



*Canadian ETV*  
*Street Sweeper Performance Verification*

**Operational On-Street Test Protocol**  
**and**  
**PM<sub>10</sub> and PM<sub>2.5</sub> Street Sweeper**  
**Efficiency Test Protocol**

*Background Information on*  
*Performance Testing and Verification*

**May 2016**

**Version 2**

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## **1.0 Introduction**

The purpose of this background document is to provide information to the vendors and/or representatives of street sweeper manufacturers (i.e. “clients” or “applicants”) wishing to test their technology to the standards outlined in the two following protocols:

- Operational On-Street Test Protocol; and
- PM<sub>10</sub> and PM<sub>2.5</sub> Street Sweeper Efficiency Test Protocol

This document provides insight into the Canadian Environmental Technology Verification (ETV) verification process which serves to verify environmental and operational performance claims of the vendor’s technology. This process may be required by members of the user community (e.g. municipal jurisdictions) as part of their procurement process. In order to ascertain the overall comprehensive performance of a street sweeper, an evaluation of both the air quality and operational performance of the street sweeper should be evaluated. A separate Verification Statement of performance, as well as a Technology Fact Sheet (TFS) are issued for each of the above protocols.

The client is responsible for obtaining the latest version of the two test protocols from the City of Toronto. The test protocols may also be downloaded from the Canadian ETV website at: <http://etvcanada.ca/home/protocols-and-procedures/>.

## **2.0 History of Independent Performance Claim Verification**

A survey conducted in 2007 by the City of Hamilton and City of Toronto was distributed to a number of municipalities across Canada, asking municipalities whether they would support third-party testing as a method that can be used to evaluate air quality (PM) and operational efficiency of various street sweeper technologies using a quantifiable method and support third-party testing as a requirement of the procurement process. The result of the survey revealed that the majority of respondents from municipalities expressed support to purchase street sweepers with performance claims verified by an independent organization.

## **3.0 GLOBE Performance Solutions (GPS)**

GLOBE Performance Solutions (GPS) is the independent verification organization which manages and delivers Canadian ETV under a license agreement with Environment Canada. GPS offers a reliable assessment process for verifying the environmental performance claims associated with projects and programs, as well as technologies and technological processes.

#### 4.0 Applying for Canadian ETV Performance Claim Verification (Pre-Screening, Formal Application, Testing)

The key steps that clients follow when applying for Canadian ETV performance claim verification include the following:

- i. Online Pre-Screening Submission
  - Prospective clients are requested to submit an online Pre-Screening Application (<http://etvcanada.ca/begin-your-etv-screening-application-here/>) which is found on the Canadian ETV website, <http://etvcanada.ca/>.
  - The Pre-Screening Application is reviewed by GLOBE Performance Solutions to assess eligibility and feasibility. In order to be eligible for verification under Canadian ETV, the technology must meet the following requirements:
    - It must be an environmental technology;
    - The performance claim must meet minimum Canadian standards and/or national guidelines for that technology and where it is being used;
    - The performance claim should be measurable;
    - The applicant should own the intellectual property of the technology to be verified, or can obtain a written permission from the owners to pursue the verification; and
    - The technology must be currently commercially available or commercially ready for full-scale application.
  - Submission of the Pre-Screening Application is free of charge.
  
- ii. Formal Application Submission
  - Upon approval of the online Pre-Screening Application, the client will be invited to complete a more detailed Formal Application form that is to be reviewed and evaluated by both GPS and the prospective Verification Expert (VE) sub-contracted by GPS.
  - The VE will be identified and recommended by GPS, as the most qualified technical expert to carry out the verification. *\*[see below “Verification Expert” (iv)]*
  - Key documents to be submitted with the Formal Application include:
    - Copy of “Claim to be Verified” for each performance claim to be verified
    - Proof of technology ownership
    - Description of operating conditions under which the performance claim is valid
    - Original test data and related documents\*\* *[see below “Independent Testing” (iii) ]*
    - Proof of analytical laboratory accreditation for analysis performed or proposed under the test procedure
    - List of literature citations and articles that support the underlying scientific and engineering principles of the technology (if available)

- List of textbooks, technical books, etc. that describe the underlying scientific and engineering principles of the technology (if available)
- Copy of the patent(s) or patent application(s) for the technology (if available)
- List of independent experts (background, affiliation, addresses and telephone numbers) qualified to discuss the scientific and engineering principles upon which the technology is based
- Process flow diagram, description, design drawings, equipment specification sheets and other information identifying the unit processes or specific steps by which the technology operates
- Summary of the key health and safety issues associated with the technology
- Summary of training requirements needed to safely and effectively operate the technology and list of documents available describing these requirements
- Other technical and promotional material as appropriate
- Completed Declaration Regarding Codes and Standards.
- The Formal Application is to be completed and signed by the applicant and returned to GPS with a non-refundable payment of \$CAN1,500 + GST.

iii. Independent Testing

- In many cases, testing may still need to be conducted, following the submission of the Formal Application.
- Applicants will be required to contact an independent sweeper testing organization, approved by GPS as qualified to conduct testing in accordance with the Operational On-Street Test Protocol and the PM<sub>10</sub> and PM<sub>2.5</sub> Street Sweeper Efficiency Protocol, published March 2008, City of Toronto.
- The selected independent testing organization will provide a quote to the client for the testing to be undertaken.
- All testing activities and related contractual agreements are carried out between the applicant (client) and the testing organization, independently of Canadian ETV. The cost of testing is paid directly to the testing organization and/or analytical laboratory by the client.
- The actual testing is then performed by the independent test organization and witnessed by the Verification Expert sub-contracted by GPS to complete the verification.

iv. Verification Expert (VE)

- GLOBE Performance Solutions (GPS) draws upon the expertise of the GPS-Consortium of recognized testing and verification organizations across Canada to verify independently collected test data against the draft performance claims or to verify actual claims from testing. These independent technical experts are referred to as "Verification Experts" or VEs under Canadian ETV.

- GPS identifies and recommends the Verification Expert (VE) for the project, and executes a non-disclosure agreement with the client, prior to sharing any information received as part of the Formal Application process.
  - *It should be noted that in certain circumstances, where necessary, GPS may choose to select expertise from outside of the GPS-Consortium to complete the verification.*
- v. Witnessing of Testing
- The Verification Expert (VE) will be required to witness the testing of the client's street sweeper by the testing organization. The costs incurred by the VE to witness the testing activities will be paid by the client to GLOBE Performance Solutions (GPS); GPS will reimburse the VE for these costs.
  - The cost of the witnessing work will relate to the amount of time required by the VE witness to be present at the independent test agent site during the street sweeper test periods, in addition to travel to- and from the test site, accommodation, etc.
  - The VE will witness the pretest of the sweeper and the first day of actual testing (on road and PM<sub>10</sub> and PM<sub>2.5</sub> tests) at the independent test site. The witnessing need only occur the first time a test agent is used (i.e. if the testing organization's site remains the same for all vendors only one witnessing will need to take place). If a new test site is chosen for testing sweepers, then witnessing (i.e. witnessing pretest plus day 1 of the testing of PM and on road testing) needs to be carried out again. Also, witnessing would be performed as above if there is a change in key personnel at a test site (e.g. the project manager / test site team leader).
  - The VE's role as a witness is to confirm that testing by the testing organization is performed as per the Operational On-Street Test Protocol and the PM<sub>10</sub> and PM<sub>2.5</sub> Street Sweeper Efficiency Test Protocol. The witnessing will help the VE complete the verification report on the testing in a timely manner.
  - The client cannot perform and/or undertake any task and/or responsibility considered to be part of the tasks and/or responsibilities of the testing agency and/or VE as part of the performance claim verification process.
- vi. Test Report Preparation
- Following the completion of field testing, the testing organization will prepare an official test report for review by the client.
  - Assuming that the data meets the requirements of the Canadian ETV "General Verification Protocol", as well as the Operational On-Street Test Protocol and the PM<sub>10</sub> and PM<sub>2.5</sub> Street Sweeper Efficiency Test Protocol, the client will submit the test report to GLOBE Performance Solutions in order to complete the requirements of the Formal Application already in progress.
  - *It should be noted that verification activities will also take into consideration the current final working copy of the proposed FDIS-ISO14034 (ETV ISO Standard).*

## 5.0 Verification Process

- i. Client Verification Contract
  - Prior to the commencement of verification activities and analysis of data by the VE, the client must enter into a Client Verification Contract with GLOBE Performance Solutions
  - Although the fees charged for each verification may vary, depending on the nature of the technology, it is reasonable to estimate a total cost of \$CAN 20,000 – 25,000 + GST.
- ii. Data Verification by the Verification Expert (VE)
  - Following the completion of a Client Verification Contract between GPS and the client, the completed Formal Application package (including test data) will be submitted to the VE by GPS.
  - The VE will analyze the data from the applicant to determine if the claim is adequately substantiated, or if additional testing is required. If additional verification activities result in work that is not covered by the original verification contract, this work may be subject to additional verification fees.
  - The VE will prepare a draft report on the results of the verification process, which is submitted to GLOBE Performance Solutions for initial review, prior to being shared with the client.
  - In the event that the vendor's draft performance claim cannot be substantiated, the applicant may choose to modify the claim such that it is substantiated with the actual test data. Alternatively, the applicant may also choose to conduct further testing to support the claim. It is important to note that Canadian ETV is governed by a "General Verification Protocol" (GVP) which determines the criteria and process required for completing all verifications.
  - The GVP is employed by VEs in the verification process and offers a comprehensive and rigorous procedure so that all verifications are completed in a consistent manner.
  - *It should also be noted that verification activities will take into consideration the current final working copy of the proposed FDIS-ISO14034 (ETV ISO Standard).*
- ii. Final Report Preparation
  - Subject to review and approval of the draft report by GPS and the client, the VE will proceed with preparation of the final verification report.
  - GPS will review the final verification report, confirming that the client's technology performance claim is supported by independent quality test data at a 95% level of confidence.

## 6.0 Costs

### 6.1 Testing of Street Sweeper

- Arranged between the independent test agency and the client and paid for by the client.

## **6.2 Witnessing Sweeper Technology Testing by a Verification Expert**

- Paid for by the client.
- Fees for witnessing are in addition to the verification fees
- Arrangements for payment are made with GPS and the VE

## **6.3 Canadian ETV – Summary of Verification Fees**

### Paid for by the client:

- Pre-Screening and Technical Pre-Screening Application no charge;
- Formal Application Fee: \$CAN 1,500.00 + GST
- Verification Fees: \$CAN 20,000 – 25,000 + GST
- Renewal fee for every three year period: \$CAN 2,000 + GST

## **7.0 What does a company receive upon successful ETV Canada verification?**

Upon successful verification the company is issued the following:

- i. Final Documents Submitted to Client by GPS
  - Final Verification Report
  - Technology Fact Sheet
  - Verification Statement (Certificate)
  - Canadian ETV Licence Agreement
  - Electronic copies of high resolution Canadian ETV logos\*\*\*

\*\*\* *The company is entitled to use the ETV logo, but limited to the uses identified in the Canadian ETV “Guide to Proper Use of ETV Program Official Marks” document, to market their technology in Canada and abroad.*

### Publication of Verification Documents

The Technology Fact Sheet is published on the Canadian ETV website under “Current Verified Technologies” <http://etvcanada.ca/home/verify-your-technology/current-verified-technologies/>

## **8.0 User Community requirements compared to Canadian ETV requirements.**

Canadian ETV is a separate process from the user community purchasing decision-making process. Nevertheless, user communities may choose to implement Canadian ETV as a requisite for their procurement processes.

## **9.0 Further information.**

Full details of applicant guidelines and the process are published on the Canadian ETV website: <http://www.etvcanada.ca/>



Additional information may also be requested from GLOBE Performance Solutions at:  
[gps@globepformance.com](mailto:gps@globepformance.com)