Phase 2 Heavy-Duty Greenhouse Gas (GHG) and Fuel Consumption Trailer Implementation Workshop

Industry/EPA/NHTSA
Ann Arbor, MI
November 16, 2016
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Key Dates

• Final rule signed August 16, 2016

• Final rule published October 25, 2016

• EPA’s trailer program begins January 1, 2018
  – January 1, 2019 for trailer manufacturers with <1,000 employees
  – NHTSA’s trailer program is voluntary until January 2021 when it aligns with EPA program

• Four stages of standards for new trailers
  – MYs 2018, 2021, 2024, 2027+
Key Web Sites

• EPA heavy-duty regulations page

• NHTSA regulations page

• Dockets: www.regulations.gov
  – EPA-HQ-OAR-2014-0827
  – NHTSA-2014-0132

• Federal Register: www.federalregister.gov
  – 81 FR 73478

• Regulations: www.ecfr.gov (updates expected by Jan 2017)
  – 40 CFR part 1037
  – 49 CFR part 523 and part 535
EPA-NHTSA Relationship

• EPA is the certification/compliance portal for both EPA and NHSTA compliance programs

•Submission to EPA is equivalent to submission to both
  – The agencies work closely behind the scenes on any issues that come up
  – Averaging credits (MY 2027+) would be managed by each agency separately

• NHTSA’s trailer program is optional until MY 2021
  – Manufacturers may voluntarily ask EPA to submit MY 2018-2020 data to NHSTA
TRAILERS IN PROGRAM
Excluded Vehicles

- 40 CFR 1037.5 (49 CFR 535.4)
  - (g) Non-box trailers other than flatbed trailers, tank trailers, and container chassis.
  - (h) Trailers meeting one or more of the following characteristics:
    - (1) Trailers with four or more axles and trailers less than 35 feet long with three axles (i.e., trailers intended for hauling very heavy loads).
    - (2) Trailers intended for temporary or permanent residence, office space, or other work space, such as campers, mobile homes, and carnival trailers.
    - (3) Trailers with a gap of at least 120 inches between adjacent axle centerlines. In the case of adjustable axle spacing, this refers to the closest possible axle positioning.
    - (4) Trailers built before January 1, 2018.
    - (5) Note that the definition of “trailer” in § 1037.801 excludes equipment that serves similar purposes but are not intended to be pulled by a tractor. This exclusion applies to such equipment whether or not they are known commercially as trailers. For example, any equipment pulled by a heavy-duty vehicle with a pintle hook or hitch instead of a fifth wheel does not qualify as a trailer under this part.
Trailer Definitions

• 40 CFR 1037.801 (49 CFR 523 and 571.3)
  – Trailer means a piece of equipment designed for carrying cargo and for being drawn by a tractor when coupled to the tractor’s fifth wheel. These trailers may be known commercially as semi-trailers or truck trailers. This definition excludes equipment that serve similar purposes but are not intended to be pulled by a tractor, whether or not they are known commercially as trailers.
    • Box vans are trailers with enclosed cargo space that is permanently attached to the chassis, with fixed sides, nose, and roof. Tank trailers are not box vans.
    • Box vans with self-contained HVAC systems are refrigerated vans. Note that this includes systems that provide cooling, heating, or both. All other box vans are dry vans.
    • Trailers that are not box vans are non-box trailers. Note that the standards for non-box trailers in this part 1037 apply only to flatbed trailers, tank trailers, and container chassis.
    • Box vans with length at or below 50.0 feet are short box vans. Other box vans are long box vans.

• Also see Preamble Section IV.C.1
Trailer Definitions (cont.)

- 40 CFR 1037.801 (49 CFR 535.4)
  - **Container chassis** means a trailer designed for carrying temporarily mounted shipping containers.
  - **Flatbed trailer** means a trailer designed to accommodate side-loading cargo onto a single, continuous load-bearing surface that runs from the rear of the trailer to at least the trailer’s kingpin. This includes trailers that use curtains, straps, or other devices to restrain or protect cargo while underway. It also may include similar trailers that have one or more side walls without completely enclosing the cargo space. For purposes of this definition, disregard any ramps, moveable platforms, or other rear-mounted equipment or devices designed to assist with loading the trailer.
  - **Tank trailer** means a trailer designed to transport liquids or gases

NOTES: The following types of equipment are not trailers for purposes of this part 1037:
- Top-loading dry bulk “vans”
- Containers that are not permanently mounted on chassis
- Dollies used to connect tandem trailers
- Expandable, gooseneck, drop deck or lowboy platform trailers
- Dry bulk tank trailers with hoppers
- Tank trailers if main purpose is for storage (frac tanks)

Also see Preamble Section IV.C.1
• 40 CFR 1037.107 (49 CFR 535.5(e))

• Manufacturers may optionally meet less stringent standards if their box vans have the following characteristics
  – “Partial-aero” if they have side or rear work-performing equipment (WPE)
  – “Non-aero” if they have both side and rear WPE

<table>
<thead>
<tr>
<th>Side WPE</th>
<th>Rear WPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side lift gate</td>
<td>Rear lift gate</td>
</tr>
<tr>
<td>Side-mounted pull-out platform</td>
<td>Rear hinged ramp</td>
</tr>
<tr>
<td>Steps for side-door access</td>
<td>Roll-up doors until model year 2024</td>
</tr>
<tr>
<td></td>
<td>(see interim provision § 1037.150)</td>
</tr>
<tr>
<td>Drop-deck design</td>
<td></td>
</tr>
<tr>
<td>Long belly boxes</td>
<td></td>
</tr>
</tbody>
</table>
WHAT IS MODEL YEAR?
• 40 CFR 1037.801 (49 CFR 535.4)
  – Model year means one of the following for compliance with this part 1037. Note that manufacturers may have other model year designations for the same vehicle for compliance with other requirements or for other purposes:

  • (1) For tractors and vocational vehicles …

  • (2) For trailers and for Phase 1 tractors and vocational vehicles with a date of manufacture before January 1, 2021, model year means the manufacturer’s annual new model production period, except as restricted under this definition and 40 CFR part 85, subpart X. It must include January 1 of the calendar year for which the model year is named, may not begin before January 2 of the previous calendar year, and it must end by December 31 of the named calendar year. The model year may be set to match the calendar year corresponding to the date of manufacture.
EPA program begins for regulated trailer types *manufactured* on or after January 1, 2018
- One year delay (to January 1, 2019) for trailer manufacturers that qualify as small businesses*
  - Fewer than 1000 employees (including affiliated companies)
  - Must notify EPA of your eligibility as a small business prior to 2018
- NHTSA program is optional until MY 2021
  - Manufacturers may voluntarily ask EPA to submit MY 2018-2020 data to NHTSA
  - EPA and NHTSA compliance programs align starting in MY 2021

After 2018, model year can be any one-year period surrounding January 1 of that year
- 40 CFR 1037.801 and 49 CFR 535.4
- For reporting purposes, EPA considers MY to end on Dec 31 of the named calendar year

Model year for EPA and NHTSA compliance is not required to align with model years used for marketing or other regulations and can align with calendar year

* The remainder of this workshop assumes everyone starts in 2018
STANDARDS
# EPA Standards for Trailers (40 CFR 1037.107)

## Subcategory

<table>
<thead>
<tr>
<th>MYs 2018-2020</th>
<th>MYs 2021+</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-Aero Box Vans</strong></td>
<td></td>
</tr>
<tr>
<td>Automatic tire inflation system (ATIS) or tire pressure monitoring system (TPMS) with wheels on all axles</td>
<td></td>
</tr>
<tr>
<td>Tire Rolling Resistance Level (TRRL) at or below 5.1 kg/tonne</td>
<td>TRRL at or below 4.7 kg/tonne</td>
</tr>
<tr>
<td><strong>Non-Box Trailers</strong></td>
<td></td>
</tr>
<tr>
<td>ATIS or TPMS with wheels on all axles</td>
<td></td>
</tr>
<tr>
<td>TRRL at or below 6.0 kg/tonne</td>
<td>TRRL at or below 5.1 kg/tonne</td>
</tr>
</tbody>
</table>

See trailer definitions on slides 8-10
TABLE 15—PHASE 2 FULL AERO BOX VAN FUEL CONSUMPTION STANDARDS

Table: Phase 2 Full Aero Box Van Fuel Consumption Standards

<table>
<thead>
<tr>
<th>Model years</th>
<th>Dry van</th>
<th>Refrigerated van</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Long</td>
<td>Short</td>
</tr>
<tr>
<td></td>
<td>Long</td>
<td>Short</td>
</tr>
<tr>
<td>Voluntary Standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018 to 2020</td>
<td>7.98625</td>
<td>12.31827</td>
</tr>
<tr>
<td></td>
<td>8.15324</td>
<td>12.68173</td>
</tr>
<tr>
<td>Mandatory Standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2021 to 2023</td>
<td>7.75049</td>
<td>12.15128</td>
</tr>
<tr>
<td></td>
<td>7.91749</td>
<td>12.52456</td>
</tr>
<tr>
<td>2024 to 2026</td>
<td>7.58350</td>
<td>11.87623</td>
</tr>
<tr>
<td></td>
<td>7.75049</td>
<td>12.24951</td>
</tr>
<tr>
<td>2027 and later</td>
<td>7.43615</td>
<td>11.72888</td>
</tr>
<tr>
<td></td>
<td>7.60314</td>
<td>12.10216</td>
</tr>
</tbody>
</table>

TABLE 16—PHASE 2 FUEL CONSUMPTION STANDARDS FOR PARTIAL-AERO BOX VANS

Table: Phase 2 Fuel Consumption Standards for Partial-Aero Box Vans

<table>
<thead>
<tr>
<th>Model year</th>
<th>Dry van</th>
<th>Refrigerated van</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td></td>
<td>Short</td>
<td>Long</td>
</tr>
<tr>
<td>2018-2020</td>
<td>12.31827</td>
<td>7.98625</td>
</tr>
<tr>
<td></td>
<td>12.68173</td>
<td>8.15324</td>
</tr>
<tr>
<td>2021 and later</td>
<td>12.15128</td>
<td>7.91749</td>
</tr>
<tr>
<td></td>
<td>12.52456</td>
<td>8.03448</td>
</tr>
</tbody>
</table>

Subcategory | MYs 2018-2020 | MYs 2021+
-------------|---------------|---------------
Non-Aero Box Vans | ATIS or TPMS with wheels on all axles | TRRL at or below 5.1 kg/tonne  |
                  | TRRL at or below 5.1 kg/tonne        | TRRL at or below 4.7 kg/tonne  |
Non-Box Trailers  | ATIS or TPMS with wheels on all axles | TRRL at or below 6.0 kg/tonne  |
                  | TRRL at or below 5.1 kg/tonne        | TRRL at or below 5.1 kg/tonne  |

See trailer definitions on slides 8-10
**What Standards Apply?**

- **Start**
  - **Box Van?**
    - Yes
    - **Length > 50-ft?**
      - Yes
      - **Long Box Van**
        - **Side WPE?**
          - Yes
          - **Rear WPE?**
            - Yes
            - **Rear WPE?**
              - Yes
              - **Partial-Aero Designation**
            - No
          - **Partial-Aero Designation**
        - No
        - **Rear WPE?**
          - Yes
          - **Non-Aero Designation**
        - No
    - No
    - **Full-Aero**
      - **Length < 35-ft?**
        - Yes
        - **Side WPE?**
          - Yes
          - **Rear WPE?**
            - Yes
            - **Partial-Aero Designation**
          - No
        - No
        - **Rear WPE?**
          - Yes
          - **Non-Aero Designation**
        - No
    - No
    - **Tank, Container Chassis or Flatbed?**
      - Yes
      - **Non-Box Trailer Tire Technology Design Standard**
      - No
      - **Excluded Trailer**

See 40 CFR 1037.107 and 801
Trailer Program Flexibilities

• Small business manufacturers allowed a 1-year delay in implementation to January 1, 2019 for EPA standards
  – Prior to 2018, contact EPA to confirm that your company has 1000 or fewer employees

• Transitional allowance for trailers
  – 40 CFR 1037.150(v) and 49 CFR 535.3(e)(3)
  – MYs 2018-2026 only
  – Trailer manufacturer may specify 20% or 350 box vans for exemption
  – Trailer manufacturer may specify 20% or 250 non-box trailers for exemption
  – Label must state that trailer is exempt under provisions of 40 CFR 1037.150

• Limited averaging program for box vans available MYs 2027+

• For all flexibilities, work with your certification representative to confirm that your trailer qualifies
Averaging (MY 2027+)

• If a manufacturer opts into the averaging program, some trailers in the subcategory/family may not meet the standard, as long as a sufficient number of trailers in the subcategory/family perform better than the standard
  – All trailers in each subcategory/family that meet the same CO₂ value (better, worse, or equivalent to the standard) are considered a “subfamily” with the same Family Emissions Limit (FEL)
  – All production-weighted FEL must average to meet the standard for that family
  – No FEL may be higher than the MY 2018 standard for that family

• Limited averaging program
  – Available in MY 2027 and later
  – Full-aero dry and refrigerated box vans only
  – Credits only apply to given model year (no carry-over)
  – Limited carry-over of deficits

• In a given model year, averaging credits may be averaged within the two Averaging Sets
  – Long box vans
  – Short box vans
Deficits for MY 2027+ if Averaging

• 40 CFR 1037.745 and 49 CFR 535.7(e)

• We understand manufacturers may choose to average, but misproject their production for a given model year
  – Our trailer provisions allow for deficits to be accrued

• Deficits determined at the end of the model year and maintained/reported
  – Must be remedied within three model years after the year generated
  – Subsequent MYs must generate credits to offset previous year’s deficit
    • If not offset after three years, penalties may apply
    – If carrying-over a deficit, credit plans will be expected to demonstrate how credit deficits will be resolved

• Certificates may be voided *ab initio* if a deficit is not offset by the required model year
## Summary of Regulatory Structure

<table>
<thead>
<tr>
<th>Description</th>
<th>Subcategory</th>
<th>Family</th>
<th>Subfamily</th>
<th>Vehicle Configuration</th>
<th>Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 Trailer subcategories</td>
<td>Typically one family per vehicle subcategory; subcategories may be combined into fewer families</td>
<td>(only for averaging)</td>
<td>A vehicle configuration is a set of vehicles with the same set of component configurations</td>
<td>Each trailer produced is a vehicle with a unique Vehicle Identification Number (VIN)</td>
</tr>
<tr>
<td>Example</td>
<td>Full-aero long dry van Non-box trailers</td>
<td>Full-aero long dry van + full-aero long refrig van</td>
<td>Family standard is 83 g/ton-mi; FELs may be 80 g/ton-mi, 84 g/ton-mi, etc.</td>
<td>Aero configuration has similar aero bin</td>
<td>Tire configuration has same tire rolling resistance level</td>
</tr>
<tr>
<td>Regulatory Use</td>
<td>The subcategory determines the CO₂ emission standard</td>
<td>Certification is based on the family • One cert application per family • One certificate of conformity issued for each family</td>
<td>Each subfamily has its own FEL which becomes the emission standard for every vehicle in the subfamily; production-averaged FELs must meet the family standard</td>
<td>Compliance equation used for each configuration in end-of-year report</td>
<td>• Each vehicle has its own label • Recordkeeping is required for each vehicle • In-use audit • Recall</td>
</tr>
</tbody>
</table>

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GENERAL CERTIFICATION PROCESS
Certification Process Outline

• Obtain manufacturer code & Verify access

• Pre-application
  – Define vehicle families, subfamilies, and configurations
  – Conduct aerodynamic evaluation, collect tire data, other testing
  – Determine other compliance equation inputs (tire pressure system, weight reduction)
  – Apply the inputs for your subfamilies into the compliance equation
  – Review compliance plans (e.g., product portfolio, testing) with EPA certification representative

• Application
  – Fill out and submit the certification template
  – Submit supplemental documents

• Review
  – EPA certification staff will review your materials
  – Agencies will work with you to resolve any outstanding issues

• Certification
  – If all regulatory requirements are satisfied, we will issue a certificate of conformity, allowing your vehicle family to be introduced into US commerce
Summary of Certification Process

At all steps, we encourage you to work with your EPA certification representative to avoid surprises or delays in the process.

Pre-Cert

Identify Technologies to Offer Customers

- Choose appropriate technologies (aero improvements, low rolling resistance tires, tire pressure systems, lightweight components)

Optional:
Perform testing on a limited number of aero technologies

Cert Application to EPA

Create Families

For Example...

Calculate CO₂ & Fuel Consumption

Apply performance parameters and production estimates

End-Of-Year

Record-Keeping and Reporting Results to EPA

Use equation and actual sales at the end of the year to determine final compliance

Submit results to EPA

Preliminary results used for EPA to grant trailer certificates
Each **vehicle family** is required to be certified prior to introduction into US commerce.

- A **certificate of conformity**, or “**certificate**” is issued as evidence of this.

Trailer production of interest include “U.S.-directed production volume for which the manufacturer has a reasonable assurance that sale was or will be made to ultimate purchasers in the United States.”

- The certificate is valid from the effective date until the end of the model year for which it is issued.
  - A model year must include January 1 of the calendar year for which the model year is named and may not begin before January 2 of the previous calendar year, and it must end by December 31 of the named calendar year (§ 1037.801).

- The certificate must be renewed annually for vehicles you continue to produce.
  - There are no certification fees associated with this rule.

- For trailers, the certifying manufacturer (i.e., “certificate holder”) is the trailer manufacturer.
Timeline for Compliance

• Now
  – Register with EPA for certification (obtain a manufacturer code)
  – Get on EPA Verify and Guidance listservs
  – Once system is available, set up Verify account

• After registration
  – Approach certification staff with questions about pre-certification testing
    • Aerodynamic evaluation, tire testing, off-cycle testing
  – Prepare labeling equipment
  – Evaluate technologies and conduct necessary testing

• Prior to Model Year (MY)
  – Complete application package, including template and additional support documents
  – Once regulatory requirements are met, EPA will issue a certificate of conformity, which allows your new vehicle to be entered into US commerce

• 90 days after end of MY
  – Submit report to EPA including production volumes by vehicle (March)

• If averaging in MYs 2027+
  – Submit a draft averaging report 90 days after end of MY (March)
  – Submit a final averaging report 270 days after end of MY (September)
### Timeline for Compliance Activities

<table>
<thead>
<tr>
<th><strong>Register with EPA</strong></th>
<th><strong>Obtain Manufacturer Code</strong></th>
<th><strong>Set up Verify Account</strong></th>
<th><strong>Join Listservers</strong></th>
<th><strong>Evaluate fuel-saving technologies, conduct testing/contract out for testing</strong>*</th>
<th><strong>Approach assigned EPA certification representative with questions</strong></th>
<th><strong>Prepare labeling template</strong></th>
<th><strong>Complete application package with support documents</strong></th>
<th><strong>EPA issues certificate of conformity</strong></th>
<th><strong>New certified trailers may be produced and entered into US commerce</strong></th>
<th><strong>Submit 90-day report</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>November</td>
<td>December</td>
<td>January</td>
<td>February</td>
<td>March</td>
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<td>June</td>
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<td>December</td>
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</tbody>
</table>

* Example for planning period with model year beginning in January
** Indicates one-time activity
*** Recommend contacting EPA prior to conducting aero testing

Note: If averaging in MY 2027+, the averaging report is due 270 days after production (Sept of following year)
Verify Certification Steps

Register with EPA
• Sign up for listservs
• Get 3-digit manufacturer code

Assign Roles
• Who will have access to Verify?
• Who will submit data, update information?
• Who will authorize info and request certificates?

Log into Verify Account
• Electronically submit information through EPA’s Central Data Exchange (CDX) and Verify
• MyCDX homepage
• CDX Inbox for communications

Request for Certificate
• Certificate Summary Information (CSI)
• Supporting certification documents
• Compliance statement
• Encrypted electronic signature

Prepare and Submit Dataset
• Web-based application will be available to collect required information

Maintain Manufacturer Information
• Company addresses
• Company contacts
• Test labs
REGISTERING WITH EPA
Verify Certification Steps

Register with EPA
- Sign up for listservs
- Get 3-digit manufacturer code

Assign Roles
- Who will have access to Verify?
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Log into Verify Account
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Request for Certificate
- Certificate Summary Information (CSI)
- Supporting certification documents
- Compliance statement
- Encrypted electronic signature

Prepare and Submit Dataset
- Web-based application will be available to collect required information

Maintain Manufacturer Information
- Company addresses
- Company contacts
- Test labs
Stay Current with Compliance Updates

• Subscribe to the Verify listserv
  – Receive status updates on system developments and outages
  – Opportunity to test new Heavy-Duty Trailer module during development
  – Receive information on upcoming webinars
  – Subscribe by going to https://lists.epa.gov/read/all_forums/subscribe?name=verify

• Guidance letters listserv
  – Get notified when new guidance letters are available
  – Email verify@epa.gov and provide email address(es) you would like to be added to the Guidance letter listserv

• Guidance for NHTSA available through Public Information Center (PIC)
Registering with EPA for Certification

• Verify is EPA's compliance information system that engine, vehicle, and equipment manufacturers use to report certification and compliance information.

• There are two parts to registering for the Verify system:
  – Part 1: Company registration for Verify
    • Obtain a 3-character manufacturer code
    • Obtain manufacturer code prior to first MY of regulation
    • Each manufacturer will be assigned an EPA certification representative who can answer questions and assist with the certification process
    • Go to https://www.epa.gov/vehicle-and-engine-certification/company-registration-verify-system for additional information
  – Part 2: Account setup for Verify
    • Users must follow this process to get an account for a functional role within Verify
    • Go to https://www.epa.gov/vehicle-and-engine-certification/account-setup-verify-system for additional information
• CROMERR (40 CFR part 3) provides the framework for electronic reporting for all of the EPA’s environmental regulations.

• CROMERR establishes standards for information systems that receive reports and other documents electronically.

• The CROMERR program ensures the enforceability of regulatory information collected electronically by EPA and EPA’s state, tribal and local government partners.

• Under CROMERR, electronic reporting directly to EPA requires submission through EPA's Central Data Exchange (CDX).
Verify Certification Steps

Register with EPA
- Sign up for listservs
- Get 3-digit manufacturer code

Assign Roles
- Who will have access to Verify?
- Who will submit data, update information?
- Who will authorize info and request certificates?

Log into Verify Account
- Electronically submit information through EPA's Central Data Exchange (CDX) and Verify
- MyCDX homepage
- CDX Inbox for communications

Request for Certificate
- Certificate Summary Information (CSI)
- Supporting certification documents
- Compliance statement
- Encrypted electronic signature

Prepare and Submit Dataset
- Web-based application will be available to collect required information

Maintain Manufacturer Information
- Company addresses
- Company contacts
- Test labs
## Certification Roles for Each Company

### Functional Roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Company Authorizing Official (CAO)</td>
<td>Identifies, vouches for, and manages the “Verify Submitters” and “CROMERR Signers”</td>
</tr>
<tr>
<td>CROMERR Signer</td>
<td>Takes legal responsibility for all of the information used as the basis for a request for certificate</td>
</tr>
<tr>
<td>Verify Submitter</td>
<td>Submits certification and compliance information to Verify (not including certificate requests)</td>
</tr>
</tbody>
</table>

### Additional Roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain Manufacturer Information</td>
<td>Provide updates to industries, addresses, contacts, test labs and other manufacturer information</td>
</tr>
<tr>
<td>Upload Compliance Documents</td>
<td>Submit non-certification compliance documents</td>
</tr>
</tbody>
</table>
To establish a CAO you must submit:

- Sponsor letter for the Verify CAO
  - Used only to identify CAOs
- Electronic Signature Agreement (ESA) for the Verify CAO
- Verify User Registration Information spreadsheet

https://www.epa.gov/vehicle-and-engine-certification/checklist-verify-registration-package
CROMERR Signer(s)

To establish CROMERR Signer(s) you must submit:

- Sponsor letter for Verify Submitter and CROMERR Signer
  - Used only to identify Verify Submitters and CROMERR Signers
- ESA for the Verify CROMERR Signer
- Verify User Registration Information spreadsheet

https://www.epa.gov/vehicle-and-engine-certification/checklist-verify-registration-package

<table>
<thead>
<tr>
<th>CROMERR Signer</th>
<th>Sponsor Letter for Verify Submitter and CROMERR Signer</th>
</tr>
</thead>
<tbody>
<tr>
<td>blank Verify CROMERR User Sponsor Letter (Word) *</td>
<td>Print letter on Company Letterhead</td>
</tr>
<tr>
<td>blank Verify CROMERR Signer Electronic Signature Agreement (ESA) (Word)</td>
<td>List name(s) of CROMERR Signer(s)</td>
</tr>
<tr>
<td>blank Verify User Registration Information (XLS) **</td>
<td>List names(s) of Verify Submitters</td>
</tr>
<tr>
<td></td>
<td>Include the Date</td>
</tr>
<tr>
<td></td>
<td>Sign the letter in ink (wet ink signature) by a CAO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ESA for the CROMERR Signer</th>
<th>Information Spreadsheet for Verify User Registration</th>
</tr>
</thead>
<tbody>
<tr>
<td>For each CROMERR Signer listed in the sponsor letter</td>
<td>For each CROMERR Signer listed in the sponsor letter</td>
</tr>
<tr>
<td>Complete ESA</td>
<td>Fill in Manufacturer Code and Date</td>
</tr>
<tr>
<td>Sign the ESA in ink (wet ink signature by the CROMERR Signer)</td>
<td>Fill in the contact information</td>
</tr>
</tbody>
</table>

[11/16/2016 Trailer Implementation Workshop]
Verify Submitter(s)

- To establish Verify Submitter(s) you must submit:
  - Sponsor letter for Verify Submitter and CROMERR Signer
    - Used only to identify Verify Submitters and CROMERR Signers
  - Verify User Registration Information spreadsheet

[Link to EPA website](https://www.epa.gov/vehicle-and-engine-certification/checklist-verify-registration-package)
Contact Info for EPA Registration

• Mail complete hard-copy CROMERR documentation to:
  Verify Team
  c/o CGI Federal, Inc.
  12601 Fair Lakes Circle
  Fairfax, VA 22033

• Once approved, each user will receive an email with instructions for finalizing their registration and a link to access their CDX accounts.

• Questions regarding registration can be sent to:
  verifydpc@epacdx.net
MAINTAIN MANUFACTURER INFORMATION

Trailer-Specific Module is Currently in Development
Verify Certification Steps

Register with EPA
- Sign up for listservs
- Get 3-digit manufacturer code

Assign Roles
- Who will have access to Verify?
- Who will submit data, update information?
- Who will authorize info and request certificates?

Request for Certificate
- Certificate Summary Information (CSI)
- Supporting certification documents
- Compliance statement
- Encrypted electronic signature

Prepare and Submit Dataset
- Web-based application will be available to collect required information

Log into Verify Account
- Electronically submit information through EPA’s Central Data Exchange (CDX) and Verify
- MyCDX homepage
- CDX Inbox for communications

Maintain Manufacturer Information
- Company addresses
- Company contacts
- Test labs
Manufacturer Information in Verify

- EPA certification engineers rely on the company information in the Verify/CDX database

- Once they have access, each company is responsible for keeping all of the information in Verify’s “Maintain Manufacturer Information” module complete and up-to-date
  - Add any new or missing industries, addresses, contacts, test labs, notification emails, etc.
  - Inactivate any obsolete addresses, contacts, test labs, etc.

- By default, all Verify users can “View Manufacturer Information” for their Manufacturer
  - A separate Verify role is needed for “Maintain Manufacturer Information”
  - Each company should have at least one user assigned the “Maintain Manufacturer Information” role to be able to update their company information
Manufacturer Information: CDX Login

- New users will obtain a URL to the CDX system in their authorization email
- The CDX system is currently being updated to include trailers
  - EPA will inform manufacturers when the system is available via the Verify listserv
The appropriate industry sector(s) must be selected as “industries” on this tab in order to submit requests for certificates.

* Verify listserv will announce when the trailer industry sector is available
Maintain Manufacturer Information*: Addresses

All company addresses must be entered on this tab in order to submit requests for certificates

* Check Verify listserv for availability
Maintain Manufacturer Information*: Contact Information

- All company contacts must be entered (or inactivated) on this tab with the applicable industries selected for each contact.
- An industry will not appear in the RFC pull-down unless the CROMERR Signer is specified as a contact here for that industry.

* Check Verify listserv for availability
Maintain Manufacturer Information*: Notification Emails

All company contacts must be entered (or inactivated) on this tab in order to submit requests for certificates

* Check Verify listserv for availability
Test lab information only applicable if performing or contracting tire or aerodynamic testing

* Check Verify listserv for availability
REQUESTING A CERTIFICATE

Trailer-Specific Module is Currently in Development
Verify Certification Steps

Register with EPA
- Sign up for listservs
- Get 3-digit manufacturer code

Assign Roles
- Who will have access to Verify?
- Who will submit data, update information?
- Who will authorize info and request certificates?

Log into Verify Account
- Electronically submit information through EPA’s Central Data Exchange (CDX) and Verify
- MyCDX homepage
- CDX Inbox for communications

Request for Certificate
- Certificate Summary Information (CSI)
- Supporting certification documents
- Compliance statement
- Encrypted electronic signature

Prepare and Submit Dataset
- Web-based application will be available to collect required information

Maintain Manufacturer Information
- Company addresses
- Company contacts
- Test labs
Request for Certificate: CROMERR Package

• The CROMERR package is compiled and stored in the CROMERR Archive when a Request for Certificate (RFC) or Revised Certificate is completed

• Package includes:
  – Formatted Certificate Summary Information (CSI) PDF report
  – Supporting certification documents
  – RFC Compliance Statement Answers
  – Encrypted electronic signature information

• A link to the CROMERR package will be sent to the CROMERR Signer’s CDX inbox

- **Request**
  - Makes the Request for Certificate or Update Certification Information

- **Review**
  - Reviews the application and related documents submitted through Verify
  - Determines completeness

- **Attest**
  - Attests that the submission is true and accurate

- **Sign**
  - Electronically signs the request for certificate
Only Verify users with the CROMERR Signer role will have the link to the Request for Certificate* module on their MyCDX page.

* Verify listserv will announce when the RFC module is available.
Request for Certificate Process*: General Information

* Check Verify listserv for availability
Request for Certificate Process*: Certification Documents

Select all applicable documents for this family and click “Next”

* Check Verify listserv for availability
Request for Certificate Process*: Compliance Statements

Answer all required Compliance Statements and click “Review”
Request for Certificate Process*:

Review Statements

Review the information provided and click “Sign & Submit” if correct

* Check Verify listserv for availability
Read the CROMERR Electronic Signature message and click “Accept”
Provide your CDX password and answer your secret question to electronically sign your Certification package. Click “Sign”.

1. Log in to CDX
   User: SOMCZA4704
   Password: 
   Welcome Sandra Somoza

2. Answer Secret Question
   Question: Who is your favorite author?
   Answer: allende
   Correct Answer

3. Sign File
   Sign

* Check Verify listserv for availability
Your Request for Certificate package has been submitted to EPA when “Complete” is displayed at the top of the confirmation screen.

* Check Verify listserv for availability
DEMONSTRATING COMPLIANCE
Demonstrating Compliance with Standards

- When requesting a certificate, box van manufacturers must calculate a projected CO₂ performance for each family based on modeled CO₂ emission rates using the compliance equation
  - MY 2018 – MY 2026
    - A vehicle family is considered in compliance with the emission standards if all configurations in that family have CO₂ emission rates at or below the applicable standards
    - When requesting a certificate for each family, calculate for the highest projected CO₂ (worst performing) configuration
  - MY 2027 and later
    - If not averaging, all configurations in a family must meet the standard
      - Calculate for the highest projected CO₂ (worst performing) configuration
    - If averaging, the projected production-weighted CO₂ average (including deficits) must meet applicable subcategory standard
      - Calculate for at least three subfamilies (highest CO₂/worst, lowest CO₂/best, and highest projected production)

- CO₂ emission rates are converted to fuel consumption (FC) rates for the NHSTA standards

- Note that non-box trailers and box vans designated “non-aero” have design standards and manufacturers simply document that appropriate LRR tires and tire pressure systems were installed
Compliance Equation for Box Vans (40 CFR 1037.515(a))

\[ e_{\text{CO}_2} = \left( C_1 + C_2 \cdot TRRL + C_3 \cdot \Delta C_d A + C_4 \cdot WR \right) \cdot C_5 \]

<table>
<thead>
<tr>
<th>Trailer Category</th>
<th>( C_1 )</th>
<th>( C_2 )</th>
<th>( C_3 )</th>
<th>( C_4 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long dry box van</td>
<td>76.1</td>
<td>1.67</td>
<td>-5.82</td>
<td>-0.00103</td>
</tr>
<tr>
<td>Long refrigerated box van</td>
<td>77.4</td>
<td>1.75</td>
<td>-5.78</td>
<td>-0.00103</td>
</tr>
<tr>
<td>Short dry box van</td>
<td>117.8</td>
<td>1.78</td>
<td>-9.48</td>
<td>-0.00258</td>
</tr>
<tr>
<td>Short refrigerated box van</td>
<td>121.1</td>
<td>1.88</td>
<td>-9.36</td>
<td>-0.00264</td>
</tr>
</tbody>
</table>

\( C_5 = 0.988 \) (ATIS), 0.990 (TPMS or mix), 1.000 (none)

This equation and the coefficients apply to all full- and partial-aero box vans
Converting CO$_2$ to Fuel Consumption for NHSTA Standards

- 49 CFR 535.6(e)

- NHTSA’s fuel consumption standards are expressed as gallons per 1000 ton-miles
  - Use the compliance equation from 40 CFR 1037.515(a) to calculate the CO$_2$ emissions rate ($e_{CO2}$) and convert to fuel consumption (FC) as follows:

  \[
  FC \left( \frac{gal_{diesel}}{1000 \ ton - mile} \right) = \frac{e_{CO2}}{10,180} \left( \frac{g_{CO2}}{ton - mile} \right) \times 1000
  \]

- The NHTSA results are included in the data submitted to EPA; do not send these results separately to NHTSA
Tire Rolling Resistance Level (TRRL)

- Measured as coefficient of rolling resistance (CRR)
  - Units of kg/metric ton
  - Reported to 1 decimal place
  - See 40 CFR 1037.520(c)
    - Based on ISO 28580 standard, incorporated by reference in 40 CFR 1037.810
    - We expect tire manufacturers will perform testing and provide CRR data to trailer manufacturers

- Box van manufacturers may submit a higher CRR value than shown in data to EPA as their TRRL
Aerodynamic Improvements ($\Delta \text{CdA}$)

\[ e_{\text{CO}_2} = \left( C_1 + C_2 \cdot TRRL + C_3 \cdot \Delta C_d A + C_4 \cdot WR \right) \cdot C_5 \]

- Measured as change in drag area ($\Delta \text{CdA}$)
  - See 40 CFR 1037.526(a)
  - Units of m²
  - Reported to 2 decimal places and assigned an aerodynamic bin
  - Approved test procedures include wind tunnel, computational fluid dynamics (CFD) or coastdown
    - Wind tunnel and CFD are measured at two surrogate yaw angles (+/- 4.5°) to represent wind-averaged results
    - Coastdown uses zero-yaw or manufacturers can work with EPA to establish a wind-averaged correction

- Trailer manufacturers or device manufacturers may perform testing, 40 CFR 1037.515 and 1037.211

- Data from aerodynamic devices verified under SmartWay’s 2014 protocols can be pre-approved before MY 2018 for use by trailer manufacturers until MY 2021
Weight Reduction (WR)

\[ e_{CO2} = \left( C_1 + C_2 \cdot TRRL + C_3 \cdot \Delta C_d A + C_4 \cdot WR \right) \cdot C_5 \]

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
<th>Weight Reduction (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure for Suspension Assembly(^1)</td>
<td>Aluminum</td>
<td>280</td>
</tr>
<tr>
<td>Hub and Drum (per axle)</td>
<td>Aluminum</td>
<td>80</td>
</tr>
<tr>
<td>Floor(^2)</td>
<td>Aluminum</td>
<td>375</td>
</tr>
<tr>
<td>Floor(^3)</td>
<td>Composite (wood and plastic)</td>
<td>245</td>
</tr>
<tr>
<td>Floor Crossmembers(^2)</td>
<td>Aluminum</td>
<td>250</td>
</tr>
<tr>
<td>Landing Gear</td>
<td>Aluminum</td>
<td>50</td>
</tr>
<tr>
<td>Rear Door</td>
<td>Aluminum</td>
<td>187</td>
</tr>
<tr>
<td>Rear Door Surround</td>
<td>Aluminum</td>
<td>150</td>
</tr>
<tr>
<td>Roof Bows</td>
<td>Aluminum</td>
<td>100</td>
</tr>
<tr>
<td>Side Posts</td>
<td>Aluminum</td>
<td>300</td>
</tr>
<tr>
<td>Slider Box</td>
<td>Aluminum</td>
<td>150</td>
</tr>
<tr>
<td>Upper Coupler Assembly</td>
<td>Aluminum</td>
<td>430</td>
</tr>
</tbody>
</table>

\(^1\) For tandem-axle suspension sub-frames made of aluminum, apply a weight reduction of 280 pounds. Use good engineering judgment to estimate a weight reduction for using aluminum sub-frames with other axle configurations.

\(^2\) Calculate a smaller weight reduction for short trailers by multiplying the indicated values by 0.528 (28/53).

- Box van manufacturers that install any of the technologies in Table 3 of 40 CFR 1037.515 directly apply the specified weight reduction values
- Box van manufacturers may also apply for off-cycle provisions (40 CFR 1037.610) to account for other weight reduction options
- Note that weight reduction is a positive value
  - Measured in pounds and reported to the nearest integer
• Box van manufacturers can optionally install tire pressure monitoring systems (TPMS) or automatic tire inflation systems (ATIS)
• Systems must be on wheels on all axles
• No testing required
  – ATIS assigned an effectiveness value of 0.988 (1.2% improvement)
  – TPMS or mix of ATIS and TPMS assigned an effectiveness value of 0.990 (1.0% improvement)
  – No tire pressure system applies a value of 1.000 (zero improvement)
Off-Cycle Technologies

- 40 CFR 1037.610 and 49 CFR 535.7

- Off-cycle provisions can be requested if
  - A technology’s performance is not captured in the trailer compliance equation (e.g., use of solar, regenerative breaking)
    - Test will determine the improvement factor applied to compliance equation
  - A manufacturer wishes to use additional lightweight materials or weight reduction strategies not included in the regulations
    - Additional weight reduction is applied to the “WR” parameter in the compliance equation

- NHTSA additionally requires:
  - Technology having direct impact on FC performance
  - Removing credits for technologies found to be defective, or identified as a part of NHTSA’s safety defects program.
  - Manufacturers must consider safety performance for all incentivized off-cycle technologies
  - Credits not to be approved for any technology that is related to crash avoidance technologies, safety critical systems or systems affecting safety critical functions, or technologies designed for the purpose of reducing the frequency of vehicle crashes.

- Contact EPA prior to conducting any off-cycle testing
  - Off-cycle technologies are jointly reviewed and approved by EPA and NHTSA
WHAT MUST I INCLUDE IN MY CERTIFICATION APPLICATION?
(40 CFR 1037.205)
Trailer Certification Template

- Template will be designed to collect most information required in 40 CFR 1037.205
  - General family information
  - Compliance equation input/output

- Remainder of information is collected in supplemental documents
  - Emission Control Information (ECI) Label
  - Warranty document
  - Aerodynamics test results (pre-approved or tested)
  - Tire information

- All information uploaded to EPA’s CDX system
Trailer Families (40 CFR 1037.230)

- Ten trailer subcategories with unique standards
  - Typically each subcategory is a family

- Manufacturers may combine families to reduce the number of certificates required (40 CFR 1037.230(d)(3))
  - Refrigerated vans can meet dry van standards
  - Short vans can meet long van standards

- Families are identified with a 12-digit name
  - Includes model year and manufacturer code
  - We will issue separate guidance on naming

(3) Apply subcategories for trailers as shown in the following table:

<table>
<thead>
<tr>
<th>Full-aero trailers</th>
<th>Partial-aero Trailers</th>
<th>Other trailers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long dry box vans</td>
<td>Long dry box vans</td>
<td>Non-aero trailers</td>
</tr>
<tr>
<td>Short dry box vans</td>
<td>Short dry box vans</td>
<td>Non-box trailers</td>
</tr>
<tr>
<td>Long refrigerated box vans</td>
<td>Long refrigerated box vans</td>
<td></td>
</tr>
<tr>
<td>Short refrigerated box vans</td>
<td>Short refrigerated box vans</td>
<td></td>
</tr>
</tbody>
</table>
Supplemental Labeling Documents (40 CFR 1037.135)

• 40 CFR 1037.135 Requires your vehicles to have a permanent emission-control information label

• Provide a sample vehicle label with the following information:
  – Heading: “VEHICLE EMISSION CONTROL INFORMATION”
  – Corporate name and trademark
  – Vehicle family standardized designation (provided in guidance)
  – Regulatory subcategory
  – Date of manufacture
  – Emission Control System (identifiers shown in Appendix III to 40 CFR part 1037)
  – Statement “THIS VEHICLE COMPLIES WITH U.S. EPA REGULATIONS FOR [MODEL YEAR] HEAVY-DUTY VEHICLES”
### Emission Control Identifiers for Label (Appendix III to Part 1037)

<table>
<thead>
<tr>
<th>Components</th>
<th>Description</th>
<th>Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tires</td>
<td>low rolling resistance tires</td>
<td>LRRA</td>
</tr>
<tr>
<td><strong>Aerodynamic</strong></td>
<td>tractor-to-trailer gap reducing trailer fairing</td>
<td>TGRT</td>
</tr>
<tr>
<td></td>
<td>trailer aerodynamic side skirt</td>
<td>TATS</td>
</tr>
<tr>
<td></td>
<td>trailer aerodynamic rear fairing</td>
<td>TARF</td>
</tr>
<tr>
<td></td>
<td>trailer aerodynamic underbody device</td>
<td>TAUD</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>automatic tire inflation system</td>
<td>ATI</td>
</tr>
<tr>
<td></td>
<td>tire pressure monitoring system</td>
<td>TPMS</td>
</tr>
<tr>
<td></td>
<td>weight-reducing trailer wheels</td>
<td>WRTW</td>
</tr>
<tr>
<td></td>
<td>weight-reducing trailer upper coupler plate</td>
<td>WRTC</td>
</tr>
<tr>
<td></td>
<td>weight-reducing trailer axle sub-frames</td>
<td>WRTS</td>
</tr>
<tr>
<td></td>
<td>wide-base single trailer tires with steel wheel</td>
<td>WBSW</td>
</tr>
<tr>
<td></td>
<td>wide-base single trailer tires with aluminum wheel</td>
<td>WBAW</td>
</tr>
<tr>
<td></td>
<td>wide-base single trailer tires with light-weight aluminum alloy wheel</td>
<td>WBLW</td>
</tr>
<tr>
<td></td>
<td>dual-wide trailer tires with steel wheel</td>
<td>DWSW</td>
</tr>
<tr>
<td></td>
<td>dual-wide trailer tires with aluminum wheel</td>
<td>DWAW</td>
</tr>
<tr>
<td></td>
<td>dual-wide trailer tires with light-weight aluminum alloy wheel</td>
<td>DWLW</td>
</tr>
</tbody>
</table>
For purposes of application for certification, include a copy of the emissions warranty statement provided to consumers
  - Warranty information for other trailer components not required

The general requirement is that the product is designed and built so it conforms at the time of sale with GHG requirements

Warranty periods:
  - 1 year for tires
  - 5 years for other emissions-related components
  - Warranty period cannot be shorter than any warranty of a component that you provide without charge

Components covered include all components whose failure would increase a vehicle’s GHG emissions, including:
  - Aerodynamic technologies, tires, tire pressure systems, and lightweight components

Describe the emission-related warranty provisions in the owners manual
  - Do not need to create a trailer-specific owners manual for all trailer components; simply must provide information for GHG emissions components
  - Owners manual can be electronic
• For purposes of your application for certification, include a statement that says you meet the maintenance requirements of this part
  – If applicable, provide a copy of any maintenance instructions provided to the consumer
• Critical emission-related maintenance
  – You may schedule critical emission-related maintenance on these components if you demonstrate that the maintenance is reasonably likely to be done at the recommended intervals on in-use vehicles
• See regulations for other special maintenance, noncritical emission-related maintenance, and non emission-related maintenance
• Explain the owner’s responsibility for proper maintenance in the owners manual
  – Include instructions that will enable the owner to replace tires so that the vehicle conforms to the original certified vehicle configuration
• See 40 CFR 1037.220 for amending maintenance instructions
Supplemental Aero Documents (40 CFR 1037.515)

• Standardized template/format will be available
  – Please consult 40 CFR 1037.515 for the required content

• Example sets of aerodynamic documents
  – Aerodynamic testing
    (submitted and approved in pre-certification process)
    • Test vehicle and test method descriptions
    • Device and device manufacturer description(s)
    • Methodology for aerodynamic configuration grouping
    • Test results from vehicles within the family
    • Aerodynamic bin(s) for each configuration
  – Pre-approved aerodynamic data
    (submitted with the application package)
    • Device and device manufacturer description(s)
    • Copy of pre-approval confirmation letter for device data
Supplemental Tire Documents (40 CFR 1037.520(c))

• Standardized template/format will be available
  – Please consult 40 CFR 1037.520(c) for the required content

• Example documents
  – Summary of all tires expected to be used during the year
    • Tire manufacturer
    • Brand, model, size and CRR
  – Copy of letter from tire manufacturer or test lab confirming rolling resistance results
• A running change can be used to make post-certification changes to current model year trailers, such as
  – Add a vehicle configuration to a vehicle family
  – Change a vehicle configuration already included in a vehicle family in a way that may affect emissions or change components described in the application
  – Include additional technologies (aero devices, tires, etc.)
  – Modify an FEL for a vehicle family

• Running changes are processed like a Request for Certificate in Verify
  – If you are unclear if you need to file a running change, consult your certification representative
RECORDKEEPING & REPORTING
Managing Records and Reporting

• Manufacturers will need access to a computer for recordkeeping and reporting

• Required software
  – Internet browser (e.g., Internet Explorer, Firefox, Chrome)
  – PDF reader

• Recommended software
  – Spreadsheet program
  – Text editor
  – PDF converter

• EPA will provide future guidance on the format of reports
• 40 CFR 1037.250
  – (a) …
  – (b) Organize and maintain the following records:
    • (1) A copy of all applications and any summary information you send us.
    • (2) Any of the information we specify in § 1037.205 that you were not required to include in your application.
    • (3) A detailed history of each emission-data vehicle (including emission-related components), if applicable.
    • (4) Production figures for each vehicle family divided by assembly plant.
    • (5) Keep a list of vehicle identification numbers for all the vehicles you produce under each certificate of conformity. Also identify the technologies that make up the certified configuration for each vehicle you produce.
  – (c) Keep required data from emission tests and all other information specified in this section for eight years after we issue your certificate…
  – (d) Store these records in any format and on any media, as long as you can promptly send us organized, written records in English if we ask for them. You must keep these records readily available. We may review them at any time.
End-of-Year Production Report

• 40 CFR 1037.250(a) and 49 CFR 535.8
  – An end-of-year production report must be submitted within 90 days after the end of the model year and include the following information:
    • Manufacturer corporate name and corporate ownership structure
    • US-directed production volumes by VIN, vehicle configuration, and subfamily
    • Trailers exempt under the transitional allowance flexibility, if applicable (§ 1037.150(v))
    • Uncertified vehicles sold to secondary vehicle manufacturers
    • Manufacturer average CO₂ and FC performance by subcategory
    • All intermediate calculation values
40 CFR 1037.735

- (a) You must organize and maintain your records as described in this section.
- (b) Keep the records required by this section for at least eight years after the due date for the end-of-year report...
- (c) Keep a copy of the reports we require in §§ 1037.725 and 1037.730.
- (d) Keep records of the vehicle identification number for each vehicle you produce. You may identify these numbers as a range...
- (e) We may require you to keep additional records or to send us relevant information not required by this section in accordance with the Clean Air Act.
40 CFR 1037.730 and 49 CFR 535.8(d)

- If averaging in MYs 2027+, manufacturers submit a second report describing their averaging results
  - Draft report within 90 days and final report within 270 days following the end of the model year
- Submit the following information for each trailer family participating in averaging:
  - (1) Vehicle-family and subfamily designations, and averaging set.
  - (2) The regulatory subcategory and emission standards that would otherwise apply to the vehicle family.
  - (3) The FEL for each pollutant...
  - (4) The projected and actual U.S.-directed production volumes for the model year...
  - (5) Useful life.
  - (6) Calculated positive or negative emission credits for the whole vehicle family...
  - (7) If you have a negative credit balance for the averaging set in the given model year, specify whether the vehicle family (or certain subfamilies with the vehicle family) have a credit deficit for the year.
EPA and NHTSA are committed to both protecting Confidential Business Information (CBI) and to achieving transparency in implementation of the trailer program.

The agencies currently publish:
- Compliance Report
- Certification data (certification testing summary)

We do not consider emissions and fuel consumption data to be CBI:
- Compliance equation outputs will not be treated as CBI.

The agencies intend to publish as much non-CBI emissions and fuel consumption information as possible for each manufacturer after the end of the model year.
AERODYNAMIC TEST OPTIONS
Pre-Approved Aero Data

• Prior to January 1, 2018, test data may be submitted to EPA for pre-approval from
  – SmartWay’s 2014 wind tunnel, CFD, or coastdown test protocols (40 CFR 1037.150(u))
    • Data must be submitted as $\Delta C_d A$
      – SmartWay wind tunnel and CFD results are obtained from a yaw sweep
        » Apply a 4th order curve fit to the yaw sweep data
        » Submit an average of the +4.5° and -4.5° results from that curve fit to EPA for pre-approval
      – SmartWay coastdown results are obtained at zero yaw
        » Submit the zero yaw results to EPA for approval
  – Phase 2 test procedures (40 CFR 1037.515)

• January 1, 2018 and later
  – All new submissions must come from Phase 2 test procedures (40 CFR 1037.515)
# Summary of Trailer Aero Data Options

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021+</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SmartWay-Verified Device Data</strong></td>
<td>Collect data from post-2014 SmartWay protocols for wind tunnel, CFD or coastdown testing</td>
<td></td>
<td></td>
<td></td>
<td>Retest devices using Phase 2 test procedures</td>
</tr>
<tr>
<td></td>
<td>Submit $\Delta C_d A$ data to EPA for pre-approval</td>
<td></td>
<td></td>
<td></td>
<td>Submit $\Delta C_d A$ data to EPA for pre-approval</td>
</tr>
<tr>
<td></td>
<td>Pre-approved data available for trailer OEMs to use for compliance</td>
<td></td>
<td></td>
<td></td>
<td>Pre-approved data available for trailer OEMs to use for compliance</td>
</tr>
<tr>
<td><strong>Pre-Approved Device Data</strong></td>
<td>Collect data from Phase 2 test procedures for wind tunnel, CFD or coastdown testing</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Submit $\Delta C_d A$ data to EPA for pre-approval</td>
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</tr>
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<td></td>
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<tr>
<td><strong>OEM-Tested Data</strong></td>
<td>Collect data from Phase 2 test procedures for wind tunnel, CFD or coastdown testing</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Submit $\Delta C_d A$ data to EPA for compliance</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Data may be resubmitted annually for compliance</td>
<td></td>
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</tr>
</tbody>
</table>
Aerodynamic bins account for uncertainties in testing

- Trailer manufacturers choose an appropriate bin for certification based on their test results
- Pre-approved test data is submitted to EPA as-is without bins
  - Trailer manufacturers decide the appropriate bin for certification based on the pre-approved $\Delta C_d A$ value(s)
  - Trailer manufacturers may apply pre-approved data from multiple devices in combination (40 CFR 1037.526(c))

### Table 2 of § 1037.515—Bin Determinations for Trailers Based on Aerodynamic Test Results

<table>
<thead>
<tr>
<th>$\Delta C_d A$ in $\text{m}^2$</th>
<th>If a trailer’s measured $\Delta C_d A$ is ...</th>
<th>designate the trailer as ...</th>
<th>and use the following value for $\Delta C_d A$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\leq 0.09$</td>
<td>Bin I</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>$0.10 - 0.39$</td>
<td>Bin II</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>$0.40 - 0.69$</td>
<td>Bin III</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>$0.70 - 0.99$</td>
<td>Bin IV</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>$1.00 - 1.39$</td>
<td>Bin V</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>$1.40 - 1.79$</td>
<td>Bin VI</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>$&gt; 1.80$</td>
<td>Bin VII</td>
<td>1.8</td>
<td></td>
</tr>
</tbody>
</table>
EPA Test Data Applied to Aerodynamic Bins (RIA)
CONTACTS & MORE INFORMATION
Certification Contacts for Trailers

• Steve Healy, EPA Certification Representative
  – Healy.Stephen@epa.gov, 734-214-4121

• Lauren Steele, EPA Certification Representative
  – Steele.Lauren@epa.gov, 734-214-4788

• Maurice Hicks, NHTSA Certification Representative (credits and enforcement)
  – Maurice.Hicks@dot.gov, 202-366-1078
Future Guidance

• EPA and NHTSA will issue guidance on future subjects when and if necessary

• Please use index cards to submit additional questions

• Please register with EPA and sign up for listservs as soon as possible
  – Once assigned, contact your certification representative
• A copy of this presentation and the rulemaking documents will be available at EPA’s heavy-duty regulations page

• Vehicle and engine certification information
  – https://www.epa.gov/vehicle-and-engine-certification

• See 81 FR 73478 (October 25, 2016)

• See 40 CFR part 1037, and 49 CFR part 523 and part 535
APPENDIX
Useful Life Compliance

• 40 CFR 1037.241 and 49 CFR 535.5(e)

• Useful life of trailers is 10 years

• We assume zero deterioration
  – If we determine that your emission controls (with the exception of tires) are likely to deteriorate during the useful life, we may require you to develop and apply deterioration factors consistent with good engineering judgment
Warranty, Defect Reports & Recall

• See Clean Air Act (CAA) section 207(a) and 40 CFR 1037.15, 1037.120, 1037.601, and 1068.501

• Defect Warranty
  – Applies to emission-related parts, components, systems, software or elements of design which must function properly to assure continued compliance with GHG requirements.
  – Applies to emission-related components, systems, software or elements of design used to obtain credits for advanced technology vehicles, off-cycle technologies and early credits.

• Defect Reporting & Voluntary Emission-Related Recall Reporting Requirements:
  – Applies to emission-related parts, components, systems, software or elements of design which must function properly to assure continued compliance with GHG requirements.
  – Applies to emission-related components, systems, software or elements of design used to obtain credits for advanced technology vehicles, off-cycle technologies and early credits.

• Recall:
  – Applies to emission-related components, systems, software or elements of design which must function properly to assure compliance with GHG requirements.
## Preamble and EPA Regulation References for Key Trailer Provisions

### Trailers Covered

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<th>Preamble Section</th>
<th>Regulations</th>
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</thead>
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<td>§ 1037.801</td>
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<td>Regulated trailers</td>
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### Trailer Standards and Phase-In

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<th>Description</th>
<th>Preamble Section</th>
<th>Regulations</th>
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<tr>
<td>Full-aero box van standards</td>
<td>IV.C.2, Table IV-2</td>
<td>§ 1037.107(a)(1) and (2)</td>
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<tr>
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<td>IV.C.2, Table IV-3</td>
<td>§ 1037.107(a)(1) and (3), 150(w)</td>
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<tr>
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### Demonstrating Compliance for Trailers

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<td>GEM-based trailer compliance equation for box vans</td>
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<tr>
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### Compliance Provisions

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<td>§ 1037.107(a)(5), Subpart H except § 1037.715, 720</td>
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<td>IV.E.4.a</td>
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<td>§ 1037.130, 620-622</td>
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<th>IV.E.3 Section</th>
<th>Regulations</th>
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<td>IV.E.3.a</td>
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<tr>
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<td>IV.E.3.b</td>
<td>§ 1037.150(x), 515(c), 526</td>
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<tr>
<td>• Trailer aerodynamic testing (test procedures)</td>
<td>IV.E.3.b</td>
<td>§ 1037.528, 530, 532</td>
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<tr>
<td>• Trailer aerodynamic performance bins (box vans)</td>
<td>IV.E.3.b.iv</td>
<td>§ 1037.515(c)</td>
</tr>
<tr>
<td>• Demonstrating weight reduction</td>
<td>IV.D.1.d</td>
<td>§ 1037.515(d) and (e)</td>
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<td>• Data from pre-approved technologies</td>
<td>IV.E.3.b.v</td>
<td>§ 1037.211, 620(c) and (d)</td>
</tr>
<tr>
<td>• SmartWay-verified technologies</td>
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<td>• EPA confirmatory testing and production vehicle audits</td>
<td>IV.E.4.f</td>
<td>§ 1037.235(c), 301, 310</td>
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</table>

### Small Business Manufacturers
- Small manufacturer definition                                           (RIA Ch 12) § 1037.801
- SBA size standards identified by NAICS codes                           (RIA Ch 12) 13 CFR 121.201
- How SBA determines “affiliation”                                       13 CFR 121.103
- How SBA calculates number of employees                                  13 CFR 121.106
- Small business flexibilities (1-year delay)                             IV.E.5.e (RIA Ch 12) § 1037.150(c)

### Other
- Reporting and recordkeeping requirements                                § 1037.250, 825
- Submitting confidential business information                            § 1037.815
- Exemptions for exported trailers                                        40 CFR 1068.230
- Importation of trailers                                                 40 CFR 1068 subpart D
- Example compliance scenarios (docket memo)                              “MemoToDocket_ExampleComplianceScenarios.pdf”