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FINAL REGULATORY SUPPORT DOCUMENT

WIDESPREAD USE for ONBOARD REFUELING VAPOR RECOVERY and STAGE II WAIVER

DECOMMISSIONING STAGE II VAPOR RECOVERY

FINANCIAL BENEFITS AND COSTS

MAY 8, 2012

US EPA

OAQPS/OTAQ

BACKGROUND

The methodology for capturing gasoline vapors generated during vehicle refueling is in a transition phase. Stage II vapor recovery systems (VRS) are gradually being supplanted by vehicle-based onboard refueling vapor recovery (ORVR) systems. Stage II VRS capture gasoline vapors at the fuel inlet of a vehicle and transfers them to the underground storage tank. ORVR blocks the gasoline vapors from exiting the fill neck and instead displaces them to an activated carbon canister on the vehicle where they are purged to the engine during vehicle operation. Manufacturers have equipped various vehicles with ORVR since 1998. Since 2006, all newly manufactured passenger cars and light trucks and even some heavy-duty gasoline vehicles have incorporated ORVR controls. Once vehicles equipped with ORVR are in widespread use, using Stage II VRS on fuel dispensers under the program as now structured in most states offers little or no additional emissions benefit, especially as ORVR phase-in continues. [1]

Under section 202(a)(6) of the Clean Air Act (CAA), EPA has authority to determine a time when ORVR is in widespread use and to then waive or revise the CAA section 182(b)(3) statutory requirement for installing and operating Stage II VRS equipment in serious, severe and extreme ozone non-attainment areas. Subsequent to this determination, state and local air quality management agencies may seek state implementation plan (SIP) revisions to permit gasoline dispensing facilities (GDF) to discontinue use of Stage II VRS and follow recommended procedures for decommissioning the equipment and vapor vent piping.

In this final rule rulemaking (FRM), EPA is establishing a date when ORVR will be considered in widespread use and the statutory requirement for serious, severe and extreme ozone non-attainment areas to adopt Stage II VRS is waived. Once this FRM takes effect, this finding gives states the option to conclude at that date or some other date in the future that the effectiveness of Stage II VRS programs have reached a point where the emissions benefit relative to the control from ORVR will no longer justify the cost of installing new Stage II VRS systems or maintaining existing ones. In some cases, there is, or could be, a net emissions dis-benefit associated with continuing to employ Stage II VRS.[2] However, it should be noted that removing Stage II will leave refueling emissions from the declining population of non-ORVR equipped vehicles uncontrolled.[3] This rule gives states the option to revise their ozone SIPs to remove some or all of their Stage II requirements but does not mandate any action.

The purpose of this document is to present the financial benefits and costs associated with removing Stage II VRS from GDFs. The financial information is useful when evaluating cost impacts or burdens or cost savings when removing Stage II VRS equipment.

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[1] The California Air Resources Board Enhanced Vapor Recovery (EVR) program includes additional regulatory provision to improve the overall effectiveness of Stage II VRS in California. See http://www.arb.ca.gov/vapor/vapor.htm for more detail.

[2] See discussion in EPA memorandum entitled, Onboard Refueling Vapor Recovery Widespread Use Assessment in public docket EPA-HQ-OAR-2010-1076.

[3] As is discussed in the preamble to the final rule, the population of ORVR equipped vehicles and the fraction of gasoline dispensed to ORVR vehicles increases each year. For example by the end of 2015, over 81 percent of vehicles will be ORVR-equipped and over 86 percent of gasoline will be dispensed to ORVR vehicles. The control lost from removing Stage II would vary according to the real Stage II in-use efficiency value and the impact of the ORVR/Stage II compatibility effect.

STAGE II VAPOR RECOVERY SYSTEMS CURRENTLY IN USE

Stage II VRS are required to be used at certain GDFs located in serious, severe, and extreme non-attainment areas for ozone under CAA section 182(b)(3). It has also been used in certain areas of the Ozone Transport Region (OTR) to meet separate comparable emissions reduction requirements under CAA section 184(b)(2) of the CAA, but that section does not absolutely require the use of Stage II in these areas and is not directly affected by the CAA section 202(a)(6) widespread use finding and waiver of the CAA section 182(b)(3) Stage II requirement.[4] To meet the CAA section 182 and section 184 provisions noted above, Stage II VRS are in place in a total of 20 states and the District of Columbia.[5] Six additional states have adopted Stage II VRS regulations to address issues such as ozone attainment and maintenance and air toxics.[6] These states use technically the same hardware and related requirements as are used in the serious, severe, and extreme areas, but removal actions by these states does not depend on EPA's widespread use finding, since they are not subject to the CAA section 182(b)(3) requirement. In total, 26 states and the District of Columbia have included these control measures in their federally-approved SIPs in the form of generally applicable regulatory requirements governing all GDF that exceed the relevant gasoline throughput criteria.

Based on conversations with state agency and industry association representatives and our own assessments, EPA estimates that Stage II VRS are in use at GDFs providing about 40 percent of the gasoline consumed nationally. This estimate is based on the sum of gasoline consumption in states which require Stage II VRS in all counties, plus the gasoline consumption in other states in which Stage II VRS are required only in specific counties. We estimate that Stage II VRS are installed at about 47,500 GDF's in part or all of the 26 states and the District of Columbia noted above. This includes retail, private, and government GDFs. In most cases this involves GDFs using underground storage tanks, but in a few locations it includes aboveground storage tanks with volumes above a set threshold such as 250-500 gallons. Of these, based on gasoline consumption in these 27 jurisdictions, EPA estimates that about 4,900 are in areas not subject to CAA section 182(b)(3). Additionally, about 330 GDFs in Vermont currently covered under its CAA section 184(b)(2) SIP are expected to remove these controls by 2013 as a result of a separate state regulatory action. Finally, of the remaining 42,270 GDFs in these states, about 11,700 GDFs in California are expected to retain this equipment until later in this decade. This leaves about 30,600 GDFs which may potentially remove Stage II VRS in response to an EPA determination of ORVR widespread use and waiver of the CAA section 182(b)(3) requirement.

EPA received a number of comments on the NPRM stating that the potential cost savings would not be realized in the OTR states if EPA did not provide updated guidance to enable states in the OTR to meet the emissions reduction requirements of CAA section 184(b)(2) but still be able to remove Stage II VRS they previously chose to adopt to achieve those reductions. In the NPRM, EPA proposed the idea that the comparable emissions reduction measures of section CAA section 184(b)(2) could be based on an assessment of the refueling emission reduction benefits of Stage II <u>incremental</u> to ORVR, rather than

[4] See EPA report "Stage II Comparability Study for the Northeast Ozone Transport Region," EPA-453/R-94-011, January 1995 for more information.

[5] The States of Arizona, California, Connecticut, Delaware, Georgia, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Missouri, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Texas, Virginia, Wisconsin, and the District of Columbia have GDF with Stage II VRS under these provisions. The requirement in Maine which was implemented under CAA §184(b)(2) (OTR) was removed at the end of 2011; the requirement in Vermont which is also under §184(b)(2) will be removed at the end of 2012. Neither is included in this analysis.

[6] These include Kentucky, Nevada, Ohio, Oregon, Tennessee and Washington.

the reductions that Stage II would have achieved assuming the absence of ORVR. As discussed in the FRM, we are issuing updated guidance to the states on how they might conduct this comparability analysis, and we believe its application could create a framework and pathway for a state in the OTR to satisfy the comparable emissions reduction measures requirements if it elects to seek removal of Stage II controls.[7,8]

MODEL GDF

Today the average GDF with Stage II VRS pumps about 1.2 million gallons per year, or about 100,000 gallons of fuel per month.[9] While it varies somewhat by design and location, this average GDF would have 5 dispenser cabinets with 10 fueling points or nozzles connected by associated piping with fuel product being stored in an average of four underground storage tanks. There are two types of Stage II VRS: balance and vacuum assist. It is estimated that nationally about 70 percent of GDFs employ vacuum-assist type systems and 30 percent area balance-type systems, although this ratio can vary greatly from state to state.

REMOVAL OF THE STAGE II VRS REQUIREMENT

EPA has determined that ORVR is in widespread use nationwide on the effective date of this FRM and thereby waives the CAA section 182(b)(3) requirement after that date. After the effective date of the final rule, any state currently requiring Stage II VRS under CAA section 182(b)(3) may seek EPA approval to revise its state regulations to no longer require GDFs to install and implement Stage II. Nonetheless, it should be noted that this action would require EPA to approve a revised ozone SIP before a state could permit decommissioning of Stage II systems. This action would not require any state to remove Stage II VRS if it elected to retain or upgrade controls.

DECOMMISSIONING OF STAGE II SYSTEMS

The Petroleum Equipment Institute (PEI)[10] and at least four states have recommended practices or specific requirements for decommissioning Stage II systems. The PEI guidance is especially instructive as it was developed by industry experts with a focus on regulatory compliance and safety. It includes the following steps which involve either hardware costs, labor costs, or both. Most steps apply to both balance and vacuum assist type systems, while some only apply to vacuum assist systems. The steps listed below assume that underground vapor vent piping is left in place and no construction costs would be incurred to break up and repair the GDF driving surface.

- Relieve pressure in the tank ullage.
- Remove and collect all liquids from equipment.

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[7] The OTR is comprised of the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland Delaware, Virginia, and the District of Columbia. Only Maine and Vermont do not have at least one area covered by section 182(b)(3).

[8] EPA intends to develop guidance titled (tentative) "Guidance on Removing Stage II Gasoline apor Control Programs from State Implementation Plans and Assessing Comparable Measures."

[9] Estimate based on dividing EPA's estimate of fraction of nationwide annual consumption covered by Stage II VRS by the total estimated GDFs with Stage II VRS and dividing by 12 months.

[10] Recommended Practices for Installation and Testing of Vapor-Recovery Systems at Vehicle Fueling Sites.PEI/RP300-09.

- Remove or disable vacuum-assist vapor pump(s), if installed.
- Reprogram dispenser electronics as required related to vacuum assist pump at each dispenser or centrally if one pump.
- Disconnect and cap off the vapor line at the dispenser end and the tank end for each dispenser.
- Replace Stage II nozzles and all related aboveground dispensing hardware with conventional hardware for each dispenser.
- Remove Stage II operating instructions.
- Conduct tank system integrity test.
- Assure overfill device is present and fully functional.
- Restore the facility to operating status.
- Maintain documentation of the procedures used in decommissioning.
- Report results to owner and/or regulatory authority, as required.
- Update any registration or certificates to reflect that Stage II equipment is no longer in service.

COSTS OF DECOMMISIONING STAGE II VRS

After a state acts to remove its Stage II VRS requirement, each GDF owner in that jurisdiction should ascertain the optimum point at which to initiate the decommissioning process, within the time boundaries of the state requirements. Not all states will act simultaneously, and within a given state not all GDFs will initiate this effort at the same time. We expect the GDF owner will pick the optimum date for decommissioning which minimizes total cost and minimizes disruption to business operations. To accomplish this, we expect the GDF owner to pick a decommissioning date on or near a future date for standard maintenance for their GDF pump hanging hardware.

Once decommissioning starts, this sets in motion a series of actions and ongoing changes in future operations in several categories. These changes lead to both costs and reductions in costs (savings). This part of the analysis discusses the costs and savings related to these actions and ongoing changes. These will be identified as one time or recurring costs or savings for the model GDF.

ANNUAL BASIS PER GDF

The costs presented in this analysis are divided between aboveground hardware and dispenser related activities. Most aboveground hardware component costs involve the nozzles, hoses, swivels, check valves, and other related components needed at the dispensers to dispense fuel and capture the vapors displaced during refueling. The dispenser related activities involve isolating and capping the vapor piping, dealing with vacuum assist pumps, and other related actions. The aboveground costs at a GDF are driven by the number of nozzles present at the GDF, while the dispenser costs depend mostly on the number of dispensers. This analysis will break down costs into aboveground and dispenser portions.

Table 1 shows the aboveground hardware costs for the model GDF mentioned here to represent the typical service station with Stage II VRS. These costs are associated with replacing aboveground hardware of the Stage II VRS with conventional nozzle hardware. After moving to conventional dispensing hardware, the GDF will not be required to maintain nozzles with bellows, coaxial hoses and high hang hose retractors, special breakaway fittings, swivels, flow limiters, vapor check valves and hose splitters. As can be seen in Table 1, for the model GDF used here, average replacement costs drop by $3580. This savings would be realized at decommissioning since maintenance was presumed to be due anyway and at each subsequent maintenance interval for the GDF.

TABLE 1: COST COMPARISON OF HARDWARE COMPONENTS

ITEM	COST OF STAGE II VAPOR RECOVERY EQUIPMENT	COST OF NON-STAGE II EQUIPMENT
	Multi-product Single Nozzle Dispenser	*Multi-product Single Nozzle Dispenser*
HANGING HARDWARE COMPONENTS FOR 5 DISPENSERS (10 NOZZLES)	Vacuum pump, vapor recovery Nozzle and coaxial hose, breakaway, flow restrictor, swivel adaptors, vapor caps, vent caps, other required equipment	Nozzle and traditional fuel hose, breakaway, check valves, clamps and seal kits and other required equipment
OVERALL COST ESTIMATE #1 Franklin Fueling Systems	$4,900	$1,540
OVERALL COST ESTIMATE #2 Graffco Equipment	$3,500	$1,200
OVERALL COST ESTIMATE #3 Nozzlemax *	$6,900	$2,060
OVERALL COST ESTIMATE #4 JME Ellsworth Co.	$3,600	$1,920
OVERALL COST ESTIMATE #5 State of Maine DEP*	$7,100	$1,360
TOTAL AVERAGE COSTS	$5,200	$1,620
SAVINGS PER GDF		**$3,580**

***vacuum assist system*

LABOR AND LOST REVENUE COSTS OF DECOMMISSIONING

Labor costs for maintaining dispensers and hanging hardware occur each time maintenance occurs. Since this analysis assumes that Stage II decommissioning occurs at a point when GDF maintenance would have occurred anyway, many of the labor and other business costs normally associated with this activity are not encountered here. This leaves only one time labor and other costs related to the decommissioning of the Stage II VRS dispensers. These include direct labor costs for activities such as disconnecting the vapor line between the dispenser and the underground storage tank and capping at each point of disconnection, disabling and/or removing vacuum pumps if used, and other activities related to modifying the hardware and electronics within the dispenser to disable or remove Stage II VRS. In addition, there would be administrative labor costs related to removing any Stage II related labels or directions on the dispenser, maintaining documentation of the procedures used in the decommissioning, reporting the results to owner and/or regulatory authority, as required, and updating any registration or certificates to reflect that Stage II equipment is no longer in service. Underground vapor piping would not be uncovered in most cases, but would be capped at the dispenser and remain connected to the tank.

As summarized in Table 2 in this analysis, we therefore include time to modify hardware within each dispenser as discussed above and time to complete documentation and put the station back in full operation. The personnel certified to conduct these activities would spend between 1 and 3 hours at

each dispensing unit to exchange equipment and complete the administrative tasks at a billed labor rate between $70 to $120/hour. The model GDF we are using has five dispensers. To be reasonably conservative for estimating costs, we have chosen the higher labor rate and 10 labor hours to decommission the model GDF. Since there will be some miscellaneous parts and materials related to the within dispenser work these have been included at 20 percent of direct labor. Two hours have been included for completion of administrative tasks.

There are two other categories of costs associated with this decommissioning. It should be noted that the re-commissioning process for a non-stage II GDF would include tank integrity tests such as a pressure decay test. Costs for these tests are not included here as they are already required annually under applicable state and federal regulations for Stage I control requirements and NESHAP for GDFs.[11] In addition, the work on the dispensers and nozzles will put at least part of the GDF out of operation over the course of the day as changes are made to the various dispensers. To some degree, this business disruption would occur anyway during the normal maintenance cycle. However, to be conservative here, we estimate foregone sales of about 1650 gallons (1/2 of a day's throughput at the model GDF) and a lost gross profit of about $300 at each GDF to account for within dispenser work that occurs only at decommissioning.[12]

TABLE 2: ONE TIME COSTS ESTIMATES OF DECOMMISSIONING DISPENSERS

ITEM	COST OF DECOMMISSIONING STAGE II VRS
LABOR COSTS	*5 Multi-product Dispensers*
Direct Labor for reconfiguration of 5 dispensers: 2 hours per dispenser @ $120 labor rate(1, 2)	$1,200
Miscellaneous dispenser hardware/parts @20% of direct labor	$240
Administrative tasks	$240
TOTAL LABOR COSTS	**$1,680**
Lost gross profit for one-half day out of service 1650 gallons @ $0.185/gal gross marketing margin [13]	$300
TOTAL LABOR AND LOST REVENUE COSTS	**$1,980**

Source: 1-Core Engineering, Inc.; 2-OPW, A Dover Company

FINANCIAL BENEFITS OF REMOVING STAGE II VRS

[11] See recommendations in Enforcement Guidance for Stage II Vehicle Refueling Control Programs, U.S. EPA, Office of Air and Radiation, Office of Mobile Sources, December 1991, and requirements in 40 CFR part 63 subpart CCCCCC.

[12] EPA recognizes that to some degree the revenues and profits arising from these lost sales would be picked up by other nearby GDFs and that on average (over time in a given area) these gains/losses could even out.

[13] The gross margin on gasoline in 2011 was 18.5 cents per gallon or about 5.3% of the cost of the fuel. See http://www.nacsonline.com/NACS/Resources/campaigns/GasPrices_2012/Documents/NACSFuelsReport2012_USPetroleumIndustryStatisticsDefinitions%20_black.pdf -- downloaded on February 26, 2012.

The financial benefits of removing Stage II VRS arise as a result of reduced life cycle costs. For purposes of this analysis, the costs and savings for the first 12 months will be presented as beginning when decommissioning first occurs and for the subsequent 12-month periods (without initial one-time costs). The direct costs (and cost savings) for hardware and labor were presented above. In addition there are other recurring costs and cost savings which will occur in the first year and subsequent periods. The recurring costs and costs savings fall into the following categories: foregone vapor recovery savings; reduced dispenser operating costs; and elimination of any annual costs related to system testing, inspections, fees, training and record keeping. This third category of costs is identified in EPA enforcement guidance related to Stage II VRS and in state Stage II SIPs.[14] [15] Table 3 presents the annual reduced dispenser operating and maintenance cost for the model GDF on an annual (or 12 month) basis.

Beyond this, GDFs will lose the vapor recovery savings originally expected with Stage II VRS. Even though ORVR is in widespread use, some benefit would have continued to accrue into the future. The methodology for calculating this benefit is presented in EPA's Stage II technical guidance document.[16] Using 86 percent Stage II efficiency, 85 percent ORVR penetration and $3.04 per gallon (2011 average retail gasoline price without tax included according to the Department of Energy), the foregone annual recovery savings is about $1230 for the model GDF in the year Stage II is removed.[17] This value would change every year due to the volatility of gasoline prices and the continued phase-in of ORVR vehicles. While the effect of the ORVR phase in can be predicted from Table 2 of the final rule preamble, predicting future gasoline prices is difficult. For purposes of this analysis, the $1230 will be kept constant.

TABLE 3: OPERATING AND MAINTENANCE COSTS COMPARISON

	STAGE II VRS COSTS (SAVINGS)	CONVENTIONAL COSTS (SAVINGS)
PER MODEL GDF		
Stage II vacuum pump maintenance (1,2, 4, 5)	$500	$0
Eliminate electricity costs of operating vacuum pump(5)	$144	$0
Training and Certification of operators[18](1, 2)	$600	$0
GDF Compliance costs (monitoring & recordkeeping)[19](1, 2)	$600	$0
Vapor Recovery Savings	($1230)	$0
OPERATING AND MAINTENANCE SAVINGS WHEN SWITCHING TO CONVENTIONAL EQUIPMENT		**($614)**

Source: 1-NESCAUM; 2-State of Vermont; 3-Franklin Fueling Systems; 4-Core Engineering, Inc.; 5- OPW, A Dover Company.

[14] Enforcement Guidance for Stage II Vehicle Refueling Control Programs, U.S. EPA, Office of Air and Radiation, Office of Mobile Sources, December 1991.

[15] See https://www.jmmmgt.com/kc/ for an unofficial but useful summary of state Stage II requirements for the GDF operators.

[16] "Technical Guidance – Stage II Vapor Recovery Systems for Control of Gasoline Refueling Emissions at Gasoline Dispensing Facilities Vol. 1," EPA-450/3-91-022a, November 1991, p. 5-16.

[17] See http://www.eia.gov/todayinenergy/detail.cfm?id=4570 downloaded on February 14, 2012

[18] Assumes one operator trained each year for 40 hours ($10 per hour) at a scheduled one week for fee class.

[19] This assumes ten minutes per day at $10 per hour.

COMBINED HARDWARE AND OPERATING SAVINGS

The results of Tables 1, 2, and 3 can be used to estimate costs for Stage II decommissioning and at the first maintenance point thereafter. These are shown in Table 4. The recurring costs (savings) are dependent on the time length of the GDF maintenance cycle. Industry sources indicate a life cycle of about 18 months for above ground hardware. Thus costs (savings) in the time period following completion of initial decommissioning would start again 18 months later. For purposes of this paper, this analysis is on a 12 month basis and assumes the hanging hardware cost savings, which would occur at the 18 month point, are apportioned at 2/3 of total per 12 months.

TABLE 4: 12 MONTH COSTS (SAVINGS) FOR DECOMMISSIONING STAGE II VRS FOR MODEL GDF

ITEM	INITIAL YEAR	RECURRING
HANGING HARDWARE	($2,363)	($2,363)
LABOR COSTS	$1,680	$0
LOST GROSS PROFIT	$300	$0
OPERATING AND MAINTENANCE	($1,844)	($1,844)
VAPOR RECOVERY	$1230	$1230
TOTAL	**($997)**	**($2,977)**

An illustration may be helpful here. If a GDF was decommissioned in January 2015 there would be a savings of $997 at that time. The next maintenance event would be assumed to be July 2016. In this illustration, for 2016 the costs (savings) would be based on the 12 month operating/maintenance savings, the 12 month foregone vapor recovery savings, and the hanging hardware savings. The total savings would be $2,977. This savings value would continue for subsequent twelve month periods, since hanging hardware is apportioned at 2/3 and other items from Table 4 are already on a 12-month basis.

COST DIFFERENCE OF MAINTAINING STAGE II VRS VS CONVENTIONAL DISPENSING SYSTEM

Stage II has been a part of VOC emission control in many areas for some time. Areas throughout the country in states listed in footnote 4 would be potentially affected by this action, if states choose to seek SIP revisions to remove Stage II requirements from their SIPs. EPA believes that not all of these jurisdictions will remove their requirements for the GDF in their states at the same time. As mentioned earlier, California has 11,700 GDFs and may keep the Stage II requirements in place for the rest of this decade. EPA estimates that there will be approximately 30,600 GDFs in serious, severe, and extreme ozone nonattainment areas that will be given the option to take steps to decommission their Stage II VRS after an ORVR widespread use determination by EPA. For purposes of this analysis, it is our expectation that, just as was the case for installations, decommissioning will occur over about a three year period, with approximately 1/3 of the GDF population affected annually. EPA makes this estimate based on the following: 1) in many cases there are not an adequate number of trained installers and jobbers to meet a surge in demand, especially with seasonal limitations in areas such as New England; 2) states are likely to act to revise their SIPs and state regulations to remove their Stage II requirements on different schedules and give varying time periods for action by the GDF owners; and 3)

facilities are expected to wait to dismantle their Stage II systems during their scheduled maintenance periods that extend beyond one year.

Costs and savings were estimated on a per facility basis based on the model GDF described above, and the initial and recurring cost savings are calculated on that basis. In terms of understanding the overall financial impact, it is useful to assess cost savings during transition years and over the long term. To assess impacts during the transition years, initial and recurring model GDF costs may be multiplied by the number of GDFs assigned for decommissioning each year, equal to 1/3 of the total (or approximately 10,200 GDFs), and those decommissioned in previous years, to estimate the nationwide impacts or benefits of this action. The long term 12-month savings in 2011 dollars would simply be the product of all decommissioned GDFs (30,600) and $2,977 per 12-months or about $91 million.

TABLE 5: NATIONWIDE SAVINGS OF REMOVING STAGE II VRS (INITIAL PLUS RECURRING)

COST SAVINGS FOR MODEL PLANT of 120,000 GPM	**SAVINGS FROM SWITCHING TO CONVENTIONAL DISPENSERS OVER MAINTAINING STAGE II VRS**
12-MONTH MODEL PLANT GDF SAVINGS AFTER STAGE II VRS IS REMOVED	INITIAL $997; RECURRING $2,977
ESTIMATED NATIONWIDE SAVINGS FOR FIRST 12 MONTH PERIOD IF STAGE II VRS IS REMOVED FROM 10,200 GDFs	$10,200,000
ESTIMATED NATIONWIDE SAVINGS FOR SECOND 12 MONTH PERIOD IF STAGE II VRS IS REMOVED FROM A TOTAL OF 20,400 GDFs	$40,500,000
ESTIMATED NATIONWIDE SAVINGS FOR THIRD 12 MONTH PERIOD IF STAGE II VRS IS REMOVED FROM A TOTAL OF 30,600 GDFs	$70,900,000
ESTIMATED ANNUAL LONG TERM NATIONWIDE SAVINGS (w/o California)	**$91,100,000**

Of course, these cost savings will not occur in one year, and as presented above are likely to increase over several years assuming Stage II is phased out. Thus, it is useful to present these cost savings as a net present value in one year. For purposes of this analysis we have selected a base year of 2013 and for sensitivity have used net present value discount factors of three and seven percent. The results of this analysis are shown in Table 6. Note that for “2016 and later” column the savings are annual and the net present value savings would be less for each following calendar year.

TABLE 6: DISCOUNTED SAVINGS OF REMOVING STAGE II VRS (INITIAL PLUS RECURRING)

COST SAVINGS (From Table 5)	2013	2014	2015	2016
Undiscounted (millions)	$10.2	$40.5	$70.9	$91.1
NPV 3% (millions)	$10.2	$39.3	$68.8	$83.4
NPV 7% (millions)	$10.2	$37.9	$61.9	$74.4

In conclusion, the agency has regarded Stage II VRS decommissioning to involve equipment replacement, labor, elimination of certain expenses associated with Stage II VRS operation. We have estimated costs on a model GDF basis and then multiplied by the number of facilities estimated to decommission Stage II VRS and the results indicate a long term substantial annual savings of over $91 million per 12 months, nationwide.

GENERAL DISCUSSION ON COST SAVINGS FOR NEW INSTALLATIONS

The analysis above represents savings that could result upon EPA's ORVR widespread use finding and waiver of the CAA section 182(b)(3) requirement only for GDFs which have currently installed and are operating Stage II VRS systems. There are also two other categories of GDFs where savings could accrue as a result of the final rule, and for which costs would be incurred in the absence of EPA's finding and waiver. The first is Stage II retrofits for GDFs in current Stage II areas which are now exempt but whose throughput in the future exceeds the state levels for exemptions and Stage II retrofits in areas which might come under CAA section 182(b)(3) in the future. The second is Stage II installations at newly constructed GDFs located in areas currently under CAA section 182(b)(3) and Stage II installations at new GDFs in areas whose ozone NAAQS status becomes serious or worse in the future. The savings profile resulting from EPA's finding and waiver for GDFs in these two categories has similar elements to those identified above but includes some additional elements as well.

RETROFIT INSTALLATIONS FOR GDFs IN AREAS CURRENTLY REQUIRING STAGE II VRS OR IN AREAS DOING SO IN THE FUTURE UNDER SECTION 182(b)(3)

This is the situation faced by many GDFs upon implementation of CAA section 182(b)(3) and thus the costs of these installations were studied thoroughly in the early 1990s. The retrofitting of GDFs to add Stage II VRS is the most expensive control situation because it includes extensive above ground costs per dispenser as well as construction and below ground costs for piping needed to route the vapors back from the dispenser to the underground storage tank (UST), trenching, backfilling and installation. Above-ground costs are driven by the number of nozzles present at the GDF, while below-ground costs are driven by the physical layout of the GDF such as the GDF configuration (i.e., number of dispensing islands, distance between islands and distance from islands to UST), the type of system (balanced system or vacuum assist system) and other station physical characteristics (amount of concrete over UST and amount of backfill material required). In EPA's Stage II technical guidance

document[20], a summary of capital cost estimates were provided for installing Stage II VRS. Taking the average of the costs suggested by commenters ($18,715) for Model Plant 4 and applying the Department of Labor's Consumer Price Index Inflation Calculator, the capital outlay in 2011 would average about $30,000.[21] This would be the potential cost-avoidance savings per GDF, plus the avoided annual Stage II VRS operating costs of about $3,000 per year as discussed above. It is not possible to fold these potential savings into the total above, because the number of potentially retrofit GDFs in the absence of EPA's ORVR widespread use finding and CAA section 182(b)(3) waiver is not known.

STAGE II VRS INSTALLATIONS AT NEW GDFs IN CURRENT OR FUTURE AREAS SUBJECT TO SECTION 182(b)(3)

Stage II VRS installation costs at new GDFs in the absence of EPA's finding and waiver would involve mostly above ground hardware. There would be below ground costs for vapor vent piping and installation to the dispensers manifold, and underground storage tank, but there would be no extra costs for driveway break up and resurfacing. EPA estimates these costs to be about $11,000 for a vacuum assist system when applying the Department of Labor's Consumer Price Index Inflation Calculator, leaving a remaining additional cost of about $20,000 per GDF.[22] This $20,000 would be the potential cost-avoidance savings per GDF, plus the avoided operating costs of about $3,000 per year as discussed above resulting from the final rule. There would be no further business disruption costs since these GDFs would be new construction. It is not possible to fold these potential savings into the total above, because the number of potentially new GDF installations that could incur costs in the absence of EPA's ORVR widespread use finding and CAA section 182(b)(3) waiver is not known.

[20] "Technical Guidance – Stage II Vapor Recovery Systems for Control of Gasoline Refueling Emissions at Gasoline Dispensing Facilities Vol. 1," EPA-450/3-91-022a, November 1991, pp. 5-19.

[21] Work conducted in Colorado in 2008, estimated retrofit costs of twice this value. See http://raqc.org/postfiles/board_meetings/2008/june18/StageIIVaporRecoveryDMA-NFR0608RevFinal.pdf.

[22] "Technical Guidance – Stage II Vapor Recovery Systems for Control of Gasoline Refueling Emissions at Gasoline Dispensing Facilities Vol. 1," EPA-450/3-91-022a, November 1991, pp. 5- 13.