

# **Environmental Technology Verification Program**

## **Policy Compendium**

National Risk Management Research Laboratory  
Office of Research and Development  
U.S. Environmental Protection Agency  
Cincinnati, Ohio 45268

## **Notice**

This document was developed by the United States Environmental Protection Agency's (EPA's) Environmental Technology Verification Program (ETV). ETV is a public/private partnership conducted, in large part, through competitive cooperative agreements with nonprofit research institutes. This document has been subjected to the Agency's review and has been approved for publication as an EPA document. The policies contained in this document do not necessarily reflect the views of the U.S. EPA.

## **Forward**

The U.S. Environmental Protection Agency (EPA) is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory (NRMRL) is the Agency's center for investigation of technological and management approaches for preventing and reducing risks from pollution that threaten human health and the environment. The focus of the Laboratory's research program is on methods and their cost-effectiveness for prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites, sediments, and ground water; prevention and control of indoor air pollution; and restoration of ecosystems. NRMRL collaborates with both public and private sector partners to foster technologies that reduce the cost of compliance and to anticipate emerging problems. NRMRL's research provides solutions to environmental problems by developing and promoting technologies that protect and improve the environment, advancing scientific and engineering information to support regulatory and policy decisions, and providing the technical support and information transfer to ensure implementation of environmental regulations and strategies at the national, state, and community levels. This publication has been produced as part of the Laboratory's strategic long-term research plan. It is published and made available by EPA's Office of Research and Development to assist the user community and to link researchers with their clients.

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## **Acknowledgments**

Early drafts of the Environmental Technology Verification Program (ETV) Policy Compendium were developed in the program's pilot period (October 1995 to September 2000) by the pilot verification organization (VOs) and the EPA ETV team. The EPA Science Advisory Board, the various stakeholder groups participating in the program, and interested outside organizations such as the White House Environmental Technology Task Force and Congress also provided operational input during the conceptual development of the ETV Program and its pilot period.

The document underwent a major revision in 2002 to address the transition from twelve pilots to six centers, as well as the addition of a homeland security focus following 9/11. The current revision was completed in 2007 and addresses the inclusion of Environmental and Sustainable Technology Evaluations (ESTE) efforts and the transfer of homeland security technology evaluation to the U.S. EPA Office of Research and Development National Homeland Security Research Center. Again, the policies contained in the document were developed by the center VOs and the EPA ETV team, with input from other EPA offices (e.g., Office of General Council) where appropriate.

## Abstract

This Policy Compendium summarizes operational decisions made to date by participants in the U.S. Environmental Protection Agency's (EPA's) Environmental Technology Verification Program (ETV) to encourage consistency among the ETV centers. The policies contained herein evolved from group decisions made by the verification organizations (VOs), EPA ETV team, and other EPA personnel during the original concept period (1993 to 1995), the operation of the actual pilot period (1995 to 2000), and subsequently. As such, the policies are and will continue to be modified as necessary and, although they generally apply to the entire ETV Program, there may be exceptions to which certain policies may not apply. The main source for each policy is cited after each policy statement. The primary sources include ETV team meetings and ETV publications, such as the *ETV Program Verification Strategy* (EPA 1997) and *ETV Quality Management Plan* (EPA 2007)

Policies are valid as of the date of issuance and the document will be updated periodically. Conformity with these policies is voluntary except where stipulated as part of the VO's agreement with EPA. The ETV Policy Compendium is divided into two main sections. Section 1 addresses core policies that generally apply to all of the ETV centers and ESTE projects. Section 2 explains policies that apply to individual steps in the operational processes of the ETV Program.

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## Abbreviations and Acronyms

ADQ	audit of data quality
ANSI	American National Standards Institute
APG	annual performance goal
ASQC	American Society for Quality Control
CBI	confidential business information
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
ESTE	Environmental and Sustainable Technology Evaluations
ETV	Environmental Technology Verification Program
MOA	memoranda of agreement
MYP	multi-year plan
NRMRL	ORD's National Risk Management Research Laboratory
OIA	EPA's Office of International Affairs
ORD	EPA's Office of Research and Development
PEA	performance evaluation audit
QA	quality assurance
QMP	quality management plan
TSA	technical systems audit
VO	verification organization

## Section 1 – ETV Core Policies

### 1.1 General Environmental Technology Verification Program Policies

#### 1.1.1 Definitions

The following terms used in this Policy Compendium and other Environmental Technology Verification (ETV) Program documents are defined accordingly.

- *Commercial-ready technology*: The technology is either in, or ready for, full-scale commercial production and has a high probability of being effective.
- *Technology category*: A group of technologies that are the same type of equipment and used in the same application or a group of technologies that are different types of equipment that are used in the same application.
- *Stakeholder groups*: Groups established for each center or Environmental and Sustainable Technology Evaluations (ESTE) project to provide input to the program and/or use the verification information, including representatives of any or all of the following verification customer groups: buyers and users of technology, technology developers/vendors, consulting engineers, finance and export communities, government permittees, regulators, first responders, emergency responders, disaster planners, public interest groups, and other groups interested in the performance of environmental technologies.
- *Verification organizations*: The public and private sector organizations holding cooperative agreements or contracts to assist or support the Environmental Protection Agency (EPA) in implementing ETV.
- *Verification*: Establishing the performance of a technology under specific, predetermined criteria or protocols and adequate data quality assurance procedures.
- *Verification test*: The performance evaluation of one or more similar environmental technologies that is documented in a single test/quality assurance plan and in one or more verification statements and verification reports. More than one technology is often tested simultaneously.
- *Verification test/quality assurance plan*: The plan developed by a verification organization (VO) to perform technology verification(s). The test/quality assurance (QA) plan may include more than one technology. The test/QA plan provides the experimental approach with clearly stated test objectives and associated quality objectives for related measurements. The test/QA plan may incorporate or reference existing generic verification protocols or provide the basis for refining draft generic verification protocols.

- *Generic verification protocol:* This document is used to promote uniform testing procedures by the VO for a single class of technologies. Adequate documentation of a robust protocol may allow the development of abbreviated individual test/QA plans which incorporate the protocol by reference. Protocols may retain draft status until verification testing is performed, then are finalized, building upon the testing experience. Protocols may also be prepared after testing has been conducted following a specific test/QA plan.
- *ETV verification report:* The report containing the results of an individual technology test and/or accepted existing data evaluation developed by the VO and reviewed and approved by EPA.
- *ETV verification statement:* A summary statement based on the verification report developed by the VO and signed by the VO and the EPA National Risk Management Research Laboratory (NRMRL) director, which reports individual technology performance.

Policy Source - ETV Quality Management Plan (QMP) 2007

### ***1.1.2 The ETV Program operates through multiple centers and ESTE projects which cover a broad range of environmental technology categories.***

During the program's pilot period, ETV operated 12 pilots, each with a different technology or operational focus. At the conclusion of the program's pilot period, the Agency reviewed the performance and operation of the program to assess its future direction and scope. Based on this review and ongoing considerations, including planned declining budgets, the ETV Program consolidated into six centers which cover a broad range of environmental technologies. In 2005, ETV further expanded its mission to include ESTE projects. These projects are intended to target high-priority Agency issues and, as such, are performed using contracts and work assignments that are managed by EPA Office of Research and Development (ORD) project officers. In 2007, the agreement between EPA and the non-profit research organization operating the pilot under the sixth center expired, as did the associated center.

Policy Source - Report to Congress (Final Draft) 2002, ETV QMP 2007

### ***1.1.3 Four important ETV documents provide direction and help ensure the program's credibility and consistency.***

Four documents define the overall operation of ETV and help ensure program credibility and consistency. The first document is the *ETV Quality Management Plan (QMP)* (EPA 2007). This is a program management document used by ETV to guide its operation. The *ETV QMP* explains in detail the quality assurance policies and procedures, including the development of center-specific QMPs by the VOs or, in the case of the ESTE projects, joint QMP/test/QA plans or provide pre-existing QMPs that meet ETV standards. The second is this document, the *ETV Program Policy Compendium*, which defines the operating policies developed to encourage consistency among the ETV centers. The third document is the draft U.S. EPA *Environmental Technology Verification Program (ETV) Guidelines for Proper Use of the ETV Name and Logo* (EPA 2007). This document contains the policy and procedures for using the ETV name [Environmental Technology Verification Program (ETV)], logo, or verified data. The fourth document is draft *Science and Technology for Sustainability Multi-Year Plan (MYP)* (EPA 2006). This document contains specific annual performance goals (APGs) and annual performance measures (APMs) that have been developed to guide the EPA sustainability-based research program, of which ETV is a part. These documents are evaluated and modified periodically.

Policy Source - ETV QMP 2007, Sustainability MYP (Draft) 2006, U.S. EPA Environmental Technology Verification Program (ETV) Guidelines for Proper Use of the ETV Name and Logo, Draft January 2008.

#### ***1.1.4 The ETV Program allows wide latitude in procedures to test operational alternatives and seek optimized, high quality verification testing and reporting.***

To identify the most efficient and cost-effective verification methods, the ETV Program allows for flexibility to test alternative ways of conducting similar activities. EPA project officers, VOs, and stakeholders are encouraged to be innovative in seeking methods and processes that allow the verification of technologies to be conducted as rapidly and efficiently as possible within the legitimate constraints of quality assured data and the agreements used to operate the centers and perform the ESTE projects. Improvements and changes to procedures are to be expected and are encouraged.

Policy Source - 2007 November Partner Call

#### ***1.1.5 ETV Program participants collect information through various mechanisms to give constant feedback on potential improvements.***

To assess efficiency and cost-effectiveness, the ETV Program incorporates several mechanisms to ensure that constant feedback on potential improvements is received by all participants.

1. The first feedback mechanism is the ongoing data collection for and development of fiscal year annual program reports, which identify the progress/milestones, trends, funding, expenditures, and timing data for each ETV center, ESTE project, and for the ETV Program as a whole. ETV's online database provides a central location that EPA ETV and VO staff can use to input, update, and manage this and other information, as noted in Section 6.6 of the ETV QMP.
2. The second feedback mechanism is monthly EPA ETV Team conference calls and semiannual ETV VO conference calls/meetings, which allow the people managing ETV centers and projects to share positive and negative experiences with each other and with the ETV program director.
3. The third feedback mechanism is semiannual to annual ETV Team meetings (which include VO managers), as needed, that allow VOs, EPA center project officers and ESTE project managers to discuss program activities that have taken place within the last six (or more) months and learn from both the positive and negative experiences of others. These meetings are limited generally to program participants to encourage maximum candor and learning, although outside parties may attend.

Each of these feedback mechanisms provides the ETV program director and ETV coordination staff, EPA center project officers, ESTE project managers, and VOs with information necessary to make ongoing improvements to the ETV Program.

Policy Source - May 2001 Team Meeting, 2007 November Partner Call, ETV QMP 2007

#### ***1.1.6 The proportion of costs covered by the vendors and others (e.g., collaborators) is expected to increase over time.***

Over the five-year pilot phase of the program, the costs of verifying technologies in many pilots shifted from being primarily government-funded to incorporating substantial private sector funding (e.g., participating vendors, others). Testing in at least one pilot was fully vendor supported from the beginning. The original ETV verification white paper developed in 1994, called for complete private sector

sponsorship within three years. An EPA Science Advisory Board (SAB) review in 1995, however, concluded that such a goal was probably not achievable in such a short timeframe (the SAB suggested five to eight years) and that some level of government support (10 to 20 percent of ongoing costs) would remain necessary to keep the activity viable.

With program maturity, the percentage of program funding received from vendors and other parties (e.g., states, communities, federal agencies, and others) has increased over time. Goals have been established based on a number of factors, including the level of cost that the private sector is willing to bear in various technology sectors. Expanded collaborations, involving greater funding contributions from non-EPA ETV sources and greater involvement from participating vendors and other parties (e.g., states, communities, federal agencies, and others) who need the information ETV produces, have been encouraged. Reductions in center support costs have also been targeted, as well as increases in in-kind support (e.g., field support) from others. In fiscal years 2005 and 2006, about 50 percent of program funding (i.e., approximately half in-kind and half monetary) were received from vendors and others.

Recent budget cuts have caused ETV to aggressively focus on establishing self-supporting centers. Under this new shift, EPA has committed to providing ongoing program support, NRMRL signature of the verification statement, technology transfer, and quality assurance support to interested centers, with monetary support being provided on an as-available and as-needed basis.

Policy Source - Verification Strategy 1997, Report to Congress (Final Draft) 2002, October 2003 Team Meeting, Spring 2006 Partner Calls, 2006 ETV Annual Report

### ***1.1.7 Technology performance evaluations focus on performance characteristics.***

The ETV Program evaluates environmental technologies to ascertain and report on their performance characteristics. Under the ETV Program, EPA and its VOs do *not* (1) rank technologies or descriptively compare their performance, (2) label or list technologies as acceptable or unacceptable, or (3) seek to determine “best available technology” in any form. In general, the ETV Program will avoid all potential pathways to picking “winners and losers.” Only “standard” or “common” technology performance specifications that originate from a clearly identified reference or source are used when relative performance is addressed or discussed. The goal of the program is to make objective performance information available to all of the actors in the environmental marketplace for their consideration and decision making.

Policy Source - Verification Strategy 1997, October 2003 Team Meeting

### ***1.1.8 ETV verification is expressly defined.***

By “verify,” ETV means to establish the performance of a technology under specific, predetermined criteria or protocols and adequate data quality assurance procedures (i.e., confirm, corroborate, substantiate, validate). ETV verification does not imply that technologies will always perform as they performed under ETV testing, nor that they will perform in the same manner under circumstances different from those tested. Most specifically, *ETV does not “certify,” guarantee, or warrant the performance of technologies.*

Policy Source - Verification Strategy 1997, ETV QMP 2007

### ***1.1.9 The program seeks to provide high-quality data to purchasers and permittees on the performance characteristics of technologies.***

The goal of the ETV Program is “to provide credible performance data for commercial-ready environmental technologies to speed their implementation for the benefit of purchasers, permittees, vendors, and the public.” This means that the provision of data and information on performance characteristics must address legitimate information that purchasers and permittees need to make decisions. For this reason, ETV does not simply verify the claims of vendors (although it may do this also), but instead, looks to stakeholders to define the data and operational parameters that must be known to make a purchase, use, regulatory, or permitting decision.

Policy Source - Verification Strategy 1997, Program Fact Sheet 2007

### ***1.1.10 Program operation is guided by ETV’s commitment to being a fair, credible, objective, transparent, and high-quality organization.***

The ETV Program is committed to being a fair, credible, objective, transparent and high-quality organization. These qualities are crucial to ETV’s ability to help the marketplace make better environmental technology decisions and help guide program operation as follows.

- The program must be *fair* and equally available to all participants. Therefore, testing will be available to and consistent for all vendors of commercial-ready technologies within defined categories being evaluated by the program.
- Data *credibility* and *objectivity* are important values that verification adds to the marketplace. Therefore:
  - All ETV tests will be conducted by objective, third-party testing organizations<sup>1</sup> with no financial or other interests in the technology being tested. Testing organizations with a financial interest in a technology that may be a candidate for testing are not allowed to conduct verification testing in that area unless the VO is able to determine that adequate barriers are in place to prevent an actual or potential conflict of interest. Furthermore, should the VO determine that the barriers are adequate, it may still be appropriate to address the potential for “appearance issues,” perhaps by disclosing the nature of the financial interest or relationship to vendors who could be tested by this facility and noting that the VO has determined that adequate barriers have been put in place. This restriction is applicable to both the financial interests of the testing organization and the financial interests of the testing organization’s parent organization.
  - Testing occurs through the development of generic verification protocols and/or test/QA plans developed in advance of testing, which are publicly available for utilization.
- The program will operate with full *transparency*. Therefore, all testing methods and verification results will be published in reports and made fully available to the public.
- *High-quality* programs depend on quality assurance procedures. Therefore, all ETV centers and ESTE projects will operate under center-specific or project-specific QMPs which are consistent with the ETV QMP and through quality procedures (e.g., audits and quality assurance reviews) that assure the production of data of an acceptable level for verification (see Section 2.4.5). The quality systems developed and used by the VOs must be consistent with both American National Standards Institute (ANSI)/American Society for Quality Control (ASQC) Standard E-4, 1994, or ISO Standard 9000.

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<sup>1</sup> A third-party organization is an independent entity that has no interest in transactions between the first and second parties. In the technology verification area, the first party is the vendor or manufacturer and the second party is the purchaser or user. In ETV’s case, the third party is the EPA/VO partnership.

***1.1.11 Key players in the ETV Program have clearly delineated roles.***

On a day-to-day basis, the ETV Program is implemented by the VOs, members of the EPA ETV Team, and appropriate EPA line management. The center VOs operate the ETV centers under the direction of a VO manager, with input from the VO quality manager and others; ESTE VOs perform verifications under the direction of the EPA ESTE project manager, again with input from VO quality assurance and technical staff. The ETV Team consists of EPA personnel who are involved in the program, including center project officers, ESTE project managers, EPA directors of quality assurance, EPA quality managers, the ETV program director, and ETV coordination staff. Section 1.2 of the *ETV QMP* describes the formal duties of all defined participants. Section 1.3 of the *ETV QMP* explains ETV customer needs, expectations, and work objectives.

Policy Source - ETV QMP 2007

***1.1.12 Records are to be maintained in accordance with specific procedures.***

Table 1 lists the different types of records that ETV generates. Procedures have been established for the development, control, and maintenance of these records. These procedures are found in Section 5.0 of the *ETV QMP*, and the records schedules listed in Table 1.

Policy Source - ETV QMP 2007

***1.1.13 Cooperative arrangements and collaborations with other organizations are negotiated directly with the VO or can occur under the auspices of an Agency-negotiated memoranda of agreement, memoranda of understanding, or letter of intent.***

EPA and the VOs may partner with other organizations, including private sector associations, states, other federal agencies, other verification programs, and other countries, to conduct verification activities when the goals and objectives of these organizations coincide with those of ETV. In general, these partnerships will occur either as part of a cooperative agreement or grant which is negotiated directly with the VO or under the auspices of an Agency-negotiated memoranda of agreement (MOA), memoranda of understanding (MOU), or letter of intent (LOI). These agreements will need to conform to all applicable laws and regulations as specified in the individual agreement, operate under the provisions of the *ETV QMP*, and conform to the programmatic values specified in Section 1.1.10 of this Policy Compendium. Operational procedures, such as responsibilities for evaluation and

**Table 1. ETV Records**

<b>Record Type</b>	<b>Records given to:</b>	<b>Form</b>	<b>Applicable Records Schedule</b>	<b># of years to hold after closing</b>
ETV quality management plan	ETV director or designee for posting to web site	Electronic	185	10
CA/IAG/contract records	ETV/ESTE project files	Electronic	003/202	10/7
Policy Compendium	ETV director or designee for posting to web site	Electronic	185	10
VO quality management plan	ETV director or designee for posting to web site	Electronic	185	10
Minutes of stakeholder meetings	ETV director or designee for posting to web site	Electronic	006	10
Generic verification protocol	ETV director or designee for posting to web site (draft and final versions)	Electronic	185	10
Test/QA plan (including SOPs)	ETV director or designee for posting to web site developer/vendor	Electronic	185	10
Raw data	VO project files (EPA can request copies)	Mixed*	003/202	10/7
Existing data	VO project files (EPA can request copies)	Mixed*	003/202	10/7
ETV verification report and ETV verification statement	ETV director or designee for posting to web site	Electronic	258	Permanent
Annual report	EPA laboratory directors	Electronic	006	10
EPA center and ESTE project QA reviews and assessment reports	ETV/ESTE project files	Mixed*	185	10
VO internal QA document reviews and assessment reports	VO project files (EPA can request copies)	Mixed*	185	10
Independent ETV program reviews and assessment reports	ETV program files	Mixed*	185	10
Email/Memos related to programmatic activities**	Receiving Person	Electronic	006/127	5/10 for general correspondence

\*Mixed = Report/summary electronic, some supporting documents for the review and assessment may not be records.

\*\* The information contained or conveyed in an email or memo will determine whether it needs to be treated as a record. Not all emails or memos qualify as records.

implementation of joint recognition, are specified in each agreement. The VO must notify the EPA center project officer and ESTE project manager about any verification-related collaboration that the VO enters into with an outside party.



To directly accept funds through a contract with another organization, the VO needs to ensure that there is a clear delineation regarding which verification-related activities will be purchased using contract funds and which will be supported using cooperative agreements funds, as well as which organization retains ownership of the products. The VO must notify the EPA center project officer and ESTE project manager about any verification-related contracts entered into with an outside party. An MOA with the ETV Program may be required for a commitment involving a relatively high level of funding or broad scope of activities.

Policy Source - May 2001 Team Meeting, October 2003 Team Meeting

***1.1.14 VOs must protect ETV's interests (e.g., values, purpose, policy, and quality requirements) when they enter into partnerships and agreements with third-party organizations for ETV-related activities.***

Any ETV-related agreements made between a VO and a third-party organization, whether a contract or a partnership, must not compromise either the VO's agreement with the ETV Program or its ability to adhere to ETV's values (see Section 1.1.10), purpose, policy, and quality requirements. In particular, controls must be in place to ensure that these agreements will not result in the following: (1) ranking technologies or descriptively comparing their performance by the ETV center or ESTE project, (2) labeling or listing of technologies as acceptable or unacceptable by the ETV center or ESTE project, or (3) verification of technologies to directly determine whether they are a "best available technology." The VO must clearly identify any products (e.g., protocols, test/QA plans, and/or verification reports/statements) expected to result from these agreements.

Policy Source - October 2003 Team Meeting

## **1.2 Technology Coverage and Eligibility**

### ***1.2.1 ETV is a voluntary program.***

Technology vendor participation in the ETV Program is completely voluntary. Vendors of environmental technologies and other actors in the environmental marketplace are not required to participate in the program, nor are they required to seek verification. The program goal is to provide objective technology performance information to the environmental marketplace. Vendors who believe that such information would be of value to their marketing activities are encouraged to participate as appropriate.

Policy Source - Verification Strategy 1997, Report to Congress (Final Draft) 2002

### ***1.2.2 Participating technologies must be commercial-ready.***

The ETV Program serves the domestic and international marketplaces to encourage acceptance and implementation of innovative environmental technologies. Therefore, ETV focuses its resources on verification of environmental technologies that are either in, or ready for, full-scale commercialization. The ETV Program does *not* evaluate technologies in research and development.

Policy Source - Verification Strategy 1997, Report to Congress (Final Draft) 2002

### ***1.2.3 EPA project personnel must abide by the criminal conflicts of interest laws and the Standards of Ethical Conduct for Employees of the Executive Branch when verifying environmental technologies.***

EPA project personnel must abide by the criminal conflicts of interest laws and the Standards of Ethical Conduct for Employees of the Executive Branch. See 18 USC 208 and 5 CFR Part 2635, Subparts D and E. They cannot participate personally and substantially on any verification in which they, their spouses, or their dependent children may have a financial interest, unless they first seek advice from the NRMRL Deputy Ethics Official or the Office of General Counsel. EPA employees must also avoid the appearance of a lack of impartiality pursuant to 5 CFR Part 2635 Subpart E, so employees who have a personal or business relationship with an entity under review must request and receive an impartiality determination from the NRMRL Deputy Ethics Official pursuant to 5 C.F.R. 2635.502(d) before participation.

Policy Source - 18 USC 208 and 5 CFR Part 2635

### ***1.2.4 Program focus is primarily on private sector technologies.***

One of the purposes of the ETV Program is to accelerate the development and acceptance of improved environmental technologies through objective verification and reporting of technology performance. One way to accomplish this goal is to provide verification of technologies that have clear domestic and international market niches with a potential for substantial increases in technology sales and use. Increasing technology sales and use can best be accomplished by focusing on technologies developed by private sector companies, which, in comparison to government-developed technologies, are more likely to be bought and sold in the environmental marketplace. While government-developed technologies can be verified under ETV, the program's emphasis is clearly on the private sector.

Policy Source - Verification Strategy 1997

### ***1.2.5 EPA-developed technologies may be verified under the ETV Program in certain circumstances.***

Although program focus is primarily on private sector technologies, EPA-developed technologies may be verified under the ETV Program using EPA-directed contracts with verification organizations, similar to ESTE projects. As noted in Section 1.2.3, to avoid the perception of a potential conflict of interest or a lack of impartiality, EPA project personnel involved in verifying EPA-developed technologies must request and receive an impartiality determination from the NRMRL or NERL Deputy Ethics Official pursuant to 5 C.F.R. 2635.502(d) before participation. The factors that the Deputy Ethics Official may take into consideration include the nature of the relationship involved; the effect that resolution of the matter will have upon the financial interests of the person involved in the relationship; the nature and importance of the employee's role in the matter, including the extent to which the

employee is called upon to exercise discretion in the matter; the sensitivity of the matter; the difficulty in reassigning the matter to another employee; and adjustments that may be made in the employee's duties that would reduce or eliminate the likelihood that a reasonable person would question the employee's impartiality. Verification statements and reports should clearly identify the technology as an EPA-developed technology and note that the EPA project officer that directed the verification received an impartiality determination from the EPA NRMRL or NERL Deputy Ethics Official.

Policy Source - May 2007 Team Meeting

### ***1.2.6 Technologies that are linked to services can be verified under the ETV Program in certain circumstances.***

In general, verification testing is limited to technologies (hardware and software) and does not include services or technologies that are closely linked to services, since technology performance is often linked to the staff performance. Centers and ESTE projects may, in certain circumstances, choose to verify a technology that is linked to services, such as wetlands control, when the design criteria, standards, etc., are so well defined that staff input will not cause significant variations in performance.

Policy Source - May 2001 Team Meeting, May 2007 Team Meeting

### ***1.2.7 Technologies owned or marketed by non-U.S. developers are eligible for verification.***

All vendors may participate in the ETV Program, including those located outside the U.S. Foreign vendors who have their technologies verified in the U.S. may be eligible to receive verification at the same cost as U.S. vendors in a specific technology category if there is a clearly identified U.S. market for their technology and the verification results would be beneficial to environmental technology purchasers and decision-makers in the U.S.

In general, if a vendor requests that verification be conducted at test sites outside of the U.S., EPA ETV funds should not be used to cover any additional costs incurred by using the chosen test site, as noted in Section 2.7.10. The decision to test at a site outside of the U.S. will be made by the VO based on the cost-effectiveness of the testing location, the expected environmental benefits of the technology, and whether verification outside the U.S. will increase the relevance or utility of the data.

Policy Source - May 2001 Team Meeting, October 2003 Team Meeting, 2007 November Partner Call

## Section 2 - ETV Process Policies

Policies in this section are organized according to the main steps of the ETV process, as initially presented in the *ETV Program Verification Strategy* (EPA 1997) and updated thereafter.

### 2.1 Solicitation and Selection of the VO

#### ***2.1.1 Public and private VOs participate in the verification process.***

In developing the ETV centers, ETV leveraged the capacity, expertise, and existing facilities of others through agreements with public and private organizations to achieve coverage for a broad array of technology types as rapidly as possible. With the development of the ESTE portion of the program, ETV has been able to further expand into a number of high-priority Agency areas. Each center and ESTE project has a third-party VO. EPA provides technical input to these organizations and audits testing to confirm the credibility of the process and data. The selection process for VOs is delineated in Section 4.0 of the *ETV QMP*.

Policy Source - Verification Strategy 1997, ETV QMP 2007

#### ***2.1.2 VOs, their subcontractors, and cooperators involved in the collection of verification data, must comply with the ETV QMP.***

Section 2.4 of the *ETV QMP* details the quality expectations for technologies and services under the program. VOs and their subcontractors must comply with these expectations and other quality systems described in the *ETV QMP*, as allowed for under their agreements or contracts with EPA.

Policy Source - ETV QMP 2007

#### ***2.1.3 Center-specific and ESTE project-specific QMPs must be reviewed and approved by EPA.***

Each ETV center and ESTE project is required under their agreement or contract with EPA to develop a QMP or, in the case of ESTE, a joint QMP/test/QA plan<sup>2</sup> specific to their center or project which describes the quality management system that will be followed to assure that verification testing and evaluation efforts carry the appropriate level of quality assurance to meet the needs of the users of the performance information. This document is developed by the VO and should be consistent with the *ETV QMP*. The center and ESTE QMPs are reviewed and approved by the EPA center project officer or ESTE

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<sup>2</sup> Consistency with the ETV QMP can also be established by referencing existing data quality system documentation.

project manager at the outset of the operation, with review and input from the EPA quality manager. They are also reviewed annually during the review of the *ETV QMP* and revised as needed. Where ETV ESTE activities are conducted via contracts outside the ETV centers, but by a VO that manages an ETV center, the VO does not have to prepare another QMP specifically for the ESTE project as long as the VO is able to address any differences that may be introduced (e.g., by using a different extramural mechanism) through an addendum to the QMP or within an ESTE joint QMP/test/QA plan.

Policy Source - ETV QMP 2007, October 2003 Team Meeting, May 2007 Team Meeting

## **2.2 Formation and Maintenance of Stakeholder Groups**

### ***2.2.1 Stakeholder groups have balanced membership and represent customer groups.***

Stakeholder groups are composed of representatives of national and international groups expected to use the information developed from the testing of technologies within that technology area. In general, stakeholders include representatives of appropriate ETV “customers” from both national and international perspectives. The program defines ETV customers as buyers and users of environmental technology, technology developers and vendors, and technology “enablers,” such as:

- the consulting and engineering community that recommends technology alternatives to purchasers
- federal, state and local government permitting/regulatory agencies
- first responder and disaster planning agencies
- environmental public interest groups
- other verification programs
- marketers
- financial and insurer communities
- Congress.

Stakeholder responsibilities may include helping to develop generic verification protocols, assisting in setting priorities for the types of technologies to be verified, reviewing project-specific procedures and selected ETV verification reports emerging from the ETV center or ESTE project, assisting in the definition and conduct of outreach activities for the technology area and customer groups, and serving as information conduits to the particular constituencies that each member represents.

Policy Source - Verification Strategy 1997, ETV QMP 2007

### ***2.2.2 Regular and publicly announced and open stakeholder meetings are held.***

Under the ETV Program the primary purpose of the stakeholder groups is to seek a diversity of opinions based on the members’ expertise and the interests of the groups they represent. In general, the role of the stakeholders in the ETV Program is to help set priorities for the types of technologies to be verified, assist in developing technology testing procedures and verifications protocols, review project-specific procedures and selected ETV verification reports emerging from the ETV center or ESTE project, help in defining and conducting outreach activities for the technology area and serve as information conduits to the particular constituencies that they represent. Stakeholder groups report directly to the respective VOs. They do not report directly to the Federal government. These groups generally meet no less than once a year, either in person or via teleconferences or videoconferences. Meetings are publicly announced and open, and participants, whether formal members of the group or not, are considered important contributors. Stakeholders typically maintain continued communications between meetings via e-mail or by participating in conference calls or task groups.

Policy Source - 1996 Team Meeting, November 1997 Workshop, January 2004 Team Call

## **2.3 Setting Technology Priorities**

### ***2.3.1 Stakeholder groups provide input for setting technology priorities.***

Because it is not feasible to address all technologies that vendors may want to have performance-verified, priorities must be established. The stakeholder groups assist ETV in this important function by representing the marketplace for a given group of environmental technologies in terms of need and feasibility. Although numerous differences in the prioritization process exist from one technology market to another, in general, three criteria for selection are considered. First, there must be a legitimate environmental need for the technology. Second, there must be at least one commercial-ready technology available for testing. Third, verification protocols must be available or capable of being developed within a reasonable time and cost range to make the verification activity feasible within the constraints of ETV funding.

Policy Source - October 1998 Team Meeting

### ***2.3.2 Technology/outcomes profiles should be developed by the VO when the technology category is prioritized for verification.***

Technology/outcomes profiles summarize basic information about a technology category that has been prioritized or verified, including a short description of the technology category, background on the associated environmental/health/regulatory issues, projected outcomes, etc. Technology/outcomes profiles should be developed by the VO using ETV's online database when the technology category is prioritized for verification. These profiles are used to promote ongoing activities and serve as a starting point for developing technology briefs once verifications have been completed (see Section 2.10.3).

Policy Source - May 2007 Team Meeting

## **2.4 Development of Generic Verification Protocols**

### ***2.4.1 Generic verification protocols and/or test/QA plans are developed for each ETV center and ESTE project.***

Each ETV center and ESTE project will typically develop a generic verification protocol and/or test/QA plan(s) for use in conducting verifications in each technology category. The generic verification protocols and/or test/QA plans should be developed with sufficient detail so that ETV or other testing organizations could duplicate the test and obtain similar results. The generic verification protocols and/or test/QA plans are publicly available on the ETV Web site and, in some cases, the VO's Web site, as noted in Section 2.10.2.

Generic verification protocols provide verification testing guidance for a particular technology category, but *not* for a specific technology, specific test facility or site, or specific test event. They are meant to promote uniform testing by the VO and provide a framework for developing the more detailed test/QA plan. The generic verification protocol should be broad enough to guide testing of different technologies falling into the technology category, yet detailed enough to be usable by a third party to guide similar testing efforts on technologies in the category. The specific content and level of detail in generic verification protocols may vary among centers or projects.

Test/QA plans provide detailed instructions for the verification testing of a single technology, or a group of technologies in the same test group, during a specific test event. The test/QA plan is specific as to the technologies to be tested, timing (i.e., includes a schedule), and place (i.e., identifies the exact test facility or site). It must be detailed and specific enough to allow a third-party to reproduce the testing results. A separate, pre-approved test/QA plan is developed and used for each verification test. A test/QA plan may be developed specific to a technology type and test facility, and an addendum later added for each specific technology tested.

Policy Source - Verification Strategy 1997, ETV QMP 2007, April 1999 Team Meeting, Review of Implementation of Quality Management in the ETV Program 2000, October 2003 Team Meeting

#### ***2.4.2 Generic verification protocols and test/QA plans undergo a specific preparation process.***

In general, generic verification protocols and test/QA plans are developed in the following manner after a technology or technology category is selected for verification.

- a. Per the original ETV model, a generic verification protocol (i.e., nonproduct-specific) is first developed for each technology category to be tested by the VO, followed by development of a specific test/QA plan (based on the generic verification protocol) for each item or group of items to be verified in a given test “event.” Draft generic verification protocols and specific test/QA plans are developed through whatever process the individual VOs, EPA center project officers, ESTE project managers, VOs, and stakeholders deem appropriate, efficient, and fair. These may include, but are not limited to, expert in-house or consultant development, technical panel formation and development, vendor design followed by stakeholder review, or any combination of the above. Stakeholder groups and participating vendors are given the opportunity to comment on draft generic verification protocols and test/QA plans, regardless of how they are developed.

[Note: In some cases, the experimental design within a generic verification protocol or test/QA plan may be specific to a matrix/contaminant, rather than a specific technology category, since many types of technologies may be used to address a specific situation. For example, the document may be specific to the verification of technologies capable of analyzing metals in soil, rather than the verification of x-ray fluorescence instruments. Also, in some cases, test/QA plans may be developed first. Generic verification protocols are then developed from the test/QA plans following technology testing. This is often the case in situations where only one technology in a technology category participates in the first round of testing.]

- b. Draft specific test/QA plans contain the experimental approach to be used to verify different technology performance factors. This includes not only the technical and analytical parameters, but also the operation, maintenance, labor, energy, and/or cost factors *if these are to be included in the ETV verification report/statement.*
- c. Vendors participating in ETV verification tests are given the draft verification test/QA plan prior to participation and afforded an opportunity to comment on the document. The verification test/QA plan may also be reviewed by a peer reviewer, preferably the same one that will be reviewing the verification reports. This will help to familiarize the reviewer with the test event and address and resolve any issues that the reviewer might have with the experimental design.
- d. Verification test/QA plans are placed on the ETV Web site and, in some cases, the VO’s Web site, as noted in Sections 2.4.3 and 2.10.6
- e. It is expected that test procedures may be modified during the course of testing; some only in small ways, others may be modified substantially. Appropriate notes will be kept on these changes and they will be documented in the verification report.

- f. Following the completion of tests, VOs and EPA managers may modify the verification test/QA plan and/or the generic verification protocol, based on the experience gained during the test and will remove the technology- and event-specific elements (i.e., make it more generic). The revised documents will be reviewed by the ETV program director, VO quality managers, and EPA quality managers and will be placed on the ETV Web site as the final test/QA plan and/or generic verification protocol for an individual technology category, as noted in Section 2.4.3. [Note: Protocols are not developed for every technology category.]
- g. Subsequent tests of technologies in the category will be conducted in a manner consistent with these generic verification protocols to the fullest extent possible. Generic verification protocols may, in some cases, be updated over time, and new specific test/QA plans will be produced for each new test event.

Policy Source - April 1999 Team Meeting, ETV QMP 2007

### ***2.4.3 The test/QA plan and associated protocol shall be posted on the ETV Web site for each verified technology.***

The final test/QA plan and protocol used to verify a technology must be posted on the ETV Web site and, in some cases, the VO's Web site, as noted in Section 2.10.6. Ideally, these documents should be posted at the start of testing and then replaced with a final version that has been revised to reflect modifications that occurred during the course of testing (see Section 2.4.2, items e and f). If the test/QA plan or protocol is updated at a later date (e.g., for a second round of verifications), both the original copy of the test/QA plan or protocol and the updated test/QA plan or protocol should be posted on the ETV Web site, so that they are available to readers interested in a particular round of verifications. Since some ETV centers and ESTE projects develop generic verification protocols only after some testing has occurred, not every technology will have both a test/QA plan and a generic verification protocol posted.

Policy Source - May 2001 Team Meeting, 2007 November Partner Call

### ***2.4.4 ETV centers and projects shall employ a structured data quality planning process.***

ETV centers and ESTE projects are encouraged to employ a structured data quality planning process such as the Agency's Data Quality Objectives (DQO) (EPA QA/G-4) process to develop generic verification protocols and test/QA plans, as noted in Section 1.1, Part B of the ETV QMP. As part of the DQO process, ETV centers and ESTE projects will develop decision rules to aid in resolving testing issues, such as sampling program designs. Consistent use of a systematic data quality planning process ensures that future verification tests are designed to reflect the inherent variability in technology performance. ETV centers and projects should include a detailed description of their DQO process in their test/QA plans and brief discussion of the process in each verification report.

Policy Source - May 2000 Science Advisory Board Review of ETV Program, May 2001 Team Meeting, ETV QMP 2007

### ***2.4.5 Generic verification protocols and test/QA plans developed for international use or under the lead of an outside VO do not need to follow the ETV process.***



A number of countries have developed verification programs since the ETV Program was started in 1995. ETV program and center staff has been investigating ways to work more effectively with these programs. In addition to raising the international relevance of ETV's efforts, a more collaborative relationship could reduce or eliminate duplicative efforts and allow ETV and other verification programs to leverage their resources and skills to meet shared environmental goals in: drinking water treatment, greenhouse gas reduction, water quality protection, site characterization/risk assessment, compliance monitoring, pollution prevention and waste treatment, and waste tracking. The co-development of mutually acceptable verification protocols and test/QA plans has been identified as a collaborative activity that the different ETV programs could potentially pursue. Given the emerging nature of this activity, ETV anticipates that the joint generic verification protocols or test/QA plans may not necessarily be developed per the "typical" ETV process, particularly if they are developed under the lead of a foreign verification program. Per Section 1.1.14, however, ETV interests must be protected and maintained during this process.

Policy Source – May 2007 Team Meeting

## **2.5 Solicitation of Technology Vendors**

### ***2.5.1 Solicitation is open and is advertised widely.***

The solicitation of vendors for participation in the ETV Program is open to all vendors of commercial-ready environmental technologies in a given category of interest. At a minimum, each ETV center and ESTE project shall open the solicitation process to all vendors by advertising plans for verification testing of particular technology types on the ETV Web site, and via ETVoice, ETV's monthly listserv. VOs should announce verification testing on their Web sites and invite vendor participation using letters and contacts to trade journals, associations and individual companies. VOs pursuing funding for verification via agreements with other organizations must openly solicit for vendors as part of proposal development or post-award.

Policy Source - Verification Strategy 1997, November 1997 Team Meeting, October 2003 Team Meeting, 2007 November Partner Call

## **2.6 Development of Specific Test/QA Plans**

As noted previously, test/QA plans are documents providing detailed instructions for the verification testing of a single technology, or a group of technologies in the same test group, during a specific test event. The test/QA plan is specific to the technologies to be tested, timing (i.e., includes a schedule), and place (i.e., identifies the exact test facility or site). Although sometimes based on an existing generic verification protocol, these documents are often developed before the protocol. A pre-approved test/QA plan must also be used during verification testing. Additional policies regarding the development and use of test/QA plans can be found in Sections 2.4.1 through 2.4.5 of this Policy Compendium.

## **2.7 Technology Testing and Evaluation**

### ***2.7.1 Verification testing data are made publicly available.***

After testing occurs, the data are generally reviewed by ETV center or ESTE project staff and validated data sets are then given to each participating vendor by the VO. The results and supporting data

will be publicly reported in a verification report and statement, as noted in Section 2.9. The report and statement will be posted on the ETV Web site and, in some cases, the VO's Web site, as noted in Section 2.10.2. In some cases, VOs may release preliminary data sets that have not been reviewed by EPA, as discussed in Section 2.9.12.

Policy Source - November 1997 Team Meeting, April 1998 Team Meeting, May 2001 Team Meeting, May 2007 Team Meeting

### ***2.7.2 Vendors must submit requests to designate information as proprietary at the time of agreement to test.***

It is the stated purpose of ETV to publish objective data on technology performance following a technology evaluation. In general, all data developed through the program are considered public information, since they are developed under agreements or contracts with EPA. Information submitted to ETV in support of verification activities is designated as proprietary only if a written request is made in advance of the submittal and at the time of agreement to test, as stipulated by the standard EPA policy on proprietary information found in Chapter 8 of the *Information Security Information Resources Management Policy Manual* (2100A16). This document addresses the establishment of a comprehensive, Agency-wide security program to safeguard Agency information resources, including the management of confidential business information, as defined below:

Confidential Business Information (CBI) includes trade secrets, proprietary, commercial, financial, and other information that is afforded protection from disclosure under certain circumstances as described in statutes administered by the Agency. Business information is entitled to confidential treatment if: (1) business asserts a confidentiality claim; (2) business shows it has taken its own measures to protect the information; (3) the information is not publicly available; or (4) disclosure is not required by statute and the disclosure would either cause competitive harm or impair the Agency's ability to obtain necessary information in the future.

EPA and its contractors and grantees must adhere to all Agency and organizational information security policies, standards, and procedures pertaining to CBI. It is solely the responsibility of the vendor to make a request to designate information as proprietary, and no post-testing requests are allowed. The data generated during testing cannot be considered proprietary, as they were collected, in part, through the use of public funds or in-kind support.

Policy Source - November 1997 Team Meeting, Information Security Information Resources Management Policy Manual (2100A16)

### ***2.7.3 Existing data may be used in verifications under specific conditions.***

Although existing vendor-generated data are valuable, these data are not often acceptable for verification purposes and should, in most cases, only be used to augment data generated during ETV testing. With that said, in some cases existing data may be used to supplement or replace verification testing. The rationale and process for using existing data to fully or partly replace verification testing are contained in *Appendix C: Environmental Technology Verification Program Existing Data: Policy and Process* of the *ETV QMP* (EPA 2007).

Policy Source - July 1997 Team Meeting, November 1997 Team Meeting, ETV QMP 2007

### ***2.7.4 "Partial" verification tests must not be intentionally performed.***

Verification tests must fully address all of the critical measurements/objectives identified in the test/QA plan or its accompanying generic verification protocol (per the requirements in the test/QA plan). “Partial” verifications which purposely address only some of the critical performance factors must not be performed, unless the protocol or test/QA plan clearly states that vendors or centers may decide to test a technology under a subset of applicable critical and secondary factors and/or specific conditions/sites, or existing data are available that can be used to supplement/replace testing.

Policy Source – January 2004 Team Call

### ***2.7.5 Vendors must pay for any re-testing of technologies.***

Vendors will pay for all of the costs for re-testing a technology after testing is completed. For example, if a technology does not perform up to the vendor’s expectations in the initial verification testing or is subsequently modified, the vendor would be required to pay for any re-testing of the technology. The ETV VOs can decline to re-test a technology that has already been verified if the vendor seeking retesting is unable to demonstrate that modifications have been made to the technology that could change the technology’s performance, based on an analysis performed by the VO, EPA and/or stakeholders. In either case, the results of the first test will be published in a verification report and possibly a verification statement.

Policy Source - April 1998 Team Meeting, May 2007 Team Meeting

### ***2.7.6 Vendors may withdraw from the ETV Program before testing begins.***

Vendors may withdraw from the ETV Program before testing begins or if unexpected circumstances (e.g., broken and irreparable equipment) prevent the completion of verification testing. After testing is completed, the ETV Program will make the results and data publicly available in a verification report and statement, as discussed in Section 2.7.1. However, the vendor may choose not to have a verification statement issued. If verification testing cannot be completed due to unexpected circumstances, the EPA center project officer or EPA ESTE project manager and VO will jointly determine if enough data have been collected to warrant the development of a verification report.

Policy Source - November 1997 Team Meeting, May 2001 Team Meeting, May 2007 Team Meeting

### ***2.7.7 ETV centers and ESTE projects must obtain approval from EPA Office of International Affairs (OIA) for verification testing in a foreign country.***

ETV centers or ESTE projects that conduct verification testing at sites outside the U.S. or subsidize verification testing performed by foreign VOs must obtain approval from EPA OIA before verification testing is performed. Ideally, OIA approval of these activities should be included in the original assistance agreement or contract between EPA and the VO. Alternatively, the EPA center project officer or EPA ESTE project manager can obtain written approval from OIA after an assistance agreement or contract has been awarded. International travel expenses related to the verification must also be approved by OIA either within the original agreement or in writing from OIA after the award and attached to the original agreement or contract (see Section 2.7.9). This requirement also applies to contractors, consultants, and other assistance recipients working under the agreement.

Policy Source - 2007 November Partner Call, EPA Order 4540.1

***2.7.8 ETV centers and ESTE projects must obtain approval from EPA OIA when purchasing services from foreign contractors or subsidizing verification activities performed by foreign VOs.***

ETV centers or ESTE projects must obtain approval from EPA OIA when using federal government funds (EPA or other federal funds) to purchase contractor services from foreign firms to conduct verification testing at sites located in foreign countries or to subsidize verification activities performed by foreign VOs. As noted in Section 2.7.7 of this Policy Compendium, prior approval should be obtained from OIA before the assistance agreement or contract between EPA and the VO is awarded. Alternatively, the EPA center project officer or EPA ESTE project manager can obtain written approval from OIA after the agreement or contract has been awarded. If an ETV center or ESTE project uses a U.S.-based contractor to conduct verification testing in a foreign country and no funds are transferred to a foreign firm, approval from OIA is still necessary.

Policy Source - 2007 November Partner Call, EPA Order 4540.1

***2.7.9 ETV centers and ESTE projects must obtain approval from EPA OIA when EPA and/or the VOs (including their contractors) travel to foreign countries to represent ETV at a meeting.***

ETV centers and ESTE projects must obtain approval from EPA OIA for any proposed foreign travel by EPA and/or VOs to meetings, conferences, or symposia to represent ETV.

In general, initial approval should be obtained from OIA before an assistance agreement or contract is awarded, preferably during an OIA review of the agreement or contract. The agreement or contract should specify which countries will be visited as part of the agreement or contract.

Initial approval may also be obtained after a contract or agreement is awarded. The EPA center project officer and EPA ESTE project manager will be responsible for specifying in writing which countries will be visited as part of the agreement or contract. This information will be attached to a copy of the agreement or contract and sent to the appropriate OIA representative. OIA will, in turn, notify and request approval from appropriate non-EPA departments. To ensure enough time is allocated, the request for approval to travel internationally under a specific agreement or contract should be sent to ETV's OIA representative at least 20 days before travel is scheduled to take place.

Cooperators or contractors with initial approval to travel internationally under an agreement or contract will need to obtain final approval from OIA each time they travel internationally. The EPA center project officer or EPA ESTE project manager will need to submit the request for final approval to OIA within 10 business days of departure. The request should identify who is traveling, when and why they are traveling, and under which agreement or contract travel is to occur. It should also note that initial approval to travel to the country in question has already been obtained under the agreement or contract.

Policy Source - EPA Order 4540.1, Input Provided by the OIA Representative Assigned to ETV, January 2004 Team Call

***2.7.10 When verification testing is conducted at a test site outside the U.S., EPA ETV funds should not be used to cover the additional costs incurred by using this test site.***

If a vendor requests that verification be conducted at test sites outside of the U.S., EPA ETV funds should not be used to cover the additional costs incurred by using the chosen test site. These costs include developing the test/QA plan, conducting testing and QA, and travel and related expenses. The

decision to test at a site outside of the U.S. will be made based on the cost-effectiveness of the testing location, the expected environmental benefits of the technology, and whether verification outside the US will increase the relevance or utility of the data.

Policy Source - May 2001 Team Meeting, October 2003 Team Meeting, 2007 November Partner Call

## **2.8 Data Package Approval/QA Evaluation**

### ***2.8.1 VOs are responsible for the maintenance of “raw data.”***

In keeping with standard EPA practice, VOs must retain all data, notebooks, logs, lab results, chains of custody, and records on each ETV test per schedule 003 (for cooperative agreements) or schedule 202 (for contracts). When the retention period for records ends, the VO will decide on what to do with these records. The EPA project officer may request these records or certain part of the records be transferred to EPA for further retention. But the final responsibility for the fate of these raw data would still be decided by the VO unless the agreements or contracts specify otherwise. The raw data do not become EPA records unless they are requested by and given to the EPA.

Policy Source - ETV QMP 2007 , US EPA Directive 2160 - Records Management Manual 1984

### ***2.8.2 Technical systems audits will be performed by the VO and EPA.***

A technical systems audit (TSA) is a qualitative onsite evaluation of the sampling and measurement systems used during a verification test. The objective of the TSA is to assess and document acceptability of all facilities, maintenance, calibration procedures, reporting requirements, sampling and analytical activities, and quality control procedures. An approved test/QA plan provides the basis for the TSA. Each VO will conduct its own TSAs based on the frequency outlined in the center QMP, ESTE project QMP, and the *ETV QMP*, but no less than once per verification test. Independent TSAs should also be conducted by the EPA quality manager, or designee as applicable, but at least once per year or as determined by the EPA quality manager. Section 9.1 of the *ETV QMP* discusses TSA reporting requirements and frequencies.

Policy Source - ETV QMP 2007

### ***2.8.3 Audits of data quality are primarily conducted by the VO, although EPA will periodically conduct independent audits.***

An audit of data quality (ADQ) is used to determine whether the data quality indicator goals specified in the test/QA plan has been met. During these assessments, at least 10 percent of all of the verification data that have already been 100 percent verified by the project personnel will be traced from original recording through transferring, calculating, summarizing, and reporting. [Note: “10 percent of all of the data” means a random selection of data from each of the measured parameters.] Independent ADQs will also be conducted by the EPA quality managers, or their designee as applicable. Section 9.1 of the *ETV QMP* discusses ADQ reporting requirements and frequencies.

Policy Source - ETV QMP 2007

### ***2.8.4 Performance evaluation audits are conducted by EPA and the VO.***

A performance evaluation audit (PEA) is a quantitative evaluation of a measurement system. PEAs are conducted by the VO for each test (if a test is capable of being quantitatively audited) to determine the bias of the total measurement system(s). The EPA quality manager will perform independent PEAs once per year if appropriate. As part of a PEA, a reference material of known value or composition is usually measured and/or analyzed, as outlined in the test/QA plan. Section 9.1 of the *ETV QMP* discusses PEA reporting requirements and frequencies.

Policy Source - ETV QMP 2007

## **2.9 Development of Verification Statements and Reports**

### ***2.9.1 Verification statements follow strict formatting guidelines.***

Each verification statement shall be included in the associated verification report on the first page after the report cover. The verification statement shall contain the information presented in the sample box below in the same format. Except for the addition of footnotes and endnotes explaining a change, etc. (see Section 2.9.8), the information in this box is the only information that can be changed in a verification statement following its issuance. This information can be updated as needed to ensure that customers of the verification information have access to the most recent contact information.

<b>TECHNOLOGY TYPE:</b>	<b>WIDGET</b>	
<b>APPLICATION:</b>	<b>ADVANCED REMOTE WIDGETING</b>	
<b>TECHNOLOGY NAME:</b>	<b>WIDGET - 2000 - A</b>	
<b>COMPANY:</b>	<b>USA Widget, Inc.</b>	
<b>ADDRESS:</b>	<b>1999 Main Street</b>	<b>PHONE: (000) 555-2000</b>
	<b>Somewhere, USA 00001</b>	<b>FAX: (000) 555-2001</b>
<b>WEBSITE:</b>	<b><a href="http://www.usawidget.com">http://www.usawidget.com</a></b>	
<b>EMAIL:</b>	<b><a href="mailto:widget@usawidget.com">widget@usawidget.com</a></b>	

**Figure 1. Sample of information to be included in each verification statement**

Policy Source - May 2001 Team Meeting

### ***2.9.2 ETV verification reports are published to provide data and summaries of an individual technology's performance.***

The ETV Program verification reports and statements describe the performance of a technology (for a specific test period). Although similar technologies are sometimes tested using the same or very similar test/QA plans, the ETV Program does *not* provide narrative side-by-side comparisons of

technology performance. The responsibility for comparing technology performance rests with the end user/customer of the data. Verification statements and reports do not interpret data or draw conclusions about performance or make recommendations; they only provide results.

Policy Source – April 1998 Team Meeting, May 2007 Team Meeting

### ***2.9.3 The verification statement requires EPA and VO representative signatures.***

Each verification statement will include the signatures of the NRMRL laboratory director and the appropriate VO representative. (Verification statements for technologies completed prior to this policy may include only the appropriate EPA signature.) Technology tests conducted with the substantial support of other organizations (in excess of 30 percent of the cost of verification including in-kind) may place their signature in a separate signature block for major contributors and/or place their logo on the document. Since readers may question why the organization's logo is on the cover, the organization's contribution(s) should also be recognized in the body of the report.

Policy Source - April 1998 Team Meeting, October 2003 Team Meeting, May 2007 Team Meeting

### ***2.9.4 The VO has primary responsibility for preparing the verification report.***

In general, it is the responsibility of the VO to complete verification reports and manage the peer review process using subject matter experts that are external to both EPA and the VO. [Note: Stakeholders may serve as subject matter experts.] The VO should also develop and implement procedures designed to expedite the report writing and peer review process, such as access to either in-house or contracted staff responsible for the technical development and editing of the reports. To the fullest extent possible, the reports should be developed simultaneously with the testing effort, and review of all "boilerplate" language should be completed in advance to allow for a more efficient report writing process. Thus, only the results section of the report should need to be produced after testing is completed.

Policy Source - November 1997 Team Meeting

### ***2.9.5 EPA has specific review requirements for verification statements and reports.***

Each verification test results in one or more verification reports(s) and verification statement(s). The VO manager is responsible for coordinating their development. These two documents, including revisions, shall be reviewed by qualified personnel for conformance with technical requirements and quality system requirements and approved for release by authorized personnel. Specifically, verification statements should be reviewed by the EPA center project officer or the EPA ESTE project manager, the EPA quality manager, the VO quality manager, the vendor, the ETV program director, and an EPA reviewer external to the ETV Program. Verification statements are considered final when signed by the NRMRL laboratory director. Verification reports should be reviewed by the EPA quality manager, the VO quality manager, and the vendor, and should be reviewed and approved by the EPA center project officer or EPA ESTE project manager (see Part B, Section 5.2 of the *ETV QMP*).

Policy Source - ETV QMP 2007, October 2003 Team Meeting

### ***2.9.6 Cooperative agreements and contracts should include specific requirements for publishing documents, such as verification statements and reports.***

Sections 5.1 and 5.2 of the *ETV QMP* describe in detail the procedures for reviewing, approving, distributing, and storing ETV documents. These procedures should be included in the publishing requirements specified in cooperative agreements, contracts, and other agreements between ETV centers or ESTE projects and other organizations, between EPA and VOs, and between VOs and their contractors. Newer agreements between EPA and VOs shall require that any documents forwarded by the VO for posting on the ETV Web site comply with the provisions of Section 508 of the Rehabilitation Act (29 U.S. C. Part d), the Accessibility Standard (36 CFR 1194), and the FAR Final Rule (FAR Part 39).

Policy Source - ETV QMP 2007, May 2007 Team Meeting

### ***2.9.7 In general, the verification report and statement are valid for an unspecified period of time.***

A verification report is issued for each technology tested under the ETV Program. Verification statements are also issued for technologies that have been tested under the ETV Program, unless the vendor requests that the statement not be issued. Each report and statement provides a performance summary for the specific technology tested. In general, no time limit is included in the verification report or statement. However, in certain instances, the verification report and statement may indicate a termination date or condition for making them invalid when adopted as a part of a protocol or test/QA plan. Vendors must notify the VO of any changes to a verified technology that affects its performance and thus warrants the termination of the verification report or statement. Although the ETV Program has no legal right to require re-testing of a vendor's technology, the ETV Program reserves the right to announce when it believes a verification report or statement no longer represents the technology that is being marketed.

Policy Source - April 1998 Team Meeting, May 2007 Team Meeting

### ***2.9.8 If the ownership or name of a verified technology changes, the verification statement, report, and ETV logo may still be used for the technology as long as the technology performance and design have not changed.***

Companies with performance-verified technologies may be acquired by other companies, change their company name, or change the name of a performance-verified technology. As long as the technology remains the same and is not changed, the new company, company with a name change, or company with a product name change may continue to use the verification statement, report, and ETV name and logo in accordance with ETV Program guidelines. The company will need to contact the VO in writing to request the company or technology name change. The written request will need to describe why a name change is being requested (e.g., a change in ownership) and state whether there have been any design or performance changes since the technology was originally verified. The VO will review the vendor's written request, as well as any documentation that may be provided, to determine whether the technology changed in any way since verification. If deemed necessary, a more in-depth analysis may be performed by the VO to confirm that the technology has not changed. The vendor will be responsible for paying for this analysis.

Once the VO is satisfied that no changes have been made to the technology, the VO can update the verification statement (and report, if applicable) to reflect the change(s). The VO shall update the



ownership and contact information in the box on the first page of the verification statement (new company or technology name, phone number, Web site, etc.) as appropriate (see section 2.9.1 for example). A footnote documenting the relevant changes should be added. For example, “This verification statement (and report) was originally written for the XYZ Company which has been purchased by the ABC Company. Widget Z is the new product name for the technology originally verified as Widget Y. The verification statement was revised on mm/dd/yyyy (insert date) to reflect this change.” Other information, such as “the XYZ Company has moved from Ontario to Pittsburgh,” may also be included in the footnote. Since the information is changed only on the cover of the verification statement, a footnote or endnote should be included stating “These changes have been made only to the cover of the document. The remainder of the document refers to the product and company name which were applicable when the technology was originally verified.” Information can also be added to the footnotes identifying the level of analysis used by the VO to assess whether a change occurred (e.g., reviewed a letter provided by the vendor). Once the VO has made the revisions to the verification statement (and report, if applicable), the new company, company with a name change, or company with a verified technology name change may continue to use the ETV verification report and statement and, subsequently, the ETV name and logo in accordance with the guidelines specified in the *U.S. EPA Environmental Technology Verification Program (ETV) Guidelines for Proper Use of the ETV Name and Logo*.

Policy Source - May 2001 Team Meeting, October 2003 Team Meeting, May 2007 Team Meeting, U.S. EPA Environmental Technology Verification Program (ETV) Guidelines for Proper Use of the ETV Name and Logo, Draft January 2008

### ***2.9.9 When the same technology is tested under separate test events or conditions, a single verification report and statement should be produced, assuming this allows the program to provide verification results in a timely and efficient manner.***

Some technologies may be tested during separate test events or conditions, either at different facilities or using different performance criteria. Since a single verification statement or report is often the more efficient way to present and also understand verification results, centers and ESTE projects need to carefully determine whether to generate more than one verification statement or report for the same technology. For example, if the tests were performed contemporaneously (or close to it) and the results from the different test events can be efficiently and effectively combined in a single document without significantly delaying its release, then only one verification report and statement should be produced. If the technology was verified at multiple locations (usually with different collaborators, applications, and/or scales) and a significant amount of time elapsed between these test events, then separate verification reports and statements may be more appropriate. The ultimate goal is to provide ETV customers with verified technology performance information in a timely and efficient manner. If more than one verification statement and report is produced, then successive verification reports should reference all previous reports.

Policy Source - May 2001 Team Meeting, January 2004 Team Call

### ***2.9.10 “Partial” verification reports must not be generated.***

All of the critical measurements/objectives identified in the test/QA plan or its accompanying generic verification protocol must be fully addressed (per the requirements in the test/QA plan) for a verification report or statement to be developed. “Partial” verifications which intentionally address only some of the critical performance factors must not be performed, as noted in Section 2.7.4.

If problems are encountered that prevent a center or ESTE project from fully verifying the performance of a technology under all the different test conditions or locations defined in the test/QA plan, the VO (with EPA and stakeholder input) may re-evaluate whether enough data have been or will be

collected to generate a verification statement or report that could prove useful to a technology decision-maker, albeit on a smaller number of conditions or locations than originally targeted. If the VO and EPA decide that a verification report and statement can be developed which evaluates all the critical objectives, but not under all the scenarios or locations originally targeted in the test/QA plan, this decision must be discussed in the verification report and a modification to the test/QA plan or protocol may be warranted. In certain, very limited circumstances, usually due to a significant delay in completing the second, third, etc., phase of testing specified in the test/QA plan, a verification statement or report may be developed containing the initial test results, as per Section 2.9.12.

Policy Source - January 2004 Team Call, 2007 November Partner Call

### ***2.9.11 Verification statements and reports should be finalized within three to six months from the completion of testing.***

Verification reports and statements should be finalized within three months of the end of testing and must be finalized within six months of testing completion. In general, no more than nine months to one year should elapse between the signing of the vendor agreements and the submittal of the draft final report by the VO to the EPA center project officer or EPA ESTE project manager for signature, assuming that testing takes less than three months.

Policy Source - January 2004 Team Call

### ***2.9.12 Preliminary data reports may be released by the VO if qualified appropriately.***

In certain circumstance, VOs may release short reports that contain verification results that have not been reviewed by the EPA quality manager, but have been reviewed and approved by the VO quality manager. In addition to clearly stating that these reports are not products of the ETV Program and have not been reviewed by EPA, these reports must contain the following disclaimer:

“The results and conclusions presented in this report have not been reviewed by the EPA quality manager for the ETV (insert the name of the center or ESTE project). The results in this report have been reviewed, however, by the ETV (insert name of VO) quality manager for the (insert name of the center or ESTE project) and approved for release.”

The report should also note that the results presented in the report are not final and are, therefore, subject to change, since they have not been reviewed by the EPA quality manager. The report should also note that the final data set will be summarized in the upcoming verification report and statement.

Policy Source – May 2007 Team Meeting

## **2.10 Information Diffusion**

### ***2.10.1 Vendors must agree to abide by the guidelines for use of the ETV name, logo, and verification information, or verifications may be revoked.***

Any use of the ETV name [Environmental Technology Verification Program (ETV)], logo, or verification data must be in compliance with the *U.S. EPA Environmental Technology Verification Program (ETV) Guidelines for Proper Use of the ETV Name and Logo*. VO agreements with vendors must require that vendors agree to follow the ETV name and logo use guidance. The agreements must state that the VO reserves the right to revoke verification in cases of inaccurate statements or logo use.

Vendors of technologies that have completed the ETV verification process may use the ETV name and logo to advertise the availability of performance data verified by ETV. Under no circumstances shall the ETV name or logo be used in a manner that would imply EPA endorsement, approval, certification, guarantee, or warranty of the company, its products, its technologies, or its services.

Organizations that misuse the ETV name or logo will be contacted in writing or by telephone to correct the error(s). Failure by a developer/vendor or their representative(s) (e.g., licensed distributor, foreign subsidiary, contractor, advertisement agency, etc.) to make the required correction(s) may result in removal of the developer's/vendor's verification report and statement from the ETV Web Site and revocation of the verification report and statement. In the event of revocation of a verification report and statement, ETV verification organizations may also send out an announcement stating that the verification has been revoked. If a developers/vendor's verification report and statement are revoked by EPA, any and all permission for use of the ETV name and logo by that developer/vendor and their representative(s) is also revoked.

Policy Source – U.S. EPA Environmental Technology Verification Program (ETV) Guidelines for Proper Use of the ETV Name and Logo, Draft January 2008

### ***2.10.2 Key ETV Program outputs are placed on the ETV Web site.***

The goal of the ETV Web site ([www.epa.gov/etv](http://www.epa.gov/etv)) is to ensure that the most up-to-date information about all parts of the program is available to the interested. If achieved, this will facilitate access to information for all customers, provide better communication among ETV Team members and VOs, and provide a current, accurate account of ETV technologies and activities. As new cooperative agreements are being competed and awarded, VOs are increasingly posting program outputs on their organizations' web sites.

Policy Source - October 1998 Team Meeting, October 2003 Team Meeting

### ***2.10.3 Technology briefs should be developed by the VO shortly after the completion of the verification statement and report.***

Technology briefs are used to document ETV activities in a specific area (e.g., green buildings) or for a specific technology category. In general, they include a short description of a technology category(ies), a summary of the verification activities to date, including verification results for completed verifications, and background information on the environmental, human health, and regulatory drivers for technology use. Although summary tables may be included that identify a technology or vendor by name, technology briefs should not contain narrative comparisons of technology performance. Whenever possible, technology briefs should be developed by the VO shortly after the completion of the verification statement and report.

Policy Source - May 2007 Team Meeting

### ***2.10.4 The EPA center project officers and EPA ESTE project managers are responsible for providing Web-ready versions of the final verification reports and statements to the ETV coordination staff.***

As soon as the verification report and statement are completed for a technology, the EPA center project officer or EPA ESTE project manager is responsible for clearing these documents and providing Web-

ready electronic versions of the verification report and statement to the ETV director or designee in the ETV coordination staff. VOs and project officers with agreements that require compliance with Section 508 of the Rehabilitation Act, the Accessibility Standard, and the FAR Final Rule shall also ensure that the statements and reports are 508-compliant. In addition to \*.pdf file(s), the EPA center project officer or EPA ESTE project manager should forward copies of the original source file(s). All files should be provided to the ETV director or designee within one week of EPA approval. ETV coordination staff will promptly forward these documents to the EPA Web master to be placed on the ETV Web site.

Policy Source - May 2001 Team Meeting, May 2007 Team Meeting

### ***2.10.5 Documents under active review will not be posted on the ETV Web site.***

The primary purpose of the ETV Program Web site is information diffusion to purchasers, permittees, regulators, vendors, and the general public. Therefore, documents under active review should not be posted on the Web site.

Policy Source - May 2001 Team Meeting

### ***2.10.6 Final verification protocols and test/QA plans will be posted on the ETV Web site.***

The primary purpose of the ETV Program Web site is information diffusion to purchasers, permittees, regulators, vendors, and the general public. Therefore, final verification protocols and test/QA plans (i.e., those ready for use in testing) should be posted on the ETV Web site and, in some cases, the VO's Web site, as noted in Section 2.10.2. The EPA center project officers and ESTE project managers are responsible for providing web-ready electronic versions of these documents to ETV coordination staff for posting, per the requirements outlined for verification reports and statements in Section 2.10.4.

Policy Source - May 2001 Team Meeting, May 2007 Team Meeting

### ***2.10.7 ETV centers and ESTE projects will provide ETV stands and disks to vendors who have a verified technology under the ETV Program.***

An "ETV Participant" stand will be provided by the ETV center or ESTE project to a vendor once a vendor agreement has been signed and upon receiving full payment for testing as applicable. An ETV disk will be provided by the appropriate ETV center or ESTE project to vendors once their technology has completed verification under the program, typically at the same time they receive the completed verification report and statement. The ETV stand and disk can be used by vendors at conferences and other meetings where they are displaying the technology or information about the technology that ETV has verified. The ETV stand and disk can be affixed to a booth or table or to the technology itself if it is being displayed. The ETV centers and ESTE projects will provide a letter to each vendor detailing the purpose and proper use of the ETV Disk. The purpose and proper use of the ETV stand and disk are detailed in *U.S. EPA Environmental Technology Verification Program (ETV) Guidelines for Proper Use of the ETV Name and Logo*.

Policy Source - May 2001 Team Meeting, U.S. EPA Environmental Technology Verification Program (ETV) Guidelines for Proper Use of the ETV Name and Logo, Draft January 2008

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