ENERGY SAVINGS
FOR BUSINESS

Investing to keep businesses competitive

WER ORC Checklist

May 25, 2021

Version 1.0

EMISSIONS REDUCTION ALBERTA

Table of Contents

INTRODUCTION 3
GUIDANCE ON APPLICATIONS 3
STEP 4 OF PRE-PROJECT APPLICATION 4
WASTE ENERGY RECOVERY ORGANIC RANKING CYCLE 4
STEP 5 OF PRE-PROJECT APPLICATION: WER ORC 7
POST-PROJECT APPLICATION 7
APPENDIX 8

INTRODUCTION

This document is intended as a guide to support the submission of accurate and complete Waste Energy Recovery (WER) Organic Rankine Cycle (ORC) project applications. All applicants with WER ORC projects should ensure the application meets the Eligibility Requirements set out in the Participant Terms and Conditions, Contractor Code of Conduct and Eligible Measures List. The applicant must submit the requested documentation and answer the questions contained within this document.

This checklist includes guidance for what needs to be entered in each input field at Step 4 and Step 5 of the Application process. Step 5 specifically describes which documents need to be uploaded and their purpose.

GUIDANCE ON APPLICATIONS

The following sections provide guidance on WER ORC applications, ensuring that they are complete, accurate and comprehensive.

The applicant and/or contractor will also need to provide the following information in Step 4 and Step 5 of the application submission, as further described in the tables below.

STEP 4 OF PRE-PROJECT APPLICATION

WASTE ENERGY RECOVERY ORGANIC RANKING CYCLE

- WER ORC – 25% Utilization
- WER ORC – 50% Utilization

Application Tip: *Please complete the system efficiency calculation outlined in the table below before you select the measure.*

Field	What to Enter	How Data or Input Provided is Used
Quantity	Enter the number of measures being installed. For WER ORC, this should be "1".	• Calculate eligible incentive. • Post-project QA/QC.
Rated Generator Capacity (kW)	Enter the size of the generator in kW.	• Calculate eligible incentive. • Post-project QA/QC.
Working Fluid	Enter the working fluid for the system.	• Post-project QA/QC.
Describe Thermal Energy Waste Source	Describe the device, location and system from where the thermal energy is coming.	• Post-project QA/QC.
Mass Flow Rate of Waste Heat (kg/hr)	Enter the annual average mass flow rate for the waste heat source fluid (e.g., flue gases).	• Calculate eligible incentive. • Post-project QA/QC.
Temperature of Waste Heat	Enter the annual average temperature in degrees Celsius for the waste heat source fluid.	• Calculate eligible incentive. • Post-project QA/QC.
Annual Electrical Energy Output (kWh)	Please enter the estimated annual electrical energy output of the ORC system in kWh.	• Calculate eligible incentive. • Post-project QA/QC.
ORC Equipment Specification Sheet	Please upload the specification sheet for the ORC equipment.	• Calculate eligible incentive. • Post-project QA/QC.
Gen Set Specification Sheet	Please upload the specification sheet for the generator.	• Calculate eligible incentive. • Post-project QA/QC.
P&ID Drawing	Please upload the P&ID (piping and instrumentation diagram) drawing.	• Post-project QA/QC.
Single Line Electrical Drawing	Please upload the single line electrical diagram.	• Post-project QA/QC.
Process Flow Diagram	Please upload the process flow diagram.	• Post-project QA/QC.
Site Layout Diagram	Please upload the site layout diagram.	• Post-project QA/QC.
Engineering Firm	Enter the name of the Engineering Firm responsible	• Post-project QA/QC.

	for the approval of the system design.	
Engineer Name	Enter the name of the Engineer. *The engineer will need to be a professional engineer licensed to practise in Alberta.*	• Post-project QA/QC. •
Status of Interconnection Application	Select from the list the status of Interconnection Application: • Not Applied • Applied • Approved	• Post-project QA/QC.
Interconnection Form A Application	Upload both the interconnection application and the supporting documents including the single line diagram if all the documents can be combined. If they cannot be combined, upload the supporting documents in Step 5 (see below).	• Confirmation that application has been submitted.
Building Type	Select from the list the building type: • Office • Private School • Retail • Theater • Warehouse • Private Healthcare • Industrial • Other	• Calculate eligible incentive. • Post-project QA/QC.
Facility Area (Sq Ft)	Enter the facility area in square feet.	• Calculate eligible incentive. • Post-project QA/QC.
Facility Annual Hours of Operation	Enter the facility annual hours of operation. *Please note that this is not the estimated annual hours of operation for the WER ORC system itself.*	• Calculate eligible incentive. • Post-project QA/QC.
Waste Energy Recovery ORC System Annual Hours of Operation	Enter the WER ORC annual hours of operation.	• Calculate eligible incentive. • Post-project QA/QC.
Annualized Electric Energy Load Profile	Upload a document showing the estimated monthly, daily, or hourly electricity load for the building/facility.	• Calculate eligible incentive. • Post-project QA/QC.

Annualized Thermal Energy Load Profile	Upload a document showing the estimated monthly, daily, or hourly thermal load for the building/facility.	• Calculate eligible incentive. • Post-project QA/QC.
System Utilization Factor	This is a calculated value. The calculation is as follows: Numerator: The annual hours that the WER ORC system runs. Denominator: 8760 The System Utilization Factor is the numerator divided by the denominator.	• Calculate eligible incentive. • Post-project QA/QC.
Electricity Price ($/kWh)	Enter the electricity cost in $/kWh.	• Used for estimating energy savings achieved.
Gas Price ($/$m^3$)	Enter the gas price in $/$m^3$.	• Used for estimating energy savings achieved.
Equipment & Material Costs	Enter equipment and material costs as indicated on the invoice / final quote.	• Calculate eligible incentive. • Post-project QA/QC.
Labour Cost	Enter labour costs as indicated on the invoice / final quote.	• Calculate eligible incentive. • Post-project QA/QC.
Design Cost	Enter design costs and include all other costs as indicated on the invoice / final quote.	• Calculate eligible incentive. • Post-project QA/QC.

STEP 5 OF PRE-PROJECT APPLICATION: WER ORC

Field	What to Enter	How Data or Input Provided is Used
Cost Quote	Quote or invoice should be itemized to include quantity, brand, model numbers for equipment, applicant name, contractor name, facility address and date (Sample quote provided in the Appendix). Costs should be indicated separately for: • Equipment and Material • Labour • Design and Others • Taxes	• Cross-reference against provided costs. • Calculate incentive cap. • Post-project QA/QC.
Electricity Bill for Facility	Upload the most recent electricity bill available for the facility.	• Ascertain rate class.

POST-PROJECT APPLICATION

Note that for the post-project application, you will be required to confirm that no changes were made from the pre-project application, unless an Application Change Approval Notice was issued by ERA.
In terms of documents required, you will need to provide evidence of the following:

- Interconnection Agreement Approval
- Electrical and Installation Permits
- Invoice for Project Costs
- Proof of Payment for Project Costs
- Conditions stated in the Notice of Pre-Approval

Participants may be subject to a QA/QC check and may be asked for additional documentation or to facilitate a site visit.

APPENDIX

SAMPLE INVOICE/FINAL QUOTE

Quotes should be itemized to include quantity, brand, model numbers for equipment, applicant name, contractor name, facility address and date. Costs should be indicated separately for:

- Equipment and Material
- Labour
- Design and Others
- Taxes

A sample quote is provided below:

Company Logo

Company Address:	xxxx
Website:	xxxx
Phone:	xxxx

	PROJECT NAME: XXXX	**Project Start Date:**	xxxx
		Project Completion Date:	xxxx
Applicant Company:	xxxx		
Applicant Name:	xxxx	**Quote #:**	xxxx
Facility Address:	xxxx	**Date:**	xxxx
Phone:	xxxx		

Measure #1			
Fixture Description	LITHONIA CPANL 2X4 40/50/60LM 40K M2	**DLC**	PMS5PPS6
Measure Description	LED 2x4 Recessed Light Fixture - 4,500 – 5,999 Lumen Output	**QTY**	63
Measure Equipment/Material Costs			$ 6,538.71
Measure Labour Costs			$ 13,251.74
Measure Design/Other Costs			$ -
		Measure Total Costs	$ 19,790.45

Measure #2			
Motor Description	ILA7080-H Siemens Semiotics 10 hp		
Measure Description	Premium efficient motor –ODP-10 hp	**QTY**	1
Measure Equipment/Material Costs			$ 934.10
Measure Labour Costs			$ 123.11
Measure Design/Other Costs			$ 50.00
		Measure Total Costs	$ 1,107.21

Measure #3			
Sensor Description	Occupancy Sensor		
Measure Description	Fixture Mounted Sensor	**QTY**	305
Measure Equipment/Material Costs			$ 15,250.00
Measure Labour Costs			$ -
Measure Design/Other Costs			$ -
		Measure Total Costs	$ 15,250.00

Total		
Total Equipment/Material Costs		$ 22,722.81
Total Labour Costs		$ 13,374.85
Total Design/Other Costs		$ 50.00
	Total Project Cost	$ 36,147.66
	GST	$ 1,807.38
	Total Cost w/ GST	$ 37,955.04