NREL
NATIONAL RENEWABLE ENERGY LABORATORY

CNG Cylinder Safety

Education, Outreach, and Next Steps



Natural Gas Vehicle Technology Forum

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Overview and Objectives

Project Participants







Presentation and Discussion Objectives

- Describe CNG Cylinder Safety Project Objectives
- Get Feedback from NGVTF on CNG Cylinder Education and Outreach Efforts, Best Practices and Next Steps

Project Background

Background

- NGV2 cylinder safety standards promulgated in 1994 provide for 15, 20, and 25-year lifetimes
- No formal tracking to ensure cylinders are properly disposed of at end of life

Example State Regulations

- Texas – Requires verification of cylinder age at time of vehicle inspection, which occurs annually
- Utah – State Patrol includes end of life as part of 3 year/36,000 mile inspection program
- Inspection legislation introduced in CA in 2013, considered in other states



CNG Cylinder Safety Project Objectives

Project Objectives

- Identify any existing information and/or datasets on NGV cylinders
- Create educational materials for NGV owners and support industries on cylinder safety
- Engage with stakeholders to get feedback and create awareness
- Develop a system to begin collecting relevant data on CNG cylinders

Cylinder Awareness and Safety Monitoring Outreach

- Development of material explaining NGV2 standards and post collision best practices
- Developed material explaining how to "defuel" a damaged or expired cylinder
- Project roll-out at Natural Gas Vehicle Task Force (NGVTF)
- Various presentations at conferences

Legacy Cylinder ID and Documentation

- Determination that no database of cylinder lifetimes exists in the industry and there is no mechanism in place to do so, particularly for conversions
- Development of web materials and database to begin collecting data on cylinders
- Outreach to stakeholders on strategies for cylinder data collection

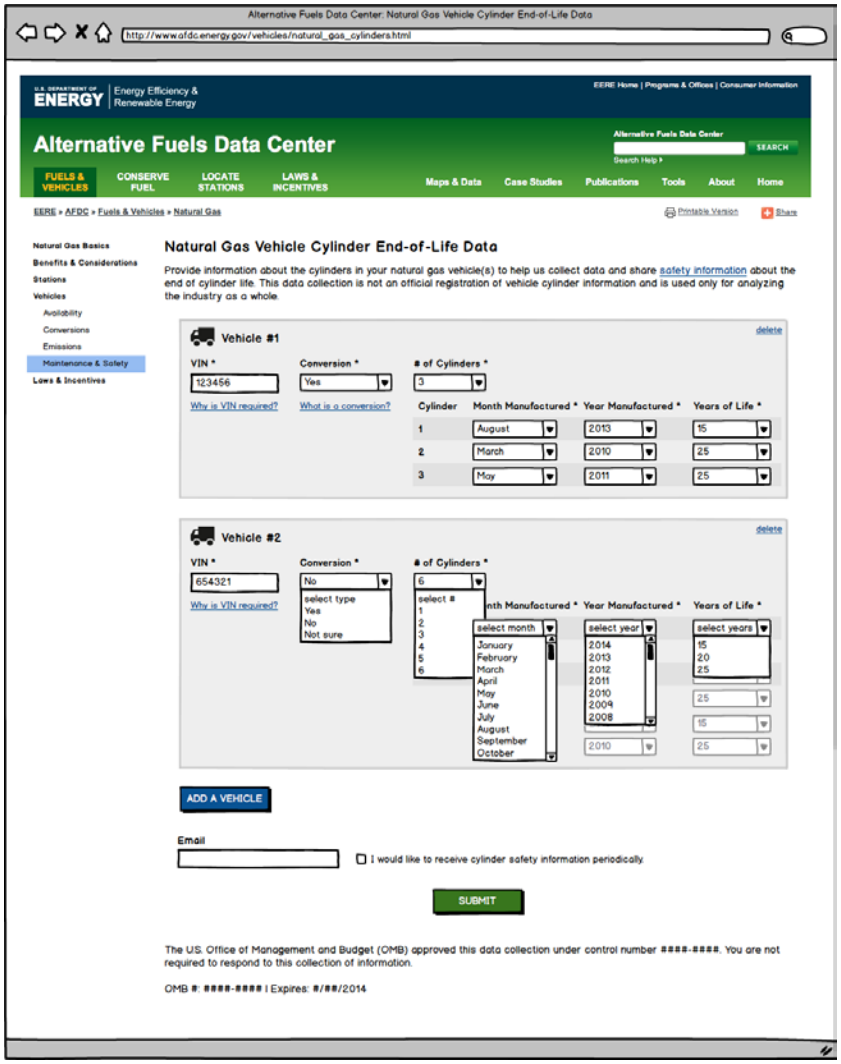
National Coordination

- Project discussion at the NGVTF

Technical Support

- Provide technical support as needed/requested

Education and Date Collection from the Public



- **One-Stop Portal for Information Related to CNG Cylinder Safety and End of Life Regulations**
- **Voluntary Web-based Data Collection of CNG Cylinders**
  Website Ready to Launch Pending OMB approval
- **Outreach with Stakeholders to Promote Awareness and Encourage Data Collection**

What Will NREL do With the Data?

Data is intended to inform educational efforts and will be non-attributable

- **Inform accident prevention outreach and education efforts**
- **Primary audience for outreach is not large fleets, but resale and secondary markets**
- **Will not be used as an enforcement or regulatory tool**

Questions for Discussion

How big of an issue do you perceive CNG cylinder liabilities as being?

Do you believe that a majority of industry actively manages their CNG cylinder inventory for end of life?

In what situation do you believe there is the greatest risk of CNG cylinder failure due to "expired" cylinders?

What do you feel is the best approach for addressing cylinder end of life?

How is this best communicated to NGV stakeholders at large?