Stakeholder Comments on Proposed Changes to MassDEP Stage I & Stage II Programs

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Comments for Stage II Stakeholder Meeting
January 10, 2013

Good afternoon. My name is Barbara Kwetz Allan. I am a MassDEP retiree, the former Director of BWP's Division of Planning and Evaluation then responsible for air quality and waste management planning. I am now a member of the American Lung Association's Massachusetts Leadership Board. Thank you for the opportunity to speak today on my behalf and on behalf of the American Lung Association.

VOC emissions from gasoline are a precursor to ozone, and are themselves toxic. While Massachusetts continues to make progress in cleaning the air, in the Lung Association's 2012 State of the Air report, no Massachusetts county received higher than a "C" grade for experiencing too many high ozone days, putting at risk vulnerable populations, including our children, elderly and those living with chronic lung disease.

Gasoline contains many toxic chemicals, including but not limited to benzene; toluene; xylene; 1, 3 butadiene. According to the most recent US Environmental Protection Agency's National Air Toxics Assessment (1996) all Massachusetts counties are predicted to exceed MA Allowable Ambient Limits (AAL) for benzene, the risk driver for the suite of toxics associated with gasoline emissions; the data from MassDEP's air toxics and PAMS monitoring networks also measure benzene concentrations in excess of the benzene AAL. Gasoline dispensing facilities (GDFs) are ubiquitous sources of these emissions. These are sites where a large portion of the public is exposed to these toxic emissions either in the short-term, during fuel delivery and vehicle fueling, or long-term, given many facilities' location in or adjacent to residential areas. Minimizing the public's exposure to these toxics is essential.

In light of health impacts of gasoline emissions, MassDEP must act prudently when removing control equipment that has served the public well all these years. The *Final ERG Report, Air Program Support for Stage I and Stage II Programs in Massachusetts (December 12, 2012)* presents a convincing, technical basis for the removal of Stage II systems and improvements to Stage I requirements. Accordingly, ALA and I support the following:

1. Elimination of Stage of II requirements for all GDFs by regulation, with decommissioning consistent with the steps listed in the *Petroleum Equipment Institute Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle-Fueling Sites (PEI/RP 300-09, Section 14, Decommissioning Stage II Vapor Recovery Piping)*. Decommissioning should be accompanied by a certification, providing MassDEP the opportunity to ensure compliance.

2. While decommissioning should commence upon legal enforceability of the regulation, the regulation should include an end date by which all decommissioning must be completed and that date should be July 1, 2015. As the Support document notes, incremental emission reduction benefits continue to accrue until then, after which the "disbenefits," i.e., excess emissions, begin to occur.

3. MassDEP should proceed with enhancing its requirement for Stage I Enhanced Vapor Recovery for GDFs with a greater than 500,001 gallon annual throughput as part of the decommissioning requirement; it should be based on the CARB-certified Stage I systems, not a mix and match system which could dilute the overall benefits. Five certified vendors for this system have been identified, ensuring choice and competition. This should also be a BACT requirement for any new or modified facility at or above the threshold for applicability upon the regulation's effective date.

The additional emission reductions from this enhancement would provide a margin of safety for identified uncertainties in the analysis in the Support Document and additional public health protection. More importantly it would address some of the problems identified in the testing certification program directly attributable to the current Stage I program. We note that this requirement provides cost-effective emission reductions, ranging from just under $3,000 per ton removed for the smaller applicable facilities (500,001 to 1,000,000 gallons), and for the largest applicable facilities (greater than 2,000,000 gallons) a positive return on investment is projected based on vapor capture and sale.

4. We endorse MassDEP's consideration of requiring low spillage nozzles and low permeability hoses. Since it is not possible to provide specifications in advance, MassDEP should reserve sections of the Stage I/Stage II regulatory package for these requirements, and make the commitment to propose regulatory language, with appropriate technical support, within a year of the final Executive Orders for this equipment, based on whichever Order is last. It is important to ensure that the equipment used to actually fuel vehicles is at least as good (durable and environmentally protective) as what it is in use today.

Thank you for consideration of these comments.

Stage II & ORVR and Associated Emissions of Gasoline Vapor State of Massachusetts Gasoline Dispensing Facilities

Ted Tiberi, Luke Howard, Mike Heffernan, ARID Technologies, Inc.

18 December 2012
www.ARIDtech.com

Executive Summary

Gas stations; also called gasoline dispensing facilities (GDF) typically store fuel in underground tanks (called UST's). The gasoline is dispensed through nozzles to the motorist's vehicle tank. When the vehicle tank is refilled, the liquid gasoline entering the tank will displace a volume of vapor phase gasoline; for example, if 10 gallons of fuel are pumped into the vehicle tank, approximately 10 gallons of vapor will be displaced. This displaced vapor is comprised of air and hydrocarbons. Some of the hydrocarbons (also called VOC's – Volatile Organic Compounds) contain HAP's (Hazardous Air Pollutants), and direct exposure to some HAP's is known to increase risks for cancer; for example benzene. In addition, the emissions of VOC's to the atmosphere are ozone precursors; where ozone formation in the lower atmosphere is detrimental to human health.

To reduce emissions of VOC's and HAP's to humans and the environment, Stage II vapor recovery systems were put in place. The Stage II systems use a small vacuum pump located in the fuel dispenser along with a coaxial hose (hose within a hose) arrangement to allow liquid gasoline to flow from the UST's to the vehicle and at the same time to collect displaced vapors from the vehicle tank and then direct these collected vapors back to the UST's.

The operation of Stage II vapor recovery provides three key benefits:

- Reduced health risks to motorists as direct exposure to benzene and other HAP's is avoided
- Reduced impact of hydrocarbon emissions to the environment as the displaced vapors are captured and directed back to the UST's
- Operational savings to the GDF owner/operator since the recovered vapors from the motorist's vehicle tank are used to blanket the liquid gasoline stored in the UST's. By keeping the hydrocarbon vapor concentration at elevated levels in the vapor space of the UST's, the natural phenomena of evaporation of liquid gasoline to vapor phase gasoline is avoided. In this manner, there is a kind of linked or interdependency between the Stage II system and the UST's
    - The vapor space above the liquid gasoline has a hydrocarbon vapor concentration that attains some "equilibrium level",

where the rate of liquid evaporating to vapor equals the rate of vapor condensing to liquid. When the equilibrium hydrocarbon concentration is altered by ingestion of atmospheric air, liquid fuel will evaporate to increase the hydrocarbon concentration back up to the original equilibrium level. During this process of "re-saturation" of the UST vapor space, the storage tank pressure will increase and excess volume of hydrocarbon vapors will be exhausted from the UST vapor space (One gallon of liquid gasoline evaporates into 520 gallons of vapor phase gasoline, at 40% hydrocarbon concentration). This storage tank breathing loss is the primary reason that very large above ground storage tanks at bulk gasoline terminals, refineries and distribution facilities use so-called "floating roof tanks"; these tanks use a roof that literally floats on the surface of the gasoline, therefore eliminating any vapor space above the liquid, to subsequently eliminate the breathing loss dynamics.

An on-going debate in the 1980's and 1990's emerged between the Auto and Oil Industries as to what party should be responsible for controlling the refueling losses. The Oil Industry prevailed and the Auto industry was forced to equip new vehicles with the so-called ORVR (On Board Refueling Vapor Recovery) system. The ORVR system is primarily comprised of an activated carbon canister, which captures the displaced vapor during refueling. As the motorist drives down the highway, the carbon canister is regenerated by a portion of engine intake air "back flushing" through the carbon canister, where the hydrocarbons are desorbed and burned as fuel in the engine. Since the ORVR systems are not retrofit to vehicles, but rather incorporated into new vehicle production, the population of ORVR equipped vehicles has been slowly increasing throughout the United States. Passenger vehicles were first equipped in 1998, with 40%, 80%, and 100% of new vehicle production having ORVR systems in 1998, 1999 and 2000, respectively.

At the time of the Oil Industry "victory", the oil industry wanted to remove the Stage II hardware from GDF. Since only a low proportion of vehicles had ORVR systems in 1998, immediate removal of the Stage II systems was not possible. However, the oil industry negotiated for a timed "phase-out" of the Stage II hardware in conjunction with a greater proportion of ORVR equipped vehicles in the fleet. The notion of widespread use (WSU) was discussed between USEPA and the Oil Industry; whereby a certain population of ORVR equipped vehicles would trigger the removal of Stage II vapor recovery controls. The rough idea formulated at that time (without in-depth study or understanding) was that after a threshold population of ORVR vehicles was attained in the fleet, the use of overlapping controls (Stage II at the GDF and ORVR within the vehicles) would be counterproductive since the emissions controlled by ORVR Alone would exceed the emissions controlled by either Stage II Alone or Stage II in conjunction with ORVR. However, in practice, these fundamental assumptions are not accurate or true. For the first assumption regarding the

refueling emissions controlled by ORVR Alone in comparison to Stage II Alone; we show in our CHART1 of this report, that there is a cross-over for the ORVR Alone curve with the Stage II Alone curves; however, in practice Stage II is never able to be used "Alone" as there will always now be some proportion of ORVR equipped vehicles in the fleet. Thus, our CHART2 shows that the combination of Stage II + ORVR provides the lowest emissions in comparison to ORVR Alone over the entire interval presented; which incorporates increased proportion of ORVR vehicles in the fleet. Basically, the presence of the Stage II system acts as a "backstop" to provide a chance to capture the refueling emissions from non-ORVR vehicles. Therefore the combined Stage II + ORVR efficiency will always be higher than ORVR Alone.

For the second assumption from above, regarding the total emissions controlled by ORVR Alone in comparison to Stage II in conjunction with ORVR; we show in CHART3 that there is a cross-over for the ORVR Alone curve with the Stage II + ORVR curves; however, this ORVR Alone curve is generated without including any storage tank breathing losses. These storage tank-breathing losses are the category of emissions described above under the "Operational Savings" section of this Executive Summary. Since Stage II is removed under the ORVR Alone option, the UST's are not able to use any of the hydrocarbon vapors displaced from the motorist's vehicle tank; as these vapors are now adsorbed on the activated carbon used in the ORVR system. As such, the UST's will ingest atmospheric air to offset the vacuum developed as product is withdrawn and directed to vehicles. The interdependency of Stage II and the UST's is now interrupted, and the ingested air will cause storage tank breathing losses to occur. The dynamics of this situation have been overlooked or ignored by the Regulatory Community, Lawmakers, and other Stakeholders. **When the storage tank breathing losses are properly accounted for and added back to the emissions inventory, the ORVR Alone curve never crosses over the ORVR +Stage II curves, and therefore the ORVR Alone case never provides for the maximum amount of emissions reductions**. The fact that Stage II systems "solve two problems simultaneously" by recovering displaced vapors from the vehicle tank AND using these recovered vapors to blanket the UST vapor space and thereby avoid subsequent evaporation of fuel and storage tank breathing losses has not been understood.

A quick word about IEE, Incompatibility Excess Emissions. IEE have been recognized by various Stakeholders'; whereby the higher proportion of ORVR equipped vehicles will cause higher amounts of ambient air to be ingested by the Stage II systems. This greater quantity of air will dilute the hydrocarbon vapor space, and cause liquid fuel to evaporate and eventually be exhausted from the UST combined vapor spaces. When the IEE are properly quantified, there is a crossover with the ORVR Alone case with the Stage II + ORVR Case (Please see CHART5c); this crossover occurs when a vapor processor is not used to actively manage the UST pressure. As seen in CHART5c, when a vapor processor such as the ARID Permeator is employed, the IEE emissions are reduced by 99.3%, and this is clearly the optimum configuration. For clarity, ORVR Alone storage tank breathing losses and

Stage II + ORVR IEE are generated by a similar mechanism. Storage tank breathing losses are caused by pure air ingested through the vent line, and IEE emissions are generated by a combination of air and hydrocarbons pumped back into the UST by the Stage II system, while refueling an ORVR equipped vehicle.

Widespread Use and General Overview

In general, vapor emissions at gasoline dispensing facilities (GDF) are comprised of **refueling emissions** and **storage tank emissions**. In turn, refueling emissions are generated at the nozzle/vehicle interface and at the outlet from the carbon canister used on the ORVR systems. The storage tank emissions are comprised of vent line emissions through the pressure/vacuum valve (p/v valve) and fugitive emissions through various point sources within the vapor containing hardware; where the vent & fugitive emissions are a function of storage tank pressure.

At a GDF using a combination of Stage II and ORVR, the storage tank vent and fugitive emissions comprise the so-called "IEE" or incompatibility excess emissions. The IEE emissions are generated from the combined storage tanks due to air ingestion, dilution of the hydrocarbon concentration within the vapor spaces of the tanks, and subsequent evaporation of liquid gasoline to increase the vapor space concentration back to the original "equilibrium" value. As ORVR penetration increases with time, the IEE will increase due to leaner vapors (more air) being returned to the storage tank vapor space, which in-turn triggers the evaporative process described above.

With non-Stage II and ORVR alone, air ingestion via Stage II vacuum pumps located in the fuel dispensers is eliminated, however ***air will still be ingested into the storage tanks through the vent line.*** During busy refueling periods, the negative cracking pressure of the p/v valve is quickly reached since the volume of fuel removed from the tank will draw down the level of fuel and this "piston effect" will create a vacuum in the tank vapor space. Typically, the air ingestion will occur when a negative pressure of -6 to -8 inches of water column is reached. The ambient air entering the system will cause the liquid fuel in the tank to evaporate (similar to IEE mechanism), and when the GDF experiences slower pumping periods or when the GDF is closed for business, the combined storage tank pressure will quickly increase. Let's refer to these emissions as "*Storage Tank Breathing Losses*". The presence of p/v valves does not in any way stop the STBL; the p/v valves simply shift a portion of the "vent emissions" to "fugitive emissions".

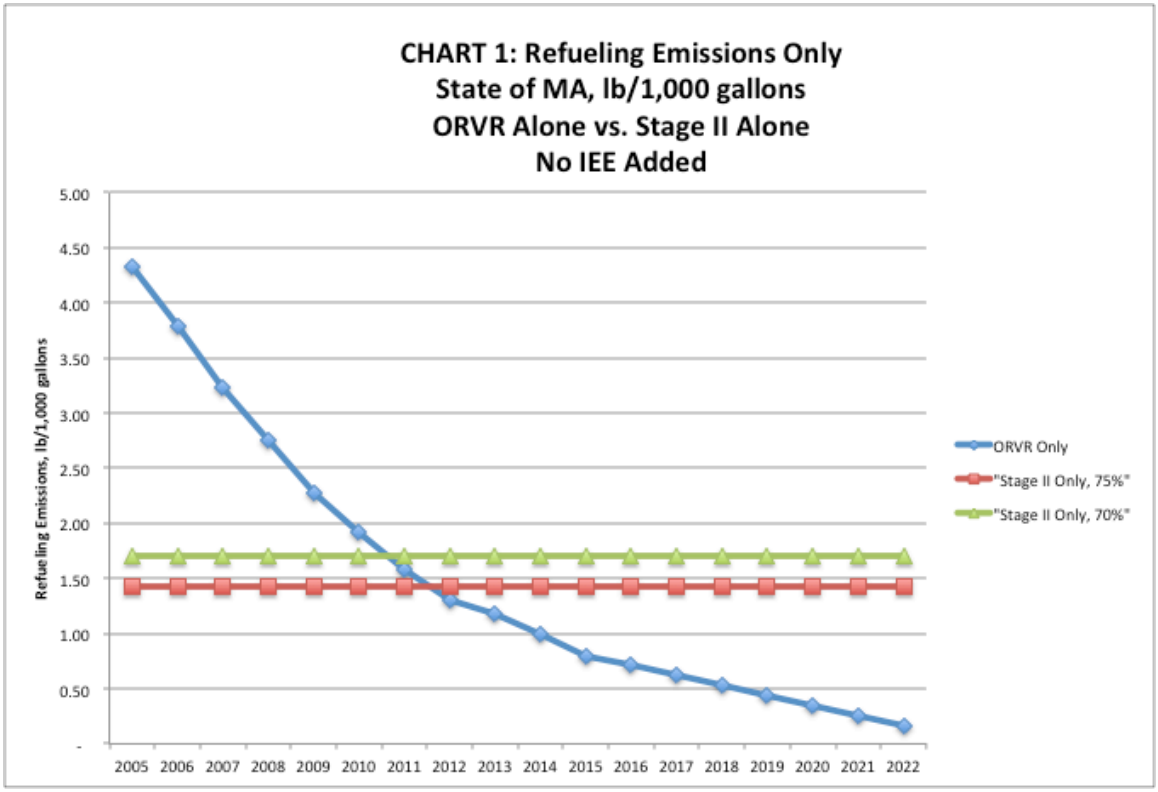
To summarize, when Stage II and ORVR are used together at a GDF, the storage tank emissions are called IEE (Incompatibility Excess Emissions). When Stage II is not present at the GDF, and only ORVR is employed, the storage tank emissions in this report are called Storage Tank Breathing Losses (STBL).

ORVR and Stage II Emissions

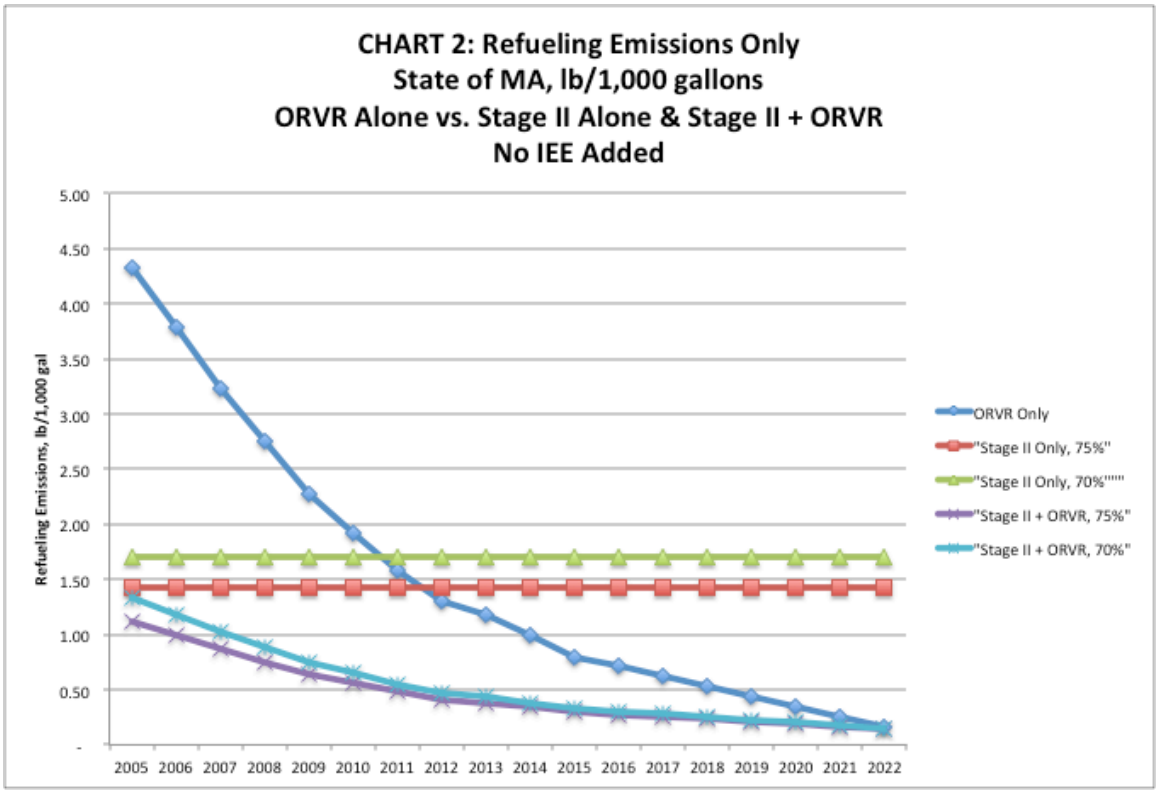
In our view, the concept of ORVR WSU "widespread use" has been misunderstood and misinterpreted. The primary flaw centers on the "breakeven" or "cross over point"; where (1) the refueling emissions from ORVR alone are said to equal the refueling emissions from Stage II alone; or (2) when refueling emissions from ORVR alone are said to equal the refueling emissions from Stage II plus ORVR.

It is best to illustrate these points by charts. Chart 1, represents similar data from the dKC Report shown as Figure 3-1 on page 3-6. As opposed to the dkC chart, our Chart1 does not add IEE, as we want to illustrate this effect later in the report.

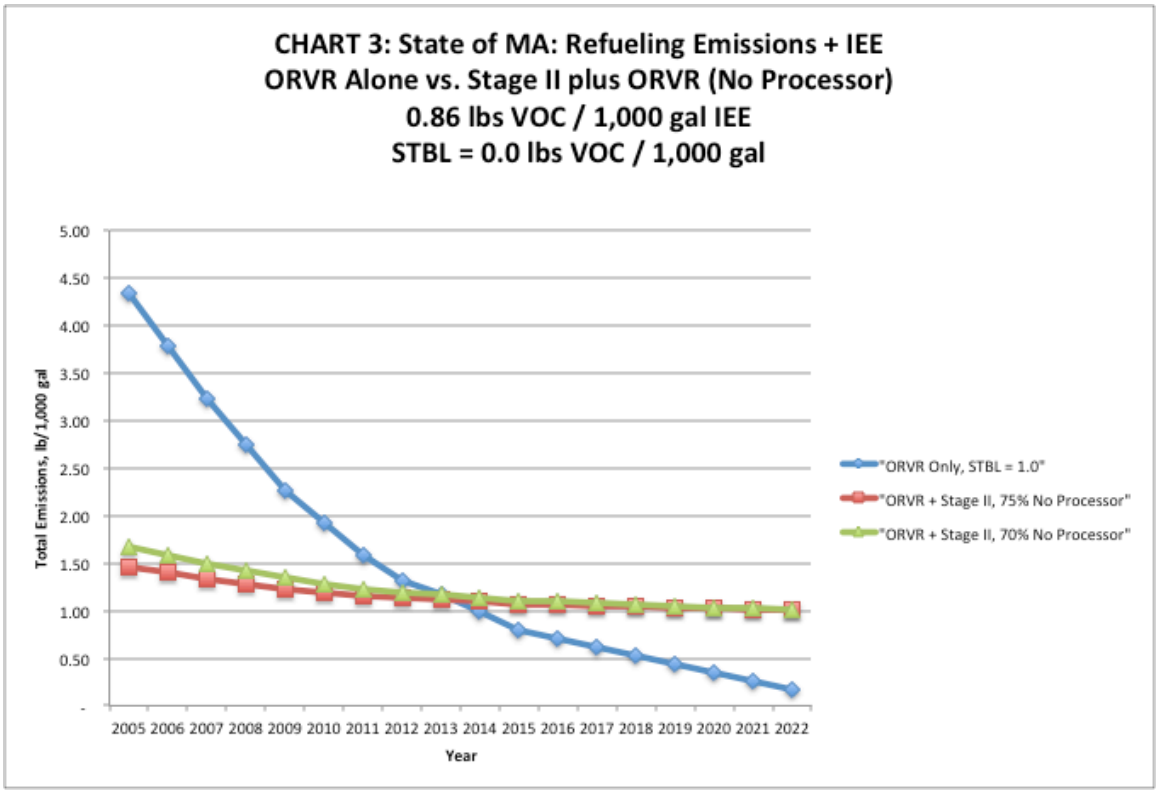
Here ARID recreates the dkC data by using a simple spreadsheet instead of MOVES. Our spreadsheet uses all the same assumptions as dKC. First, we plot the ORVR Alone vs. Stage II Alone refueling emissions from 2005 through 2022; we show ORVR only and two control efficiencies for Stage II only, 75% and 70%.



Next, we show Chart 2, which incorporates Stage II + ORVR refueling emissions, using the same Stage II efficiencies of 75% and 70%. The refueling emissions with the combined use of Stage II and ORVR are always lower than the emissions with ORVR only; and there is no "crossover" point with ORVR only and the Stage II + ORVR curves. Thus definition (1) from above on WSU is negated, and there is no benefit to using ORVR Alone in comparison to Stage II + ORVR over the entire interval shown. This data is not shown in the dKC report.

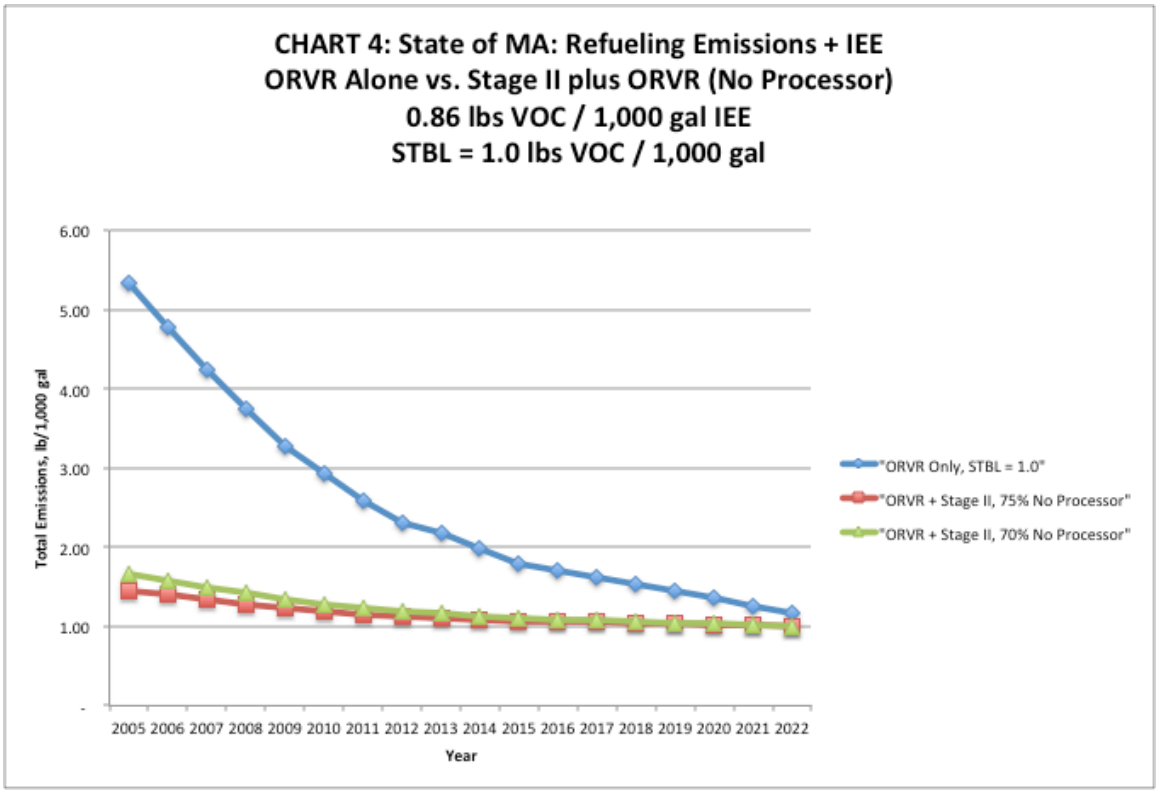


Next, we move to Chart 3, which very closely represents the data from the dKC Report shown as Figure 3-1 on page 3-6. Here ARID recreates the dKC data by again using our simple spreadsheet instead of MOVES; incorporating the relevant dKC assumptions. First we plot ORVR Alone vs. Stage II plus ORVR, at the two Stage II efficiency levels. Even though ARID has directly measured values for IEE which far exceed the value of 0.86 lbs. VOC / 1,000 gal figure used by dKC for their Figure 43-1 plot; ARID uses the low figure in our Chart 3. Chart 3, if realistic, would show a benefit to using ORVR Alone beyond 2013.



However, the major problem with Chart 3 (and Figure 3-1 in dKC report) is that the Storage Tank Breathing Losses (STBL) for the ORVR Alone plot are ignored and mathematically are **set to zero**. The assumption of zero STBL is totally unrealistic and not supportable by actual measured data. The STBL are a very important contribution to the total vapor losses, and the dKC Report (and US EPA and MA DEP rationale) have totally neglected this category of emissions. For decades, the USEPA has ignored this category of important emissions in their analysis of Stage II and ORVR interactions.

It is this very same category of emissions which dKC recommends the use of a vapor processor for mitigating; however, the magnitude of these emissions is strangely assigned a zero in this part of the dKC analysis. This is highly unusual and represents a fundamental flaw in the dKC, USEPA and MA DEP rationale.



We incorporate a very conservative figure of 1.0 lb/1,000 gal STBL in our Chart 4. Please note a gap between the ORVR Only emissions and the ORVR + Stage II emissions; there is no intersection of the curves and therefore no emissions reduction advantage to using ORVR Alone in comparison to ORVR + Stage II. Please also note that the emissions gap is relatively modest in future years without the use of a technology to mitigate the storage tank losses. To view the impact of using a means to reduce the storage tank evaporative losses, our Chart 5 now incorporates emissions curves for ORVR + Stage II + Vapor Processor; where an active vapor processor is used to control storage tank pressure and to reduce IEE by 99.3%, as confirmed by objective, third-party field testing.

In Chart 5b, below; we incorporate a still conservative figure of 2.5 lbs./1,000 gal STBL. Please note that further "upward shift" in the ORVR only emissions curve.

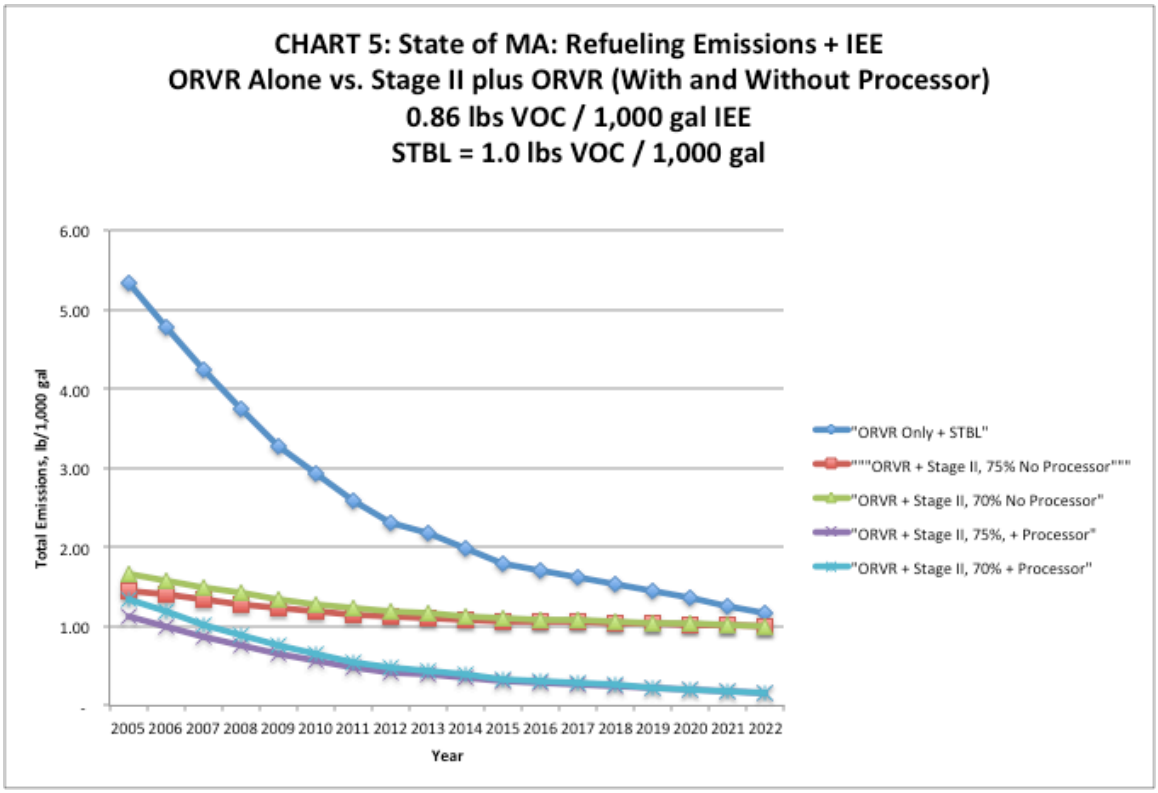
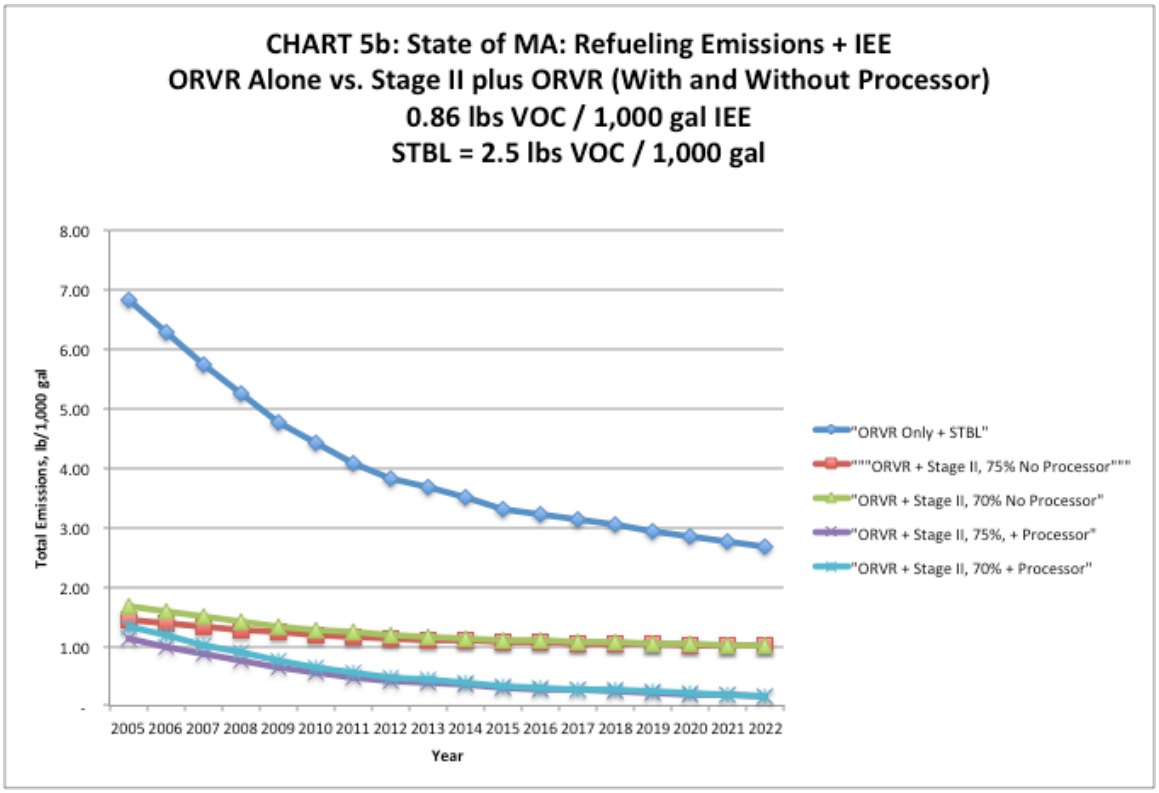


CHART 5: State of MA: Refueling Emissions + IEE
ORVR Alone vs. Stage II plus ORVR (With and Without Processor)
0.86 lbs VOC / 1,000 gal IEE
STBL = 1.0 lbs VOC / 1,000 gal
Total Emissions, lb/1,000 gal
6.00
5.00
4.00
3.00
2.00
1.00
-
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Year
"ORVR Only + STBL"
"""ORVR + Stage II, 75% No Processor"""
"ORVR + Stage II, 70% No Processor"
"ORVR + Stage II, 75%, + Processor"
"ORVR + Stage II, 70% + Processor"



As seen in Chart 5, the ORVR + Stage II + Processor curves show a large reduction in total emissions from the ORVR Alone case, when STBL emissions are properly accounted for in the emissions inventory. We use a very conservative figure of 1.0 lbs. VOC / 1,000 gal for STBL; in practice ARID has measured values nearly five times higher than this figure, or about 5 lbs. of VOC per 1,000 gallons of fuel dispensed.

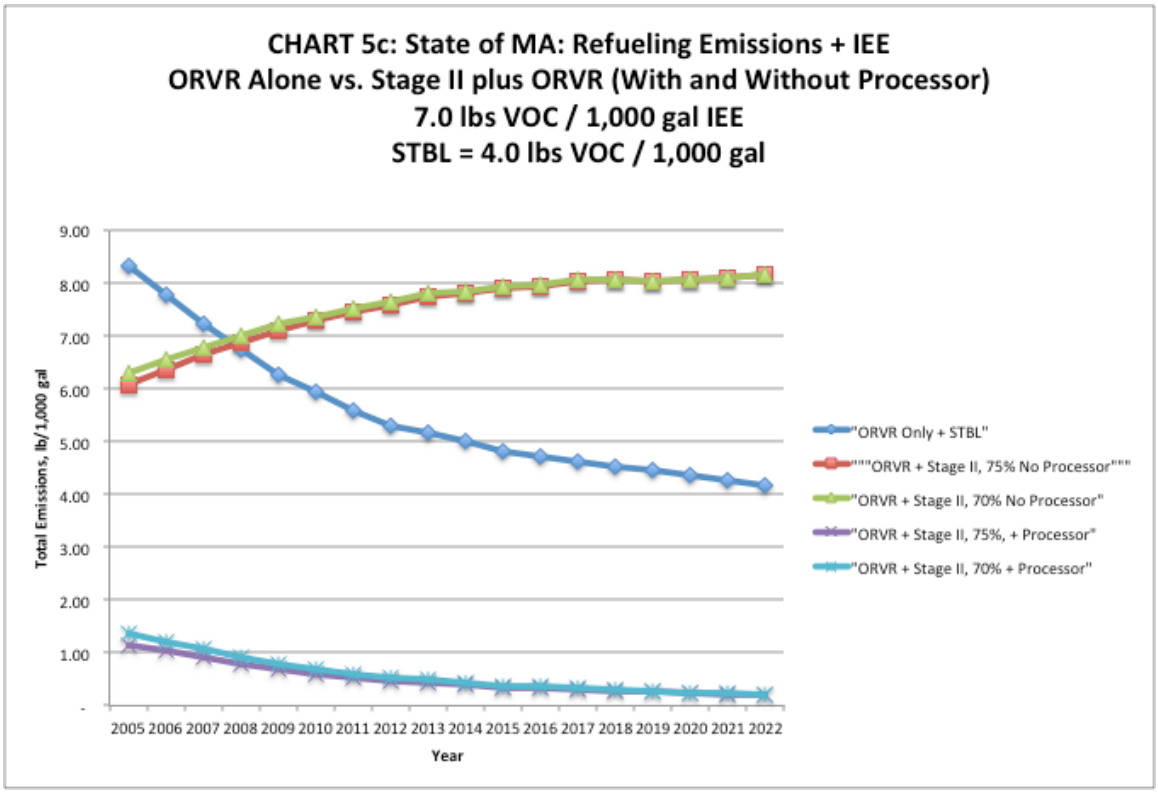
Chart 5b, above, shows the same curves but with STBL incremented to 2.5 lbs./1,000 gallons; still in our view a conservative figure.

Ironically, as mentioned previously, the dKC Report (and USEPA and MA DEP rationale) seems to recommend the elimination of Stage II (without considering enhancement via vapor processors); but then the report recommends further investigation for the use of vapor processors to mitigate ***the new problem*** caused by STBL, in an ORVR only environment.

Especially bothersome is that STBL are not included in the dKC report to MA DEP. The omission of these important storage tank emissions results in dramatically different (and incorrect) conclusions drawn from this study.

Thus far, we have explained a fundamental flaw in the dKC Report and USEPA and MA DEP treatment of storage tank emissions in an ORVR Alone environment. In addition, we have shown a large emissions gap between the MA DEP proposal and the simple enhancement of Stage II vapor recovery. In the section to follow, we will

quantify the costs per ton of VOC reduced under the MA DEP proposal and compare these to the costs per ton of VOC reduced for a state-of-the-art approach using the ARID processor. For our economic analysis, we will incorporate the most conservative assumptions from our perspective (in other words; even though ARID has directly measured higher parameters for IEE and STBL; we will use lower figures referenced in the dKC Report and by USEPA)



Before presenting the cost effectiveness date, we insert Chart 5c, above to view the slope and direction of the curves when more representative values of IEE and STBL are used in the calculations. Note the upward sloping curves for the ORVR + Stage II case, without the use of a processor to mitigate the increasing storage tank emissions. Note also the early cross over point, where ORVR Alone would yield better emissions reductions in 2008 (compared to ORVR + Stage II), if not for the use of a processor on the storage tank. Please note the large gap between ORVR Alone and the ORVR +Stage II + Processor Case. The economics for this case will be tabulated later in this report.

Economic Analysis

Assumptions used in the Cost Effectiveness calculations:

- Fuel Savings: $3.70/gallon
- Stage II Operating Expenses: $4,207/site-year
- Stage II Removal Expenses: $7,000 / site (33% allocated in 2013, 33% allocated in 2015, and 33% allocated in year 2018)
- State of MA Gasoline Throughput: 2,916,370,000 gallons per year; constant over period 2013 – 2022
- Uncontrolled Refueling Emissions: 7.01 lbs. / 1,000 gallons
- Stage II Overall Vapor Recovery Efficiency: 75%
- ORVR Vapor Recovery Efficiency: 98%, constant with no degradation
- 81 % of fuel dispensed to GDF equipped with Stage II Vacuum Assisted systems
- IEE = 0.86, 3.67, 7.0 lbs. / 1,000 gallons
- STBL: 0, 1.0, 2.5 and 4.0 lbs. / 1,000 gallons

Table 1: Cost Effectiveness: IEE = 0.86 lbs. VOC/1,000 gal, STBL = 1.0 lbs./1,000 gal

ORVR Alone vs. Stage II + ORVR + Processor

State of MA

Throughput Category *gallons/year*	# GDFs	2013 Net $/Ton	2013 Fuel Savings	2015 Net $/Ton	2015 Fuel Savings	2018 Net $/Ton	2018 Fuel Savings
Less than 120,000	598	($84,977.31)	$47,535.96	($101,726.06)	$39,821.60	($117,849.18)	$34,441.12
120,001 to 240,000	114	($27,339.10)	$27,186.12	($32,922.02)	$22,774.23	($38,296.39)	$19,697.10
240,001 to 500,000	371	($12,540.10)	$181,863.45	($15,256.12)	$152,349.82	($17,870.68)	$131,765.13
500,001 to 1,000,000	814	($5,436.58)	$808,826.68	($6,776.48)	$677,566.58	($8,066.33)	$586,017.41
1,000,001 to 2,000,000	894	($1,978.29)	$1,776,636.49	($2,648.24)	$1,488,315.77	($3,293.17)	$1,287,222.52
Greater than 2,000,000	241	($141.07)	$1,021,731.59	($455.11)	$855,920.30	($757.42)	$740,272.93
Grand Total	3,032						

If we exclude the first three throughput categories from above (< 500,000 gallons per year); The cost effectiveness for the three subsequent throughput categories show viable measures; where approximately 93% of MA gasoline throughput is controlled with the combination of Stage II + ORVR + Processor. Of particular note, the maximum cost per ton is shown to be $8,066, with a cost of $141 per ton for the best case. These figures are for very conservative IEE and STBL; please note that these cost effectiveness figures vary greatly from the dKC reported range of $8,941 to $24,311 per ton for Stage II enhancement for 2013 in Table 3-8, page 3-8. (ARID shows $141 to $5,437) Also the ARID values for 2015 ($455 to $6,776) are much lower than the 2015 dKC reported range of $37,889 to $97,050 in Table 3-9, on page 3-8. CHART 6 below summarizes the cost effectiveness figures graphically for this case where IEE = 0.86 and STBL = 1.0.

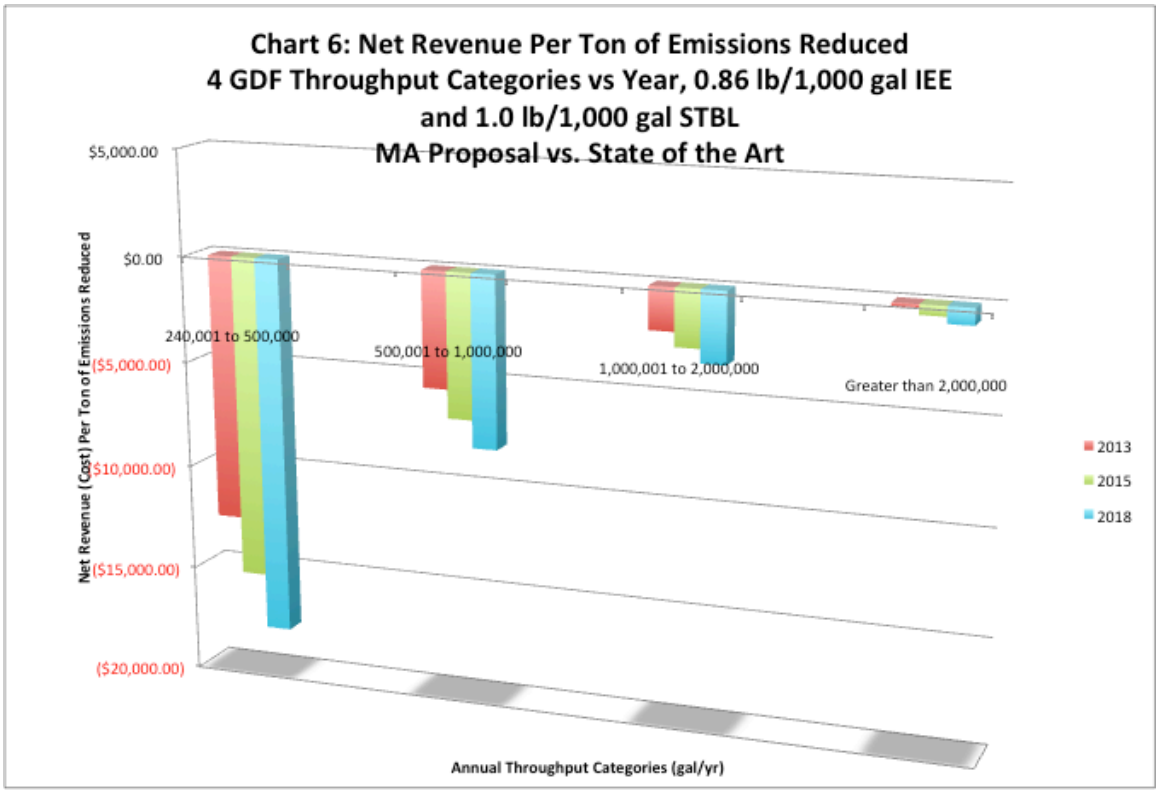


Table 2: Cost Effectiveness: IEE = 0.86 lbs. VOC/1,000 gal, STBL = 2.5 lbs./1,000 gal

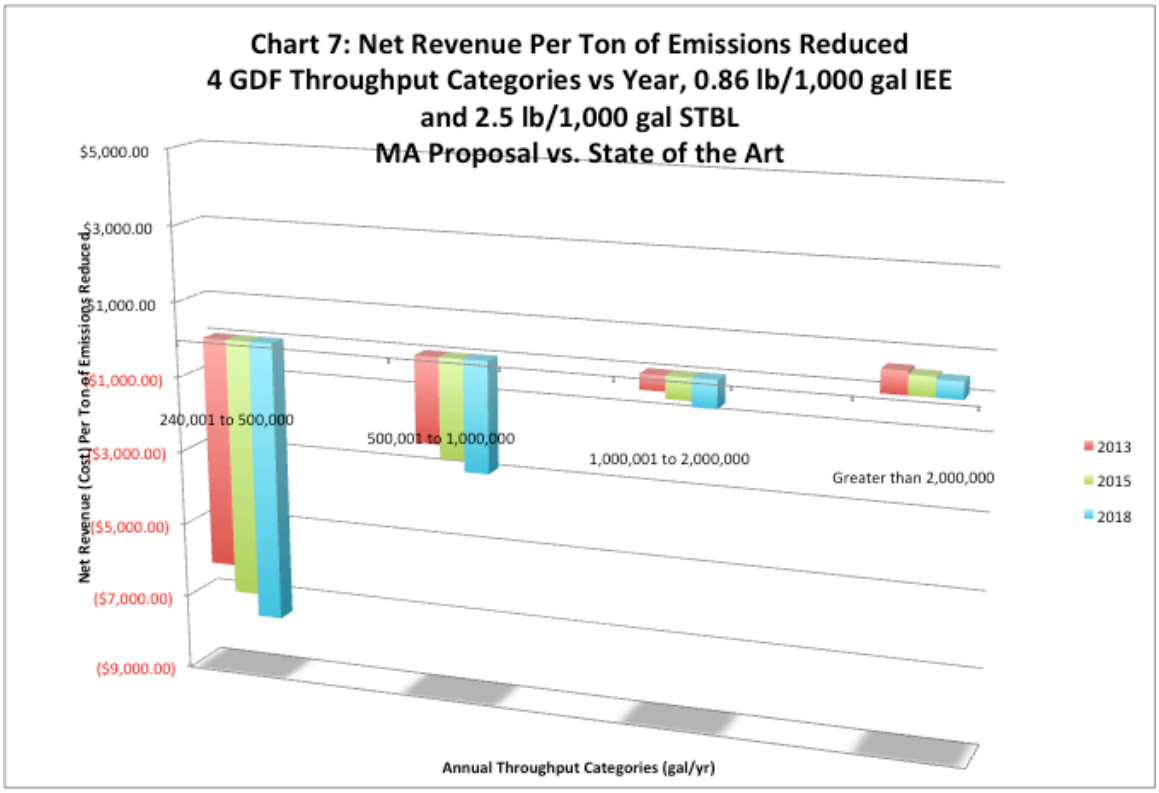
ORVR Alone vs. Stage II + ORVR + Processor

State of MA

Throughput Category *gallons/year*	# GDFs	2013 Net $/Ton	2013 Fuel Savings	2015 Net $/Ton	2015 Fuel Savings	2018 Net $/Ton	2018 Fuel Savings
Less than 120,000	598	($45,563.28)	$87,362.76	($50,119.66)	$79,648.40	($53,857.90)	$74,267.92
120,001 to 240,000	114	($14,201.09)	$49,963.32	($15,719.89)	$45,551.43	($16,965.97)	$42,474.30
240,001 to 500,000	371	($6,148.64)	$334,233.15	($6,887.51)	$304,719.52	($7,493.71)	$284,134.83
500,001 to 1,000,000	814	($2,283.46)	$1,486,481.68	($2,647.97)	$1,355,221.58	($2,947.03)	$1,263,672.41
1,000,001 to 2,000,000	894	($401.73)	$3,265,146.49	($583.99)	$2,976,825.77	($733.52)	$2,775,732.52
Greater than 2,000,000	241	$597.94	$1,877,763.59	$512.51	$1,711,952.30	$442.41	$1,596,304.93
Grand Total	3,032						

If we exclude the first two throughput categories from above (< 240,000 gallons per year); The cost effectiveness for the four subsequent throughput categories show viable measures; where approximately 98% of MA gasoline throughput is controlled with the combination of Stage II + ORVR + Processor. Of particular note, the maximum cost per ton is shown to be $7,494, with a **revenue stream** of $598 per

ton for the best case (*this is a revenue stream, not a cost*). These figures are again for conservative IEE and STBL; please note that these cost effectiveness figures vary greatly from the dKC reported range of $8,941 to $97,050 per ton for Stage II enhancement referenced previously. In fact, dKC does not list 2018 figures, as these are N/A due to increased emissions according to dKC; on the contrary ARID shows favorable cost effectiveness figures for 2018 and beyond.



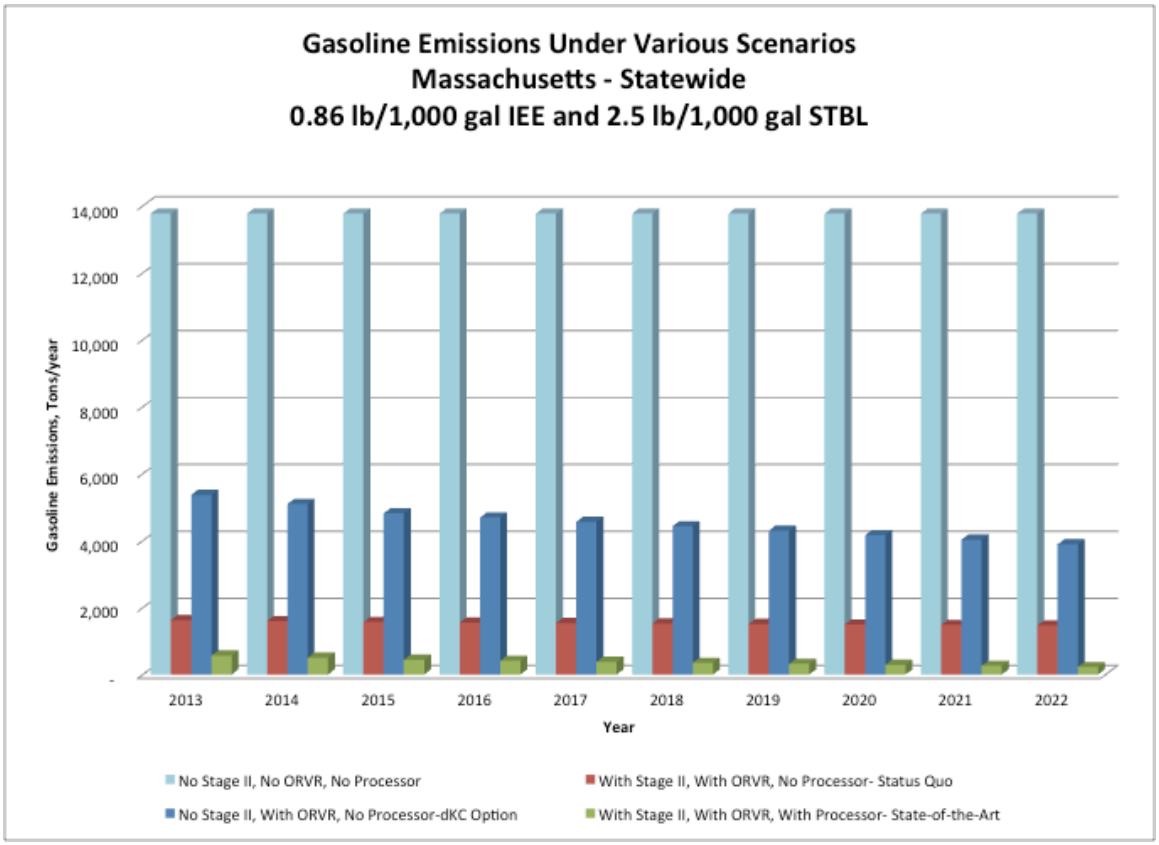


Chart 7b, above shows that with an IEE of 0.86 lb/1,000 gal and STBL of 2.5 lb/1,000 gal, the Status Quo (existing conditions) are much more favorable than the MA DEP proposed case (Red bar vs. dark blue bar). It should also be noted that the green bar represents the State-of-the-Art approach using a vapor processor on the storage tanks.

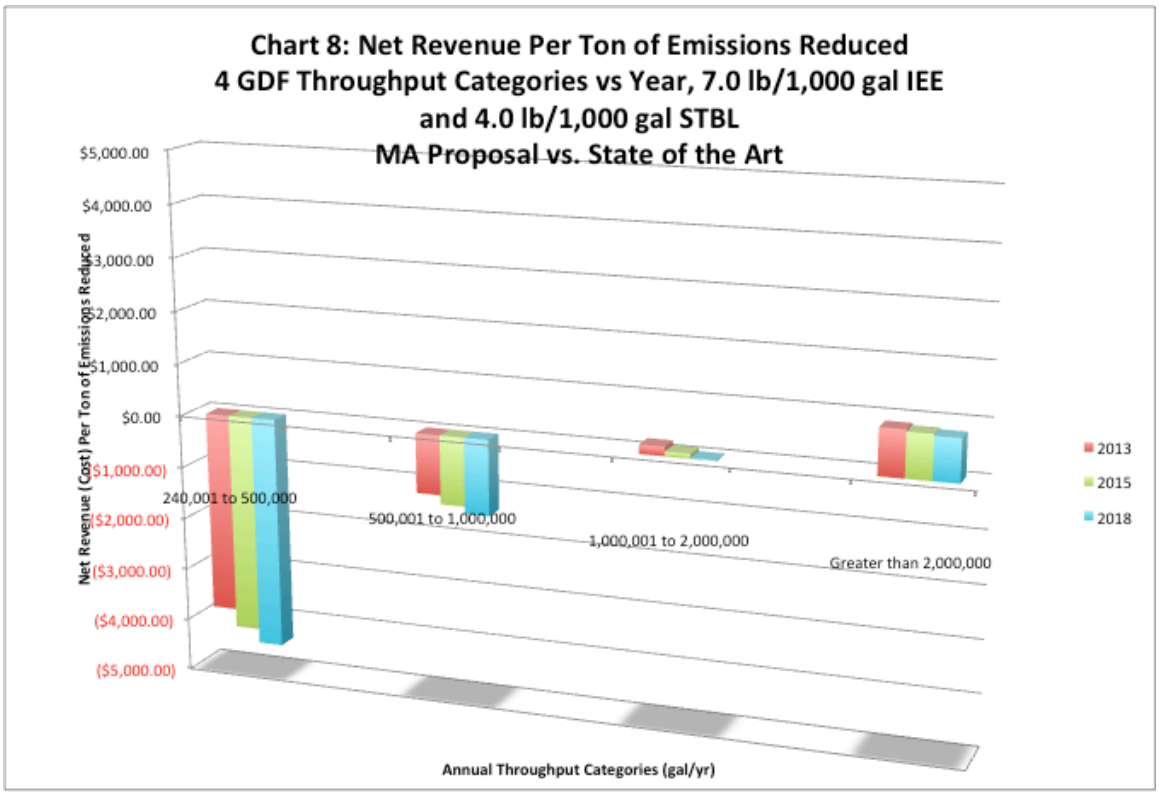
Table 3: Cost Effectiveness: IEE = 7.0 lbs. VOC/1,000 gal, STBL = 4.0 lbs./1,000 gal

ORVR Alone vs. Stage II + ORVR + Processor

State of MA

Throughput Category *gallons/year*	# GDFs	2013 Net $/Ton	2013 Fuel Savings	2015 Net $/Ton	2015 Fuel Savings	2018 Net $/Ton	2018 Fuel Savings
Less than 120,000	598	($31,149.31)	$125,955.19	($33,289.24)	$118,203.08	($34,957.42)	$112,791.48
120,001 to 240,000	114	($9,396.44)	$72,034.57	($10,109.75)	$67,601.09	($10,665.81)	$64,506.17
240,001 to 500,000	371	($3,811.24)	$481,880.39	($4,158.25)	$452,222.30	($4,428.77)	$431,518.59
500,001 to 1,000,000	814	($1,130.34)	$2,143,133.80	($1,301.54)	$2,011,231.26	($1,434.99)	$1,919,152.75
1,000,001 to 2,000,000	894	$174.83	$4,707,522.41	$89.23	$4,417,790.54	$22.50	$4,215,534.55
Greater than 2,000,000	241	$868.20	$2,707,264.19	$828.08	$2,540,641.36	$796.80	$2,424,325.31
Grand Total	3,032						

In the above case, only the smallest throughput category can be excluded which allows for 98.7% of the MA GDF throughput to be effectively controlled. For the most favorable case, please note a **revenue stream** of $868 per ton for the largest throughput category of GDF in 2013, with revenue streams continuing through the periods 2015, 2018 and beyond.



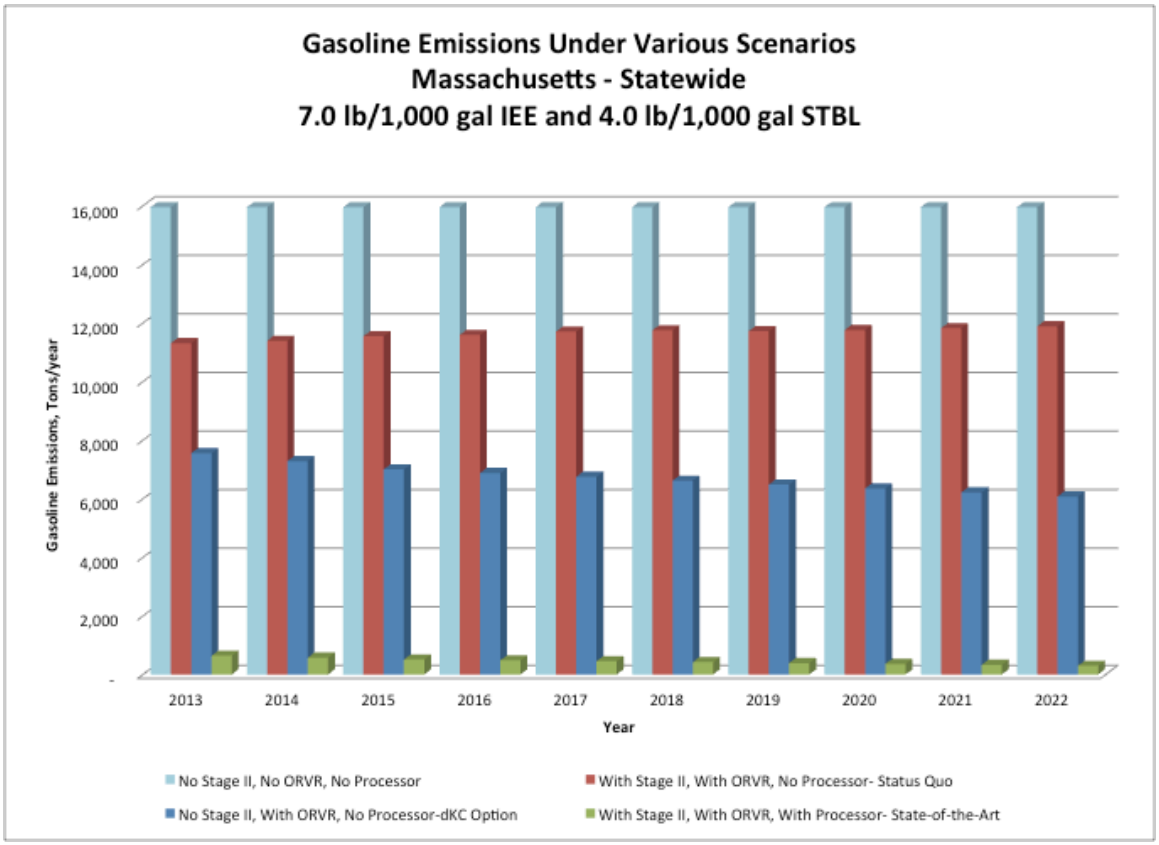


Chart 8b, above, shows the state wide MA emissions including refueling emissions and Storage Tank Breathing Losses. The MA DEP proposal shows benefits in comparison to the Status-Quo case, however, the State-of-the-Art (SOA) case shows again the best results, with a large gap between SOA and the MA DEP proposed case.

Negative Health Impacts

At a non-Stage II GDF, in addition to the problem of Storage Tank Breathing Losses, STBL, non-ORVR vehicle refueling will directly expose the motorist (and nearby people) to carcinogenic vapors, increasing toxic exposure risk factors. Please reference this link for video of a refueling event with a non-ORVR vehicle refueling at a non-Stage II GDF: http://www.youtube.com/watch?v=E8Hoj-_v0W4&feature=related

- This problem will be more prevalent at GDF refueling a higher proportion of non-ORVR vehicles. Such GDF are typically located in so-called Environmental Justice (or "EJ") areas or in communities that happen to have a larger percentage of non-ORVR vehicles.
- Motorists who refuel non-ORVR equipped vehicles at non-Stage II GDF will be directly exposed to carcinogenic vapors, thus creating unnecessary and unreasonable risks to public health, welfare and safety

In Massachusetts, the population of automobiles and SUV's is approximately 5 million (US Dept. of Transportation, Federal Highway Administration, Highway

Statistics, 2010). Thus, if ORVR penetration is 85% in year 2013; then 15% or 750,000 vehicles do not have ORVR. Using an ORVR vapor recovery efficiency of 98%; upon refueling each "batch of 750,000 cars", the raw emissions will be equivalent to 50 x 750,000 or 37,500,000 vehicles. This far exceeds the total vehicle population by a factor of 7.5 times. In another context, the motorist refueling a non-ORVR vehicle at a non-Stage II GDF will be exposed to ***50 times the pollutants*** as a motorist refueling an ORVR vehicle.

Conclusion

In conclusion, the elimination of Stage II and sole reliance on ORVR technology does not provide the State of Massachusetts with optimal emissions reductions; in terms of both refueling and storage tank emissions. This action will increase emissions of VOC's and HAPS, increase health risks to motorists, GDF employees and members of the Community, where the brunt of the emissions and negative health impacts will be borne by EJ Communities or communities which happen to have a larger proportion of non-ORVR vehicles.

Overlooked in past studies and analyses on this topic are three key elements: 1.) The proper quantification and accounting for the IEE and the STBL from the Storage Tanks, 2.) The adverse health impacts from raw, uncontrolled emissions from non-ORVR vehicles; especially the disproportionate share of this burden being borne by EJ Communities, and 3.) The positive impact of using active processors to enhance Stage II by managing storage tank pressure and significantly reducing IEE and STBL.

The optimal course of action is for MA DEP to require Enhanced Stage II via vapor processors with continuous pressure monitoring and remote data acquisition.

The detailed analysis above shows that the use of an active processor provides the following benefits to a GDF:

- *Control of VOC's and HAP's*
- *Reduction of Toxic Exposure Risk to motorists, GDF employees and members of Community*
- *Energy Recovery from saved gasoline*
- *Automatic monitoring and inspection through data logging and remote data acquisition system*
- *Continuous monitoring to reduce leaks in UST and Stage II piping system*
- *Leverage valuable existing hardware already installed at GDF*
- *Improve operating efficiency and associated profitability for GDF*
- *Allow both large capacity and small capacity GDF to earn benefits*

In comparison to ORVR Alone, the aggregate benefits for enhancing Stage II for the State of MA GDF operators with a vapor processor include $93 million in fuel

savings while at the same time reducing emissions of volatile organic compounds and air toxics by over 62,000 tons; over the period 2013 - 2022.

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Compliance Solutions Inc.
P.O. Box 431
Rochdale, Ma. 01542

Subject: Pressure Decay Testing IRT Stage I Vapor Recovery Systems

Compliance Solutions Inc. technicians have approximately 20 years of experience conducting pressure decay testing for Stage I and Stage II vapor recovery systems in the New England area. We have made recommendations to our customers with the knowledge and experience obtained in the field to achieve maximum compliance utilizing what in our opinion is the best component each manufacturer has to offer. With the sunset of the Stage II program there have been questions as to the mixing and matching of Stage I EVR components for the purpose of achieving compliance. It is the opinion of Compliance Solutions Inc. that mixing and matching of approved Stage I EVR components will not adversely affect the efficiency of the Stage I system if all components are installed per manufacturer's specifications and tested periodically. It is also our opinion that any UL listed UST component (i.e. slip over spill bucket) that is not connected to the Stage I system therefor will not affect the efficiency of the Stage I system be allowed.

David E. Berberian

President
Phone: (508) 509-8971
Fax: (508) 519-6550
Email: csinc@charter.net

Independent Oil Marketers Association of New England

January 24, 2013

Ms. Nancy Seidman, Assistant Commissioner
Bureau of Waste Prevention
Massachusetts Department of Environmental Protection
One Winter Street
Boston, MA 02108

RE: MassDEP Stage I & II Vapor Recovery Program

Dear Ms. Seidman:

The Independent Oil Marketers Association (IOMA) of New England appreciates the opportunity to collaborate with the Massachusetts Department of Environmental Protection (MassDEP) to provide comments at the January 10, 2013 stakeholder meeting and in writing. Working collaboratively, MassDEP, the IOMA and other stakeholders should be able to identify cost-effective common ground that will allow for the timely elimination of the Stage II vapor recovery program. The elimination of Stage II vapor recovery equipment will bring a quick-end to incompatibility excess emissions (IEE), estimated to be approximately two (2) tons per summer day, caused by the incompatibility between vacuum assist Stage II vapor recovery systems and on-board refueling vapor recovery equipment. The elimination of the Stage II vapor recovery program will be protective of public health, safety, welfare and the environment, which makes for good public policy. In addition to this summary of recommendations below, IOMA is providing MassDEP as an attachment, a more detailed set of technical comments which provides the supporting rationale and cost-benefit analyses for these recommendations.

IOMA believes the MassDEP cannot afford to rely solely on the regulatory process to revise the Stage II regulations for the elimination of the Stage II vapor recovery program commencing July 1, 2013. By way of comparison, the MassDEP has been preparing DRAFT regulations for underground storage tank systems for over three (3) years since assuming responsibility for the program on July 1, 2009. The last UST stakeholder meeting was over eight (8) months ago on May 1st, 2012, where IOMA provided detailed comments on the entire set of regulations. To date, the regulations have still not been issued for Public Hearing purposes.

With incompatibility excess emissions estimated at approximately two (2) tons per summer day, the citizens of the Commonwealth cannot wait for the laborious and tedious administrative and regulatory review processes of the MassDEP to issue revised Stage II regulations when the benefits of decommissioning Stage II equipment can be realized immediately, this summer. IOMA believes it is imperative for MassDEP to simultaneously develop and issue a Stage II Vapor Recovery Enforcement Discretion letter for the elimination of Stage II equipment effective July 1, 2013.

PO Box 1827
N. Falmouth, MA 02556

Therefore, IOMA recommends the MassDEP pursue dual tracks for the elimination of Stage II vapor recovery equipment as follows:

1. Drafting and promulgating the regulatory revisions currently underway to eliminate the Stage II program; and,
2. Drafting and the timely issuance of a Stage II Vapor Recovery Enforcement Discretion letter, similar to Commissioner Kimmell's Enforcement Discretion letter of July 2, 2012. This letter would allow all GDF's as of July 1, 2013, to immediately begin decommissioning Stage II vapor recovery equipment and complete its removal by June 30, 2014. Advance notice is essential so that coordinated plans and schedules can be developed by IOMA members performing the removals across thousands of GDF's and balance this need among the finite supply of available contractors. The sooner we can plan for this the better, and the more likely decommissioning timelines can be met for the majority of stations wanting to immediately remove Stage II.

In addition, IOMA recommends:

1. Requiring a Module 1 California Air Resources Board (CARB) Stage I Certified pressure/vacuum (P/V) vent cap be installed on existing (mix and match) Stage I systems when Stage II is decommissioned, unless an existing CARB certified P/V vent cap is already in use.
2. Existing Stage I mixed and matched equipment be allowed to remain in-use at existing GDFs until such time a component fails or is in need of replacement at which time it will be replaced with equipment from any of the Module 1 CARB Certified systems (i.e., continuation of mixed and matched approach);
3. Module I CARB Certified Stage I equipment be mixed and matched at new GDFs and GDFs undergoing a substantial modification for the UST system;
4. If MassDEP believes further evaluation is required concerning the merits of mixing and matching Module I CARB Certified Stage I equipment, then IOMA believes this approach will significantly delay the Stage II decommissioning rulemaking. This information gathering approach would necessitate the issuance of the Enforcement Discretion letter to eliminate the Stage II program since the revised Stage II regulations would not be ready for public hearing and promulgation by July 1, 2013;
5. IOMA believes that MassDEP must decouple Stage II decommissioning from:
   A. Continuous monitoring;
   B. Pressure management;
   C. Low spillage nozzles which are not available for conventional nozzles; and,
   D. Low permeability hoses which are unavailable for conventional hoses;

6. Following the PEI Recommended Practices for Installation and Testing of Vapor Recovery Systems at Vehicle-Fueling Sites, PEI/RP300-09, Section 14, Decommissioning Stage II Vapor Recovery Piping;
7. A Stage II decommissioning Work Group be established by MassDEP to address decommissioning in regard to the DRAFT regulations, SIP revisions, timing, implementation and outreach issues;
8. MassDEP be sensitive to the economic challenges of the small gasoline dispensing facility (GDF) owner/operator by allowing Stage II equipment to remain in-place until August 2017 for GDFs dispensing <500,000 gallons per year (50K gallons/month);
9. Stage II equipment remaining in place at GDFs dispensing <500,000 gallons per year must be maintained and tested in accordance with current Stage II regulations;
10. MassDEP require a pressure decay test as the performance standard to document the integrity of a Module I CARB Certified mix and match system as currently required; and,
11. MassDEP make cost-effective, home grown decisions based upon home grown data which is good public policy and not rely upon anecdotal information from equipment manufacturers or studies conducted in a very different climate which is 3,000 miles from Massachusetts.

Thank you for your consideration of IOMA's comments and recommendations. We look forward to our continued collaboration to identify cost-effective common ground for the elimination for Stage II vapor recovery equipment.

Very truly yours,

Peter Romano

Peter Romano, President

CC: Eileen Hiney

Comments on ERG Final Report and January 13, 2013 Stakeholder Meeting Discussions Concerning Elimination of Stage II Requirements and Modification of Stage I Vapor Recovery Requirements

Prepared By:

Independent Oil Marketers Association (IOMA)

January 23, 2013

The Independent Oil Marketers Association (IOMA) appreciates the opportunity to provide comments regarding the final Eastern Research Group, Inc. (ERG) Report and the Massachusetts Department of Environmental Protection (MassDEP) recommendations for the Stage I and Stage II Programs dated December 12, 2012. As with our previous evaluation of the draft version of the ERG Report, IOMA retained Tech Environmental (Tech) of Waltham, Massachusetts to provide a technical review of the final ERG report. For your consideration a copy of the Tech letter report, summarizing their findings and recommendations is enclosed with this correspondence.

Below please find IOMA's comments and recommendations related to each of the major areas discussed in the ERG report and/or discussed during the recent January 10, 2013 Stakeholder meeting.

Decommissioning of Stage II Vapor Recovery Systems

IOMA is in full agreement with the conclusions in the ERG report regarding the need to eliminate Stage II vapor recovery and we fully support MassDEP's recommendation to allow Underground Storage Tank (UST) Owners and Operators to begin removing the redundant technology starting July 1, 2013. We are also in agreement with MassDEP's recommendation that decommissioning of Stage II systems should be performed in accordance with Petroleum Equipment Institute Recommended Practice PEI/RP300-09, Section 14.

To avoid the Incompatibility Excess Emissions (IEE) that will occur if Stage II is left in place, we recommend that decommissioning be complete within **one year** of the effective date of the regulation. We believe the IEE may already be occurring, particularly at high volume gasoline dispensing facilities (GDFs) with higher populations of vehicles with onboard refueling vapor recovery (ORVR), and establishing this deadline will minimize exposure to these emissions.

As indicated during the public hearing on January 10, 2013, IOMA recommends that MassDEP grant an exception to smaller GDFs to allow Stage II to remain in place until August 2017 as long as equipment is tested and maintained in accordance with existing Stage II regulations. We believe this will reduce the financial burden on these small business owners and will also ensure that contractors are available to perform the work. We initially recommended that the exemption be applicable to GDFs that dispense less than 600,000 gallons/year (50,000 gallons/month), but after listening to comments at the hearing, we agree that the threshold for this exemption be reduced to 500,000 gallons/year.

To facilitate the process of Stage II decommissioning, IOMA recommends that a Stage II decommissioning work group be established to address decommissioning in regard to the DRAFT regulations, SIP revisions, timing, implementation and outreach issues. We believe this workgroup will be an efficient and productive forum for discussing any

issues that may arise and will serve to facilitate quick resolution. We are willing to meet as soon as next week with MassDEP staff to get the process started.

Finally, since delays in the regulatory process are likely to arise, and it is probable that the July 1, 2013 target date will not be met, we strongly recommend that MassDEP develop their own alternative route to ensure that decommissioning is initiated on July 1, 2013, and completed in a timely manner. This could be accomplished by an executive order or an enforcement waiver acknowledging that MassDEP will no longer enforce existing Stage II regulations while the new regulations are being developed. As indicated during our meeting on January 10, 2013, IOMA has submitted legislation eliminating Stage II vapor recovery as a back-up alternative, in case the regulatory amendments are not effective by July 2013. Decommissioning of Stage II is an important economic and environmental issue for retail marketers. Marketers don't want to spend resources maintaining Stage II systems that have been effectively replaced by ORVR systems, and Marketers do not want to cause excess emissions. IOMA believes that any further delay to decommissioning beyond July 2013 is unacceptable.

Stage I Enhance Vapor Recovery (EVR)

Discussion of Mix and Match Approach Versus CARB Systems

IOMA's position remains that requiring GDFs to upgrade to one of the five California Air Resources Board (CARB) certified systems is an unnecessary financial burden to Stakeholders without providing substantial reduction in volatile organic compound (VOC) emissions relative to a "mix and match" approach of existing and/or CARB-approved equipment.

As a follow-up to our November 2012 meeting with MassDEP, IOMA further investigated the benefits of using one of the five CARB systems versus a mix and match of components that are part of the five systems. IOMA spoke with the two major UST system testing firms in New England, Crompco LLC and Tanknology Inc., to obtain their opinion on whether their decades of experience with Stage I and II system testing has provided industry evidence of incompatibility of components. Both firms have since submitted comments to MassDEP indicating that in their opinion there is no significant benefit in using the full CARB systems versus a mix and match approach using CARB certified components. In their correspondence, Tanknology provided an excellent summary of the CARB approval process and how equipment is selected for inclusion in a system not based on its compatibility with other components, but due to vendors wanting to use their own components to justify the financial cost of getting a system approved by CARB. IOMA believes that MassDEP is overestimating the value added of certified systems versus continuing to allow the use of certified components.

In addition, through a wealth of real-world experience, personnel with UST testing firms and UST maintenance companies are the first to say that certain brands of a Stage I system component perform at a higher level than other brands (less likely to fail, longer useful life, ability to stand-up to a New England winter, etc.). The ability to use the best

component based on industry experience, and not because the component is the only one listed on an approved CARB system list, is the main technical reason to allow a mix and match approach to Stage I vapor control equipment.

One argument offered during our attendance at the Stakeholder meeting in favor of requiring CARB systems are that they offer an easy surrogate for MassDEP to implement and meet Environmental Protection Agency (EPA) expectations for Stage I systems. While maybe simpler for MassDEP administratively, the cost to the stakeholder is prohibitive. IOMA's estimate of the costs for a typical GDF in Massachusetts to install a full CARB-approved system range from $14,900 to $17,300 (estimates developed for three of the CARB systems); the attached Table 1 summarizes the estimated equipment and installation costs. In contrast, the IOMA estimates of the cost of the initial mix and match installation at the time of Stage II decommissioning to be $1,100 (mix and match approach discussed further below). Requiring this significantly more expensive option, when the claimed emission benefits are not fully understood, and moreover, not determined from Massachusetts specific UST systems, seems ill advised in a still shaky economy.

A second argument in favor of implementing a CARB system approach is that the CARB systems have been tested for an extended period under varying pressure and temperature conditions and the components are proven to be compatible. A former CARB official recently explained this to an IOMA member as simply you don't know how components that have not been tested together will interact together over time, citing a very specific example where one component in contact with a second component during an extended test (rubbing) and caused the second component to fail.

IOMA's experience with regard to this argument is that all key components of a Stage I system are not in physical contact with each other and the potential for examples such as that cited above is extremely remote. In the rare instance they do occur, the failure of a component, if significant enough to be of concern, will be detected by the industry performance standard, a pressure decay test. The more important characteristics of any Stage I control system are that the components individually are capable of sustaining UST operating pressures, maintain structural integrity with time, are installed correctly and are checked/maintained. All of these characteristics are consistent with <u>both</u> components used in a CARB approved system and with components used in a mix and match approach, when there are sufficient performance standard checks and inspections in place.

This also raises a larger issue which strikes at the heart of any rulemaking which is the regulatory philosophy behind the regulations, or the touchstones used to develop these regulations. IOMA cannot support regulations that are "command and control" which we believe limit flexibility, tolerate no risk, and in fact often regulate risks of a risk, which all create unnecessarily high compliance cost burdens. IOMA does however, support performance standard based requirements that provide flexibility to demonstrate compliance, create certainty and accountability, while at the same time rely upon

scientific information and actual data to focus on meaningful environmental protection of real risks not perceived or anecdotal risks.

In summary, IOMA's continues to believe a mix and match approach, as described in the next section, is as effective as CARB approved systems in meeting the MassDEP, EPA and IOMA's objectives of controlling VOC emissions from UST systems.

IOMA's Recommendations for Mix and Match Approach and Program

IOMA proposes the following improvements to the current Stage I program for consideration by MassDEP in any rule making. These improvements to the program include improvements to equipment, maintenance and inspections. The recommendations have been proposed to provide MassDEP with the confidence that Massachusetts-specific (and not those borrowed from California) Stage I vapor control regulations can meet the goals of the Department without the significant cost and limitations that come with adopting a CARB-approved system approach.

The recommendations are as follows:

- A CARB-approved pressure/vacuum (P/V) vent valve shall be required to be installed at the time of Stage II system decommissioning. As IOMA has indicated in previous correspondence, a proper P/V vent valve has been shown to contain nearly all emissions from a UST system under normal operating conditions. P/V vent valves currently installed as part of a Stage II Executive Order may already be CARB approved and perform at the same positive and negative cracking thresholds established by CARB Phase I Executive Orders. A regulation should not require these to be changed until they fail to operate in accordance with manufacturer's standards.

- All fill caps, dry break caps and automatic tank gauge caps shall be inspected and certified at the time of Stage II decommissioning by the testing firm performing the pressure decay test. Any caps that are not CARB approved shall be replaced with CARB approved equipment.

- The performance standard for whether a Stage I vapor control system is operating as intended will be the pressure decay test. Pressure decay tests will be performed on an annual basis and similar to current Stage II testing, two consecutive passes should result in a year without a test required. This incentivizes GDF owners to perform the necessary maintenance to keep their control systems functioning as intended.

- Any existing Stage I component that is replaced in the future must be replaced with a CARB approved component. The exception are spill buckets that are replaced by slip-on spill buckets without drains as these spill buckets have no connection with the piping that contains gasoline vapors and are not a potential va-

por leak point. As long as existing systems can continue to pass pressure-decay tests, existing components (other than the P/V valve) may remain in place.

- Pressure decay tests will be conducted after installation of any threaded spill buckets (i.e., non slip-on buckets) due to the number of nipples/unions related to the spill bucket installation.

- During new installation, replacement or significant modification of UST systems, all Stage I vapor control equipment shall be replaced with CARB approved components. In addition, the post-installation inspection currently proposed in the MassDEP UST regulations should include a statement by the engineer or installer that CARB approved Stage 1 equipment has been installed.

- Current Class B Operator inspections outlined in Department of Fire Service (DFS) regulations require monthly inspections of spill buckets and the P/V vent valve, but do not specifically require the inspection to include verification that fill caps, vapor caps, ATG probe caps and swivel adaptors are securely in place and of sufficient integrity. The current MassDEP UST regulations under development should include these specific visual checks.

- An inspection of the condition of Stage I components should be conducted by the UST testing company at the time of any pressure decay test and certified as completed on the testing form submitted to the MassDEP. If the pressure decay test is the annual test, the certification should be included on Form C (or equivalent). The certification should confirm that the Stage I equipment in place is in good physical condition and appears to be installed as intended. With the inspection conducted by individuals already on-site performing testing, it can be done at a low cost to GDF owners.

- MassDEP should modify the Form C (or equivalent) to capture in better detail the causes of pressure decay failures. Knowledge on the source of failures would be valuable information to MassDEP and IOMA and easily obtained. Data documenting whether failures are the result of equipment performance or issues that should be caught by maintenance inspections could be made readily available for future study. Based upon these data, MassDEP and IOMA together could develop guidance and/or outreach to decrease pressure decay failures.

Stage I Continuous Monitoring

IOMA understands from information made available by MassDEP during the January 10th Stakeholder meeting that the Department is not planning at this time to pursue regulations requiring GDF's to be upgraded with Stage I continuous monitoring systems. IOMA concurs with this position on the basis that sufficient data from UST systems equipped with Stage I only does not exist to warrant the implementation of costly continuous monitoring systems. Data used by ERG to generate their VOC emission savings and cost/benefit analysis for continuous monitoring systems is not derived from

UST systems operating in New England without Stage II, but rather is from UST systems with Stage II operating under over-pressurized conditions. In addition, input values used for calculating VOC emission reductions were based on "best guess" extrapolations of limited pressure decay data sets and results of non-quantitative surveys of testing vendors. These approaches may represent best efforts by ERG and MassDEP to quantify theoretical VOC emission savings from continuous monitoring, but they fall far short of the scientific rigor that is necessary to justify implementing a regulation with such a large accompanying financial burden to stakeholders.

While Stage I continuous monitoring may not be currently planned for inclusion in the current regulatory changes being contemplated by MassDEP, IOMA presents below several concerns identified in our review of the final ERG report that should be considered by MassDEP if continuous monitoring is ever considered in the future:

Stage I Continuous Monitoring – Comments on Calculation of VOC Emissions

- The rate of pressure decay failures needs to be based on data collected from GDFs operating in Massachusetts without Stage II over-pressurizing the USTs. With wide-spread use of ORVR in Massachusetts, it is the experience of IOMA that our USTs are currently under positive pressures that can lead to greater stress on the Stage I components and more pressure decay failures. Pressure decay failure rates from other New England states that have recently implemented Stage II decommissioning are not yet available as they perform a pressure decay test at three year intervals, matching the Federal requirement.

- The current Stage II Form C's submitted by GDFs only capture whether a pressure decay failure occurred, but not whether from a Stage I or Stage II component issue. For the ERG report, MassDEP determined the percentage of pressure decay rate failures from Stage I was 75-85% of the failures observed, using survey results from six (6) testing firms that work in Massachusetts. Inquiry by IOMA of three (3) of the testing firms, however, found that no statistical review of pressure decay results were performed; testing firms offered "best guess" values when completing the survey. In contrast, IOMA members in early 2012 performed a detailed review of pressure decay testing at 234 sites in Connecticut. The results from this review found that only 53% of the pressure decay failures that occurred (18% of the tests conducted) were from Stage I components. This is significantly lower than the 75% to 85% postulated in the ERG report. Furthermore, during the 2012 New England Interstate Water Pollution Control Commission Tanks Conference in St. Louis, Missouri, a presentation by industry leading testing companies called "Measuring Progress in the UST Program – What can We Learn From 10 Years of UST System Testing Data", documented Stage 1 passing rates of greater than 90%. It is our contention that failure rates will continue to decrease as UST systems change from operating under an over-pressurized conditions with Stage II equipped, to operating under negative pressure with Stage 1 vapor recovery only.

- The ERG report does not sufficiently account for the fact that UST systems with Stage I only are believed to operate the majority of each day at negative pressures. This is especially the case for high throughput GDFs, as these stations often operate 18 to 24 hours a day with minimal time for vapor growth. The report concludes that continuous monitoring is cost effective for stations with gasoline throughputs over 1,000,000 gallons; however, these are the very stations that are more likely to be operating under a negative pressure. Assuming that a pressure decay failure represents maximum uncontrolled breathing emissions at a UST under pressure is an overstatement of VOC emissions. ERG in their report assumes that 50% of uncontrolled breathing losses would be controlled through the continuous monitoring system (other 50% through Stage I EVR upgrades). IOMA believes for the above reasons that this 50% may be a gross overestimation and until empirical data becomes available, a value of 25% or less may be applicable.

- Continuous monitoring is only effective with Stage II and pressure monitoring in place. IOMA's understanding is that it can only function with the other equipment in place, and without Stage II, there is no real utility for any continuous monitoring systems.

- Several of the causes of Stage I pressure decay failures, such as worn fill and dry break caps, loose swivel adaptors and/or spill buckets in need of repair, are items that should be detected in the Class B monthly inspection requirements contained in the UST regulations. IOMA believes that the implementation of Class B inspections will reduce the number of Stage I pressure decay failures. Any further evaluations of continuous monitoring needs to take into account the effect of Class B inspections on pressure decay failures.

Stage I Continuous Monitoring – Comments on Costs

- IOMA's investigation of Stage I continuous monitoring systems has identified that installation of the systems are not as simple as installation of a pressure sensor on the vent and connecting to the automatic tank gauge (ATG) console in the building. Many stations will require a new ATG console to be installed due to the model and/or version of the ATG not being compatible with the system, and others at a minimum will require an upgrade of the ATG software. In addition, there will likely be many sites where a remote sensor will not be effective and excavation for installation of wiring will be required. These additional costs were clearly not factored into estimates provided in the ERG report.

- IOMA developed costs for wireless installation and hard-wire installation of continuous monitoring systems under three scenarios: installation of a system with a compatible ATG system; installation of a system where upgrade of the ATG is necessary; and installation of a system where the age/model of the ATG necessitates a second ATG be installed. Installation costs, summarized on the attached Tables 2A through 2C, range from $7,400 to $12,400 for wireless installation and

$15,200 to $20,200 for hardwire installation. Based on location of vents relative to the ATG location in the building, many sites will require hardwire installation to insure reliable monitoring. A rough average estimate for capital costs, assuming an average between the three scenarios and a 50/50 split between wireless and hardwire installations, is $13,600.

- IOMA believes that maintenance costs of continuous monitoring system operation presented in the ERG report underestimate the number of site visits that will be necessary due to false alarms. Information from CARB on false alarm issues in California have IOMA concerned that false alarms will be an even greater concern in a cold New England climate. Our concerns are primarily based not on the ability of the sensor to operate in a New England climate (as cited by ERG), but rather the ability of the system to handle the changing pressure/temperature environments caused by New England weather. IOMA believes that maintenance costs could be as much as double what ERG estimates.

- As evident in the cost/benefit analysis prepared by ERG, fuel savings are a major variable in the calculation. These savings in the analysis are directly related to the VOC emission controlled through the Stage I continuous monitoring technology, and as such, any decrease in the VOCs controlled would also effect the cost/benefit calculation by decreasing fuel savings. In addition, ERG is incorrect in setting the cost of fuel saved as retail prices. Gasoline purchased to replace any gasoline vapor loss from the Stage I system would be at wholesale prices – it does not include the retail margin as it has not yet been sold to the public. IOMA conservatively believes that fuel savings could be 25% or more lower than estimated by ERG.

Stage I Continuous Monitoring – Cost/Benefit Analysis

IOMA believes the cost per ton savings from Stage I continuous monitoring calculated by ERG should not be used as the basis for regulations at this time due to the lack of data from UST systems operating without Stage II systems. ERG made good faith efforts to estimate the cost/benefit, but due to limitations outlined by IOMA in this letter, reliance on these calculations in formulating regulatory policy is premature. IOMA's calculation of the cost per ton using Tech Environmental's estimate of tons controlled by the technology and IOMAs cost information discussed in the preceding section is $14,000/ton and $5,800/ton for facilities with annual throughputs of 1,000,001 to 2,000,000 gallons and >2,000,000 gallons, respectively. This range in values between ERG and IOMA calculations further illustrate the lack of data and understanding of continuous motoring's utility and value at this time.

Stage I Pressure Management

IOMA agrees with the ERG report conclusion that additional study of pressure management is necessary and commends MassDEP for not recommending use of these systems at GDFs in Massachusetts. Based upon available information, we continue to

have significant doubts that these systems are cost effective, and as we have stated on a number of occasions, that a majority, if not all, of the assumed emission reductions would be achieved through the use of a CARB approved P/V vent valve once Stage II vapor recovery is removed. It is important to note that the ERG report utilizes equipment and installation costs from Veeder Root that we believe are underestimated by at least 50% and it is our understanding that ARID Technologies' pressure management system and installation cost is at least four (4) times the cost used in the report. Furthermore, these systems are untested in the absence of Stage II, and their utility with UST systems that will operate under vacuum for a majority of the time is questionable at best.

We refer you to the comments from the American Petroleum Institute (API) on the white paper submitted to MassDEP by ARID Technologies. IOMA is in agreement with the points made by API's consultant Tamura Environmental which cast significant doubt on ARID's claims.

Low Spillage Nozzles and Low Permeability Hoses

While it was interesting to learn from VST during the stakeholder meeting of their efforts to market a low-spillage nozzle, this equipment needs to be on the market and widely available at competitive, market rates before it should be discussed as a requirement at GDF facilities. Inclusion in any revision of regulations package is pre-mature at this time.

Thank you again for the opportunity to meet with you during the recent Stakeholder meeting and provide these additional written comments on the final ERG Report. Please do not hesitate to contact me if you have any questions or would like to discuss the information in this letter further.

Attachments:

Tech Environmental Report
Table 1 (Stage 1 Costs)
Tables 2A – 2C (Continuous Monitoring Costs)

Table 1. Retrofit Costs to Install CARB Approved Enhanced Stage I Vapor Recovery

COMPONENT	OPW	EBW	Emco Wheaton	Average Cost	IOMA Proposal
Pressure/Vacuum Vent Valve(Husky)	$308.88	$308.88	$308.88	$308.88	$308.88
Pressure/Vacuum Vent Valve(PV-Zero)	$1,900.00	$1,900.00	$1,900.00	$1,900.00	$1,900.00
Spill Container X (2)	$684.36	$724.78	$731.90	$713.68	
Jack Screw Kit	$86.10	N/A	N/A	$86.10	
Dust/Fill Caps (Product)	$25.58	$31.14	$18.21	$24.98	
Dust/Fill Caps (vapor)	$27.36	$37.10	$19.79	$28.08	
Product Adaptor	$162.53	$223.26	$115.63	$167.14	
Vapor Adaptor	$226.06	$308.06	$160.94	$231.69	
Face Seal Adaptor	$199.56	N/A	N/A	$199.56	
Drop Tube	$65.54	$64.26	N/A	$0.00	
Overfill Drop Tube	$460.13	$355.10	$383.00	$399.41	
Tank Probe Cap & Ring	$73.96	$78.84	$57.07	$69.96	
Extractor Fitting	N/A	N/A	$67.99	$0.00	
Installation Per Tank	$3,000.00	$3,000.00	$4,000.00	$3,333.33	$500.00
Pressure Decay Test	$300.00	$300.00	$300.00	$300.00	$300.00
Total per Tank	**$5,554.52**	**$5,367.16**	**$6,163.41**	**$5,862.81**	**$1,108.88**
Total for 3 tank system	**$15,445.80**	**$14,883.72**	**$17,272.47**	**$16,370.66**	**$1,108.88**
Total for 3 tanks including PV-Zero	**$17,036.92**	**$17,074.84**	**$18,863.59**	**$17,961.78**	**$2,700.00**

Only highlighted items were included in cost total. The Husky P/V vent was not used when determining costs. If the PV-Zero P/V vent valve is used, there would be an additional $1,600 per UST system. All Spill Bucket costs assume single-wall 5 gallon type. Installation assumes replacing all components including the Fill Riser Pipe. Installation for the Emco Wheaton system has higher install costs due to Extractor fitting replacement.

Table 2a. Costs to Install Vapor Pressure Monitoring with post 6/08 Veeder Root TLS350 or TLS350R

These costs assume the UST facility has an existing Veeder Root TLS 350 or TLS 350R. They must be equiped with Version 28 or greater. (Version 28 was released in March "08) If not a new TLS 350 would have to be installed.

Component	Cost
V/R (8) Input Smart Mag Interface Module	$839.70
V/R (4) Relay Output Interface Module	$219.60
V/R ECPU2 Memory Expansion Module	$272.70
V/R Pressure Sensor Installation Kit	$1,335.00
Sub Total	**$2,667.00**
Installation Wirelessly	
V/R TLS-RF 900 MHz receiver	$1,506.60
V/R 900 MHz battery operated Transmitter	$694.12
Labor to install & program Veeder Root	$1,500.00
Veeder Root Technician Labor	$1,000.00
Sub Total	**$4,700.72**
Installation Hard Wired	
Saw cut asphalt/concrete	$1,000.00
Excavate Trench & debris disposal	$2,000.00
LSP/Environmental oversight to screen soils	$1,000.00
Electrician to install conduits/ wiring including permit	$2,500.00
Backfill trench	$1,000.00
Patch Asphalt/concrete	$1,500.00
Labor to install & program Veeder Root	$2,500.00
Veeder Root Technician Labor	$1,000.00
Sub Total	**$12,500.00**
Total to Install Wirelessly	**$7,367.72**
Total to Install Hard Wired	**$15,167.00**

Table 2b. Cost to Install Vapor Pressure Monitoring With Pre 6/08 Veeder Root TLS350 or TLS350R

These costs assume the UST facility has an existing Veeder Root TLS 350 or TLS 350R but is not equiped with Version 28 or greater. (Version 28 was released in March "08) Veeder Root will be upgraded.

Component	Cost
V/R (8) Input Smart Mag Interface Module	$839.70
V/R (4) Relay Output Interface Module	$219.60
V/R ECPU2 Memory Expansion Module	$272.70
V/R Pressure Sensor Installation Kit	$1,335.00
V/R Software upgrade	$386.10
V/R ECPU2 Upgrade	$850.00
Sub Total	**$3,903.10**
Installation Wirelessly	
V/R TLS-RF 900 MHz receiver	$1,506.60
V/R 900 MHz battery operated Transmitter	$694.12
Labor to install & program Veeder Root	$2,400.00
Veeder Root Technician Labor	$1,000.00
Sub Total	**$5,600.72**
Installation Hard Wired	
Saw cut asphalt/concrete	$1,000.00
Excavate Trench & debris disposal	$2,000.00
LSP/Environmental oversight to screen soils	$1,000.00
Electrician to install conduits/ wiring including permit	$2,500.00
Backfill trench	$1,000.00
Patch Asphalt/concrete	$1,500.00
Labor to install & program Veeder Root	$3,000.00
Veeder Root Technician Labor	$1,000.00
Sub Total	**$13,000.00**
Total to Install Wirelessly	**$9,503.82**
Total to Install Hard Wired	**$16,903.10**

Table 2C. Costs to install Vapor Pressure Monitoring without a Veeder Root

These costs assume the UST facility does not have a Veeder Root TLS 350 or TLS 350R and a new one will have to be installed. The existing ATG will continue to monitor the tanks. The new Veeder Root will only monitor the Vapor Sensor.

Component	Cost
V/R (8) Input Smart Mag Interface Module	$839.70
V/R (4) Relay Output Interface Module	$219.60
V/R ECPU2 Memory Expansion Module	$272.70
V/R Pressure Sensor Installation Kit	$1,335.00
Veeder Root TLS350 console with printer	$3,544.00
Sub Total	**$6,211.00**
Installation Wirelessly	
V/R TLS-RF 900 MHz receiver	$1,506.60
V/R 900 MHz battery operated Transmitter	$694.12
Labor to install & program Veeder Root	$3,000.00
Veeder Root Technician Labor	$1,000.00
Sub Total	**$6,200.72**
Installation Hard Wired	
Saw cut asphalt/concrete	$1,000.00
Excavate Trench & debris disposal	$2,000.00
LSP/Environmental oversight to screen soils	$1,000.00
Electrician to install conduits/ wiring including permit	$3,500.00
Backfill trench	$1,000.00
Patch Asphalt/concrete	$1,500.00
Labor to install & program Veeder Root	$3,000.00
Veeder Root Technician Labor	$1,000.00
Sub Total	**$14,000.00**
Total to Install Wirelessly	**$12,411.72**
Total to Install Hard Wired	**$20,211.00**

MASSACHUSETTS PETROLEUM COUNCIL
A DIVISION OF AMERICAN PETROLEUM INSTITUTE

JOHN E. QUINN
Executive Director

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STEPHEN C. DODGE
Associate Director

January 25, 2013

Ms. Nancy Seidman, Assistant Commissioner
Bureau of Waste Prevention
Massachusetts Department of Environmental Protection
One Winter Street
Boston, Massachusetts 02108

RE: Mass DEP Stage I & II Vapor Recovery Program

Dear Ms. ~~Seidman.~~ Nancy

Would you please incorporate the attached report from Tamura Environmental into the record of your deliberations in this matter.

Respectfully,

John E. Quinn

John E. Quinn
Executive Director

cc: Eileen Hiney

TAMURA ENVIRONMENTAL

TO: Shane Skelton, American Petroleum Institute
FROM: Todd Tamura, QEP
RE: Review of Tiberi et al. paper, "Stage II & ORVR and Associated Emissions of Gasoline Vapor – State of Connecticut Gasoline Dispensing Facilities"
DATE: January 8, 2013

The principle conclusions of the paper "Stage II & ORVR and Associated Emissions of Gasoline Vapor – State of Connecticut Gasoline Dispensing Facilities" by Tiberi et al. are that "past studies and analyses" regarding Stage II removal have overlooked three things:

1. The "proper" quantification and accounting for the Incompatibility Excess Emissions (IEE) and the Storage Tank Breathing Losses (STBL) from the USTs
2. The adverse health impacts from raw, uncontrolled emissions from non-ORVR vehicles; especially the disproportionate share of this burden being borne by EJ Communities
3. The positive impact of using active processors to enhance Stage II by managing storage tank pressure and significantly reducing IEE and STBL

and that therefore the "optimal course of action is for CT DEEP to require Enhanced Stage II via vapor processors with continuous pressure monitoring and remote data acquisition" (p. 16). These conclusions are not accurate, as identified in more detail below.

"Proper" Quantification and Accounting of IEE and STBL Emissions: The paper by Tiberi et al. makes several assertions regarding emissions quantification without any citation or justification. Each of the charts that incorporates IEE shows the same 0.86 lb/1000 gal factor that was derived by CARB staff with the exception of Chart 5c, which identifies IEE of 3.67 lb/1000 gal without any discussion in the text regarding how this value was arrived at or why it was chosen. The analyses in the paper are based on the assumption that controlled STBL emissions are between 1.0 and 2.5 lb/1000 gal (substantially higher than any of the published data I have seen, which are cited in Connecticut Petroleum Council's previous comments to CT DEEP),[1] and Tiberi et al. also state that "in practice ARID has measured values...[of] about 5 lbs. of VOC per 1,000 gallons of fuel dispensed" (p. 10). Again there are no citations or justification for any of those factors. Although there is a test report available from ARID's website that identifies emissions of 3.48 lb/1000 gal without a PV valve and 1.20 lb/1000 gal with a PV valve,[2] those data were from a facility operating with a vacuum-assisted Stage II system, and are therefore not representative of emissions at a facility without Stage II. In contrast, testing conducted by Tiberi and his contractor at a 12-dispenser GDF without Stage II showed emissions (downstream

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[1] S. Guveyan, written comments submitted to Mr. Ric Pirolli and Mr. Robert Girard, Feb. 2, 2012 (available from http://www.ct.gov/dep/lib/dep/air/stageii/Connecticut_Petroleum_Comments_on_Klausmeier_Report_February_2_2012.pdf).

[2] Matus Technical Services, "Test Report for the ARID Technologies Vapor Recovery Unit installed in Lantana, FL", Project No. 148, available from http://www.aridtech.com/study_lantana.html.

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of a PV vent valve) of just 0.09 lb over a 24-hour period.[3] (Although throughput information were not recorded, a 12-dispenser GDF is likely to have 24-hour throughput in the neighborhood of 8,000 gal/day = 240,000 gal/month or more, in which case 0.09 lb would correspond to no more than 0.011 lb/1000 gal.)

In contrast, CT DEEP's consultant (dKC) used a much lower emission factor—1.0 lb/1000 gal for uncontrolled STBL emissions (prior to control by the PV valve)—that was based on a 1962 study, and calculated impacts of the PV valve.[4] As identified in the Connecticut Petroleum Council's previous comments to CT DEEP,[1] this methodology substantially overestimated emissions for current-day facilities. Those comments provided a detailed explanation of why this was so (with specific references) and were also backed up by experimental data obtained from USTs at two non-Stage II gasoline distribution facilities (GDFs) located in Texas and Rensselaer, NY.

With regard to accounting, Tiberi et al. make the statement that

> "...when Stage II and ORVR are used together at a GDF, the storage tank emissions are called IEE (Incompatibility Excess Emissions). When Stage II is not present at the GDF, and only ORVR is employed, the storage tank emissions are called Storage Tank Breathing Losses (STBL)." (p. 4)

Tiberi et al. then indicate that when IEE are included in the evaluations of Stage II, STBL should be included for the case in which Stage II is removed. Specifically, they state that because they are not included in EPA's and dKC's Stage II analysis charts, they have been "set to zero" (even though dKC specifically quantifies them elsewhere in their report), "totally neglected", and "ignored" (p. 7), and that this constitutes a "fundamental flaw" (p. 10). It is actually Tiberi et al. who have erred here: IEE does not include all of the storage tank emissions, it includes only those emissions above those which occur in the absence of ORVR technology; i.e., baseline emissions from the UST (in the absence of ORVR) have been subtracted from the IEE.[5] Therefore, EPA's and dKC's charts are consistent in excluding normal storage tank emissions from their analyses (i.e., they are excluded from both the data for Stage II + IEE and the data for ORVR only). Tiberi et al. also indicate (on pp. 2-3 of their paper) that UST emissions may be greater without Stage II than with it (since the former ingest air when running at vacuum, and the latter return a mixture of air and vapor, at least when they fuel non-ORVR vehicles), but as identified previously in this memo, the data that they have collected at facilities with and without

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[3] Matus Technical Services, "Test Report for the ARID Technologies Vapor Recovery Unit installed at the Sunshine Gasoline Station, Miami, FL", Project No. 159, February 13, 2006, received by Florida DEP's Bureau of Air Monitoring and Mobile Sources on August 31, 2006.

[4] R. Klausmeier, "Final Report: Analysis of Future Options for Connecticut's Gasoline Dispensing Facility Vapor Control Program," prepared for Connecticut Department of Energy and Environmental Protection (Hartford, CT) by de la Torre Klausmeier Consulting, Inc. (Austin, TX), June 4, 2012, available from http://www.ct.gov/dep/lib/dep/air/stageii/final-report_future_options_gdf_vapor-control-program_%28dkc-finalreport%29.pdf.

[5] This is specifically shown in CARB, "EVR Emission Reduction Calculations – Module 3: ORVR Compatibility", in Appendix D of "Hearing Notice and Staff Report, Enhanced Vapor Recovery, Initial Statement of Reasons for Proposed Amendments to the Vapor Recovery Certification and Test Procedures for Gasoline Loading and Motor Vehicle Gasoline Refueling at Service Stations," February 4, 2000, available from http://www.arb.ca.gov/regact/march2000evr/march2000evr.htm.

Stage II show the opposite, probably as a result of (a) the fact that at facilities without Stage II, air is ingested at the PV valve vent (much higher above the liquid surface than vapors returned from Stage II equipment) and stays above the heavier hydrocarbon vapors rather than mixing downward, and/or (b) the fact that at facilities without Stage II, operating at vacuum all day means that the UST pressure can increase substantially in the evening (e.g., 10 inches of water column) without opening and venting through the PV valve, whereas at facilities with Stage II, operating under positive pressure or near zero during the day means that the UST can only increase a few inches of water column before opening and venting through the PV valve.

"Adverse health impacts from raw, uncontrolled emissions from non-ORVR vehicles": The paper by Tiberi et al. makes no quantitative assessment of health impacts; it largely mentions qualitative information which has been identified previously. For people refueling non-ORVR vehicles, very short-term exposures (during the few minutes that refueling occurs) could be higher during vehicle refueling without Stage II than with Stage II. However, cancer risk assessments are based on long-term exposures, meaning that whatever exposure exists for a few minutes per day (and probably only a few days per month at most) is not likely to have a significant impact on a quantitative cancer risk assessment. It should also be noted that whatever short-term exposures might be encountered for non-ORVR vehicles are the same as those experienced around most of the country in areas that do not have Stage II vapor recovery, and will be substantially lower that what they were prior to Connecticut's implementation of the Stage II vapor recovery program (i.e., in the 1980s and earlier) as a result of more recent restrictions on gasoline volatility and gasoline benzene content.

"Positive impact of using active processors to enhance Stage II by managing storage tank pressure": dKC specifically mentioned Stage II enhancements on pp. 12-13 of their report, and the reference to "CA EVR Module 2" would include processors that manage storage tank pressure such as ARID's Permeator technology. Tiberi et al.'s overestimation of STBL emissions (discussed earlier in this memo) not surprisingly causes the positive impacts of their active processor technology (both emissions reductions and associated cost savings) to be substantially overestimated as well.

In summary, I believe that (a) there are no fundamental flaws or omissions in the analyses as claimed by Tiberi et al. and that (b) Tiberi et al. have substantially overestimated STBL emissions without providing any supporting evidence.

January 7, 2013

MADEP – Office of Air and Climate
One Winter Street
Boston, MA 02108

RE: Phase I EVR Equipment

To Whom It May Concern:

Tanknology has been in contact with several UST owners in the state of Massachusetts with regards to proposed regulations changes in the Air Quality Program. One of the items discussed was the uniformity of the equipment on the CARB certified Phase I equipment based on manufacturer and whether or not the equipment is or can be effective on a mix and match basis. The purpose of the letter is to provide our opinion on this matter.

It is important to take into context the CARB certification process. This is an expensive, intense, highly scrutinized, lengthy process. The minimum evaluation period is 180 days, however in practice the timeframe of the initial evaluation period is often two to three times longer. Due to the precise nature and cost of the CARB certification, equipment manufacturers will use, test, and hope to certify only the equipment they manufacture, as they control the engineering process. Also, this will insure some return (future equipment sales) on the investment of the CARB certification. The manufacturer has some incentive to keep the parts on the approved equipment list as uniform as possible. The second important item to note is that regardless of the manufacturer any piece of equipment on a Phase I EVR approved equipment list has met the same performance standard as required by CARB. This is why some manufacturers that do not have plans to design a piece of equipment, i.e. a drop tube, may adopt an already approved model by another manufacturer. It simplifies their approval.

The most significant change in the Phase I EVR system was to eliminate the drain valve as a leak point. This was accomplished by lowering the drop tube below the bucket and utilizing an adaptor to create a vapor tight seal beneath the bucket. Each manufacturer of the drop tube accomplishes this in a slightly different manner. If you look at the standard installation specifications from OPW, Franklin, or Emco Wheaton for drop tube installations, the spill bucket manufacturer neutral, meaning a brand X spill bucket is not required for a brand X drop tube to be installed. Note this would be required in the CARB EVR approval. Other equipment improvements such as the swivel adapter and PVVC also helped remove common deficiencies in the "old" systems. All of the Phase I EVR equipment has been continually tested and improved over the last 10 years. Industry and the environment has benefitted from these systems.

Tanknology has two field offices in CA and since the 1998 upgrades has continually had 25-35 technicians testing in CA on a daily basis. Over this 12 year period, we have been firsthand participants in several vapor recovery upgrade programs, one of which was the Phase I EVR program. We have over nine years of data on testing Phase I EVR systems in CA. Properly installed equipment, meeting the annual maintenance and periodic testing requirements (depending on air district) have dramatically increased first time pressure decay, typically TP 201.3(two inch wc test), passing rates.

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www.tanknology.com

Based on years of maintaining and testing Phase I EVR systems, there should be no performance degradation when currently approved CARB phase I EVR equipment is properly installed, maintained and tested per manufacturer specifications even if used in a mix and match manner. There will be certain product limitations that may impact what components work together, however this is something a certified UST installer could easily determine. It is also worth noting there are geographic, climate differences in play, such as plugged drain valve or UST accommodations made to due to more severe weather in New England.

I will not argue that installing and testing the CARB approved system eliminates any gray area and clearly defines performance standards. However the environmental savings may not be worth the initial cost to industry requiring UST owners to remove existing EVR approved components simply to install like parts to meet the uniform equipment outline in the Phase I EVR executive order.

Please do not hesitate to call me with any questions or concerns.

Sincerely,

William B Derge

Brian Derge
Tanknology – Division Vice President

11000 N. Mopac Expressway, Ste 500
Austin, TX 78759
bderge@tanknology.com

TECH environmental
FOCUSED KNOWLEDGE. REAL SOLUTIONS.

January 23, 2013

Mr. Peter Romano
President & COO
Independent Oil Marketers Association of New England
PO Box 1827
North Falmouth, MA 02556

Re: Review of ERG's Final Report for the MassDEP on Stage I and Stage II *Job 3656*

Dear Mr. Romano:

Tech Environmental, Inc. (Tech) is pleased to provide this letter summarizing our review of Eastern Research Group Inc.'s (ERG's) recent "Air Program Support for Stage I and Stage II Programs in Massachusetts, Final Report", dated December 12, 2012. This letter provides a technical analysis of potential changes to the Massachusetts Stage I and Stage II vapor recovery programs for the Massachusetts Department of Environmental Protection (MassDEP).[1] As you are aware, the MassDEP is considering the elimination of Stage II vapor recovery requirements and the addition of Stage I enhancements for fleet refueling facilities (i.e., proposed amendments to 310 CMR 7.24).

Executive Summary

This letter report focuses on some key aspects of the Stage I and Stage II vapor recovery programs. **Our analysis demonstrates: (1) that continuing the Stage II program is not cost-effective; (2) that a review of the data supports an immediate end to Stage II programs in Massachusetts, i.e. today; and (3) that the proposed Stage I continuous monitoring and pressure management proposals should be eliminated due to lack of data regarding the effectiveness of these systems when operated without Stage II programs in place.**

The analysis conducted by ERG supports the immediate removal of Stage II controls. In addition to becoming less cost effective over time, in the near future (and likely occurring at select locations today) the incompatibility excess emissions from the competing ORVR and Stage II emissions controls will overwhelm any reductions from the continuation of Stage II programs, and it is imperative that Stage II controls be removed before this happens.

Our review of the proposed Stage I enhancements concludes that the installation of continuous monitoring and pressure management systems are unproven in Massachusetts's harsh winter climate and that these systems are not a cost effective method to control VOC emissions. In addition, these systems are untested when used without Stage II in place. Therefore, we recommend the elimination of the proposed Stage I enhancements from the MassDEP's proposed amendments to 310 CMR 7.24.

[1] Summarized on the MassDEP website: http://www.mass.gov/dep/air/community/stageii.htm#changes

1.0 Review of Stage II and Related VOC and Benzene Emission Assumptions

The MassDEP is considering when to allow the removal of Stage II systems in MA, given the diminishing emission benefits as on-board refueling vapor recovery (ORVR) systems become more prevalent. Each year, as ORVR systems become more common on vehicles being refueled, the emissions benefit of Stage II systems decreases and so the cost of reducing these emissions quickly increases on a dollar per ton of VOCs removed basis. At a point in the near future (and likely occurring at select locations today), the incompatibility excess emissions from the competing ORVR and Stage II emissions controls will overwhelm any emission reduction benefits from the continuation of Stage II programs.[2] It is essential that Stage II be removed before this time so that these excess emissions are not released into the atmosphere. Our review of the ERG report found there is strong evidence to support the immediate, full removal of Stage II equipment.

1.1 Cost of Continuing Stage II Controls

ERG's report states that ORVR systems alone will result in the same emission reductions as Stage II systems alone by approximately July 2013, and presents the costs per ton of VOC reduced for continuing Stage II in 2013 and 2015 (ERG report, Table 3-8 and 3-9). The report estimates costs of $19,889 - $22,932 per ton of VOCs removed by Stage II in 2013, as compared to $28,995 as calculated in Tech's September 28, 2012 report.[3] These estimates rapidly increase to costs of $80,030 - $116,466 per ton of VOCs removed by Stage II in 2015.

For comparison, MassDEP's 2011 guidance used to determine if an air pollution control technology is economically feasible assumes that a cost effective control technology would have a cost no higher than $11,000 – 13,000 per ton of VOC removed in a non-attainment area.[4] Clearly, Stage II controls in Massachusetts are already well beyond the point of being cost-effective.

Stage II controls continue to become less cost-effective as ORVR penetration increases and predicted gasoline sales decrease. A recent article in the Wall Street Journal mentioned that the recovering US auto industry and new vehicle offerings, pickup-truck demand and a stable economy are helping to fuel increasing vehicle sales to above 15 million this year. New vehicle registrations, which are a key indicator of auto sales, are also expected to increase.[5] This increase in sales will mean more ORVR-equipped vehicles on the road and thus greater possibility of incompatibility excess emissions with Stage II controls. In addition, predicted VOC emissions from refueling are expected to decrease in the future due to a decrease in gasoline sales as the vehicle miles per gallon (MPG) increases and hybrid vehicles become more common.[6,7]

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[2] IOMA Press Release, "House Resolution may lead to 240-ton reduction in Commonwealth's 2011 smog emissions", March 25, 2010.
[3] Tech Environmental Inc., "Review of ERG's Report for the MassDEP on Stage I and Stage II", September 28, 2012.
[4] MassDEP, "Best Available Control Technology Guidance", June 2011.
[5] Bennett, Jeff. "U.S. Auto Sales Seen Exceeding 15 Million for Full-Year 2013", January 2, 2013, The Wall Street Journal.
[6] "The Outlook for Energy: A View to 2040", ExxonMobil, 2012. Available online: http://www.exxonmobil.com/Corporate/energy_outlook.aspx
[7] David M. Parker, Valero, Presentation at the PMAA Board of Directors Meeting, May 18, 2012.

1.2 Impact of VOC Controls on MA Emissions Inventory

To provide insight into the extent of the magnitude of the proposed emission reductions from continuing Stage II controls, the estimates of VOC control can also be compared to the predictions of VOC emissions in the Commonwealth contained in the most recent Massachusetts Periodic Emissions Inventory (PEI).[8] Assuming that the VOCs controlled by Stage II in 2013 are 1.98 tons per day as predicted in ERG's report (Table 3-5), these emissions would only represent 0.6% of the area source emissions (which includes gasoline dispensing facilities) in the Commonwealth on a summer day.[9] When the predictions of the VOCs controlled by Stage II in 2013 are compared to the PEI's total emissions of VOCs in the Commonwealth, this number decreases to 0.3%. Clearly the magnitude of the emissions which could potentially be controlled is very low.

1.3 Benzene Emissions

The ERG report also considers the statewide benzene emissions reductions from continuing Stage II controls in the Commonwealth. In 2013, ERG estimates that the incremental benefit of maintaining Stage II control would provide an additional emission reduction of 15.48 lbs/summer day in the entire Commonwealth. Using the same cost figures discussed above, on a dollar per ton removed basis for benzene, the estimated costs are $4.25 Million - $4.29 Million per ton of benzene removed by Stage II in 2013.

Since 1994, the MassDEP has been monitoring for benzene emissions. In 1997, they reported that a preliminary analysis of the ambient concentrations revealed a decline in certain toxic VOC. They attribute the substantial decrease in benzene and other air toxins to the introduction of reformulated gasoline in January 1995. A graph showing the decreasing trend in benzene emissions over time, as compared to federal and Massachusetts ambient air guidelines is attached, Figure 1. Please note that benzene air measurements are not only composed of emissions from mobile sources, but also include other fuel combustion, industrial processing operations and biogenic sources.

As is shown by the figure, the levels of benzene have been decreasing over time and are well below the MassDEP 24-hour threshold effects exposure limits (TEL) and the Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Level (MRL). The TEL is a concentration, based on non-cancer health effects, intended to protect the general population, including sensitive populations such as children, from adverse health effects over a lifetime of continuous exposure. The values are above the Massachusetts annual Ambient Air Limit (AAL), which is generally based on known or suspected carcinogenic health effects, a concentration associated with a one in a million excess lifetime cancer risk over a lifetime of continuous exposure.[10] The United States Environmental Protection Agency Inhalation Reference Concentration (RfC) is an upper and lower bound estimate of a continuous inhalation exposure of a chemical to the human population through inhalation (including sensitive subpopulations) that is likely to result in less than 1 in a million risk of developing cancer over a lifetime

[8] "Massachusetts 2005 Periodic Emissions Inventory of: Volatile Organic Compounds, Nitrogen Oxides, Carbon Monoxide, Sulfur Dioxide, Particulate Matter, Ammonia", Massachusetts Department of Environmental Protection, September 2008.
[9] Area sources are defined in "The Massachusetts 2002 Base Year Emissions Inventory of: Volatile Organic Compounds, Nitrogen Oxides, Carbon Monoxide, Sulfur Dioxide, Particulate Matter, Ammonia", Massachusetts Department of Environmental Protection, September 2007, Draft for Public Hearing. Gasoline stations and dry cleaning establishments are treated as area sources."
[10] MassDEP AALs and TELs: http://www.mass.gov/dep/toxics/stypes/telaal.htm

of exposure.[11] The ATSDR, a federal public health agency of the U.S. Department of Health and Human Services, has set a Minimal Risk Level (MRL) for chronic-duration inhalation exposure (≥1 year).[12] The figure clearly shows that benzene air levels are trending down and will continue to do so with improvements in vehicle emissions standards and vehicle fuel efficiency standards.

In a presentation at the January 10, 2013 Stakeholder Meeting on Stage I & Stage II Program Changes, the MassDEP presented benzene emissions monitoring data, including emissions data from the monitoring station in Chicopee, MA. The benzene levels in Chicopee were higher than one might expect from a rural location and it is possible that some of these emissions are transported upwind from upstate New York, given the downwind proximity, the predominantly westerly winds, and the half-life of benzene. Upstate New York has never had Stage II controls and with Chicopee directly downwind, it is likely that the benzene concentration may be influenced by its western neighbor.

The MassDEP's emphasis on benzene emissions as a reason to maintain Stage II controls is suspect at best, given that the United States Environmental Protection Agency (EPA) has not mentioned any concerns regarding benzene from GDFs. The EPA's Guidance document[13] states that having a comparable measure of control is satisfied if phasing out a Stage II control program in a particular area is estimated to have a de minimis, incremental loss of area-wide emissions control. Under the EPA's definition, Massachusetts is allowed to immediately remove Stage II with EPA's support.

To consider the magnitude of the ERG's predicted estimate of 15.48 lbs benzene/summer day, compare this estimate to the estimated benzene from the on-road mobile source benzene in the PEI. The PEI on-road MOBILE6.2 VOC emissions are predicted to be 111.8 tons per summer day, or 0.44 tons of benzene per summer day.[14] The predicted savings of benzene by keeping Stage II controls (15.48 lb or 0.00774 tons/summer day) would thus represent only 1.8% of the mobile source benzene in the Commonwealth.

2.0 Review of Stage I Continuous Vapor Monitoring

The ERG report reviewed various Stage I enhancements including: CARB Module I Stage I Enhanced Vapor Recovery (EVR) systems, continuous vapor leak monitoring systems (continuous monitoring), and pressure management systems (emissions processors), as well as the estimated VOC reductions from these systems. Tech reviewed the emissions savings related to the use of continuous monitoring systems, which use a sensor to monitor UST systems for vapor leaks.

2.1 Continuous Vapor Monitoring is Less Effective than Assumed

Section 4.2.2 of the final ERG report, briefly addresses the reliability of these continuous monitoring systems in winter when they are exposed to snow and extremely cold temperatures, by stating that "ERG believes these systems should work reliably in Massachusetts…" Tech raised a concern in our September 28, 2012 comment letter that this "belief" seems overly optimistic given the equipment

[11] EPA Benzene RfC: http://www.epa.gov/iris/subst/0276.htm
[12] ATSDR Benzene ToxFAQs: http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=38&tid=14
[13] "Guidance on Removing Stage II Gasoline Vapor Control Programs from State Implementation Plans and Assessing Comparable Measures", August 7, 2012, EPA-457/B-12-001.
[14] The estimated VOCs emissions in the PEI from on-road mobile sources were multiplied by the benzene fraction of VOC calculated by MOVES (0.0039 or 0.39%) to calculate total estimated benzene emissions.

problems and malfunctions that have occurred during the winter season in California. CARB released a memorandum entitled "Response to Winter Season ISD Pressure Alarms"[15] that states that during the "winter fuel season, the number of pressure related ISD alarms increases significantly", such that no service or equipment testing is required prior to clearing the OP alarms from November 1 to March 1. The extent of this problem is wide-spread enough that CARB even offers a training session for GDF operators on how to handle alarms in the winter season.[16] Winter in California is far less cold than winter in New England. These concerns are being raised again here since it is our opinion that ERG and MassDEP did not adequately address the potential for problems with continuous monitoring in cold weather. Given that these systems are untested in the harsher New England environment, there is great concern regarding faulty alarms during a New England winter which could create a situation of alarm fatigue where alarms are ignored. In addition, any cost benefit analysis would need to consider that the equipment is out of service for at least four months of the year. Tech strongly believes that requiring a system that is untested in the Massachusetts climate is premature at this time.

2.2 Continuous Monitoring Emissions Reduction Assumptions

The ERG report's review of continuous monitoring and pressure management systems relied heavily on assumptions regarding the estimated impact of system leaks. While these assumptions were necessary since the EPA has not provided guidance on how to estimate emissions reductions for either system, the extent of the assumptions used in the cost effectiveness calculations raises significant doubts on their reliability and accuracy. Several major issues with these assumptions are presented below, which cast doubt on the cost effectiveness calculations.

First, the testing failure rates for GDFs that have both Stage I and Stage II systems were used to estimate the potential emissions reduction benefits for continuous monitoring. Those testing data came from over-pressurized UST systems associated with the Stage II systems. The ERG report correctly acknowledged that without Stage II, it is possible that the leaks would be reduced; thereby lowering ERG's assumed continuous monitoring emission reductions. This means that once Stage II systems are removed, the potential benefits from the installation of a continuous monitoring system are greatly reduced, making these systems less cost effective.

Table 4-7 of ERG's final report shows the predicted emission reductions for continuous monitoring for vapor leaks. In this table, the breathing loss reduction is calculated based on several factors; we believe that four of these factors contribute to an overestimation of the level of control that continuous monitoring for vapor leaks will be able to achieve. Tech has updated ERG's Table 4-7 (provided at the end of this repot) to correct this overestimation. The corrections are as follows.

The first factor to update the breathing loss calculation is from the breathing loss reduction calculation, which is based on an out-of-date emission factor from AP-42 that is from a 1962 paper which cites emissions of 1 lb/1000 gallons.[17] In 1962, gasoline RVP values were lower and GDFs had lower gasoline throughput levels. To correct for this, the IOMA suggests that the emissions factor for

[15] CARB Special Advisory, Response to Winter Season ISD Pressure Alarms", Number 405-B, October 10, 2011.
[16] Course #267.1: Changes in Response to In-Station Diagnostic Alarms: http://www.arb.ca.gov/training/courses.php?course=267.1
[17] Burlin, Ralph M. and Fudurich, Albert P. "Air Pollution from Filling Underground Gas Storage Tanks", December 1962, Air Pollution Control District, City of Los Angeles.

uncontrolled breathing losses be reduced to 0.76 lb/1,000 gallons to reflect reduced gasoline volatility during the summer months.

The second factor to update the breathing loss calculation is from the reduction due to the pressure decay failures which were attributed to be caused by Stage I components. ERG assumed that the fraction of failures related to pressure decay tests was 75% - 85%. This assumption was based on "anecdotal evidence from companies that perform GDF certification tests" rather than on a review of actual testing data which would have given a more accurate estimate. Industry experts from IOMA had previously conducted a detailed review of pressure decay testing at 234 stations in Connecticut and found only 53% attributable to Stage I components. In lieu of ERG's unsupported estimate, this empirical value has been used instead.[18]

The third factor to update the breathing loss calculation is from the reduction taken based on the assumption that vapor leak monitoring systems will eliminate 50% of the leaks. As detailed in IOMA's comment letter to the MassDEP, this factor is believed to be overstated and it would not be unreasonable to assume it were half that value, and so 25% was used.[18]

The fourth factor considered for the update of the breathing loss calculation is the percent of compliance failures due to pressure decay failures. ERG assumed 85% for each GDF category, which suggests it is an estimate rather than based on a recent analysis of certification data. IOMA reviewed data from Stage I/II compliance testing failures from 2011-2012 for 150 stations in Massachusetts.[19] Of these tests, 12.5% were found to be compliance failures due to pressure decay, which was conservatively doubled to 25% when updating the calculations in Table 4-7.[18]

Tech updated Table 4-7 based on the factors discussed above. As can be seen, the estimated benefit from continuous monitoring for vapor leaks has been reduced to 1.49 tons/summer day, as compared to the 2.69 tons/summer day calculated by ERG. This estimate with actual industry data is 45% lower than what ERG had calculated. The costs per ton of VOC reduced for continuous monitoring for vapor leaks (shown in ERG's table 4-14) are estimated to be approximately twice as high. This makes the installation and operation of the continuous vapor monitoring systems even less cost effective than in ERG's report. It is also noted that the tons of VOCs reduced by the installation of these systems are likely to be even lower assuming the anticipated decline in gasoline sales in the future, and the GDFs would be burdened with false alarms due to the ineffectiveness of an alarm system during the long Massachusetts winter.

3.0 Conclusion

In 2011, EPA reviewed Stage II vapor recovery system decommissioning and estimated the national cost savings for facilities decommissioning Stage II vapor recovery systems to be over $88 million annually. The review of Stage II was undertaken as part of the current administration's initiative to review outdated rules and update them to ensure that they are still achieving the environmental benefits that they were intended to achieve. In allowing Stage II equipment to be removed, the EPA is acknowledging that Stage II is no longer "achieving the environmental benefits that they were intended to achieve". Our analysis, like the analysis conducted by ERG, supports the immediate removal of

[18] Personal communications between Dana Buske and Steven Charron of IOMA, January 16 & 18, 2013.
[19] The NPN Station Count from 2006 listed 2,700 GDFs in Massachusetts, so the sample size was approximately 5.6% of the stations in the Commonwealth.

Stage II controls. In addition to becoming less cost effective over time, in the near future (and likely occurring at select locations today) the incompatibility excess emissions from the competing ORVR and Stage II emissions controls will outweigh any emission reduction benefits from the continuation of Stage II programs, and it is imperative that Stage II controls be removed before this happens.

The proposed Stage I enhancements, namely the installation of continuous monitoring and pressure management systems, are unproven in Massachusetts's harsh winter climate and are untested when used without Stage II in place. Given the unproven nature of the technology and excessive costs to control VOC emissions, they should not be required in Massachusetts and these controls should be shelved unless future work supports their usages. Therefore, we recommend the elimination of these proposed Stage I enhancements.

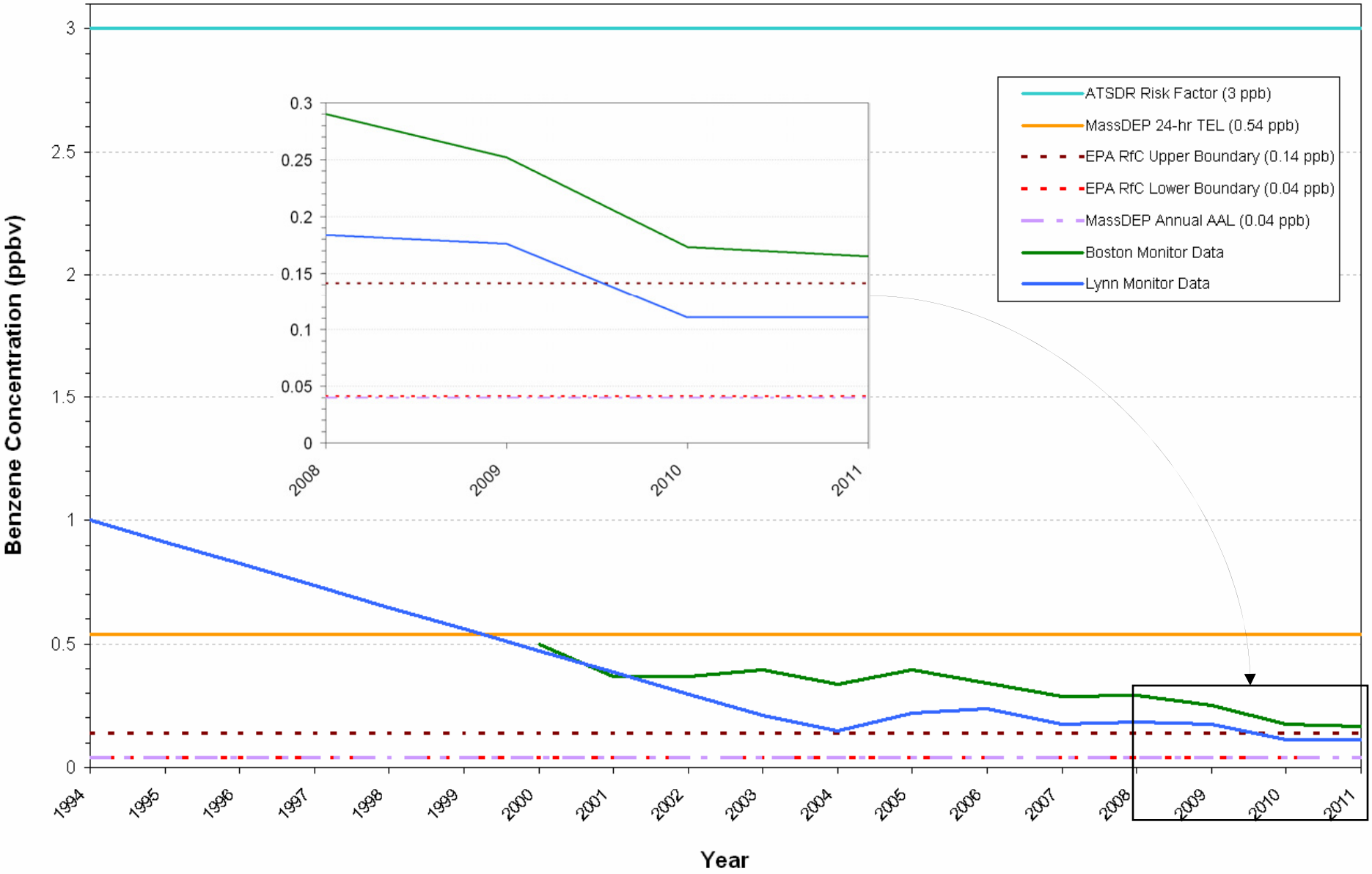
If you have any questions regarding this report, please let us know.

Sincerely,
TECH ENVIRONMENTAL, INC.

Dana C. Buske, Ph.D.
Environmental Scientist

Marc C. Wallace, QEP
Associate

Figure 1. Benzene Emissions Data & Guideline Concentrations



Updated Table 4-7. Emission Reductions for Continuous Monitoring for Vapor Leaks

Throughput Category (gal/yr)	# of facilities	Total Annual Throughput (gal)	Tech's Breathing Loss Reduction (lb/1,000 gal)	Filling Losses (tons/yr)	Tech's Calc'ed Breathing Losses (tons/yr)	Tech's Modified Total Benefit (tons/yr)	Tech's Modified Total Benefit (tons/summer day)
Less than 120,000	598	35,880,000	0.09	6	0.2	6	0.02
120,000 to 240,000	114	20,520,000	0.10	4	0.1	4	0.01
240,001 to 500,000	371	137,270,000	0.12	25	1	26	0.07
500,001 to 1,000,000	814	610,500,000	0.12	109	5	114	0.31
1,000,001 to 2,000,000	894	1,341,000,000	0.12	239	11	250	0.68
Greater than 2,000,000	241	771,200,000	0.13	138	7	145	0.40
ALL	**3032**	2,916,370,000		**521**	**24**	**545**	**1.49**

From: Reid, Kent [kreid@veeder.com]
Sent: Wednesday, January 23, 2013 10:21 AM
To: Hiney, Eileen (DEP)
Cc: Denormandie, Thomas (DEP)
Subject: RE: Agenda for Jan 10 Stakeholder Meeting

Eileen,

Thank you for the invitation to attend the workshop back on January 10th, I found the discussion very interesting. As I mentioned after the meeting I would like to follow up with a few comments on your proposed direction regarding the decommissioning of Stage II Vapor Recovery:

Comments:

1. A significant portion of the VOC's created by evaporative loss at a gasoline dispensing facility can be contained by an underground storage tank system that is free from leaks and fitted with a properly operating P/V valve.
2. Vapor leaks in a UST system can seriously impact the ability of the tank system to contain the VOC's produced by deliveries and evaporation
3. Vapor leaks in UST's are difficult to identify and will most likely go unnoticed until a pressure decay test is performed on the tank system
4. Continuous containment monitoring can notify the station operator when a leak occurs allowing actions to be taken to minimize VOC losses to the environment
5. Containment monitoring systems certified by CARB were designed to provide two separate functions: 1) Continuous Vapor Leak Detection, and 2) Over Pressure Monitoring.
6. A pressure management system only works when the tank is tight, so continuous vapor leak detection is the first step. Pressure management/over pressure monitoring can always be added later and is complementary to the site owners investment in continuous vapor leak detection monitoring.
7. The use of over pressure monitoring only makes sense when coupled with a pressure management system
8. The Vapor Leak Detection function, when used, will ensure proper functioning of the Stage I components and proper containment of VOC's
9. The use of EVR Stage I components will help ensure proper containment but are still subject to failure and will require periodic testing
10. The use of Continuous Vapor Leak Detection monitoring could enable the use of non EVR certified stage I components or mix and match since component failures will be identified when they occur enabling timely repair or replacement versus an entire site upgrade all at once to EVR certified Stage I components.
11. Veeder Root's Vapor Leak Detection can be added to any TLS350 system with the addition of a vapor pressure sensor and a software upgrade with a per station upgrade cost of approximately $4,000 to $6,000 depending on the installed equipment
12. Veeder Root's Vapor Leak Detection can be added to any Veeder Root or competitive ATG system with the addition of a Vapor Pressure Sensor and an upgrade module (TLS-DL)

with an
approximate per station cost of $5,000

Recommendations:
1. Go forward with the requirement for Continuous Vapor Leak Detection monitoring for stations that choose to remove stage II vapor recovery
2. Allow stations that do utilize Continuous Vapor Leak Detection to be exempt from manual leak decay testing (this will more than pay for the installation of continuous monitoring).
3. For stations that choose not to install Continuous Vapor Leak Detection, require manual testing every 3 months.
4. Do not require the installation and use of Over Pressure Monitoring
5. Allow mix and match (non-EVR certified) phase I components if Continuous Vapor Leak Detection monitoring is utilized (this will provide additional financial incentive to offset the cost of installing and maintaining monitoring). This eliminates voiced objections regarding the initial cost to comply (entire site upgrade all at once) with EVR Certified Stage I components
6. Any failed Stage I component should be replaced with EVR Stage I components such that over-time the sites are upgraded to the latest EVR Stage I technology

Conclusions:
1. The use of Continuous Vapor Leak Detection monitoring will ensure proper stage I operation and evaporation lost control which will result in significant reductions of VOC's for MA and the environment
2. Station operators will benefit financially from the retention of gasoline vapors, the reduction in testing expenses and reduced station down time

I am available to discuss or provide addition information as needed,

Thanks again,

Kent

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From: Hiney, Eileen (DEP) [mailto:eileen.hiney@state.ma.us]
Sent: Wednesday, January 09, 2013 1:14 PM
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Subject: Agenda for Jan 10 Stakeholder Meeting

To: Stage I-II Interested Parties:

Attached please find the Agenda for the Stage I-II Stakeholder meeting to be held at 1:30 p.m., Thursday, January 10, at the MassDEP offices at 1 Winter Street, Boston.

A few people have expressed interest in participating by conference call. The call-in number for the meeting is provided below. Due to the configuration of our conference rooms, those calling in may have difficulty hearing some of the discussion. We apologize in advance for that and hope you will find participation by phone to be worthwhile nonetheless.

The call in # is: 617-292-5890; bridge# 87878; pass code 3371#.

We look forward to seeing you tomorrow.

_____

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? print double-sided to use less paper

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