste disposal facilities that receive DOS collected waste.

3. Public Awareness. The program can be expected to raise the waste prevention and recycling awareness of the business community. Individuals who work in businesses in New York City often live in the City. To motivate New York City residents to minimize wasteful behavior, we must reach out to people not only in their homes, but where they work.

4. Sustainable businesses and self-sustaining program. NY WasteMatch saves money for businesses, which the program may be able to leverage to minimize the cost per ton of Sanitation's investment in NY WasteMatch. As a solid waste management agency, a primary waste reduction goal for DOS is to minimize the cost per ton of programs that DOS funds.

Although NY WasteMatch may generate limited direct benefits for the Department of Sanitation, it benefits the City by helping businesses to become more competitive and sustainable. The businesses and institutions that are directly served by the program, and the business assistance agencies and organizations that serve the business community and the City's institutions such as local development corporations and business improvement districts appear to have a vested interest in supporting the service, financially or otherwise.

Therefore, DOS's role in the program is to serve as an initiator of a service, but not necessarily as

a funder, or at least the primary funder, in the long-run. DOS is working to position the program so that it will become self-sufficient in whole or in part over time. DOS anticipates that progress toward this goal can be achieved by demonstrating that NY WasteMatch is a program that is valued and needed by the City's businesses and institutions. To the extent that NY WasteMatch is successful in leveraging resources from the business community and others through fees-for-services, establishment of satellite services, and through outreach and marketing efforts, it will minimize the cost per ton to the Department of Sanitation for any financial support the agency may continue to provide over the long-term.

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WELCOMING REMARKS

(See Appendix A for list of attendees and Roundtable agenda.)

The session began with brief welcoming remarks from the co-sponsors and organizers of the Materials Exchanges Roundtable: John Filippelli, U.S. EPA Region 2; Dave Kleckner, New York City Department of Sanitation, Bureau of Waste Prevention, Reuse and Recycling; and Ellen Harrison, Director of the Waste Management Institute at Cornell University.

Deputy Commissioner Martha K. Hirst of the NYC Department of Sanitation welcomed the participants on behalf of DOS Commissioner John J. Doherty, and highlighted the importance of waste prevention and recycling as components of the City's Plan to Phase Out the Fresh Kills Landfill. Deputy Commissioner Hirst noted that the continued success of DOS's programs rely on working closely with federal, state, and local policy makers; recycling advocates; the business community; and the City's residents. She added that DOS recognizes that there is much that jurisdictions can learn from each other, including those represented at the Roundtable.

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PROGRAM DESCRIPTIONS

The Roundtable proceeded with representatives of materials exchange programs from throughout the country presenting the following program descriptions:

California Materials Exchange Program (CALMAX) - Kevin Taylor

CALMAX is a service provided by the California Integrated Waste Management Board (CIWMB), designed to help businesses and other organizations reduce the amount of waste materials discarded, and to meet the 1989 state mandated goals of reducing the amount of waste going to the landfill by 25 percent by 1995 and 50 percent by the year 2000. The main target of the CALMAX program is California's businesses, but surrounding areas such as Oregon, Nevada, and Northern Mexico are invited to use the program. Listings from other areas of the U.S., as well as Canada and Mexico, are accepted if they may be beneficial to California. CALMAX does not accept most hazardous materials or hazardous wastes. Some exceptions (e.g., fluorescent lights) may be permitted on a case-by-case basis. CALMAX has designated

construction/demolition, organics, and electronics waste types/industries as priorities. Promotion is through a quarterly catalogue and the Internet (www.ciwmb.ca.gov/mrt/calmax/calmax.htm). The catalogue is the primary mechanism used by CALMAX for disseminating listings, and also serves a promotional function. Printing and mailing costs are approximately \$20,000. A challenge is to get more people to use the Internet. Progress is being made. In the past year, approximately 350 queries/week were made on the database through the Web site. (CALMAX estimates that approximately 1100 listings were completed last year; annual budget, \$200,000-\$250,000; staff = 2 full-time equivalent employees (FTEs), 1 part-time student, contractor for catalogue.)

Iowa Waste Exchange (via conference call) - Jennifer Drenner

The Iowa Waste Exchange is a cooperative effort of Iowa community colleges and councils of governments, solid waste agencies, the Iowa Waste Reduction Center at the University of Northern Iowa, the Iowa Department of Natural Resources, the Iowa Department of Economic Development and the Recycle Iowa Program. There are 11 regional offices throughout the state with eight FTEs. Information about the program is disseminated through a Web listing, (www.recycleiowa.org/tech/bawss.html); and a pull-out section in a quarterly newsletter, "The Closed Loop," that contains "hot" (newest listings, and "hard-to-place" materials) listings. Exchange transactions are made through direct contact with regional representatives.

Long Island City Business Development Corporation (LICBDC) - John Okun

LICBDC, a NY WasteMatch subcontractor, operates the Industrial Waste Recycling and Prevention Program (INWRAP), which includes a nonhazardous materials exchange, serving primarily Long Island City, western Queens, and Greenpoint. The program is targeted mainly to small and medium-sized industrial businesses. INWRAP provides ambitious technical assistance in recruiting users and listings, and performs significant tracking, invoicing, and analysis of cost savings. Approximately 30-35 percent of funding dollars comes from revenues generated by INWRAP through shared savings payments from participating companies (contracts are executed between the companies and INWRAP) and membership dues from vendors and recipients. Additional funding comes from grants from Empire State Development and EPA, and sponsorships for special events.

A new program initiative utilizes a credit network specializing in cash and trade credits offered by the worldwide Chadwick Financial Corporation in exchange for non-performing assets such as unwanted equipment and surplus inventory. For specific information on how INWRAP uses the credit network, contact John Okun; general information about the Chadwick Financial Corporation is available on the Web (www.inkindgift.com/boutchad.htm). INWRAP makes use of interns through a partnership with the NY Institute of Technology and LaGuardia Community College. (4-500 listings/year; staff - 1.5 FTE and 3 part-time interns.)

New Hampshire Materials Exchange (NHME) - Mark Toussaint

NHME is a service of WasteCap of New Hampshire, a proactive not-for-profit waste reduction organization operated by the Business & Industry Association (BIA) of New Hampshire. Mark

Toussaint is the sole staff member; funding for the program (approximately \$18,000 annually) comes from community sponsors; grants (EPA and the American Plastics Council); and fund-raising events tied to specific projects. Materials exchange information is disseminated in four ways: 1) through the World Wide Web (www.wastecapnh.org) with e-mail links to listers when possible, links to other materials exchanges nationwide, and information about Wastecap's free, confidential waste reduction services; 2) a printed catalogue published quarterly; 3) an e-mail list serve whereby users sign up to receive current information on exchange opportunities (to register for the list, e-mail nhmex@aol.com); and 4) an automatic fax on new listings for those who have fax machines, but no access to e-mail.

Contact information is provided in the catalogue and Website allowing direct contact between generators and users. Approximately one-half of NHME's listings this quarter came through the Web access. Recycler's World has a link to the NHME site which generates a fair number of visitors. (Approximately 200 listings/year; staff = .5 FTE; office space is donated.)

Northeast Industrial Waste Exchange, Inc. (NIWE); The Millennium Exchange, Ltd. - Bill Sloan

NIWE provides buyers' and sellers' listings for a 13 state area. Funding is currently provided by grants/contracts from sources in New York State, Baltimore, and Pennsylvania, which support one full time employee. The Millennium Exchange, is a private, investor-owned company, which is anticipated to provide active custom match-ups through the Web, e-mail, and fax. (1-2,000 listings/year; staff = 1.5 FTE and 1 temporary.)

Southeast Minnesota Recyclers' Exchange (SEMREX) - Anne Morse

Minnesota has developed a statewide materials exchange network. Five regional materials exchange programs function in partnership as the Minnesota Materials Exchange Alliance with the Minnesota Office of Environmental Assistance (OEA) which coordinates the regional efforts, and the Minnesota Technical Assistance Program which publishes the statewide catalogue. One of the five regional exchanges, SEMREX is an organization of counties in the Southeast corner of Minnesota. SEMREX has developed an interactive Materials Exchange database that links businesses that have a usable waste material with others that can use that material as a resource. SEMREX also provides Cooperative Marketing services to its businesses to overcome the obstacles rural recyclers face, such as smaller volumes and dispersed populations, higher transportation costs, and budgetary and storage constraints.

Through free waste evaluations, SEMREX assists businesses in identifying which waste materials can potentially be reused by others, and which are recyclable through the marketing program. State funds provide for the operation of the clearinghouse for listings from the exchange programs in Minnesota and other states, and a semiannual publication of a "Materials Listing Catalogue." Regional exchanges are required to be self-financing, and SEMREX is working to achieve this through a ten percent surcharge on materials cooperatively marketed, and the use of volunteer and AmeriCorps*VISTA workers (see Appendix D). (Approximately 1500 listings/year; staff = 5 regional offices with one staff each.)

Southern Waste Information Exchange (SWIX) - Gene Jones

SWIX is a service of Keep Florida Beautiful, Inc. and Florida State University (FSU). Originally instituted as FWIX (Florida Waste Information Exchange) in 1981, it expanded its service area in 1982 to the southern region of the U.S. in order to improve waste recycling, use, and reuse opportunities for Florida waste generators, as well as to more effectively respond to the many inquiries about Florida's materials from potential clients outside of Florida. The program started with hazardous wastes listings, but since 1993 the shift has been to nonhazardous wastes. All areas of waste exchange are targeted, but the focus is on 12 standard categories of "materials available" and "materials wanted" acids, alkalis, other inorganic chemicals, solvents, other organic chemicals, oils and waxes, plastics and rubber, textiles and leather, wood and paper, metal and metal sludges, construction/building materials, and equipment. Promotion of exchanges is accomplished through: 1) a catalogue published three times annually; 2) an Internet home page (<http://www.enviroworld.com/SWIX/>) with links to other exchanges and environmental agencies, and 3) a toll-free 800 number (1-800-441-7949). SWIX received 5,000 requests for information last year.

Requests for information through the Internet are increasing, from 10 to 33 percent in the past year, but the bulk are received by phone (54%). The budget for SWIX is approximately \$100,000 annually, and FSU donates some in-house costs, i.e., office space and equipment. In addition, FSU faculty and students provide assistance in identifying potential uses of materials and pollution prevention opportunities. Additional revenues are raised by catalogue subscriptions, fees for materials available and waste management services listings, and sponsors. (2-300 listings/year; staff = 1 FTE, 1 part-time student.)

Following the presentations from the materials exchange representatives, all participants of the Roundtable introduced themselves/affiliations and briefly outlined their reasons for participating. The discussion then moved on to how to effectively recruit listings and facilitate transactions.

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MOTIVATING BUSINESSES TO USE WASTE EXCHANGES

The motivation for companies to participate in waste exchange includes reduced waste handling costs, savings in purchasing costs, increased storage space that can be used for other purposes, tax deductions and civic pride from reusable materials that may be donated to not-for profit organizations, concern for the environment, and other considerations. However, for many companies, the focus is on revenue generated by their normal business activities, with less regard for pursuing cost reduction initiatives, which is an obstacle to generating interest and participation in materials exchange programs. In some instances, "doing the right thing," (e.g., environmental responsibility) is cited as a prime motivation for participation in waste exchanges. The group discussed some ideas for encouraging more participation in materials exchange programs

Demonstrate to businesses that although maximizing revenue from their operations is likely their primary focus, they can enhance their profitability by replacing raw materials or reducing waste

disposal costs through reusable material transactions.

Change the mindset of those responsible for purchasing, i.e., from "where do I get virgin materials" to "where can I get cost-effective, used materials."

Tax deductions may be available, when materials are donated to nonprofit organizations.

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METHODS OF IDENTIFYING USERS AND GENERATORS

Transactions do not always involve "buyers" and "sellers." Money may not always exchange hands (e.g., barter and donations are possible). This might entail efforts to find a specific match for a specific waste, or efforts to link generators with possible users with whom they can work in the future. Finding and developing new markets for potential waste streams and identifying new companies to bring into the reuse and recycling markets is an on-going activity. Following are some methods suggested by Roundtable participants for identifying users and/or generators:

Use SIC (Standard Industrial Classification) Codes to target similar businesses who may have similar needs/wastes and to identify materials used by those businesses.

Use Thomas' Register of Business & Industry, Harris Directory, and Yellow Pages (available on the Web) to identify area businesses; focus on local commodities.

Use Internet listing of businesses who specialize in "green materials."

Work with recycling coordinators and economic development experts (including Empire State Development, ORMD in NYS); they are often aware of what is being disposed of and what materials may have other uses.

Work with local economic development, business, and trade organizations such as Local Development Corporations, Chambers of Commerce, and with Manufacturing Extension Partnerships (MEPs).

Consider linking with the NY State Department of Environmental Conservation's beneficial use determination (BUD) program.

Use referrals from successful exchanges, helping participants to network with peers.

Promote success stories publicize through trade association newsletters.

Target repeat services.

Target specific individual within a company (i.e., John Doe in purchasing, who is interested in the "bottom line").

Use vendors who travel between companies (e.g., computer service providers) and repeat customers to build an informal network to promote the materials exchange concept.

Inventory purchased inputs as well as wastes when conducting business audits.

Look at new businesses prior to start-up, design for minimum waste; identify opportunities to use exchange materials as inputs and opportunities for reusable and recyclable outputs.

Work with manufacturers within an industry, or related industries, to discuss possibilities of targeting waste products.

Convince generators to target their waste to users, modifying it to meet user's needs.

Provide information (and possibly samples) at trade shows and similar events (may not need to rent a booth, but simply show up and distribute catalogues).

Provide samples of materials at trade shows, fairs, on-site visits, and consider contests for "how to reuse these materials" (though some Roundtable participants do not make use of samples in order to avoid liability of representing that the material available is exactly the same as the sample).

Target hospitals as possible sources or users of reusable materials.

Target schools as possible recipients of reusable materials.

Work with waste haulers.

Seek contacts in construction as possible sources of reusable materials.

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OPEN VERSUS CLOSED LISTINGS

Open listings (listings that fully disclose information about the listing, including the identity of the listing entity, whereby transactions can be facilitated without the direct assistance or knowledge of the materials exchange program sponsor) do not provide opportunities for tracking and measuring outcome, for charging based on exchanges, or for providing as much service assistance to companies. However, they save time and money and thus allow for facilitating more exchanges. Confidentiality is not generally an issue except for hazardous materials. Materials exchange representatives described their policies:

SEMREX requires users to go through a registration process to obtain information. Registration can take place either over the telephone or via the Web. Once registered, users can list materials directly on the Web site (with e-mail automatically going to SEMREX so information can be verified), or access contact information on materials listed. SEMREX also obtains names within companies to establish client relationships.

CALMAX maintains open listings with all contact information unless confidentiality is specifically requested.

SWIX and NHME use a listing code in order to track numbers of inquiries, target like companies, and gather information for documenting successful exchanges.

NY WasteMatch uses closed listings in order to enable tracking, charging for transactions, and to provide middle-man service for companies, but may consider open listings on a limited basis where confidentiality is not requested.

Iowa maintains "closed listings and complete confidentiality."

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REALISTIC WASTE EXCHANGE RADIUS

Transportation costs usually define exchange geographical boundaries. While acceptable transport distances will vary with the value of the material as well as disposal costs, generally 250 miles is a practical radius.

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TECHNOLOGIES USED TO ORGANIZE LISTINGS AND ASSIST MATCHMAKING

Print materials (e.g., catalogues) - Materials exchange operators find catalogues useful for several reasons. Businesses may not yet be accustomed to accessing information on the Internet, which makes hard copy useful. Catalogues are considered useful promotional tools: they serve as a good desk reference and may also be passed on to others. However, they are costly to assemble and publish. Alternative forms of visual "advertising" such as incorporating a section into existing newsletters may provide some of the benefits without the major costs.

Internet - Use of the Internet is increasing rapidly and Web listings provide the opportunity to link with other exchanges, but several representatives feel it is a challenge to get businesses to fully utilize this new technology. There was some comment from NYC participants that NYC businesses and even potential partners (such as LDCs) may not have Internet access; some nonprofit agencies do not have access to the Internet; and/or some small businesses simply did not have time to fully utilize new technologies. In addition, using the Web requires businesses to seek out the information rather than having it "delivered."

Computer databases for storing and organizing listings - Computer databases are essential for recordkeeping, monthly reports, tracking, invoicing, and program evaluation. When designing an interactive database, it is important to make sure all databases are compatible. This applies not only within the organization, but also to the use of the database by partners and potentially by clients. CALMAX maintains three databases: a list of contacts, a list of materials available and

wanted, and a list of successful exchanges. Entering information is the time consuming aspect. Automated entry by the contractor is being used by SEMREX and CALMAX with the use of pull down "pick lists" to help ensure consistent listings. Records within the databases need to be linked so that a change of address, for example, can be automatically applied to all relevant categories. There are a variety of programs that can be used.

SEMREX's "interactive real time database" located on the Web (<http://www.wwwwis.com/semrex>) also keeps track of regional activities. Members of the public can post listings of items they have available, and browsers can access listing and contact information (SEMREX terms these referrals) on items in the on-line catalogue they are interested in. Regional program operators will also use this on-line catalogue as their primary method of listing and tracking materials. SEMREX expects associated employee training requirements for the program to be minimal, as the program is very "user friendly." Highlights of the SEMREX database program include the ability to track users via registration data, ticklers which prompt referral follow-up, drop-down menus with editing procedures and conversion charts, extensive search capabilities, e-mail contact linked to the tickler system, and fields for avoided disposal and acquisition costs. This on-line database will also function as the database for the twice/year paper catalogue.

Anne Morse (507-457-6468, fax: 507-457-6469; e-mail: amorse@ntl.co.winona.mn.us) will supply any of the Roundtable participants with a simple password in order to access the office applications that are not readily apparent when just visiting the Web site. Moreover, since they are in the process of completing the program, any suggestions other exchange operators have as to additional fields or reporting features would be very useful. SEMREX is also willing to share its software program with other exchange programs for a small portion of the development costs.

Faxing - There are two fax techniques. One involves use of a computer to automatically fax new listings to specified potential users or persons identified in categories in a database. The second, an automatic fax-back service, sends a fax back with contact information about a listing in response to the receipt of a faxed inquiry. Such a system can be costly (anywhere from \$10-\$50,000).

E-mail Listserves - An emerging technology is to have e-mail messages delivered automatically to a listserve as new listings are entered. Thus any potential user of some class of materials would be notified when a listing of the materials was received or conversely, information on a new "materials wanted" listing could be distributed automatically to a relevant subset of material generators. This is similar to a fax system in practice in some exchanges. A concern about tying up the computer too much in sending such messages can be addressed by having the messages sent at night. Sophisticated e-mailing of diagrams and pictures is also emerging. There is currently a listserve for Material Exchange Operators only; for instructions on subscribing, contact CWMI or e-mail Gene Jones at gjones@mailier.fus.edu.

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TRACKING RESULTS AND PROGRAM EVALUATION

There are several indicators of success which programs have tried to use. The number of successful exchanges is one quantifiable indicator of a materials exchange program's effectiveness. The amount of material moved and the monetary value of the exchanges are other measures. Data on the types and quantities of materials exchanged can be used to estimate costs savings and other benefits derived by the sponsor and other stakeholders, but Roundtable participants agreed that calculating costs is very problematic.

The main methods used to document successful exchanges are calls to listing companies, mailing follow-up surveys requesting information, and obtaining information through personal contacts. Materials exchange representatives discussed some of their experiences with tracking and evaluation, and outlined some methods used to document successful exchanges:

It has been CALMAX's experience that follow-up letters to targeted listings are usually not answered; when there are responses, most people are just guessing at the numbers in regard to dollars saved. In 1997, staff conducted follow-up phone calls to every listing. The effort was extremely time consuming. They have recently implemented a new system that requires companies to specify the duration of a listing (3 months, 6 months, 1 year) and CALMAX calls 1-2 months prior to termination to ask if an exchange has been made or if the listing should be extended. This equals about 50 calls/month. A database of successful matches is being kept.

SEMREX verifies each listing before a catalogue is published, thereby finding out if a match has been made.

New Hampshire follows up on every exchange it can through mail and telephone. Successful exchanges are reported in terms of tonnages diverted; measurements (weight and volume) are easier to validate than dollars saved. There are various ways of reaching dollar amounts in evaluating exchanges avoided disposal costs plus material value includes depreciation, transport costs, landfill costs. Life cycle assessment information currently available on the Internet may be of some use.

SWIX enters every inquiry/generator into a database. A generic follow-up letter (See Appendix B) has had a 20 percent rate of return; the returned responses are then followed up with phone calls for verification and/or more information. Phone inquiries are not tracked.

Fax-back systems do not provide for automatic tracking information.

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LIABILITY, CONFIDENTIALITY AND REGULATORY ISSUES

None of the participating exchanges have had any liability problems. In general, most exchanges only arrange for contact between users and generators, and do not take possession of a material, or transport or arrange for transportation which thus minimizes liability exposure. The group felt that a subscription fee for participation and for listing is unlikely to generate liability. If an exchange takes physical charge of a material or charges for the transaction, the liability question is less clear. Materials exchange representatives described precautions taken to protect

themselves against liability:

California state lawyers have determined there is no liability to CALMAX, but catalogue and Web listings carry a disclaimer statement.

New Hampshire has a disclaimer "NHME does not broker materials, provides information only."

SEMREX - The Minnesota Materials Exchange Alliance's statewide catalogue carries a disclaimer, and the Internet access to the SEMREX database requires users to affirm that they have read the disclaimer before they can receive contact information.

INWRAP carries professional liability insurance; and also has a one page contract (any longer than one page seems to deter business participation) to release INWRAP from liability (See Appendix C).

ITAC carries insurance which does not have an environmental exclusion. As part of a Manufacturing Extension Partnership (MEP), they have determined that their liability in providing engineering assistance exceeds their liability for environmental risk. No MEP has ever been sued.

See sample liability article, and other "liability reference materials" listed in Appendix C.

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PAYING FOR IT REVENUE GENERATION AND SELF-SUFFICIENCY

General agreement was that complete self-sufficiency through fees-for-savings charged to generators and recipients of materials is an unrealistic expectation for a materials exchange:

Bill Sloan indicated that he believes that if a program focuses on low-value materials, it cannot be self-sustaining. However, he also indicated that self-sustainability may be possible by limiting the focus of a program to a limited number of high-value materials.

John Okun indicated that charging a fee is important because it enhances program credibility. When businesses are charged for the services they receive, they treat the service provider as a business in a professional manner.

CALMAX's program is focused on the goal of maximizing the amount of waste diverted by the program for reuse, rather than in generating funds to support program operation.

Gene Jones estimates that he spends about one-third of his time on fundraising.

Staffing Options

Because most waste exchanges operate with very limited budgets, almost all rely partially on the use of volunteers or low-cost employees to help with the workload. Following are some sources:

Mayor's Volunteer Action Center, NYC, is a source of retired engineers for INWRAP;

Americorps* VISTA (See Appendix D);

Interns from technical institutes, community college co-op programs, college environmental programs;

Students - off campus work-study programs;

University studies, i.e., Cooper Union; research studies.

Potential Sources of Support

The materials exchanges represented are largely dependent on budget support from federal, state, and/or local governments, and seek to defray expenses through fees for catalogues, listing fees, grants, or other mechanisms. The Roundtable participants discussed other stakeholders and program beneficiaries that might provide support or assistance to NY WasteMatch:

Environmental agencies; State Economic Development Agencies;

City Agencies;

Board of Education - School Materials Exchanges can foster after school programs; student waste audits, high school projects;

Trade and business associations such as Chambers of Commerce (both Florida and Minnesota programs started with the help of local chambers);

Private investors - i.e., the Millennium Exchange.

Potential Funding Sources

Some possible methods for obtaining funds and other assistance:

Grants from agencies including Economic Development, Environmental Conservation (several representatives felt that diverse waste stream exchanges were most likely to get government support); grants from foundations; grants from trade groups such as American Plastics Council;

Membership dues/subscription fees; revenues from advertising in exchange catalogues;

Sponsorships for special events;

Cooperative marketing of recyclable/reusable materials; (10% fee generates revenue for SEMREX);

Landfill tipping fees or other surcharge on waste transport or disposal;

Fees for services such as percent of transaction value (cost savings or revenues). Issues with this include difficulty of accurate cost assessment, potential to discourage trades and thus undermining goal. INWRAP uses a sliding scale for transaction charges. They believe charging helps businesses take INWRAP seriously as a business.

Communicating Benefits to Garner Support

Some suggestions for communicating benefits to stakeholders to facilitate support:

Calculate savings to make your case; use case study information to recruit similar businesses.

Show a dollar return on savings to businesses as the best means of obtaining funding (from state/federal agencies).

Change mind set from "generating revenue" to "cost savings."

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TIME FRAME FOR RESULTS IN NEW YORK CITY

What NYC can realistically expect to happen and what else needs to be done to get the program fully up and running includes:

Expect a slow beginning the first database and the first catalogue are the hardest to produce.

General public information campaign; probably a multimedia approach would be most successful for NYC at this time for generating interest in the program.

Promote same concept to workers that they buy into at home i.e., reduce, reuse, recycle so that PR for materials exchange links to the reuse concept.

Place an ad in a trade journal, the more specific, the better. For example, an article in the *New York Times* in July generated approximately 200 calls to INWRAP that led to 75-80 listings.

The extra time and effort devoted to the program in the beginning will help to ensure future success.

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POTENTIAL FOLLOW UP MEETING IN NEW YORK CITY

A follow-up meeting for potential participants and stakeholders in New York City and the vicinity to discuss ways to effectively implement WasteMatch may be needed. The following topics were identified:

What opportunities are there to identify generators and users through various permit systems?

What opportunities are there to target wastes generated by city agencies and materials they might use?

How to maximize the effectiveness of partnerships with LDCs and others?

Database consistency and sharing, i.e., if listings are generated by a number of players (partners, businesses), how can they be verified and consistent?

There is an upcoming Materials Exchange Conference in Florida. For more information or to get on listserve, e-mail: gjones@mailier.fsu.edu

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Appendixes in Original Report:

Appendix A - List of Roundtable Participants

Roundtable Agenda

Appendix B - Generic Survey Follow-Up Letter

Appendix C - Sample Waiver, Release and Fee Agreement (INWRAP)

Reference List of Liability Articles

"Liability Associated with Waste Exchanges"

Appendix D - AmeriCorps*VISTA

List of Web Sites contained in Report

Materials Exchanges on the Web