



September 15, 2014

Via email and FedEx to
Amy Million, Principal Planner
Community Development Department
250 East L Street
Benicia, CA 94510
amillion@ci.benicia.ca.us

Re: The City of Benicia's Draft Environmental Impact Report for the
Valero Benicia Crude by Rail Project

Dear Ms. Million,

On behalf of the Natural Resources Defense Council (NRDC), and the undersigned groups, we submit the following comments on the City of Benicia's Draft Environmental Impact Report (DEIR) for the Valero Benicia Crude by Rail Project (the Project). The Project, if approved, would allow the Valero refinery to receive up to 70,000 barrels per day of crude oil by train. Our evaluation of the Project, as well as that of two independent experts retained by NRDC, indicates that it will result in very significant environmental impacts that have not been disclosed or mitigated in the DEIR.¹

Most notably, the DEIR fails to adequately evaluate the significant air quality, health, and safety hazard impacts of the Project. By relying on an incorrect baseline, the DEIR fails to assess how changes in crude slate or throughput will affect refinery emissions. The DEIR also misleadingly downplays the risk of a significant crude-by-rail accident, even though there have been at least twelve serious crude-by-rail accidents in North America in the past year-and-a-half alone—including one in Lac-Mégantic, Quebec, that killed 47 people and leveled the center of that town.

Because this Project would result in significant environmental impacts, the City cannot certify the DEIR before adopting all feasible

¹ Selected sources cited have been provided to the City of Benicia in hard copy. Other sources cited in these comments and in the expert reports will be provided in CD to follow.

mitigation measures. Yet the DEIR fails to identify and analyze mitigation measures that would reduce the Project's impacts, incorrectly claiming that no mitigation measures are available. In fact, there are numerous mitigation measures and alternatives that would reduce the impacts of the Project. These measures must be analyzed in the DEIR, so that the full range of options are publicly disclosed and considered by decision-makers.

In light of the Project's significant, unmitigated impacts, the people of Benicia, as well as up-rail communities, will be protected only if the City denies the permit for the Project. However, if the City intends to move forward notwithstanding the Project's significant impacts, the City must comply with the law. At the very least, the City must revise the DEIR to address these concerns and those raised by community members and public agencies, and recirculate the revised DEIR for public comment.

I. THE DEIR FAILS TO DISCLOSE, ANALYZE, AND MITIGATE THE PROJECT'S SIGNIFICANT AIR QUALITY IMPACTS

With the exception of the impacts from railroad emission in Yolo and Sacramento air basins, the DEIR concludes that the Project will not have any significant air quality impacts. DEIR at 4.1-16 to 4.1-26. The DEIR fails to disclose and analyze many important factors that clearly demonstrate that the Project would have significant air quality impacts both here in the San Francisco Bay Area, where the Project is located, and in other up-rail regions to the east. As described in more detail below and in the accompanying report by Dr. Phyllis Fox (Attachment 1), the DEIR:

- uses an improper, hypothetical baseline to avoid evaluating increased refinery emissions that may result from changes in crude slates or increases in throughput;
- incorrectly claims that crude slate and emissions data are trade secrets;
- fails to disclose the actual increases in criteria and toxic air pollutants that will result from refining new types of crudes, including Bakken and tar sands crudes;
- fails to disclose the increases in fugitive toxic and organic air emissions from storage tanks and unloading equipment due to the higher volatility of new crudes;

- relies on Valero's unenforceable promise that the Project's crude will displace crude shipped by marine tanker to conclude that the Project will reduce transportation emissions;
- fails to properly disclose the increases in criteria and toxic air pollutants during the transportation of the crude, both from fugitive emissions and from the locomotives themselves;
- uses an outdated emissions model for construction emissions and underestimates key factors affecting those emissions; and
- provides a Health Risk Assessment that vastly underestimates toxic air contaminant emissions.

In addition to failing to disclose and analyze all of these significant impacts, the DEIR fails to include any mitigation measures, claiming that no mitigation measures are available. That is an error: there are many feasible mitigation measures the City could implement, as described below. In light of these deficiencies, the City must revise the DEIR to address the significant air quality impacts described here and recirculate it for public comment.

For context of the gravity of the air pollution impacts of this project, we note that although emissions of some pollutants from Valero's Benicia refinery (such as sulfur dioxide due to installation of a scrubber) have decreased over recent years, the refinery continues to emit dangerous and unhealthy levels of toxic air pollutants.² According to Toxics Release Inventory reports, Valero releases 70 percent more toxic chemicals than the California refinery average, putting the surrounding community at much greater risk of adverse health impacts such as cancer, chronic disease, lower IQ, reproductive problems and developmental delays.³

² See EPA Region 9 Toxics Release Inventory, 2012 California Refineries Report, available at: <http://www.epa.gov/region09/tri/report/12/tri-calif-refineries-2012.pdf>

³ In 2012, Valero Benicia released 5 pounds of toxic chemicals per barrel per day vs. a statewide refinery average of 2.9 pounds of toxic chemicals released per barrel per day. This comparison is based on the total toxic releases in 2012 reported by EPA Region 9, normalized to capacity for each refinery based on California Energy Commissions refinery capacity data available at: <http://energyalmanac.ca.gov/petroleum/refineries.html>

A. The DEIR Uses an Improper Baseline for Refinery Emissions

To evaluate the environmental impacts of a proposed project, a lead agency must first determine the environmental setting, or baseline. 14 Cal. Code Regs. (“Guidelines”) § 15125(a). Under CEQA, the baseline consists of “the physical environmental conditions in the vicinity of the project, as they exist at the time . . . environmental analysis is commenced.” Guidelines § 15125(a). In other words, the baseline is the actual physical conditions that exist at the site—not hypothetically permitted conditions. *Communities For A Better Env’t v. S. Coast Air Quality Mgmt. Dist.*, 48 Cal. 4th 310, 315(2010).

The DEIR states that the air emissions baseline for the Project is the full scope of operations allowed under current permits, including those issued for the Valero Improvement Project. DEIR, Appx. C at C.1-3. It states that if refinery emissions were to increase based on Valero’s purchase of heavy sour Canadian crudes or Bakken crudes, “any such emissions increases would properly be considered part of the baseline because the baseline includes the full scope of operations allowed under existing permits that were issued based upon prior CEQA review.” DEIR Appx. C.1 at C.1-1; DEIR Appx. C.2 at C.2-1.

The DEIR’s analysis fails to meet CEQA’s requirement that agencies analyze the impacts of a project compared to the actual physical conditions, rather than hypothetically permitted conditions. As the California Supreme Court explained in *Communities for a Better Environment v. South Coast Air Quality Management District*, the City must compare the change in emissions that result from the Project to the current emissions at the refinery. Without this baseline, neither the City nor the public can determine whether the Project will increase emissions, either because of an increase in the total amount of crude refined or because of changes in the crude slate. Knowing these baseline conditions is essential to understanding the Project’s impact on the environment.

The DEIR half-heartedly claims that the Project is not a new project, but rather a modification of the Valero Improvement Project (VIP). DEIR, Appx. C.1 at C.1-3; DEIR, Appx. C.2 at C.2-3. To the contrary, the City has consistently treated the Project as a new project, requiring a new set of permits and preparing environmental review documents from scratch, rather than preparing any of the subsequent environmental review documents contemplated by Public Resources Code section 21166 and Guidelines section 15162. Those sections do not apply to new projects. *Save Our Neighborhood v. Lishman*, 140 Cal. App. 4th 1288, 1301 (2006). The VIP

environmental analysis was performed over 10 years ago. Much has changed in the last 10 years, including the suite of crudes available in the market, the transportation options, and the regulations and standards governing air emissions. Accordingly, the baseline for purposes of analyzing the Project's impacts is the current level of emissions, not the maximum permitted emissions.

Even if this Project were a modification of the VIP—which it is not—the City must still properly analyze the impacts of the Project relative to that baseline. As discussed in the attached report by Dr. Phyllis Fox, the refining of Canadian tar sands or Bakken crudes will have significant air quality impacts, even beyond what was permitted in the VIP. The City cannot simply assume that the emissions from the Project would be within the emissions permitted by the VIP without conducting a detailed analysis of how refining these new types of crudes would change refinery emissions.

B. The City Cannot Skirt Its Duty to Evaluate Project Impacts by Claiming Some of the Information Submitted By Valero Constitutes Trade Secrets

The DEIR states that “Valero has submitted data and information regarding the proposed project, including data and information regarding the past and anticipated future crude oil slate at the Valero Benicia refinery.” DEIR, Appx. D at D-1. This information includes the identity of the specific crudes Valero has previously purchased and plans to purchase as part of the Project, as well as the properties of those crudes (weight, sulfur content, vapor pressure, and acidity). *Id.* Despite having this information at its disposal, the City has determined that it should be withheld from public review, citing Government Code section 6254.7 and Public Resources Code section 21160.

In our comments on the Mitigated Negative Declaration, we called for the City to disclose the crudes Valero is likely to transport as a result of the Project, so that the City and the public can fully evaluate the potential air impacts from refining these crudes and the spill risks from transporting them. As explained below, the information most relevant to evaluating these impacts is not a trade secret. But even if some information provided to the City were a trade secret, the City still would have a duty to disclose and analyze the reasonably foreseeable impacts of the Project in the DEIR.

As an initial matter, Valero's intent to transport Bakken and tar sands crudes is not a trade secret. The City admits as much in its DEIR, listing the potential crudes the Project may import. DEIR, Appx. K at K-12, K-13. And

crude “assay” data, which includes details about the specific properties and chemical content of a crude oil, is widely reported.⁴ Because this information is widely available, it is not “known only to certain individuals within a commercial concern,” and therefore is not a “trade secret” under Government Code section 6254.7. Accordingly, the DEIR must also disclose the characteristics of these crudes that are relevant to environmental concerns.

Furthermore, the City may not rely on its “trade secret” designation to avoid analyzing the impacts of the proposed Project. Air emissions from refinery changes are not trade secrets and must be disclosed. Government Code section 6254.7, which the City cites in support of withholding Valero’s crude slate information, explains that “all air pollution emission data, including those emission data which constitute trade secrets . . . are public records.” Thus, even assuming that Valero’s specific crude slate is a trade secret, the change in emissions that it will produce is not. For example, the City of Richmond recently evaluated and disclosed how operations could change at the Richmond Refinery under several crude input scenarios.⁵ Likewise, the City of Benicia should evaluate and disclose the reasonably foreseeable crude blend changes and the resulting environmental consequences. Because Valero has provided the City with its prior and anticipated crude slate, DEIR at D-1, the City has the information necessary to determine the reasonably foreseeable changes in air emissions that that will occur due to changes in the crude slate. These changes in air emissions must be disclosed.

C. The DEIR Failed to Consider Impacts on Refinery Emissions

On July 1, 2013 we submitted comments on the Mitigated Negative Declaration for the Project, explaining in detail that this Project would facilitate significant changes in crude oil slate quality, which would result in emission increases that were not considered. The DEIR fails to correct the defects that we identified in those comments and the accompanying report by Dr. Fox; thus we include them here as Attachments 2 and 3.

⁴ Jeff Thompson, Public Crude Assay Websites, February 24, 2011. http://www.coqa-inc.org/docs/default-source/meeting-presentations/20110224_Thompson_Jeff.pdf.

⁵ Chevron Refinery Modernization Project, Draft EIR 4.3 (March 2014), *available at* http://chevronmodernization.com/wp-content/uploads/2014/03/Volume-1_DEIR.pdf.

The DEIR lists 38 “available North American crudes” that could be imported by the Project. DEIR, Table 3-1. Regardless of which of these 38 crudes are ultimately shipped to the Project, the DEIR must analyze the full range of resulting impacts from all of the 38 crude oil types available, as the DEIR suggests that it is reasonably foreseeable that each of them will be refined. Impacts would vary greatly between tar sands crudes (on the heavy, high-sulfur end) and Bakken crudes (on the light, sweet end), with unique and significant impacts from each end of this range. The DEIR does not analyze impacts from either of these, but instead inappropriately considers an unidentified default crude that is not representative of *any* of the 38 possible types.

The DEIR incorrectly asserts that blending of the rail-imported crudes with other crudes to meet current sulfur and specific gravity (“weight”)⁶ requirements will mean that emissions would not change. DEIR, Appendices C.1, C.2 and K. This assertion is an error for several reasons.

Crudes exhibit important differences that are not related to the weight and sulfur content of the crude, such as chemical composition, vapor pressure, and other physical and chemical attributes. These differences can significantly affect refinery emissions. For example, the chemical components of the crude (such as toxic air contaminants (TACs) like benzene, or highly malodorous compounds such as mercaptans) may be present at much higher concentrations in one crude than in other crudes with identical sulfur content and API gravity. Fox DEIR Comments at 5.

Further, other characteristics, such as vapor pressure or flammability, differ in significant ways among crudes with similar sulfur and weight. The DEIR actually concedes that there is no relationship between vapor pressure (expressed as RVP) and weight (expressed as API) for different crude types. DEIR, Appx. K at K-18. This is further substantiated by analysis of data published by Enbridge, summarized here in Figure 1. The Enbridge data covering 76 different types of crude oil show that crude oil attributes of sulfur content and density are completely independent of vapor pressure. Fox DEIR Comments at 4.

⁶ Note that throughout the DEIR, the term “weight” is used to indicate API gravity or density, where “density” is technically what is meant. We will use the same terminology in these comments; “weight” indicates density.

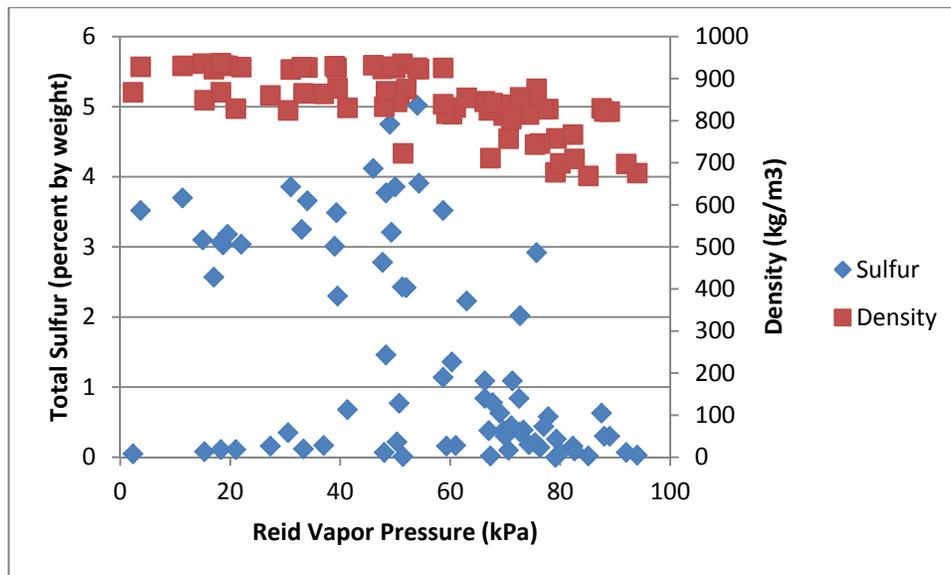


Figure 1: Reid Vapor Pressure Compared to Total Sulfur and Density for 76 different types of Crude Oil

Source: Enbridge Pipelines Inc., 2013 Crude Characteristics⁷

The vapor pressure of crude determines to a large extent the amount of reactive organic gases (ROG) and toxic air contaminants (TAC) that are emitted when the crude is transported, stored, and refined. Thus, a crude slate may have identical sulfur content and weight, but dramatically different ROG and TAC emissions.

Similarly, the nature of the crude's chemical bonds determines the amount of energy and hydrogen that must be supplied to refine it. Thus, a crude slate may have identical sulfur and weight, but a different mix of chemicals that would affect the amount of energy and hydrogen required to convert it into refined products. Put another way, one crude slate may require more refining than another, even though the two slates have the same sulfur and weight. This means that total refinery emissions are affected by crude slate characteristics other than sulfur and weight. Fox DEIR Comments at 5.

These impacts have not been considered in the DEIR. The DEIR ignores significant increases in ROG emissions, contributing to existing violations of ozone ambient air quality standards; significant increases in TAC emissions, resulting in significant health impacts; significant increases in malodorous sulfur compounds, resulting in significant odor impacts;

⁷ Available at

<http://www.enbridge.com/~media/www/Site%20Documents/Delivering%20Energy/2013%20Crude%20Characteristics.pdf>

significant increases in combustion emissions, contributing to existing violations of particulate matter (PM) standards; and significant increases in flammability—and the resulting potential for more dangerous accidents if and when trains derail or spills occur, off-site or on-site.

1. Import of Tar Sands or Other Heavy Crudes Would Increase Refinery Emissions

Although the DEIR asserts that “[t]here is no reason to believe that . . . Valero would be more likely to purchase heavy Canadian crudes than any number of other North American crudes that are lighter and/or sweeter . . .,” DEIR, Appx. C.1 at C.1-1, the DEIR is required to consider scenarios that are reasonably foreseeable. Table 3-1 lists 38 “available North American crudes” that could be imported by the Project, of which at least 15 are tar sands crudes.

Tar sands crudes are chemically distinct from the current crude slate and thus will result in significant impacts that were not analyzed in the DEIR. Fox DEIR Comments at 5; Fox IS/MD Comments at 25-28. The DEIR discusses heavy sour crude slate issues in Appendix C.1, focusing on the weight and sulfur content of the crude, to the exclusion of other important factors such as chemical composition, volatility, and corrosivity. Appendix C.1 asserts that emissions would not increase because the blended crude slate would remain within Valero’s operating range for both weight and sulfur. DEIR, Appx. C.1 at C.1-3.

As an initial matter, the argument that sulfur levels and weight of the crude slate will stay within a narrow range ignores the possibility of a change that, while within that range, would nonetheless be significant. This recently occurred at the nearby Chevron Richmond Refinery. This refinery gradually changed crude slates, while staying within its established crude unit design basis for total weight percent sulfur of the blended oil going into the crude unit.⁸ This change increased corrosion rates, which led to a catastrophic pipe failure in the #4 Crude Unit on August 6, 2012. This accident sent 15,000 people from the surrounding area for medical treatment due to the release and resulting fire that created huge black

⁸ US Chemical Safety and Hazard Investigation Board, Chevron Richmond Refinery Pipe Rupture and Fire, August 6, 2012, p.34 (“While Chevron stayed under its established crude unit design basis for total wt. % sulfur of the blended feed to the crude unit, the sulfur composition significantly increased over time. This increase in sulfur composition likely increased corrosion rates in the 4-sidecut line.”).

clouds of pollution over the surrounding community. Fox DEIR Comments at 6; Fox IS/MND Comments at 25-26.

These types of accidents can be reasonably expected to result from incorporating tar sands crudes into the Benicia crude slate, even if the range of sulfur and weight of the crudes remain the same, unless significant upgrades in metallurgy were to occur. Yet the DEIR fails to propose any measures to upgrade metallurgy or address the potential for increased corrosion that could contribute to accidents. Tar sands crudes have a significant concentration of sulfur in the heavy components of the crude coupled with high TAN and high solids, which aggravate corrosion. The gas oil and vacuum resid piping, for example, may not be able to withstand naphthenic acid or sulfidation corrosion from tar sands crudes, leading to catastrophic releases.⁹ Fox DEIR Comments at 6; Fox IS/MND Comments at 35-36.

The DEIR fails to consider catastrophic releases of air pollution from accidents that would be a reasonably foreseeable result of the use of more corrosive crude oil. Rather, the DEIR relies on the Refinery's existing Process Safety Management program, including the Management of Change (MOC) and Mechanical Integrity (MI) programs, to prevent corrosion. DEIR at 3-16. However, similar programs were also in place at Chevron at the time of the August 2012 accident discussed above, and they did not prevent a catastrophic accident caused by sulfur creep. The recent Chevron FEIR incorporated many additional mitigation measures to improve these programs,¹⁰ which should be required for the Project. Fox DEIR Comments at 6.

As discussed above, the weight and sulfur content are not the only characteristics of crude oil that determine environmental impacts. Other important factors include volatility, flammability, metal content, ROG speciation profile, the specific suite of heavy organic compounds in the crude, and the TAC and sulfur speciation profile (i.e., the concentration of individual TAC and sulfur compounds present in the crude). The DEIR fails

⁹ See, for example, K. Turini, J. Turner, A. Chu, and S. Vaidyanathan, Processing Heavy Crudes in Existing Refineries. In: Proceedings of the AIChE Spring Meeting, Chicago, IL, American Institute of Chemical Engineers, New York, NY, Available at: <http://www.aiche-fpd.org/listing/112.pdf>.

¹⁰ See, e.g., Chevron Refinery Modernization Project, Revisions to Draft EIR Volumes 1 & 2, p. 4-40, Mitigation Measure 4.13-7h, Available at: <http://chevronmodernization.com/project-documents/>.

to assess increases in refinery emissions of sulfur compounds, heavy metals, benzene and other TACs, as well as increased production of contaminated petroleum coke that would occur with the import of tar sands crude.

Tar sands crudes are derived from bitumen, a semi-solid tar-like substance that is contaminated with five times more lead, 20 times more vanadium, and higher levels of other heavy metals and pollutants than conventional crude, according to the U.S. Geological Survey. Fox IS/MND Comments at 22. The tar sands crude that would be imported by this Project is likely to be a “dilbit” blend of tar sands with a very light diluent to make the semi-solid tar sands flow like conventional oil. Dilbits contain high levels of VOCs, sulfur compounds, and HAPs, such as benzene. Fox IS/MND Comments at 26.

Elevated levels of benzene or hydrogen sulfide in dilbit cannot be blended out because they are emitted from tanks and fugitive components before the crudes reach the mixing tanks. The majority of the toxic TACs and malodorous chemicals are emitted before blending occurs, during unloading and from fugitive components along the pipeline and at the storage tanks. Blending itself does not eliminate them.

Similarly, elevated metals that end up in coke fugitive particulate emissions cannot be blended out. No matter how much blending is done with relatively less contaminated crudes, a significant amount of heavy metals from lower quality rail-imported crude would still remain. Blending also does not remove, but rather only dilutes, elevated concentrations of high molecular weight organic compounds such as asphaltenes and resins that require high energy input to break down into marketable products. Fox IS/MND Comments at 4-10. These characteristics may vary in significant ways among crudes with the same range of API gravity and sulfur, resulting in significant environmental impacts. Fox IS/MND Comments at 29-30. The DEIR must be revised to address potential impacts from increased contamination with heavy metals and other TACs, increased refinery air emissions, and increased petroleum coke production.

2. Import of Bakken and Other Light Crudes Would Increase Refinery Emissions

The DEIR concedes that Valero is likely to import large amounts of light sweet North American crudes, specifically crudes that are, on average, lighter and sweeter than Valero’s current feedstocks. DEIR at 3-24; Appx. C at C.2-1. Light sweet crudes such as Bakken could result in a dramatic increase in fugitive ROG and TAC emissions from all aspects of the refinery,

most notably storage tanks, pumps, compressors, valves, and connectors. Like the IS/MND, the DEIR fails to evaluate these impacts. Fox IS/MND Comments at 11, 25-28; Fox DEIR Comments at 11.

According to Valero, the refinery will use rail imports to create an “Alaskan North Slope (ANS) look-alike blend.” DEIR at 3-24. The closest and most cost advantaged of light sweet North American crudes listed in DEIR Table 3-1 that could be blended to be an ANS look-alike is Bakken crude. For example, a blend of 55% Bakken and 45% Western Canadian Select (tar sands) could potentially cost far less than the ANS market price. The resulting mix has the same API gravity and slightly higher sulfur than ANS, and virtually identical distillation yields.¹¹ Alternatively, some of the lighter crudes, such as Bakken, could be fed directly to refining units, such as the FCCU, eliminating the need for blending. Fox DEIR Comments at 11.

The DEIR did not analyze the full emissions profile of these specific, reasonably foreseeable crude blends. However, the emissions increases could be significant. As discussed above, the amount of ROG and TAC emissions that will be emitted from refinery tanks, pumps, compressors, valves, and connectors is determined by the volatility of the crude oil and the concentration of TACs within the crude, not by its weight or sulfur content. The volatility can vary widely for “light sweet crudes,” independent of weight and sulfur content. Processing in the oil fields, in particular, significantly affects volatility of shipped crudes, as discussed below.

Bakken crudes have unique chemical and physical characteristics that distinguish them from currently refined crudes and that would result in significant environmental impacts not identified in the DEIR, including significant risk of upset, air quality, odor, and public health impacts. These unique characteristics include high volatility, flammability, and elevated concentrations of TACs and ROG. The Bakken crudes that the Project is likely to import are at least twice as volatile as the Alaska North Slope (ANS) crude and other foreign imports that would be replaced. Specifically, ANS crude has a Reid Vapor Pressure (RVP)—a common measure of volatility—of 6.3

¹¹ John R. Auers and John Mayes, North American Production Boom Pushes Crude Blending, Oil & Gas Journal, May 6, 2013, Available at: <http://www.ogj.com/articles/print/volume-111/issue-5/processing/north-american-production-boom-pushes.html>.

pounds per square inch (psi) compared to Bakken crude, which can have a RVP of up to 15.5 psi.¹² Fox DEIR Comments at 12-17.

Thus, replacing ANS and foreign imports with Bakken would increase ROG and TAC emissions from refinery fugitive sources by a factor of two or more (as is also true for other sources discussed below). The TAC emissions would increase even more, because the concentration of TACs in the DEIR Table 3-1 crudes that are likely to be imported by the Project are much higher than in the current crude slate. Fox DEIR Comments at 13.

In addition, Bakken crudes, when blended with heavy crudes to stay within the refinery operating envelope, have resulted in many refinery operating issues that increase emissions. These issues include fouling of the cold preheat train; desalter upsets; and fouling of hot preheater exchangers and furnaces; as well as corrosion.¹³ The DEIR unlawfully failed to disclose these reasonably foreseeable operating problems and resulting emission increases. Fox DEIR Comments at 17.

D. The DEIR Failed to Consider Impacts on Emissions from Storage Tanks and Loading Areas

Because the Project will import Bakken or similar crudes, it will significantly increase ROG and TAC emissions during unloading from the rail cars, pipeline fugitive components (valves, pumps, connectors), and crude storage tanks. The DEIR inaccurately asserts that the baseline for any increase in emissions from the refinery's eight crude oil storage tanks is the level permitted in the Valero Improvement Project (VIP) approved by the

¹² ExxonMobil Refining and Supply Company, ANS11U, Available at: http://www.exxonmobil.com/crudeoil/about_crudes_ans.aspx and <http://www.exxonmobil.com/crudeoil/download/ans11u.pdf>.

Classification and Hazard Communication Provisions for Crude Oil – Bakken Crude Oil Data, June 13, 2014, Available at: <http://www.unece.org/fileadmin/DAM/trans/doc/2014/dgac10c3/UN-SCETDG-45-INF26e.pdf>; Dangerous Goods Transport Consulting, Inc., A Survey of Bakken Crude Oil Characteristics Assembled for the U.S. Department of Transportation, Submitted by American Fuel & Petrochemical Manufacturers, May 14, 2014, at 5, 19, Available for download from: <https://www.afpm.org>; North Dakota Petroleum Council, Bakken Crude Quality Assurance Study, Available at: http://www.ndoil.org/image/cache/Summary_2.pdf.

¹³ Innovative Solutions for Processing Shale Oils, Hydrocarbon Processing, 7/10/2013, <http://www.hydrocarbonprocessing.com/Article/3223989/Innovative-solutions-for-processing-shale-oils.html>.

City in 2003. DEIR, Appx. C.2 at C.2-3. As explained above, because the Project is a new project, the correct baseline is determined by actual, physical conditions, not by hypothetical permitted conditions. *Communities For A Better Env't v. S. Coast Air Quality Mgmt. Dist.*, 48 Cal. 4th 310, 315(2010).

Compared to existing conditions, the Project will significantly increase ROG and TAC emissions from storage tanks and unloading areas. The VIP environmental documents, which analyzed the crudes that are currently stored and unloaded at the refinery, illuminate these impacts. For example, the assessment of tank emissions for the VIP assumed benzene levels in the crude stored in tanks would be 0.009 wt.%,¹⁴ but the benzene levels in the suite of crude oils potentially imported by the Project are up to **700** times higher than those currently refined, ranging from 0.02 wt.% to 7 wt.%.¹⁵ Benzene is a known human carcinogen. Human exposure to benzene has been associated with a range of acute and long-term adverse health effects and diseases, including cancer and adverse hematological, reproductive and development effects.¹⁶ Fox DEIR Comments at 19. The DEIR unlawfully fails to disclose and discuss the potentially significant

¹⁴ The benzene concentration assumed in the storage tanks is calculated from post-VIP ROG emissions of 193 ton/yr (VIP DEIR, Table 4.2-9) and the post-VIP benzene emissions of 33.93 lb/yr (VIP DEIR, Table 4.7-6) as: $100 \times [33.93 \text{ lb/yr} / (193 \text{ ton/yr})(2000 \text{ lb/ton})] = 0.009 \text{ wt}\%$.

¹⁵ www.crudemonitor.ca. Concentrations reported in volume % (v/v) in this source were converted to weight % by dividing by the ratio of compound density in kg/m³ at 25 C (benzene = 876.5 kg/m³) to crude oil density in kg/m³, based on the most recent sample, as of June 27, 2014.

TSBC 2013; Tesoro Savage, Application for Site Certification Agreement, vol. 2, Appendix G: Material Safety Data Sheets for Enbridge Bakken (n-hexane = 11%); sour heavy crude oil (benzene = 7%; toluene = 7%; ethylbenzene = 7%; xylene = 7%); sweet heavy crude oil (toluene = 7%); light sweet crude oil (benzene = 7%; toluene = 7%; ethylbenzene = 7%; xylene = 7%), August 29, 2013, Available at:

<http://www.efsec.wa.gov/Tesoro%20Savage/Application/EFSEC%202013-01%20Volume%20II%20-%20Appendices/EFSEC%202013-01%20Compiled%20Volume%20II.pdf>.

¹⁶ CARB, Report to the Scientific Review Panel on Benzene, Prepared by the Staffs of The Air Resources Board and The Department of Health Services, November 27, 1984, Available at: <http://www.arb.ca.gov/toxics/id/summary/benzene.pdf>; Chronic Toxicity Summary: Benzene, Available at: http://www.oehha.org/air/chronic_rels/pdf/71432.pdf; World Health Organization, Exposure to Benzene: A Major Public Health Concern, Available at: <http://www.who.int/ipcs/features/benzene.pdf>.

health and environmental impacts of increased emissions of benzene and other ROG and TAC constituents.

1. The DEIR Omits Significant ROG and TAC Emissions Increases from Tanks

The DEIR did not adequately quantify emissions from the tanks that would store the crude oil delivered by rail. The emissions from floating-roof tanks include: tank breathing losses (the sum of rim seal losses, withdrawal losses, deck fitting losses, and deck seam losses estimated by the U.S. EPA Model TANKS 4.0.9d) and roof landing losses.

First, the DEIR fails to consider tank breathing losses. Valero originally proposed repurposing a tank currently used to store non-crude products (tank 1776) to store Project crude. In the initial study, the City calculated the increase in ROG emissions from that new tank to be 23.7 pounds per day, using an RVP of 9.4.¹⁷ Valero modified the Project in November 2013 to use other existing external floating roof tanks (tanks 1701 through 1708, which are currently permitted to store crude oil) rather than repurposing tank 1776. DEIR, Appx. E.4 (11/13 Ap., p. 6). These other existing external floating roof tanks currently store both San Joaquin Valley crudes, ANS crude, and other ship-imported crudes. *Id.*

Replacing the crudes currently stored in these tanks with Bakken crudes would significantly increase emissions due to the much higher volatility of Bakken crudes discussed above. A simple calculation, much like the one the City previously did for tank 1776, shows that substituting Bakken crudes for San Joaquin Valley crude in particular would significantly increase ROG emissions:

- 1) The IS/MND estimated total ROG emissions from tanks of 39.3 lb/day for the 70,000 bbl/day throughput Project.
- 2) The IS/MND used an RVP estimate of 9.4 psi for the crude.

¹⁷ That analysis considered changing the service of tank 1776 from jet fuel and other refinery products to crude oil. The ROG emissions were estimated with the U.S. EPA TANKS 4.0.9d model for a throughput of 70,000 bbl/day and a crude oil RVP of 9.4 psi. The net ROG emission increase, relative to December 2009 through November 2012 baseline, was 4.33 ton/yr. DEIR, Appx. E.3 (2/13 Ap., Table 3-2). The supporting calculations for these emission increases (in Appendix B to the February 2012 Application, DEIR Attachments B-1 and B-2) were withheld from the DEIR as confidential business information (CBI).

- 3) Compare that to the crude oil it could replace, in this example, San Joaquin Valley (or similarly stable) crude that has an RVP of 0.04 psi.¹⁸
- 4) Assuming the RVP of the crude is proportional to tank emissions of ROG, the storage of 70,000 bbl/day of SJV crude = (39.3 lb/day) (0.04 psi/9.4 psi) = 0.17 lb/day, representing current conditions of stored SJV crude.
- 5) The increase in ROG tank emissions from storing 70,000 bbl/day of Bakken crude, assuming the reported upper-bound vapor pressure for Bakken crude of 15.5 psi¹⁹ would be (39.3 lb/day)(15.5 psi/9.4 psi) = 64.8 lb/day.
- 6) The net increase in ROG tank emissions from replacing 70,000 bbl/day of pipeline-imported SJV crude with 70,000 bbl/day of rail-imported Bakken is (64.8-0.2) 64.6 lb/day The corresponding net increase in annual tank emissions would be (64.6 x 365/2000) 11.8 ton/year if all of the rail-imported crude were Bakken.

Similarly, replacing ANS crude with Bakken crude utilizing the same method described above would lead to increased ROG emissions from tanks of 38.5 lb/day or 7.0 tons/year from the Project.²⁰ Fox DEIR Comments at 23. *The resulting net increase in ROG emissions from the Project if Bakken or similarly volatile light crudes are imported would be 58 to 84 lb/day*, as shown in Table 1. This exceeds the BAAQMD CEQA significance threshold of 54 lb/day. This increase in ROG emissions is a significant impact that the DEIR unlawfully fails to disclose. Fox DEIR Comments at 23-24.

¹⁸ Emission Calculation Protocol for Oil Production Tanks, September 1, 2000.

¹⁹ Classification and Hazard Communication Provisions for Crude Oil – Bakken Crude Oil Data, June 13, 2014.

²⁰ This assumes an RVP equal to that for Alaska North Slope crude, or 6.3 psi. ExxonMobil Refining and Supply Company, ANS11U, Available at: http://www.exxonmobil.com/crudeoil/about_crudes_ans.aspx and <http://www.exxonmobil.com/crudeoil/download/ans11u.pdf>.

**Table 1: Revised Daily Net Operational Emissions
Including ROG Emissions from Tanks**

Source	ROG (lb/day)		
	DEIR Table 4.1-5	Scenario 1: SJV baseline	Scenario 2: ANS baseline
Unloading Rack & Pipeline Fugitive Components	10.3	10.3*	10.3*
Locomotives	19.3	19.3*	19.3*
Storage Tanks	Not Included	64.6	38.5
Marine Vessels (Displaced Baseline)	-28.3	0**	0**
Total Net Emissions	-8.8	84.2	58.1
BAAQMD CEQA Significance Threshold	54	54	54

Source: DEIR Table 4.1-5 was modified to include tank emissions, estimated according to the above described methodology.

“Scenario 1: SJV baseline” represents the replacement of SJV crude with Bakken crude described above.

“Scenario 2: ANS baseline” represents the replacement of ANS crude with Bakken crude described above.

* These emissions are likely to be much higher per the discussion below.

** The current marine vessel emissions cannot be discounted per the discussion below.

The increase in ROG emissions reflected in Table 1 would be accompanied by an increase in TAC emissions, which are estimated by multiplying the ROG emission increase by the weight percent of each TAC in the ROG emissions (i.e., the TAC speciation profile). These omissions are discussed in detail below in the Health Risk Assessment section.

The increase in ROG emissions estimated above is actually an underestimate because the model used, EPA’s TANKS 4.0.9d model (TANKS), omits a number of important fugitive sources. The TANKS model estimates only rim seal losses, withdrawal losses, deck fitting losses, and deck seam losses. It does not estimate other fugitive ROG emissions from roof landing losses, inspection losses, or flashing losses. These additional emissions should be estimated, added to other tank emissions, and mitigated when the DEIR is revised. Fox DEIR Comments at 25.

Roof landing losses can occur when a tank is emptied, and there is a gap between the roof and the bottom of the tank. These losses are not accounted for in EPA’s TANKS model, and EPA recommends that they be calculated separately. These evaporative roof landing losses could be

substantially higher for Bakken crudes than for other types of crude. Bakken crudes leave waxy deposits in pipelines and tanks, which require more frequent cleaning,²¹ and thus higher emissions, than the crudes they would replace. Roof landing losses, can be easily estimated and are routinely included in emission inventories.²² They are required to be reported, for example, in Texas.²³ They are also included in the emission inventory for Tesoro's Vancouver Terminal, which imports similar crudes by rail, and stores those crudes in tanks.²⁴ Fox DEIR Comments at 25-26.

Tank flashing emissions would increase ROG emissions as well and were not accounted for in the DEIR. Most Bakken crudes are transported raw, without stabilization, as discussed elsewhere in these Comments. Unstabilized or "live" crude oils have high concentrations of volatile materials entrained in the bulk crude oil. Tank flashing emissions occur when these live crude oils, such as Bakken crudes, are exposed to temperature increases or pressure drops. In such circumstances, some of the compounds that are liquids at the initial pressure/temperature transform into gases and are released (or "flashed") from the liquid. These emissions are not estimated by the EPA TANKS model, but should have been calculated separately using standard procedures.²⁵ The DEIR failed to

²¹ Innovative Solutions for Processing Shale Oils, Hydrocarbon Processing, 7/10/2013, Available at: <http://www.hydrocarbonprocessing.com/Article/3223989/Innovative-solutions-for-processing-shale-oils.html>.

²² "How Can I Estimate Emissions from Degassing and Cleaning Operation During a Tank Turnaround? And How Can I Estimate Emissions from Roof Landing Losses in the TANKS Program:?", Available at: <http://www.epa.gov/ttnchie1/faq/tanksfaq.html#13>.

²³ Memorandum from Dan Eden, Deputy Director, Office of Permitting, Remediation, and Registration; David C. Schanbacher, Chief Engineer; and John Steib, Deputy Director, Office of Compliance and Enforcement, Re: Air Emissions During Tank Floating Roof Landings, December 5, 2006, Available at: http://www.tceq.state.tx.us/assets/public/permitting/air/memos/tank_landing_final.pdf.

²⁴ Tesoro Savage, Application for Site Certification Agreement, Section 5.1.2.1.4, Available at: <http://www.efsec.wa.gov/Tesoro%20Savage/Application/EFSEC%202013-01%20Volume%20I/EFSEC%202013-01%20-%20Compiled%20PDF%20Volume%20I.pdf>.

²⁵ See, e.g., calculation methods at: Paul Peacock, Marathon, Bakken Oil Storage Tank Emission Models, March 23, 2010, Available at: file:///C:/Users/Phyllis/Downloads/Peacock_-_March_23_2010_.ppt.pdf; TCEQ, Air Permit Reference Guide APDG 5941, Available at: http://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/guidance_flashemission.pdf; Kansas Dept. of Health & Environment, Available at:

mention, calculate, or take into account these emissions, and does not include mitigation measures that would allow only stabilized crude oils to be received. Fox DEIR Comments at 28.

Finally, the DEIR fails to analyze water draw tank emissions. Crude oil typically contains small amounts of water. The water separates from the crude oil and accumulates in the bottom of storage tanks. This accumulated water, referred to as water draw, is typically transferred from the crude oil storage tanks into a smaller water draw surge tank for processing prior to disposal. Over time, a thick layer of crude oil forms in the water draw surge tank. The water draw surge tank and processing of wastewaters from it emit ROG and TACs. The DEIR fails to mention water draw, or include emissions from storing or processing it. This omission is material, because emissions associated with water draw will increase as the vapor pressure of the stored crude increases, and vapor pressure will increase when, for example, Bakken crude is substituted for San Joaquin Valley crude. Fox DEIR Comments at 28.

2. The DEIR Omits Rail Car Unloading Emissions

The Project includes a rail car unloading rack capable of unloading two parallel rows of 25 crude oil rail cars simultaneously. DEIR at ES-3. The DEIR fails, however, to properly analyze the emissions from the unloading process.

A typical rail car unloading system consists of an adapter unit that connects the rail car to couplings, hoses, valves and piping. These in turn connect to a positive displacement pump. Air and crude oil vapors are commonly mixed in with crude oil, due to loading and evaporation during transit. Because these vapors present an explosion risk for downstream equipment, they are typically removed with air eliminators. The vapors also contain high concentrations of ROG and TACs, thus they are typically routed to carbon columns or an incinerator to control the emissions. Fox DEIR Comments at 29.

The DEIR does not mention these vapors or indicate how they will be controlled. The DEIR only notes that “the BAAQMD will consider locomotive

http://www.kdheks.gov/bar/download/Calculation_Flashing_Losses_Handout.pdf; B. Gidney and S. Pena, Upstream Oil and Gas Storage Tank Project Flash Emissions Models Evaluation, July 16, 2009, Available at: <http://www.bdlaw.com/assets/htmldocuments/TCEQ%20Final%20Report%20Oil%20Gas%20Storage%20Tank%20Project.pdf>.

emissions and tank car unloading emissions as may be caused by the Project.” DEIR at 3-2. This is not adequate. If unloading emissions will occur, at an air eliminator or other release point, the DEIR must disclose and analyze those emissions now. If unloading emissions will not occur, then the DEIR should provide sufficient documentation to prove that and explain how or whether the explosion hazard typically associated with unloading cargos such as Bakken crude will be addressed. It is not clear that the air equalization system discussed in the DEIR would eliminate this hazard. Fox DEIR Comments at 29.

The unloading facility also includes a liquid spill containment sump with the capacity to contain the contents of at least one tank car. DEIR at ES-2. Crude oil that spills into this sump would release vapors including ROG and TAC emissions. The DEIR unlawfully failed to disclose or analyze these emissions. Fox DEIR Comments at 29.

E. The DEIR Improperly Assumes that the Project Will Offset Ship Emissions

The DEIR assumes that the Project’s crude would “replace” marine deliveries, rather than replacing pipeline deliveries or simply increasing the total amount of deliveries. DEIR at ES-1, ES-3, 1-1. Based on this assumption, the DEIR claims that the Project will decrease emissions from marine vessels. DEIR at 4.1-19. Specifically, the DEIR claims an emission reduction of 5.18 tons/year, (see Table 1 for example) by assuming that 73 vessel trips would be eliminated. DEIR at 4.1-16. This description of the project is misleading. There is no enforceable requirement that would require Valero to reduce marine deliveries to offset new rail deliveries. And it is reasonably foreseeable that such an offset will not occur, or not occur in full.

Instead, it is reasonably foreseeable that crude arriving by rail due to the project will replace existing albeit declining supplies of San Joaquin Valley crude oil,²⁶ which are presently delivered by pipeline, rather than replacing (or just replacing) crudes delivered by ship. Fox DEIR Comments at 20. The nearby Shell Oil Refinery in Martinez, for example, recently increased crude storage capacity to substitute imported crude oil by marine vessel “for diminishing San Joaquin Valley crude by pipeline.” DEIR, Table 5-1. The City's consultant, ESA, similarly expressed concern that ship

²⁶ California Energy Commission, Margaret Sheridan, California Crude Oil Production and Imports, April 2006, Available at: <http://www.energy.ca.gov/2006publications/CEC-600-2006-006/CEC-600-2006-006.PDF>.

deliveries could increase in the future to replace diminishing supplies of crude oil available by pipeline. Fox DEIR Comments at 20.²⁷ Further, the BAAQMD Statement of Basis for the VIP Project states: “Valero anticipates the possibility that crude may no longer be brought in by pipeline. This could result from a problem with the pipeline, or a change in the cost of crude that makes pipeline supply no longer economical.”²⁸ Thus, it is reasonably foreseeable—especially in the absence of any contrary, enforceable conditions of approval—that the Project would not decrease marine deliveries to the extent claimed in the DEIR, or perhaps would not decrease them at all. The DEIR fails to disclose or analyze this scenario.

The DEIR also unlawfully fails to analyze whether the Project’s crude will be additional to what is already being imported under baseline conditions. Indeed, the DEIR lacks any information whatsoever about the current baseline throughput. Without such information, it is impossible to know whether the Project will allow throughput to increase. Obviously, to the extent that Valero *adds* the Project crude to its existing sources, there will be no decrease in marine shipments of crude.

Agencies may not incorporate proposed mitigation measures into the description of the project to skirt CEQA’s requirement to disclose significant impacts. *Lotus v. Dep’t of Transp.*, 223 Cal. App. 4th 645, 655-56 (2014). And if an agency relies on such measures to reduce the significance of the project, it must ensure that they are enforceable. *Id.* at 652. Here, the City may not simply rely on Valero’s unenforceable statements that the Project would reduce marine shipments. There is certainly nothing inherent in the project that would prevent marine shipments to continue at their present level. If the City wishes to rely on Valero’s statement that marine shipments will decrease, it must make that an enforceable condition of approval. If the City believes it cannot make an offsetting reduction in marine crude shipments enforceable, then the City must analyze the increase in train emissions without any offsets for reductions in marine emissions. The DEIR fails on both fronts.

²⁷ Valero Responses to: Valero Crude by Rail Project Data Request Number 2, April 2, 2013.

²⁸ Available at http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2626/B2626_2010-05_renewal_03.ashx?la=en.

F. The DEIR Fails to Adequately Analyze Substantial Fugitive ROG and TAC Emissions from Rail Transport

Because rail cars are not vapor tight, ROG and TACs from Bakken or similar crudes will be emitted from rail cars from their point of origin through unloading. Each rail tank car filled with crude oil has head space to accommodate expansion during shipping. This free space at the top of the tank car, allows entrained gases to be released from the crude oil²⁹ and emitted to the atmosphere during transit and idling in rail yards.³⁰ Because most Bakken crudes are shipped live, they can flash in the tank cars when exposed to temperature increases or pressure drops, causing valves to open, emitting ROG and TACs. Fox DEIR Comments at 30.

These losses are consistent with the well-known “crude shrinkage” issue associated with crude by rail: The quantity of crude delivered is significantly less than the quantity of crude that was loaded. The reported range in crude shrinkage is 0.5% to 3% of the loaded crude.³¹ Some of this shrinkage is likely due to emissions of ROG and TAC from the rail car during transit, which has been confirmed by field measurements. The DEIR did not include these ROG and TAC emissions in its emission calculations or the health risk assessment. Fox DEIR Comments at 30.

²⁹ Anthony Andrews, Congressional Research Service, Crude Oil Properties Relevant to Rail Transport Safety: In Brief, February 18, 2012, at 8-9.

³⁰ A DOT 111 (or comparable) tank car generally has a capacity of 34,500 gallons or 263,000 lbs. gross weight on rail. Under some conditions, the maximum gross weight can be increased to 286,000 lbs. At an API gravity of 50°, a tank car can hold its maximum volume of 31,800 gallons and not exceed the 286,000 lb gross weight on rail limit. As the API gravity drops, the amount of oil that can be carried must also drop. Thus, a tank car of Bakken crude, at its highest density of 39.7° API, can only hold 30,488 gallons, a volume reduction of about 1,300 gallons. Further, as crude oil density (and thus API gravity) is temperature dependent, volume will increase as temperature increases. Thus, the shipper may have to reduce the shipped volume even further. This volume reduction creates a space above the crude oil where vapors accumulate.

³¹ Alan Mazaud, Exergy Resources, Pennsylvania Rail Freight Seminar, May 23, 2013, p. 17. Available at: <http://www.parailseminar.com/site/Portals/3/docs/Alan%20Mazaud%20Presentation%20-%20AM.pptx>.

Additionally, the domes covering the access point to each tank cars have vents and safety valves to let out vapors,³² creating another source of ROG emissions that were omitted from the emission calculations. Occasionally dome covers are left open (e.g. for inspections or repairs), allowing residual vapors to escape to atmosphere. Crude oil residue coats the bottom and sides of empty rail cars, offgassing ROG and TAC while the rail cars idle at the site, waiting for the entire unit train to be unloaded. The ROG and TAC emissions from these sources were omitted from the DEIR's emission inventory. Fox DEIR Comments at 31.

Further, each tank car has a bottom outlet that is used for loading and unloading that includes pumps, manifolds, and valves, all of which leak ROG and TACs. Finally, liquid leaks occur when unloading arms are disconnected, even for the so-called no leak arms proposed for the Project. These disconnect leaks evaporate, contributing to ROG and TAC emissions. Fox DEIR Comments at 31.

Assuming the very low end of the range of crude shrinkage discussed above, 0.5%, increases in fugitive ROGs can be estimated as follows:

- The maximum freight weight per rail tank car is 106 tons.³³
- ROG emissions from two unit trains per day with 50 cars each total 53 tons/day.³⁴
- ROG can be emitted as the trains traverse the 1500 miles between the shipping point and the Valero rail terminal.
- Of this 1500 miles, 263 miles are within California.³⁵ Thus, 9.3 tons/day of ROG can be emitted within California from rail car leakage.³⁶

³² Chapter 11. Tank Car Operations, Available at: <http://www.globalsecurity.org/military/library/policy/army/fm/10-67-1/CHAP11.HTML>.

³³ TRN Spec Sheet-1. DEIR, Ex. E.6 (6/11/14 Memo to Morgan from Velzy, pdf 1208).

³⁴ ROG emissions from train transit = (106 tons/car)(50 car/train)(2 train/day)(0.005) = 53 tons/day.

³⁵ DEIR, App. E.5 (Air Quality & GHG Supplement, pdf 1198) Distance within California = (136 + 390)/2 = 263 mi.

³⁶ DEIR, App. E.5 ROG emitted within California = (53 tons/day)(263/1500) = 9.3 tons/day.

- Of the 263 miles within California, 22 miles are within the boundary of the BAAQMD. Thus, 0.8 tons/day (1,555 lb/day) of ROG emissions can be emitted within the BAAQMD.³⁷

These are material and unlawful oversights. ROG emissions of 1,555 lb/day exceed the BAAQMD daily CEQA significance threshold for ROG of 54 lb/day by over an order of magnitude. Further, these ROG emissions contain some of the same chemicals found in crude oil, including benzene, toluene, xylene, hexane, and ethylbenzene. As discussed below, some crudes can contain up to 7% benzene by weight (see Table 2 below). Thus, up to 1,301 lb/day of benzene could be emitted in California and up to 109 lb/day within the BAAQMD from rail car leakage. This rail car leakage is much greater than the amount of benzene (and other TACs) included in the DEIR's HRA. For example, the HRA included only 0.06 lb/day of benzene³⁸ from fugitive components—a tiny fraction of the 109 lb/day of benzene that could be emitted within the BAAQMD from the rail cars themselves. Fox DEIR Comments at 31.

These emissions greatly exceed the ROG (and HRA) CEQA significance thresholds of the BAAQMD and other air districts along the rail route. DEIR at 4.1-17, 4.1-18. The City must disclose, analyze, and require mitigation for these ROG and TAC emissions.

G. The DEIR Failed to Properly Analyze Construction Emissions

The DEIR finds that there are no significant air quality impacts from construction activities, including diesel engine exhaust from equipment and haul trucks. DEIR at 4.1-15. However, the underlying analysis is flawed; in fact, daily construction emission estimates may exceed significance thresholds for NO_x, a precursor to both ozone and particulate matter.³⁹

³⁷ ROG emitted within BAAQMD = (53 tons/day)(22/1500) = 0.8 tons/day.

³⁸ Benzene in fugitive emissions from DEIR, Appx. E.4, pdf 1160; Table 3-5: (2.57E-3 lb/hr)(24 hr/day)/2000 lb/ton = 3.1E-5 ton/day.

³⁹ Based on comments provided by Petra Pless, Pless Environmental, Inc. San Rafael, CA, prepared for Adams Broadwell Joseph & Cardozo and dated September 15, 2014 ("Pless Comments").

The DEIR relies on an outdated emissions model, URBEMIS, that was previously included in BAAQMD CEQA Guidelines.⁴⁰ More recent BAAQMD guidance recommends CalEEMod 2013.2, noting that URBEMIS is no longer supported.⁴¹ The CalEEMod 2013.2 model has been used to estimate construction emissions for other refinery crude-by-rail projects.⁴²

Additionally, the DEIR's approach relied on *average* daily construction emissions, which is inconsistent with the BAAQMD guidance to determine *maximum* daily construction emissions. Consequently, it substantially underestimates emissions on a short-term basis because it does not take into account the daily emissions during the various, potentially overlapping construction phases.⁴³

In addition to the above methodological error in determining daily construction emissions, the DEIR also substantially underestimates emissions from material delivery trucks. The DEIR assumes a one-way trip distance of 7.3 miles for material delivery trucks, based on URBEMIS default values for urban commercial-non-work delivery trucks in Solano County.

⁴⁰ BAAQMD, California Environmental Quality Act Air Quality Guidelines, updated May 2012; p. 8-1.

http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQM%20CEQA%20Guidelines_Final_May%202012.ashx?la=en.

⁴¹ BAAQMD, CalEEMod Release, Update August 5, 2013, website last updated January 16, 2014; <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx>.

⁴² See, for example, the Draft EIR for the Phillips 66 Rail Spur Extension Project in Santa Maria, November 2013, Appendix B "Air Emission Calculations"; [http://www.slocounty.ca.gov/Assets/PL/Santa+Maria+Refinery+Rail+Project/Draft+EIR-Phillips+66+Rail+Spur+Extension+Project+\(November+2013\)/Appendices/Appendix+B+-+Air+Emission+Calculations.pdf](http://www.slocounty.ca.gov/Assets/PL/Santa+Maria+Refinery+Rail+Project/Draft+EIR-Phillips+66+Rail+Spur+Extension+Project+(November+2013)/Appendices/Appendix+B+-+Air+Emission+Calculations.pdf); and the Recirculated Draft EIR for the WesPac Pittsburg Energy Infrastructure Project, July 2013, Appendix C "Emission Estimation and Modeling Protocol"; <http://www.ci.pittsburg.ca.us/Modules/ShowDocument.aspx?documentid=5646>; (As recommended by BAAQMD (A. Kirk, personal communication, February 25, 2013), the California Emissions Estimator Model (CalEEMod) (version 2011.1) was used to quantify the construction emissions associated with the proposed project and Alternative 1.").

⁴³ CAPCOA, California Emissions Estimator Model, User's Guide, Version 2013.2, July 2013, p. 25-27; <http://www.aqmd.gov/docs/default-source/caleemod/usersguide.pdf?sfvrsn=2>. CAPCOA, California Emissions Estimator Model, User's Guide, Appendix A, Calculation Details for CalEEMod, revised July 2013, CalEEMod v.2013.2; available at <http://www.aqmd.gov/caleemod/doc/AppendixA.pdf>.

These county-average default trip lengths likely substantially underestimate actual trip lengths for Project construction, given that large amounts of specialized materials are required—*e.g.*, rail tracks, pumps, etc. —that may have to be brought in from a seaport or trucked in over long distances. Similarly, the DEIR's calculations do not appear to take into account delivery of the numerous pieces of construction equipment to the site, most of which will require delivery by heavy duty diesel trucks.

The DEIR's failure to account for these factors is material. Because the DEIR reported NO_x emissions were so close to the threshold of significance (51.9 lb/day vs. a 54 lb/day threshold), it is highly likely that a more accurate accounting of construction emissions from the Project would have shown exceedances of the significance threshold and required mitigation. The City must correct these emissions calculations, recirculate the DEIR for public comment, and mitigate any significant impacts.

H. The DEIR Fails to Properly Analyze and Disclose ROG Emissions Outside the Bay Area

The DEIR neglects to properly assess, disclose, and mitigate the Project's air quality impacts in three affected air basins outside of the Bay Area: the Yolo-Solano, Sacramento and Placer air basins.⁴⁴ Although the DEIR quantifies indirect emissions from locomotives hauling crude oil within the jurisdictional boundaries of each of these air districts and finds significant impacts due to NO_x emissions for the Yolo-Solano and Sacramento air basins, it fails to include fugitive ROG emissions from tank cars, discussed at length above. Utilizing the same method outlined above, we find that fugitive ROG emissions from tank cars exceed the threshold of significance for ROG in all three air basins outside the SF Bay Area:⁴⁵

- Fugitive ROG emissions in the Yolo-Solano Air Basin are 413 tons per year, which is 40 times the significance threshold of 10 tons ROG per year.
- Fugitive locomotive ROG emissions in the Sacramento Air Basin are 1,095 lb/day, which is more than 16 times the significance threshold of 65 lbs ROG per day.

⁴⁴ Pless Comments at 19-20.

⁴⁵ Locomotive roundtrip track distances were taken from DEIR Appendix E.5 at page 3, Yolo-Solano Air Basin = 32 miles, Sacramento AB = 15.5 miles, and Placer AB = 2.5 miles. Significance thresholds for the Air Basins are listed in DEIR Table 4.1-6

- Fugitive locomotive ROG emissions in Placer County Air Basin are 177 lb/day, which is more than twice the significance threshold of 82 lb ROG/day.

The DEIR fails entirely to identify and assess these excess ROG emissions outside of the Bay Area, and fails to provide any mitigation for them.

I. The DEIR Fails to Disclose and Underestimates TAC Emissions Used in Health Risk Assessment

The Health Risk Assessment (HRA) for the Project fails to include most of the key information, such as emissions calculations for TACs, necessary to evaluate the increased health risks that could result from air emissions from the Project. As such, there is no evident basis to conclude that the Project would not result in significant health impacts; in fact, the Project raises serious potential health impacts, described below.

The HRA included diesel particulate matter and PM2.5 emissions but no other TACs (e.g. fugitive emissions) from locomotives. While TAC emissions were considered for some fugitive sources, such as rail car unloading, the HRA failed to include many other more significant sources of TAC emissions outlined above (e.g. storage tanks, rail cars, etc.).

Even when considering the TAC emissions from fugitive sources (mainly from rail car unloading), the HRA underestimated those emissions. The DEIR estimated TAC emissions from fugitive components using entirely inappropriate default emission factors that are not at all representative of the types of crude oil that could be imported at the rail terminal. DEIR, Appx. E.4-1 (11/13 Ap., pdf 1179, footnote). The emissions factors used by the HRA to estimate TACs are significantly lower than the levels of key TACs actually measured in some of the crude oil that it is reasonably foreseeable the project will import (according to DEIR Table 3-1). The emissions factors used by the HRA also significantly underestimate TACs as reported in publicly available Material Safety Data Sheets (MSDSs) for North American crudes.⁴⁶ Fox DEIR Comments at 32-33.

⁴⁶ Tesoro Application to SCAQMD for Tank 80079 Throughput Increase, October 3, 2013, PRN 556835 (10/3/13 Application), MSDS for Light Sweet Crude, pdf 12; Tesoro Savage, Application for Site Certification Agreement, vol. 2, Appendix G: Material Safety Data Sheets, August 29, 2013, Available at:

<http://www.efsec.wa.gov/Tesoro%20Savage/Application/EFSEC%202013->

The upper bound concentration of key TACs measured in North American crudes are summarized in Table 2 and compared with the emission factors used in the DEIR. This table shows that the HRA significantly underestimated all of the organic TACs included in the HRA by a factor of five to 28. Fox DEIR Comments at 33.

Table 2: Comparison of HRA Speciation Profile for Fugitive Emissions with Maxima Reported in MSDS(s)⁴⁷

TAC	Weight Percent	
	HRA Speciation Profile ⁴⁸	Maxima MSDS
Benzene	0.6	7
Ethyl Benzene	0.4	7
Hexane	0.4	11
Toluene	1	7
Xylenes	1.4	7

Actual TAC emissions, after adjusting for the correct contaminant concentration, would be much higher. For example, benzene emissions could be ten times higher than reported in the DEIR, for those sources that were evaluated—and potentially orders of magnitude higher, if all of the appropriate sources of ROG emissions that would contribute TAC were evaluated. This increase in benzene alone is large enough to increase the cancer risk at the maximum exposed individual worker (MEIW) to a level that exceeds the BAAQMD significance threshold of 1 in one million. DEIR, Appx. E.4-1 (11/13 Ap., pdf 1189). Fox DEIR Comments at 34.

[01%20Volume%20II%20-%20Appendices/EFSEC%202013-01%20Compiled%20Volume%20II.pdf](http://www.efsec.wa.gov/Tesoro%20Savage/Application/EFSEC%202013-01%20Volume%20II%20-%20Appendices/EFSEC%202013-01%20Compiled%20Volume%20II.pdf)

⁴⁷ Tesoro Savage, Application for Site Certification Agreement, vol. 2, Appendix G: Material Safety Data Sheets for Enbridge Bakken (n-hexane = 11%); sour heavy crude oil (benzene = 7%; toluene = 7%; ethylbenzene = 7%; xylene = 7%); sweet heavy crude oil (toluene = 7%); light sweet crude oil (benzene = 7%; toluene = 7%; ethylbenzene = 7%; xylene = 7%), August 29, 2013, Available at: <http://www.efsec.wa.gov/Tesoro%20Savage/Application/EFSEC%202013-01%20Volume%20II%20-%20Appendices/EFSEC%202013-01%20Compiled%20Volume%20II.pdf>. See also 3/7/13 Revised Application, pdf 96-115.

⁴⁸ DEIR, Appx. E.4, Table 3-5, pdf 1160.

Further, while the DEIR focuses on the benzene content of two Canadian crudes that are on average lower than the benzene content of Alaska North Slope crude (0.33%), the design crude for the refinery, DEIR, Appx. K at K-17, the DEIR entirely fails to account for the fact that other crudes that it is reasonably foreseeable will be imported by rail due to the project have higher average benzene content than ANS. Light crudes, like Bakken, have been reported to contain benzene concentrations of up to 7 percent by weight, which is twenty-one times higher than the design ANS crude. Fox DEIR Comments at 34.

In sum, the DEIR unlawfully fails to properly disclose and analyze the health impacts of importing, storing, and refining the crude oil that it is reasonably foreseeable the Project will bring to Valero.

J. The DEIR Incorrectly Concludes That There Are No Feasible Mitigation Measures for Air Quality

If an EIR concludes that a project will have a significant impact, CEQA requires the lead agency to adopt feasible mitigation measures or alternatives that reduce that impact to a level of insignificance. Pub. Res. Code § 21081, 21002. If the agency believes that there are no feasible mitigation measures or alternatives that reduce the project's impacts to less than significant, it must explain why and adopt a statement of overriding considerations before approving the project. Pub. Res. Code § 21081(a), 21002; Guidelines, §§ 15043, 15093.

The DEIR concludes in several places that no mitigation measures are available or are required because the City of Benicia purportedly lacks authority to adopt them. For example, the DEIR states that air emissions from tanker car locomotives would be a significant impact, but because it determined that “[t]he City has no jurisdiction to impose any emission controls on the tanker car locomotives,” it concluded that “there is no feasible mitigation available to reduce this significant impact to a less-than-significant level.” DEIR at 4.1-20.

The City is incorrect that it lacks any authority or ability to impose mitigation measures for the Project's significant air quality impacts; there are many possible mitigation measures within the City's authority. Most notably, the City could reduce the Project's impacts by limiting the number of rail cars that can be unloaded per day or otherwise reducing the offloading capacity of the Project. Valero is not a rail carrier as defined by federal law, and the City is not preempted from regulating Valero's actions. Chapter 6, which claims that this alternative is legally infeasible, should be

revised accordingly. In addition, the DEIR should analyze the following mitigation measures.

3. *The City Must Mitigate Fugitive ROG Emissions*

To mitigate the Project's significant ROG emissions, the City should consider feasible mitigation measures such as the use of zero-leak fugitive components; use of geodesic domes on fixed roof as well as external floating roof tanks; and cable-suspended, full-contact floating roof tanks.⁴⁹ Fox DEIR Comments at 24-26.

To reduce fugitive emissions from tanks including breathing losses, degassing, cleaning, and roof landing losses, the City should require Valero to install geodesic domes on any tanks that would store rail-imported crudes, thus avoiding emissions from tanks storing highly volatile crude oil. Over 10,000 aluminum domes have been installed on petrochemical storage tanks in the United States.⁵⁰ For example, ExxonMobil's Torrance Refinery covered all floating roof tanks with geodesic domes in 2008, reducing ROG emissions by 80 percent.⁵¹ Similarly, a crude storage project recently proposed at the Phillips 66 Los Angeles Carson Refinery required external

⁴⁹ See, e.g., Phillips 66 Los Angeles Refinery Carson Plant – Crude Oil Storage Capacity Project, September 6, 2013, Draft Negative Declaration (Carson Neg.Dec.), Available at: [https://www.aqmd.gov/CEQA/documents/2013/nonaqmd/Draft ND Phillips 66 Crude Storage.pdf](https://www.aqmd.gov/CEQA/documents/2013/nonaqmd/Draft%20ND%20Phillips%2066%20Crude%20Storage.pdf) and City of Richmond, Chevron Refinery Modernization Project DEIR (Chevron DEIR), Chapter 4.3, at 4.3-92, Available at: [http://chevronmodernization.com/wp-content/uploads/2014/03/4.3 Air-Quality.pdf](http://chevronmodernization.com/wp-content/uploads/2014/03/4.3%20Air-Quality.pdf).

⁵⁰ M. Doxey and M. Trinidad, Aluminum Geodesic Dome Roof for Both New and Tank Retrofit Projects, Materials Forum, v. 30, 2006, Available at: http://www.materialsaustralia.com.au/lib/pdf/Mats.%20Forum%20page%20164_169.pdf. Numerous vendors have provided geodesic domes for refinery tanks. See, e.g., Aluminum Geodesic Dome, Available at: <http://tankaluminumcover.com/Aluminum-Geodesic-Dome>; Larco Storage Tank Equipments, Available at: http://www.larco.fr/aluminum_domes.html; Vacono Dome, Available at: http://www.easyfairs.com/uploads/tx_ef/VACONODOME_2014.pdf; Peksay Ltd., Available at: <http://www.thomasnet.com/productsearch/item/10039789-13068-1008-1008/united-industries-group-inc/geodesic-aluminum-dome-roofs/>; United Industries Group, Inc., Available at: <http://www.thomasnet.com/productsearch/item/10039789-13068-1008-1008/united-industries-group-inc/geodesic-aluminum-dome-roofs/>.

⁵¹ Torrance Refinery: An Overview of our Environmental and Social Programs, 2010, Available at: http://www.exxonmobil.com/NA-English/Files/About_Where_Ref_TorranceReport.pdf.

floating roof tanks with geodesic domes to store crude oil with an RVP of 11;⁵² and other examples abound.⁵³ The crudes that would be stored in the Project tanks have vapor pressures that are comparable to gasoline, justifying the use of geodesic domes to control tank emissions. Fox DEIR Comments at 26.

Additionally, to prevent flashing emissions from tanks and dangerous transport conditions caused by entrained volatile gases (NGL) in crude oil, discussed at length above, permit conditions for this Project should allow only stabilized crude oils to be received.

4. The City Must Mitigate Diesel Emissions from Locomotives

Diesel emissions from locomotives are extremely harmful to public health, have been associated with a wide array of impacts, and are responsible for extremely high cancer risks documented around busy railyards in California.⁵⁴ NRDC MND comments at 26-30. Nationwide,

⁵² See, e.g., Phillips 66 Los Angeles Refinery Carson Plant – Crude Oil Storage Capacity Project, September 6, 2013, Table 1-1, Draft Negative Declaration, Available at: https://www.aqmd.gov/CEQA/documents/2013/nonaqmd/Draft_ND_Phillips_66_Crude_Storage.pdf.

⁵³ The ConocoPhillips Wilmington Refinery added a geodesic dome to an existing oil storage tank to satisfy BACT. SCAQMD Letter to G. Rios, December 4, 2009, Available at: [http://yosemite.epa.gov/r9/air/epss.nsf/e0c49a10c792e06f8825657e007654a3/e97e6a905737c9bd882576cd0064b56a/\\$FILE/ATTTOA6X.pdf/ID%20800363%20ConocoPhillips%20Wilmington%20-%20EPA%20Cover%20Letter%20%20-AN%20501727%20501735%20457557.pdf](http://yosemite.epa.gov/r9/air/epss.nsf/e0c49a10c792e06f8825657e007654a3/e97e6a905737c9bd882576cd0064b56a/$FILE/ATTTOA6X.pdf/ID%20800363%20ConocoPhillips%20Wilmington%20-%20EPA%20Cover%20Letter%20%20-AN%20501727%20501735%20457557.pdf).

Chevron proposes to use domes on several existing tanks to mitigate VOC emission increases at its Richmond Refinery.

City of Richmond, Chevron Refinery Modernization Project, Environmental Impact Report, Volume 1: Draft EIR, March 2014 (Chevron DEIR), Chapter 4-3; Available at: <http://chevronmodernization.com/project-documents/>.

The U.S. Department of Justice CITGO Consent Decree required a geodesic dome on a gasoline storage tank at the Lamont, Texas refinery.

CITGO Petroleum Corp. Clean Air Act Settlement, Available at:

<http://www2.epa.gov/enforcement/citgo-petroleum-corporation-clean-air-act-settlement>.

⁵⁴ California Air Resources Board, Railyard Health Risk Assessments and Mitigation Measures, www.arb.ca.gov/railyard/hra/hra.htm. Cancer risks exceed 1,000 per million next to some of the largest railyards.

pollution from locomotives contributes to 4,500 premature deaths per year.⁵⁵

In 2015, tier 4 locomotives will be available that emit 80 percent less NO_x and 90 percent less PM than a train engine built in 2008.⁵⁶ Where Tier 4 locomotives are not yet available, diesel particulate filters (DPFs) and selective catalytic reduction (SCR, a common catalyst based technology used to reduce NO_x emissions) can be installed on existing locomotives to achieve emissions reductions similar to those of certified Tier 4s.⁵⁷ Locomotives serving this Project must meet tier 4 or equivalent emissions standards.

Locomotive emissions can and must be further mitigated by using an electronic positioning system,⁵⁸ rather than the locomotive engine, to move the cars through the unloading facility, and by installing automatic controls to minimize locomotive engine idling in the unloading facility.⁵⁹

5. The City Must Mitigate Diesel Emissions from Construction

Diesel emissions from construction activity would be significant and highly likely to exceed thresholds of significance requiring mitigation. The mitigation measures for construction discussed in the DEIR are minimal: dust control steps that are already required by BAAQMD. DEIR at 4.1-15 to 4.1-16. The BAAQMD recently recommended the following additional feasible measures to reduce NO_x emissions during construction of the WesPac Pittsburg Energy Infrastructure project:

⁵⁵ Fabio Caiazzo et. al, Air Pollution and early deaths in the United States. Part 1: Quantifying the impact of major sectors in 2005. *Atmospheric Environment* 79 (2013) 198-208.

⁵⁶ U.S. Environmental Protection Agency. "EPA Finalizes More Stringent Emissions Standards for Locomotives and Marine Compression-Ignition Engines." Regulatory Announcement EPA420-F-08-004, March 2008. Available at: <http://www.epa.gov/otaq/regs/nonroad/420f08004.htm>.

⁵⁷ West Coast Collaborative, Locomotive and Rail Sector meeting materials, 2012, <http://westcoastcollaborative.org/wkgrp-loco.htm>.

⁵⁸ See, for example, Oregon Department of Environmental Quality, Standard Air Contaminant Discharge Permit, Coyote Island Terminal, LLC, July 24, 2012, p. 3, Condition 1.1.a (an electric powered positioning system for maneuvering railcars through the Railcar Unloading Building).

⁵⁹ See, for example, EPA Smartway program; <http://www.epa.gov/otaq/smartway/idlingtechnologies.htm#loco-mobile-sdsu>

- Prohibit diesel generators where access to the electrical grid is available.
- Require electrification of motors, pumps, and other power tools whenever feasible.
- Require the use of biodiesel or other alternative fuels in generators, construction equipment, and/or off-road vehicles.

In addition, all construction equipment should meet EPA Tier 4 emission standards or utilize the best available control technology (BACT)⁶⁰ for emissions reductions of PM.⁶¹ On-road trucks, such as dump trucks, should meet current EPA emissions standards or be equipped with diesel particulate filters.

II. THE DEIR FAILS TO PROPERLY DISCLOSE, ANALYZE, AND MITIGATE THE PROJECT'S SIGNIFICANT GREENHOUSE GAS IMPACTS

CEQA requires agencies to analyze and mitigate a project's greenhouse gases impacts. Pub. Res. Code § 21083.05; Guidelines § 15064.4. Under the Bay Area Air Quality Management District threshold of significance used by the City, a stationary source project will have significant climate impact if it will emit more than 10,000 metric tons per year of carbon dioxide equivalent. DEIR at 4.6-9. The DEIR, looking solely at transportation emissions, concludes that the Project will not have significant climate impacts. DEIR at 4.6-11 to 4.6-14.

As with its analysis of air quality impacts, the DEIR improperly fails to disclose or analyze how changes in the crude slate or the total throughput at the refinery, enabled by the Project, will affect greenhouse gas emissions. The DEIR does not provide the current baseline for greenhouse gas

⁶⁰ Here, BACT refers to the "most effective verified diesel emission control strategy" (VDECS), which is a device, system, or strategy that is verified pursuant to Division 3, Chapter 14 of Title 13 of the California Code of Regulations to achieve the highest level of pollution control for an off-road vehicle.

⁶¹ This could include natural gas or biodiesel (derived from vegetable oils or animal fats, meeting the requirements of ASTM D 6751). However, biodiesel must be proven to be sourced from sustainable feedstocks including waste grease, fats or oil, and, under certain circumstances, farmed oils that can be proven to be sustainable.

emissions, beyond the emissions of marine tankers. DEIR at 4.6-8. Accordingly, it does not even mention possibly increases in refinery emissions, even though the refining of tar sands causes increased greenhouse gas emissions relative to traditional crudes. Fox IS/MND Comments at 29. The DEIR must analyze whether changes in the crude slate or increases in the total throughput would affect greenhouse gas emissions.

Furthermore, the DEIR's conclusion that the Project would not have a significant impact based on changes in transportation emissions is flawed. This conclusion, like the conclusion for air quality, assumes without any assurances that the Project's crude would necessarily replace crude imported by ship, rather than crude imported by pipeline. DEIR at 4.6-14. As discussed above, there is no enforceable mitigation measure requiring this result, and thus no guarantee that emissions will actually go down as promised by the DEIR.

III. THE DEIR FAILS TO PROPERLY DISCLOSE, ANALYZE, AND MITIGATE THE PROJECT'S SIGNIFICANT HAZARDS IMPACTS

The City concedes that the Project will bring in crude from the Bakken region. DEIR at 3-23, 4.7-6 to 4.7-10. Bakken and other similar light crudes taken straight from the well are typically called "live" crudes because they contain large amounts of volatile natural gas liquids. The high concentration of these liquids in live crudes makes them highly flammable and more likely to form fire balls and boiling liquid expanding vapor explosions (BLEVES) in accidents. In most petroleum-producing regions, volatile components are removed before shipping using a stabilizer. However, in the Bakken fields, this infrastructure is rare, and so the crudes are shipped live. Thus, shipping Bakken crudes by rail poses unique risks. Fox DEIR Comments at 16-17.

In the past year and a half alone, there have been twelve serious crude-by-rail accidents in North America resulting in deaths, injuries, major evacuations, and millions of gallons of spilled oil. Attachment 4, Diane Bailey, *It Could Happen Here: The Exploding Threat of Crude by Rail in California*, NRDC Fact Sheet, June 2014 (Bailey Report) at 1. Most notably, on July 6, 2013, a train carrying Bakken crude oil derailed and exploded in Lac-Mégantic, Quebec, killing 47 people and destroying 30 downtown buildings. DEIR at 4.7-6, 4.7-8. The federal government has recognized the significant hazards presented by shipping Bakken crude by rail, calling it an "imminent

hazard to public health and safety and the environment.”⁶²



Aftermath of crude-by-rail accident in Lac-Mégantic, Quebec
(The Canadian Press/Ryan Remiorz)



Crude-by-rail accident in Casselton, North Dakota (Zuma Press)

⁶² U.S. DOT, Emergency Order re Petroleum Crude Oil Railroad Carriers, , May 7, 2014, available at <http://www.dot.gov/briefing-room/emergency-order>.

Despite the clear risks of transporting crude by rail, the DEIR, and the Barkan Report it relies on, claim that the Project will have no significant hazards impacts. DEIR at 4.7-15 to 4.7-27, Appx. F. As explained in detail below and in the attached report by rail safety expert Dr. Fred Millar, the DEIR improperly limits the scope of its analysis, overlooks relevant data, and downplays the effects of a serious accident. Once these factors are properly taken into account, there can be no dispute that the Project will have significant hazards impacts.

A. The DEIR Improperly Limits the Geographic Scope to the Area Between Roseville and Benicia

An EIR must discuss the significant impacts that the proposed project will have in the relevant geographic area. Guidelines § 15126.2(a). Agencies must “provide a reasonable explanation for the geographic limitation used,” Guidelines § 15130(b)(1)(B)(3), and the geographic scope “cannot be so narrowly defined that it necessarily eliminates a portion of the affected environmental setting,” *Bakersfield Citizens for Local Control v. City of Bakersfield*, 124 Cal. App. 4th 1184, 1216 (2004).

For the purposes of the hazards analysis, the DEIR limits the study area to the “rail corridor between Roseville and Benicia.” DEIR at 4.7-1. It claims that analyzing any impacts beyond Roseville would be “speculative” because crude oil shipments could come from regions “all over North America.” *Id.*

The DEIR’s restriction of the geographic scope to Roseville—a town just northeast of Sacramento and less than 80 miles from Benicia—is arbitrary and violates CEQA. Although the DEIR claims that analysis beyond Roseville would be speculative, there is no evidence that the City attempted to determine to possible routes upstream of Roseville. There are only a handful of rail lines that would serve the Project, so analysis of the potential impacts along those lines would have been far from speculative. In fact, within California, there are only three branches of Union Pacific rail lines that lead to Roseville, and it is possible that only one or two of those routes might be used to ship crude to Benicia for economic or other reasons. But because the City did not bother to investigate, the DEIR does not contain this analysis.

As Dr. Millar points out in his report (Attachment 5), the DEIR’s failure to analyze the probability of accidents upstream from Roseville is a major flaw in the Barkan Report. Millar Report at 3. The number of miles

travelled by the trains is a critical factor in the Barkan Report, so these additional miles would affect the likelihood of accidents. *Id.* Yet the report says nothing about what length of track trains will travel before arriving in Roseville, what the physical conditions of that track are like, or what the probability of release is on those stretches. *Id.* The DEIR must analyze the risk of accidents beyond Roseville, both within California and in other states.

B. The DEIR Fails to Analyze Specific Characteristics of the Rail Route That Could Affect the Likelihood or Severity of an Accident

Even assuming it were sufficient for the DEIR to analyze just the route between Benicia and Roseville, the DEIR fails to take into account specific physical features of the route that would affect both the likelihood and the severity of an accident.

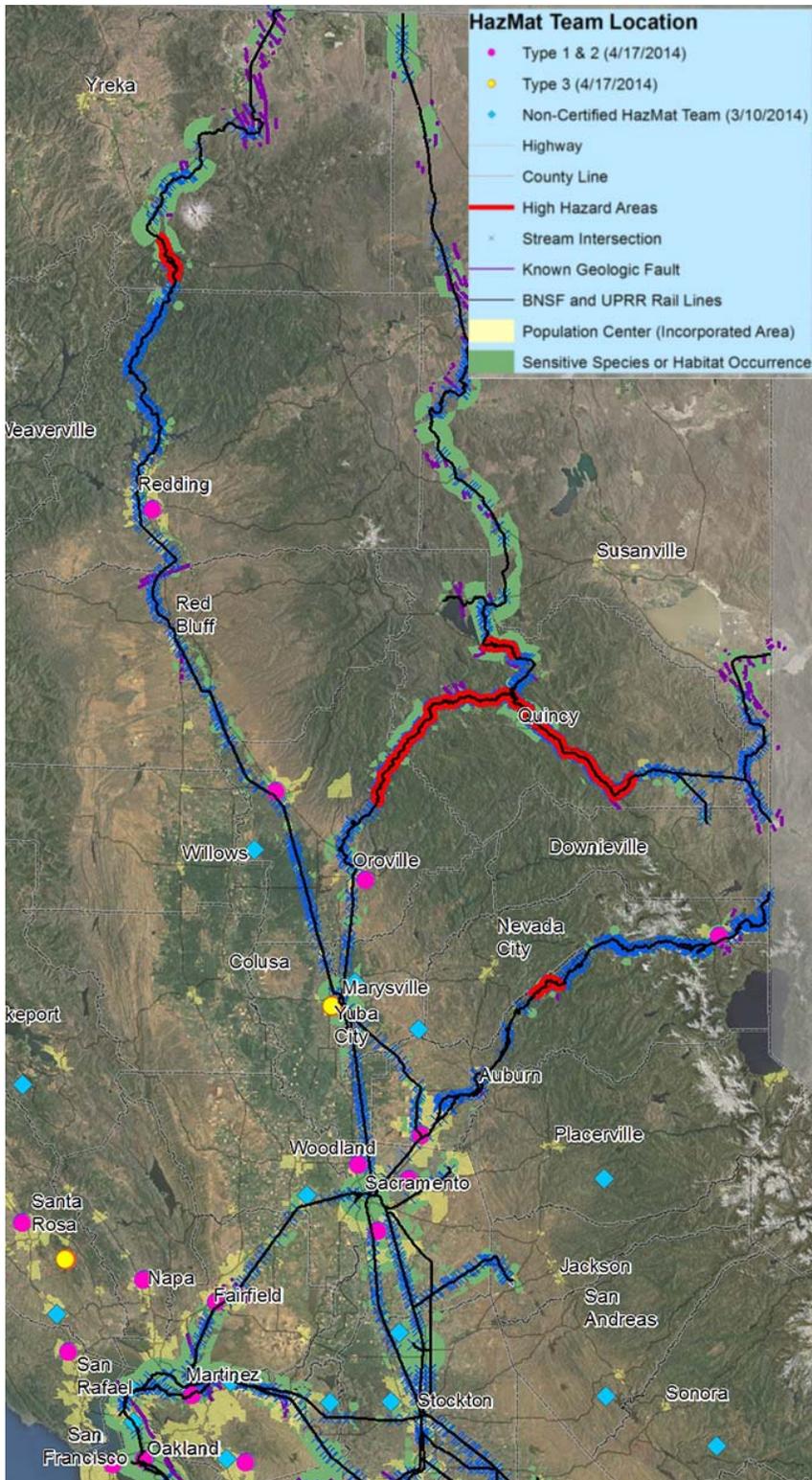
First, the probability calculations in the Barkan Report fail to take into account any features of the track beyond the class of track. Millar Report at 3-4. These include things like dangerous curves, washout potentials, trestles, or tunnels. *Id.* The Governor's Office of Emergency Services has prepared a map of rail risk areas that shows multiple high-risk areas upstream from Roseville. These types of local conditions contributed significantly to the accidents in the Lac-Mégantic and Lynchburg accidents. Millar Report at 3-4. And Dr. Barkan himself has acknowledged in prior work that local track conditions have an impact on the likelihood of an accident. *Id.*

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Crude by Rail Areas of Concern

Source: *Oil by Rail Safety in California*, California Interagency Rail Safety Working Group, Governor's Office of Emergency Services, June 10, 2014, attached as Attachment 6.

Second, the DEIR fails to adequately take into account the environmental setting surrounding the rail lines, which could affect the severity of any accident. “An EIR must include a description of the environment in the vicinity of the project, as it exists before the commencement of the project, from both a local and regional perspective.” Guidelines § 15125; *San Joaquin Raptor/Wildlife Rescue Ctr. v. Cnty. of Stanislaus*, 27 Cal. App. 4th 713, 722 (1994). The DEIR acknowledges that the consequences of a release would depend on the location of that release, yet beyond calculating a specific rate for the route traversing the Suisun wetlands, it makes no attempt to analyze what an accident in a sensitive area would look like. DEIR at 4.7-17; Appx. F at 7.

For example, a derailment near a school or a major population center could have catastrophic consequences. The DEIR acknowledges that there are at least 27 schools within one-fourth of a mile of the rail line on the Benicia to Roseville route alone. DEIR at 4.7-23. But the DEIR claims that this close proximity poses no significant risk. *Id.* And the DEIR does not even attempt to analyze whether there are other types of sensitive areas, such as areas with high population densities or hospitals, near the rail line. In fact, there are millions of people living within close proximity to certain sections of these rail lines. Bailey Report at 3; *see also* Attachment 7 (rail risk maps). Such factors are critical to analyzing the actual risks the Project poses. Millar Report at 4-5.

Likewise, the rail line crosses through many forested areas, and a derailment that causes a fire—even a small fire—could easily trigger a wildfire. Nonetheless, the DEIR dismissed the risk of wildfire from the Project as insignificant without even considering this possibility. DEIR at 4.7-27. The City must revise the DEIR to adequately describe the conditions surrounding the rail line, to give a full and accurate picture of the Project’s potential impacts.

C. The DEIR Relies on Speculative and Unenforceable Mitigation Measures to Conclude That the Risk Is Less Than Significant

The DEIR claims that the Project’s hazards impacts are less than significant in part because “Valero . . . would use only 1232 Tank Cars to transport oil from Roseville to Benicia.” DEIR at 4.7-19. The CPC-1232 tank car, named for the American Association of Railroads’ Casualty Prevention Circular 1232, is a tank car designed in 2011 to meet voluntary standards after the industry experienced a series of serious accidents with the puncture-prone DOT-111 tank cars. DEIR at 4.7-6. Nonetheless, the DOT-

111 continues to be the most commonly used tank car for transporting crude oil—there are over 80,500 DOT-111 tank cars in flammable liquid service compared to just 17,300 CPC-1232 tank cars. *Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains*, 79 Fed. Reg. 45016 (Proposed Rule) at 45025 (Aug. 1, 2014).⁶³

The DEIR's entire analysis of risk is premised on Valero's promise to use CPC-1232 tank cars. However, agencies may not incorporate proposed mitigation measures into the description of the project to skirt CEQA's requirement to disclose significant impacts. *Lotus v. Dep't of Transp.*, 223 Cal. App. 4th 645, 655-56 (2014). If an agency relies on such measures to reduce the significance of the project, it must ensure that they are enforceable. *Id.* at 652. Here, the City may not simply rely on Valero's assurances that only CPC-1232 tank cars will be used. Because there are far fewer CPC-1232 tank cars available, Valero will surely have an incentive to use DOT-111 cars. If the City wishes to rely on this mitigation measure, it must ensure that the requirement is enforceable by making it a condition of approval. If the City believes it cannot make the condition enforceable because of preemption or other concerns, it must analyze the risk assuming DOT-111 cars, which are likely to be used. The City cannot have it both ways—claiming both that the use of CPC-1232 tank cars reduces the risk of the Project and that the CPC-1232 tank car requirement is not enforceable.

Even if Valero were to use only CPC-1232 tank cars, the Project will still have significant hazards impacts. As the DEIR admits, CPC-1232 tank cars were involved in the April 30, 2014 Lynchburg, Virginia accident. DEIR at 4.7-8. At least one of the CPC-1232 tank cars ruptured in that event and released its contents. *Id.* Flames shot 100 feet into the air, and the downtown had to be evacuated. The train was traveling just 24 miles per hour.⁶⁴

⁶³ The Proposed Rule is included on the accompanying CD as a reference to the Millar Report.

⁶⁴ Besty Morris and Laura Stevens, *Oil Train That Crashed in Lynchburg Was Moving Below New Speed Limit*, Wall Street Journal, available at <http://online.wsj.com/news/articles/SB10001424052702304178104579535732934152004>



Lynchburg, Virginia crude-by-rail accident involving 1232 cars (Sheri Felipe)

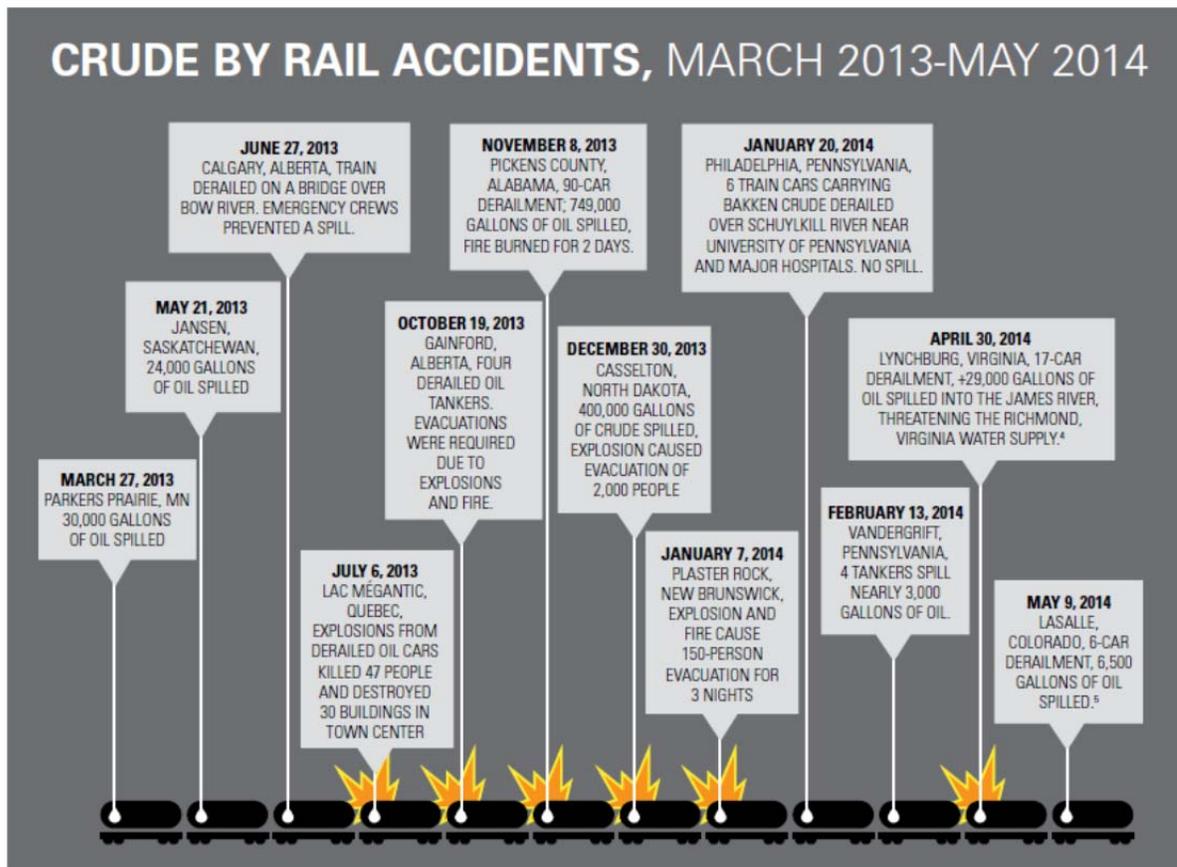
The DEIR also claims that crude oil trains will be subject to “new, more stringent requirements” from the Department of Transportation and Pipeline and Hazardous Materials Safety Administration (PHMSA). DEIR at 4.7-20. This is apparently a reference to PHMSA’s proposed rule, which was released for public review on August 1, 2014.

Present law does not require any of those “new, more stringent requirements.” The City cannot rely on safety measures that are not yet—and may never be—adopted to find that there is no significant safety risk. PHMSA’s proposed rule provides for a wide range of possible options, including three different potential tank car standards. Proposed Rule at 45018-19. Notably, the CPC-1232 tank car that Valero promises to use for this Project is the least safe of the three options evaluated in the proposed rule. *Id.* at 45019. There will certainly be heavy industry lobbying to adopt the least protective standards, or to do nothing at all. Furthermore, PHMSA has proposed a lengthy phase-out period for DOT-111 tank cars, allowing their use until 2018 or 2020. 45043. If the City wishes to use the new PHMSA rules in its analysis, it must wait until the final rule is issued. And even if PHMSA ultimately adopts more stringent tank car standards, the City cannot simply assume that compliance with those standards would ameliorate any significant impacts. *See Communities for a Better Env't v. California Res. Agency*, 103 Cal. App. 4th 98, 114 (2002) (rejecting the

argument that a project's impacts are insignificant simply because they comply with regulatory standards).

D. In Evaluating the Risk of an Accident, the DEIR Ignores the Most Recent and Relevant Data About Crude Oil Train Derailments

Among the most serious flaws in the DEIR is its failure to fully reckon with the serious accidents that have accompanied the rise of crude-by-rail shipments over the past five years. The amount of crude shipped by rail has increased drastically in recent years, from 45,000 barrels in 2009 to 6 million barrels in 2013. Bailey Report at 1. In the past year and a half alone, there have been twelve serious crude-by-rail accidents in North America resulting in millions of gallons of spilled oil, major evacuations, and, in Lac-Mégantic, 47 deaths. Bailey Report at 1. Nonetheless, the DEIR states that the “rate of hazardous material releases from trains has declined since the rate estimates were developed; the accident rate has been declining for decades . . .” DEIR at 4.7-18. Given the sharp increase in crude-by-rail accidents over the past two years, this language is misleading.



Source: Bailey Report at 2.

The Barkan Report, which underlies much of the DEIR's discussion of risk, fails to consider a number of important factors about crude-by-rail accidents. First, it relies solely on data from 2009 and earlier—before the boom in crude-by-rail shipments. The failure to use this more recent data is fatal to the report. Millar Report at 5-6. The City must use more recent and relevant data that takes into account the true probability and severity of crude-by-rail accidents, which can result in explosions and fires in addition to the “releases” discussed in the Barkan Report. For example, the Department of Transportation, in evaluating the risk of crude-by-rail accidents, uses recent data that includes years in which there were substantial crude-by-rail shipments. Millar Report at 6.

The Barkan Report also fails to take into consideration the unique characteristics of crude oil unit trains that could increase derailment rates. Millar Report at 5. It assumes an average train derailment rate based on all kinds of trains. *Id.* In fact, the Department of Transportation, the Association of American Railroads, and the NTSB have all recognized that crude oil unit trains are more likely to derail than average trains. *Id.* As the Department of Transportation recently stated:

The trains are longer, heavier in total, more challenging to control, and can produce considerably higher buff and draft forces which affect train stability. In addition, these trains can be more challenging to slow down or stop, can be more prone to derailments when put in emergency braking, and the loaded tank cars are stiffer and do not react well to track warp which when combined with high buff/draft forces can increase the risk of derailments.

Millar Report at 5. The Barkan Report failed to acknowledge this risk in its assumptions about derailment rates.

The Barkan Report also makes other assumptions about crude unit trains that contradict real-world data. For example, the report assumes an average of six derailed cars per derailment, and then uses that number to determine the probability of at least one car releasing crude oil per derailment. DEIR, Appx. F at 5. But in fact, actual data from the past year show that many more than six cars often derail during crude-by-rail accidents. And many of those cars release their contents. Proposed Rule at 45020 (showing that over 17 cars derailed in five recent crude-by-rail accidents, resulting in up to 25 tank cars being punctured). More broadly, the report fails to take into account the number of cars per train in the

analysis at all, assuming without support that both long and short trains would have identical derailment rates.

Instead of relying on actual data about crude-by-rail accidents, the Barkan Report uses a method of calculating the resistance of tank cars to puncture that is not transparent or sufficiently supported by empirical evidence. The report claims that the “conditional probability of release” for CPC-1232 tank cars is 0.103, but it fails to explain where that number comes from, other than to state that it was estimated based on statistics developed by the Railway Supply Institute (RSI) – Association of American Railroads (AAR) Railroad Tank Car Safety Research and Test Project.” DEIR, Appx. F at 5. Even assuming that it were proper to assume that only CPC-1232 tank cars would be used, there are many problems with this figure. The conditional probability of release for CPC-1232 tank cars is an estimate, not a figure drawn from actual data. Millar Report at 7. At a recent NTSB Forum, Todd Treichel, the director of the RSI-AAR Railroad Tank Car Safety Research and Test Project stated, “the CPC-1232 cars in particular remain fairly scarce in our data, so the specific question how have they performed in accidents so far doesn't really confirm or dispute the CPR estimates until there are many more cars that have been derailed in many more types of accidents.”⁶⁵ Similarly, the conditional probability of release applies to derailments that happen at a speed of 27 miles per hour, much lower than the voluntary limit of 40 to 50 miles per hour currently used by the railroads. Millar Report at 6.

Finally, the DEIR compares its calculated probability of a crude-by-rail accident to the probability of a marine tanker or automobile accident. DEIR at 4.7-18. This language is merely an attempt by the DEIR to minimize the appearance of the risk. The risk of a train carrying explosive Bakken crude derailed and decimating a town is simply not comparable to the risks of marine or auto accidents. Because they are misleading, these comparisons should be removed from the DEIR.

E. The DEIR Fails to Disclose the Significance of Low Probability, High Consequence Events

The DEIR acknowledges that the consequences of a release are “potentially severe,” but it dismisses those consequences by saying that the likelihood of a severe event occurring is low. DEIR at 4.7-20. The DEIR

⁶⁵ NTSB Rail Safety Forum: Transportation of Crude Oil and Ethanol at 82, April 22, 2014, Washington, D.C., available at <http://dms.nts.gov/pubdms/search/hitlist.cfm?docketID=56186>

devotes only one terse sentence to these types of impacts: “If a release in an urban area were to ignite and/or explode, depending on the specific circumstances, the release could result in property damage and/or injury and/or loss of life.” DEIR at 4.7-17.

Quite simply, the risk of a Lac-Mégantic-type accident happening, even if it were to happen only once every 111 years as estimated by the Barkan Report, is significant and the DEIR must disclose it as such. Millar Report at 9. Because the significance of an accident depends both on its probability of occurring and its magnitude, high magnitude-low probability risks are significant impacts under CEQA. Guidelines § 15143 (“The significant effects should be discussed with emphasis in proportion to their severity and probability of occurrence.”).

F. The DEIR Fails to Adequately Analyze the Impacts of a Tar Sands Spill

In addition to Bakken crude, Valero will likely also import Canadian tar sands by rail. The majority of tar sands currently being shipped by rail is bitumen blended with diluent, also known as diluted bitumen, or “dilbit.” Most formulations of diluent include natural gas liquid condensate containing volatile hydrocarbons such as benzene, toluene, ethyl benzene and xylene. A spokesperson for PHMSA recently stated that diluted bitumen would qualify as a flammable Class 3 material, like Bakken crudes.⁶⁶ Therefore, because diluent is volatile, dilbit could pose similar explosion hazards as Bakken crudes. The DEIR should analyze this risk.

Furthermore, because diluent evaporates after a spill and leaves the heavy crude behind, dilbit spills are particularly difficult to clean up. EPA recently noted that spills of diluted bitumen require different response action and equipment than conventional oil spills. In fact, three years after a major spill of dilbit into the Kalamazoo River in Michigan, heavy oil remained at the bottom of the river and will require dredging to clean up.⁶⁷ That effort has cost over \$1 billion so far. The DEIR fails to consider the possibility of a dilbit spill into the fragile San Francisco Bay Delta or other

⁶⁶ Elana Schor, “Canadian oil sands crude is the X factor in crude-by-rail rule,” Energy Wire (Aug. 13, 2014), available at <http://www.eenews.net/energywire/stories/1060004416>.

⁶⁷ EPA, Comment letter to US Department of State regarding the Supplemental Draft Environmental Impact Statement for TransCanada’s proposed Keystone XL project, 2013, available at <http://www.epa.gov/compliance/nepa/keystone-xl-project-epa-comment-letter-20130056.pdf>.

sensitive areas, and what the wildlife, ecosystem, economic and human health implications would be.

G. The DEIR Fails to Properly Analyze the Cumulative Impacts of Crude-by-Rail Projects

The DEIR claims that “two or more events (from the Project and another cumulative project)” would need to occur “at the same time” for the Project’s cumulative hazards impacts to be significant. DEIR at 5-17. This statement fails to take into account the cumulatively significant increase in risk that communities near rail lines will face. In addition to the proposed WesPac Project in Pittsburg, which the DEIR lists on page 5-6, there are existing or proposed crude-by-rail projects in Sacramento, Richmond, and Stockton that may use the same rail lines as the Project. The additional risk posed by the Project is cumulatively significant in light of these other projects. Therefore, the DEIR must disclose this risk as significant and adopt mitigation measure to reduce the risk.

Similarly, because the Project would increase the rail traffic on these rail lines considerably, the DEIR must also analyze whether the additional traffic on the line could increase releases, either through increasing the probability of collision or contributing to wear and tear of the tracks.

H. The DEIR Incorrectly Concludes That There Are No Feasible Mitigation Measures for Hazards

As discussed above, the risk of accidents and spills due to transporting crude oil by rail is a significant impact of the Project. To comply with CEQA, the City must adopt all feasible mitigation measures to reduce the risk and severity of an accident along the rail line and enhance the City’s ability to respond to such an accident. The DEIR states that no mitigation measures are required to mitigate upset and accident conditions, in part because “federal law preempts the ability of state and local governments to regulate rail activity and/or impose any requirements that burden the unrestricted movement of trains in interstate commerce” and that the City “must rely on the federal authorities to ensure that any such risks are mitigated as appropriate.” DEIR at 4.7-20.

As with air impacts, the City is incorrect that it lacks any authority or ability to impose mitigation measures for the Project’s significant hazards impacts; there are many possibly mitigation measures within the City’s authority. The following mitigation measures can and should be adopted to

mitigate impacts from tanker car locomotives and to mitigate the risks of spills and accidents.

Most notably, the City can reduce the Project's impacts by limiting the number of rail cars that can be unloaded per day or otherwise reducing the offloading capacity of the Project. Valero is not a rail carrier as defined by federal law, so the City is not preempted from regulating Valero's actions. Chapter 6, which claims that this alternative is legally infeasible, should be revised accordingly. Likewise, the City can and should require Valero to have spill containment for more than one car at the offloading facility. Spill containment for just one car is insufficient if multiple cars can be unloaded at same time. DEIR at 3-17 to 3-21.

The City can also impose a variety of other mitigation measures that address the risks of the Project without regulating rail transportation. For example, the City should impose a fee or bonding requirement for crude shipments, with the proceeds to go toward accident preparedness and response. Likewise, the City should require Valero to insure itself up to the amount of damage that a significant accident in Benicia would cause. The City should also require Valero to contribute annually to the Benicia Fire Department for its reverse 911 system.⁶⁸

Similarly, the City should require that Valero provide training and tuition assistance for emergency responders in consultation with the Fire Department.⁶⁹ Likewise, the City should require Valero to provide the Fire Department with a Fire Protection Engineering Consultant;⁷⁰ to provide a consultant to develop a Fire and Life Safety Plan;⁷¹ and to buy an industrial foam pumper/tender, along with a cache of foam, all of which will be necessary for the Fire Department to respond to accidents effectively.⁷² Lastly, the City should require Valero to fund a fair-share grant program for response preparedness in communities along the rail line. All of these

⁶⁸ See Kern Cnty Planning & Devt. Dep't, Draft Environmental Impact Report: Alon Bakersfield Refinery Crude Flexibility Project (Alon EIR) 1-59 (May 2014), available at <http://pcd.kerndsa.com/planning/environmental-documents/350-alon-bakersfield-refinery-crude-flexibility-project>

⁶⁹ See *id.* at 1-62.

⁷⁰ See *id.* at 1-57.

⁷¹ See *id.*

⁷² See *id.* at 1-60.

measures would help offset the costs of the added vigilance that the Project would require of accident responders and would help ensure that Valero would pay its share of the remediation should an accident occur.

The City should also impose several informational requirements on Valero. First, the City should require Valero to work with it and other communities along the rail line to address local concerns. As part of this collaboration, it should require Valero to provide a brochure for local residences and businesses, informing them of how crude-by-rail deliveries will affect them, how they can prepare for an accident, and how they should respond after such an accident occurs.⁷³ The City should also require that Valero maintain a log of all crude deliveries, document the type of oil, its source, and the type of tank car that delivered it, and have all deliveries labelled with their volatility⁷⁴—measures that would better enable accident responders to adequately respond to any accident or spill.

Next, the City should ensure that Valero provides the means to monitor conditions surrounding crude shipments so that conditions leading to accidents can be detected and accidents prevented. To that end, the City should require Valero to provide sensors or detectors for toxic or flammable gasses or vapors at the refinery and along the rail line.⁷⁵ Finally, the City should require Valero to ensure that Union Pacific conducts frequent and thorough track inspections.

In addition to mitigating risks through funding and informational measures, the City should impose procedural and planning requirements on Valero. These could include ensuring compliance with all Certified Unified Program Agency requirements, which contain numerous emergency plan requirements.⁷⁶ The City should require Valero to adhere to Best Management Practices in its crude-by-rail operation, to provide training for equipment use and spill cleanup, and to contain and clean spills according to the California Stormwater Quality Association Best Management Practice Handbook.⁷⁷ Moreover, the City should require Valero to update its refinery

⁷³ See *id.* at 1-59.

⁷⁴ See *id.* at 1-61.

⁷⁵ See *id.* at 1-58.

⁷⁶ See *id.* at 1-58.

⁷⁷ See *id.* at 1-63.

safety procedures⁷⁸ and to amend its spill and accident prevention and response documents to take into account the new risks introduced by the Project.

None of these funding measures, informational requirements, or planning procedures would regulate rail transportation or have the effect of interfering with railroad operations. Moreover, most of these proposed requirements have been included in the EIR for the Alon crude by rail project in Bakersfield, indicating that both agencies and industry groups may be amenable to them.

IV. THE DEIR FAILS TO PROPERLY DISCLOSE, ANALYZE, AND MITIGATE THE PROJECT'S SIGNIFICANT TRAFFIC IMPACTS

The Project will add four train crossings a day to the at-grade crossing at Park Road in Benicia. The Project's traffic impacts are important to many of the small businesses and community members that use Park Road to access their places of work. These additional crossings could also affect emergency access to the refinery in the event of an accident, should additional emergency response be needed from points east. Under the DEIR's significance criteria, the Project would have a significant impact on traffic if it would cause an intersection's operations to degrade from LOS D or better to LOS E or F; substantially increase delays at an intersection that currently operates at LOS E or F; or increase the average vehicle delay by one second or more at a train crossing that currently operates at LOS F. DEIR at 4.11-5. The DEIR concludes that the traffic created by the Project will not exceed any of these thresholds. DEIR at 4.11-6. To the contrary, the Project will have significant traffic impacts by nearly any measure.

To understand the flaw in the DEIR's reasoning, it is first essential to understand how the Project will affect traffic. Under the existing conditions, on weekdays there are, on average, 10 crossings per day of 2.83 minutes a crossing, or 28.3 minutes total a day. On weekends, there are, on average, 7 crossings per day of 1.7 minutes, or 11.9 minutes total per day. DEIR at 4.11-7. According to the DEIR, the Project will increase train crossings at Park Road by four trains a day (two 50-car trains arriving and leaving). DEIR at 4.11-1. Each train crossing will take approximately 8.3 minutes. DEIR at 4.11-9. Thus the Project will increase train crossing time by 33.2 (4 x 8.3) minutes a day; it will more than double the waiting time on weekdays, and

⁷⁸ See *id.* at 1-56 to 1-57.

nearly triple the waiting time on weekends. On their face, these impacts are significant.

Because of the unique traffic impact of train crossings, the DEIR's reliance on more traditional LOS thresholds is inappropriate. But the Project will have significant impacts even using those inappropriate thresholds. The DEIR's own analysis shows that train crossings cause the Park Road intersection to degrade from LOS A to LOS F, substantially increase delays at the intersection even compared to other train crossings, and increase the average vehicle delay by more than one second at the intersection compared to existing train crossings. DEIR at 4.11-8, 4.11-10.

Furthermore, the DEIR bases its analysis on a voluntary agreement by the railroad that that train crossings "will be scheduled to avoid the [rush] hours of 6:00 AM to 9:00 AM and 4:00 PM and 6:00 PM." DEIR at 4.11-1. However, Union Pacific has made clear that it does not view this measure as enforceable. DEIR, Appx. L. If this mitigation measure is not enforceable, the City must analyze the impacts of the Project in the absence of the measure. Train crossings during rush hour would drastically increase the Project's impacts.

Because this impact is significant, the City must adopt all feasible mitigation measures. Here, that could include reducing the number of cars that can be offloaded per day, or contributing a fair share to road improvements, such as an over or under pass (e.g. grade separation), that would lessen the traffic impacts.

Finally, the DEIR makes no attempt whatsoever to analyze traffic impacts at crossings outside the City. The DEIR must identify other at-grade crossings that may be affected, busy intersections in uprail Davis for example, and analyze whether those impacts would be significant.

V. THE DEIR FAILS TO PROPERLY DISCLOSE, ANALYZE, AND MITIGATE THE PROJECT'S SIGNIFICANT NOISE IMPACTS

Under CEQA, "it is the policy of the state" to "[t]ake all action necessary to provide the people of this state with . . . freedom from excessive noise." Pub. Res. Code § 21001(b). The Project will add new sources of noise, both during the rail haul and on the Valero property during offloading activities. DEIR at 4.10-3. These noises will affect the residents in Benicia as well as those in uprail communities, some of whom may be as close as 50 feet from the rail line. DEIR at 4.10-14. It is well known that trains can cause

significant noise impacts. Nonetheless, the DEIR concludes that Project will not have any significant noise impacts. DEIR at 4.10-13, 4.10-14.

The DEIR uses the performance standards from the Benicia General Plan to evaluate noise. Those standards are 55 dBA hourly L_{eq} during the daytime hours of 7 a.m. to 10 p.m., and 50 dBA hourly L_{eq} during the daytime hours of 10 p.m. to 7 a.m.⁷⁹ DEIR at 4.10-9; Benicia General Plan at 178, Table 4-4. According to the general plan, the “an increase of 3dB or greater constitutes a significant environmental impact, unless the increase does not cause the standards in Table 4-4 to be exceeded.” General Plan page 178, notes to Table 4-4; DEIR at 4.10-9. In other words, a project will have a significant impact in an area that already exceeds the City standards (55 or 50 dBA hourly L_{eq}) if it will increase noise by 3 dBA. Furthermore, according to the DEIR, a project will have a significant impact if in an area that does not already exceed City standards if it will increase noise by 5 dBA. DEIR at 4.10-11.

Based on the analysis of the City’s own noise expert, the existing noise at four residential receptor areas already exceeds the City’s threshold of 50 dBA hourly L_{eq} during the night. DEIR Wilson Ihrig & Associates Noise Study (Noise Study) at 6. The noise at one of those four residential receptors also exceeds the City’s 55 dBA hourly L_{eq} threshold for the day, and the other three receptors are just one or two dBA below that standard. *Id.* at 6. Thus, an increase in 3 dBA hourly L_{eq} or more would be significant for any of these receptors.

The DEIR claims that the noise levels would be 3 dBA hourly L_{eq} from the unloading rack pump noise and 33 dBA hourly L_{eq} from the train car movements. DEIR at 4.10-13. The DEIR fails to explain whether this noise is *in addition* to the existing baseline. It appears that these numbers simply represent the noise generated by the Project itself. If that is true, then the DEIR fails entirely to evaluate the impacts of the Project in combination with the existing noise levels, and fails to answer the question of whether noise levels will increase by 3 dBA hourly L_{eq} . Quite simply, the DEIR fails to answer the crucial question of what the actual noise levels will be *with* the Project. Given the already high baseline and the fairly large increase in noise from train car movements, which will occur between 10 p.m. and 5 a.m., Noise Study at 3, it appears the Project will exceed the City’s thresholds of

⁷⁹ DBA stands for A-weighted decibel. L_{eq} stands for the equivalent sound level, which is used to describe noise over a specified period of time. DEIR at 4.10-3.

significance. The DEIR must better explain its analysis so that the public can understand the true noise impacts.

The DEIR also improperly uses an hourly L_{eq} to evaluate the Project's noise along the rail line. Using an hourly average to measure noise from a passing train, including the horn, is misleading. *Berkeley Keep Jets Over the Bay Comm. v. Bd. of Port Comm'rs*, 91 Cal. App. 4th 1344, 1377-83 (2001). The DEIR admits that the noise from a train horn will be 110 dBA at 100 feet, which is twice as far as some residences will be from the rail line. DEIR at 4.10-13. That level of noise is louder than a rock concert or a jet flyover at 1,000 feet. DEIR at 4.10-2. Even in Benicia itself, noise from the train horn would be as loud as 62 dBA at the nearest residence, which is as loud as heavy traffic at 300 feet. DEIR at 4.10-2, 4.10-14. These impacts, especially if at night, would be significant.

The DEIR also fails to adequately describe what these increases in noise will mean in terms of communication interference, sleep interference, physiological responses, and annoyance. A description of each of these problems, and at what noise levels they occur, is included in our comments on the Mitigated Negative Declaration.

Given these significant impacts, the City must adopt all feasible mitigation measures. Some of the mitigation measures discussed above, such as reducing the offloading capacity of the terminal, would also reduce noise impacts by reducing the number of trains. And even putting aside changes to the Project itself, the City could include a variety of residential sound insulation measures in nearby homes that would mitigate noise impacts. These measures include funding for new windows, exterior doors, and attic insulation. Residential sound insulation is a common mitigation measure that has been adopted at many airports around the state, including at LAX and Ontario.⁸⁰

VI. CONCLUSION

Valero's proposed Project would fundamentally change the quality of life not only for thousands of Benicia residents and small businesses but for those living in uprail communities spanning from Fairfield, Davis, and Sacramento to far beyond. The profound risks to public health and safety from the Project have been completely obscured, robbing the public of its

⁸⁰ Los Angeles World Airports, Residential Sound Insulation, http://www.lawa.org/welcome_LAWA.aspx?id=1092

right to engage in the CEQA process. The DEIR fails to adequately disclose, analyze, and mitigate the Project's significant environmental impacts. The City should ultimately reject this dangerous Project and at the very least must address these flaws in a revised DEIR and recirculate the DEIR for public comment.

Sincerely,
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Natural Resources Defense Council

Katherine Black
Benicians for a Safe and Healthy Community

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Janea Scott, Commissioner, California Energy Commission
Gordon Schremp, Senior Fuels Specialist, CEC
Tom Cullen, Administrator, Office of Spill Prevention and Response
Tom Campbell, Hazardous Materials Program Chief, Office of Emergency Services
Sally Magnani, Senior Assistant Attorney General, California Department of Justice, Environment Section

List of Attachments:

Attachment 1: Comments by Dr. Phyllis Fox on the Draft Environmental Impact Report for the Valero Benicia Crude by Rail Project, September 15, 2014
Attachment 2: NRDC Comments on the Initial Study/Mitigated Negative Declaration for the Valero Benicia Crude by Rail Project, July 1, 2013
Attachment 3: Comments by Dr. Phyllis Fox on the Initial Study/Mitigated Negative Declaration for the Valero Benicia Crude by Rail Project, July 1, 2013
Attachment 4: Report by Diane Bailey, *It Could Happen Here: The Exploding Threat of Crude by Rail in California*, NRDC Fact Sheet, June 2014
Attachment 5: Comments by Dr. Fred Millar on the Draft Environmental Impact Report for the Valero Benicia Crude by Rail Project, September 15, 2014
Attachment 6: *Oil by Rail Safety in California*, California Interagency Rail Safety Working Group, Governor's Office of Emergency Services, June 10, 2014
Attachment 7: Crude Oil Train Derailment Risk Zones in California for Selected Cities, NRDC, 2014