Update on Enhanced Vapor Recovery (EVR) and In-Station Diagnostics (ISD) at Gasoline Dispensing Facilities

California Air Resources Board
Monitoring and Laboratory Division
June 26, 2007
Presented at South Coast AQMD
Diamond Bar, CA
Agenda

• Introduction by SCAQMD
• EVR General Update
• EVR Phase II Deadline
• EVR Certification Update
• Franklin/Healy EVR Phase II System
• In-Station Diagnostics
• Question and Answer Session
Presented at the EVR/ISD Public Information Meeting
June 26, 2007

Cindy Castronovo
Air Resources Board
Cal-EPA
Outline

• EVR Applicability
• EVR Timeline
• ORVR and Phase II Interaction
• USEPA ORVR “Widespread Use” Determination
• E85 Compatible Equipment Status
• New Exam for Vapor Recovery Installers
Vapor Recovery at Service Stations

Phase I

Phase II
EVR for ASTs:

Regulation Approved at June 21 Board Hearing Effective Jan 2009
Partial EVR Exemption for Districts in Attainment with State Ozone Standards

- Exempt existing sites from all EVR modules except ORVR compatibility
- ORVR compatibility to minimize benzene exposure
- New and modified stations must comply
2006 Changes to Ozone Attainment Designations
EVR Timeline (updated June 2006)

Phase I EVR System

Phase II EVR Standards & Specifications

Unihose Dispenser

ORVR (>2.0 mil gal/yr)

ORVR (>1.0 mil gal/yr)

ORVR (<1.0 mil gal/yr)

Liquid Retention - 350 ml

Liquid Retention - 100 ml

Nozzle Spitting

Spillage

Dripless Nozzle

ISD (>1.8 million gal/yr)

ISD (> 600,000 gal/yr)

Not required for dispensers installed before April 2003

Dotted box: time between start of 4-year clock and operative date

Start of solid bar: date required for new or modified facilities (operative date)

End of solid bar: date required for existing facilities (installed before start of bar)

Not required for dispensers installed before April 2003
### Onboard Refueling Vapor Recovery or “ORVR”

<table>
<thead>
<tr>
<th>Vehicle Class</th>
<th>40%</th>
<th>80%</th>
<th>100%</th>
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<tbody>
<tr>
<td>Passenger</td>
<td>1998</td>
<td>1999</td>
<td>2000</td>
</tr>
<tr>
<td>LD Trucks &amp; MDV (up to 6000 lb)</td>
<td>2001</td>
<td>2002</td>
<td>2003</td>
</tr>
<tr>
<td>MDV &amp; HDV (6001 – 10,000 lb)</td>
<td>2004</td>
<td>2005</td>
<td>2006</td>
</tr>
</tbody>
</table>
ORVR - Phase II Incompatibility
ORVR Vehicle Penetration
(vehicle miles traveled - VMT)

% Penetration

Year

2007

50
US EPA “widespread use” of ORVR Vehicles

- Phase II systems are required by federal, state and local agencies
- US EPA may allow removal of Phase II vapor recovery systems in next 10 years
- CA expects to keep Phase II systems until 2020 or longer to maintain emission reductions
Limited “Widespread Use” Designations

• US EPA 12/12/06 memo
  – Initial fueling of new vehicles at automobile assembly plants
  – Refueling of rental cars at rental car facilities
  – Refueling of flexible fuel vehicles at E85 dispensers
Status of E85 Dispensing in California

- Currently, no certified vapor recovery (VR) systems for E85
- Seven E85 R&D facilities in California
- Phase II VR for E85
  - Districts evaluating USEPA Phase II waiver
- Phase I VR for E85
  - ARB staff evaluating Phase I E85 compatible components
- UL Update
  - Certification to begin fourth quarter 2007
EVR Installation Training

• Manufacturer’s training plan is part of ARB certification requirements
• Executive Orders require that installers be trained
• Districts will check contractor certification
• Warranty may be conditioned upon use of trained installers
### Number of Trained EVR Contractors in California

<table>
<thead>
<tr>
<th></th>
<th>Franklin/Healy</th>
<th>Veeder-Root (ISD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Certified Individuals</strong></td>
<td>435</td>
<td>411</td>
</tr>
<tr>
<td><strong>Number of Certified Companies</strong></td>
<td>142</td>
<td>100</td>
</tr>
</tbody>
</table>
ICC Vapor Recovery System Installer Exam

- ICC = International Code Council
- Maintain exams for UST program
- Vapor Recovery Installer Exam now available
- May be required by district rule or permit condition
- Vapor recovery tester exam under development
EVR Phase II
Deadline
Phase II EVR April 2009 Deadline

• 13,000 GDFs have 21 months to upgrade to EVR Phase II systems!
  – Obtain permits
  – Purchase equipment
  – Install using certified contractor
• Potential contractor shortage if wait until last minute
• See Advisory 359
### Estimated Phase II EVR Costs (without ISD)

<table>
<thead>
<tr>
<th>Dispenser Equipment</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$7,240</td>
<td>$14,480</td>
<td>$21,720</td>
<td>$43,440</td>
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<tr>
<td>Dispenser Equipment</td>
<td>$600</td>
<td>$1,200</td>
<td>$1,800</td>
<td>$3,600</td>
</tr>
<tr>
<td>Installation*</td>
<td>$7,245</td>
<td>$7,245</td>
<td>$7,245</td>
<td>$7,245</td>
</tr>
<tr>
<td>Clean Air Separator</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>CAS Installation*</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$17,240</strong></td>
<td><strong>$24,925</strong></td>
<td><strong>$32,765</strong></td>
<td><strong>$56,285</strong></td>
</tr>
</tbody>
</table>

* Assumes installation labor cost of $75/hr
## Estimated ISD Costs

<table>
<thead>
<tr>
<th>Number of Dispensers</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equipment</strong></td>
<td>$12,300</td>
<td>$14,000</td>
<td>$15,900</td>
<td>$21,300</td>
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<tr>
<td><strong>Installation</strong></td>
<td>$1,300</td>
<td>$2,500</td>
<td>$3,800</td>
<td>$7,600</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$13,600</td>
<td>$16,500</td>
<td>$19,700</td>
<td>$28,900</td>
</tr>
</tbody>
</table>

* Includes purchase of TLS-350 (retrofits will cost less)
** Assumes installation labor cost of $135/hr
# Total Estimated Cost for EVR Phase II and ISD

<table>
<thead>
<tr>
<th>Number of Dispensers</th>
<th>EVR Phase II</th>
<th>ISD</th>
<th>TOTAL</th>
</tr>
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<tbody>
<tr>
<td>2</td>
<td>$17,240</td>
<td>$13,600</td>
<td>$30,800</td>
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<tr>
<td>4</td>
<td>$24,925</td>
<td>$16,500</td>
<td>$41,400</td>
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<tr>
<td>6</td>
<td>$32,765</td>
<td>$19,700</td>
<td>$52,500</td>
</tr>
<tr>
<td>12</td>
<td>$56,285</td>
<td>$28,900</td>
<td>$85,200</td>
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</tbody>
</table>

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Does not include cost to replace dispensers, obtain permits, install electrical lines or conduct start-up tests
RUST program

• Small business assistance to comply with SB 989
• Also covers Enhanced Vapor Recovery and electronic monitoring system (ISD)
• Grants: $3,000 to $50,000
• Loans: $10,000 to $750,000
• www.waterboards.ca.gov/cwphome/ustcf/rust.html
Trouble Getting EVR Equipment or EVR Trained Contractor?

- Let ARB know!
- Form to document unavailability of vapor recovery equipment or certified contractor at www.arb.ca.gov/vapor/vapor.htm
EVR Deadline Outreach

• Frequent Advisories
• Regular public information meetings
• Local outreach events
• Provide information at contractor training facilities
• New website planned for local permitting agencies
EVR Certification Update
Phase I EVR Certification Update

OPW Executive Order VR-102-H signed
May 23, 2007

*Includes “Remote-Fill” configuration*
Example of Remote Fill: Placerville, CA.
Other Phase I EVR Revisions

• All Phase I EVR Executive Orders
  – Remove ball floats / extractors from Exhibit 1 and maintenance requirements.
  – Revise P/V vent valve positive cracking pressure to +2.5 to +6.0 in H$_2$O.
  – EOs completed: OPW, Phil Tite
  – EOs pending: EBW, CNI, & Emco Wheaton
Phase II EVR Certification Update

Status of the Balance System?

- One balance system (with processor) has successfully completed ARB field testing
- Executive Order VR-204-A (with ISD) expected December 2007.
Phase II EVR Certification Update

- Additional Balance Systems?
  - Four other balance system applications received, all include processors.
  - Prototype equipment currently installed at “test sites” in Sacramento.
  - None have been “sealed” by ARB to begin field testing.
  - “Test sites” are GDFs with a minimum of 10 fueling points & 150K gallon throughput per month.
Replacement Parts
(per section 19.1, CP-201)

• EVR certified components can be used (optional) as pre-EVR replacement parts if determined compatible by ARB.

• EVR certified components shall be used (mandatory) as pre-EVR replacement parts if determined compatible and commercially available by ARB.
Franklin Fueling Systems /Healy Phase II
EVR System

- Includes a new “Universal Dispenser Manual”, any existing dispenser can be upgraded to Healy EVR.
- Allows for flexibility in component installation as along as system passes performance tests.
- Negative slope in dispenser piping is allowable if necessary.
Negative Slope in Dispenser Piping

Costco-Folsom Dispenser No. 7

Pump Inlet

Pump Outlet
FFS/ Healy Phase II System (cont..)

- Flushing Procedure for Dispenser Piping?
  - There is no FFS approved flushing procedure. If rotor/vanes need cleaning, follow cleaning procedure in the IOM.
Healy Clean Air Separator in Stock

N.W. Pump
West Sacramento
Contractor Training

- 142 Healy certified contracting companies.
- Contractor list available at: www.franklinfueling.com/pdfs/HealyCerts.pdf
- For training, contact:
  Steve Langlie
  800-225-9787
  langlie@franklinfueling.com
FFS/ Healy Phase II System (cont.)

- Veeder Root ISD System Training
- 100 certified contracting companies.
- For training contact Dave Emmington @ demmington@veeder.com.
- Contractor list available at:  
  www.veeder.com/cfusion/veeder/ascsearch/index.cfm
Questions?

Visit our Web Page @

http://www.arb.ca.gov/vapor/vapor.htm
In-Station Diagnostics Update
**ISD Implementation**

- **> 1.8 million gallons/yr**
  - New and Major Mod Sites: Sept. 2005
  - Existing Sites: Sept. 2009

- **600,000 – 1.8 million gallons/yr**
  - New and Major Mod Sites: Sept. 2006
  - Existing Sites: Sept. 2010

- **≤ 600,000 gallons/yr**
  - Exempt From ISD
Gasoline Dispensing Facilities with ISD

- About 150 ISD sites in operation statewide
- About 150 ISD permits pending statewide
- SCAQMD has most operating sites at approximately 50 facilities
In-Station Diagnostic Systems

Electronic Access: Availability of an RS 232 Port

• Requires that a vacant RS 232 port must always be available to electronically download reports.

• If no vacant RS 232 port exists, Gasoline Dispensing Facility owners must install an additional RS 232 port that remains vacant for Certified Veeder-Root Technicians and District staff to access daily and monthly reports.
Illustration of an available RS 232 port
In-Station Diagnostic Systems
Version 1.01 Software Upgrade

- Version 1.00 contains command sequence that can delete stored data
- Version 1.01 should be installed as soon as practicable by certified technician
- Manufacturer rebates are available
ISD Contractor Training

• Alpha Petroleum Inc. - Dixon
  – www.alphapetro.com

• Banks and Co. - Fresno
  – www.banks-co.com/training.htm

• Northwest Pump - San Diego
  – www.nwpump.com
Three ISD Activities

• ISD Enforcement Policy
  – interim policy established June 2006

• ISD In-Use Evaluation
  – See if ISD sites in five districts perform as expected

• ISD Cost-Effectiveness Review
  – Due 18 months after first ISD certification as per 2002 Board resolution
ISD Enforcement Policy

• ARB Policy
  – ISD output not currently appropriate for enforcement
  – No response by station operator to ISD failure signal is enforceable

• CAPCOA recommended policy (6/27/06) posted on ARB website
ISD 18-Month Field Study

To determine whether installed systems perform similar to ISD system tested in certification. Monthly tests include:

- Vapor Flow Meter Operability Test
- Vapor to Liquid (V/L) Ratio Testing
- Identification of Onboard Refueling Vapor Recovery (ORVR) equipped Vehicles
- Pressure Sensor Verification
- Vapor Pressure Sensor Ambient Reference Test
Status of ISD Field Study

- ISD working as expected
- Data from the first nine months of the study are posted at www.arb.ca.gov/vapor/isdtestdata.pdf
- Data collection completed by January 2008
ISD Cost Analysis Update
Resolution 02-35
December 12, 2002  EVR Technology Review

BE IT FURTHER RESOLVED that the Board directs the Executive Officer and Board staff to assess, following the initial certification of the first EVR Phase II system with in-station diagnostics (ISD), the **capital cost impacts** of ISD on smaller through-put GDFs. The Executive Officer and Board staff are directed to complete the assessment within 18 months after the initial certification of an ISD equipped system.
Change In Approach

• Return to original focus on cost impacts – not cost-effectiveness.
• Why??
  – cost-effectiveness review goes beyond mandate from Board
  – Difficult to measure/estimate emission benefit this early in ISD implementation
  – Report due 18 months after ISD certified
  – Need to focus ARB resources on EVR certification and implementation
## 2006 vs. 2002 ISD Costs using CARB methodology

<table>
<thead>
<tr>
<th>Number of Dispensers</th>
<th>GDF 1</th>
<th>GDF 2</th>
<th>GDF 3</th>
<th>GDF 4</th>
<th>GDF 5</th>
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<tbody>
<tr>
<td>1</td>
<td>$11,324</td>
<td>$12,454</td>
<td>$14,485</td>
<td>$16,849</td>
<td>$19,218</td>
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<tr>
<td>1.5</td>
<td>$10,660 - $12,625</td>
<td>$11,451 - $14,371</td>
<td>$13,824 - $16,379</td>
<td>$16,187 - $19,202</td>
<td>$18,470 - $22,015</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.5</td>
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</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
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</tbody>
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### ISD Cost Survey Results

<table>
<thead>
<tr>
<th>GDF Survey ID</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDF Category</td>
<td>GDF2</td>
<td>GDF3</td>
<td>GDF4</td>
<td>GDF5</td>
<td>GDF5</td>
</tr>
<tr>
<td>TOTAL 2006 SURVEY Permit, Equip., Install, Testing Costs</td>
<td>$13,596</td>
<td>$11,553</td>
<td>$21,742</td>
<td>$13,935</td>
<td>$27,060</td>
</tr>
<tr>
<td>Difference Between 2006 Survey Cost and 2002 Estimate</td>
<td>+ 1,142</td>
<td>- $2,932</td>
<td>+ $4,893</td>
<td>- $5,283</td>
<td>+ $7,842</td>
</tr>
<tr>
<td>Percent Difference from 2002 Estimates</td>
<td>+ 9.2 %</td>
<td>- 20 %</td>
<td>+ 29 %</td>
<td>- 27 %</td>
<td>+ 41 %</td>
</tr>
</tbody>
</table>

"Lower Throughput"
Conclusion

• Final cost analysis report sent to Executive Office at end of April
• Hold the course on ISD implementation
EVR Contacts

• **EVR Regulations** - Cindy Castronovo
  – ccastron@arb.ca.gov  (916) 322-8957

• **EVR Certification** - Pat Bennett
  – pbennett@arb.ca.gov  (916) 322-8959

• **ISD and AST certification** - Joe Guerrero
  – jguerrer@arb.ca.gov  (916) 324-9487

• **In-Use Vapor Recovery** - Ranjit Bhullar
  – rbhullar@arb.ca.gov  (916) 322-0223

www.arb.ca.gov/vapor/vapor.htm
Questions?