How to Develop a Heavy-Duty Diesel Technology Verification Program

A Guide for Trainers

SmartWay®
U.S. ENVIRONMENTAL PROTECTION AGENCY

CONTENTS

FOREWORD

Freight transportation is critical to businesses, consumers, and the economy worldwide, but it comes with an impact on the planet's environment. In response, freight shippers, carriers, and their customers in many countries and regions are implementing programs to better manage their greenhouse gas and other emissions.

One part of this international green freight movement is the SmartWay Transport Partnership, initiated by the U.S. Environmental Protection Agency (EPA) in 2004. Operating in the United States and now Canada, SmartWay is a joint government-industry partnership aimed at reducing emissions and improving fuel efficiency in the freight industry. The partnership provides freight shippers, carriers, and logistics companies with tools to report, benchmark, and improve fuel efficiency; save money; and track progress while earning public recognition for their achievements.

In 2014, EPA issued *How to Develop a Green Freight Program: A Comprehensive Guide and Resource Manual*, along with an accompanying training guide and PowerPoint presentation. These documents provide the information, lessons learned, and best practices to help government agencies, nongovernmental organizations, and other entities create and implement their own green freight programs modeled on SmartWay.
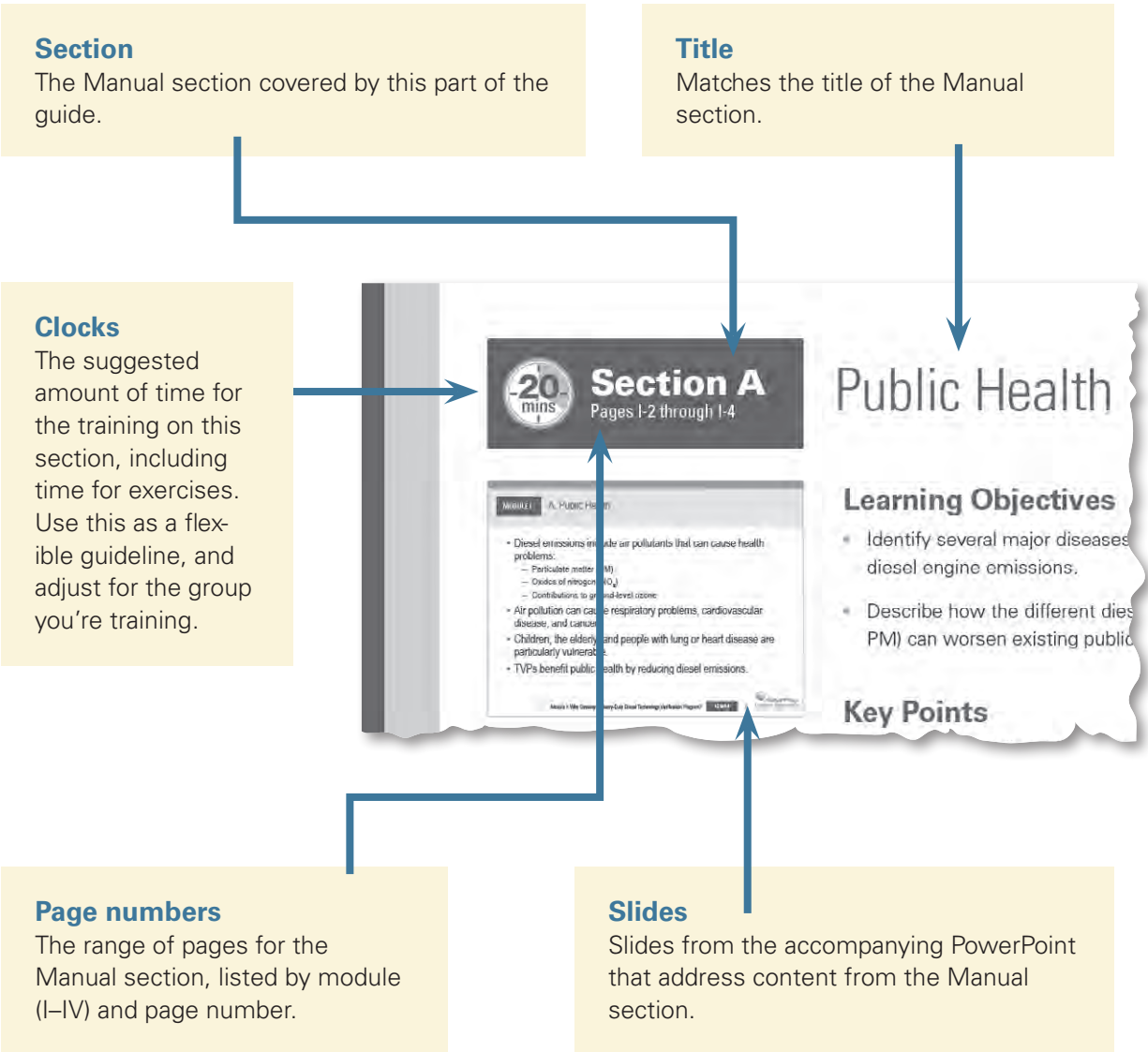
In 2016, EPA issued an additional resource, *How to Develop a Heavy-Duty Diesel Technology Verification Program : A Comprehensive Resource Manual*, with accompanying PowerPoint slides—and this guide for trainers, which is designed to help train policymakers and others interested in developing and implementing a technology verification program. Through learning objectives and key points, it provides a roadmap for conveying information from the technology verification Manual.

For guidance on preparing and delivering effective training sessions, consult EPA's *Guidance for Trainers: Preparing and Conducting an Effective Training Session*. Visit our website at https://www.epa.gov/smartway/modeling-global-programs-after-smartway.

HOW TO USE THIS GUIDE

The material presented in this guide, including the orientation, is designed to be presented over a day and a half (or 12 workshop hours).

Make sure to review the *How to Develop a Heavy-Duty Diesel Technology Verification Program: A Comprehensive Resource Manual* carefully before conducting your training—the better you know the Manual's contents, the more useful the training will be. The course of training follows those contents. Each section in this guide corresponds to one in the Manual, with graphics to help you navigate:
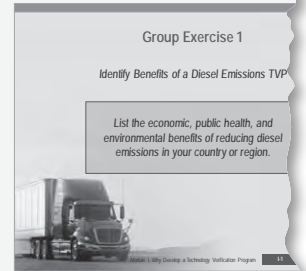
Section
The Manual section covered by this part of the guide.

Title
Matches the title of the Manual section.

Clocks
The suggested amount of time for the training on this section, including time for exercises. Use this as a flexible guideline, and adjust for the group you're training.

Page numbers
The range of pages for the Manual section, listed by module (I–IV) and page number.

Slides
Slides from the accompanying PowerPoint that address content from the Manual section.

GROUP EXERCISE 1

Identify Benefits of a Diesel Emissions TVP

- Form two teams by dividing the room in half.

- Members of Team A, consulting among themselves, should list economic, public health, and environmental challenges and issues for the freight industry, writing them on a flipchart as they describe each one aloud. (The trainer might want to prompt this team, as Team listens to their deliberations.)

- For each challenge or issue identified, members of Team B can describe how a TVP

Group Exercise 1

Identify Benefits of a Diesel Emissions TVP

List the economic, public health, and environmental benefits of reducing diesel emissions in your country or region.

ORIENTATION

Orientation to Training

SECTIONS

30 mins   Suggested time for this module

⏱ 10 mins Introductions and Housekeeping

Learning Objectives

- Feel welcome and acknowledged by the host institution and trainer.

- Be familiar with the schedule for the day.

- Know important logistic and housekeeping details.

Key Points

- Introduce yourself and others present. Ask participants to introduce themselves one by one.

- Establish ground rules for participation.

- Conduct an icebreaker if time permits.

- Go over important logistics, such as emergency exit procedures, facility locations, and the schedule for breaks.

⏱ Training Overview

Learning Objectives

- Understand the broad goals of the training and what participants will accomplish by attending.

- Have a general sense for why freight is important and how it impacts the global environment.

- Understand the value of impartial and accurate information about diesel emission reduction and fuel efficiency technologies to help stakeholders make purchasing decisions.

- Understand key program design elements of EPA's technology verification programs (TVPs).

Key Points

- Give participants a big picture perspective on the importance of green freight and TVPs.

  » The freight sector is critical to businesses, consumers, and the world economy, and it is responsible for local and global environmental impacts.

  » The freight industry benefits from reliable and unbiased information on emission reduction and fuel-efficient technologies.

  » Manufacturers benefit from having a "level playing field."

  » Fleet owners and operators benefit by being able to make informed decisions on technology purchases.

- Successful programs need not be structured exactly like SmartWay. But shared elements, such as technology verification requirements and procedures, will help those stakeholders who are active internationally.

ORIENTATION — Goals for This Training

- Learn about:
  - Diesel emissions reductions technologies and strategies.
  - How to set up and launch a technology verification program (TVP).
  - Resources to initiate and grow a successful TVP.
- Successful programs do not need to be exactly like SmartWay!

Orientation

MODULE I

Why Develop a Heavy-Duty Diesel Technology Verification Program?

SECTIONS

Suggested time for this module

Public Health

Learning Objectives

- Identify several major diseases aggravated or caused by diesel engine emissions.

- Describe how the different diesel engine pollutants (e.g., particulate matter, or PM) can worsen existing public health problems.

Key Points

- Combustion of diesel fuel directly releases both harmful and general pollutants, but chemical reactions in the air can produce additional pollution that threatens human health.

  » Direct emissions of concern include oxides of nitrogen (NO_X) and some PM.

  » Secondary pollutants created by chemical reaction include additional PM and ground-level ozone.

- Diesel emissions are inhaled by people and contribute to several health problems.

  » PM, NO_X, and ozone can all worsen respiratory diseases, such as asthma, bronchitis, and emphysema.

  » Cardiovascular disease can be aggravated by ultra-fine PM, which can pass between the lungs and the bloodstream.

  » Lung cancer has been linked to PM by the World Health Organization (WHO).

- The most vulnerable populations include children, the elderly, people with lung or heart disease, and those living in low-income communities near sources of diesel emissions.

Summing Up

- Briefly review the different types of pollutants of concern and how they form.

- Summarize how health conditions are affected by NO_x, PM, and ozone.

The Environment

Learning Objectives

- Describe the global and local environmental impacts of diesel emissions and the freight industry.

- Identify specific environmental concerns related to the impacts of diesel emissions that are relevant to the local country or region.

Key Points

- Diesel emissions of NO_X, PM, and greenhouse gases (GHGs) negatively affect the environment.

- NO_X causes significant ecosystem issues, damaging soils, water, vegetation, and wildlife.

- GHGs (such as carbon dioxide, methane, and nitrogen dioxide) trap heat, influence climate change, and change weather patterns.

  » New technologies that decrease fuel consumption can impact the scale and severity of these changes.

- Black carbon (BC) is a component of PM that results from the combustion of fossil fuels. BC absorbs sunlight and reduces the reflectivity of snow and ice.

  » Its emissions have a global warming potential 680 times higher than carbon dioxide.

  » Older, less efficient engines and high-sulfur diesel fuels are significant sources of BC.

Summing Up

- Review global and local environmental issues impacted by diesel emissions.

- Prompt participants to discuss environmental issues specific to the local country or region that may be related to diesel emissions.

20 mins

Objective Performance

Learning Objective

- Describe how having reliable, unbiased, and objective information on technological claims will impact the freight industry.

Key Points

- A TVP evaluates manufacturers claims and can strengthen their credibility.

- Without a TVP, manufacturers may make unqualified claims on unproven technologies, frequently offering anecdotal evidence.

  » This can be misleading and result in costly, misinformed purchases.

- TVPs apply rigorous scientific and unbiased testing to assess technologies and their lifetime performance.

- Once approved, technologies are placed on a list that provides the freight industry with objective measurements and information.

Evaluation

Summing Up

- Briefly review the factors that constitute an effective TVP:

    » Standardized, scientific testing procedures

    » Unbiased third-party researchers

    » Laboratory and field-testing measures

- Encourage participants to share specific examples and anecdotes on how the availability of a verified technologies list could affect the decision-making process of industry stakeholders.

Economic Benefits

Learning Objectives

• Explain the way in which a TVP influences manufacturers', carriers', and shippers' economic decision-making.

• Identify potential economic impacts of a technology verification system.

Key Points

• An effective program encourages technological advances and innovations, as each technology's effectiveness is clearly assessed.

• TVPs and green freight programs encourage carriers to use advanced technologies, as shippers preferentially hire carriers who demonstrate efficiencies and emission reductions.

• TVPs provide information resources to freight stakeholders, who may be engaged in global programs that require emissions accounting and carbon footprint reporting.

• Participants who take advantage of these programs can benefit from improved public relations.

• Greater efficiencies can better insulate carriers and shippers from economic fluctuations and other dynamic risks.

GROUP EXERCISE 1

Identify Benefits of a Diesel Emissions TVP

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- Members of Team A, consulting among themselves, should list economic, public health, and environmental challenges and issues for the freight industry, writing them on a flipchart as they describe each one aloud. (The trainer might want to prompt this team, as Team B listens to their deliberations.)

- For each challenge or issue identified, members of Team B can describe how a TVP might help address those problems.

Group Exercise 1

Identify Benefits of a Diesel Emissions TVP

List the economic, public health, and environmental benefits of reducing diesel emissions in your country or region.

Module I: Why Develop a Heavy-Duty Diesel Technology Verification Program? I-7

Summing Up

- Briefly review how TVPs deliver economic benefits and innovation throughout the freight industry.

- Summarize participants' input on how a TVP would impact economic, public health, and environmental issues specific to the local country or region.

Host Agency Benefits and

- TVPs aggregate valuable data on emissions reductions and technologies.
  - Make it easier to track program benefits.
  - Provide a deeper understanding of technology performance.
  - Constitute valuable input for regulators.
- TVPs provide opportunities to engage freight industry and others in a common pursuit.

Module I: Why Develop a Heavy-Duty Diesel Technology Verification Program?   I-7   10   SmartWay

Learning Objectives

- Explain how a TVP is an important component of a comprehensive, pragmatic, and responsive green freight program.

- Describe how a TVP that engages stakeholders will contribute to a healthier, cleaner, and more innovative freight industry.

Key Points

- Incorporating industry input when developing a TVP can strengthen relationships among government agencies and manufacturers.

- An effective TVP provides both stakeholders and regulators a more transparent system to quantify and verify emissions reductions.

- A TVP can play a role in helping regulators and the industry prepare for and comply with increasingly stringent air quality and emissions regulations.

- A well-instituted TVP will provide industry stakeholders with more innovative technologies, lower investment risks, fewer emissions and higher efficiencies, and opportunities to earn public recognition.

Industry Engagement

Summing Up

- Recap the important role a TVP can play in further promoting the goals of both host agencies and industry stakeholders.

- Stimulate a discussion for participants to volunteer their ideas on how a TVP can facilitate a relationship between industry and regulators.

Getting Started

SECTIONS

2 HRS   Suggested time for this module

Assessing Air Pollution

Learning Objectives

- Identify what information is most vital for deciding which technology types will be the most beneficial to the local country or region.

- Explain the key local or regional environmental, public health, and emissions issues that the TVP will need to address.

Key Points

- Given limited resources, the first step in program design should be understanding the emissions sources that are most pressing in the local region, then focusing on how a TVP can help mitigate them.

- Developing and using a detailed emissions inventory will enable TVP administrators to make the most effective decisions when choosing technologies to focus on.

- Emissions inventories, combined with air quality monitoring networks, pinpoint the specific pollutants and air quality issues.

- Environmental agencies often maintain local or regional air quality monitoring networks and databases. They can help:

  » Provide insight on the most pressing air quality issues.

  » Offer suggestions on the appropriate scale and scope for your TVP.

- Carefully consider the many factors influencing overall air pollution and the fleet's characteristics, including engine and vehicle types, operating conditions, fleet age, idling times, road conditions, and shipper and carrier business models.

and Fleet Characteristics

GROUP EXERCISE 2

Identify Sources of Emissions Inventory Data

- Ask participants to take out a blank sheet of paper. Give the group five minutes to work independently to write down data sources and means to access them on their sheet.

- Ask participants to call out their responses one-by-one while you create a list on a large white board, black board, or poster.

- Facilitate a discussion around ranking the ideas from best/easiest-to-access sources to unlikely/most-difficult-to-access sources. Ask participants to think creatively about how they might find alternate sources if none are readily available.
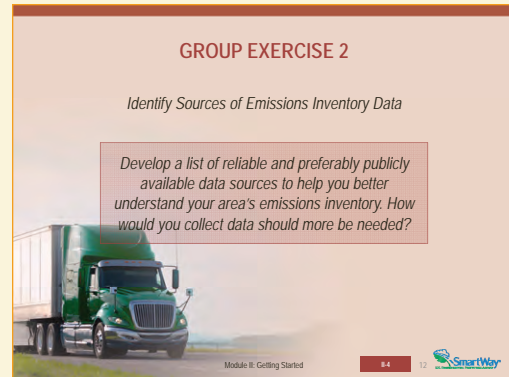
Summing Up

- Summarize the key stakeholder agencies and data sources.

- Emphasize the importance of a comprehensive and detailed understanding of environmental and public health issues in the local region. Understanding how those issues relate to transportation sources will help guide the design and implementation of an effective TVP.

Technologies, Regulations,

Learning Objectives

- Identify and categorize emissions reduction technologies by strategy.

- Understand how local or national regulations may affect the adoption of verified technologies.

- Identify elements of other successful TVPs that may can be easily adopted or borrowed.

Key Points

- There are many technologies and strategies that can become part of a new TVP:

    » Exhaust aftertreatment

    » Engine upgrades and retrofits

    » Fuel savings technologies

    » Fuel strategies

- Determine which are the best fit for the local environment. Be sure to review local regulations.

and Other Programs

GROUP EXERCISE 3

Identify Target Technologies

- Working with the list of potential data sources identified in the previous exercise, allocate the first half of the exercise to having the group refine this list.

  » First review the list, then discuss any information gaps that should be filled before an initial set of technologies is chosen.

- For the second half, discuss how a TVP might overcome those uncertainties and, with the information at hand, what technologies might be promising for the new program.

GROUP EXERCISE 3

Identify Target Technologies

What technologies are well-suited to the emissions challenges your area faces? Are there additional constraints that might preclude promising technologies from having a significant impact?

Module II: Getting Started   II-13   14

Summing Up

- Emissions reduction technologies are at the heart of a TVP. The choice of which ones to verify should be careful and strategic.

- Highlight the importance of focusing on the right technologies for TVPs to make the most significant impact.

Stakeholder Participation

Learning Objective

- Understand how involving a wide variety of stakeholders during the program design process will encourage industry approval and buy-in.
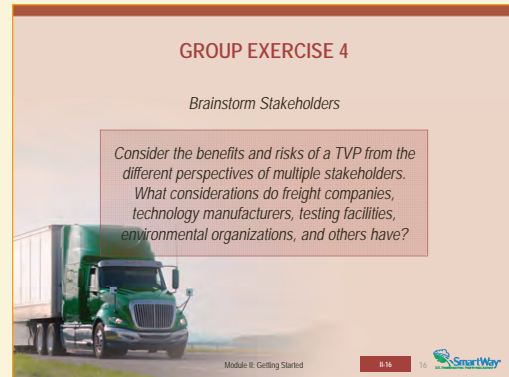
Key Points

- An effective TVP pushes the entire transportation industry toward cleaner and more efficient operations.

- Having multiple and diverse participants engaged in the program will result in a stronger and more resilient TVP.

GROUP EXERCISE 4

Brainstorm Stakeholders

- Break the group into teams of two to five and assign each group the role of stakeholders from the freight industry, manufacturing, testing facilities and labs, civil society, and academia.

- Have each team work together to write down its interest in advancing a local TVP.

- Ask one person from each group to present its perspective on and interest in technology verification.

- Leave some time at the end for everyone to come together and discuss the exercise. What was expected? What was surprising? Summarize the key takeaways for the group.

GROUP EXERCISE 4

Brainstorm Stakeholders

Consider the benefits and risks of a TVP from the different perspectives of multiple stakeholders. What considerations do freight companies, technology manufacturers, testing facilities, environmental organizations, and others have?

Module II: Getting Started

Summing Up

- Many stakeholders have an interest in TVPs. Engaging them early in the process will benefit the program.

- Review some of the interests and perspectives that participants brought up during their role play exercise.

MODULE III

Design Your Program

SECTIONS

4 HRS   Suggested time for this module

Performance Goals and

Learning Objectives

• Define simple TVP goals and potential strategies for achieving them.

• Recognize that a TVP requires continual monitoring, revisiting, and revising of goals.

• Understand the need for quantitative goals/metrics and baseline measurements for program administrators to accurately assess program performance.

Key Points

• In forming environmental and energy goals, consider the regional issues/priorities that are affected by the freight industry, such as air quality goals and GHG reductions.

  » Short-term and long-term objectives are both important.

  » Quantitative goals can be used to help track a program's progress over time.

  » Frame goals in a context that resonates for truckers, shippers, and fleet operators.

• Before deciding on which promising technologies the program should verify, consider:

  » The types of vehicles/engines primarily responsible for the emissions of concern.

  » The cost-effectiveness of each potential strategy, if possible.

  » The availability and costs associated with potential control strategies.

  » How shippers, logistics companies, and fleets use and view the technologies.

Technologies

- Participation targets/goals will help measure the program's progress in meeting its environmental/energy objectives. Structure participation goals to:

  » Target the number of fleets that adopt verified technologies.

  » Ascertain the number of vehicle retrofits/technology implementations.

  » Compare adaptation levels to baseline performance metrics.

- Establishing internal program goals and strategies will facilitate the program's effectiveness in reaching environmental, energy, and efficiency targets.

Summing Up

- Recap the importance of developing cohesive environmental/energy goals and promising technology strategies.

- Review examples of goals and strategies that participants provided during the group exercise.

- Revisit the importance of choosing metrics and developing baseline measurements to help track program progress.

Establish a Budget

Learning Objectives

• Determine initial TVP funding needs.

• Understand how funds may be allocated across program activities.

Key Points

• Other TVPs can offer experience and insights into funding needs for new programs.

• Creating a line-item budget is a useful way to figure out how to allocate limited funds.

• Emphasize to participants that the more organized they are about their program's funding needs up front, the better off they will be in terms of managing their budgets and programs. Suggest that they think about specific funding levels associated with startup costs, establishing and sustaining a technology verification process, general operating costs, and recruiting and outreach to arrive at a total program funding estimate.

Summing Up

- TVP administrators need not start from scratch when trying to figure out initial budgetary needs. Other TVPs can help.

- Emphasize that planning a budget requires a detailed look at different activities and will pay off in the long run.

Secure Funding

Learning Objectives

- Identify potential sources of funding for a TVP.

- Develop a plan for pursuing funding from a range of sources.

Key Points

- There is no one-size-fits-all approach to funding a TVP. Each program and region will require its own strategy.

- Funding can come from a range or combination of sources.

- Incorporating a grant program into a TVP, while requiring additional funds, has the potential to jumpstart the program and transform the local marketplace for verified technologies.

- As a first step, participants should understand that they should thoroughly research the range of funding sources and frame program benefits so that potential funders understand its value.

- They should also understand the value of involving stakeholders and building relationships in the fundraising process. Mention that if they do not have prior experience or skills in starting a program or raising funds, participants may want to consider retaining fundraising professionals.

Summing Up

- While securing funds is challenging, a TVP's chances of raising funds are highest when its administrators thoroughly understand the priorities and missions of funding agencies they are soliciting and when they frame the TVP in terms and benefits that resonate with funders.

- Some programs, notably SmartWay, had government support and also incorporated a grant program, which had a disproportionately large impact on verified technologies and served the program well.

Design Program Elements

Learning Objective

- Outline the key elements of a TVP's application and testing procedures.

Key Points

- Consider whether some established technologies (e.g., already approved by other TVPs) can automatically qualify for verification under the program.

- Set up performance-based standards to categorize the effectiveness of technologies verified under the program.

- Create an application for technology vendors seeking verification of their products.

- Verification testing is crucial to the success of any program. Develop minimum requirements and testing protocols, for accredited/independent facilities, that outline a verification process that includes laboratory, durability, and field/in use testing.

- Develop legal guidelines and policies regarding privacy and security to protect technology vendors' confidential business information (CBI).

Summing Up

- Participants should consider what type of testing programs are needed. They should think about which technologies will require testing under local operating conditions and which can be pre-qualified.

- Stress the importance of developing a comprehensive and secure application process.

- Emphasize that new TVPs can kickstart their program by approving pre-qualified technologies.

GROUP EXERCISE 6

Pre-Qualified Technologies

- Ask participants to navigate to EPA and California Air Resources Board (ARB) webpages that have summary tables of current verified technologies.

- Encourage participants to consider and debate what technologies operate more or less uniformly across different fleets and regions and may not require special performance testing for the local region.

- Come together as a group to create a list of technologies that participants identify as "low-hanging fruit" for verification.

Group Exercise 6

Pre-Qualified Technologies

List technologies that have been verified under other programs that may pre-qualify for your program.

Module III: Design Your Program   III-8   22   SmartWay

GROUP EXERCISE 7

Becoming Familiar with Vendor Applications

- Refer participants to the sample application from a hypothetical vendor found in Appendix B. It includes some errors and omissions.

- Give the group time to identify the problems with the application.

- Once the group has finished identifying the problems, ask them to make recommendations to the hypothetical vendor on how each can be fixed. Refer to the trainer's answer key that follows to make sure the group found all of the mistakes and omissions.

Group Exercise 7

Become Familiar with Vendor Applications

Identify potential problems in a sample vendor application and provide recommendations.

Module III: Design Your Program   III-13   23   SmartWay
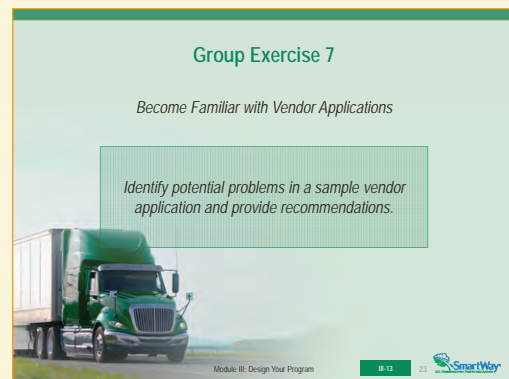
Sample Vendor Application Answer Key

Vendors interested in receiving verification for their technology from this agency must complete this form and email it to XXXX@ProgramX.gov with "Request for Verification" in the subject line. Our program administrator will confirm receipt by email and will contact you if additional information is needed.

Contact information:

Company name: _WhatTire Corp._

Contact person: _WhatTire Corp._ (individual's name needed instead of company name)

Work phone: _+44 555 123 4567_ (this phone number is not in the United States)

Cell phone: _____ (need cell phone number)

Email: _john.smith@whattire.com_

Mailing address: _5725 Whattire Dr_ (need city, state, and zip code)

Manufacturing facility address: _Shanghai, 201814_ (this is not a full address)

Product description:
(please provide specifics that include: product name, product ID/serial/part numbers, component manufacturer, and a short description of the product)

Product: Low Rolling Resistance Tires that minimize the energy wasted as a tire rolls, thereby decreasing required rolling effort and improving vehicle fuel efficiency. By using low resistance tires on all axles, a combination long-haul truck can reduce fuel consumption by 3% annually, resulting in hundreds of gallons of fuel saved per year while cutting carbon dioxide and other pollutant emissions.

(need product name, product ID, and component manufacturer)

Please describe the environmental benefit that your technology provides:

> (need description of the benefit of technology)

Additional information: (please answer with yes/no)

???	Are you seeking placement of your technology on Program X's Verified Technologies List? (need a yes/no answer)
Yes	Is this the first time you have submitted this product/technology for Program X verification?
	Does your product have regulatory requirements that supersede verification? (need a yes/no answer)
No	Are you currently pursuing verification with any other programs for this technology?
Don't Know	Is your product commercially available? (need a yes/no answer)
No	Is your product still in the research and development stage?
Maybe	Does your product have performance data that you can share? (need a yes/no answer)
No	Will your product carry any safety or health concerns?
	Can you provide training requirements for safe and effective operation of your technology? (need a yes/no answer)
1 year	Does your company offer a full warranty for this technology? (need a yes/no answer)

In signing below, you certify that all submitted information is accurate:

John   **7/28/2017**

Print Name   Signature   Date
(need full name)   (need signature)   (2017 is not a proper date)

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MODULE IV

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Launch Your Program

SECTIONS

🕑 **2 HRS**   Suggested time for this module

Program Infrastructure

Learning Objectives

- Identify the skillsets, backgrounds, and experience necessary in selecting employees to staff and develop a TVP.

- Recognize different stages of program development and understand how program growth will affect staffing needs.

Key Points

- During the initial development phase, staff should be selected for broad program management experience, familiarity with diesel technologies and testing protocols, and connections to both the manufacturers and end users of these technologies.

- As the TVP expands, consider adding staff with more depth of technical expertise in different emissions reduction strategies or staff members with air quality and public health regulatory experience.

- Because all elements of a TVP require outreach and ongoing support, experts with specialized experience in marketing and communications will be valuable.

GROUP EXERCISE 8

Stakeholder Role Play

- Select a participant to be a vendor and another to be a fleet manager. (If possible, select people who have no background or experience in these roles in real life.) Assign a third person to take notes. The rest of the group will be TVP representatives.

- Give the "vendor" and the "fleet manager" the relevant sets of questions from Appendix B's "Stakeholder Scripts" section.

- Ask the "vendor" and "fleet manager" to come to the front of the room and face the group. They should then begin their dialogue and question the "TVP representatives" while the note taker records main points and issues that are raised. Refer to the answer key (on the following pages) to assist participants as needed.

- After the role play ends, have the note taker review the points and issues that were raised and facilitate a discussion on what skills and knowledge were or would have been most helpful for the TVP staff to have.

Summing Up

- Emphasize the importance of hiring experienced program mangers early on to drive success and long-term stability of a TVP.

- Review the key skills that program designers and administrators should look for when building a capable team.

Stakeholder Scripts Answer Key

Sample Questions for Technology Vendors

1. **Who may apply to a technology verification program?**

   Any technology developer, manufacturer, or its authorized representative may apply.

2. **Why should I seek verification for my new technology?**

   Breaking into the market with innovations can be a significant challenge, since innovations by definition cannot show a successful track record. Without credible information about innovative technologies, potential purchasers are unsure whether to trust the claims made about the performance. As a result, manufacturers and vendors often face difficulties when marketing their innovative, potentially excellent technologies because of inaccurate assessments of their risks, benefits, and limitations. This in turn creates a disincentive to develop and innovate new technologies. The primary goal of this program is to provide independent and credible information on new technologies by verifying that performance claims put forward by technology developers and vendors are complete, fair, and based on reliable test results. The confirmed performance claim is presented in the form of a verification report, which the vendor or manufacturer can use in marketing and in building trustworthy business relationships with potential customers and investors.

3. **What technologies are good candidates for verification?**

   Any innovative fuel-saving or emission-reducing technology that is ready for market uptake, for which an independent validation of its performance will help build purchasers' trust and accelerate market penetration, is a good candidate.

4. **When is a technology ready for verification?**

   The technology can be verified once it is ready for commercialization or is already available to consumers.

5. **What is the verification process?**

   a. Requirements: New technologies meet the device eligibility requirements before vendors submit an application.

   b. Application: Applicants complete the form in its entirety.

   c. Device information: During the application process, applicants should begin preparing descriptions, engineering drawings, test data, and in-use testing data. Program X will contact applicants with instructions for submission.

   d. Testing: Testing consists of selecting a qualified test facility, developing a test plan, and working with Program X to ensure the quality of the testing. Please **do not** conduct verification testing without Program X approval.

e. Evaluation: Program X will review the verification test data. If the data are satisfactory, Program X will issue a verification letter and add the technology to the verified technologies list.

6. **How do I submit a technology for verification with your program?**
Visit our website at www.programx.gov and download an application form. Complete it and email it to the address provided. Additional instructions are provided on our website.

Sample Questions for Fleet Managers

1. **What are green products and services?**
Generally, a product may be considered "green" if it poses less harm to human health or the environment than other products that serve the same purpose.

2. **How do I learn more about available verified technologies?**
Visit Program X's website or websites of other TVPs, such as EPA's at www.epa.gov/smartway/learn-about-smartway-verified-technologies.

3. **Why should I use these technologies?**
Over the past decade, technological advancements have made unprecedented improvements in supply chain freight efficiency. Many fleets are adopting verified technologies because they deliver a rapid return on investment, saving fuel and reducing emissions for tractors, trailers, and locomotives. Verified technologies include aerodynamic devices, idling reduction equipment, and new and retread low rolling resistance tires.

4. **Does this program endorse specific products or companies?**
No.

5. **What are the most important things I consider when purchasing green products and services?**
Despite a manufacturer's or vendor's best intentions, not all claims that a product is green are meaningful or accurate. What makes a product green is complex. As a start, look for products and services verified as meeting standards or ecolabels that:

-   Cover the key impact areas for that product or service.
-   Were issued or supported by organizations widely respected and trusted.
-   Are managed by a legitimate TVP.

Branding

MODULE IV   B. Branding

- Develop program branding and outreach strategies *before* the program launches.
- Create a logo.
- Develop a mission statement.
- Incorporate brand elements consistently into outreach materials.

Module IV: Launch Your Program   IV-3 to IV-5   27   SmartWay

Learning Objectives

- Understand the importance of branding and its role in helping to distinguish vehicles or equipment that use verified technologies from those that don't.

Key Points

- Establishing and presenting a consistent brand is crucial for effective marketing and outreach campaigns.

  » A well-constructed brand should reflect the program's attributes, values, purposes, and strengths.

- The program logo should reflect the program's brand.

- All programs need at least some basic outreach materials.

GROUP EXERCISE 9

Create a Brand Platform

- For the first half of this exercise, split the participants into small discussion groups of three to four people. Instruct the groups to go through each question and brainstorm different answers. Encourage them to consider multiple answers and perspectives.

- During the second half of this exercise, go through each question with the entire group and call on each group to respond with the answers that they came up with.

  » Prompt them for their justifications or rationale, especially when groups come up with different answers.

Summing Up

- Review the importance of a strong brand in developing consistent marketing and outreach tools and approaches.

- Summarize the discussion from the exercise. Encourage participants to consider how their sample platform might function now and in the future, when goals and technologies may have changed.

Program Website

Learning Objectives

- Understand how a program website functions as a primary method by which industry stakeholders view, explore, and access the program.

- Decide which pieces of information are most critical for industry stakeholders to access and how the website should be organized to make the information available to them.

Key Points

- Websites serve as a repository for program information and a potential communications center.

- The TVP's most important pieces, and the ways in which stakeholders will interact with them, will influence the website's design.

Development

Summing Up

- Emphasize the critical importance of a well-functioning, well-maintained website to stakeholder engagement and program success.

- Program administrators will need to ultimately determine what roles the website will fill within the broader program.

If time permits, navigate to some TVP websites to show participants how various programs have chosen to organize information online.

Links to TVP Websites:

www.epa.gov/verified-diesel-tech/smartway-technology

www.arb.ca.gov/diesel/verdev/verdev.htm

www.vert-certification.eu

Outreach Activities

Learning Objectives

• Identify the target audiences who might participate in or would benefit from this program.

• Describe specific strategies for reaching different audiences and the benefits of marketing to multiple groups.

Key Points

• Each key target audience receives and consumes information in its own way. So each requires its own combination of outreach efforts.

• Become familiar with professional outreach strategies to reach and engage stakeholders. Plan to use the ones that are most effective in reaching target audiences.

• Public recognition from a program can incentivize participants to take action.

Summing Up

• Acknowledge that different audiences will need different outreach strategies. Public recognition is often a powerful motivator to get companies to participate.

• Highlight some of the key organizations and industry resources that may have information on who would be the best participants in a TVP and discuss how to access these resources.

GROUP EXERCISE 10

Communications Plan Basics

Ask the group to brainstorm these different elements and complete this matrix to establish the basic foundation of a communications plan. As ideas are mentioned, note them in the appropriate square.

Group Exercise 10

Communications Plan Basics

Define your target audiences, messages, dissemination approach, and frequency.

Target Audience	Primary Messages or Call to Action	Dissemination Mechanisms	Frequency
• Fleet managers	• Use the list to inform your equipment and retrofit purchasing decisions	• Publications read by fleet managers • Websites visited by fleet managers • Freight conferences • Direct contact	• Ad every quarter • Banner for six months • Annual • Two contact attempts

Managing Program Data

Learning Objectives

- Design and select the information and features necessary for a TVP database.

- Understand that constant maintenance of this database is critical to a program's effectiveness.

Key Points

- A well-constructed database is central to the operation of a TVP, in that it can:

  » Provide a publically accessible portal to the list of verified technologies and list of participating companies.

  » Safeguard internal (protected) program information such as contact information of program participants or CBI.

  » Track verification applications.

  » Calculate TVP benefits.

- The database will need to be maintained with content updates and adequate security and data recovery protocols.

- Before opening the program portal to applications and industry stakeholders, be sure the database is operational!

Summing Up

- Review the importance of a database for providing the information necessary for a functional TVP.

- Review how a database may take on diverse functions and applications for TVPs.

Encourage participants to clearly mark such information in any documentation provided as "CBI." It is essential that all CBI be protected from release to anyone other than the party that originally submitted it. Any requests for CBI should be routed to the owner/original submitter for response. Share these guidelines and policies with program participants.

Evaluate, Refine, and Expand

SECTIONS

1.5 HRS   Suggested time for this module

Evaluate Program

Learning Objectives

• Understand and describe the importance of conducting periodic evaluations of a TVP's performance.

• Identify key processes for conducting reviews that elicit meaningful results and feedback.

Key Points

• Reviewing key metrics (such as the number of verified technology installations and yearly/cumulative emissions reductions) will provide data-driven and quantitative feedback about progress toward program goals.

• TVP administrators should monitor and review overarching trends in the freight industry and align their program's vision and activities with them.

• Stay abreast of emerging technologies and position the program to provide information on the latest advances.

Performance

GROUP EXERCISE 11

Examine an Example Benefits Calculation

- Walk the group through the process of how someone might calculate the benefits a TVP delivers over the course of one year.

- Start by directing participants to the worksheet for Group Exercise 11, found in Appendix B of the Manual.

- Next, walk participants through the process for calculating annual emissions reductions by using the sample data provided and EPA's data found on its online Verified Technologies List for Clean Diesel. Discuss how to perform this calculation using local program data once they become available.

Group Exercise 11

Examine an Example Benefits Calculation

Conduct a sample annual emissions benefits calculation.

Summing Up

- Review how an annual/periodic program review will help identify areas for improvement.

- Review the example benefits calculation. Encourage participants to try the exercise on their own after the workshop ends, using different technologies, activity levels, and other assumptions. This will enable participants to explore how changing the focus of their TVP can help them address the different environmental and public health issues.

Collect Feedback

Learning Objectives

- Explain the importance of collecting feedback from different stakeholders on various program elements.

- Identify questions, topics, and issues that specific stake-holders may be able to speak to.
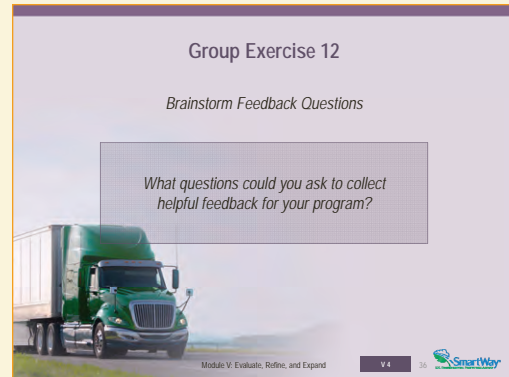
Key Points

- Collecting feedback should not be a one-time event. It should take place across multiple stages of the program's development and with a diverse group of stakeholders.

- Gathering feedback through different channels, tools, and techniques can help pinpoint different issues and bring more subtle problems to light.

GROUP EXERCISE 12

Brainstorm Feedback Questions

- Ask each participant to spend a few minutes thinking about questions to elicit feedback. Ask them to write down at least three.

- Reconvene as a group and ask participants to read their questions aloud. Write down the responses on a board.

- Facilitate discussion around the questions that arose most frequently and those that few mentioned. Allow for the exchange of ideas among participants.

Group Exercise 12

Brainstorm Feedback Questions

What questions could you ask to collect helpful feedback for your program?

Module V: Evaluate, Refine, and Expand

Summing Up

- Feedback is an important aspect by which program administrators can learn how effective the design and direction of their program is.

- Recap some of the feedback questions that come up during the group exercise. Emphasize how these questions could be used to target specific issues that new TVPs may encounter.

Make Interim Changes

Learning Objectives

- Recognize that some feedback may indicate a need for mid-course corrections or even a significant program overhaul to an already operating TVP.

- Identify some specific issues that may require adjustment, due to the dynamic nature of the freight industry.

Key Points

- Technology development is a continual process, so a TVP should be ready to add, drop, or investigate technologies as appropriate. A variety of factors exert influence on technology development.

- TVPs often add an extra step for manufacturers and vendors who want their technologies verified before taking them to market. Engaging with industry stakeholders and incorporating their feedback can help maintain their support for the program and these extra steps.

- If emissions targets are not being met, be prepared to review and refine the targets, strategies, and assumptions used to develop the program.

Summing Up

- Review the importance of updating and adjusting how the TVP is designed and implemented.

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