

Air Pollution Control Technology Verification Center

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RTI International

New Technology R&D Workshop

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The ETV Program

- Goal: To improve the environment by accelerating new environmental technologies into the market
- Objective: To *verify* the performance of *commercial-ready* environmental technologies using *objective and quality-assured data* resulting in publication of *verification statements* for the technologies
- Independent, third-party testing
- Voluntary, stakeholder-oriented program



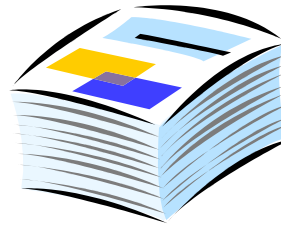
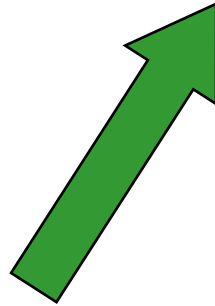
ETV Verification Process



EPA, verification organizations, stakeholders OR EPA-only (ESTE)...



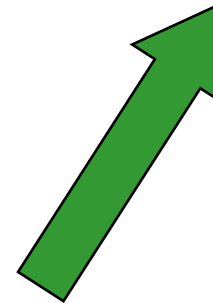
Identify priority technology categories



With stakeholders, develop test protocols, quality-assurance test plans AND



Identify vendors, collaborators



Conduct technology testing



Write verification report



ETV Outreach

www.epa.gov/etv



APCT Center

- Focus - PM, NO_x, VOCs, and hazardous air pollutants.
- Test protocols completed for:
 - Paint overspray arrestors
 - Baghouse filter products
 - NO_x controls
 - Dust suppressants
 - Mobile source retrofit controls
 - Biofiltration systems
 - Indoor air products

Turbine Verification – NO_x Emissions



Dust Suppressant Verifications

Fort Leonard Wood, MO
5 products, 3 vendors



Maricopa County, Arizona
2 products, 1 vendor

Biofilter Verification

Verification in progress at a fiberglass parts manufacturing facility



Diesel Retrofit Emissions Controls

- The APCT Center partnered with the EPA/OTAQ National Clean Diesel Campaign (NCDC - formerly VDRP)
- NCDC listed technologies are associated with SIP credits and OTAQ grants
- Working with a stakeholder panel, three test protocols were developed for devices, fuels, & SCR
- Coordinating with Texas and California

Diesel Retrofit Technology Types

■ Devices

- ◆ Diesel exhaust catalysts
- ◆ Diesel particulate filters
- ◆ Engine modifications
- ◆ Other devices

■ Selective catalytic reduction

■ Fuels

- ◆ Alternative fuels (emulsions, biodiesel)
- ◆ Reformulations
- ◆ Fuel additives
- ◆ Lubricants and lubricant additives

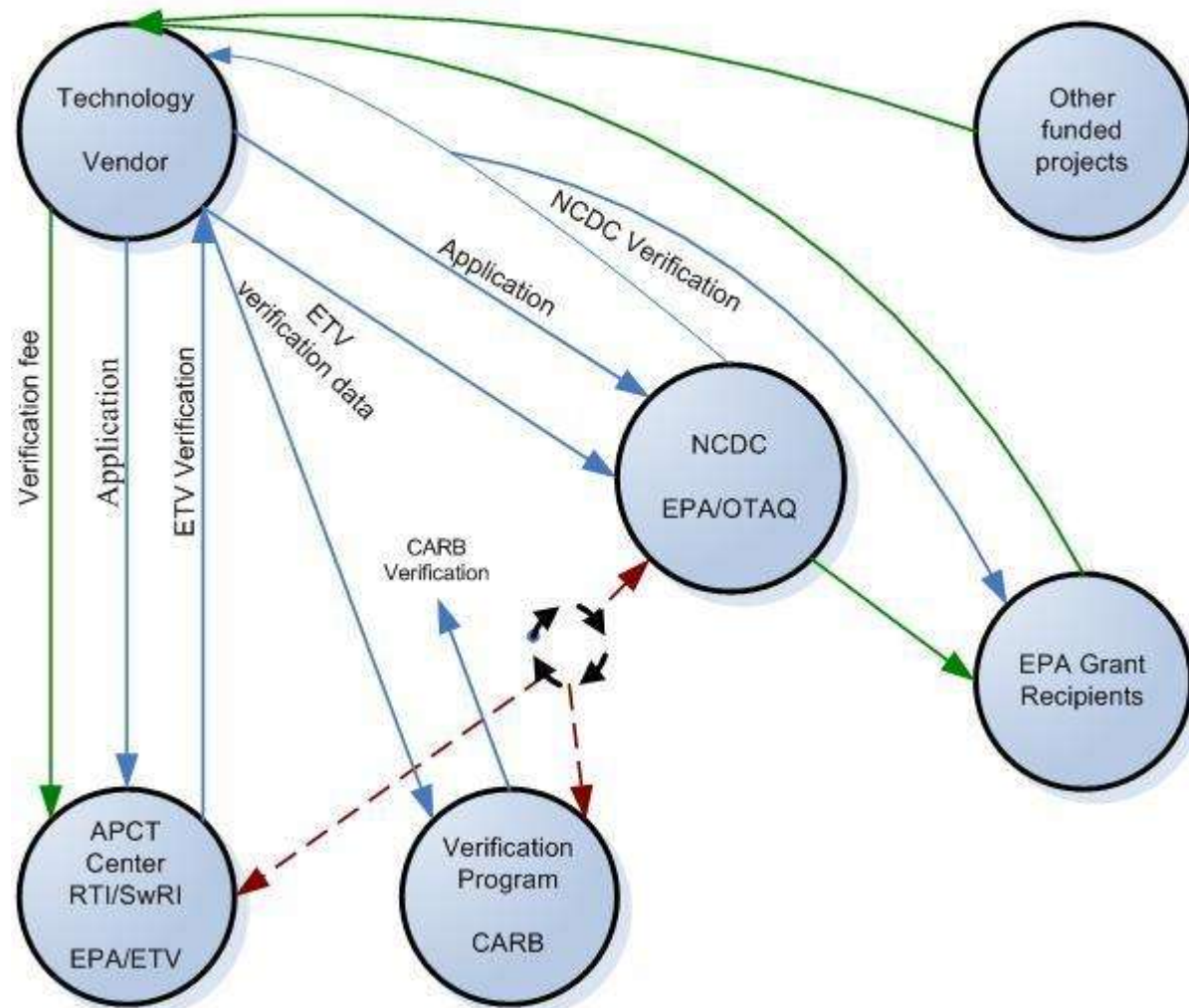
ETV - ORD

- Coordinates testing with EPA-OTAQ
- Prepares test/QA plan
- Audits ETV test labs
- Conducts ETV tests
- Issues ETV verification reports and statements

NCDC - OTAQ

- Evaluates total application package
- Accepts emissions reductions data generated by ETV
- Sets emissions reductions for technologies and posts on NCDC website
- Extends applicability to other engines (may request additional data)

Diesel Retrofit Control Technologies Verification Interactions



Verifications Completed

- Donaldson (October 2003)
 - ◆ Oxidation catalyst
 - ◆ Oxidation catalyst (Series 6100) with a closed crankcase filter
 - ◆ Oxidation catalyst (Series 6000) with a closed crankcase filter
- Clean Diesel Technologies
 - ◆ Fuel-borne catalyst with an oxidation catalyst (February 2004)
 - ◆ Fuel-borne catalyst with a wire mesh filter (October 2004)

Verifications Completed Cont'd

- Lubrizol (June 2004)
 - ◆ Particulate filter
- Clean Clear Fuel Technologies (March 2005)
 - ◆ Universal Fuel Cell
- Paceco (March 2006)
 - ◆ Particulate filter for nonroad engines

Verifications Completed Cont'd

- PUREM North America, LLC (April 2007)
 - ◆ Oxidation catalyst plus a powdered metal particulate filter
- Flint Hills Resources (May 2007)
 - ◆ Diesel fuel formulation with additive
- Cummins Filtration & Cummins Emission Solutions (July 2007)
 - ◆ Closed crankcase ventilation system, consisting of a precious metal DOC and coalescing filter

The Verification Process

- Pre testing is encouraged – know the performance before you start an official verification test
- Decide on the application (engine family) for which you want verification
- Prepare technical descriptions of the technology and how it functions; prepare any installation, maintenance, and operating procedures or instructions needed.
- Have technically knowledgeable staff available to interact with OTAQ

The Verification Process cont'd

- Application
 - ◆ Submit to NCDC (form on NCDC website)
 - ◆ Copy to the APCT Center
- Initial discussions and test scoping
 - ◆ OTAQ review relative to NCDC – respond to OTAQ questions
 - ◆ APCT Center review relative to ETV – generally satisfied when NCDC review is satisfied
 - ◆ Discussions entail a combination of email, phone, and applicant-OTAQ-APCT conference calls
 - ◆ Test organization consulted if needed

The Verification Process cont'd

- APCT Center contract and fee
 - ◆ Test scope circulated for agreement of all parties and test cost developed
 - ◆ Contract incorporates ETV policies and ETV logo guidelines and references the test scope
 - ◆ Contract signed and fee paid before test is scheduled and conducted

The Verification Process cont'd

■ Testing

- ◆ Applicant provides degreened and aged units and test engine to the test organization
- ◆ Once the test starts, the applicant cannot change the scope or stop the test or reporting of results.
- ◆ Verification is a transparent process open to public scrutiny
- ◆ Test organization reports results to the APCT Center

The Verification Process cont'd

- Verification report preparation
 - ◆ Test organization reports results to the APCT Center
 - ◆ APCT Center conducts a QA review of the data and prepares the draft verification report
 - ◆ Draft report and statement are submitted to EPA, ORD for peer/QA review (current peer reviewers are Rudy Smaling and a member of OTAQ staff)
 - ◆ After revision the report goes through EPA, ORD editorial and administrative reviews

The Verification Process cont'd

- Completed verification
 - ◆ Verification statement signed by APCT Center Director and EPA, ORD Laboratory Director
 - ◆ Signatures attest to the quality of the data, not an endorsement of the technology
 - ◆ Report and statement are published on www.epa.gov/etv
 - ◆ ETV Program conducts outreach including mention of verified technologies in publications and exhibit opportunities

Contact Information

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