Retooling the Vapor Recovery System Part 2: Will New Rules Evade Old Concerns?

by Wolf H. Koch, Ph.D.

Editor's Note: *Last month's issue of* PE&T *revisited our past coverage of vapor recovery developments and activities to reacquaint readers with vapor recovery legislation and technologies and the critical issues concerning their effectiveness ("Retooling the Vapor Recovery System, Part 1: Looking Back with* PE&T," *by Joe Totten, Jun. 2000, p. 6).*

For this article, Wolf Koch provides an analysis of the California Air Resources Board's (CARB's) new Enhanced Vapor Recovery (EVR) program, and he voices his concerns about the program's foundation, direction and impact. He also discusses plans and actions by California air pollution district officials related to the new rules and their enforcement. The tables in the article were derived from CARB materials at CARB's website.

On March 23, CARB passed its EVR program, which brings major changes to equipment testing and certification requirements. Prior to that action, CARB held vapor recovery workshops (November and January) and CAPCOA met (February) to discuss the subject.

Before the February CAPCOA meeting, CARB released a draft of its proposed rules, as mandated by California's 45-day notice requirement. The draft was the primary discussion topic at the CAPCOA meeting. The topic was revisited at CAPCOA's May meeting—after CARB passed the new program.

The final proposal to the Board in March was revised significantly from the one released in February. It was distributed at the Board meeting as "Resolution 00-9, Enhanced Vapor Recovery." CARB staff is assembling the responses to the proposal and will publish additional revisions in late summer, allowing for another 15-day comment period.

In my view, CARB's actions will not resolve some basic issues concerning (1) the total amount of refueling emissions that need to be addressed in the vapor recovery effort, (2) the need for improved enforcement to ensure that vapor recovery equipment works efficiently and meets requirements and (3) the potential for local jurisdictions' enforcement procedures to create non-uniform testing requirements that gasoline marketers must meet.

Events evoking changes

From my perspective, CARB's motivation to change the testing and certification requirements came from the following:

- Stage II assist systems that cause fugitive emissions when fueling vehicles equipped with and Onboard Refueling Vapor Recovery (ORVR) systems have been recognized for some time. Beginning in 1994, CARB sponsored a series of workshops on defining the Stage II/ORVR problem and a potential safety issue with ORVR systems. Since 1998, CARB has hosted ten workshops on various aspects of proposed new standards related to those issues.
- Poor results from efficiency testing of many balance and assist Stage II systems in operation have provided additional reasons for new standards. During the last year, CARB staff and CAPCOA have tested many assist and balance systems at operating stations. A just-released report on balance system performance estimates that the San Diego and South Coast Air Quality Management Districts (AQMDs) experience an average collection efficiency of about 70 percent. The report (B. McEntire, *Performance of Balance Vapor Recovery Systems At Gasoline Dispensing Facilities*, May 18, 2000) projects that efficiencies between 85 and 90 percent are possible with increased enforcement through recurring testing, an idea which has been adopted in the form of quarterly testing requirements by the Monterey AQMD.
- The settlement requirements of a lawsuit for failure to attain air quality emissions improvements have forced the timing for new rules. While CARB sets statewide requirements for California, the implementation and enforcement rests with the individual AQMDs. In 1997, the Coalition for Clean Air filed suit against the South Coast AQMD for not having attained air quality goals outlined in California's state implementation plan (SIP). Last year, CARB entered into a settlement agreement, committing the Board to achieving additional reductions of 5 to 10 tons of Reactive Organic Gases (ROG) or Volatile Organic Compounds (VOC) by 2010.

To meet the requirements of the settlement agreement, CARB combined previous ideas for requiring Stage II-ORVR compatibility with other actions to form an EVR program. The new program is to be implemented over the next eight years.

In my view, CARB's response to the events overlooked the obvious: fixing what is wrong with current systems now, instead of phasing in a new program over the next eight years. I will elaborate on this after explaining the specific requirements of the EVR program.

EVR requirements

The new EVR requirements are broken down into six modules in the CARB Staff Report (*Hearing Notice and Staff Report: Enhanced Vapor Recovery*, February 4, 2000) and in Resolution 00-9, dated March 23, 2000. The following descriptions are summarized from the Resolution:

Module 1: Stage I Vapor Recovery

Stage I vapor recovery is applied to the transfer of gasoline from the cargo tanker truck to the gasoline dispensing facility. Currently, Stage I systems are certified to be at least 95 percent efficient in returning vapors from the underground storage tank (UST) vapor space to the cargo tank. CARB will increase the certification standard to require Stage I systems to be certified at a minimum of 98 percent efficiency. This corresponds to an emission limit of 0.15 lb./1,000 gallons using a summer uncontrolled emission factor of 7.6 lb./1,000 gallons. All currently used Stage I equipment will be decertified as of April 2001 and must be recertified to the new standards (see *Table 1*).

Module 2: Stage II Vapor Recovery

CARB will substitute an emissions limit of 0.38 lb./1,000 gallons (cor-

Performance Type	Requirement	Std. or Spec.	Test Procedure
Stage I efficiency	98.0% minimum	Std.	TP-201.1 TP-201.1A
Stage I emission limit	0.15 pounds HC per 1,000 gallons	Std.	TP-201.1A
Static pressure performance	Compliance as specified in TP-201.3	Std.	TP-201.3
Pressure integrity of drop-tube with overfill protection	≤ 0.17 CFH at 2.0 inches H_2O	Spec.	TP-201.2B
Stage I product adapter/ delivery elbow connection	Rotatable 360˚ or equivalent	Spec.	Engineering evaluation
Stage I vapor adapter/ delivery elbow connection	Rotatable 360˚ or equivalent	Spec.	Engineering evaluation
Stage I vapor adapter	Poppetted	Spec.	Engineering evaluation
Stage I vapor adapter	No indication of leaks using liquid leak detection solution or bagging		Leak detection solution
Stage I vapor adapter dynamic pressure drop	Pressure drop at 300, 400, and 500 gpm: specification to be established during certification process	Spec.	TP-201.2B
UST vent pipe pressure/ vacuum relief valves	Pressure Settings: 3.0 ≤ 0.5 inches H_2O positive pressure 8.0 ≤ 2.0 inches H_2O negative pressure Leak rate at +2.0 inches H_2O ≤ 0.17 CFH Leak rate at -4.0 inches H_2O ≤ 0.21 CFH Total additive leak rate from all P/V valves: ≤ 0.17 CFH at 2.0 inches H_2O	Std.	TP-201.2B
Containment boxes	Leak rate at +2.0 inches H_2O: ≤ 0.17 CFH No standing fuel in box	Std.	TP-201.2O Visual
Connectors and fittings	No indication of leaks using liquid leak detection solution or bagging	Spec.	LDS or bagging
Compatibility with fuel blends	Materials shall be compatible with approved fuel blends	Spec.	Engineering evaluation

Table 1: Stage I Performance standards and specifications for all vapor recovery systems.

responds to 95 percent efficiency using an uncontrolled summer emission factor of 7.6 lb./1,000 gallons) for the 95 percent efficiency requirement. The old requirement was for 95 percent efficiency based on an emissions factor of 8.4 lb./1000 gallons. In addition, the required certification testing will be increased from a 90-day operational period to a 180-day period and from 100 cars to 200 cars. The new emissions factor and the requirements for nozzles with internal vapor valves and unihose dispensers will be effective in April 2001, while the new performance standards and specifications for Stage II equipment, as shown in *Tables 2, 3 and 4*, will be effective in April 2003.

Module 3: ORVR Compatibility

CARB's new rules will not allow excess emissions due to refueling of ORVR-equipped vehicles. The new standard requires that refueling ORVR vehicles shall not cause the Stage II vapor recovery system to exceed the emission limit of 0.38 lb./1,000 gallons, and that the pressure-related fugitive emissions shall not exceed 50 percent of the emission factor. The phase-in requirements for ORVR vehicles and their projected impact on California's vehicle population are shown in *Tables 5 and 7*. ORVR compatibility will be effective in 2001 and must be operational in 2003. Differences between effective and operational dates will be discussed under "EVR Implementation."

Module 4: Liquid Retention and Spitting

Emissions occur between vehicle fueling episodes when gasoline retained in the hanging hardware (nozzles and hoses) on the dispenser evaporates into the atmosphere. The gasoline may also be spilled into the fillpipe well or the dispenser housing or otherwise find its way to the atmosphere without being counted as spillage. The liquid product and vapor lines are already required to have valves that separate the underground vapor space from the atmosphere. However, retention emissions occur from the atmospheric side of the valves and at least one vapor recovery system has vapor valves in the dispenser rather than the nozzles. Reduction of liquid retention will be phased in in two stages between 2001 and 2003 as shown in *Table 6*.

Another new rule addresses "nozzle spitting," defined as the release of liquid when the nozzle trigger is depressed with the dispenser not actuated. This can happen when the nozzle is lifted from the dispenser and the trigger is accidentally depressed before the dispenser is activated. Nozzle spitting shall not exceed 1.0 ml/nozzle. Spitting conditions usually occur in warm weather when a nozzle has been idle and the gasoline in the hose expands due to warming. The new standard for nozzle spitting will minimize accidental liquid gasoline releases, which occur while moving the nozzle from the dispenser to the vehicle and releasing the trigger before fueling. Implementation will be required in 2004.

Module 5: Spillage and Dripless Nozzle

Spillage is recognized as a significant source of gasoline vapor emissions and includes spitting as well as any other gasoline losses during

Performance Type	Requirement	Std. or Spec.	Test Procedure
Stage II emission limit (includes refueling, vent pipe and pressure-related fugitive emissions)	≤ 0.38 lb. HC per 1,000 gallons	Std.	TP-201.2 TP-201.2A TP-201.2F
Static pressure performance	As specified in TP-201.3	Std.	TP-201.3
Spillage, including drips from spout	≤ 0.24 pounds/1,000 gallons	Std.	TP-201.2C TP-201.2E
ORVR Compatibility	Interaction of refueling ORVR vehicles shall not cause the system to exceed 0.38 lb/1,000 standard, including ORVR penetrations to 80%	Std.	Approved procedure developed by manufacturer
Stage I compatibility	Stage II system shall not cause excess emissions from Stage I operations	Std.	Engineering evaluation
UST pressure criteria (30 day rolling average)	Daily average pressure: ≤ +0.25 in. H_2O Daily high pressure: ≤ +1.50 in. H_2O Non-excluded hours/day = 0 ≤ 0.05 in. H_2O	Std.	Engineering evaluation and ISD
Nozzle criteria	Post-refueling drips: ≤ 1 drop/refueling Fuel any vehicle that can be fueled with a conventional nozzle	Std.	TP-201.2D, engineering evaluation
Liquid retention Nozzle "spitting"	≤ 100 ml/1,000 gallons ≤ 1.0 ml per nozzle per test	Std.	TP-201.2E
Liquid removal systems	Capable of removing 5 ml/ gal. (average)	Std.	TP-202.6
Nozzle/dispenser compatibility	Vapor check valve closed when hung; hold-open latch disengaged when hung	Std.	Engineering evaluation
Unihose MPD configuration	One hose/nozzle per dispenser side	Std.	Engineering evaluation
Stage II vapor riser	Min. 1" Nominal ID	Std.	Engineering evaluation
Vapor Return Piping	Min. 3" nominal ID after first manifold; Recommended slope 1/4" per foot; Minimum slope 1/8" per foot	Std.	Engineering evaluation
Vapor return pipe runs	Maximum allowable lengths of pipe runs shall be established during the certification process	Spec.	Engineering evaluation
Liquid condensate traps	Shall have automatic evacuation system	Std.	Engineering evaluation
Connectors and Fittings	No indication of vapor leaks using liquid leak detection solution (LDS) or bagging	Spec.	LDS or bagging

Table 2: Stage II performance standards and specifications for balance and assist systems.

the fueling process. CARB has reduced the spillage limit from 0.42 lb./1,000 gallons to 0.24 lb./1,000 gallons. CARB also limits post-fueling losses to one drop per fueling event: after the nozzle has shut off, no more than one drop may be discharged while placing it into the dispenser boot. Implementation will be required in 2004.

Module 6: In-Station Diagnostics (ISD)

In-station diagnostics will require continuous monitoring of important emission-related vapor recovery system parameters and alerting the station operator when a failure mode is detected. It is similar in concept to the current CARB on-board diagnostics regulations for motor vehicles. Many gasoline-dispensing facilities already have a similar diagnostic system for detecting liquid gasoline leaks from USTs. CARB supports integration of the vapor recovery in-station diagnostics with these UST leak detection systems where possible. ISD implementation will be in 2003 or 2004, depending on station throughput.

For balance systems, the rules will require pressure monitoring, as well as checking for liquid blockage at each dispensing point. A high-pressure drop indicates a blockage problem. One solution allowed will be to measure the vapor-to-liquid (V/L) ratio (also referred to as air-to-liquid ratio or A/L) in each dispenser with a flow meter.

For assist systems, monitoring of the V/L ratio—in a way that will detect a failure mode at individual dispensers—will be required. CARB will require that when the monitor detects an A/L ratio of zero (i.e., no vapor flow), the dispenser will be shut down.

Modules 5 and 6 are designed to be technology forcing, because no existing technology has been identified that will meet requirements for dripless nozzles and ISD. CARB plans to monitor industry progress in these areas and will host a technology review in April 2002.

Additional requirements

CARB has also adopted a new four-year certification limit. If, at the end of the four-year period, field problems are minimal, the certification may be extended. Otherwise, the system will be decertified. The agency will no longer certify individual components, but only complete systems. Under the new rules, certifications will expire after the four-year limit for equipment of manufacturers who have merged with other corporations. Manufacturers may make product warranties contingent upon the use of certified installers.

Performance Type	Requirement	Std. or Spec.	Test Procedure
Nozzle criteria	Insertion interlock device and vapor check valve	Std.	Engineering evaluation
Insertion interlock	Verification of no liquid flow prior to bellows compression	Spec.	Engineering evaluation
Vapor check valve	Leak rate: ≤ 0.07 CFH at 2.0 inches H_2O	Std.	TP-201.2B
Bellows insertion force	Pounds (force) to retaining device specified during certification testing	Spec.	Engineering evaluation
Nozzle pressure drop	Δ P at 60 CFH of N_2 ≤ 0.08 inches H_2O	Std.	TP-201.2B
Hose pressure drop, including whip hose	Δ P at 60 CFH of N_2 ≤ 0.09 inches H_2O	Std.	TP-201.2B
Breakaway pressure drop	Δ P at 60 CFH of N_2 ≤ 0.04 inches H_2O	Std.	TP-201.2B
Dispenser pressure drop	Δ P at 60 CFH of N_2 ≤ 0.08 inches H_2O	Std.	TP-201.2B
Swivel pressure drop	Δ P at 60 CFH of N_2 ≤ 0.01 inches H_2O	Std.	TP-201.2B
Pressure drop, Stage II riser to tank, including vapor impact valve	Δ P at 60 CFH of N_2 ≤ 0.05 inches H_2O	Std.	TP-201.4
Pressure drop from nozzle to UST	Δ P at 60 CFH of N_2 ≤ 0.35 inches H_2O Δ P at 80 CFH of N_2 ≤ 0.62 inches H_2O	Std.	TP-201.4

Table 3: Stage II performance standards and specifications for balance Stage II systems only.

Specific requirements under the new CARB rules, as passed by the Board in March, are summarized in *Tables 1-4*. New requirements exist for vent processor operations which are not shown in these tables.

EVR implementation

The early proposals for an EVR program called for an April 2001 implementation. At that point, all existing vapor recovery systems were to have been decertified, but would have been allowed to remain in service for an additional four-year period, as provided by California law. After lobbying by the oil industry and comments from equipment suppliers, CARB realized that it would be impossible to recertify all necessary equipment prior to the original April 2001 deadline and changed the implementation schedule to that shown in *Table 6*.

CARB established *effective* dates for beginning the four-year grace period, and *operative* dates by which the new requirements must be implemented. The resulting schedule is an eight-year phase-in of the new requirements. Only Stage I equipment must be recertified by April 2001.

Troublesome areas

While oil companies and dealer organizations complained about the potential costs of new requirements, the requirements should be a boon to equipment suppliers. Overall, there are many areas in which the new requirements may be controversial. Two areas that stand out as especially troublesome, in my view, are (1) the all-inclusive decertification of existing equipment and (2) the lack of a sound basis for the new emissions factors that define maximum allowable losses during certification testing. I also question the continued unwarranted discrimination against assist systems, which is reducing equipment choices for marketers, and the rationale for the single-hose dispenser requirement. My concerns in these four areas are discussed in the next sections.

Alternative to decertification

An effective alternative to total decertification of existing systems, in my view, would be stepped-up inspections and enforcement and selective decertification of equipment that will not perform as required. The concept that increased inspections will increase the every-day effectiveness of the equipment is the basis for EPA's allowance of VOC SIP credits of 56 to 92 percent based mostly on the state's inspection requirements ("Refueling Vapor Recovery in the United States" *PE&T*, July 1998, p. 30). Also, recent work in the Monterey AQMD points to increased reliability of vapor recovery equipment with increased (now quarterly) testing and inspection requirements. Weights and measures organizations in most states recognized this long ago and require annual testing and calibration of gasoline dispenser metering systems.

Improvements through stepped-up inspections would be realized in a short time, compared to the eight-year phase-in provided in the CARB rules. Equipment suppliers are responsive to their customers and would react quickly to keep stations open and equipment working properly. Decertification, although seldom used, has always been an option for CARB. It makes much more sense to selectively decertify noncomplying systems rather than all systems.

Unsupported emissions factor

Since 1995, CARB has used an uncontrolled emissions factor of 8.4 pounds of hydrocarbon (HC) vapor per 1,000 gallons of gasoline dispensed. CARB has been requiring that Stage II systems be certified at 95 percent efficiency, which means that the system should lose no more than 0.42 pounds HC for every 1,000 gallons of gasoline dispensed (.05 x 8.4 pounds).

The 8.4 lb./1,000 factor was extrapolated from a previous factor of 10 lb./1,000 gallons, which had been established for gasoline with a vapor pressure of 9 psi. The extrapolation assumed that gasoline vapor pressure in 1995 was 7.8 psi. Neither number was based on experimental data, but both were extrapolated from other earlier emissions factors.

The new CP-201, the CARB guidance document for vapor recovery, has reduced the emissions factor from 8.4 to 7.6 lb./1,000 gallons. This reduced factor is based on the assumption that summertime gasoline in California is now regulated to a vapor pressure of 7 psi rather than 7.8 psi. A linear extrapolation, which CARB claimed it used, would make the new factor 7.8 rather than 7.6 starting with pre-1992 data. Rec-

Performance Type	Requirement	Std. or Spec.	Test Procedure
Nozzle criteria	Mini-boot and integral vapor check valve	Std.	Engineering evaluation
Nozzle vapor check valve	Leak rate: ≤0.038 CFH at +2.0 inches H_2O ≤0.10 CFH at ≤100 inches H_2O	Std.	TP-201.2B
Nozzle pressure drop specifications	Δ P at specified vacuum level established during certification process	Spec.	TP-201.2B
Maximum air-to-liquid ratio	1.00 (without processor) 1.30 (with processor)	Std.	TP-201.5
Air-to-liquid ratio range	Established during certification process	Spec.	TP-201.5

Table 4: Stage II performance standards and specifications for assist systems only.

ognizing that winter gasoline will result in higher emissive factors, equipment subjected to winter certification tests would not need to meet the maximum loss of 0.38 lb./1,000 gallons, but only the 95 percent collection efficiency specification.

CARB has used certification data taken since 1996 to help validate the new emissions factors. Unfortunately, the data provided in the Staff Report does not list actual gasoline vapor pressures, although that data should have been available because it is required as part of certification testing. The data cited uncontrolled HC between 6.4 and 9.4 lb./1,000 gallons, a spread of 50 percent.

One major problem with the data results from the fact that the volume and concentration measurements were taken at the base of the test dispenser. The difference in vehicle tank and dispensed gasoline temperatures may be as high as 40°F, certainly resulting in condensation of vapors as they travel up 12 feet of hose filled with cooler gasoline and through uninsulated dispenser piping. Vapor condensation results in a lower hydrocarbon measurement at the dispenser base and thus lower emissions factors. It is difficult to imagine that one would want to establish a new standard on the basis of such data points.

All data used in justifying calculated emissions factors has been based on a series of assumptions, rather than actual measurements of vehicle tank conditions. Data should be taken at the vehicle tank and include hydrocarbon concentration and component analyses in order to make it usable for predicting hydrocarbon inventories.

One last observation about the lower emissions factor of 7.6 lb/1,000 gallon used in the new rules: The previously cited report from the San Diego AQMD suggests that actual emissions factors are between 11-12 lb./1,000 gallons. In practice, if the emissions factor understates the amount of HC vapors that need to be collected, manufactures must meet a higher efficiency standard in order to achieve the same 0.38 lb/1000 gallons loss limit. In fact, should the factor be closer to 12 lb., an efficiency of 97 per cent will be required to meet the new allowable losses. CARB has already conceded that such an efficiency may not be obtainable by allowing winter gasoline, which contains more VOC's, to certify at 95 percent in lieu of the 0.38 lb factor.

Unfair treatment of assist systems

In prior *PE&T* articles (January, August and November 1999), I have pointed out how CARB has been showing unwarranted bias against assist systems in its actions and deliberations. CARB's new requirements related to nozzle leak rates continue to discriminate against assist systems, without a sound scientific basis.

Throughout most of 1999, CARB staff's proposals for allowable maximum nozzle leak rates were equal for both balance and assist systems. However, the February 4, 2000 document passed by the Board on March 23 lists maximum allowable leak rates as 0.07 cubic feet per hour (CFH) for balance system nozzles and 0.038 CFH for assist system nozzles at a pressure of 2.0 inches water column. Nowhere in previous discussions has a need for these different maximum leak rates been discussed; a single standard of 0.07 CFH is still appropriate.

In my view, enforcement of the different leak rates without a sound engineering basis to support them is not appropriate.

Vehicle Class	40%	80%	100%
Passenger	1998	1999	2000
LD Trucks & MDV (<6000 lbs)	2001	2002	2003
MD Vehicles (6001-8500 lbs)	2004	2005	2006

Table 5: ORVR phase-in.

Single hose dispensers

A past CARB proposal for single hoses and nozzles per fueling location was eliminated some time ago after strong opposition from industry. The requirement reappeared in the February Staff Report and was adopted by the Board. The new standard calls for all dispensers at new installations to be single hose, a requirement based on the belief that multiple fueling positions create the chance for multiple leaks. However, CARB has already passed a requirement for maximum losses at a station regardless of the number of fueling positions, making the reduction of hoses and nozzles unnecessary.

In my view, CARB needs to revisit this issue. Multi-hose dispensers are installed primarily as a result of customer demands: customers feel they are cheated when paying for premium products dispensed through a single hose already filled with lesser products.

CAPCOA going its own way

For several years, CAPCOA's Vapor Recovery Committee has expressed significant concern for the lack of support from CARB and the inadequacy of enforcement tools. At its February meeting, the group voiced strong opposition to CARB's proposed requirements on the basis that the new rules would bring about new problems and not provide the tools for correcting problems with existing equipment.

The minutes of the February meeting, which are posted on CAPCOA's website, read in part that "the EVR program has no chance of achieving the claimed reduction [in hydrocarbon emissions] if something is not done to improve the [station] plumbing standards," and that "committee members noted the EVR [CARB] staff report referenced but did not include data and calculations supporting various proposed standards."

A discussion indicating that the CAPCOA committee was adamantly opposed to supporting the new EVR standards, to the point of indicating district level litigation against CARB does not appear in the February meeting minutes. After having heard their vehement objections in February, I was surprised when CAPCOA and individual districts endorsed the EVR standards at CARB's Board meeting on March 23.

In private discussions with me after the March 23 Board meeting, individual CAPCOA Vapor Recovery Committee members expressed opposition to the newly-adopted rules—opposition that they said would be reflected in future district-level requirements beyond those adopted by CARB. In this regard, the May 19 CAPCOA Vapor Recovery Committee meeting provided a glimpse of things to come. To provide field inspectors with better diagnostic tools, CAPCOA will adopt the use of four tests that are not reflected in the new CARB rules:

- Ring test for spout dimension
- Bag test for detecting leaking nozzles
- Pressure test (15") of nozzle check valve
- Pressure test (27") for dispenser integrity

CAPCOA is revising the test procedures to include the items listed above. The plan is to have the completed procedures approved by United States Environmental Protection Agency (US EPA). All tests other than the bag test are based on equivalent precision tests and represent a worst case pass/fail. With EPA approval, districts will try to enforce the tests under the federal "credible evidence rules." The proposed procedures are currently under review by district attorneys. The bag test cannot be related to other existing tests; failure will result in a requirement for other follow-up testing.

CAPCOA has announced that it will host a workshop once the procedures are in place. The Western States Petroleum Association (WSPA) has already gone on record in opposing district-level test requirements under federal rules, citing a low comfort level with the use of simple diagnostic tools for performance testing that may result in assessing fines. Instead, WSPA is recommending that CAPCOA provide station operators with diagnostic tools.

Effective Date	Module	Emission Category	Proposed Operative Date
April 2001	1	Stage I	April 2001
	3	ORVR Compatibility	April 2003
	4	Liquid Retention	
		< 350 ml	April 2001
		< 100 ml	April 2003
	5	Spillage	April 2004
		Dripless Nozzle	April 2004
April 2003	2	Stage II	April 2003
April 2003 *April 2004*	6	In-Station Diagnostics	
		> 1,800,000 gal/yr	April 2003
		> 160,000 gal/yr	April 2004
Stations < 160,000 gal/yr exempt from ISD			

Table 6: EVR implementation schedule.

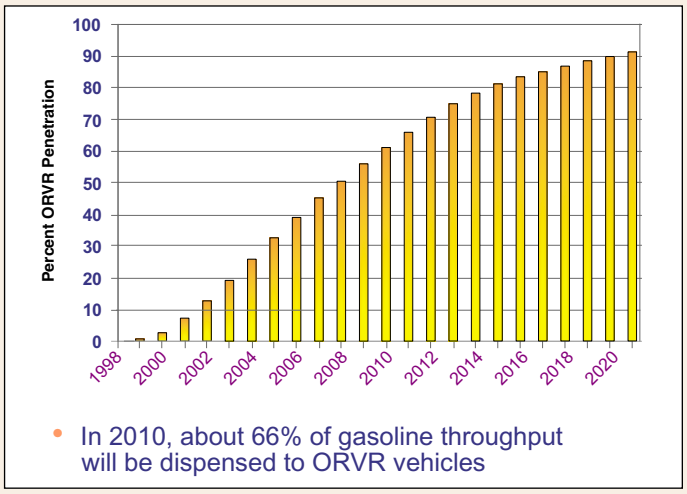

Table 7: Penetration of ORVR cars in California.

Other districts have already implemented rules specific to their jurisdictions. Beginning in June, all new construction in the Bay Area will be required to use ORVR compatible equipment. The new requirement does not apply to balance systems. Currently, only one manufacturer (Healy) has a certified assist system for ORVR. Claims by two other manufacturers (OPW and Hirt) that their systems achieve compatibility via vent processors was dismissed by Bay Area representatives as having insufficient supporting data.

The Monterey AQMD is now requiring regular tightness and blockage testing of all stations, in addition to A/L testing of assist stations, as part of their permit requirements.

Looking ahead

Testing should be done to establish supportable vehicle tank HC inventories for testing the effectiveness and efficiency of vapor recovery equipment under the new requirements. Emissions inventory data for vehicle refueling with low vapor pressure gasoline may not be available.

The new CARB rules will be a boon for the equipment industry and likely increase the cost of gasoline to consumers. For the reasons I have discussed, it is questionable if these additional costs will result in air quality improvements.

Unless coupled with additional enforcement, the new standards will not improve vapor recovery efficiency. With proper enforcement, current equipment can meet applicable requirements at less cost, as long as requirements for ORVR/Stage II compatibility are implemented.

The division between CARB and CAPCOA will result in confusion over applicable standards. As jurisdictions outside California adopt new enforcement procedures, gasoline marketers may be forced to comply with various tests based on CARB and local AQMD procedures.

Biography

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