Multi-Criteria Analysis Tool for Proposed Energy Projects Requiring Municipal Support Confirmations

Energy Projects Evaluation Guide

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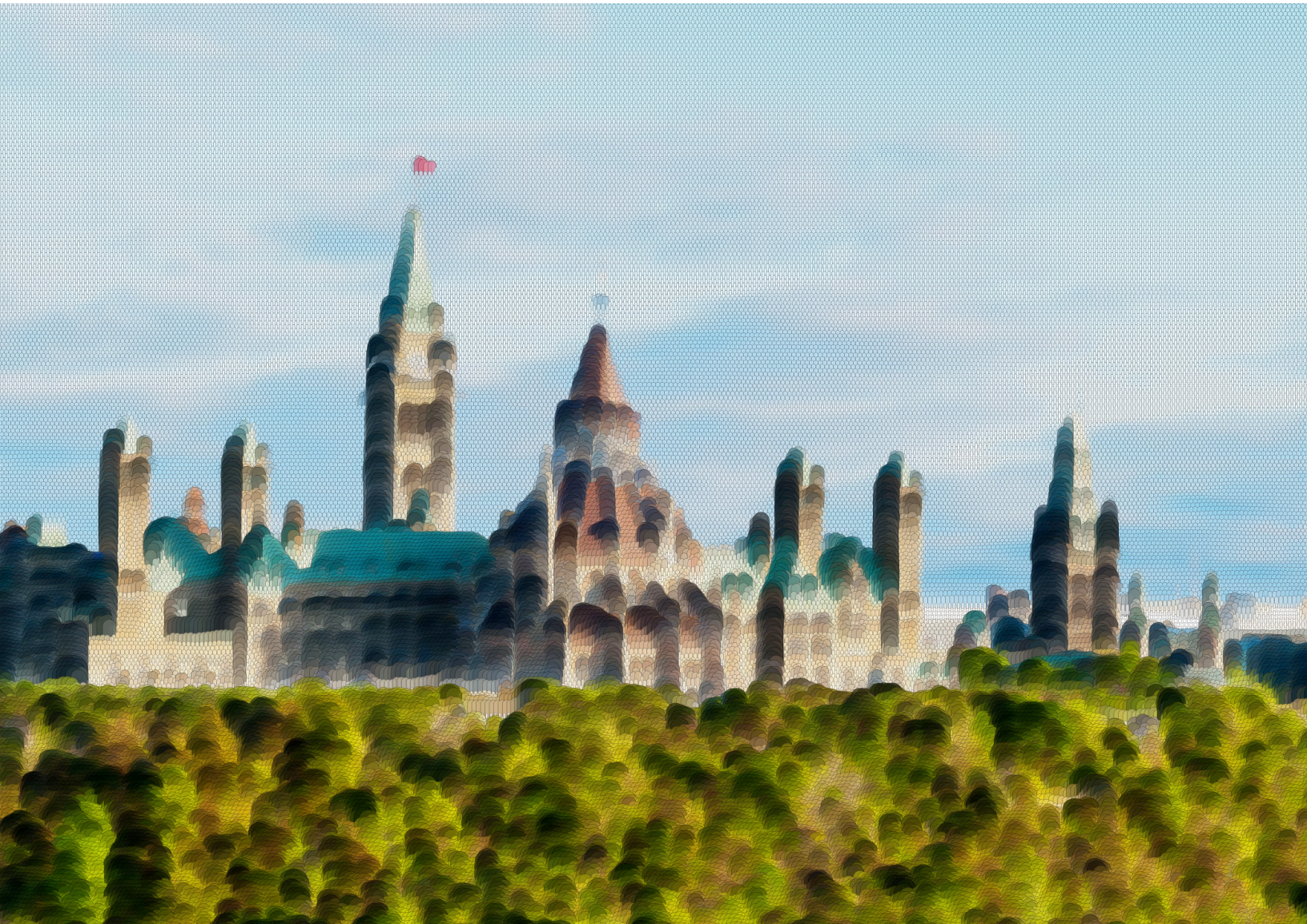

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Introduction

This guide instructs evaluators how to use The Atmospheric Fund (TAF)/ Sustainability Solution Group's (SSG) multi-criteria analysis tool (MCA Tool) for proposed projects requiring municipal support confirmation. The MCA Tool is an Excel-based analysis spreadsheet designed to help municipal officials and staff evaluate how well proposed electricity generation projects align with the interests and aspirations of their municipalities.

In 2022, the Independent Electricity System Operator (IESO) began requiring municipal support confirmations for energy projects with its Long-Term 1 (LT-1) procurements. This required municipal staff and elected officials to evaluate proposed projects from perspectives outside traditional municipal responsibilities such as land use and zoning. In response, Sustainability Solutions Group and The Atmospheric Fund, in collaboration with the Association of Municipalities of Ontario (AMO), developed the MCA Tool.

SSG and TAF used their expertise and experience to identify the necessary criteria for evaluating proposed projects; however, the evaluator retains the prerogative to select, not select, or insert their own criteria, in a step-by-step evaluation process. This includes adjusting criteria weights to reflect what is most important for each individual municipality and project.

The MCA Tool only addresses one aspect of the process required to approve and build projects. The IESO leads and manages the overall procurement process, and the MCA Tool is not intended to replace approval processes related to municipal planning and zoning. More information on electricity procurements and the role of municipalities is available on the AMO's website: AMO's Guidance Resources for Electricity Procurements | AMO.

Using the MCA Tool

This guide gives step-by-step instructions for selecting evaluation criteria, entering key information about proposed projects, and deciding how heavily selected criteria should be weighted for up to six proposed projects.

The evaluator must enter data or select options on Worksheets 2 (Project Details), 3 (Criteria), and 4 (Scores-Manual). Using Worksheet 8 (Sensitivity) is optional, but data entry is required if the evaluator intends to employ it.

On the worksheets following Worksheet 3 (Criteria), criteria not selected will be greyed out, indicated as not selected, or appear in a grey font.

Worksheet 1. Introduction

The introduction gives background information on recent IESO procurements and generation programs and provides relevant links to IESO and AMO webpages that serve as helpful resources.

Worksheet 2. Project Information

Information provided in this worksheet serves as critical inputs for criteria outputs that are either calculated automatically or referenced for evaluations performed based on user judgement. Evaluators should complete the information cells to the fullest extent possible. This section also prompts the evaluator to consider what information the proponent of a proposed project should provide to municipalities to support informed consideration.

If a project is dropped or the tool is being cleared between uses, remove all information except the cells with drop-down options. In drop-down cells, the last entry will remain in place until there is a new entry.

Figure 1. Previous values will remain in the sheet at end of use and need to be re-entered for subsequent uses.

Municipal population (000's)	35	
Does the municipality have a climate plan?	No	
Has the community declared a climate emergency?	No	
Is there a watershed or stormwater plan at the proposed site?	Yes	
Current Ontario Grid Emissions Factor	87	kg CO_{2e}/MWh

Section 2.1 Relevant Community Information

This information provides context by relating the proposed project(s) to the size of the associated municipality and to several of the municipalities' relevant initiatives.

Section 2.2.1 General

This section records the proposed project's key aspects. Key inputs include:

1. **Project nameplate capacity (MW)**: This should be identical to the nameplate capacity put forward in the proponent's(proponents') application to the IESO.
2. **Contract duration (Years):** This is the period for which the IESO is offering a contract for the proposed project. Many projects have their contracts renewed as they approach expiry, but this tool is not intended for considering possible contract extensions.

Enter project(s) sequentially from left to right and in Row 14, start the numbering with a "1" in Column D, and increase the project number as more projects are added.

Figure 2. Sample projects entered in the "General" Section.

2.2.1 General

Project Proponent	**Acme Generation**	**PowerCo**	**ReGen**	**ReGen**	
Project #	**1**	**2**	**3**	**4**	
Project name	Pump'id up	Solar +	Windy City	PV Plus	
Type of project	Solar	Solar	Wind	Solar	
Project nameplate capacity (MW)	50	25	40	6	
Contract duration (Years)	20	20	20	20	

Section 2.2.2 Financial

This section captures the project's financial implications. The evaluator will have to monetize in-kind benefits and costs and consider the extent to which costs and benefits will escalate.

Some items will require careful consideration by the evaluator. Estimating a prospective project's impact on property tax is highly situational, and therefore, this tool does not provide a formula for generating these values; in other words, this is left to the evaluator's discretion.

Similarly, soft costs, such as demands a prospective project imposes on municipal services, are often specific to local context. For example, costs could include increased expenses incurred for emergency services or road maintenance. AMO's Municipal Energy Procurement Toolkit can help to identify possible costs that municipalities should consider. The evaluator may wish to run the prospective project with a range of potential costs and benefits to analyze optimistic and pessimistic scenarios.

Section 2.2.3 Community

This section assesses the corporate citizenship of the proponent. Aligning this assessment with the community's policies and practices is the basis for evaluation in this area.

Section 2.2.4 Technical

This subsection contains information to evaluate prospective projects based on land-use, environmental, and resiliency impacts or benefits. Key inputs include:

1. **Land Requirements (Rows 33, 34):** These inputs consider how efficiently land is being used and whether it is dedicated to the project. The evaluator must interpret and assess overall land requirements with respect to some projects. For example, wind projects can be installed over a large area but only actively use a small proportion of it. Similarly, solar projects may allow crops to be grown under or around installed panels, and the dedicated land-use or project footprint may be lower than the overall proposed project site. Land-use impacts should not include any related electrical transmission infrastructure that will be built to support new electricity generation or electricity storage.
2. **Connection Points (Rows 35, 37):** Inputs that cover whether generation is sited on **local distribution grids**, behind **customer meters,** or on **transmission lines** that serve the community are used to assess the degree to which proposed projects enhance local energy security by siting generation close to consumption.
3. **Carbon Capture and Storage (Row 36):** Systems that capture the CO_2 produced in a combustion-based system and permanently store it—typically deep underground. It should not include offsets such as tree planting. This technology could apply to the following project types (Row 16): Single-cycle gas, combined-cycle gas, biogas, biomass, cogeneration with gas, a mix of fossil and green fuels, and an incinerator.
4. **Noise (Rows 38–40):** Noise receptors are typically comprised of residences, commercial campgrounds, community centres, and places of worship. They typically exclude un-staffed locations, industrial sites, works yards, airports, and rail yards. Provincial regulations have set 550 metres as an important distance limit for locations that are proximate to proposed wind farms.

Section 2.2.5 Economic

This section refers to the direct economic benefits in the proposed project's municipality.

- **Municipal ownership (%):** This reflects direct ownership of the project by the local municipal government or the higher-tier municipality where the project is proposed.

Worksheet 3. Criteria

First, the evaluator selects which criteria they wish to include in the evaluation (**Column D**) by selecting "Yes" or "No" under "Select Criteria." Selecting criteria in this section will ensure its selection in the scoring and calculations in subsequent worksheets.

Next, the evaluator sets a weighting (**Column E**) for all selected criteria from 1 to 10. A "1" weighting indicates low importance, while "10" is the highest possible weighting and would likely relate to something significant for the community and/or be strongly reflected in municipal policies and programs.

The last two rows (**Rows 16 and 17**) in the criteria table are placeholders that allow the evaluator to add their own custom criteria to the evaluation. This could be any criteria of local importance that fall outside of the provided pre-selected criteria.

Worksheet 4. Scores—Manual

In this section, the evaluator scores criteria 4 to 8 (inclusive) as well as any "custom" criteria they may have added in Section 3. These criteria require manual evaluation, as the evaluator must use their professional judgement to assess how projects rate against each criterion. Conversely, automated criteria are calculated using the inputs provided in Worksheet 2 (see Worksheet 5 below). Each project must be evaluated against each criterion on a scale of 1 to 10.

To help with the evaluation process, suggested considerations are provided in **Column B**, while suggestions on how to apply the 10-point scale are provided in **Columns N and O**. Criteria not selected in Worksheet 3 (i.e., set to "No") will be greyed out.

The best performance rating for prospective projects is a "10." It may be reserved for projects that end up having extra benefits. For example, a project that rates well for operational and environmental impacts while also remediating a contaminated site might score a 10 overall.

Worksheet 5. Scores—Automatic

This worksheet employs the evaluator's information from Worksheet 2 to automatically score criteria 1 to 3, inclusive. Criteria not selected in Worksheet 3 (i.e., set to "No") will be greyed out.

Columns P to V, inclusive, provide details on how automatic scoring is calculated and why it is included for transparency and traceability. Automatic scoring works as follows:

1. **Municipal Financial Impact ($1,000s):** Relates the size of a prospective project (in megawatts of capacity) to the financial contribution it makes to the municipality. For example, a small project that contributes generously to municipal finances will score highly.
2. **Local Resilience:** Relates the amount of energy a project will produce relative to the size of the community's local energy demand. The calculation employs capacity factors of different forms of generation and considers where they are sited relative to consumption. For example, a project with a large amount of well-sited energy production relative to local energy demand will score well.
3. **Climate Change:** Evaluates the extent to which the project will reduce greenhouse gas emissions. Proposed project(s) with higher emissions reductions will score higher.

Worksheet 6. Scores—Summary

This worksheet provides results for the proposed project(s) in tabular form using data from Worksheets 4 and 5. Criteria that make up the evaluation matrix are shown across **Row 7**, with all non-selected criteria greyed out.

The weightings (**Row 10**) are imported from Worksheet 3 and the ratings (**Columns D, G, J,** etc.) are imported from either Worksheet 4 or Worksheet 5. For each criterion, the ratings and weightings are multiplied to calculate scores. For example, if the rating for Municipal Financial Impact is a "1" and the weighting is a "2," the score for the criterion will be "2" (rating 1 x weighting 2 = a score of 2).

Worksheet 7. Results

This worksheet sources the results from Worksheet 7 and compares the proposed project(s) graphically. If the evaluator is assessing multiple proposed projects, these will be ordered from highest to lowest score. These scores are also displayed as percentages (relative to the highest possible score).

The evaluator should consider these percentages and scores as comparative rather than absolute. This analysis tool is not intended for use as a binary pass or fail evaluation of proposed projects. For example, scores below 50% should not be automatically viewed as a fail and scores above 70% should not be automatically viewed as a pass.

If the percentage result conflicts with the expectations prior to evaluation, the evaluator should verify project inputs and reconsider the criteria, weighting, and scoring used to evaluate proposed projects. Additionally, the evaluator can proceed to the next worksheet, where they can trial alternative weighting of the selected and scored criteria.

Worksheet 8. Sensitivity

This worksheet contains an optional function that the evaluator may wish to employ to quickly assess the impact and sensitivity of changes to the weightings of chosen criteria. This allows the evaluator to increase or decrease the weightings of selected criteria and immediately see the impact on final scores. If multiple proposed projects are being evaluated, the scoring of all projects will be reflected in the results displayed.

Evaluators employing this function may wish to save the results of different weighting changes. This can be done using screen captures or by copying results to a separate document.

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