

# Base Protocol Plan for Waste Heat Recovery Projects

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Fast Track Protocol Development Process

**Submitted: September 2008**

This document has been prepared by Blue Source Canada ULC on behalf of the Industry  
Provincial Offset Group Working Group 1: Non-Emitting Renewables.

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## Part I: Identification of the Protocol Developer

### 1.1 Title of the Base Protocol:

Quantification Protocol for Waste Heat Recovery Projects

### 1.2 Lead Protocol Developer

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### 1.3 Initiating Entity

<b>Organization:</b>	Industry Provincial Offsets Group (IPOG): Working Group 1 – Non-Emitting Renewables
<b>Name:</b>	Working Group Chair: Paula McGarrigle
<b>Title:</b>	Manager, Wind Electricity
<b>Address:</b>	Shell Canada Wind Energy 400 4th Avenue S.W., P.O. Box 100 Station M, Canada
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#### **1.4 Rationale for initiating the development of the protocol (optional):**

There is industry support behind the development of this protocol and a recognized opportunity to generate greenhouse gas offset credits.

Through the Industry Provincial Offset Group, members strive to ensure that protocols are:

- Based on a complete life-cycle analysis with consideration of all relevant GHG sources and sinks;
- Consistent in their treatment of cross-cutting issues;
- Based on accurate and unbiased best science and best practice guidance;
- Fully transparent; and
- Conservative so as to ensure that environmental integrity is maintained.

## **Part II: Base Protocol Applicability and Development Approach**

### **2.1 Description of the Project Type:**

This quantification protocol is applicable to the quantification of direct and indirect reductions of greenhouse gas (GHG) emissions resulting from the implementation of waste heat recovery projects. The protocol quantifies the emission reductions from the avoidance of fossil fuel consumption resulting from the capture and utilization of heat that is currently being wasted. The waste heat may be transferred into the project site where it is utilized, or may be recovered and used within the project site. Project configurations where the waste heat is supplemented are also included.

This protocol does not prescribe the configuration of the scheme. Rather, this protocol serves as a generic 'recipe' for project proponents to follow in order to meet the measurement, monitoring and GHG quantification requirements. The project must achieve some level of fuel savings by capturing and utilizing waste heat.

The boundary of the waste heat recovery protocol encompasses the recovery, distribution and utilization systems, which may cross site boundaries. Further, the utilization systems are defined as those within the impacted unit, i.e. equipment, processes, facilities, etc., whose heat load is partially or wholly impacted by the operation of the waste heat recovery system.

### **2.2 Description of Project-specific Technology (if applicable)**

Waste heat boilers capture heat from waste gas streams for use at the receiving site.

### **2.3 GHG(s) that will be reduced:**

- CO<sub>2</sub>;
- CH<sub>4</sub>; and
- N<sub>2</sub>O

### **2.4 Description of how real reductions will be achieved:**

The waste heat recovery protocol quantifies emission reductions on the basis that the heat and power demand being offset was being achieved through fossil fuel combustion, either on-site or off-site. Thus, the starting point for all quantification is the heat load of the project and how this is being achieved.

### **2.5 Base Protocol Flexibility (optional):**

Flexibility in applying the quantification protocol is provided to project developers in four ways:

1. The source of the waste heat may supplement their heat demand either to replace a component of the heat being transferred or to augment the heat exported, however, these emissions must be captured as supplementary heat and power under this protocol;
2. Waste heat recovery projects may occur within a single site or across multiple sites. Further, the defined unit impacted, both on the recovery and utilization of the waste heat, may include multiple processes, equipment, etc. Definition of the units impacted is to be justified by the project proponent;
3. Site specific emission factors may be substituted for the generic emission factors indicated in this protocol document. The methodology for generation of these emission factors must be sufficiently robust as to ensure reasonable accuracy; and
4. Waste heat recovery projects may provide some or all of the heat requirements for the facility. Flexibility is provided in terms of allowing the broadening of the project scope to include existing, new, or retrofit supplementary heating both on and off site to meet the project energy load.

## 2.6 Federal, Provincial/Territorial Legal Requirements & Climate Change Incentives

### 2.6.1 List of potentially relevant requirements:

- The Province of British Columbia: The BC Energy Plan
- The Province of Nova Scotia: Renewable Portfolio Standard
- The Province of Ontario: Renewable Portfolio Standard

### 2.6.2 List of potentially relevant climate change incentives:

- The Province of Ontario: In an effort to meet its renewable energy supply targets, Ontario Power Authority created the Standard Offer Program. The program offers \$110 / MWh for electricity produced renewable sources. Under the program OPA takes ownership over all environmental attributes, including GHG reductions not associated with electricity generation.

## 2.7 Building on existing protocols or proprietary information (if applicable)

<b>Registered name of protocol:</b>	Quantification Protocol for Waste Heat Recovery Projects
<b>System for which protocol was developed:</b>	Alberta Offset System
<b>Date protocol was completed and approved:</b>	September 2007
<b>Developer of the protocol</b>	
<b>Name:</b>	Keith Driver

<b>Organization:</b>	Blue Source Canada ULC
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## 2.8 Explanation of how the existing protocol will be adapted:

The existing seed protocol will be adapted through an inclusive, transparent and consistent process coordinated through the Industry Provincial Offset Group's (IPOG) broad membership. In particular, work will be conducted by a protocol technical working group formed specifically to address adaptation of the protocol in question and potentially other related protocols. Cross-cutting issues groups will also be formed to address issues affecting a range of protocols, and to ensure consistency in approach.

### **Adaptation of the existing protocol will follow the multi-step process outlined below:**

- Collection of technical and background information related to development, review and approval of the protocol to ensure transparency through the adaptation process;
- Review of the protocol to ensure consistency with Canada's "Turning the Corner" action plan and the requirements of the federal offset system. Any areas of inconsistency with the protocol documentation will be identified in this step;
- Review of existing provincial and federal regulations that could impact the surplus nature of the emission reductions from the project activity. This phase will serve to address the surplus requirement relative to applicable federal and provincial legislation;
- Review of the seed protocol's baseline condition to address the incremental nature of the project activity in the Canadian context. This review will include an assessment of the baseline's compatibility with Canadian best practices and potential alternative baseline approaches;
- Review of the protocol to ensure the quantification methodology is consistent with best practice guidance, and applicable to the range of Canadian geographical and climatic conditions;
- Review of the protocol's measurement and monitoring requirements to ensure they are reflective and reasonable in the Canadian context. This will include a review of data collection requirements and frequency of measurement and monitoring;
- Consideration of other environmental impacts and criteria air contaminants, as required by the "Turning the Corner" action plan;
- Additional analysis to address any outstanding issues identified to date that may present a significant challenge to protocol adaptation. This step may include assembly of the technical working group to drive further analysis;

- Redrafting of protocol to address technical issues identified in the previous steps and to ensure it meets the technical and format requirements of the Canadian offset system;
- Review of any material changes made to the quantification approach using project data to ensure the revised methodology is generally consistent with the original documentation;
- Cross-protocol review of the adapted protocol with other protocols adapted by IPOG, to ensure consistency in scope and approach to quantification; and
- Compilation of documents required for submission of the final draft protocol to Environment Canada for approval. The results of all stages of the review and adaptation process will be summarized and compiled to support Environment Canada's review.

Given the volume of work required under short timelines, multiple agencies will be required to provide a range of technical inputs, perspectives and capacity. To accomplish required tasks and meet timelines, technical resources within IPOG will be mobilized to provide input; drawing on group member's significant experience in protocol and project development.

This IPOG working group will draw on the experience of Climate Change Central to manage the adaptation process and to ensure broad stakeholder involvement by parties that may not be comfortable working directly with IPOG.

### **2.9 Explanation of the nature of the proprietary information and how it might be used in the Base Protocol:**

We are anticipating full disclosure and transparency; therefore no proprietary information should be required.

### **Part III: Declaration / Consent / Signature**

The undersigned acknowledges that the undersigned has read, understood and that the undersigned agrees to abide by all the terms, conditions, instructions, and notices set out in the Guide for Protocol Development.

The undersigned acknowledges that the review of, and comments regarding, this base protocol plan or portions thereof does not ensure that the base protocol plan or portions thereof will be used in an Offset System Quantification Protocol by Canada's Offset System for Greenhouse Gases.

The undersigned is legally authorized to use any and all proprietary (or protected) information found in and submitted with the base protocol plan.

The undersigned is duly authorized to sign this application.

The undersigned declares that the base protocol plan submitted for Canada's Offset System for Greenhouse Gases and the information provided on, with or pursuant to this application is true, accurate and complete.

The undersigned consents to the public disclosure, in any manner including, without limitation, posting on Offset System website, of all the information in the base protocol plan and the information submitted with the base protocol plan.

By protocol developer (individual, or an organization's or a corporation's duly authorized representative, date, name, title)

By: **KEITH DRIVER**

Title: **VICE-PRESIDENT, OPERATIONS  
BLUE SOURCE CANADA ULC**

Signature: \_\_\_\_\_

Signed this \_\_\_\_ day of \_\_\_\_\_, 2008