Aboveground Storage Tanks (AST) Phase II Enhanced Vapor Recovery (EVR) Requirements

Proposed Amendments

Public Workshop
Sacramento
December 4, 2018
Housekeeping

- Emergency Exits, Building Evacuation, Restrooms
- Listen Only Conference Line:
  - Phone: 1 (800) 230-1085
- Conference call participants may email comments and questions during the presentation to: vapor@arb.ca.gov
- Presentation and handouts available on Vapor Recovery Webpage
Presentation Outline

- AST Vapor Recovery Background
- Executive Order VR-501
- Activities to Date
- Survey Results
- Cost Effectiveness Analysis
- Findings
- Emission Analysis
- Amendment Proposal
- Next Steps
California’s Vapor Recovery Program

- Approximately 14,000 fueling facilities statewide – 2,700 are AST facilities.
- California consumes 15 billion gallons of gasoline per year – approximately 106 million gallons from ASTs.
AST Vapor Recovery Background

  - Modeled after Underground Storage Tank EVR standards
  - Applied to all ASTs
- Deadlines for existing ASTs to comply
  - Set by issuance of first Executive Order
AST Vapor Recovery Background

- Deadlines for ASTs to comply with performance standards:

<table>
<thead>
<tr>
<th>EVR Module</th>
<th>New Installations</th>
<th>Existing Installations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standing Loss Control</td>
<td>4/1/09</td>
<td>4/1/13</td>
</tr>
<tr>
<td>Phase I</td>
<td>7/1/10</td>
<td>7/1/14¹</td>
</tr>
<tr>
<td>Phase II²</td>
<td>3/13/15</td>
<td>3/13/19</td>
</tr>
</tbody>
</table>

¹ Per amended Certification Procedure 206 (April 23, 2015), specific ASTs with pre-EVR Phase I systems are allowed to continue to use their pre-EVR components until the end of their useful life before upgrading to EVR Phase I components.
² Executive Order VR-501-B certifies balance Phase II EVR systems for protected ASTs with remote dispensing.
AST Vapor Recovery Background

- CAPCOA Board requested in 2013 to recalculate Phase I EVR cost effectiveness
  - CARB and District staff gathered data
  - CARB staff determined Phase I EVR not cost effective for all tanks

- April 2015 Board Hearing
  - Phase I EVR amended
  - Phase II EVR action delayed for further analysis
Executive Order VR-501

- Only Phase II EVR Executive Order for ASTs
  - Hirt Thermal Oxidizer
  - Pressure management through thermal oxidation
- Started the 4-year clock, with existing ASTs required to upgrade by March 13, 2019
- Certification limited to the following AST configuration type
  - Protected AST
  - Remote Dispensing
“Protected” versus “Single-Wall” Configurations

Protected

Single-wall
“Remote” versus “Non-Remote” Dispensing
Activities to Date

- Conducted a previous Workshop in 2017
- Surveyed Districts for AST data
  - General AST population
  - Specific to upgrading AST facilities
- Contacted equipment distributors, installers, and District permitting staff to determine costs associated with upgrade
- Meetings with Air District Staff to determine best course of action
Survey Results

➢ Statewide AST Facilities - Extrapolated

<table>
<thead>
<tr>
<th>Statewide AST Facilities – Subject to some form of Vapor Recovery</th>
<th>Throughput of Facilities (gallons/year)</th>
<th>Facilities Subject to Phase II EVR (VR-501)</th>
<th>Throughput of Facilities Subject to Phase II EVR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,761</td>
<td>106,782,636</td>
<td>187</td>
<td>55,536,802</td>
</tr>
</tbody>
</table>

➢ Phase II EVR system upgrade costs (EO VR-501)

<table>
<thead>
<tr>
<th>Upgrade to Phase II EVR Breakdown</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average System Equipment Cost:</td>
<td>$20,002.11</td>
</tr>
<tr>
<td>Average System Installation Cost:</td>
<td>$16,732.89</td>
</tr>
<tr>
<td>Average Permitting Fee:</td>
<td>$1,131.16</td>
</tr>
<tr>
<td>Total Average Cost to Install:</td>
<td>$37,866.16</td>
</tr>
</tbody>
</table>
Cost Effectiveness Analysis

<table>
<thead>
<tr>
<th></th>
<th>Facilities Upgrading in 2019</th>
<th>Cost Effectiveness ($/lb) of Emission Reductions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject as Currently Structured</td>
<td>187</td>
<td>$47.69</td>
</tr>
<tr>
<td>Subject with 480K Threshold</td>
<td>26</td>
<td>$9.25</td>
</tr>
</tbody>
</table>

- Assumptions:
  - Gasoline cost is $3.71/gallons (projected 2019-2023 average)
  - Gasoline density of 6.3 gallons/pound
Findings

- AST Phase II EVR not cost-effective for many AST facilities
  - The total upgrade cost is high
  - Relatively small proportion of AST population would need to upgrade

- Cost-effectiveness for Phase II EVR upgrade improves with an annual gasoline throughput threshold
  - Higher thresholds improve cost-effectiveness

- An annual gasoline throughput threshold of 480,000 gallons/year is consistent with cost-effectiveness for Phase I EVR
# Emission Analysis

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Throughput</th>
<th>Emission Benefit/Reduction of EVR (tons/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject as Currently Structured</td>
<td>187</td>
<td>55,536,802</td>
</tr>
<tr>
<td>Subject with 480K Threshold (Proposal)</td>
<td>26</td>
<td>37,894,531</td>
</tr>
<tr>
<td>No Longer Subject at 480K (Proposal)</td>
<td>161</td>
<td>17,642,271</td>
</tr>
</tbody>
</table>

- Pre-EVR emission factor is 0.94 lbs/1000 gallons
- EVR emission factor is 0.33 lbs/1000 gallons
- Emission Factors include control factors, spillage, hose permeation, and assumed 85% ORVR penetration

![Emission Reductions Between Current Regulation and Proposal](california-air-resources-board-logo)
Amendment Proposal

Certification Procedure Language – Amend CP-206

- Existing ASTs in attainment areas may keep pre-EVR Phase II equipment until end of useful life, then remove and upgrade to Phase II EVR, if required by district.

- Existing ASTs in non-attainment areas with a throughput of 480,000 gallons/year and less can keep existing pre-EVR Phase II equipment until end of useful life, then upgrade to Phase II EVR, if required by district.

- New ASTs in non-attainment and attainment areas must have Phase II EVR if vapor recovery is required by their district.

*Please see handouts for amended CP-206 language*
Amendment Proposal

Definitions – Amend D-200

- Protected ASTs
- Remote Dispensing
- Non-Remote Dispensing

*Please see handouts for amended D-200 language
Next Steps

- Send comments on proposed amendments to vapor@arb.ca.gov by December 21, 2018
- Release Staff Report Spring 2019
  - 45-day public comment period
- Public Hearing tentatively scheduled for May 2019
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