Proposed Amended Rule 1178 – Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities

WORKING GROUP MEETING 6
OCTOBER 27, 2022

JOIN ZOOM MEETING: https://scaqmd.zoom.us/j/93814044899
MEETING ID: 938 1404 4899
TELECONFERENCE DIAL-IN: (669) 900-6833

Agenda

- Summary of Working Group Meeting #5
- Public Comment and Responses
- Updates to Cost-Effectiveness
- Proposed Amended Rule Language
- Next Steps

Summary of Working Group Meeting #5

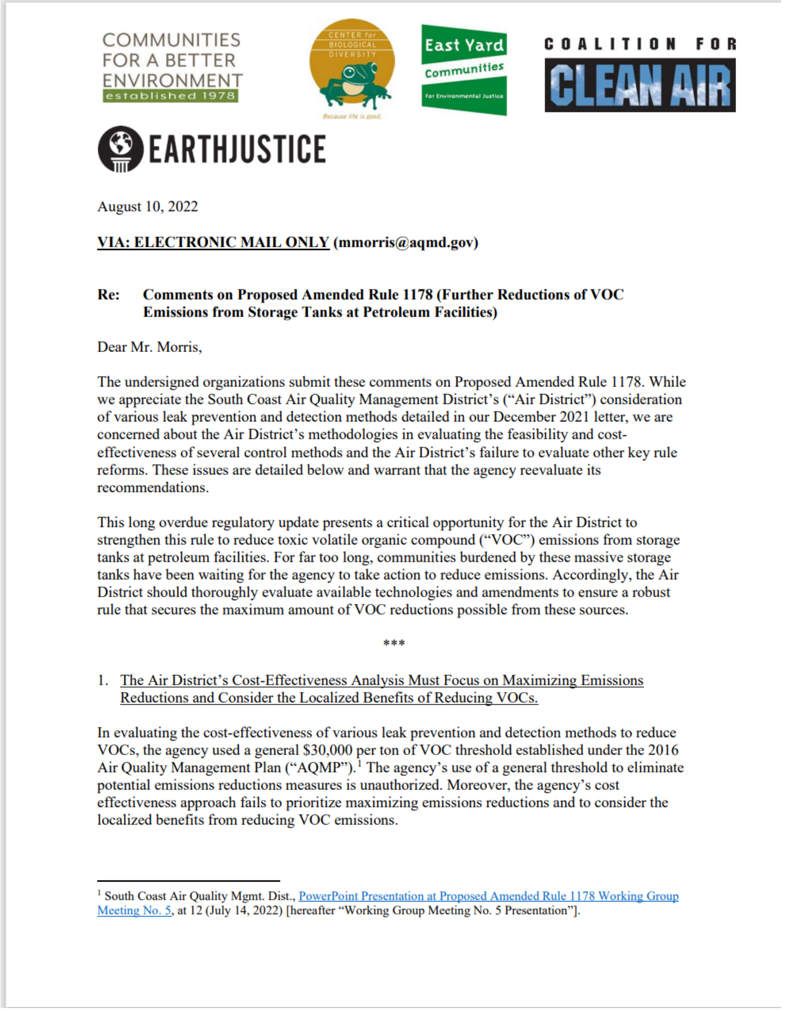
- During Working Group meeting #5, Staff noted U.S. EPA's identified deficiencies in Rule 463 and 1178
- Staff presented cost-effectiveness for control and monitoring technologies

	Control/Monitoring Technologies	Cost-Effectiveness ($/ton)	Notes
Control Technologies	Vapor Recovery	Not Calculated	98% efficiency requirement already met
	Secondary Seals for Internal Floating Roof (IFR) Tanks	$197,500	
	Gap Requirements	Not Calculated	Gap requirements already met
	Doming Crude External Floating Roof (EFR) Tanks (< 180 ft diameter)	$29,900	
	Retrofitting IFR Tanks with Cable Suspension Systems	$39,800	Not pursued due to high cost-effectiveness
Monitoring Technologies	Proximity Switches on Fixed Roof Tanks	$1,000	Not pursued due to more emission reductions from enhanced inspection monitoring
	Optical Gas Imaging (OGI) Weekly Monitoring + Tank Farm Overview	$16,900	

PUBLIC COMMENT AND RESPONSES

EarthJustice Comment Letter Introduction

- EarthJustice sent third comment letter on August 10, 2022
- Comment letter highlighted nine areas requesting further information such as use of cost-effectiveness threshold and scope of various analyses
- Each of EarthJustice's complete comment letters found on the PAR 1178 Proposed Rules page[1]



COMMUNITIES FOR A BETTER ENVIRONMENT established 1978 · Center for Biological Diversity · East Yard Communities for Environmental Justice · COALITION FOR CLEAN AIR · EARTHJUSTICE

August 10, 2022

VIA: ELECTRONIC MAIL ONLY (mmorris@aqmd.gov)

Re: Comments on Proposed Amended Rule 1178 (Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities)

Dear Mr. Morris,

The undersigned organizations submit these comments on Proposed Amended Rule 1178. While we appreciate the South Coast Air Quality Management District's ("Air District") consideration of various leak prevention and detection methods detailed in our December 2021 letter, we are concerned about the Air District's methodologies in evaluating the feasibility and cost-effectiveness of several control methods and the Air District's failure to evaluate other key rule reforms. These issues are detailed below and warrant that the agency reevaluate its recommendations.

This long overdue regulatory update presents a critical opportunity for the Air District to strengthen this rule to reduce toxic volatile organic compound ("VOC") emissions from storage tanks at petroleum facilities. For far too long, communities burdened by these massive storage tanks have been waiting for the agency to take action to reduce emissions. Accordingly, the Air District should thoroughly evaluate available technologies and amendments to ensure a robust rule that secures the maximum amount of VOC reductions possible from these sources.

***

1. The Air District's Cost-Effectiveness Analysis Must Focus on Maximizing Emissions Reductions and Consider the Localized Benefits of Reducing VOCs.

In evaluating the cost-effectiveness of various leak prevention and detection methods to reduce VOCs, the agency used a general $30,000 per ton of VOC threshold established under the 2016 Air Quality Management Plan ("AQMP").[1] The agency's use of a general threshold to eliminate potential emissions reductions measures is unauthorized. Moreover, the agency's cost effectiveness approach fails to prioritize maximizing emissions reductions and to consider the localized benefits from reducing VOC emissions.

[1] South Coast Air Quality Mgmt. Dist., PowerPoint Presentation at Proposed Amended Rule 1178 Working Group Meeting No. 5, at 12 (July 14, 2022) [hereafter "Working Group Meeting No. 5 Presentation"].

[1] http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/proposed-rules/rule-1178/comment-letters

EarthJustice Comment Letter

Comment 1A

- *The Air District's cost-effectiveness analysis must focus on maximizing emissions reductions.*

Staff Response 1A

- HSC § 40920.6[1] requires an air district to calculate the cost-effectiveness for any individual pollution control technology
- These cost-effectiveness thresholds were first created by the South Coast AQMD in the 2012 AQMP at a level of $16,500 per ton VOC
  - Tentative threshold in 2022 AQMP is $36,000 per ton VOC
- These thresholds are guidelines; if exceeded a more rigorous cost analysis will be conducted and reviewed by the Governing Board no less than 90 days prior to rule adoption[2]

[1] https://codes.findlaw.com/ca/health-and-safety-code/hsc-sect-40920-6/
[2] http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15

EarthJustice Comment Letter

Comment 1B

- *The Air District's cost-effectiveness analysis must consider the localized benefits of reducing VOCs.*

Staff Response 1B

- Used U.S. EPA's "Reference Concentrations" (RfC) to provide a conservative (high) guideline to assess risk of adverse effects from toxics exposure to benzene, toluene, ethylbenzene, and xylene (BTEX)
- Modeled BTEX emissions from a hypothetical setup at one large tank (230 ft diameter EFR tank) located across the street from a resident receptor
- Accounted for annual BTEX emissions and diluent volume of air between tank and receptor
- Concentration of benzene in liquid crude oil provided by U.S. EPA at 0.45% by weight, and conservative assumption of 1% for each of remaining toxics[2]

BTEX Pollutant[1]	U.S. EPA RfC (mg/m^3)	BTEX Pollutant Concentration in Diluent Volume (mg/m^3)[2]
Benzene	0.03	2.08×10^{-8}
Toluene	5	4.61×10^{-8}
Ethylbenzene	0.03	4.61×10^{-8}
Xylenes	0.03*	4.61×10^{-8}

Staff Conclusion

BTEX concentrations in air to nearest receptor are far below U.S. EPA Reference Concentration thresholds

[1] https://www.epa.gov/sites/default/files/2016-09/documents for each pollutant

*No RfC established by U.S. EPA; stated value is Agency for Toxic Substances and Disease Registry (ATSDR) "Minimal Risk Level" (MRL)

[2] https://www3.epa.gov/ttnchie1/le/benzene_pt2.pdf

EarthJustice Comment Letter

Comment 2

- *The Air District's reliance on a 2016 cost-effectiveness threshold is arbitrary and misleading. The cost-effectiveness threshold must reflect 2022 dollars.*

Staff Response 2

- The 2016 AQMP cost-effectiveness threshold of $30,000 per ton VOC is the most recent threshold approved by the South Coast AQMD Governing Board
- An updated 2022 AQMP cost-effectiveness threshold has been proposed at $36,000 per ton VOC
- PAR 1178 will use updated threshold assuming the 2022 AQMP is adopted

<u>Staff Conclusion</u>

Use 2022 AQMP Cost-Effectiveness threshold of $36,000 per ton VOC reduced

Updated Slide

EarthJustice Comment Letter

Comment 3A

- *The Air District failed to evaluate higher control efficiency for non-combustion systems.*

Staff Response 3A

- Staff is aware of only one vapor recovery test result showing 99% efficiency, all other test results only state “in compliance” on reports
- Vendors will only guarantee 95% non-combustion efficiency and 98% combustion efficiency
- Staff is not aware of any carbon adsorbers connected to large storage tanks but common with truck loading racks

<u>Staff Conclusion</u>

Increase removal efficiency from 95% to 98% for all vapor recovery units

EarthJustice Comment Letter

Comment 3B

- *The Air District failed to evaluate vapor recovery systems on all fixed and floating roof tanks.*

Staff Response 3B

- Fixed roof tanks currently required to install a vapor recovery system per *subparagraph (d)(4)(A)*
- Staff continues to meet with facilities and vendors to assess the technical and economic feasibility of installing vapor recovery systems on all tanks and will conduct a cost-effectiveness once sufficient information received

Staff Conclusion

Staff will conduct a cost-effectiveness on vapor recovery systems in the next working group meeting

EarthJustice Comment Letter

Comment 3C

- *No explanation for discrepancy between the 308 fixed roof storage tanks with vapor recovery stated during the July 16, 2021 working group meeting and the 267 such tanks during the July 14, 2022 working group meeting.*

Staff Response 3C

- Initial assumption was that all fixed roof tanks were equipped with a VRU
- Further review indicates that some fixed roof tanks store product < 0.1 psia TVP and are exempt from requirement to be equipped with a VRU

EarthJustice Comment Letter

Comment 4A

- *The Air District's secondary seals analysis relied on misleading cost data and equipment life and ignored secondary seals for exempt domed external floating roof tanks.*

Staff Response 4A

- Updated secondary seal cost of $163 per linear foot
- Based on average of 2001 rulemaking ($206) and 2022 vendor quote ($120) costs

2001 Rulemaking Cost

- 2001 rulemaking secondary seal cost: $98 per linear foot[1]
- PPI-adjusted cost figure: $206 per linear foot[2]

2022 Vendor Quote Cost

- Staff contacted several seal manufacturers for updated material and installation costs and other considerations including equipment life
- One vendor provided a quote of $40-$60 per linear foot for material cost only
- Useful life stated as 10 years and no requirement to remove tank from service during installation
- An additional assumed 100% installation cost factor yields a total cost of $120 per linear foot

[1] Based on average of two manufacturer as-installed quotes of $138 and $57 per linear foot

[2] PPI increase of 110% from Dec, 2001 to Aug, 2022. https://fred.stlouisfed.org/series/PPIACO.

EarthJustice Comment Letter

Comment 4A

- *The Air District’s secondary seals analysis relied on misleading cost data and equipment life and ignored secondary seals for exempt domed external floating roof tanks.*

Staff Response 4A (cont.)

- Revised cost-effectiveness for IFR tanks without secondary seals using individual tank permit data, 2019 AER throughput, and current vendor cost quotations
  - VOC emissions without secondary seals: 5.27 tpy
  - VOC emissions with secondary seals: 4.27 tpy
  - VOC emission reductions: 1 tpy
  - Total of floating roof circumferences: 5,808 linear feet
  - Total Cost: $946,700 seal installation + $234,000 permitting
  - Total Cost-Effectiveness: $1,180,700 / (1 tpy * 10 yrs) = $118,100 per ton VOC

EarthJustice Comment Letter

Comment 4A

- *The Air District's secondary seals analysis relied on misleading cost data and equipment life and ignored secondary seals for exempt domed external floating roof tanks.*

Staff Response 4A (cont.)

- Requiring secondary seals is not cost-effective (cost-effectiveness > $36,000 per ton VOC) for all internal floating roof tanks due to some tanks storing low volatility products such as kerosene
- Staff then assessed cost-effectiveness for a subset of IFR tanks storing more volatile gasoline and crude products at varying RVP values
- Requiring secondary seals on eight IFR tanks storing gasoline or crude with RVP ≥ 6 results in the maximum amount of emission reductions with cost-effectiveness remaining < $36,000 per ton VOC
    - VOC emissions without secondary seals: 3.58 tpy
    - VOC emissions with secondary seals: 2.61 tpy
    - VOC emission reductions: 0.97 tpy
    - Total of floating roof circumferences: 1,362 linear feet
    - Total Cost: $222,000 seal installation + $72,000 permitting
    - Total Cost-Effectiveness: $294,000 / (0.97 tpy * 10 yrs) = $30,300 per ton VOC
- All domed external floating roof tanks are currently required to be equipped with secondary seals per *subparagraph (d)(2)(e)*

Staff Conclusion

Require secondary seals on all IFR tanks storing gasoline with RVP ≥ 5 or crude with RVP ≥ 6
Require existing secondary seals to be maintained

Updated Slide

EarthJustice Comment Letter

Comment 5

- *The Air District relied on a flawed cost-effectiveness analysis to exclude external floating roof tanks from doming requirements and focused solely on crude oil tanks.*

Staff Response 5

- EFR tanks storing product with a total vapor pressure (TVP) ≥ 3 psia are already required to install a dome
- Vendors and facilities provided estimates regarding expected dome life; staff is using 50-year dome life
  - Western Canadian Installer Estimate: 30 years[1]
  - US Installer A: 50+ years
  - US Installer B: 50 years[2]
- Actual baseline emissions and emission reductions are calculated using the *TankESP* program
- Updated cost-effectiveness analyses utilizing 2019 AER data (submitted in 2020)
  - Revised cost-effectiveness for crude EFR tanks (with an 8 RVP) show higher cost-effectiveness than previously discussed
  - Lowering the TVP applicability of non-crude EFR tanks to below 3 TVP will result in even lower emission reductions and a higher cost-effectiveness, above the $36,000 per ton VOC threshold
- More details provided in *Updates to Cost-Effectiveness* section beginning on Slide 21

[1] Includes considerations such as precipitation and additional load due to snowfall
[2] If maintained well, including sealant replacement, gasket replacement after 20 years, and hardware tightening

EarthJustice Comment Letter

Comment 6

- *The Air District dismissed suspension systems for internal floating roof tanks based on flawed analysis and failed to consider requiring these systems for new proposed tanks.*

Staff Response 6

- New IFR tanks will be subject to BACT, which is more stringent than BARCT which is the scope of this rule development effort

Staff Conclusion

No changes to suspension system analysis for IFR tanks

EarthJustice Comment Letter

Comment 7

- *The Air District improperly dismissed open path monitoring and gas sensors based on an improper cost-effectiveness analysis and neglected to consider other alternatives.*

Staff Response 7

- Staff contacted an open path technology provider early in the rule development process, but the provider withdrew from discussions
- In the absence of vendor data, Staff is unable to determine whether open path monitoring is offered as a service nor what the cost is associated with open path monitoring as a service
- Staff identified several continuous monitoring technologies that are commercially available and is open to stakeholder input on additional alternatives

Staff Conclusion

OGI and approved continuous monitoring systems will be allowed to meet enhanced monitoring requirements

EarthJustice Comment Letter

Comment 8

- *The Air District failed to consider bi-weekly third-party monitoring of storage tanks with OGI cameras and increased Method 21 inspections.*

Staff Response 8

- Analyzed cost-effectiveness of bi-weekly individual tank inspection using OGI technology
  - Bi-weekly OGI inspection cost-effectiveness analysis provided in *Updates to Cost-Effectiveness* section on Slide 21
- Staff shared in Working Group Meeting 5 that leak reports (inclusive of Method 21 inspections) may not fully characterize emissions from leaks
- Although Method 21 inspections can identify leaks below 500 ppm, sub-500 ppm emissions are not considered leaks requiring a repair action
  - Sub-500 ppm leaks contribute very little to total emissions from leaks[1]
- Use of OGI technology expected to better capture emissions from leaking components

Staff Conclusion

Retain 500 ppm leak threshold and analyze cost-effectiveness of bi-weekly OGI inspection frequency

[1] Sub-500 ppm leaks contribute < 1 % of total leak emissions; see Slide 19 for further details

EarthJustice Comment Letter

Comment 9

- *No consideration for changing performance test exemption for portable tanks*
- *No consideration for a lower Method 21 leak detection threshold, such as BAAQMD's 100 ppm threshold*
- *No consideration for leak repair reinspection*

Staff Response 9

- Portable tank weekly Method 21 inspections are sufficient to capture any emissions
- If the emission control equipment is out of tune or otherwise not performing, such lack of performance would be detected by the weekly Method 21 inspection
  - A detected leak warrants change to the emission control system
- Staff identified 68 leaks on leak reports from 2019
  - 8% of leaks were within 100-500 ppm (0.65% of total mass emissions[1])
  - Of the leaks > 500 ppm, 60% were above OGI detection threshold of 2,500 ppm
- While reinspection may be performed in practice, this practice should be a formalized requirement in the rule and has been added as a proposed amendment

Staff Conclusion

Retain 500 ppm leak threshold and require reinspection of repaired leaks

[1] Calculated using CAPCOA's Revised U.S. EPA Correlation Equations and Factors. https://ww2.arb.ca.gov/sites/default/files/2020-04/CAPCOA%201999.pdf.

UPDATES TO COST-EFFECTIVENESS

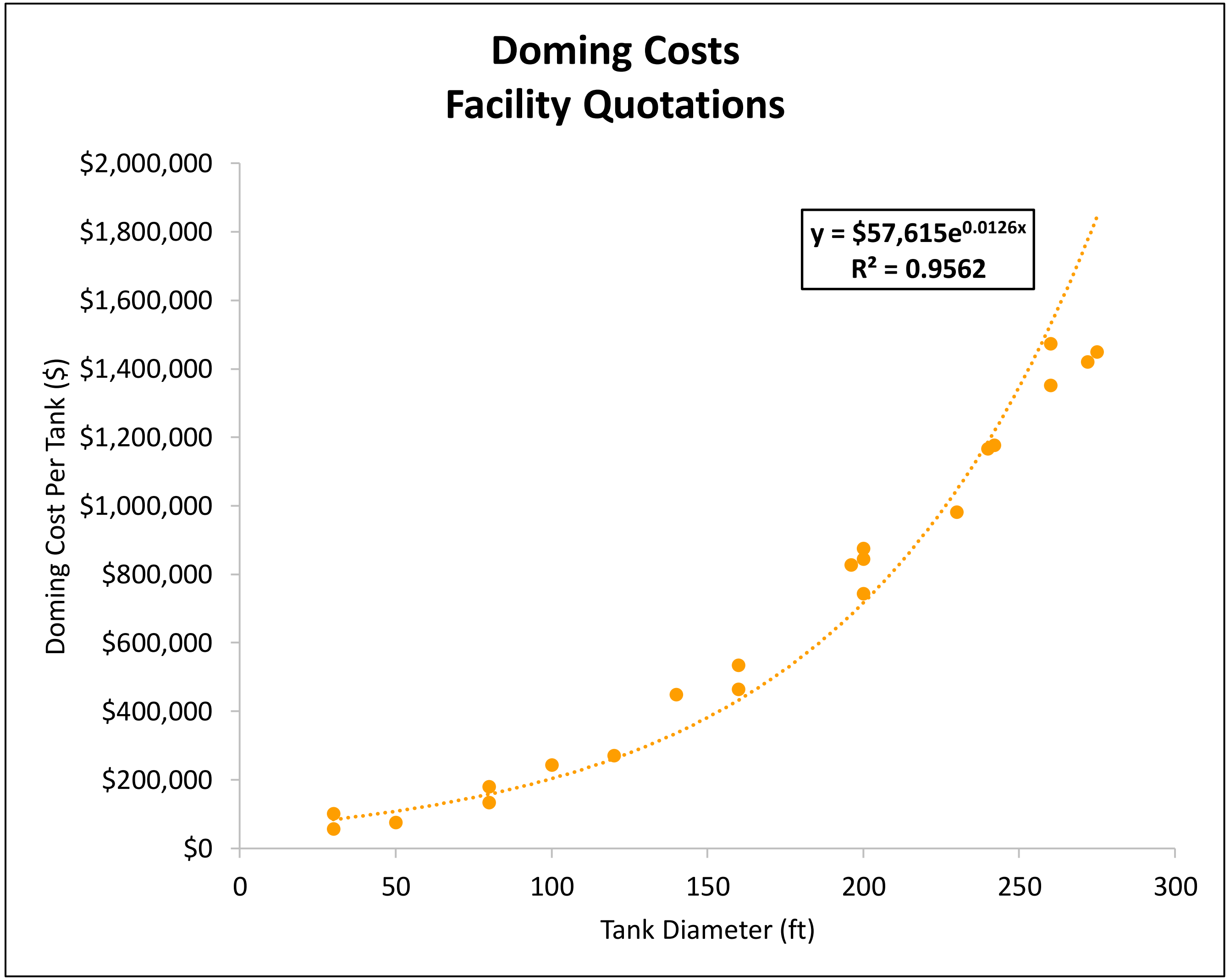
Cost-Effectiveness of Doming External Floating Roof Tanks

- Staff utilized the *TankESP*[1] program to calculate emissions for various tank configurations
- Initial cost-effectiveness for doming crude EFR tanks with a diameter of less than 180 feet of $29,900 per ton VOC
- Staff adjusted *TankESP* inputs[2] to account, or add missing information, for:
  - **Shell type**: welded or riveted
  - **Roof type**: double-deck or pontoon
  - **Seal types**: primary and secondary mechanical shoes or rim-mounted type
  - **Tank location**: facility-specific locations
  - **Throughput**: 2019 operating year

[1] https://www.trinityconsultants.com/software/tanks/tankesp
[2] Inputs and outputs of TankESP program provided in appendix to Preliminary Draft Staff Report

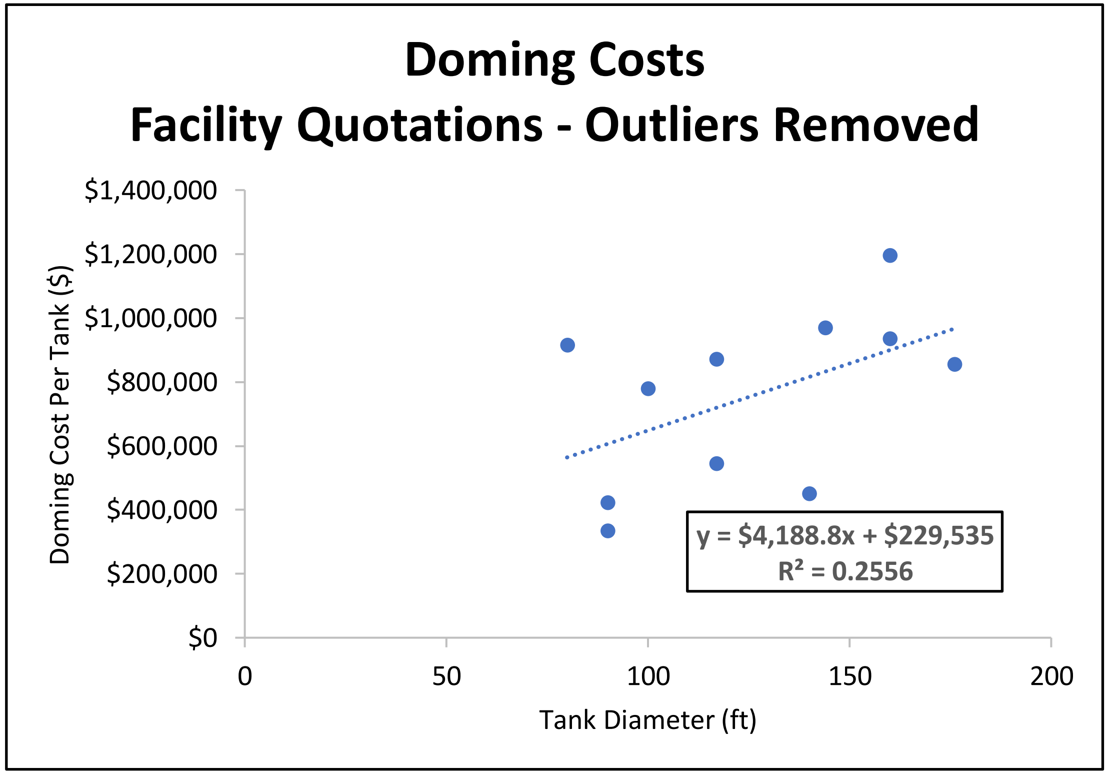
Cost-Effectiveness of Doming External Floating Roof Tanks (Vendor Quotes)

- Staff received doming quotes from three vendors for tanks
  30 - 275 ft in diameter
- Cost curve for vendor quotes shows an exponential increase in costs with increasing tank diameter



Cost-Effectiveness of Doming External Floating Roof Tanks (Facility Quotes)

- Staff received 11 doming project quotes from seven facilities
  - Quotes spanned from years 2003 to 2022 for tanks of various diameters (30 - 160 ft)
  - 2 of 11 quotes considered outliers and removed
    - Due to mixed tank diameters in each quote, inclusion in cost curve resulted in a near-zero slope cost curve
    - Near-zero slope leads to similar absolute costs for doming, regardless of tank diameter
- Staff noted in its field observations of 4 facilities the presence of existing fire suppression systems on most tanks
  - Added an average fire suppression system cost of $105,500 per tank based on two fire suppression vendor quotations and two facility quotations*



* Two facility quotations for fire suppression separate from the two facility doming quotations considered as outliers

Cost-Effectiveness of Doming External Floating Roof Tanks

- Facility data (linear cost curve) does not reflect the exponential increase in doming costs shown in vendor data (exponential cost curve) nor data beyond 160 ft diameter tanks
  - Facility data's largest tank diameter: 160 ft
  - Vendor data's largest tank diameter: 275 ft
  - Largest tank diameter in South Coast AQMD: 260 ft
- Staff created a hybrid cost curve based on:
  - Linear cost curve data points (as shown in facility cost curve)
  - Exponential cost curve character for larger diameter tanks (as shown in vendor cost curve)

Cost-Effectiveness of Doming External Floating Roof Tanks (New Exponential Cost Curve)

Step 1

Create data set for range of tank diameters using both cost curves

Data for tank diameters < 80 ft only contained in the two outlier quotes and are thus not included in this analysis

Tank Diameter (ft)	Vendor Cost Curve (Cost = $57,615*e^(0.0126*Diameter)	Facility Cost Curve (Cost = $4,189*Diameter+$229,535)
20	$74,127	
40	$95,372	
60	$122,705	
80	$157,872	$564,639
100	$203,117	$648,415
120	$261,330	$732,191
140	$336,226	$815,967
160	$432,587	$899,743
180	$556,564	$983,519
200	$716,074	$1,067,295
220	$921,297	$1,151,071
240	$1,185,338	$1,234,847
260	$1,525,051	$1,318,623
280	$1,962,124	$1,402,399
300	$2,524,461	$1,486,175

Cost-Effectiveness of Doming External Floating Roof Tanks (New Exponential Cost Curve)

Step 2

Add extrapolation premium figure to best match vendor and facility cost curves at 160 ft diameter level*

Tank Diameter (ft)*	Vendor Cost Curve		Extrapolation Premium		New Exponential Cost Curve	Facility Cost Curve
80	$157,872	+	$467,000	=	$624,872	$564,639
100	$203,117	+	$467,000	=	$670,117	$648,415
120	$261,330	+	$467,000	=	$728,330	$732,191
140	$336,226	+	$467,000	=	$803,226	$815,967
160	$432,587	+	$467,000	=	$899,587	$899,743
180	$556,564	+	$467,000	=	$1,023,564	$983,519
200	$716,074	+	$467,000	=	$1,183,074	$1,067,295
220	$921,297	+	$467,000	=	$1,388,297	$1,151,071
240	$1,185,338	+	$467,000	=	$1,652,338	$1,234,847
260	$1,525,051	+	$467,000	=	$1,992,051	$1,318,623
280	$1,962,124	+	$467,000	=	$2,429,124	$1,402,399
300	$2,524,461	+	$467,000	=	$2,991,461	$1,486,175

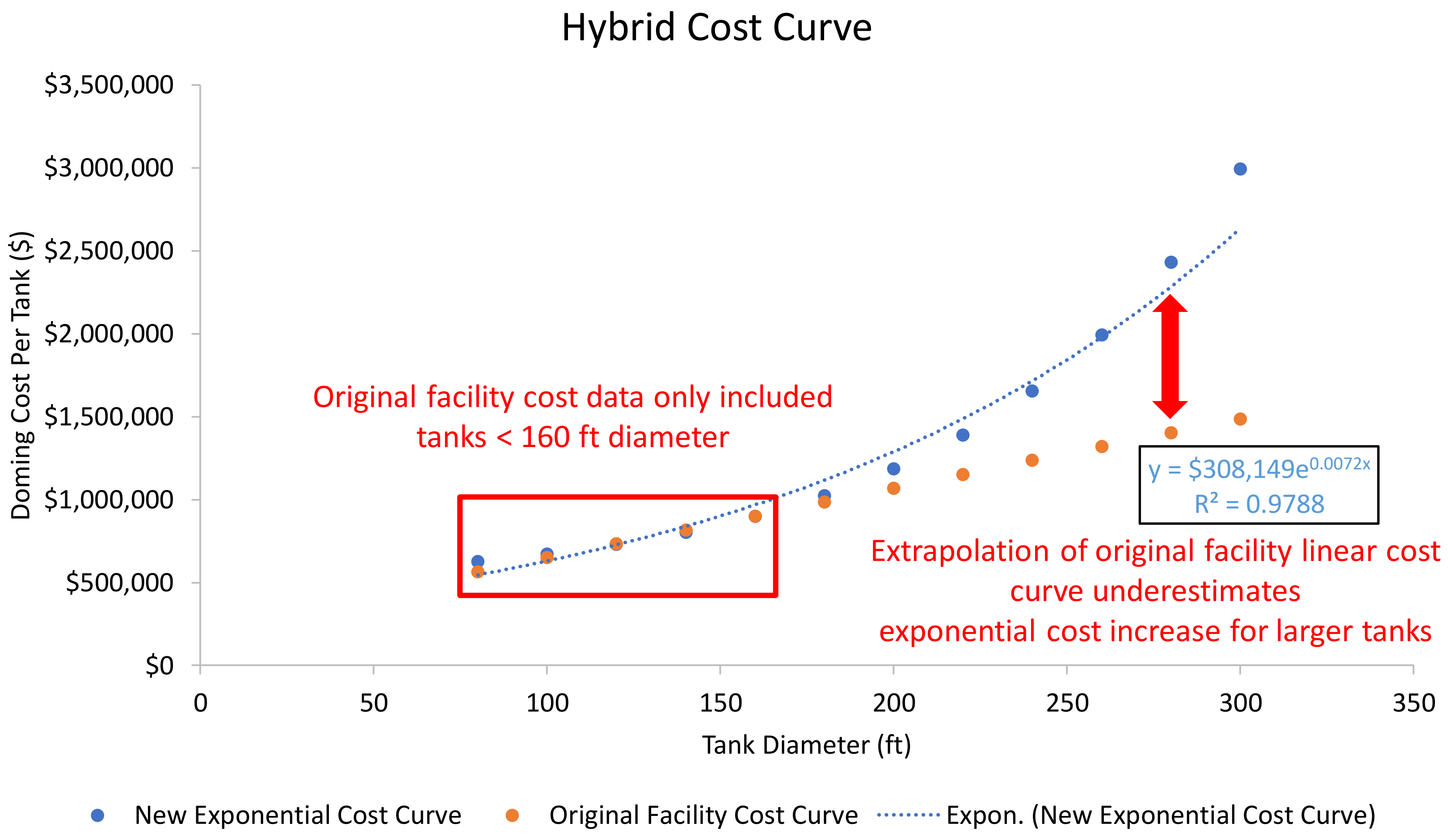
Cost curves match at 160 ft diameter level with extrapolation premium included

Cost-Effectiveness of Doming External Floating Roof Tanks (New Exponential Cost Curve)

Step 3

Plot new hybrid cost curve using new cost data points

New exponential cost curve matches the facility cost curve at the 160 ft diameter level and can be used to extrapolate costs for larger diameter tanks



Updated Slide

Cost-Effectiveness of Doming External Floating Roof Tanks

- Staff calculated the cost-effectiveness of various diameter applicability thresholds with varying useful life of the domes, accounting for permitting[1] and lost productivity[2]

Dome Useful Life (yrs)	Total Costs ($)	Total Emission Reductions (tons)	Cost-Effectiveness ($/ton)
25	$73,807,300	1,131	$65,300
30		1,357	$54,400
35		1,584	$46,600
40		1,810	$40,800
45		2,036	$36,300
50		2,262	$32,600

Staff Recommendation

Doming required for all crude EFR tanks

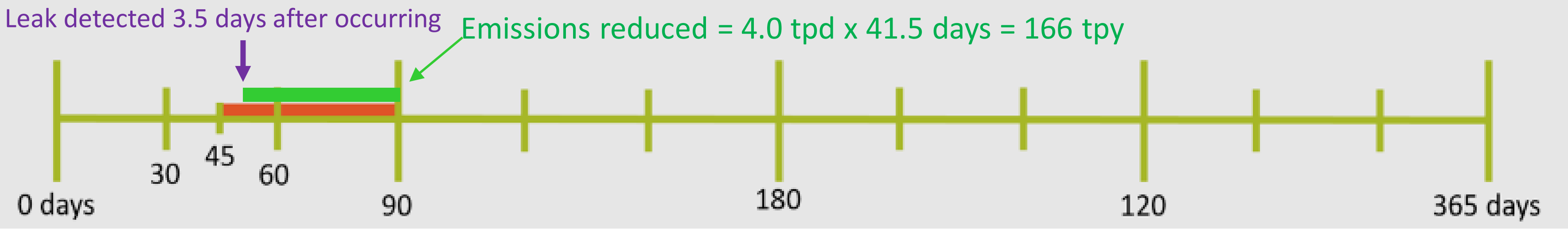
[1] Rule 301. Table Fee Rate-A, Schedule D, Alteration/Modification. http://www.aqmd.gov/docs/default-source/rule-book/reg-iii/rule-301.pdf.

[2] Applied only to tanks with diameter ≥ 200 ft. Cost-per-barrel and construction timeline noted by one facility in its doming quote ($0.50/bbl for 75 days).

Cost-Effectiveness of Bi-weekly OGI Inspection Frequencies

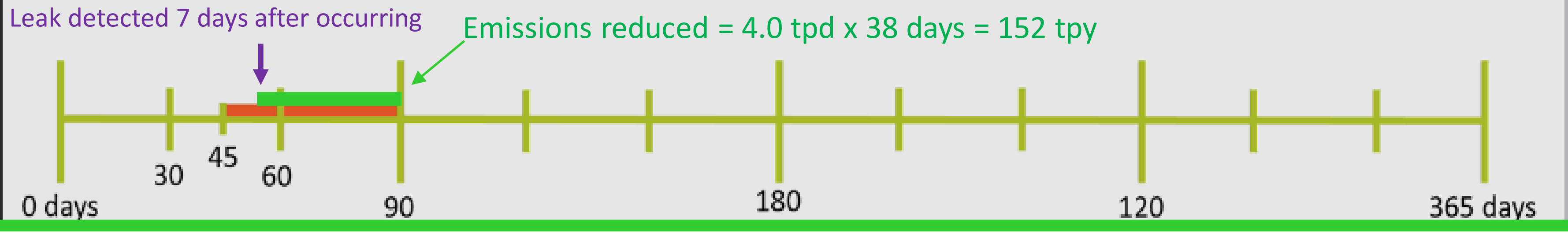
- Previous working group meeting recommended a partial weekly monitoring + tank farm scan OGI inspection strategy, with a cost-effectiveness of $16,900 per ton VOC
- Staff evaluated the cost-effectiveness of an additional inspection frequency of a bi-weekly individual tank inspection schedule

<u>Weekly monitoring</u>
Leak detected 3.5 days after occurring
(1/2 the time between inspections)



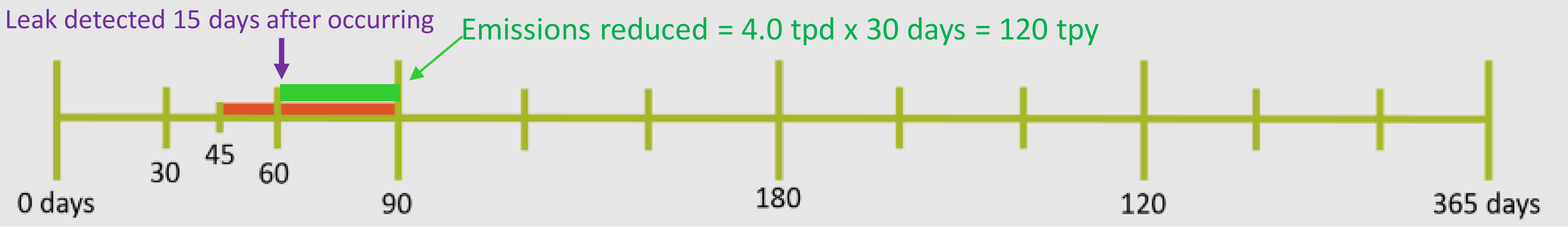
166 tons per year

<u>Bi-weekly monitoring</u>
Leak detected 7 days after occurring
(1/2 the time between inspections)



152 tons per year

<u>Monthly monitoring</u>
Leak detected 15 days after occurring
(1/2 the time between inspections)



120 tons per year

Cost-Effectiveness of Bi-weekly OGI Inspection Frequencies

- Bi-weekly individual tank OGI monitoring is cost-effective but incremental cost-effectiveness between all cost-effective monitoring frequencies must also be considered

Cost-Effectiveness

	Individual Tank Monitoring			Partial Monitoring (15 tanks) + Tank Farm Scan
Frequency of Inspection	Monthly	**Bi-Weekly**	Weekly	Weekly
Cost to monitor 1,063 tanks ($/year)	$1,700,800	**$3,685,100**	$7,370,100*	$2,808,000 (27 facilities)
Reductions (tpy)	120	**152**	166	166
Cost-effectiveness ($/ton)	$14,200	**$24,200**	$44,400	$16,900

* Corrected cost from $7,370,200 shown in Working Group Meeting #5

Cost-Effectiveness of Bi-weekly OGI Inspection Frequencies

- Incremental cost-effectiveness analysis conducted between monthly and bi-weekly schedules and between monthly and partial monitoring schedules

Incremental Cost-Effectiveness

	Monthly to Bi-Weekly Inspection	Monthly to Partial Monitoring
Incremental Cost	$1,984,300	$1,107,200
Incremental Reductions (tpy)	32	46
Incremental Cost-Effectiveness ($/ton)	$62,000	$24,100

Staff Conclusion

- Not incrementally cost-effective to increase frequency of individual tank monitoring from a monthly basis to a bi-weekly basis
- Partial tank + tank farm scan is the most frequent and incrementally cost-effective OGI monitoring technology option

INITIAL PROPOSED RULE CONCEPTS

Doming External Floating Roof Tanks and Secondary Seals

Doming EFR Tanks

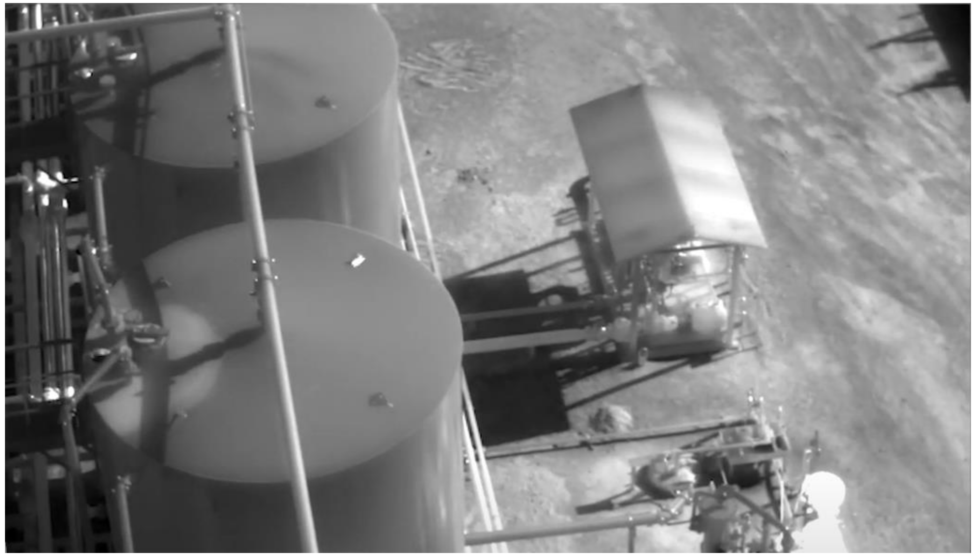
- Exemption currently available for external floating roof tanks permitted to store greater than 97% by volume crude oil
- Proposed doming requirement for all external floating roof tanks storing crude

Secondary Seals on IFR Tanks

- Proposed requirement for IFR tanks storing gasoline or storing crude with RVP ≥ 6
- Proposed requirement to maintain existing secondary seals

Enhanced Monitoring

- Additional monitoring requirement for all tanks using OGI or approved continuous monitoring systems
- Objective is to capture major leaks more quickly than a 90-day inspection with a total vapor analyzer would allow
  - Staff observed that inspections for floating roof tanks focus on gap measurements rather than leak measurements
- OGI inspections and continuous monitoring will supplement existing LDAR requirements (U.S. EPA Method 21 inspections and seal gap inspections)



Enhanced Monitoring: OGI

- OGI imaging requirement: individually inspect no fewer than 15 tanks on a weekly basis and perform one tank farm scan per week
  - Facilities with more than 15 tanks may not have individual tank inspections via OGI each week, but large leaks will be captured during tank farm scan
- Any leak detected by an OGI camera is considered a leak due to threshold of detection
  - Threshold of ~2,500 ppm according to some OGI manufacturers and monitoring contractors
- In lieu of individual and tank farm scans, stationary OGI cameras may be calibrated and installed for continuous monitoring

Next Steps

- ❑ Determine eligibility of PAR 1178 to U.S. EPA 2016 CTG
- ❑ Finalize technical and economic feasibility of installing vapor recovery systems on all tanks
- ❑ Release full preliminary draft rule language
- ❑ Public Workshop (Q4 2022)
- ❑ Public Hearing (Q1 2023)

Contacts

James McCreary
Air Quality Specialist
jmccreary@aqmd.gov
909-396-2451

Melissa Gamoning
Air Quality Specialist
mgamoning@aqmd.gov
909-396-3115

Rodolfo Chacon
Program Supervisor
rchacon@aqmd.gov
909-396-2726

Mike Morris
Planning and Rules Manager
mmorris@aqmd.gov
909-396-3282

Michael Krause
Assistant Deputy Executive Officer
mkrause@aqmd.gov
909-396-2706

To receive e-mail notifications for Rule 1178 – Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities, sign up at: **www.aqmd.gov/sign-up**

https://www.gettyimages.fi/detail/video/orbital-shot-of-the-chevron-el-segundo-refinery-stock-video-footage/1027886248