Introduction

A broad business case for a retrofit program, its scope and resource requirements, has been made in the Action Plan. Key stakeholders and senior management have been engaged in the process and are committed to the further development of project details.

The next step in the municipal building retrofit process is the development of a detailed Project Proposal. The Project Proposal is intended to present enough detail of the proposed energy conservation measures and implementation strategy that the municipality will authorize the resources for the Feasibility Study phase.

The key outcome of the Project Proposal is a commitment to proceed, so it is important to understand your municipality's decision-making process and to form partnerships with key decision-makers and stakeholders within your municipality and community.

This section provides guidance for the development of the Project Proposal and the achievement of the desired commitment from the municipality.

Purpose

The purpose of the Project Proposal is to further define the project and secure the commitment and resources from council to move ahead to a detailed Feasibility Study.

The Project Proposal presents the same categories of information as in the Action Plan, but at a higher level of detail and certainty, incorporating building level information for the proposed retrofit sites. These categories are:

- **Building Information**, including utility, operational and maintenance expenditures and challenges, and their assessment against benchmarks and norms for similar facilities
- The **Project Context**, including expected results, market conditions, the policy context and municipal goals as they apply to the proposed retrofit sites, environmental and health concerns applicable to the proposed retrofit sites, activities to date, and the proposed project activity
- **Implementation Options**, in particular the selection of an external or internal implementation strategy if that decision has not already been made at the Action Plan stage
- In concert with the implementation option decision, **Financing Options** for the execution of the project
- **Recommendations** for furthering the project, in particular to include summary information about anticipated project costs and benefits, implementation and financing parameters, and the resources required to conduct the detailed Feasibility Study.

Team/Partnership

The internal energy team that developed the Action Plan should continue to provide input into the Project Proposal on a regular basis.

During this phase you may want to work with various external partners (see the Resource Manual Section 2) to collect, co-ordinate, or synthesize information required for the Project Proposal and subsequent steps. In particular, if an external implementation option has been selected at the Action Plan stage, the contractor, ESCO, or whoever has been enlisted to carry out this work, needs to be fully involved in the development of the Project Proposal.

Information Requirements

The Project Proposal requires information that goes beyond what was provided in your Green Leaf™ Phase I Assessment. Rather than having the wide focus of building portfolio information, data related specifically to the proposed retrofit sites needs to be collected and organized for presentation in the Project Proposal. This will include:

- Electricity cost and consumption data, including month-by-month demand (kW) and energy (kWh), annual totals, and annual minimum and maximum demand
- Fuel cost and consumption data, including month-by-month consumption by type and annual totals
- Other utility data such as water consumption on a month-by-month basis, steam or other purchased energy costs and consumption;
- Building characteristics, including total floor area
- Building occupancy, including schedule and number of persons
- Current annual maintenance costs
- Asset renewal plans
- Derived performance indicators, such as electrical demand and energy intensity (kW/m^2 and kWh/m^2), heating (probably fuel) energy intensity (converted to kWh/m^2)
- Performance benchmarks for similar facilities, if available, and the savings potential indicated by them.

Action Items

During this phase, your main actions are to:

- Collect, organize and interpret the information items listed above
- Recommend a financing and implementation option (see Resource Manual)
- Develop the Project Proposal.

Template Material

- Project Proposal Template and Guide
- Model Energy Performance Contract for Use by Municipal Government First-Out Style Contract
- Model Request for Proposal for Third-Party Services for Energy Performance Contracting
- Model Energy Performance Request for Proposal for use by Municipalities

Next Steps

- Present the Project Proposal to senior staff or council and obtain commitment to proceed with a detailed Feasibility Study
- Continue to engage external partners
- Identify various financing opportunities
- Conduct the Feasibility Study

FCM Support

- Resource Manual: Financing and Implementation Options, Renewable Technologies, and Waste Disposal sections
- Strategic Energy Planning Workshop (optional)
- Spot the Energy Savings Opportunities Workshop (optional)
- Monitoring and Verification Workshop (optional)

Understand the decision-making process within your municipality

As noted above, the critical outcome of the Project Proposal is a commitment by council to proceed with a detailed Feasibility Study. This is a commitment of resources at a level that essentially establishes that a project is going to be implemented, and is, therefore, a decision that will not be taken lightly. It is important to understand the decision-making process within your municipality in order to guide the Project Proposal towards a positive decision. In this regard, it is essential to:

- Understand the process that your municipality follows in making decisions about building improvements
- Know about any policy and/or regulations that may affect procurement and financing options
- Identify and involve key people who must approve policy, operating, and financial decisions
- Determine and obtain approval for your initial project target, development approach, and team to take next steps.

Section 5
Project Proposal

Guide

All templates in this guide are available in text and PDF format on the accompanying CD ROM or on the Knowledge Network at http://kn.fcm.ca.

Guide to Project Proposal Template

Template Section 5 Page 1 ☛

The Project Proposal differs from the Action Plan in several key areas identified in Table 5.1 below. The Project Proposal will help weed out the collection of unnecessary data during the Feasibility Study, saving money.

1.0 INTRODUCTION AND SUMMARY

1.1 Purpose

Sample text

This Project Proposal recommends a course of action for financing and implementing a building renewal project that will enable an investment of resources to improve the maintenance, comfort, safety and energy efficiency of [municipality x]'s corporately owned buildings. This Proposal identifies building-specific energy consumption data, defines specific retrofit measures and their savings potential, outlines a financing and implementation methodology, and ensures that municipal resources are used efficiently and effectively.

1.2 Background

This Project Proposal was undertaken by [municipality x] utilizing the Federation of Canadian Municipalities' Municipal Building Retrofit (MBR) process. It builds upon the Green Leaf™ Eco-rating Program and Action Plan completed on [insert date]. The MBR process enables municipal governments to follow a strategic plan that will make the most of opportunities to save money and reduce waste. Drawing on the experience of other municipal governments that have successfully carried out a range of building retrofits, the MBR process consists of eight steps. At each step, there is an opportunity to assess the information available and to decide whether there is a strong case to proceed.

Modernizing municipal buildings will decrease expenditures and free up needed revenue for other critical functions, all while conserving energy and water. A recent Green Leaf™ Assessment carried out under the auspices of the MBR process found that each and every day [municipality x] postpones energy retrofits, $[insert amount] is lost in potential savings that could be used to finance building improvements.

1.3 Activities to date

[Municipality x] enrolled in the MBR process and completed the first step by signing a Letter of Commitment on [insert date]. From [insert month-to-month range], staff completed a Green Leaf™ Phase I questionnaire to assess how well prepared [municipality x] is to implement an energy-efficiency program. [If applicable] The Phase 2 assessment was completed on [insert date] by [insert participants]. A post assessment review meeting (Phase 3) was held with [insert names] from FCM and municipal staff including [insert names] on [insert date]. From [insert month-to-month range], information was gathered for the preparation of this Project Proposal.

1.4 Summary of relationship of building retrofit to municipal goals and policies

Recent funding constraints and budget cuts have encouraged [municipality x] to find ways to reduce operational budgets.

[Municipality x]'s environmental policy includes a commitment to increase energy efficiency in municipally owned and operated facilities.

The internal rate of return for energy-efficiency measures is generally within established criteria for municipal investments.

1.5 Recommended next steps

A program of building improvement is recommended. The assessment conducted to date indicates that an investment of $[insert amount] in the proposed building retrofits, equipment renewal, training, and other project costs would yield annual savings of $[insert amount], for a simple payback period of [insert number] years. The program will be entirely self-funding and all program costs will be retired by operational cost savings. The details of such a program need to be confirmed by proceeding to the next step in the MBR process. It is recommended that council endorse continued participation in the MBR process, and approve $[insert amount] from the [insert department] budget for the preparation of a Feasibility Study on the [insert number] municipal buildings identified in this Proposal.

Table 5.1: Action Plan and Project Proposal Comparison

Item	Action Plan	Project Proposal
Overall Purpose	Summarizes the benefits and purposes of the retrofit and seeks council approval for concept and cost of Project Proposal.	Clearly defines scope of the retrofit and preferred mechanisms for financing and implementing the project; seeks council approval for the cost of a Feasibility Study.
Financing	Outlines financing options (*"Here are some financing options we need to investigate."*)	Recommends financing method (*"After investigating the financing options we recommend this option."*)
Implementation	Outlines implementation options *("Here are some options we need to investigate….. internal, third party, ESCO.")*	Recommends implementation method *("This is what we're going to do and this is how we will proceed.")*
Energy details	Overall energy expenditures for building stock	Complete or selected list of buildings, and energy consumption data and performance indicators for each (annual costs, energy source, area).
Target Buildings	Identify all buildings	Identify target buildings (based on age, equipment renewal, potential for energy savings, etc.)
Energy Savings	Estimate energy saving potential (provided by Green Leaf™ Assessment)	Energy savings become more specific (based on building-by-building benchmarks)
Budget	Identify information gaps and budget for preparation of Project Proposal.	Budget for targeted Feasibility Study (based on building-by-building benchmarks)

Template Section 5 Page 2 ☛

Insert any other comments relevant to the team. This experience could be a good example for future projects. Although the energy team is likely well established by now, you may find it helpful to revisit its composition, as well as the matter of external partners who can assist in reference to Section 2 of the Resource Manual.

Please note that an Excel file called Energy Use Summary by Building is included in the Resource Manual.

2.0 PARTNERSHIPS

An internal energy-efficiency team [insert name if applicable] was established on [insert date] to oversee the co-ordination of [insert name] retrofit project. Team members collected and evaluated building and energy data and assembled options for prioritizing, financing and implementing retrofits. Each team member plays a specific role as identified in Appendix D.

External partners, as identified in Appendix D, provided various levels of expertise in gathering and assembling information required to prepare this Proposal. Furthermore, various funding and partnership opportunities with [list names] have been made possible through this process that would have otherwise been lost.

3.0 CURRENT SITUATION

3.1 Building portfolio

[Municipality x] has [insert number] buildings that cost $[insert amount] in energy as indicated in Table 1 below.

Capital plans indicate that the heating, ventilating and air conditioning unit in the Town Hall is scheduled for replacement by the end of next fiscal year as indicated by the accompanying capital plan summarized below. A copy of this plan is provided in Appendix 1.

Table 1: 5 Year Capital Improvement Plan Summary and Proposed MBR Projects

The data required to fully describe the building stock likely includes some or all of the following:

Building Description:
- Building type and use (e.g., principal building activity)
- Total floor area
- Type of floor area (e.g., gross, net rentable, net usable, etc.)
- Hours of occupancy – the actual amount of time that the building is used on a monthly basis (the hours of business operation plus any additional hours in which significant occupant activity occurs)
- Ownership/occupancy (it may be useful to know who occupies a building when comparing it to other candidate buildings. Owner-occupants have the greatest incentive to implement energy-saving measures)
- Building age
- Plans and specifications (the team should try to obtain as-built plans and specifications from the building owner or manager. If not available, single-line diagrams will need to be drawn to indicate the equipment in place, connected loads, and other major features)
- Types of renovations previously performed
- Energy system operation and maintenance (O&M) practices (if available, O&M logs and equipment manuals help indicate how equipment is being operated and maintained and how changes in O&M routines may have affected equipment performance. Valid warranties and guarantees on equipment that may be modified could also be useful)
- Heating and cooling fuels
- Type of control system
- Types of lighting (by percentage of floorspace)
- Type of heating/cooling system
- Extent of computer use by occupants (general types and estimated quantities)

Energy Data:
Gas
- Building identification
- Meter number
- Billing start and end dates
- Monthly natural gas consumption
- Monthly natural gas cost (in $)
- Rate schedule identification

Optional data elements that may also prove useful include:
- Average gas consumption unit cost
- Monthly peak gas demand

Other Fuels
- Similar data can also be collected for fuel oil, propane, coal, purchased steam, and chilled water, if applicable to your building stock.

Electric
- Building identification as determined by utility account number, meter location, and/or customer name
- Meter number
- Billing start and end dates
- Monthly total electrical consumption (in kWh)
- Monthly peak electrical demand (in kW, if available from the utility)
- Monthly total electrical cost (in $)
- Rate schedule identification

Optional data elements that may also prove useful include the following:
- Monthly electrical off-peak consumption (kWh/month) – may be available through 15-minute demand data for off-peak hours
- Monthly electrical on-peak consumption (kWh/month)
- Contract demand (in kW)
- Average electric consumption unit cost (in $/kWh)
- Average electric demand unit cost (in $/kw)

Template Section 5
Page 2 ☛
(continued)

It is important to relate proposed retrofit projects to the municipality's capital asset renewal plans. Retrofits, justified on the basis of the energy savings that will accrue, can also address building renewal priorities, and this will contribute to the overall project justification. A table, like Table 1, can help summarize this interrelationship.

...by the end of next fiscal year as ...
A copy of this plan is provided in Appendix 1.

Table 1: 5 Year Capital Asset Renewal Plan Summary and Proposed MBR Projects

File No.	Building Renewal Project	Project Cost ($)	FY2002	FY2003	FY2004	FY2005	FY2006	Ref. MBR Project
C-044	**1. City Hall**							
	1.1 Chiller Replacement	152,946				152,946E		MBR01 – 2004 Chiller Replacement
	1.2 Council Chamber Lighting Upgrade	35,200	35,200DE					MBR02 – Lighting Retrofits
	1.3 Boiler Controls Installation	38,750			38,750E			
	1.4 Exterior glazing renewal	59,850		25,000DE	34,850E			MBR03 – Building Envelope Renewal
	Sub-Total	***286,746***	***35,200***	***25,000***	***73,600***	***152,946***		
C-070	**2. Recreation Complex**							
	2.1 Pool Heater Replacement	17,000	17,000E					
	2.2 Arena Reflective Ceiling Installation	55,800			55,800C			
	2.3 Roof Renewal	175,000				175,000C		MBR03 – Building Envelope Renewal
	2.4 Washroom fixture upgrades	29,750		29,750E				
	2.5 Lighting Retrofit	89,500	89,500DE					MBR02 – Lighting Retrofits
	Sub-Total	***367,050***	***116,500***	***29,750***	***55,800***	***175,000***		
C-071	**3. Fire Station**							MBR04 – Fire Hall Retrofits
	3.1 Overhead Door Replacement	8,900					8,900EC	
	3.2 Furnace Replacement	4,500					4,500E	
	3.3 Roof Reseal	38,400					38,400C	
	Sub-Total	***51,800***					***51,800***	
	Plan Total	**705,596**						
	Total FY2002		**151,700**					
	Total FY2003			**54,750**				
	Total FY2004				**129,400**			
	Total FY2005					**327,946**		
	Total FY2006						**51,800**	

LEGEND: A = ACQUISITION D = DESIGN C = CONSTRUCTION E = EQUIPMENT O = OTHER

Template Section 5 Page 3 ☛

Complete one form for each building. Insert comments on building equipment and systems that are problematic or scheduled to be replaced in the next few years.

Provide lists of operational and maintenance expenditures if necessary.

3.2 Utility expenditures and challenges

Most departments within [municipality x] pay utility bills without verifying costs. The accounting department plans to consolidate the payment system, allowing centralized tracking of bills. This new system will also facilitate tracking energy expenditures. The following table summarizes current utility costs and the level of carbon dioxide emissions on a building-by-building basis. By gathering this information we have determined that [number of buildings] are in need of upgrades to the [list system or equipment]:

Table 2: Municipal Building Portfolio – Energy Use Summary (By Building)

Building:_____.

Area (sq. ft.)_____.

Period: From _____. To _____.

Energy Type	Annual Costs ($)	% of Cost	Equivalent kWh	% of Energy	CO_2 Emission[1][2]
Electricity					
Natural Gas					
Oil					
Propane					
Water					
Renewable					
Other					
Total					

Comments:_____.

_____.

_____.

_____.

_____.

[1] Use the coefficients table in the guide to calculate your CO_2 emissions or use the CO_2 calculator found on the accompanying CD.
[2] FYI PCP members should use CO_2 calculations for your municipality's CO_2 inventory.

3.3 Operations expenditures and challenges

Operational expenditures have increased over the past two years. However, the implementation of this Project Proposal will decrease operational expenditures in the following areas [provide list and explain each]:

3.4 Maintenance expenditures and challenges

Heating equipment in [insert names of buildings] is old and requires constant maintenance and attention. New equipment would save time and money on maintenance.

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Page 4 ☛

4.0 DATA COLLECTION & ANALYSIS

In Section 3 of this Proposal, we have catalogued the building portfolio together with summary data on our utility expenditures and general building condition. At this stage of the process, we are screening the building stock for those sites that offer the potential for retrofit and those that would potentially yield the greatest energy savings.

The data provided in Section 3 was collected by personnel from [insert department name], under the direction of the Energy-efficiency Committee and the Director of Physical Plant. The assistance of [insert name of utilities] in collecting historical electricity and fuel consumption records was helpful; as well, utility personnel conducted building-by-building electrical metering at the service entrances to generate electrical demand profiles.

To prioritize the buildings in our stock for potential energy savings, comparisons were made between the energy use indices, such as energy and demand intensity for electricity and fuel consumption achieved (kWh/m^2 and Watts/m^2 respectively) and benchmarks for similar facilities. Where external benchmarks were not available, these performance indicators were calculated to determine best historical performance as a basis for estimating potential energy savings.

Table 3 below summarizes the energy performance of the building stock.

Data collection is a crucial task and must be carried out by individuals with the necessary knowledge and skills. These include:

- **Building energy survey skills.** The analyst should be experienced in using a light meter and other devices for performing initial on-site testing of a building's current energy use characteristics. Such surveys are intended to quickly identify buildings that are potentially large consumers of energy. Accordingly, analysts do not necessarily need the full set of skills used by energy auditors.
- **Data collection experience.** The individual should have experience in collecting building characteristics and energy data from utilities, using floor plans, developing occupant questionnaires, conducting building owner/operator phone interviews, and so forth.
- **Building energy analysis expertise.** The analyst should be experienced with methods for analyzing energy savings from retrofits and methods for assessing the relative energy efficiency of buildings. He/she should also be familiar with methods for handling utility-metered data, building energy metering methods, knowledgeable about how energy is used in different types of buildings, and skilled at identifying the buildings that are the best candidates for energy-efficiency measures.
- **Communication and computer skills.** These skills should include the ability to handle data archives and provide backup, the ability to handle large data files, familiarity with data processing software (if a large number of buildings are to be analyzed), and the ability to generate useful reports and presentations. A qualified energy analyst or analytical group can be identified through local business directories and associations or by consulting local utilities, government energy agencies, and architects. Engineering firms also provide such services or can direct you to local experts.

Table 3: Energy Use Indices for Building Portfolio

Site	Annual Electricity (kWh)	Natural Gas (GJ)	m^2	Electric Energy kWh/m^2	Natural Gas kWh/m^2	Total Energy (kWh)	Total kWh/m^2	Total Cost (1) (2)
Building A	418,686	2,318	6,214	67	104	1,062,626	171	$49,011
Building B	447,169	2,221	5,900	76	105	1,064,163	180	$50,180
Building C	515,902	4,921	9,329	55	147	1,882,956	202	$77,942
Building D	692,870	2,371	6,606	105	100	1,351,534	205	$68,654
Building E	390,488	4,344	7,792	50	155	1,597,251	205	$64,258
Building F	321,781	4,651	7,692	42	168	1,613,829	210	$62,058
Building G	375,933	2,471	5,043	75	136	1,062,377	211	$47,319
Building H	427,461	4,058	7,301	59	154	1,554,773	213	$64,415
Building I	352,237	3,111	5,459	65	158	1,216,473	223	$51,100
Building J	669,425	4,619	6,604	101	194	1,952,583	296	$86,121
Building K	457,666	6,088	7,008	65	241	2,148,912	307	$83,785
Building L	669,709	4,861	6,567	102	206	2,020,095	308	$88,198
Totals	**5,739,327**	**46,034**	**81,515**			**18,527,572**		**$793,042**

(1) Based on an electricity cost of $0.07/kWh and gas cost of $8.50/GJ
(2) This analysis does not include electrical demand and its associated cost.

The analysis of collected data is directed at determining the best sites for retrofits that will yield the maximum energy savings. Screening buildings for this purpose involves the determination of energy use indices (EUIs) that can be used for internal comparison of building performance historically, and external comparison to industry standards. EUIs that should be calculated are:

- Electrical energy intensity, kWh/m^2
- Electrical peak demand intensity, kW/m^2
- Electrical load factor
- Natural gas (or other fuel) consumption index, kJ/m^2 (or other appropriate unit)

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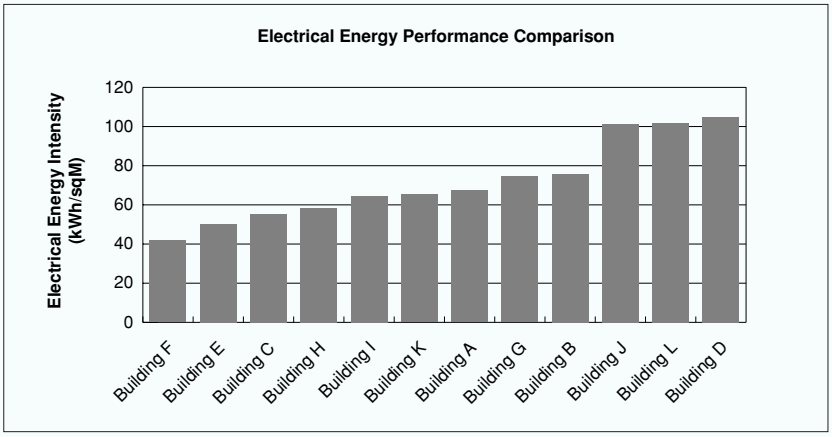
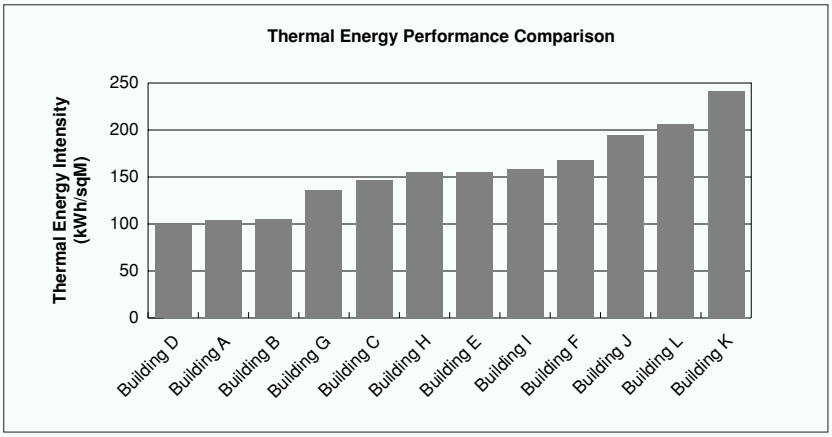
Once your team has calculated the EUIs, the values can be compared with existing annual EUI data as a first step toward identifying those buildings with the best potential for energy retrofits. To identify unusually high annual consumption, the EUIs computed should be compared to available benchmarks, according to the appropriate building and fuel type.

The following figures provide a graphical comparison of building performance.

Figures 1, 2 and 3: Energy Performance of Building Portfolio





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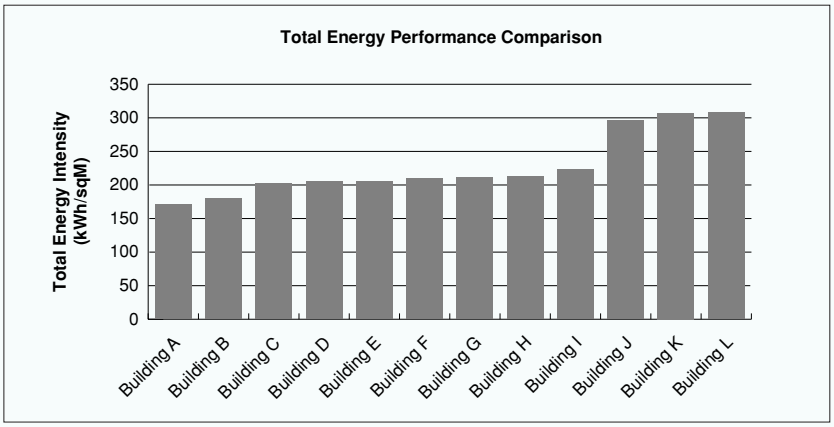
The preliminary estimate of savings potential is the application of an acceptable energy use index to the area of the building in question to calculate its potential energy consumption and cost, and the determination of the difference between this and current consumption and cost. This kind of analysis may be done on all energy sources and, in some cases, can be broken down to examine disaggregated segments of the total energy bill separately.



5.0 ENERGY SAVINGS SUMMARY

As noted above, our analysis of energy use indices for the building portfolio has identified those buildings that have the greatest potential for energy savings. When industry benchmarks are applied to these buildings, it is possible to provide a preliminary estimate of the savings that will accrue from the indicated retrofits. It is important to note that these are preliminary estimates only that have not been subjected to any rigorous engineering analysis. The accuracy of savings calculations will increase with the analysis that will occur in the Feasibility Study stage of the retrofit process.

The table and graph below summarize the savings potential if the indicated target energy use indices are achieved. We can prioritize the buildings for retrofits on the basis of the potential savings (see Section 9 of this Proposal).

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The impact of an energy retrofit on the municipality can be very positive in terms of the provision of goods and services. If local contractors and suppliers are to be employed in the project, it is important to factor in the revenues generated in the local economy as part of the "big picture" analysis of the project. The rule of thumb given in the template gives a rough indication of the economic impact. It probably goes beyond the scope of the Project Proposal to do any rigorous analysis beyond this, however, the municipal economic development office would be a useful resource in developing this argument. Section 3 of the Resource Manual also addresses this issue.

Table 4: Savings Potential in Building Portfolio

Site	Target Annual Electricity (kWh)	Target Natural Gas (GJ)	m^2	Target Electric Energy kWh/m^2	Target Natural Gas kWh/m^2	Target Energy (kWh)	Target kWh/m^2	Target Cost (1)	Total Projected Savings kWh/Year	Total Projected Savings $/Year (2)
Building A	403,910	2,318	6,214	65	104	1,047,850	169	$47,977	14,776	$1,034
Building B	383,500	2,221	5,900	65	105	1,000,494	170	$45,724	63,669	$4,457
Building C	515,902	4,921	9,329	55	147	1,882,956	202	$77,942	0	$0
Building D	429,390	2,371	6,606	65	100	1,088,054	165	$50,211	263,480	$18,444
Building E	390,488	4,207	7,792	50	150	1,559,288	200	$63,097	37,963	$1,162
Building F	321,781	4,153	7,692	42	150	1,475,581	192	$57,828	138,248	$4,230
Building G	327,795	2,471	5,043	65	136	1,014,239	201	$43,949	48,138	$3,370
Building H	427,461	3,942	7,301	59	150	1,522,611	209	$63,431	32,162	$984
Building I	352,237	2,948	5,459	65	150	1,171,087	215	$49,711	45,386	$1,389
Building J	429,260	3,566	6,604	65	150	1,419,860	215	$60,358	532,723	$25,763
Building K	455,520	3,784	7,008	65	150	1,506,720	215	$64,051	642,192	$19,734
Building L	426,855	3,546	6,567	65	150	1,411,905	215	$60,020	608,190	$28,178
Totals	**4,864,099**	**40,448**	**81,515**			**16,100,645**		**$684,298**	**2,426,928**	**$108,744**

(1) Based on an electricity cost of $0.07/kWh and gas cost of $8.50/GJ
(2) This analysis does not include electrical demand and its associated cost.

6.0 LOCAL ECONOMIC IMPACTS

It has been estimated elsewhere (American Council for an Energy Efficient Economy) that a direct correlation exists between energy-efficiency expenditures and job creation, with between 49 and 70 jobs created per $1 million of project expenditure depending on the extent of private investment in the project. These estimates assume that a significant proportion of the costs associated with the proposed retrofits will be spent in [municipality x] in the form of goods and services. They further assume that the job creation includes direct effects related to the execution of the project itself (the on-site jobs for contractors, labour, suppliers, etc.), indirect effects (the off-site jobs in organizations that support the project execution), and induced effects (as spending in the community in general grows due to the project-related revenues that find their way into the hands of residents).

As a matter of policy, procurement of goods and services will favour local suppliers and service providers. Our preliminary estimate is that the total project value of $[insert estimate] will generate [insert estimate] person-years of employment in [municipality x].

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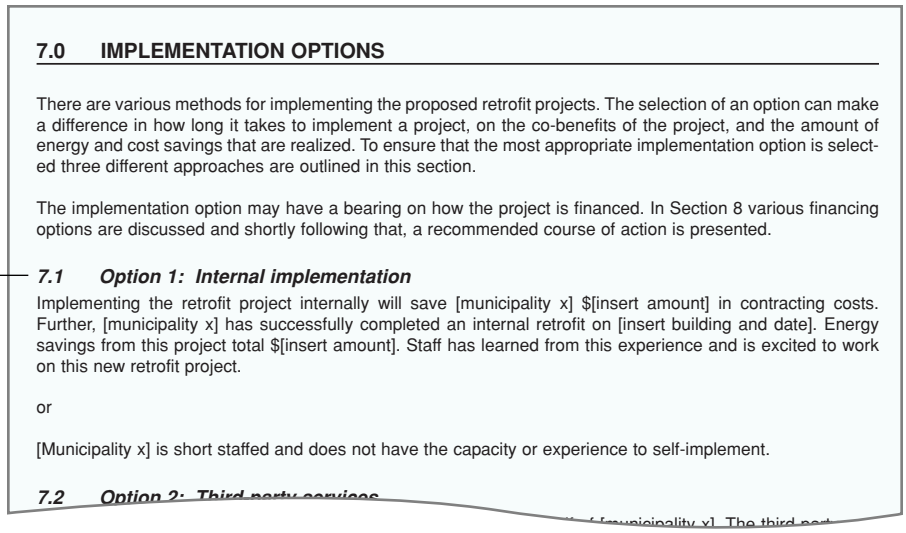
If a choice has not already been made, you may propose at this point to use one or other of the possible optional strategies for implementation of the project: internal, third-party or ESCO. Sample language addressing these options is provided in the template, but you will obviously need to tailor this depending on your chosen strategy. You should base the explanation of each option on the strengths and weaknesses of your municipality.



7.0 IMPLEMENTATION OPTIONS

There are various methods for implementing the proposed retrofit projects. The selection of an option can make a difference in how long it takes to implement a project, on the co-benefits of the project, and the amount of energy and cost savings that are realized. To ensure that the most appropriate implementation option is selected three different approaches are outlined in this section.

The implementation option may have a bearing on how the project is financed. In Section 8 various financing options are discussed and shortly following that, a recommended course of action is presented.

7.1 Option 1: Internal implementation

Implementing the retrofit project internally will save [municipality x] $[insert amount] in contracting costs. Further, [municipality x] has successfully completed an internal retrofit on [insert building and date]. Energy savings from this project total $[insert amount]. Staff has learned from this experience and is excited to work on this new retrofit project.

or

[Municipality x] is short staffed and does not have the capacity or experience to self-implement.

7.2 Option 2: Third-party services

In this section, describe the benefits of self-implementing the retrofit project based on your municipality's ability to do so. Do you have the resources (staff, time and money) to self-implement the retrofit project? If so, perhaps managing the project internally is the best option for your municipality. Please refer to the Internal Implementation Section of the Resource Manual. A Model Energy Performance Contract for use by Municipal Governments First-Out Style Contract has been prepared to facilitate the selection of a service provider. This document may be found in the Resource Manual.

If you have decided to conduct energy audits internally it is recommended that you form an energy-efficiency team comprised of key personnel from within your municipality, including:
- Energy manager (if one exists)
- Environmental manager
- Finance

A network of specialists from outside the municipality will have important information and knowledge that you will benefit from.

1. Develop objectives and criteria, including:
- Quantified energy performances objectives, and specific financial criteria the project must meet
- Other important objectives, such as better occupant comfort and safety, performance guarantees, CO_2 reduction targets
- Procedures for measuring and verifying performance and cost improvements, and their persistence.

2. Develop a technical and financial plan, including:
- Types and sources (internal/external) of technical expertise that will be used
- Types and sources (internal/external) of project financing that will be used
- An estimate of the net present value of savings and benefits from the total project
- Cash-flow projections, inclusive of front-end development and back-end monitoring costs.

3. Determine needed facilities, scheduling, and management, including:
- A list of target buildings, a schedule and priorities for implementing individual projects
- The person or persons who will have primary management and oversight responsibilities for the project.

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(continued)

7.2 Option 2: Third-party services

A general contractor will be retained to manage the project on behalf of [municipality x]. The third-party contractor will provide a high level of expertise to assist [municipality x] to oversee the implementation of the retrofit project.

Consultants who are familiar with energy and retrofit projects can be hired to oversee the implementation of a large or small retrofit project. These contractors bring expertise to the table that might not exist within the municipality. This may be a good option when resources are available but expertise is lacking. Provide specific examples of the work staff would be expected to conduct (site audits, detailed energy audits, construction, demolition, lighting, retrofits, etc.).

For more information on third-party services see the Financing and Implementation Section of the Resource Manual. A Model Request for Proposals for Third-Party Services for Energy Services Contracts may be found in the Model Document Section of the Resource Manual.

7.3 Option 3: Energy services company (external implementation)

Energy services companies (ESCOs) provide a wide range of services that can be tailored to meet [municipality x]'s needs. Typical ESCO services include: energy audits, project financing, and construction management services. There are additional costs associated with this option for risk management if a performance guarantee for the building retrofit is included in the project contract. However, the time frame to implement this project will be greatly reduced, such that savings are realized earlier and the additional costs are offset. Furthermore, [municipality x] has worked successfully with [insert ESCO name] on [insert project name and date]. [Municipality x] does not have the time or resources to oversee a retrofit project. Therefore, we propose to retain [insert name of ESCO] to execute this project, and to enter into negotiations towards an energy performance contract.

or

While [municipality x] has had previous experience with ESCOs, our analysis of this project indicates that we have the required expertise and resources to implement the project with internal management. Further, the risks involved appear to be manageable without a performance guarantee, and the required capital can be secured through the municipality's own sources. Therefore, we do not propose to use an ESCO for this project.

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It is a common misconception that ESCOs only provide a complete package of services. In fact, ESCOs can bring financing to the table and implement the retrofit project, or they can complete a portion of the project for you, or under the direction of a third-party general contractor or project manager. If your municipality does not have the resources to manage the project you should clearly demonstrate this here.

For more information on energy performance contracts see the Financing and Implementation Section of the Resource Manual. A Model Request for Proposal for Third-Party Services for Energy Performance Contracting and a Model Energy Performance Request for Proposal for use by Municipalities may be found in the Model Document Section of the Resource Manual.

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There may be several financing options available to your municipality. In this section you should summarize the options that are suitable to your current situation.

In part, the selection of an option is dependent on the internal/external implementation strategy choice. However, in either case, there are still options for the use of internal capital, debt-financing through the various lending sources available to the municipality, and lease/lease-to-purchase arrangements.

You will find a detailed discussion of these options and the principles that apply to the selection in the Finance and Implementation Section of the Resource Manual.

8.0 FINANCING OPTIONS

Several options for financing the proposed retrofit projects have been explored. These include internal financing with available capital, debt financing through [municipality x]'s borrowing opportunities, and leasing from the vendors where appropriate. Similar financing mechanisms can be employed in the event that the retrofits are managed by an ESCO.

8.1 Internal

Internal financing, that is, the use of [municipality x]'s own resources to implement the retrofit projects, is an option whether the project is managed by the municipality or by an ESCO or other third party. Internal financing of the proposed retrofits is predicated on the availability of operating budgets (for example, maintenance budgets) and capital funds (for example, for capital replacement and building renewal). This option offers the advantage of avoiding any debt on the balance sheet, and the avoidance of financing costs.

Based on the preliminary costs associated with the prospective retrofits as summarized in Section 9 below, and advice provided by Finance regarding the availability of operating and capital budget, we recommend that the internal financing option [be/not be] employed in this retrofit program.

8.2 Debt-financing

[Municipality x] has the option of borrowing or raising capital through bond issues in the same way as it does to meet other capital needs, and may do so whether the project is internally or externally managed. Borrowed capital may comprise the whole project cost or a portion of it. Borrowing places the debt on the balance sheet and introduces the additional cost of borrowing. Current regulations pertaining to debts incurred by the municipality need to be considered. We recommend that the proposed retrofits [be/not be] debt-financed.

8.3 Lease and lease-to-purchase

Various equipment leasing and lease-to-purchase arrangements are possible for the new technology installed in the proposed retrofits. As with debt-financing, these structures place debt on the balance sheet and there are costs of borrowing to be borne. However, the upfront costs of acquiring the equipment are avoided, which may improve the viability of the project. We recommend that the leasing options [be/not be] employed in this retrofit program.

8.4 ESCO-managed

The services provided by the ESCO can be unbundled or used as a comprehensive package that includes project financing. As noted above, our choice to use an ESCO does not preclude our providing financing through one of the options discussed. The ESCO may or may not be in a position to secure financing at a more attractive rate than [municipality x] itself. We recommend that this ESCO-managed project [utilize/not utilize] financing arranged by the ESCO.

Based on the analysis conducted in the development of this Proposal, we recommend that the selected projects be financed through [insert option].

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9.0 COST-BENEFIT ANALYSIS METHOD

Cost-benefit analysis has both qualitative and quantitative aspects. Qualitative benefits arising from the proposed retrofits include co-benefits such as:

- Improved indoor air quality
- Improved worker productivity and reduced absenteeism
- Economic benefits to the community as discussed in Section 6.

Direct quantitative benefits arise from:

- Reductions in energy and other utility costs
- Reductions in maintenance costs due to the installation of new equipment as part of the proposed retrofits.

Our method for assessing the direct quantitative benefits, at this stage of the project development, is the calculation of simple payback period. It is appropriate to use this method since we do not have engineering level costs and savings for the proposed retrofits, and for this reason it is not yet possible to provide return on investment data with a high degree of accuracy.

However, our preliminary estimates of the project cost and the savings returned, as summarized in Section 5, allow us to estimate the simple payback period for the proposed measures. The initial screening of alternative projects is based on their relative simple paybacks. Table 4 below summarizes the simple payback periods of the proposed retrofits.

It is important to analyze the prospective projects from a cost-benefit point of view. While they usually cannot be quantified, it is helpful in obtaining approval of the Project Proposal if co-benefits are addressed along with the quantifiable direct cost-benefits attributable to energy and utility savings, maintenance savings, and so on. Section 3 of the Resource Manual speaks to the issue of co-benefits.

At this stage of the project, cost and savings data are preliminary only, and simple payback calculations are useful for screening the potential projects. As the analysis moves into the Feasibility Study stage, engineering estimates of costs and savings will be developed and more rigorous life cycle cost-benefit analysis methods should be employed.

the proposed retrofits.

Table 5: Simple Payback Periods for Proposed Projects

Site	Total Projected Savings $/year	Estimated Project Cost $	Simple Payback Period, Years	Rank
Building A	$1,034	$1,551	1.5	4
Building B	$4,457	$10,251	2.3	6
Building C	$0	n/a	n/a	n/a
Building D	$18,444	$106,973	5.8	10
Building E	$1,162	$581	0.5	1
Building F	$4,230	$31,725	7.5	11
Building G	$3,370	$3,370	1.0	3
Building H	$984	$492	0.5	1
Building I	$1,389	$2,083	1.5	4
Building J	$25,763	$77,289	3.0	7
Building K	$19,734	$69,069	3.5	8
Building L	$28,178	$135,255	4.8	9
Totals	**$108,744**	**$438,640**	**4.0**	

In screening buildings for retrofit, more can be accomplished within investment criteria that apply to the municipality by bundling projects together such that the combined payback period remains attractive while capturing savings from projects that, on their own, might be seen as financially nonviable.

We recommend that consideration be given to bundling projects. As noted above, all retrofits together have a combined simple payback period of four years.

At the Feasibility Study stage, as data becomes more refined and viable projects have been identified, we will employ life-cycle cost analysis methods.

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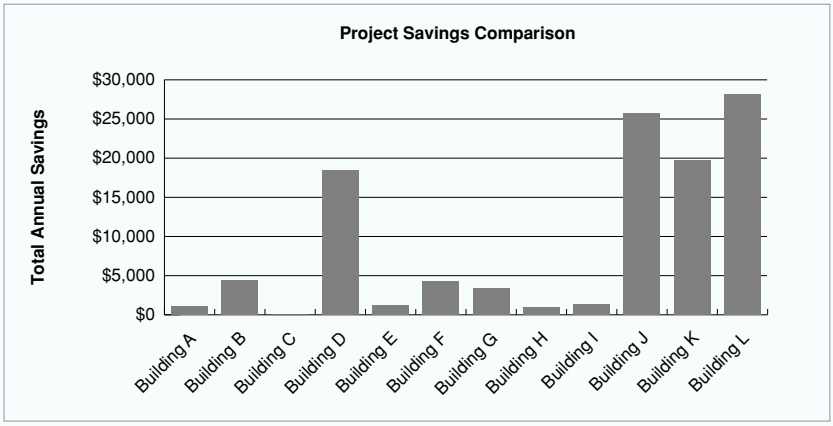
It is important to clarify the monitoring and verification strategy that will be used throughout the retrofit process. A savings verification strategy helps to ensure that predicted savings are achieved by improving savings opportunity selection. It also helps to reduce financing costs because it can enhance the confidence of lenders that predicted savings will be achieved. Monitoring and verification also creates a management information process that contributes to ongoing energy management as an organizational priority.

Before you move forward the methodology, monitoring and verification should be clearly understood by all parties involved with the retrofit.

Depending on the implementation option chosen for the project, savings verification may be done using internal or external resources. If the latter, the energy performance contractor or ESCO will typically include this function within the bounds of the contract. Alternatively, consulting firms that offer savings verification services can be employed regardless of the implementation strategy choice.



10.0 MONITORING AND VERIFICATION

The central purpose of monitoring and verification for [municipality x] is to verify the energy savings achieved to [satisfy internal financial accounting and reporting requirements]

or

[meet the terms of third-party contracts for project implementation and management, including energy performance contracts].

A secondary, although in the long term no less important, purpose of the techniques associated with monitoring and verification is to ensure that savings are maximized and sustained through ongoing management control of the use of energy, a technique known as energy monitoring and targeting (M&T).

For the purpose of this retrofit [insert title] [municipality x] will use the following monitoring and verification strategy:

- *[A "whole building" approach to energy monitoring will be employed to determine variance from baseline performance as determined prior to the project. This approach will include adjustments for significant changes in energy determinants such as weather and building occupancy.]*

or

- *["Retrofit isolation" is possible for the retrofits contemplated in this Proposal, and it is our intention at this point to develop this monitoring and verification strategy more fully for the proposed project.]*

The estimated cost for monitoring and verification in this project is $[insert amount], representing approximately [insert value] per cent of the total project value.

Terms that apply to monitoring and verification are:

- **Measurement, as in Measurement and Verification M&V**, is a process of quantifying energy consumption before and after an energy conservation measure (ECM – also referred to in other MBR documents as an energy-efficiency measure or EEM – ECM is used in this document) and is implemented in order to verify and report on the level of savings actually achieved.
- **Energy monitoring**, targeting and reporting are management techniques that can, and should, be utilized with or without specific facility retrofits in order to keep operations efficient and to monitor utility costs. These strategies are designed to drive energy costs downwards as a continuous improvement cycle.
- **Energy monitoring** is the regular collection of information on energy use. Its purpose is to establish a basis of management control, to determine when and why energy consumption is deviating from an established pattern, and as a basis for taking management action where necessary. Monitoring is essentially aimed at preserving an established pattern.
- **Targeting** is the identification of levels of energy consumption, which is desirable as an ongoing management objective.
- **Reporting** "closes the loop" by putting the management information generated from monitoring into a form that enables ongoing control of energy use, the setting and achievement of reduction targets, and the verification of savings.

Please refer to Section 8 for more information on monitoring and verification. You may also want to attend FCM's Monitoring and Verification Workshop for Municipal Governments.

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The need for training is probably self-evident. Please refer to the Resource Manual for a catalogue of available training services and resources.

11.0 TRAINING

The proposed retrofits have implications for the work demands of operating and maintenance staff, as well as the behaviours of building occupants. For this reason, we advocate the integration of staff training into the retrofit projects. Our preliminary analysis indicates the following needs for staff training:

- Operating staff need system-specific training for the operation of all new technologies being installed in the retrofits
- Maintenance staff need training that focuses on the energy-efficiency implications of proper maintenance of these and other existing systems in the buildings they maintain
- General staff occupying the buildings, including clerical, supervisory and management personnel comprising the indoor staff, need training to heighten their awareness of energy efficiency as a priority of [municipality x] and an appreciation of the energy and cost consequences of their day-to-day work-related activities.

Various sources of training workshops, courses, and awareness development sessions exist in our community. We recommend a provisional budget of $[insert amount] be reserved as a part of the overall capitalization of this project for training. We further propose to engage Human Resources in the clarification of training needs and the procurement of appropriate training services to meet those needs.

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(continued)

Recommendations made throughout the Proposal should be collected and listed in this section to highlight the need for further action. Some of these recommendations will anticipate the execution of the next step in the MBR process, the Feasibility Study.

12.0 RECOMMENDATIONS

To summarize, in the foregoing we have made the following recommendations:

1. A program of building improvement is recommended for the following facilities owned and operated by [municipality x]: [provide list]
2. It is recommended that council endorse continuing participation in the MBR process to execute the proposed retrofits.
3. It is recommended that [municipality x] council approve $[insert estimated amount] to conduct a detailed Feasibility Study on the buildings listed above to confirm the details of a retrofit program.
4. It is recommended, based on preliminary cost and savings data, that project financing by [insert option] be fully explored.
5. It is recommended that the bundling of retrofits be fully considered with the objective of maximizing the capture of energy savings within the financial constraints that apply.
6. It is recommended that [insert name of ESCO, contractor, or other third-party company] be retained by [municipality x] to conduct the required Feasibility Study.
7. It is recommended that a “whole building” strategy for monitoring and savings verification be developed concurrently with the Feasibility Study.
8. It is recommended that [municipality x] secure the necessary services and resources to begin an assessment of the training needs of personnel, and commit to the implementation of required training programs at the earliest opportunity.

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The conclusion to the Proposal closes the loop by restating its objectives and identifying how and where those objectives have been met.

Please Note: All model documents are located in the Resource Manual under the subheading Model Documents.

13.0 CONCLUSION

This Proposal builds on the information developed in previous steps of the MBR process. It utilizes and adds to information obtained in the Green Leaf™ Assessment, and refines and expands the directions described in the Action Plan.

In this Proposal we have presented more refined data concerning the performance of facilities owned and operated by this municipality. Our objectives in doing so are to:

- Screen the building portfolio and identify those buildings that offer the greatest potential for energy savings through retrofits
- Refine our knowledge of those buildings in terms of energy and cost performance and to estimate the savings that can accrue from retrofitting them
- Clarify the steps that need to be taken to move the retrofit program to its conclusion
- Obtain a commitment of resources from council to proceed to the Feasibility Study stage.

These objectives have been met as follows:

- Sections 1 and 2 present background for the Proposal, linking it to previous actions within the MBR process, and recommend continuing the process to the Feasibility Study stage.
- Sections 3, 4, 5 and 9 develop the information needed to select those buildings in the portfolio that should be studied further for retrofit possibilities, by providing energy use indices that have been compared to benchmarks for similar facilities.
- Sections 6, 7, 8, 10 and 11 address issues that need to be resolved and decisions that need to be made regarding the execution of retrofit projects.