Commercial Custom Measures Program
Feasibility Study Proposal Application – Guide

Section 1 – Introduction
This guide has been written to assist Registered Professional Engineers or Architects with the preparation of the Feasibility Study Proposal and the Feasibility Study Report.

The purpose of the Feasibility Study Proposal is to define the scope and cost of the study and provide a pre-feasibility analysis of potential measures and options.

The purpose of the Feasibility Study Report is to present the results of the study in a common format.

To receive a Feasibility Study Proposal incentive the estimated annual electrical energy savings for the project must be at least 50,000 kWh. To be eligible for Feasibility Study Report assistance, the entire Feasibility Study Proposal submission must be approved by Manitoba Hydro prior to initiating the actual study.

Section 2 – General requirements
Grammar and Style: The proposal and report should be grammatically correct. The language should be clear, concise and understandable by all readers.

Engineering Calculation Methods:
• Manual, spreadsheet, modeling or calculation software will be acceptable only if the calculation methods are well documented, transparent and traceable for Manitoba Hydro technical review. All assumptions, inputs and outputs must be documented for each individual measure and option. Modeling results must be realistic when tested against simple manual check methods.
• Electrical energy savings shall be quoted in kilowatt-hours (kWh). Natural gas energy savings shall be quoted in cubic metres (m³). Other energy units (BTU, GJ or kWh equivalents) may also be used as long as cubic metres and kWh are also stated.
• Weather related measures must utilize degree day, bin temperature data or hourly weather data for the closest weather station to normalize the saving calculations.

Documentation:
• Supporting energy usage histories, equipment performance data, load calculations, detailed cost estimates and assumptions that were used in the calculations and estimates must be documented and included in the report. The rationale for all relevant assumptions should be clearly stated. For retrofit projects, saving calculations are also expected to be supported by logged, trended, metered or spot instantaneous field measurements.
• Engineering calculations, field energy measurement results, meter readings, data logging results and equipment performance data sheets, cost estimate quotations, etc. must be included in an Appendix. Electronic model or spreadsheet files shall also be provided upon request.
• When quoting equipment capacities, clearly indicate whether using input or output.

Mathematical Accuracy and Consistency: All calculations should be checked for mathematical accuracy and values should be consistent when repeated more than once.

Illustrations: Tables, charts and other diagrams should be properly labeled. Duplication of similar information in varying forms is not generally necessary.

Section 3 – Definitions: Base Case/Energy Efficient Case(s)
In order for a project to be considered for eligibility, there must be a lower cost, less efficient option and a higher cost, more efficient option to study. Projects where the more efficient option is the lower cost will not be eligible for incentives. The Project Concept Analysis must be completed with the assistance of a Commercial Custom Measures Program Representative and approved by Manitoba Hydro prior to the preparation of a Feasibility Study Proposal.

The Base Case is defined as the lower capital cost, less efficient option which would normally be installed in the absence of incentive programs. The Energy Efficient Case is defined as the higher capital cost, more efficient option.

For existing facilities, lost opportunity projects and resource acquisition projects must be defined.

• Lost Opportunity Projects are defined as those where the original equipment has failed or is at the end of its useful service life and must be either repaired or replaced. If there is only one more efficient option, the Base Case would be either repair or replacement with similar equipment and the Energy Efficient Case would be the more efficient piece of equipment. If there are numerous more efficient options, the Base Case could be any one of these options and the Energy Efficient Case would be any other higher cost, more efficient option.

• Resource Acquisition Projects are defined as those where the original equipment has remaining significant useful service life so that it could remain in operation and there is at least one more efficient option available. For these types of projects, the Base Case could be either to do nothing or it could be one of the more efficient options. The Energy Efficient Case would be any other higher cost, more efficient option.

For new facilities, the Base Case would be defined as the lower cost, less efficient system that would normally be installed in the absence of incentive programs. The Energy Efficient Case would be defined as any higher cost, more efficient option.

Section 4 – Energy conversion factors

<table>
<thead>
<tr>
<th>Energy</th>
<th>Natural gas</th>
<th>Other</th>
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</thead>
<tbody>
<tr>
<td>1 HP = 0.746 kW</td>
<td>1 m³ = 35,310 BTU*</td>
<td>1 m³ = 35.31 ft³</td>
</tr>
<tr>
<td>1 kW = 3412 BTU/hr</td>
<td>1 therm = 100,000 BTU</td>
<td>1 boiler HP** = 33,480 BTU</td>
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<tr>
<td>1 CCF = 100,000 BTU</td>
<td>1 boiler HP** = 34.5 lb/hr</td>
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</tr>
<tr>
<td>1 MCF = 1,000,000 BTU</td>
<td>1 MMBTU = 1,000,000 BTU</td>
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<tr>
<td>1 GJ = 948,210 BTU</td>
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* based on 1,000 BTU per ft³
** from and at 212°F
2.1 Potential for energy savings of each EE option
   - Estimate of electrical energy savings in kWh.
   - Estimate of natural gas savings m³.
   - Identify the net impacts for all interactive effects of the measure(s) to be evaluated in the study, which could cause an increase in electricity or natural gas usage by other systems.

2.2 Estimate of the cost saving benefits of each EE option
   - Annual electric billing cost savings (for “Demand Rate” electric customers only, include an estimate of the total annual electric demand charge cost savings).
   - Annual natural gas billing cost savings.
   - Other energy billing cost savings potentially affected by the EE measures.
   - Water/sewer utility savings (quantity and $ value).
   - Maintenance and repair cost savings.
   - Other quantifiable project non-energy benefits.

2.3 Simple payback of each EE option
   - Estimated total annual cost savings.
   - Best approximation of incremental cost of implementing the proposed system/measures. The project incremental cost is defined as the cost difference between the Proposed Energy Efficient and Base Case systems.
   - Estimated conditional Hydro Incentive.
   - Simple payback of each measure or option with and without Hydro incentive and other government program funding or incentives.
   - Customer’s acceptable investment assessment criteria i.e. simple payback, return on investment or life cycle cost.

3. Scope of consulting services

3.1 Study methodology
   - Identify the study tasks and describe the work to be done in each task.
   - Description of the engineering calculation methods to be used.
   - Description of field measurements, logged, trended or metered data to be used as the basis and support for the final savings calculations.

3.2 Study team
   - Identify the responsible Manitoba registered professional engineer or architect.
   - Identify the technical specialists or other personnel who will be involved in the study.
   - Identify all sub consultants involved in the project.
   - Attach resumes of all key personnel.

3.3 Study schedule
   - Include a basic schedule for completion of the study tasks.
   - Expected start and completion dates.

3.4 Study cost
   - Total quoted cost for the study including labour, disbursements and all applicable provincial and federal taxes. Provide labour, material, and any other related costs separately.
   - Indicate the total study cost inclusive of all requested Manitoba Hydro Incentives and any other government sponsored funding allowances.