

E&E Project Evaluation Form

****Please be advised that completed evaluations are made available publicly and are posted on Stewardship Ontario's E&E Fund web site****

Project Name/Number/Priority area: Northumberland Recycling Program Optimization Study/
PN 81/MRF Rationalization

Lead Sponsor/competed by/date: County of Northumberland with Jacques Whitford and
MacViro Consultants/August 2006

Project Duration: August 2005 to May 2006

Total project value: \$69,000 **E&E funding amount:** \$23,000 **Actually spent:** \$19,720

Section 1 –To be completed by Project Applicant

1) What were the Project Goals and Objectives (as per the E&E Application and/or Contract)?

The County of Northumberland Material Recovery Facility (MRF) began operation in April 1996 processing a commingled dry waste stream. Over the years, the County has informally modified the list of acceptable recyclables as a result of finding out that some items are particularly problematic for the MRF process (e.g. wire, video cassettes). It was recommended that a study be done to evaluate the optimal recycling stream for ease of processing and convenience for residents.

It was also recognized that the processing equipment at the MRF is now ten years old and that sorting technology has advanced since the time the MRF was originally designed. It was recommended that a review of the existing processing equipment be conducted to determine if modifications would be justified based on the savings that would be realized in processing costs.

The County commissioned Jacques Whitford to complete a study to optimize the MRF incoming material stream and to complete a review of the MRF equipment in accordance with the following objectives:

- To increase the amount of material recovered at the Northumberland MRF
- To decrease the overall cost of the recycling program

2) Were the goals and objectives met? (and if not why not?)

This study identified how to achieve the project goals and objectives through feedstock modifications and equipment retrofits.

3) Summary of Project Accomplishments (i.e. what did the project do/achieve?):

The study identified the expected outcomes of the feedstock modifications and equipment retrofit to be:

- Decreased time required for sorting materials
- Eliminate the need for overtime shifts
- Increased throughput per hour from 5 tonnes to 10 tonnes
- Increased recyclables capture by 27%

4) Summary of Project Limitations (e.g. is there anything that should have been done differently?)

The County conducted a survey to determine resident waste diversion habits, satisfaction with the County's waste diversion programs, and willingness of residents to modify their waste diversion habits. Not as many people participated in the public survey as we had hoped, likely due to the time of year the survey was conducted (late November/early December).

5) What do you consider to have been the key “lessons learned” from this project? Does your project/activity represent a “best practice”?

The County is currently spending almost \$400K annually to sort and manage residual materials. It is anticipated that as a result of implementing the recommendations of the report, the MRF residual rate can be reduced from 36% to 12%, thus reducing the cost to manage residual to approximately \$130K per year.

6) What specifically are municipal staff doing with the experiences and data from this project? Do you have plans to apply these lessons in your program? Please explain how.

- County Council has revised the bylaw stating what is acceptable in the recycling stream.
- Staff have prepared public education material to inform residents about the changes to what is accepted in the recycling collection, and the way they are to prepare their recyclables (bagging plastic film separately).
- Staff have applied for E&E funding to make the recommended equipment modifications. If funding is approved, a public tendering process will be utilized for the supply and installation of the equipment.

7) Has your municipal council been informed about the project and its results?

Yes. The County of Northumberland accepted the recommendations contained in the Optimization of the Northumberland MRF Material Stream and Equipment Review (Jacques Whitford, May 2006) at its May 31st 2006 meeting.

In addition to accepting the recommendations, council also passed a resolution to amend the waste bylaw to reflect the proposed incoming material stream at the MRF; directed staff to prepare a public education campaign to advise residents of the modified recycling materials; and directed staff to apply to the Efficiency and Effectiveness Fund for a 50% contribution to the capital cost for equipment modifications at the MRF.

8) Do you think there are opportunities to share/replicate the successful elements of this project with other Ontario programs? If yes, how and where?

Yes. When the new equipment is installed we will be able to provide information on the cost savings and the increase in recyclables captured.

The County will continue to track such key indicators as material recovered per household, residual rate and net cost of processing.

9) Did this project result in either reduced costs per tonne of Blue Box waste recycled and/or increased Blue Box tonnes diverted? (Please explain)

Once the study recommendations are implemented, this project should achieve both reduced cost per tonne and increased recyclables diverted.

It is anticipated that the annual cost savings for labour will be \$346,000, which is made up of:

- Decreased time for sorting material (estimated savings of \$228,000), and
- Eliminate the need for overtime shifts (estimated savings of \$118,000).

It is estimated that approximately 27% (or 4,000 tonnes) more recyclables will be captured each year, thus increasing sales revenues by \$75,000.

Section 2 –To be completed by Stewardship Ontario (and reviewed by applicant)

9) Did this project do what it set out to do? If not, what were the reasons/ barriers?

As per the original application, the overall goal of this project was to increase efficiency and capture of the County of Northumberland recycling program. The associated objectives were to:

- Increase the amount of material recovered at the Northumberland (MRF);
- Decrease the overall cost of the recycling program;
- Provide information to other municipalities regarding the optimum feedstock to balance resident convenience with processing efficiency.

The County commissioned a study to determine if more recyclables could be captured at a lower cost if the County converted to a more traditional recycling program that processes an expanded list of recyclables. A second component of the study was to review the existing MRF processing equipment and make recommendations for equipment modifications to improve efficiency. This study provides the necessary information to move forward in achieving the above-stated goal and objectives.

10) What are the key learnings from this project? Are there any next steps? What is being done to share the results?

The report indicates that removing the dry waste component from the Northumberland material stream will have a positive impact on the following key performance indicators of the facility:

- Throughput Rate - potential to increase from 5 tonnes per hour to the original commissioning rate of 8 tonnes per hour without changing equipment design.
- Residual Rate - potential to reduce residential residual rate from 36% to 20-25% within a single stream enhanced recycling stream.
- Processing Costs - potential to reduce residual handling costs by approximately 60% based on changing of the material processing flow through the MRF (negatively sort the newspaper).
- MRF Capacity - reduce the number of overtime shifts by 70% based on less sorting time spent on residual material.
- Health and Safety - reduce the number of instances of staff injury from handling the mixed waste product.

The report also found that the above performance indicators could be improved further by taking the additional step of asking residents to conduct a small amount of at-source sorting preparation of the recycling material (bagging the film separately, removing textiles and bundling styrofoam).

Overall, it is estimated that the required retrofit will be in the order of approximately \$800,000. Assuming that the equipment is paid for over a ten year period, the annual cost is approximately \$111,000 (assuming a 6.5% annual cost of capital). Offsetting this cost at a minimum is the reduction in the production hours for the facility across all sorters. The annual labour savings are in the order of \$346,000. Therefore, conservatively, the system should have a net cost savings of approximately \$235,000 per year, with an overall payback period of 3.21 years (assuming the new equipment is financed).

As mentioned in Section 1, County Council has revised the bylaw stating what is acceptable in the recycling stream. Staff have prepared public education material to inform residents about the changes to what is accepted in the recycling collection, and the way they are to prepare their recyclables (bagging plastic film separately). Finally, an application has been submitted to the E&E Fund for \$774,000 to implement the study's recommendations.

11) Was the project good value for the money (e.g. were there measureable program or system cost reduction benefits, cost effective tonnage increases, etc?)

This project was meant to gather the necessary information to determine how to reduce Northumberland's recyclable processing costs and increase the tonnage the MRF can effectively process. The study has shown that there are significant effectiveness and efficiency improvement that can be made.

12) Does this project represent "best practices"? If yes, explain.

Optimizing existing MRFs offers a substantial opportunity of reducing the cost of the Blue Box system. While the MRF retrofits proposed by Northumberland are supported by a solid business case, it is important to view this investment in the context of a region-wide MRF processing infrastructure strategy. More work is needed in this field to determine exactly where it makes sense to invest, and to ensure that economies of scale are achieved.

13) Total project cost – \$69,000

E&E contribution – \$23,000 (\$19,720 spent)

Other Cash/in-kind contributions - 1/3 funding from FCM and 1/3 from Northumberland County