

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

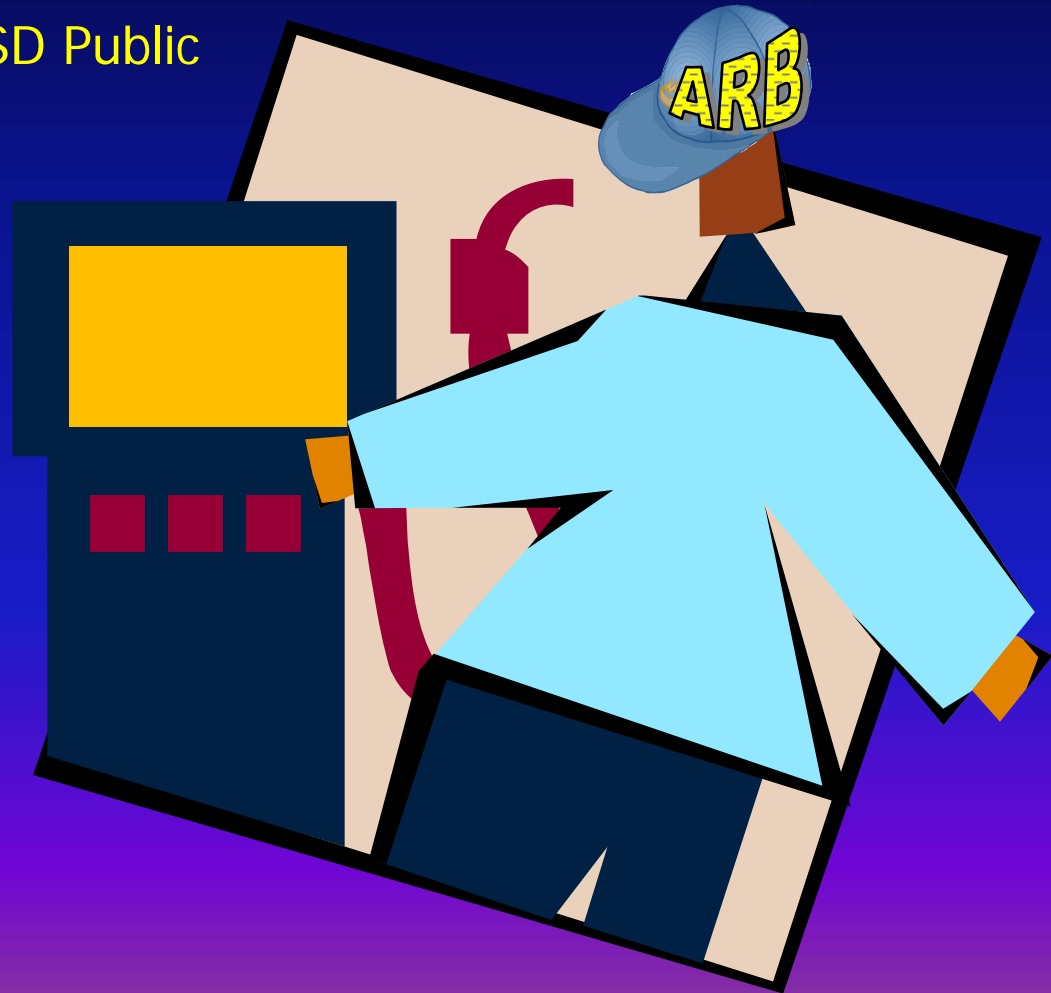
- Introduction by SCAQMD
- EVR General Update
- EVR Phase II Deadline
- EVR Certification Update
- Franklin/Healy EVR Phase II System
- In-Station Diagnostics
- Question and Answer Session

Enhanced Vapor Recovery Update

Presented at the EVR/ISD Public
Information Meeting

June 26, 2007

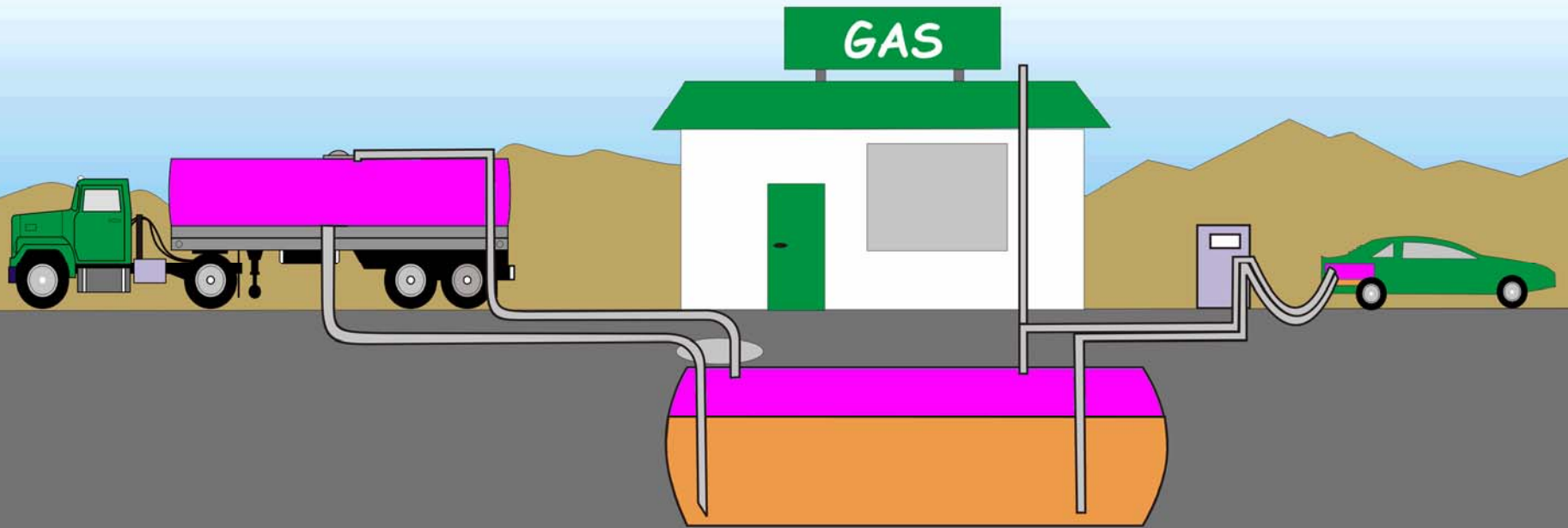
Cindy Castronovo
Air Resources Board
Cal-EPA



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

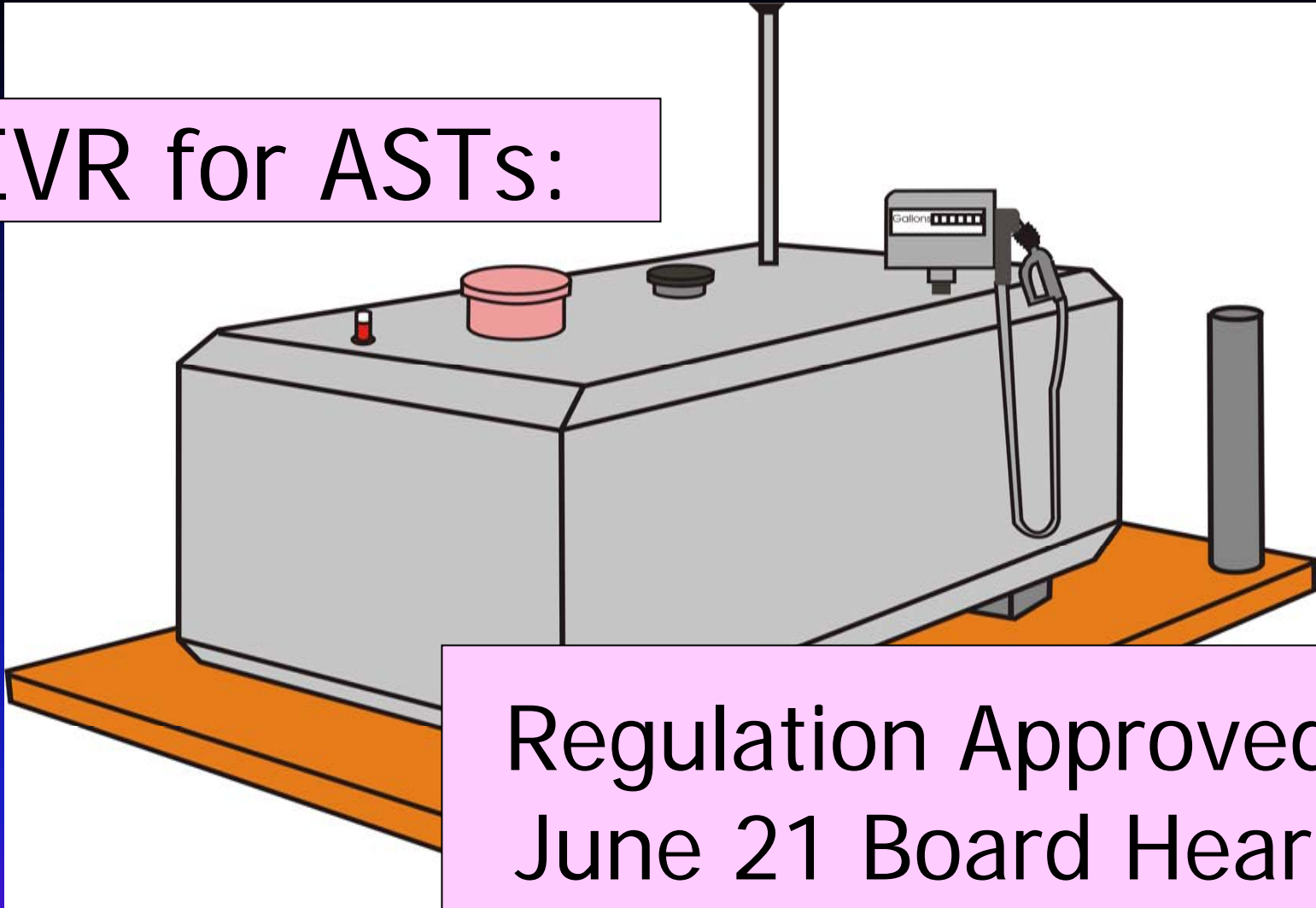
Vapor Recovery at Service Stations



Phase I

Phase II

EVR for ASTs:

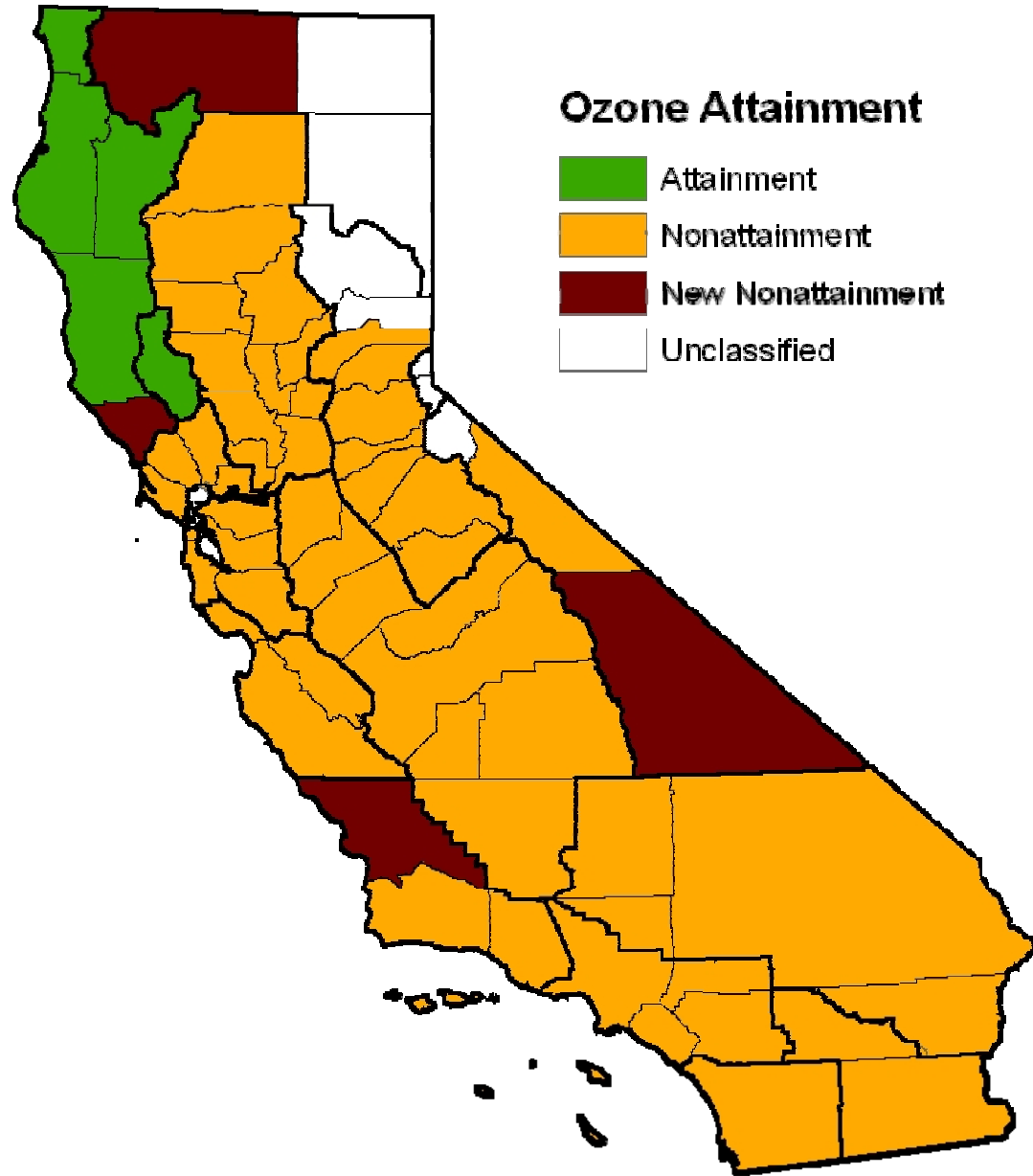


Regulation Approved at
June 21 Board Hearing
Effective Jan 2009

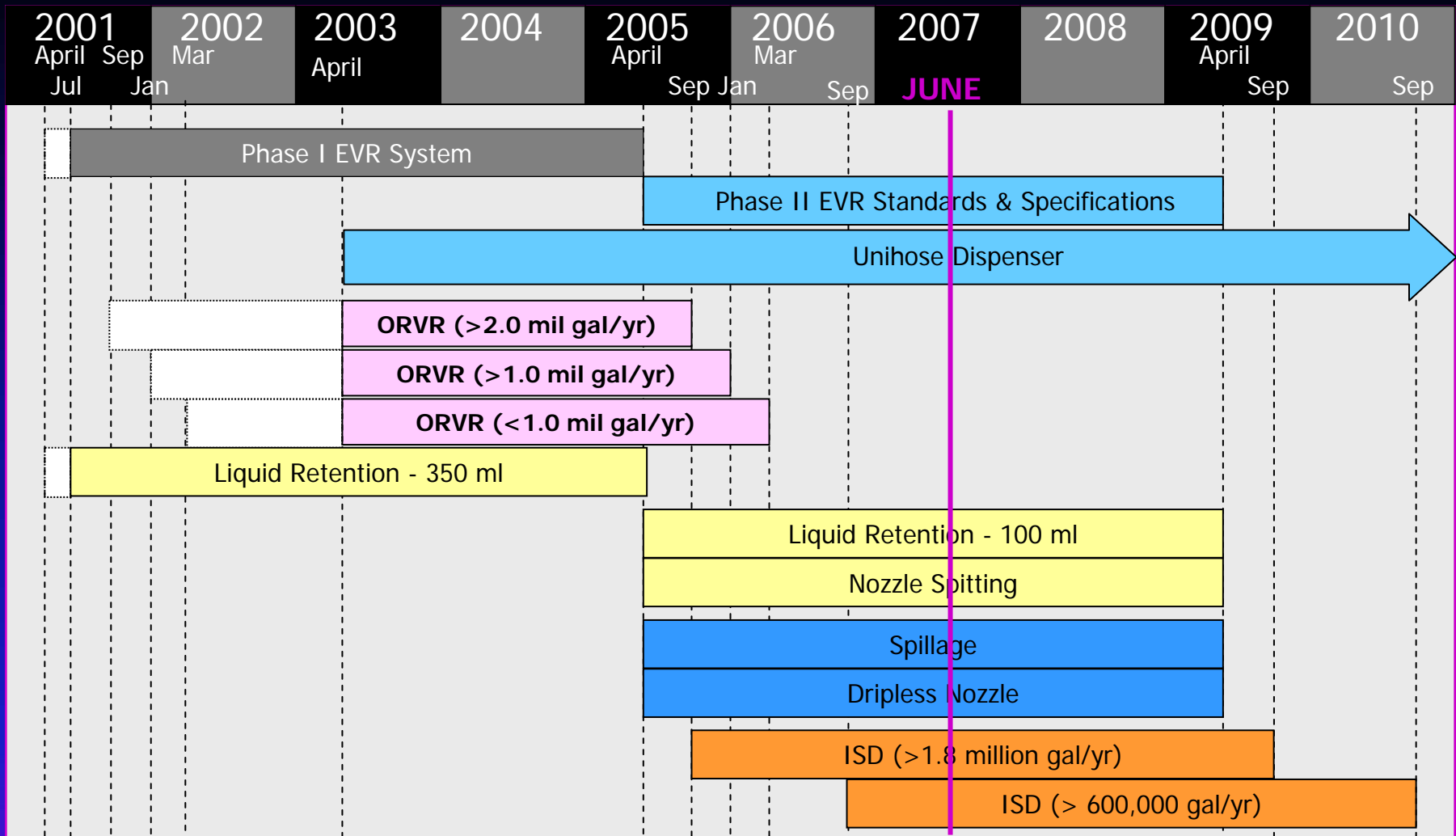
Partial EVR Exemption for Districts in Attainment with State Ozone Standards

- 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)



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)

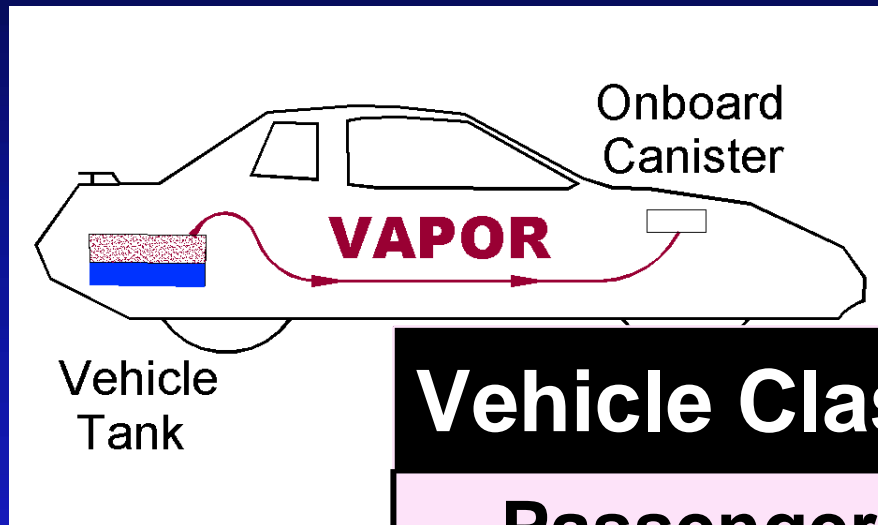


End of solid bar: date required for existing facilities (installed before start of bar)



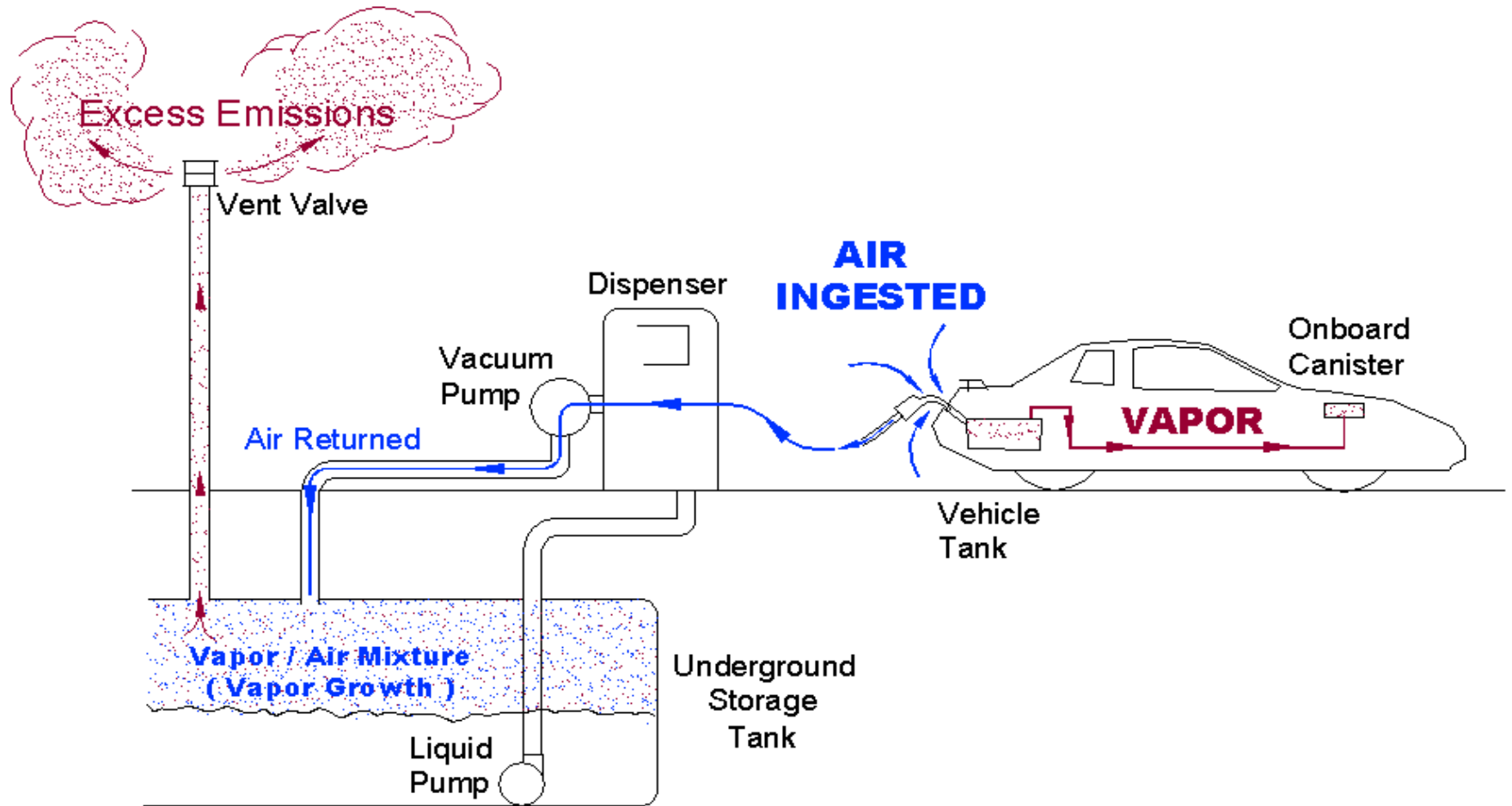
Not required for dispensers installed before April 2003

Onboard Refueling Vapor Recovery or "ORVR"



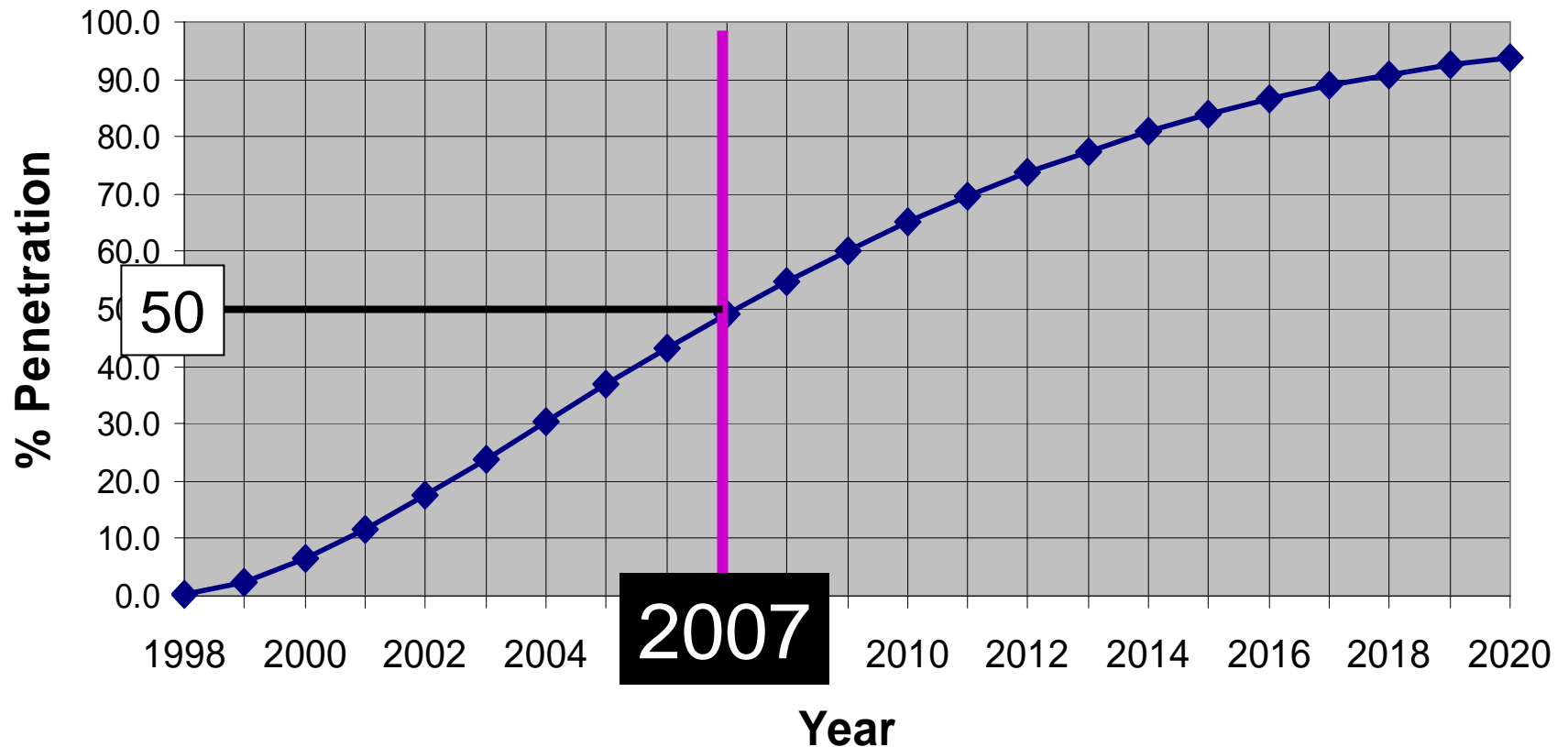
Vehicle Class	40%	80%	100%
Passenger	1998	1999	2000
LD Trucks & MDV (up to 6000 lb)	2001	2002	2003
MDV & HDV (6001 – 10,000 lb)	2004	2005	2006

ORVR - Phase II Incompatibility



ORVR Vehicle Penetration

(vehicle miles traveled - VMT)



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

	Franklin/ Healy	Veeder- Root (ISD)
Number of Certified Individuals	435	411
Number of Certified Companies	142	100

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)

	Number of Dispensers			
	2	4	6	12
Dispenser Equipment	\$7,240	\$14,480	\$21,720	\$43,440
Dispenser Equipment Installation*	\$600	\$1,200	\$1,800	\$3,600
Clean Air Separator	\$7,245	\$7,245	\$7,245	\$7,245
CAS Installation*	\$2,000	\$2,000	\$2,000	\$2,000
TOTAL	\$17,240	\$24,925	\$32,765	\$56,285

* Assumes installation labor cost of \$75/hr

Estimated ISD Costs

	Number of Dispensers			
	2	4	6	12
Equipment*	\$12,300	\$14,000	\$15,900	\$21,300
Installation**	\$1,300	\$2,500	\$3,800	\$7,600
TOTAL	\$13,600	\$16,500	\$19,700	\$28,900

* 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

	Number of Dispensers			
	2	4	6	12
EVR Phase II	\$17,240	\$24,925	\$32,765	\$56,285
ISD	\$13,600	\$16,500	\$19,700	\$28,900
TOTAL (rounded to nearest \$100)	\$30,800	\$41,400	\$52,500	\$85,200

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

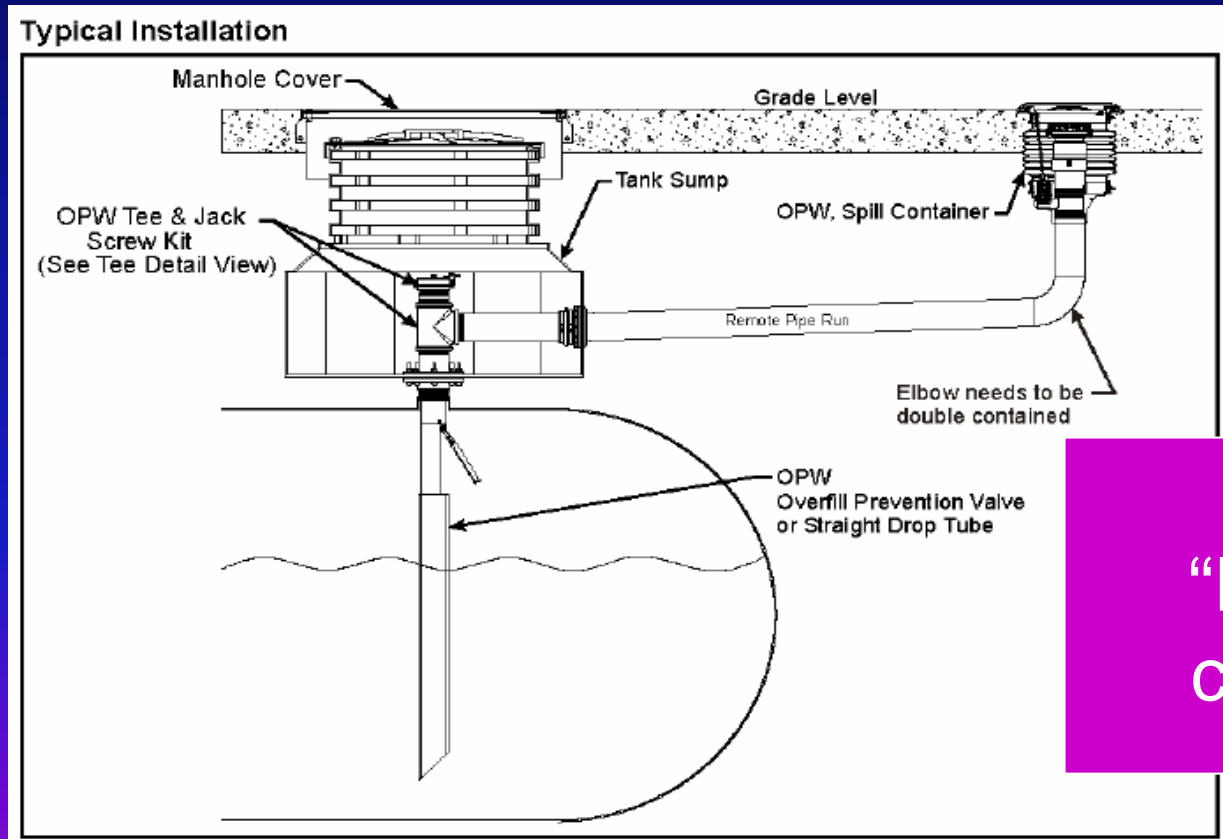
- Frequent Advisories
- Regular public information meetings
- Local outreach events
- Provide information at contractor training facilities
- New website planned for local permitting agencies

EVR Certification Update



Phase I EVR Certification Update

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



Includes
“Remote-Fill”
configuration

OPW VR-102-H

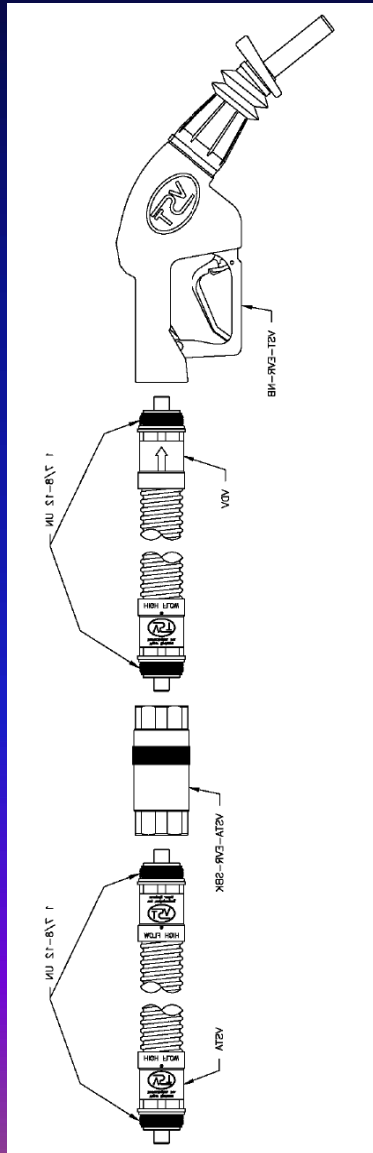
Example of Remote Fill: Placerville, CA.



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 H₂O.
 - 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-203-A (without ISD) expected September 2007.
- 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

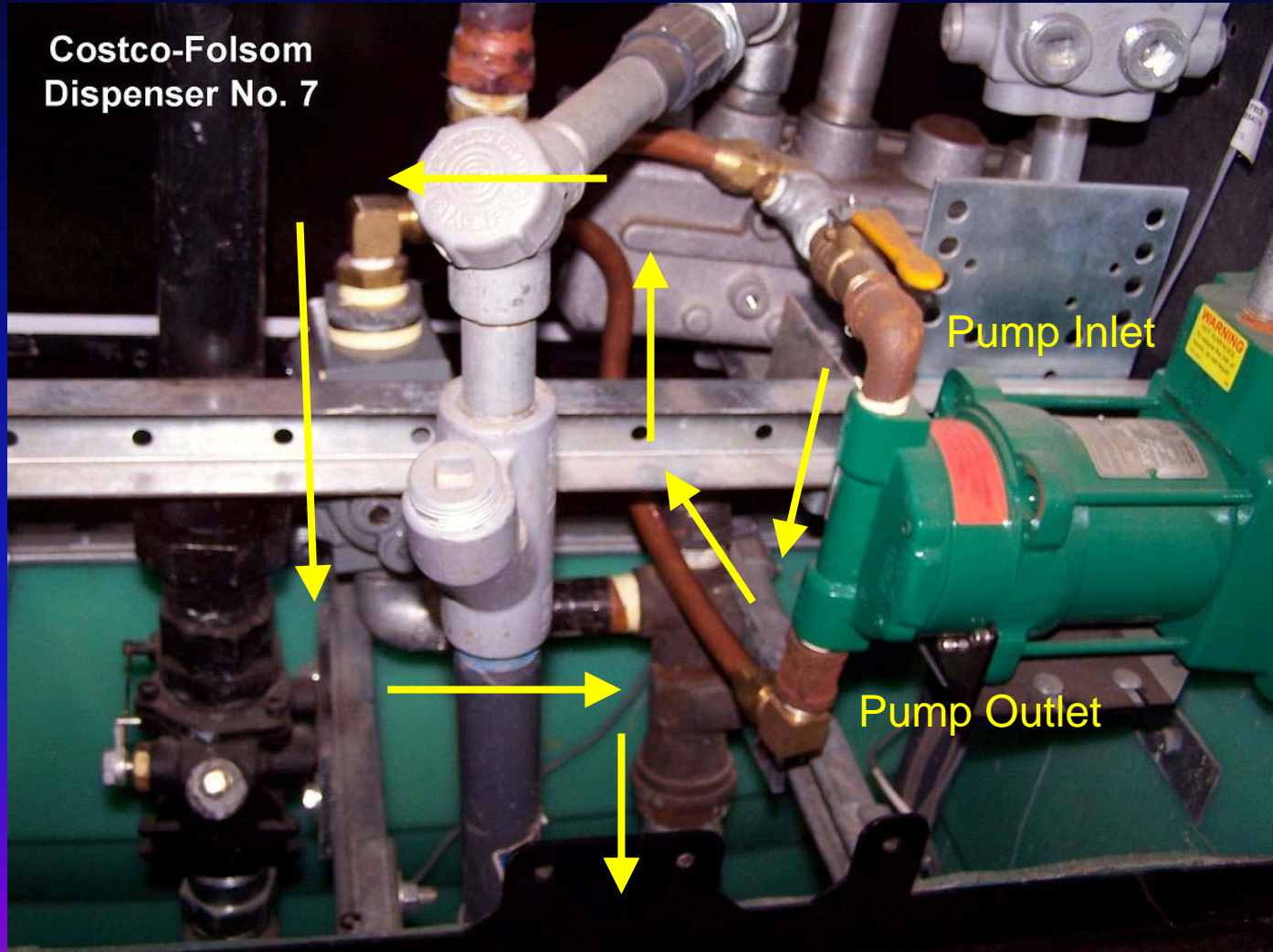
(per section 19.1, CP-201)

- 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

- Executive Orders VR-201-C and VR-202-C signed May 9, 2007.
- Includes a new “Universal Dispenser Manual”, any existing dispenser can be upgraded to Healy EVR
- Allows for flexibility in component installation as long as system passes performance tests.
- Negative slope in dispenser piping is allowable if necessary.

Negative Slope in Dispenser Piping



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.
 - “VP-1000 Vane & Rotor Service & Replacement Guide” page 61 of Installation, Operation and Maintenance Manual (IOM).

Healy Clean Air Separator in Stock



**N.W. Pump
West Sacramento**

FFS/ Healy Phase II System (cont.)

- 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

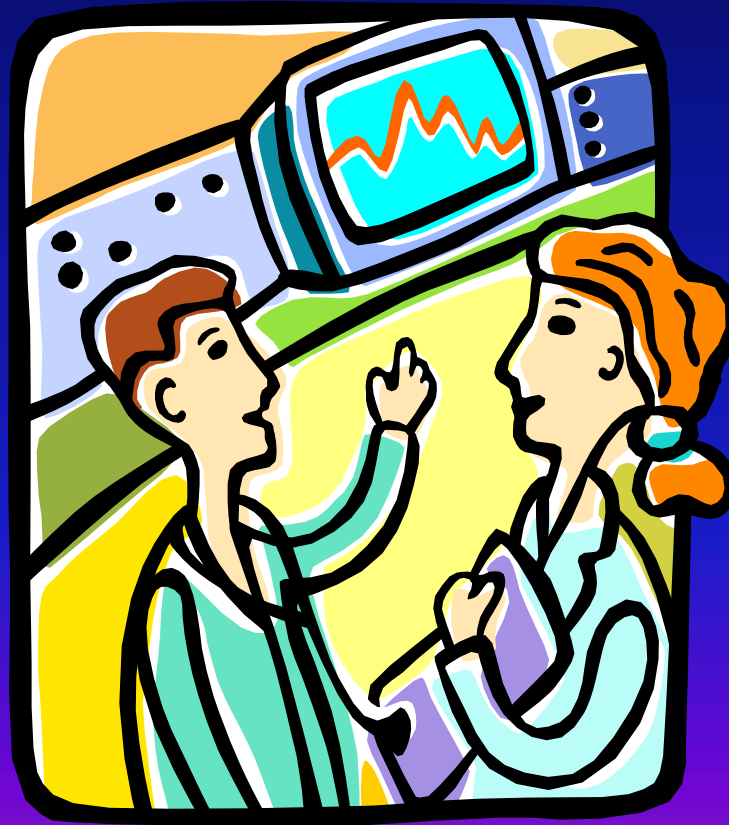
Questions?

Visit our Web Page @

<http://www.arb.ca.gov/vapor/vapor.htm>



In-Station Diagnostics Update



ISD Implementation

**> 1.8 million
gallons/yr**

**600,000 – 1.8 million
gallons/yr**

**\leq 600,000
gallons/yr**

**New and Major
Mod Sites:
Sept. 2005**

**Existing Sites:
Sept. 2009**

**New and Major
Mod Sites:
Sept. 2006**

**Existing Sites:
Sept. 2010**

**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

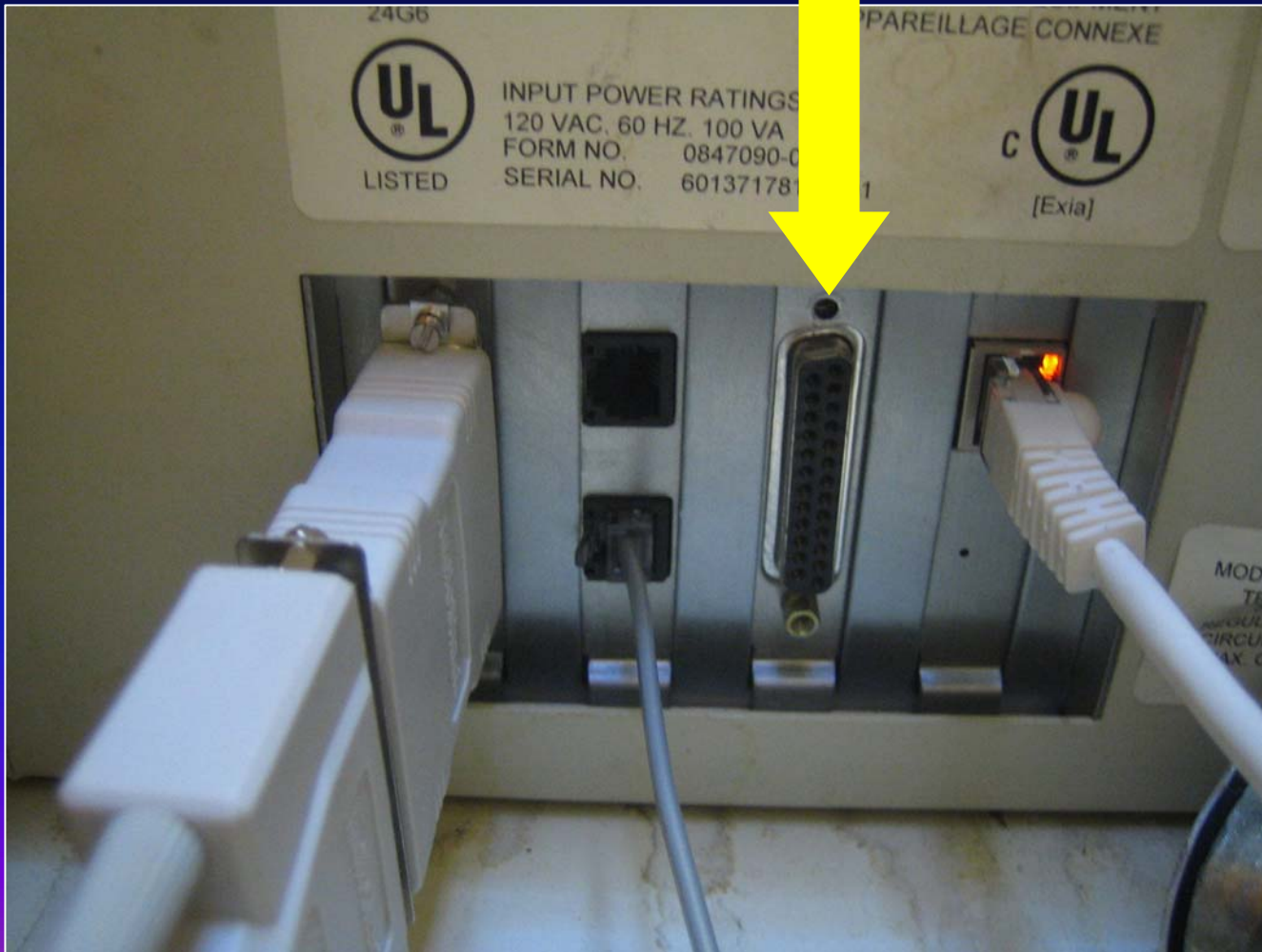
Vapor Recovery Advisory No. 355
October 10, 2006

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



Vapor Recovery Advisory No. 357
December 15, 2006

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

	GDF 1	GDF 2	GDF 3	GDF 4	GDF 5
Number of Dispensers	1	1.5	3	4.5	6
Tech Rev Oct 2002 (2006 dollars)	\$11,324	\$12,454	\$14,485	\$16,849	\$19,218
2006 Estimate	\$10,660 - \$12,625	\$11,451 - \$14,371	\$13,824 - \$16,379	\$16,187 - \$19,202	\$18,470 - \$22,015

ISD Cost Survey Results

GDF Survey ID	A	B	C	D	E
GDF Category	GDF2	GDF3	GDF4	GDF5	GDF5
TOTAL 2006 SURVEY Permit, Equip., Install, Testing Costs	\$13,596	\$11,553	\$21,742	\$13,935	\$27,060
TOTAL 2002 Equipment, Installation & Testing Cost Estimate	\$12,454	\$14,485	\$16,849	\$19,218	\$19,218
Difference Between 2006 Survey Cost and 2002 Estimate	+ 1,142	- \$2,932	+ \$4,893	- \$5,283	+ \$7,842
Percent Difference from 2002 Estimates	+ 9.2 %	- 20 %	+ 29 %	- 27 %	+ 41 %

**“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?

