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September 15, 2014

### **By Email and Overnight Mail**

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**Re: Comments on the Draft Environmental Impact Report for the Valero Benicia Crude by Rail Project (SCH# 2013052074)**

Dear Ms. Million:

We are writing on behalf of **Safe Fuel and Energy Resources California** (“SAFER California”) to comment on the Valero Benicia Crude by Rail Project (“Project”) Draft Environmental Impact Report (“DEIR”) prepared by the City of Benicia (“City”), pursuant to the California Environmental Quality Act (“CEQA”).<sup>1</sup> The Project includes the construction of facilities to allow the Valero Refining Company (“Applicant”) to receive up to 70,000 barrels per day of North American crude oil by rail (two 50-car trains per day). The facilities include 8,880 feet of new track, a new tank car unloading rack capable of unloading two parallel rows of tank cars simultaneously, and 4,000 feet of 16-inch diameter crude oil pipeline and associated fugitive components connecting the offloading rack with an existing crude supply pipeline.

The City initially prepared a Mitigated Negative Declaration (“MND”) for the Project. However, after reviewing comments submitted on the MND which showed that the Project may have significant environmental impacts, the City prepared the DEIR. Based upon our review of the DEIR, City records, as well as other public records, we conclude that the DEIR is so inadequate under CEQA that it must be withdrawn. The DEIR fails to include a complete and accurate description of the

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<sup>1</sup> Pub. Resources Code, §§ 21000 et seq.  
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Project by excluding from the Project description the likely change in crude slate quality. In addition, the DEIR fails to provide a sufficiently detailed environmental setting against which to measure the Project's potentially significant impacts from a crude slate change. The DEIR also fails to adequately disclose, analyze and mitigate the Project's potentially significant impacts related to air quality, public health, odors and hazards. These defects render the DEIR inadequate as an informational document. The numerous defects in the City's analysis, set forth in greater detail in the following paragraphs, are fatal errors. The City must withdraw the DEIR and prepare a revised DEIR which fully complies with CEQA.

We prepared these comments with the assistance of expert environmental Petra Pless, Ph.D. and Phyllis Fox, Ph.D. Dr. Pless' and Dr. Fox's technical comments are attached hereto and are incorporated by reference. Dr. Pless and Dr. Fox's comments are submitted in addition to the comments in this letter. Accordingly, the City must address and respond to the comments of Dr. Pless and Dr. Fox separately.

## **I. INTEREST OF COMMENTORS**

SAFER California advocates for safe processes at California refineries to protect the health, safety, the standard of life and the economic interests of its members. For this reason, SAFER California has a strong interest in enforcing environmental laws, such as CEQA, which require the disclosure of potential environmental impacts of, and ensure safe operations and processes for, California oil refineries. Failure to adequately address the environmental impacts of crude oil transport and refining processes poses a substantial threat to the environment, worker health, surrounding communities, and the local economy.

Refineries are uniquely dangerous and capable of generating significant fires and the emission of hazardous and toxic substances that adversely impact air quality, water quality, biological resources and public health and safety. These risks were recognized by the Legislature and Governor when enacting SB 54 (Hancock). Absent adequate disclosure and mitigation of hazardous materials and processes, refinery workers and surrounding communities may be subject to chronic health problems and the risk of bodily injury and death. Additionally, rail transport of crude oil has been involved in major explosions, causing vast economic damage, significant emissions of air contaminants and carcinogens and, in some cases, severe injuries and fatalities.

Poorly planned refinery projects also adversely impact the economic wellbeing of people who perform construction and maintenance work in the refinery and the surrounding communities. Plant shutdowns in the event of accidental release and infrastructure breakdown have caused prolonged work stoppages. Such nuisance conditions and catastrophic events impact local communities and can jeopardize future jobs by making it more difficult and more expensive for businesses to locate and people to live in the area. The participants in SAFER California are also concerned about projects that carry serious environmental risks and public service infrastructure demands without providing countervailing employment and economic benefits to local workers and communities.

The members represented by the participants in SAFER California live, work, recreate and raise their families in Solano County, including the City of Benicia. Accordingly, these people would be directly affected by the Project's adverse environmental impacts. The members of SAFER California's participating unions may also work on the Project itself. They will, therefore, be first in line to be exposed to any hazardous materials, air contaminants, and other health and safety hazards, that exist onsite.

## II. THE PROJECT DESCRIPTION IS INADEQUATE

The DEIR does not meet CEQA's requirements because it fails to include a complete and accurate project description, rendering the entire impact analysis inherently unreliable. An accurate and complete project description is necessary to perform an evaluation of the potential environmental effects of a proposed project.<sup>2</sup> Without a complete project description, the environmental analysis will be impermissibly narrow, thus minimizing the project's impacts and undercutting public review.<sup>3</sup> The courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient [CEQA document]."<sup>4</sup> Only through an accurate view of the project may affected outsiders and public decision makers balance the proposal's benefit against its environmental costs.<sup>5</sup>

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<sup>2</sup> See, e.g., *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376.

<sup>3</sup> See *id.*

<sup>4</sup> *County of Inyo v. County of Los Angeles* (1977) 71 Cal.App.3d 185, 193.

<sup>5</sup> *Id.* at 192-193.

CEQA Guidelines section 15378 defines “project” to mean “the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.”<sup>6</sup> “The term “project” refers to the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies. The term project does not mean each separate governmental approval.”<sup>7</sup> Courts have explained that “[a] complete project description of a project has to address not only the immediate environmental consequences of going forward with the project, but also all “*reasonably foreseeable* consequence[s] of the initial project.”<sup>8</sup> “If a[n] . . . EIR. . . does not adequately apprise all interested parties of the true scope of the project for intelligent weighing of the environmental consequences of the project, informed decisionmaking cannot occur under CEQA and the final EIR is inadequate as a matter of law.”<sup>9</sup>

The DEIR fails to meet CEQA’s requirements for an adequate project description by failing to adequately describe Project construction and the reasonably foreseeable changes to the existing crude slate quality, each of which is necessary to evaluate related environmental impacts. As explained below, this defect is fatal to the City’s analysis of the Project’s environmental impacts. The City must withdraw the DEIR and prepare a revised DEIR which complies with CEQA.

#### **A. The DEIR Fails to Adequately Describe Project Construction**

The DEIR provides minimal information regarding Project construction. The DEIR states that Project construction will take 25 weeks. However, the DEIR provides no construction schedule specifying the duration, and potential overlap of, each construction phase (e.g. clearing, grading, terminal construction, paving). The DEIR also fails to provide the number of each type of equipment for each construction phase and the number of construction workers for each phase. These details are necessary to evaluate the Project’s air quality and public health impacts from Project construction. The City must revise the DEIR to include a complete description of Project construction.

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<sup>6</sup> 14 Cal.Code Regs, tit. 14, §15378 (“CEQA Guidelines”).

<sup>7</sup> CEQA Guidelines, § 15378(c).

<sup>8</sup> *Laurel Heights Improvement Association v. Regents of University of California* (1988) 47 Cal.3d 376, emphasis added; see also *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 449-50.

<sup>9</sup> *Riverwatch v. Olivenhain Municipal Water Dist.* (2009) 170 Cal.App.4th 1186, 1201.

**B. The DEIR Fails to Adequately Describe a Change in Crude Slate Quality**

In *Communities for a Better Environment v. City of Richmond*, the First District Court of Appeal held that an EIR for a refinery project must disclose whether the proposed project would allow the refinery to process heavier crude where a change in feedstock is a reasonably foreseeable consequence of the proposed project.<sup>10</sup> There, petitioners argued that the EIR was inadequate because the project description failed to clearly and consistently state whether the project would facilitate the future processing of heavier crudes at the refinery, and to analyze the consequences of such a change.<sup>11</sup> In that case, the EIR acknowledged that the proposed project would allow the refinery to process a wider range of crude oils, including crude that contains a higher amount of sulfur and associated contaminants.<sup>12</sup> However, the lead agency denied claims that the refinery would also be able to process heavier crudes than before.<sup>13</sup> Petitioners pointed to conflicting statements in the EIR and the project proponent's SEC filings, as well as the project proponent's rejection of a permit limitation precluding the alteration of the baseline crude slate mix, all of which suggested that the project would (contrary to the lead agency's claim) enable the refinery to process heavier crudes.<sup>14</sup> The court agreed with petitioner that a crude switch was reasonably foreseeable and invalidated the EIR "because the EIR's project description ... [was] inconsistent and obscure as to whether the Project enables the Refinery to process heavier crudes."<sup>15</sup>

Here, the DEIR suffers from a similar error. The DEIR fails to disclose that the Project would facilitate a change to the current crude slate quality (to heavier higher sulfur crudes or to lighter sweeter crudes) which, according to Dr. Fox, would result in emission increases that were not considered in the DEIR.<sup>16</sup> Here, as in the case of *Communities for a Better Environment v. City of Richmond*, a change in crude slate quality is a reasonably foreseeable consequence of the Project and must be disclosed, described and analyzed in a revised DEIR.

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<sup>10</sup> See *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 89.

<sup>11</sup> See *id.* at p. 83.

<sup>12</sup> *Id.* at pp. 76-77.

<sup>13</sup> See *id.*

<sup>14</sup> *Id.* at pp. 83-85.

<sup>15</sup> See *id.* at p. 89.

<sup>16</sup> See generally **Attachment A**: Phyllis Fox Comments on the Draft Environmental Impact Report for the Valero Benicia Crude by Rail Project, September 15, 2014 ("Fox Comments").

The DEIR provides a list of 38 “available North American crudes” that could potentially be imported to the Valero refinery as a result of the Project. 87 percent of them are Canadian tar sands crudes (almost half of which are heavy sour crudes). In her comments on the MND, Dr. Fox explained that Canadian tar crudes are chemically distinct from the current crude slate processed at the refinery.<sup>17</sup> In short, Canadian tar sand crudes are different because they contain tar sands bitumen mixed with large quantities of diluent.<sup>18</sup> Dr. Fox explained that tar sand bitumens require more energy to convert them into the same slate of refined products and, therefore, “most fired sources in the refinery—heaters, boilers, etc—will have to work harder to generate the same quantity and quality of refined projects...and thus emit more pollutants, than when refining conventional heavy and other crudes.”<sup>19</sup> Diluent contains high levels of VOCs, sulfur compounds and hazardous air pollutants which “would be emitted during unloading and present in emissions from the crude tank(s) and fugitive components from its entry in to the Refinery with the crude until it is recovered and marketed, or at least between the desalter and downstream units where some of it is recovered.”<sup>20</sup> Further, “[t]he presence of diluents would increase the vapor pressure of the crude, substantially increasing VOC and HAP emissions from tanks and fugitive component leaks compared to those from displaced heavy crudes not blended with diluent.”<sup>21</sup>

The Project will also allow light sweet crudes, such as Bakken, to be imported to the refinery. According to the DEIR, “[o]nce the Project is constructed and operational, Valero may well purchase large amounts of light sweet North American crudes. In fact, this is Valero’s stated plan.”<sup>22</sup> The DEIR also states that “[o]nce the Project is complete, Valero plans to obtain North American crudes that are, on average, lighter and sweeter than Valero’s current feedstocks. According to Valero, the North American crudes will be ‘Alaskan North Slope (ANS) look-alikes or sweeter’ (Valero, 2013).”<sup>23</sup> Dr. Fox provides that “[t]he closest and most cost advantaged of light sweet North American crudes listed in Table 3-1 that could be blended to be an ANS look-alike is Bakken crude.”<sup>24</sup>

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<sup>17</sup> **Attachment B:** Phyllis Fox Comments on Initial Study/Mitigated Negative Declaration for the Valero Crude by Rail Project, July 1, 2013 (“Fox Comments on MND”), pp. 28-31.

<sup>18</sup> *Id.*

<sup>19</sup> *Id.* at p. 29.

<sup>20</sup> *Id.* at p. 24.

<sup>21</sup> *Id.*

<sup>22</sup> DEIR, p. C.201.

<sup>23</sup> *Id.* at p. 3-24.

<sup>24</sup> Fox Comments, p.11.

Dr. Fox explains in her comments on the DEIR that various crude components can alter the quality of crude, including (but not limited to) “volatility, flammability, metal content, ROG speciation profile, the specific suit or heavy organic compounds in the crude, and the TAC and sulfur speciation profile (i.e., the concentration of individual ROG and sulfur compounds present in the crude).”<sup>25</sup> When crude is processed, these crude components result in different emissions. For example, the “vapor pressure of crude determines the amount of ROG and TAC emissions that are emitted when [crude] is transported, stored and refined.”<sup>26</sup> Further, the nature of the chemical bonds in crude determines the amount of energy and hydrogen that must be supplied to refine it.”<sup>27</sup> Dr. Fox explains that these chemical and physical characteristics “will result in significant impacts that have not been considered in the DEIR.”<sup>28</sup> Dr. Fox provides examples of these significant impacts, including

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 odiferous sulfur compounds, resulting in significant odor impacts, significant increases in combustion emissions, contributing to existing violations of ambient air quality standards; and significant increases in flammability and thus the potential for and magnitude of accidents involving train derailments or spills on-site.<sup>29</sup>

Dr. Fox also explains that, even if the sulfur content and weight of the crude processed at the Valero refinery remain within a specific range outlined in the DEIR, the Project will cause the average sulfur concentration and/or weight of the crude processed at the refinery to increase over time.<sup>30</sup> In fact, this occurred at the Chevron refinery in Richmond in 2012. The Chevron refinery gradually changed crude slates while staying within its established crude unit design basis for total weight percent sulfur of the blended feed to the crude unit. This change increased

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<sup>25</sup> *Id.* at p. 7.

<sup>26</sup> *Id.* at p. 5.

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

<sup>29</sup> *Id.*

<sup>30</sup> *Id.* at p. 6.

pipe corrosion rates and resulted in a catastrophic pipe failure, sending 15,000 people for medical treatment.<sup>31</sup>

Substantial evidence shows that it is reasonably foreseeable that the Project will result in a change in crude slate quality. The reasonably foreseeable crude switch from local heavy crudes to a combination of Bakken and North American shale and Canadian tar sands crudes is significant in that it will change the scope and nature of the Project's environmental impacts. The composition of crude slate determines a project's impacts on air quality, odors, public health and hazards and are relevant to, processing, as well as transporting and unloading the crude. The chemical composition of crude also determines its corrosive qualities, increasing the chance of accidental release and catastrophic events. The City must revise the DEIR to disclose the chemical composition of the crude that could be processed at the Valero refinery, as compared to current conditions, and analyze the environmental consequences of importing and processing both Bakken and tar sands crudes, which span the range of likely impacts.

### **III. THE DESCRIPTION OF THE ENVIRONMENTAL SETTING IN THE DEIR IS INADEQUATE**

CEQA requires the lead agency to include a description of the physical environmental conditions in the vicinity of a project as they exist at the time environmental review commences.<sup>32</sup> The description of the environmental setting constitutes the baseline physical conditions by which a lead agency may assess the significance of a project's impacts. The EIR must also describe the existing environmental setting in sufficient detail to enable a proper analysis of project impacts.<sup>33</sup>

Describing the environmental setting accurately and completely for each environmental condition in the vicinity of the project is critical to an accurate, meaningful evaluation of environmental impacts. The courts are clear that, “[b]efore the impacts of a Project can be assessed and mitigation measures

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<sup>31</sup> *Id.*

<sup>32</sup> CEQA Guidelines, § 15125(a); see also *Communities for A Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 321.

<sup>33</sup> *Galante Vineyards v. Monterey Peninsula Water Management District* (1997) 60 Cal.App.4th 1109, 1121-22.



considered, an [environmental review document] must describe the existing environment.”<sup>34</sup> It is:

a central concept of CEQA, widely accepted by the courts, that the significance of a Project’s impacts cannot be measured unless the DEIR first establishes the actual physical conditions on the property. In other words, baseline determination is the first rather than the last step in the environmental review process.<sup>35</sup>

Additionally, it is axiomatic that the baseline information on which an EIR relies must constitute substantial evidence.<sup>36</sup> The CEQA Guidelines define “substantial evidence” as “enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion.”<sup>37</sup> “Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts.” “[U]nsubstantiated opinion or narrative [and] evidence which is clearly inaccurate or erroneous . . . is not substantial evidence.”<sup>38</sup>

The DEIR fails to establish the environmental setting against which to measure air quality impacts from a crude slate change. The information presented in the DEIR assumes an artificial baseline based on the allowable emissions under existing permits. The City’s approach is contrary to the record evidence and CEQA case law. The City must revise the DEIR to include a legally sufficient and factually accurate description of the environmental setting. Absent adequate baseline information, the City cannot conclude that the Project’s potentially significant air quality impacts are less-than-significant.

**A. The DEIR Fails to Establish the Environmental Setting Against Which to Measure the Project’s Impacts from a Crude Slate Change**

The DEIR distorts baseline conditions with respect to air quality. The DEIR provides that Valero made significant modifications to the refinery between 2004

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<sup>34</sup> *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 952.

<sup>35</sup> *Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 125.

<sup>36</sup> See CEQA Guidelines, §15063(a)(3) (“An initial study may rely upon expert opinion supported by facts, technical studies or other substantial evidence to document its findings.”).

<sup>37</sup> CEQA Guidelines, §15384.

<sup>38</sup> Pub. Resources Code, § 21082.2(c).

and 2010 as part of the “Valero Improvement Project” (“VIP”).<sup>39</sup> The City certified the EIR for the VIP in April 2003 and an addendum to the VIP EIR in 2008. The DEIR argues that for the Project, “[e]ven if refinery emissions were to increase based on Valero’s purchase of heavy sour Canadian crudes, any such emissions increases would properly be considered part of the baseline because the baseline includes the full scope of operation allowed under existing permits that were issued based upon prior CEQA review.”<sup>40</sup> The DEIR goes on to cite several CEQA cases that have held that if a project is a modification of a previously approved project, the previously approved emissions are the proper CEQA baseline.<sup>41</sup>

The City’s argument fails for three reasons. First, the scope of operations approved in the VIP EIR and addendum did not include any impacts from a crude slate change and did not contemplate the crudes listed in the DEIR. Second, the Project is not a modification of the VIP and, therefore, the City applied the wrong legal test. Finally, even if the VIP EIR evaluated a crude slate change and the Project was a modification of the VIP (neither of which are true), the regulatory framework is different, requiring additional CEQA review.

1. *The VIP EIR and Addendum did Not Evaluate Impacts from the Project’s Crude Slate Change*

The VIP EIR and addendum did not describe or analyze potentially significant impacts associated with processing cost-advantaged North American crudes, such as those listed in the DEIR. In fact, the VIP EIR and addendum did not mention these crudes. Rather, the VIP EIR analyzed impacts from importing heavy sour crudes by ship in 2002, which “are chemically and physically different from the crudes available by rail in 2014.”<sup>42</sup> Dr. Fox explains that “[t]he crudes that are currently the target of the Rail Project (DEIR, Table 3-1) were not available in the marketplace in 2002 when the VIP CEQA analysis was performed and thus were not considered in prior CEQA analyses.”<sup>43</sup> Therefore, the City cannot rely on the VIP to establish a baseline against which to measure the Project’s impacts from the Project’s crude slate change.

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<sup>39</sup> DEIR, p. 3-12.

<sup>40</sup> *Id.* at p. C.1-1.

<sup>41</sup> *Id.*

<sup>42</sup> Fox Comments, p. 9.

<sup>43</sup> *Id.*

2. *The Project is Not a Modification of the VIP and the City Applied the Wrong Legal Test*

The Project is not a modification of the VIP; it is a new Project.<sup>44</sup> The City cannot rely on the VIP permit conditions to establish a baseline against which to measure the Project's impacts from the Project's crude slate change. Rather, CEQA requires the City to include a description of the physical environmental conditions as they exist at the time environmental review commences.<sup>45</sup>

The baseline environmental setting for CEQA review is not the environmental setting that could exist under hypothetical situations.<sup>46</sup> In *CBE v. SCAQMD*, the Supreme Court affirmed this basic CEQA rule, rejecting the SCAQMD's approach to the environmental baseline where the district measured a proposed project's increased emissions *against the maximum emissions that were allowed under a previously issued permit for a refinery*.<sup>47</sup> In reaching this conclusion, the Court applied well-established caselaw from numerous appellate court decisions interpreting environmental baseline requirements under CEQA Guidelines section 15125.<sup>48</sup> The Court explained that an approach which relies on hypothetical allowable conditions as the baseline results in "illusory" comparisons, which "can only mislead the public as to the reality of the impacts and subvert full consideration of the actual environmental impacts," a result at direct odds with CEQA's intent.<sup>49</sup> "Like an EIR, an initial study or negative declaration must focus on impacts to the existing environment, not hypothetical situations."<sup>50</sup> Failure to adequately describe the existing setting contravenes the fundamental purpose of the environmental review process, which is to determine whether there is a potentially substantial, adverse change compared to the existing setting.

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<sup>44</sup> See DEIR generally, which does not characterize the Project as a modification of the VIP.

<sup>45</sup> CEQA Guidelines § 15125(a); see also *Communities For A Better Environment v. South Coast Air Quality Management Dist.* (2010) 48 Cal.4th 310, 321, fn. 5 (*CBE v. SCAQMD*).

<sup>46</sup> *CBE v. SCAQMD*, 48 Cal.4th at p. 322; see also *Environmental Planning and Info. Council v. County of El Dorado* (1982) 131 Cal.App.3d 350, 354 (*EPIC*) and *Friends of Eel River v. Sonoma County Water Agency* (2003) 108 Cal.App.4th 859, 874.

<sup>47</sup> *Id.*

<sup>48</sup> *Id.* at pp. 321-322, fn. 6-7, discussing, among other cases, *EPIC, supra*, 131 Cal.App.3d at p. 354 and *Save Our Peninsula Com. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 121.

<sup>49</sup> *Id.* at p. 322, citing *EPIC, supra*, 131 Cal.App.3d at p. 358.)

<sup>50</sup> *Sunnyvale West Neighborhood Association v. City of Sunnyvale City Council*, 2010 WL 5116526, \*13 (2010) (internal quotations omitted) (citing *County of Amador v. El Dorado County Water Agency*, 76 Cal.App.4th at 955).

In short, CEQA requires the City to include a description of the actual physical environmental conditions on the ground, *not* the conditions that could exist under the previously issued permit for the VIP.

3. *The Regulatory Framework has Changed since the VIP was Approved*

Even if the VIP EIR evaluated the crude slate change facilitated by the Project and the Project was a modification of the VIP (neither of which is the case), the VIP EIR analysis is obsolete because the regulatory and informational framework that currently exists has changed dramatically. As a result, the City cannot rely on the VIP EIR to establish a baseline against which to measure the Project's impacts from the Project's crude slate change.

The City certified the VIP EIR in 2003 and the addendum in 2008.<sup>51</sup> Since the VIP EIR was certified, new scientific evidence about the potential adverse impacts of air pollutants became available, new guidance was published and several federal and state ambient air quality standards were revised. Dr. Fox's comments include a list of this new information and the regulatory changes that occurred since the VIP EIR was certified.<sup>52</sup>

In sum, the DEIR fails to include an accurate description of baseline conditions against which to measure the Project's impacts from a change in crude slate quality. There is no legal or factual support for the City's argument that the Project's increase in emissions from importing heavy sour Canadian crudes are part of the baseline "because the baseline includes the full scope of operation allowed under existing permits that were issued based upon prior CEQA review."<sup>53</sup> The City must prepare a revised DEIR that includes a legally sufficient and factually accurate description of the environmental setting against which to measure the Project's potentially significant impacts

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<sup>51</sup> The addendum incorporated a flue gas change related to the Main Stack Scrubber and added an analysis of greenhouse gas emissions. These changes are irrelevant to the discussion here.

<sup>52</sup> Fox Comments, pp. 10-11.

<sup>53</sup> DEIR, p. C.1-1.

**IV. THE CITY LACKS SUBSTANTIAL EVIDENCE TO SUPPORT ITS CONCLUSIONS IN THE DEIR REGARDING THE PROJECT'S SIGNIFICANT IMPACTS; THE DEIR FAILS TO INCORPORATE ALL FEASIBLE MITIGATION MEASURES NECESSARY TO REDUCE SUCH IMPACTS TO A LEVEL OF INSIGNIFICANCE**

CEQA has two basic purposes, neither of which the DEIR satisfies. First, CEQA is designed to inform decision makers and the public about the potential, significant environmental impacts of a Project before harm is done to the environment.<sup>54</sup> The EIR is the “heart” of this requirement.<sup>55</sup> The EIR has been described as “an environmental ‘alarm bell’ whose purpose it is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return.”<sup>56</sup>

To fulfill this function, the discussion of impacts in an EIR must be detailed, complete, and “reflect a good faith effort at full disclosure.”<sup>57</sup> An adequate EIR must contain facts and analysis, not just an agency’s conclusions.<sup>58</sup> CEQA requires an EIR to disclose all potential direct and indirect, significant environmental impacts of a project.<sup>59</sup>

Second, CEQA directs public agencies to avoid or reduce environmental damage when possible by requiring imposition of mitigation measures and by requiring the consideration of environmentally superior alternatives.<sup>60</sup> If an EIR identifies potentially significant impacts, it must then propose and evaluate mitigation measures to minimize these impacts.<sup>61</sup> CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures.<sup>62</sup> Without an adequate analysis and

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<sup>54</sup> CEQA Guidelines § 15002(a)(1); *Berkeley Keep Jets Over the Bay v. Bd. of Port Comm’rs.* (2001) 91 Cal.App.4th 1344, 1354 (“*Berkeley Jets*”); *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

<sup>55</sup> *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 84.

<sup>56</sup> *County of Inyo v. Yorty* (1973) 32 Cal.App.3d 795, 810.

<sup>57</sup> CEQA Guidelines § 15151; *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 721-722.

<sup>58</sup> *See Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 568.

<sup>59</sup> Pub. Resources Code § 21100(b)(1); CEQA Guidelines § 15126.2(a).

<sup>60</sup> CEQA Guidelines § 15002(a)(2) and (3); *Berkeley Jets*, 91 Cal.App.4th at 1354; *Laurel Heights Improvement Ass’n v. Regents of the University of Cal.* (1998) 47 Cal.3d 376, 400.

<sup>61</sup> Pub. Resources Code §§ 21002.1(a), 21100(b)(3).

<sup>62</sup> *Id.*, §§ 21002-21002.1.

description of feasible mitigation measures, it would be impossible for agencies relying upon the EIR to meet this obligation.

Under CEQA, an EIR must not only discuss measures to avoid or minimize adverse impacts, but must ensure that mitigation conditions are fully enforceable through permit conditions, agreements or other legally binding instruments.<sup>63</sup> A CEQA lead agency is precluded from making the required CEQA findings unless the record shows that all uncertainties regarding the mitigation of impacts have been resolved; an agency may not rely on mitigation measures of uncertain efficacy or feasibility.<sup>64</sup> This approach helps “insure the integrity of the process of decision by precluding stubborn problems or serious criticism from being swept under the rug.”<sup>65</sup>

In this case, the DEIR fails to satisfy the basic purposes of CEQA. The DEIR’s conclusions regarding air quality, public health, odor and hazards impacts are not supported by substantial evidence. In preparing the DEIR, the City: (1) failed to provide sufficient information to inform the public and decision-makers about potential environmental impacts; (2) failed to accurately identify and adequately analyze all potentially significant environmental impacts; and (3) failed to incorporate adequate measures to mitigate environmental impacts to a less than significant level. The City must correct these shortcomings and recirculate a revised DEIR for public review and comment.

**A. The DEIR Underestimates Project Construction Emissions and Fails to Identify and Mitigate Significant Impacts on Air Quality from NO<sub>x</sub> and ROG Construction Emissions**

Project construction would result in engine exhaust emissions from on-site construction equipment, haul trucks and construction worker commuter vehicles. The DEIR concludes that impacts from Project construction-related engine exhaust emissions would be less than significant.<sup>66</sup> The DEIR’s conclusion is based on a comparison of *average daily* exhaust emissions estimates (in pounds per day) to the Bay Area Air Quality Management District’s (“BAAQMD”) quantitative daily

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<sup>63</sup> CEQA Guidelines, § 15126.4(a)(2).

<sup>64</sup> *Kings County Farm Bur. v. County of Hanford* (1990) 221 Cal.App.3d 692, 727-28 (a groundwater purchase agreement found to be inadequate mitigation because there was no record evidence that replacement water was available).

<sup>65</sup> *Concerned Citizens of Costa Mesa, Inc. v. 32nd Dist. Agricultural Assn.* (1986) 42 Cal.3d 929, 935.

<sup>66</sup> DEIR, p. 4.1-15.

significance thresholds recommended in its 2009 *Revised Draft Options and Justification Report*.<sup>67</sup> Dr. Pless reviewed the analysis and concludes that the DEIR “relies on an inappropriate methodology to arrive at the daily emission estimates it compares to the BAAQMD’s significance thresholds.”<sup>68</sup> In addition, Dr. Pless concludes that the DEIR substantially underestimates emissions from several sources during Project construction.

1. *The City’s Methodology Used to Determine Construction Emissions is Inconsistent with the BAAQMD’s Recommended Method and Underestimates Emissions*

The City’s methodology used to determine the Project’s construction emissions is flawed for two reasons. First, the BAAQMD recommends using the California Emissions Estimator Model (“CalEEMod”) to quantify construction emissions.<sup>69</sup> The City did not use CalEEMod to estimate construction emissions and provided no explanation for why it did not use the model.

Second, the City incorrectly based its analysis of construction emissions impacts on *average* daily emissions. The City calculated the total emissions for each criteria pollutant that would occur over the entire 25-week construction period and then divided these emissions by the number of days construction would occur (175 days) to arrive at *average* daily emissions. Dr. Pless explains that this methodology is inconsistent with the CalEEMod, which provides *maximum* daily emissions.<sup>70</sup>

According to the CalEEMod user guide:

Since construction phases may or may not overlap in time, the maximum daily construction emissions will not necessarily be the sum of all possible daily emissions. CalEEMod therefore calculates the *maximum daily emissions for each construction phase*. The program will then add together the maximum daily emissions for each construction phase that overlaps in time. Finally *the program will report the highest of these combined overlapping phases as a daily*

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<sup>67</sup> *Id.*

<sup>68</sup> **Attachment C:** Letter from Petra Pless to Rachael Koss re: Review of Draft Environmental Impact Report for Valero Benicia Crude by Rail Project, September 15, 2014 (“Pless Comments”), p. 4.

<sup>69</sup> *Id.* at p. 5.

<sup>70</sup> *Id.* at pp 6-7.

*maximum*. For fugitive dust calculations during grading, the maximum amount of acres graded in a day is determined by the number of grading equipment which is assumed to operate for 8 hours.<sup>71</sup>

Thus, the City's approach "substantially underestimates emissions on a short-term basis because it does not take into account that daily emissions during the various, potentially overlapping construction phases may vary considerably."<sup>72</sup>

Dr. Pless points out that "[t]he consequences of this 'averaging' approach become acutely apparent when considering ROG emissions from architectural coating or asphalt paving, which occur only for a few days or weeks."<sup>73</sup> Dr. Pless explains that "ROG and NOx emissions are precursors to ground-level ozone formation through a complex series of chemical reactions between these pollutants in the presence of sunlight" and "contributions to ozone formation from ROG precursors that occur on a short-term basis...are important to consider."<sup>74</sup> Therefore, for example, averaging ROG emissions from architectural coatings over the 175-day construction period "severely underestimates the Project's contribution to short-term ozone formation."<sup>75</sup>

In short, the City substantially underestimates the Project's construction emissions and the DEIR's conclusion that the Project's construction emissions would be less than significant is unsupported. The City must revise the DEIR to include an adequate analysis of the Project's construction emissions that is supported by substantial evidence.

## 2. *The DEIR Substantially Underestimates Construction Emissions from Several Sources*

In addition to the methodological errors described above, the DEIR substantially underestimates construction emissions from construction worker commuter vehicles, offsite vehicles and construction equipment.

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<sup>71</sup> *Id.* at p. 7, citing CAPCOA, California Emissions Estimator Model, User's Guide, Appendix A, Calculation Details for CalEEMod, revised July 2013, CalEEMod v.2013.2, *emphasis* added.

<sup>72</sup> Pless Comments, p. 7.

<sup>73</sup> *Id.* at p. 8.

<sup>74</sup> *Id.*

<sup>75</sup> *Id.*



a. Construction Worker Commuter Vehicles

The DEIR estimates the total construction workforce to be 121 construction workers per day for the 175-day construction period.<sup>76</sup> The DEIR assumes that construction workers would not carpool. This results in 242 one-way commuter trips per day and 42,350 one-way commuter trips for the 175-day construction period (not including off-site lunch trips).<sup>77</sup> Yet, the DEIR's emission estimates are based on 22,760 one-way commuter trips – nearly half the actual number of trips.<sup>78</sup>

Further, the DEIR assumes, without any support, that all construction workers would drive gasoline-powered passenger vehicles. Dr. Pless explains that construction workers often drive large pickup trucks, including light-duty to light-heavy-duty trucks, which have considerably higher fleet-average emissions factors than passenger vehicles.<sup>79</sup> In her comments, Dr. Pless provides a table of emission factors for passenger cars and light-duty to light-heavy trucks which shows the much greater emissions from trucks, particularly diesel-powered trucks.<sup>80</sup> Dr. Pless also provides a table which compares the DEIR's emission estimates for the Project's construction worker commuter vehicles (all gasoline-powered passenger cars) with a mix of vehicle classes. The table shows that had the DEIR based its analysis on the actual number of commuter trips per day (242) and a mixed vehicle fleet (rather than gasoline-powered passenger vehicles only), construction worker commuter vehicle emissions would result in NOx emissions that exceed the BAAQMD's 54 lbs/day threshold.<sup>81</sup> The DEIR fails to identify a significant air quality impact from construction worker commuter vehicle NOx emissions.

Moreover, according to Dr. Pless, NOx emissions from construction worker commuter vehicles would likely be even greater because the DEIR assumes a one-way trip distance of only 12.4 miles.<sup>82</sup> The 12.4 mile figure is based on URBEMIS default values for Solano County's urban home-work trip lengths for construction workers. Dr. Pless explains that the County average default trip lengths likely underestimate actual trip lengths for Project construction workers. The Project

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<sup>76</sup> DEIR, p. 3-25.

<sup>77</sup> Pless Comments, p. 9.

<sup>78</sup> *Id.*

<sup>79</sup> *Id.*

<sup>80</sup> *Id.* at p. 10.

<sup>81</sup> *Id.* at p. 11.

<sup>82</sup> *Id.* at p. 12.

requires a large number of highly skilled construction workers to operate the various specialized equipment such as cranes, track production tamper and track regulator. According to Dr. Pless, it is unlikely that a sufficiently skilled construction workforce would be available within an average 12.4-mile radius of the Project site.<sup>83</sup> Rather, the construction workforce may commute as much as 60 miles to the Project site.<sup>84</sup>

The DEIR significantly underestimates emissions from construction worker commuter vehicles and fails to identify significant impacts on air quality from NOx emissions.

b. Offsite Vehicles

The DEIR assumes a one-way trip distance of 7.3 miles for material delivery trucks based on URBEMIS default values for Solano County urban commercial-nonwork trip lengths for delivery trucks. According to Dr. Pless,

[t]hese county-average default trip lengths for *commercial* trips substantially underestimate actual trip lengths for delivery of materials required for Project construction, especially considering that large amounts of specialized materials are required – e.g., rail terminal components, rail tracks, pumps, etc. – that may have to be trucked in over long distances, potentially directly from California ports.<sup>85</sup>

Further, the DEIR's analysis fails to account for emissions associated with delivery of construction equipment to the Project site, most of which will be delivered on heavy-duty flatbed diesel trucks.<sup>86</sup>

The DEIR significantly underestimates emissions from off-site vehicles. The City must revise the DEIR accordingly.

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<sup>83</sup> *Id.*

<sup>84</sup> *Id.*

<sup>85</sup> *Id.*

<sup>86</sup> *Id.*

c. Construction Equipment

The DEIR assumes statewide fleet average emission factors obtained from the California Air Resource Board's OFFROAD2007 model for estimating emissions from construction equipment.<sup>87</sup> However, the DEIR does not require that Project construction equipment comply with these assumed emission factors. In Dr. Pless' opinion, Project construction equipment likely would not comply with the emission factors.<sup>88</sup>

Dr. Pless reports that studies of the average useful life of construction fleet equipment show that some engines in the equipment fleet may be quite old. According to Dr. Pless, the useful life of construction equipment (defined as the age at which *half* of the equipment of a given model year has been retired) varies from 10 to 32 years.<sup>89</sup> It follows that the other half of equipment of a given model year continues to operate longer than 10 to 32 years. For heavy-duty equipment, the average useful life is quite long – 29 years for crawler tractors and 26 years for scrapers, for example. Therefore, in Dr. Pless' opinion, "there is a good chance that some of the equipment, especially the heavy-duty equipment used at the site may be very old and have very high emissions ..."<sup>90</sup> Consequently, the DEIR substantially underestimates emissions from construction equipment.

Dr. Pless calculated pounds per hour emitted for each type of Project construction equipment. Dr. Pless provides a table of the approximate daily emissions. The table shows that Project construction equipment would result in daily NO<sub>x</sub> emissions of 68.2lbs/day, which greatly exceeds the BAAQMD's significance threshold of 54 lbs/day.<sup>91</sup> The DEIR fails to identify this significant air quality impact.

Dr. Pless recommends that the City revise the DEIR to include more conservative emission factors. In the alternative, Dr. Pless recommends that the City require that the Project construction equipment fleet comply with the DEIR's assumed emission factors.<sup>92</sup>

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<sup>87</sup> *Id.*

<sup>88</sup> *Id.* at pp 12-13.

<sup>89</sup> *Id.* at p. 13.

<sup>90</sup> *Id.* at pp. 13-14.

<sup>91</sup> *Id.* at p. 15.

<sup>92</sup> *Id.* at p. 14.

3. *The DEIR Must be Revised to Include Mitigation Measures to Reduce the Project's Significant Air Quality Impacts from Construction Emissions to a Less than Significant Level*

Substantial evidence shows that the DEIR substantially underestimates construction emissions and fails to identify significant air quality impacts from NO<sub>x</sub>, which is an ozone precursor. The City must prepare a revised DEIR that includes measures to mitigate the Project's significant air quality impacts from construction emissions to a less than significant level. In her comments, Dr. Pless provides an extensive list of feasible mitigation measures recommended by the BAAQMD for projects with significant construction emissions.<sup>93</sup> The City must incorporate these measures into a revised DEIR.

**B. The DEIR Fails to Address Cumulative Air Quality Impacts from Project Construction**

The DEIR concludes that Project construction would result in less than significant cumulative air quality impacts because "Project construction exhaust emissions would not exceed the BAAQMD regional mass emissions thresholds and Mitigation Measure 4.1-1 would be implemented to ensure that impacts associated with fugitive dust emissions would be reduced to a less-than-significant level."<sup>94</sup> The DEIR's conclusion is unsupported. As explained above, the DEIR substantially underestimates construction emissions and substantial evidence shows that Project construction emissions would result in exceedance of the BAAQMD's thresholds. Thus, the City must prepare a revised DEIR that adequately discloses, analyzes and mitigates the Project's potentially significant cumulative air quality impacts from Project construction.

**C. The DEIR's Air Quality Impact Analysis Based on Air District Jurisdictional Boundaries is Arbitrary and Fails to Adequately Address the Project's Air Quality Impacts During Project Operation**

The DEIR analyzes the Project's operational emissions separately for each of the three air basins that trains are assumed to travel (the San Francisco Bay Area Air Basin ("SFBAAB"), the Sacramento Valley Air Basin ("SVAB") and the

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<sup>93</sup> *Id.* at pp. 16-17.

<sup>94</sup> DEIR, p. 5.5.

Mountain Counties Air Basin (“MCAB”). These basins are served by four air pollution control districts (Yolo-Solano Air Quality Management District (“YSAQMD”), Sacramento Metropolitan Air Quality Management District (“SMAQMD”), Placer County Air Pollution Control District (“PCAPCD”) and the BAAQMD). The City’s approach is unsupported.

Dr. Pless explains:

it is well known that pollutants don’t stay put due to winds and other atmospheric phenomena. Pollutants generated in one air basin do not necessarily stay in that basin but rather are transported under certain weather conditions from one air basin to another (referred to as “interbasin transport”). Thus, pollutants generated in one basin contribute to air pollution in adjacent basins.<sup>95</sup> Interbasin transport among the three air basins that would be impacted by the Project is known to impact ozone and particulate matter concentrations in adjacent air basins...<sup>96</sup>

For example, technical studies show that the Mountain Counties Air Basin violates ozone standards due to transport from the Sacramento Valley, the San Joaquin Valley and the San Francisco Bay Area.<sup>97</sup> Also, air quality in the broader Sacramento area is impacted by transport from the San Francisco Bay Area and, while less frequent, from the San Joaquin Valley.<sup>98</sup> Further, on some days when the State standard is violated, the Sacramento area is impacted by transport of pollutants from the Bay Area.<sup>99</sup> Since the three air basins through which Project trains would pass exhibit interbasin pollutant transport, Dr. Pless states that the Project’s operational air quality impacts should be evaluated cumulatively.<sup>100</sup>

Dr. Pless aggregated daily emissions from the entire impacted area and provides the results in her comments. She concludes that:

both ROG and NOx emissions are highly significant for the entire affected area, covering the three impacted air basins and the four air districts that serve them on days when no marine vessels call. The daily ROG emissions

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<sup>96</sup> Pless Comments, p. 30.

<sup>97</sup> Pless Comments, p. 31.

<sup>98</sup> *Id.*

<sup>99</sup> *Id.*

<sup>100</sup> *Id.*

exceed the significance threshold of 54 lbs/day by a factor of almost two and the daily NOx emissions exceed the significance threshold of 54 lbs/day by a factor of almost nine.<sup>101</sup>

The DEIR fails to identify these significant air quality impacts from Project operation. The City must revise the DEIR accordingly.

**D. The City's Exclusive Reliance on the BAAQMD's Annual Significance Threshold is Inadequate and the DEIR Fails to Identify Significant Impacts on Air Quality in the SFBAAB**

Dr. Pless explains that the BAAQMD has two thresholds for assessing the significance of a project's operational emissions – (1) on a daily basis (in lbs/day) and (2) on an annual basis (in tons/year).<sup>102</sup> Further, the BAAQMD's CEQA Guidelines make clear that the BAAQMD's intent is that both daily and annual thresholds be used to determine the significance of a project's operational emissions.<sup>103</sup> The Guidelines state, when analyzing a project's unmitigated emissions, an agency should “[s]um the estimated emissions for area, mobile, and stationary sources (if any) for each pollutant as explained above and compare the *total average daily and annual emissions* of each criteria pollutant and their precursors with the thresholds of significance determined by the lead agency...”<sup>104</sup> For an analysis of a project's mitigated emissions, an agency should “[c]ompare the *total average daily and annual* amounts of mitigated criteria air pollutants and precursors with the project thresholds.<sup>105</sup> Despite this explicit guidance, the DEIR provides emission estimates only on an annual basis. Thus, the DEIR fails to identify the Project's significant short-term impacts from daily emissions.<sup>106</sup>

Dr. Pless calculated the Project's daily emissions from about 88 crude oil deliveries via marine vessel per year that the Valero marine terminal currently receives. Her comments detail her calculations. Based on her calculations, Dr. Pless concludes that the Project's “total ROG and NOx emissions on days without marine crude oil deliveries would by far exceed the BAAQMD's daily significance thresholds and would substantially worsen the air quality in the BAAQMD and in

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<sup>101</sup> *Id.* at p. 32.

<sup>102</sup> *Id.* at p. 28.

<sup>103</sup> *Id.*

<sup>104</sup> *Id.*, citing BAAQMD 2012 CEQA Guidelines, p. 4-3, *emphasis* added.

<sup>105</sup> *Id.*

<sup>106</sup> *Id.*

other air basins affected by transport.”<sup>107</sup> Dr. Pless points out that “[t]his is of particular concern during the ozone season as several affected areas within the three air basins are in nonattainment. The increase in ROG and NO<sub>x</sub>, ozone precursors, may result in or contribute to existing violations of the federal and state ozone ambient air quality standards.”<sup>108</sup> The DEIR completely fails to disclose, analyze or mitigate this significant impact. The DEIR must be revised.

**E. The DEIR Fails to Adequately Disclose, Analyze and Mitigate Significant Air Quality and Public Health Impacts from a Change in Crude Slate**

Dr. Fox commented on the MND that the North American crudes that would be imported by rail as a result of the Project would likely include Canadian tar sand crudes blended with diluent or “DilBits,” which would “have the potential to increase emissions compared to the current crude slate, which would result in potentially significant impacts not disclosed in the IS/MND.”<sup>109</sup> The North American crudes “may also include light sweet shale oil crudes, such as Bakken, which also have the potential to increase emissions, and result in significant environmental impacts, compared to the current crude slate.”<sup>110</sup> Dr. Fox explained in her comments on the MND that

[t]he pollutants in the diluents blended with these DilBit crudes and in the light sweet shale crudes include significant amounts of hazardous air pollutants, such as benzene, a potent carcinogen. These would be emitted at many fugitive components in the Refinery, including compressors, pumps, valves, fittings, and tanks, in greater amounts than from other crudes that are currently being refined or have otherwise been proposed. These increased emissions would result in significant air quality impacts not acknowledged in the IS/MND.<sup>111</sup>

In response to Dr. Fox’s comments, the DEIR states that the weight and sulfur content of crude processed at the refinery would remain within the same range of crude currently processed at the refinery and, therefore, the Project would

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<sup>107</sup> *Id.* at p. 29.

<sup>108</sup> *Id.*

<sup>109</sup> Fox Comments on MND, p. 1.

<sup>110</sup> *Id.*

<sup>111</sup> *Id.*

not cause significant impacts from a crude slate change.<sup>112</sup> The DEIR's argument is incorrect and unsupported.

Dr. Fox explains in her comments on the DEIR that there are differences in crudes unrelated to weight and sulfur content.<sup>113</sup> Specifically, “[e]ven if the weight and sulfur content of a particular crude blend fall within the range specified in the DEIR, or don’t change at all, other components in the crude, such as toxic air contaminants (“TACs”) like benzene, or highly malodorous compounds such as mercaptans, may be present at much higher concentrations than in the crudes they replace with identical sulfur and API gravity.”<sup>114</sup> In addition, characteristics such as vapor pressure and flammability may differ significantly between existing and replacement crudes.<sup>115</sup> In fact, the City’s own consultant pointed out that there is no relationship between vapor pressure and crude gravity.<sup>116</sup> Published data also shows that crude sulfur content and density are completely independent of vapor pressure.<sup>117</sup> This distinction is important because, as Dr. Fox explains, “vapor pressure of crude determines to a large extent the amount of ROG and TAC emissions that are emitted when it is transported, stored, and refined. Thus, a crude slate may have identical sulfur content and weight, but would result in dramatically different ROG and TAC emissions.”<sup>118</sup> Notably, Bakken crudes (the most likely replacement for the current Alaska North Slope crude and similar or heavier foreign imports) “have uniquely elevated vapor pressures compared to the light sweet crudes they would replace.”<sup>119</sup> In Dr. Fox’s opinion, the Project would result in an increase in ROG and TAC emissions by up to a factor of 2.5.<sup>120</sup>

Dr. Fox also explains that “the nature of the chemical bonds in crude determines the amount of energy and hydrogen that must be supplied to refine it.”<sup>121</sup> Therefore, even if a crude slate has identical sulfur and weight, it may have a different mix of chemicals that would affect the amount of energy and hydrogen necessary to refine it.

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<sup>112</sup> DEIR, Appendix C.1, p. C.1-3.

<sup>113</sup> Fox Comments, p. 4.

<sup>114</sup> *Id.*

<sup>115</sup> *Id.*

<sup>116</sup> DEIR, p. K-18.

<sup>117</sup> Fox Comments, p. 4.

<sup>118</sup> *Id.* at pp. 5, 11-12.

<sup>119</sup> *Id.* at pp. 13-14.

<sup>120</sup> *Id.* at p. 13.

<sup>121</sup> *Id.* at p. 5.



According to Dr. Fox, these chemical and physical differences (other than weight and sulfur content) “will result in significant impacts that have not been considered in the DEIR.”<sup>122</sup> These impacts may include, for example, significant increases in ROG emissions contributing to existing violations of ozone ambient air quality standards, significant increases in TAC emissions (and resulting significant health impacts), significant increases in malodorous sulfur compounds, significant increases in combustion emissions contributing to existing violations of ambient air quality standards, and significant increases in flammability and the potential for dangerous accidents involving train derailments and on-site spills.<sup>123</sup> Thus, the City’s argument that the Project would not cause significant impacts from a crude slate change because the weight and sulfur content of crude processed at the refinery would remain within the same range of crude currently processed at the refinery, is incorrect and unsupported.

The City’s argument is also incorrect and unsupported because it “ignores the possibility of gradual creep within that range that would still be significant.”<sup>124</sup> This “gradual creep” recently occurred at the Chevron Richmond Refinery. The Chevron refinery gradually changed crude slates while maintaining the “established crude unit design basis for total weight percent sulfur of the blended feed to the crude unit.”<sup>125</sup> Even so, the change increased corrosion rates which led to a catastrophic pipe failure, a fire, “huge black clouds of pollution over the surrounding community” and 15,000 people seeking medical treatment.<sup>126</sup> Dr. Fox explains that “[t]hese types of accidents can be reasonably expected to result from incorporating tar sands crude into the Benicia crude slate, even if the range of sulfur and gravity of the crudes remain the same, unless significant upgrades in metallurgy occur, as these crudes have a significant concentration of sulfur in the heavy components of the crude coupled with high TAN and high solids, which aggravate corrosion.”<sup>127</sup> The DEIR completely ignores catastrophic releases of air pollution from these types of accidents.

The DEIR fails to adequately disclose and analyze the Project’s potentially significant impacts from a crude slate change. The DEIR must be revised to

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<sup>122</sup> *Id.*

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

<sup>125</sup> *Id.*

<sup>126</sup> *Id.*

<sup>127</sup> *Id.*

evaluate the reasonably foreseeable impacts from importing both light sweet crude (including Bakken) and heavy sour crude (including tar sands).

**F. The DEIR Fails to Adequately Disclose and Analyze Potentially Significant Air Quality, Public Health and Hazards Impacts Unique to Importing Bakken Crudes**

The Project will allow light sweet crudes, such as Bakken, to be imported to the refinery. According to the DEIR, “[o]nce the Project is constructed and operational, Valero may well purchase large amounts of light sweet North American crudes. In fact, this is Valero’s stated plan.”<sup>128</sup> The DEIR also states that “[o]nce the Project is complete, Valero plans to obtain North American crudes that are, on average, lighter and sweeter than Valero’s current feedstocks. According to Valero, the North American crudes will be ‘Alaskan North Slope (ANS) look-alikes or sweeter’ (Valero, 2013).”<sup>129</sup> Dr. Fox provides that “[t]he closest and most cost advantaged of light sweet North American crudes listed in Table 3-1 that could be blended to be an ANS look-alike is Bakken crude.”<sup>130</sup>

Dr. Fox explains that Bakken crudes:

have unique chemical and physical characteristics that distinguish them from currently refined crudes and which 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.<sup>131</sup>

According to Dr. Fox, “Bakken crude oils are the most volatile of the crudes listed in DEIR Table 3-1.”<sup>132</sup> Further, “[t]he more volatile the crude, the higher the ROG, TACs, and methane (a potent greenhouse gas) emissions, the higher the flammability, and the greater the potential consequences in the event of an accident.”<sup>133</sup> Dr. Fox explains that Bakken crudes typically contain large amounts of natural gas liquids, including C2 and C5 hydrocarbons (methane, propane,

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<sup>128</sup> DEIR, p. C.201.

<sup>129</sup> *Id.* at p. 3-24.

<sup>130</sup> Fox Comments, p.11.

<sup>131</sup> *Id.* at p. 14.

<sup>132</sup> *Id.*

<sup>133</sup> *Id.*

butane, ethane and pentane), which are the components most likely to volatilize, burn or explode in an accident.<sup>134</sup>

In addition, when Bakken crudes are blended with heavy crudes to meet crude slate requirements, refinery operating issues often occur, which increases emissions.<sup>135</sup> These include “fouling of the cold preheat train; desalter upsets; and fouling of hot preheater exchangers and furnaces; as well as corrosion.”<sup>136</sup> As a result, emissions increase.<sup>137</sup> The DEIR fails to disclose and analyze these operating problems and resultant emission increases that substantial evidence shows may occur from the Project.

The DEIR fails to disclose and analyze potentially significant air quality, public health and hazards impacts from importing Bakken crudes. The City must revise the DEIR accordingly and circulate it for public review and comment.

**G. The DEIR Substantially Underestimates ROG Emissions; the Project Would Result in a Significant Impact from ROG Emissions**

The DEIR concludes that the Project would result in a net *decrease* in ROG emissions by 1.61 tons/yr.<sup>138</sup> In Dr. Fox’s opinion, the DEIR excludes many sources of ROG emissions from the Project and underestimates ROG emissions.<sup>139</sup> Dr. Fox concludes, when all ROG emissions are properly considered, the Project would result in a significant air quality impact.<sup>140</sup>

1. *The DEIR Incorrectly Assumes that the Project Would Reduce ROG Emissions from Marine Vessels*

The DEIR states that crude brought to the refinery by rail would replace crude brought by marine vessels, but crude by rail would not replace crude delivered by pipeline.<sup>141</sup> The DEIR assumes that marine vessel emissions would be

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<sup>134</sup> *Id.* at p. 16.

<sup>135</sup> *Id.* at p. 17.

<sup>136</sup> *Id.*

<sup>137</sup> *Id.*

<sup>138</sup> DEIR, Table 4.1-5.

<sup>139</sup> Fox Comments, p. 19.

<sup>140</sup> *Id.*

<sup>141</sup> DEIR, p. ES-3, 1-1.

reduced by 5.18 ton/yr by eliminating 73 vessel trips.<sup>142</sup> However, Dr. Fox explains that production of the crude brought by pipeline, San Joaquin Valley crude, is declining and, therefore, marine vessel trips may not be reduced.<sup>143</sup>

The City is aware of this – its consultant, ESA, expressed concern that ship deliveries could increase in the future to replace diminishing supplies of crude oil available by pipeline.<sup>144</sup> Further, according to the BAAQMD Statement of Basis for the VIP, “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.”<sup>145</sup> Thus, it is possible that crude brought by pipeline would be replaced by crude shipped by marine vessels, and the Project would not decrease marine deliveries to the extent the DEIR claims.

Dr. Pless agrees with Dr. Fox and also points out that the VIP substantially increased the crude processing capacity of the refinery.<sup>146</sup> The refinery is currently processing crude oil at approximately 65% capacity and, therefore, the refinery will be able to substantially increase crude oil processing in the future.<sup>147</sup> Dr. Pless notes that, according to the 2008 VIP addendum, the increase may result in an additional 60 more ships per year to obtain sufficient crude feedstocks.<sup>148</sup> Thus, it is likely that the delivery of crude by rail would not reduce marine vessel imports.

## 2. *The DEIR Omits ROG and TAC Emissions from Storage Tanks*

The DEIR fails to adequately quantify emissions from the tanks that would store the crude oil delivered by rail. The emissions from floating-roof tanks include: (1) tank breathing losses (rim seal losses, withdrawal losses, deck fitting losses and deck seam losses) and (2) roof landing, degassing and cleaning losses.

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<sup>142</sup> *Id.* at p. 4.1-16.

<sup>143</sup> Fox Comments, p. 20.

<sup>144</sup> *Id.*, citing Valero Responses to: Valero Crude by Rail Project Data Request Number 2, April 2, 2013.

<sup>145</sup> *Id.*, citing

[http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2626/B2626\\_2010-05\\_renewal\\_03.ashx?la=en](http://www.baaqmd.gov/~media/Files/Engineering/Title%20V%20Permits/B2626/B2626_2010-05_renewal_03.ashx?la=en).

<sup>146</sup> Pless Comments, p. 19.

<sup>147</sup> *Id.* at p. 21.

<sup>148</sup> *Id.*

a. Tank Breathing Losses

According to the DEIR, the crude from each tank car will be pumped into existing storage tanks in the Refinery's crude oil storage tank field.<sup>149</sup> The DEIR states that the Project would not cause any emissions increases from storage tanks because "the Refinery stores crude oil delivered by ship and pipeline in eight existing storage tanks numbered 1701 through 1708. Crude oil delivered by rail would be stored in the same tanks. The tanks would not be modified, and would continue to be subject to the same throughput limit and other permit conditions."<sup>150</sup>

Dr. Fox explains that the ROG and TAC emissions from the tanks *will* increase because the imported crude will have a higher vapor pressure than current crudes stored in the tanks (ROG and TAC emissions depend on vapor pressure and TAC speciation of the crude).<sup>151</sup> The DEIR completely fails to disclose these emissions increases.

In her comments, Dr. Fox calculates the estimated increase in ROG emissions from tank breathing losses using both Alaska North Slope crude and San Joaquin Valley crude for baseline ROG emissions.<sup>152</sup> Dr. Fox concludes that the "[t]he resulting daily net increase in ROG emissions for a San Joaquin Valley crude baseline, but otherwise assuming all of the CBR Project DEIR's emissions, is 66 lb/day...This increase in emissions is significant, as it exceeds the BAAQMD CEQA significance threshold of 54 lb/day. This is a significant impact that was not disclosed in the DEIR."<sup>153</sup>

To mitigate the Project's significant impact from increase ROG emissions, Dr. Fox recommends feasible mitigation measures, such as the use of zero-leak fugitive components; use of geodesic domes on external floating roof tanks, which are commonly used on tanks that store RVP 11 crude oils; cable-suspended, full-contact floating roofs; and the use geodesic domes on the existing fixed roof tanks."<sup>154</sup>

Dr. Fox also explains that an increase in TAC emissions would also occur, "which are estimated by multiplying the ROG emission increase by the weight

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<sup>149</sup> DEIR, p. 3-20.

<sup>150</sup> *Id.* at p. 4.1-17.

<sup>151</sup> Fox Comments, p. 21.

<sup>152</sup> *Id.* at pp. 22-23.

<sup>153</sup> *Id.* at p. 23 (internal citation omitted).

<sup>154</sup> *Id.* at p. 24.

percent of each TAC in the ROG emissions (i.e., the TAC speciation profile).<sup>155</sup> The DEIR fails to include TAC emissions from storage tanks in the health risk assessment.

b. Roof Landing, Degassing and Cleaning Losses

Dr. Fox also concludes that the Project would result in increased ROG and TAC emissions from roof landing losses, inspection losses and flashing losses, which were not disclosed or analyzed in the DEIR.

Dr. Fox explains that the Project involves seven existing external floating roof tanks which are supported by legs. When the roof floats on the surface of the liquid inside the tank, evaporative losses during normal operations are reduced. When the tank is emptied, the roof sits on the legs, a breather vent opens and evaporative losses occur (“roof landing losses”).<sup>156</sup>

In addition, “degassing and cleaning losses” occur when tanks are drained and degassed for inspection and/or cleaning. These include roof landing emissions, complete tank degassing and emissions from cleaning out accumulated sludge. These emissions are uncontrolled tank emissions.<sup>157</sup> According to Dr. Fox, degassing, cleaning and roof landing losses continue until the tank is refilled to a sufficient level to again float the tank roof.<sup>158</sup>

In Dr. Fox’s opinion, the tank cleaning emissions could be substantially higher for Bakken crudes than for other types of crude because Bakken crudes leave waxy deposits in pipelines and tanks, which require more frequent cleaning. This would result in higher emissions than the crudes they would replace.<sup>159</sup>

To reduce emissions from degassing, cleaning and roof landing losses, Dr. Fox recommends that the City require the Applicant to install geodesic domes on the tanks that would store rail-imported crudes.<sup>160</sup> This is a feasible measure that has been used on more than 10,000 petrochemical storage tanks in the United States.<sup>161</sup>

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<sup>155</sup> *Id.*

<sup>156</sup> *Id.* at pp. 24-25.

<sup>157</sup> *Id.* at p. 25.

<sup>158</sup> *Id.* at p. 26.

<sup>159</sup> *Id.* at p. 25.

<sup>160</sup> *Id.* at p. 26.

<sup>161</sup> *Id.*

According to the ExxonMobil Torrance Refinery “[b]y installing domes on our storage tanks, we’ve reduced our VOC emissions from these tanks by 80 percent. These domes, installed on tanks that are used to store gasoline and other similar petroleum-derived materials, help reduce VOC emissions by blocking much of the wind that constantly flows across the tank roofs, thus decreasing evaporation from these tanks.”<sup>162</sup>

c. Tank Flashing Emissions

Dr. Fox explains that most Bakken crudes are transported without stabilization. Unstabilized or “live” crude oils contain high concentrations of volatile materials. Tank flashing emissions occur when these crude oils, such as Bakken, are exposed to temperature increases or pressure drops. When this occurs, some of the compounds that are liquids at the initial pressure/temperature transform into gases and are released or “flashed” from the liquid.<sup>163</sup> There is no evidence that only stabilized crude oils would be shipped by rail to the refinery, yet the DEIR completely fails to disclose or analyze tank flashing emissions.

d. Water Draw Tank Emissions

Dr. Fox explains that crude typically contains small amounts of water, which separates from the crude oil and accumulates in the bottom of storage tanks. This accumulated water, referred to as “water draw,” is usually transferred from the crude oil storage tanks into a smaller surge tank for processing prior to disposal. Over time, a thick layer of crude oil forms in the water draw surge tank. As a result, the water draw surge tank and processing of wastewaters from it emit ROG and TACs.<sup>164</sup> These emissions “would increase as the vapor pressure of the stored crude increases, i.e., as from a switch from San Joaquin Valley to Bakken crude.”<sup>165</sup> The DEIR completely fails to disclose or analyze water draw tank emissions.

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<sup>162</sup> *Id.*, citing 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](http://www.exxonmobil.com/NA-English/Files/About_Where_Ref_TorranceReport.pdf).

<sup>163</sup> *Id.* at p. 27.

<sup>164</sup> *Id.* at p. 28.

<sup>165</sup> *Id.*

3. *The DEIR Fails to Disclose or Analyze 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.<sup>166</sup> EIRs for similar facilities, such as the proposed Phillips 66 crude by rail project in Santa Maria, report unloading emissions. Here, the DEIR fails to disclose any emissions from the unloading process.<sup>167</sup>

Dr. Fox explains that a typical rail car unloading system, as described in the Santa Maria Rail EIR, consists of an adapter unit that connects the rail car to couplings, hoses, valves and piping that connect to a positive displacement pump. Air and crude oil vapors are commonly mixed in with crude oil from loading and evaporation during transit. According to Dr. Fox, “[t]hese vapors can present an explosion risk for downstream equipment and are typically removed with air eliminators.”<sup>168</sup> Also, because “the vapors contain high concentrations of ROG and TACs, they are typically routed to carbon columns or an incinerator to control the emissions.”<sup>169</sup>

The DEIR completely fails to describe these vapors or explain how they will be controlled. The DEIR merely notes that “the BAAQMD will consider locomotive emissions and tank car unloading emissions as may be caused by the Project.”<sup>170</sup> This statement does not satisfy CEQA’s requirement that potentially significant impacts from hazards and increased air emissions be disclosed, analyzed and mitigated in an EIR. The City must revise the DEIR to include an analysis of potentially significant impacts from the Project’s unloading emissions.

4. *The DEIR Fails to Disclose or Analyze Sump Emissions*

The DEIR states that the unloading facility includes a liquid spill containment sump with the capacity to contain the contents of at least one tank car.<sup>171</sup> According to Dr, Fox, crude oil that spills into this sump would release

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<sup>166</sup> DEIR, p. ES-3.

<sup>167</sup> Fox Comments, p. 28.

<sup>168</sup> *Id.* at p. 29.

<sup>169</sup> *Id.*

<sup>170</sup> DEIR, p. 3-2.

<sup>171</sup> *Id.* at p. ES-2.



vapors including ROG and TAC emissions.<sup>172</sup> The DEIR completely fails to disclose these emissions. The City must revise the DEIR accordingly.

5. *The DEIR Fails to Disclose or Analyze Rail Car Fugitive Emissions*

According to Dr. Fox, because rail cars are not “vapor tight,” rail cars will emit ROG and TACs from their point of origin through unloading.<sup>173</sup> The emissions of ROG and TACs from rail cars has been confirmed by field measurements.<sup>174</sup> The emissions of ROG and TACs from rail cars has been confirmed by field measurements.<sup>175</sup> Yet, the DEIR completely fails to include these emissions in its emission calculations and the health risk assessment.

In her comments, Dr. Fox describes how these vapors will be emitted:

The crude oil would be shipped in tank cars, such that the volume of loaded crude oil shipped is less than the capacity of the rail car to accommodate expansion during shipping. This volume reduction creates free space at the top of the tank car, which provides space for entrained gases to be released from the crude oil and emitted to the atmosphere during transit and idling in rail yards. As rail cars are not vapor tight, these vapors in the head space above the oil are emitted to the atmosphere during rail transport and at the unloading terminal.<sup>176</sup>

Dr. Fox also explains that because most Bakken crudes are shipped “live” (as discussed earlier), “[t]hese crudes will flash in the tank cars when exposed to temperature increases or pressure drops, causing valves to open, emitting ROG and TACs.”<sup>177</sup>

These losses are consistent with what is known as “crude shrinkage” – the crude delivered by rail is significantly less than the crude loaded on the rail.<sup>178</sup> The

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<sup>172</sup> Fox Comments, p. 29.

<sup>173</sup> *Id.*

<sup>174</sup> *Id.* at p. 30.

<sup>175</sup> *Id.*

<sup>176</sup> *Id.* at pp. 29-30.

<sup>177</sup> *Id.* at p. 30.

<sup>178</sup> *Id.*

reported range in crude shrinkage is 0.5% to 3%, some of which is attributable to emissions from the rail car during transit.<sup>179</sup>

Dr. Fox's comments includes a calculation and estimate of the Project's rail car fugitive emissions released in California. Dr. Fox concludes that:

a total of 53 ton/day of ROG can be emitted as the trains traverse the 1500 miles between the shipping point and the Valero rail terminal. Of these 1500 miles, 263 miles are within California. Thus, 9.3 ton/day of ROG (18,600 lb/day) can be emitted within California from rail car leakage. Of the 263 miles within California, 22 miles are within the boundary of the BAAQMD. Thus, 0.8 ton/day (1,555 lb/day) of ROG emissions can be emitted within the BAAQMD. *These daily emissions greatly exceed the BAAQMD daily CEQA significance threshold for ROG of 54 lb/day, requiring mitigation.*<sup>180</sup>

Dr. Fox goes on to explain that these ROG emissions contain the same chemicals found in crude oil, including benzene. Some crudes contain up to 7% benzene by weight. Therefore, according to Dr. Fox, "greater than 1,301 lb/day of benzene could be emitted in California and greater than 109 lb/day of benzene 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 HRA."<sup>181</sup> These emissions greatly exceed the ROG (and HRA) significance thresholds of the BAAQMD and other air districts along the rail route.<sup>182</sup> These are significant impacts that were not disclosed or analyzed in the DEIR. The City must prepare a revised DEIR that discloses, analyzes and mitigates emissions from rail car leakage.

#### **H. The DEIR Fails to Require Mitigation to Reduce Significant Operational Air Quality Impacts from NO<sub>x</sub> and ROG Emissions**

The DEIR concludes that the increase in NO<sub>x</sub> emissions from locomotives passing through the YSAQMD (annual) and the SMAQMD (daily) were significant.<sup>183</sup> Despite this, the DEIR fails to mitigate these significant impacts, arguing that the City has no jurisdiction to impose emission controls on locomotives.

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<sup>179</sup> *Id.*

<sup>180</sup> *Id.* at p. 31 (*emphasis* added and internal citations omitted).

<sup>181</sup> *Id.*

<sup>182</sup> *Id.*; see also DEIR, pp. 4.1-17 -18.

<sup>183</sup> DEIR, Table 4.1-6.

Instead, the DEIR concludes that these impacts are “significant and unavoidable.”<sup>184</sup>

Dr. Pless explains that the City actually has at least three options to mitigate the significant ROG and NO<sub>x</sub> emissions. First, it can deny the Project. Second, it can require that the Applicant install ROG and NO<sub>x</sub> controls at the refinery. Third, it can require the Applicant to enter into Voluntary Emission Reduction Agreements (“VERAs”) with air districts in adjacent air basins affected by ozone transport.<sup>185</sup>

Dr. Pless goes on to show that most of the area affected by the trains currently violate California’s 8-hour ozone ambient air quality standard and most of the population in the affected air basins currently live in areas that also violate the federal 8-hour ozone ambient air quality standard.<sup>186</sup> Further, both ROG and NO<sub>x</sub> are converted into ozone in the atmosphere. Therefore, “the increase in Project emissions from trains and refinery sources (tanks, fugitive, leaking rail cars) will increase ozone concentrations, aggravating existing exceedances of ozone standards, set to protect public health.”<sup>187</sup> The short-term increase in emissions is up to three times higher than the daily ROG significance threshold and up to nine times higher than the daily NO<sub>x</sub> significance threshold.<sup>188</sup> According to Dr. Pless,

these short-term increases are highly significant as the State and Federal ozone standards are based on 8-hour averages, set to protect public health. Exceedances translate directly into adverse health impacts in the affected population. Further, these unmitigated increases will interfere with the affected air basins’ ability to comply with State Implementation Plans, designed to bring the basins into compliance with standards. These are serious impacts with serious consequences that should result in denial of the Project if these impacts are not mitigated.<sup>189</sup>

Dr. Pless explains, however, that ROG and NO<sub>x</sub> emission increases can be mitigated by reducing emissions from the refinery. According to Dr. Pless, the control of NO<sub>x</sub> and ROG at the refinery would mitigate significant impacts from

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<sup>184</sup> *Id.* at p. 4.1-20.

<sup>185</sup> Pless Comments, p. 33.

<sup>186</sup> *Id.* at pp. 33-34.

<sup>187</sup> *Id.* at p. 35.

<sup>188</sup> *Id.*

<sup>189</sup> *Id.*

locomotives in adjacent air districts since ozone precursors generated in one air basin form ozone in other adjacent basins.<sup>190</sup> Dr. Pless recommends installing updated low NO<sub>x</sub> burners and/or Selective Catalytic Reduction (“SCR”) on one or more currently uncontrolled combustion sources at the refinery to reduce NO<sub>x</sub> emissions.<sup>191</sup> Dr. Pless explains that “[t]he combination of low-NO<sub>x</sub> burner technology and SCR has been demonstrated to achieve very low emissions of NO<sub>x</sub> in refinery applications.”<sup>192</sup> For ROG emissions, Dr. Pless recommends the installation of state-of-the-art leadless or low-leak fugitive components (such as valves, pumps, connectors) throughout the refinery.<sup>193</sup> In addition, Refinery emissions both ROG and NO<sub>x</sub> emissions can be reduced by dock electrification of the marine terminal. This measure was recently recommended by the BAAQMD for proposed WesPac Pittsburg Energy Infrastructure Project.<sup>194</sup>

Finally, ROG and NO<sub>x</sub> emissions can be reduced by requiring the Applicant to enter into VERAs with the affected air districts. Dr. Pless explains that this offsite mitigation was required, for example, for the Hydrogen Energy California Project, a proposed power generation and fertilizer production facility in the San Joaquin Valley. In that case, the project proponent entered into a VERA with the San Joaquin Valley Air Pollution Control District (“SJVAPCD”) for about \$1.2 million to mitigate 16.7 tons/year of NO<sub>x</sub> emissions.<sup>195</sup> The funding provided under the VERA was required by the SJVAPCD to satisfy CEQA mitigation requirements and will support the SJVAPCD’s Emission Reduction Incentive Program.<sup>196</sup> A similar requirement could be developed with assistance from the air districts to address emission reductions from mobile and/or stationary pollution sources in the affected air basins.

There is no support for the City’s conclusion that the Project’s impacts from ROG and NO<sub>x</sub> emissions from locomotives are significant and unavoidable. Substantial evidence shows that the City has at least three options to mitigate the significant ROG and NO<sub>x</sub> emissions.

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<sup>190</sup> *Id.* at p. 36.

<sup>191</sup> *Id.*

<sup>192</sup> *Id.*

<sup>193</sup> *Id.* at p. 37.

<sup>194</sup> *Id.*

<sup>195</sup> *Id.* at p. 38.

<sup>196</sup> *Id.*

**I. The DEIR and Health Risk Assessment Fail to Disclose Crucial Information Regarding TAC Emissions and Substantially Underestimate TAC Emissions**

In her comments, Dr. Fox explains that Health Risk Assessments (“HRA”) typically contain tables that summarize the amount of each TAC and the corresponding cancer, chronic and acute health risk from each. Supporting TAC emission calculations are usually presented in an appendix and the modelling files are attached separately. Here, the HRA fails to include most of this information, and the supporting emission calculations are incomplete and scattered throughout several appendices with no explanation for how it all fits together.<sup>197</sup> Without supporting emissions calculations, the DEIR concludes that the Project would not result in significant health impacts from TAC emissions.<sup>198</sup> The DEIR fails to satisfy CEQA’s disclosure requirements. Further, Dr. Fox’s and Dr. Pless’ analyses show that the City underestimated TAC emissions and provide substantial evidence that the Project would cause significant health impacts from TAC emissions.

First, as an initial matter, the HRA only includes diesel particulate matter and PM<sub>2.5</sub> emissions from locomotives and TAC emissions from fugitive sources. The HRA excludes TAC emissions from all other sources (storage tanks, idling rail cars, etc.), as discussed above.

Second, the HRA underestimates TAC emissions from fugitive sources.<sup>199</sup> The DEIR states that the unloaded crude oil will be transported from the unloading rack to existing crude supply piping in a 4,000-foot-long pipeline.<sup>200</sup> The connecting system includes 3 pumps, 521 valves, 940 flanges, 295 connectors and 6 pressure relief valves (plus a 15% contingency for valves, flanges and connectors).<sup>201</sup> According to Dr. Fox, crude oil vapors will be emitted from all of these components.<sup>202</sup> The DEIR estimates TAC emissions from these components using a hypothetical, default speciation profile for crude oil,<sup>203</sup> which identifies each chemical in the liquid and its concentration. However, Dr. Fox explains that the default speciation profile used is not representative of the crude oil that could be

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<sup>197</sup> Fox Comments at p. 31.

<sup>198</sup> DEIR, p. 4.1-25.

<sup>199</sup> Fox Comments, p. 32.

<sup>200</sup> DEIR, p. 1-2.

<sup>201</sup> *Id.*, Appendix. E.4-1.

<sup>202</sup> Fox Comments, p. 32.

<sup>203</sup> DEIR, Appendix. E.4-1.

imported as a result of the Project.<sup>204</sup> Material Safety Data Sheets submitted for other projects to import cost-advantaged North American crudes show that much higher concentrations of TACs could be present in the crude oils unloaded as a result of this Project.<sup>205</sup> Further, the City provides no support for use of the hypothetical speciation profile to evaluate the Project's health impacts. Dr. Fox concludes that "the HRA significantly underestimated all of the organic TACs included in the HRA."<sup>206</sup> Specifically, the HRA underestimates the amount of benzene, ethyl benzene, hexane, toluene and xylenes in emissions by factors of 5 to 28.<sup>207</sup> In addition, actual TAC emissions would be substantially more because the DEIR excludes most of the sources of ROG emissions that would contribute TACs.<sup>208</sup> According to Dr. Fox, "[t]he increase in benzene alone is large enough to increase the cancer risk at the maximum exposed individual worker [ ] over the BAAQMD Regulation 2-5 significance threshold of 1 in one million."<sup>209</sup>

Third, the DEIR and HRA rely on an outdated model (the Industrial Source Complex Short Term Version 3 model). Dr. Pless consulted three air dispersion modeling experts regarding the analysis in the DEIR and HRA. According to these experts, the most current and preferred model is AERMOD because "there is more confidence in the accuracy of AERMOD results."<sup>210</sup> AERMOD is recommended by the BAAQMD and the California Air Resources Board.<sup>211</sup>

Fourth, Dr. Pless points out that the DEIR relies on outdated meteorological data for conduction air dispersion modeling.<sup>212</sup> The U.S. Environmental Protection Agency recommends using the most recent five years of data, which would be 2009 through 2013 for the Project. According to Dr. Pless, datasets for 2009 through 2013 are available from air districts. Yet, the DEIR relies on data from 1985 through 1985 and 2000 through 2005, depending on the geographic location.<sup>213</sup> None of the data sets comply with the U.S. EPA's guidance.

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<sup>204</sup> Fox Comments, p. 32.

<sup>205</sup> *Id.*

<sup>206</sup> *Id.*

<sup>207</sup> *Id.* at p. 33.

<sup>208</sup> *Id.*

<sup>209</sup> *Id.*

<sup>210</sup> Pless Comments, p. 40.

<sup>211</sup> *Id.*

<sup>212</sup> *Id.*

<sup>213</sup> *Id.* at pp. 40-41.

Fifth, Dr. Pless explains that the DEIR and HRA apply the wrong dispersion coefficient for the Fairfield risk assessment. The DEIR and HRA specify the dispersion coefficient as “rural,” but according to Dr. Pless, the area should be classified as “urban.”<sup>214</sup> This error results in an underestimate of TAC emissions.

Sixth, Dr. Pless points out that the HRA fails to account for rail emission impacts beyond the Roseville Yard to the east. While the DEIR provides a health risk assessment for locomotive diesel particulate matter emissions for receptors near the Roseville Yard, the DEIR dismisses analyzing potential impacts beyond the Roseville Yard. The DEIR states, without support, that impacts beyond the Roseville Yard are “indirect and difficult to predict given the speculative nature of the exact rail routes that would be used to transport the crude oil.”<sup>215</sup> Dr. Pless explains that there are a limited number of routes from the Canadian tar sands fields and the Bakken oil fields to the Roseville Yard. These include the Modoc Line route over Donner Pass in eastern Placer County past the City of Truckee to Reno and the Feather River Corridor via Winnemucca to Reno.<sup>216</sup> The route to Canada would likely go along the I-5 corridor.<sup>217</sup> Dr. Pless provides that the communities along the Sierra Nevada routes “are subject to the highest emissions of carcinogenic diesel particulate matter emissions due to the locomotives operating at maximum load while navigating the switch-backs up and down the steep slopes of the Sierra Nevada.”<sup>218</sup> Thus, the City must prepare a health risk assessment for communities along these routes.

Seventh, the DEIR and HRA are inadequate because they fail to assess TAC emissions during Project construction. The DEIR states:

Construction of the Project would generate diesel particulate matter (DPM), which is considered to be a TAC, from the use of diesel off-road equipment. For short-term construction emissions, the BAAQMD recommends that construction health risks be evaluated if there are sensitive receptors located within 1,000 feet of the construction site. project-related construction sources would be temporary (i.e., 25 weeks) and would be over 2,000 feet from the nearest sensitive land uses, which are residences off Lansing Circle.

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<sup>214</sup> *Id.* at p. 41.

<sup>215</sup> DEIR, p. 4.1-12.

<sup>216</sup> Pless Comments, p. 43.

<sup>217</sup> *Id.*

<sup>218</sup> *Id.* at p. 44.

Therefore, Project construction would not result in a significant health risk.<sup>219</sup>

The DEIR is incorrect. According to Dr. Pless, “the 1,000 foot radius is intended only for identifying existing sources within and around a project property boundary, not as a zone within which health risk assessments must be performed...”<sup>220</sup> Rather, to determine the health risks of new sources, the BAAQMD recommends “the nearest receptor (resident) regardless of distance” and “[f]or assessing the project alone impacts of a new source...the location of maximum risk, hazard, and PM2.5 concentration affecting a receptor should be identified.”<sup>221</sup> Thus, modeling of Project construction TAC emissions must be performed to determine health risks for the nearest receptor regardless of distance. Dr. Pless provides evidence that clouds of soot from construction equipment can travel long distances and can have a staggering effect on public health, including respiratory and cardiovascular disease.<sup>222</sup>

Finally, the DEIR and HRA fail to adequately evaluate the Project’s cumulative health risks from TAC emissions. The DEIR states that “Project construction exhaust emissions would not exceed the BAAQMD regional mass emissions thresholds” and, therefore, “construction of the Project facilities would not be considered to make a cumulatively considerable contribution to regional air quality impacts. The cumulative impact would be reduced to a level that would be less than significant.”<sup>223</sup> Dr. Pless explains that the DEIR’s conclusion is flawed and unsupported for three reasons. First, as shown above, the Project’s construction emissions are substantially underestimated and when revised, may exceed the BAAQMD’s significance thresholds. Second, even if diesel particulate matter emissions do not exceed the BAAQMD’s quantitative mass significance threshold for PM2.5 for exhaust emissions, health risks may still be significant because the BAAQMD’s emission thresholds for PM2.5 were developed to bring the region into attainment with the ambient air quality standards, not to address risks from diesel exhaust.<sup>224</sup> The BAAQMD developed separate thresholds for risks and hazards that apply to both construction and operation. Third, health risks from

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<sup>219</sup> DEIR, p. 4.1-24.

<sup>220</sup> Pless Comments, p. 45.

<sup>221</sup> *Id.*, citing BAAQMD, Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 2.0, May 2011.

<sup>222</sup> *Id.*, pp. 46-48.

<sup>223</sup> DEIR, p. 5-5.

<sup>224</sup> Pless Comments, p. 49.



Project construction emissions may be cumulatively considerable even if they are not significant on an individual project basis.<sup>225</sup> Thus, the DEIR's conclusion is unsupported.

The DEIR is equally flawed for cumulative health risks from operational TAC emissions. The DEIR concludes that the cumulative health risk and cumulative concentrations of PM<sub>2.5</sub> near the refinery would be below the BAAQMD's respective cumulative significance thresholds and, therefore, the Project would not result in a cumulatively considerable impact.<sup>226</sup> Dr. Pless explains that the DEIR's conclusion is flawed and unsupported for three reasons. First, the DEIR fails to address chronic health hazards.<sup>227</sup> Second, the DEIR fails to include all of the cumulative projects in the analysis, including, for example, the Valero Cogeneration Project and the dredging project at Valero's crude dock.<sup>228</sup> Third, the DEIR is inconsistent with the BAAQMD's guidance regarding cumulative health risk assessments, which recommends a 1,000 foot radius around the project property boundary to identify sources that may contribute to the cumulative impact.<sup>229</sup> Dr. Pless identifies several sources within a 1,000 foot radius of the Project boundary that the DEIR fails to include in its cumulative impact analysis, including, for example, the Valero asphalt plant immediately adjacent to the refinery.<sup>230</sup>

In short, the DEIR and HRA fail to adequately analyze the Project's impacts from TAC emissions. There is no support for the City's conclusion that the Project would result in less-than-significant health impacts from TAC emissions. Substantial evidence shows that the Project would cause significant health impacts from TAC emissions. The City must prepare a revised DEIR that adequately discloses, analyzes and mitigates these impacts.

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<sup>225</sup> *Id.* at p. 50.

<sup>226</sup> DEIR, p. 5-13.

<sup>227</sup> Pless Comments, p. 50.

<sup>228</sup> *Id.* at pp. 50-51.

<sup>229</sup> *Id.* at p. 51.

<sup>230</sup> *Id.*

**J. The DEIR Fails to Adequately Disclose, Analyze and Mitigate the Project's Odor Impacts**

The DEIR states:

Project construction and operations would include diesel exhaust sources, such as off-road construction equipment and generators and train locomotives that could result in the creation of objectionable odors. However, these emissions would be temporary and/or intermittent in nature and the closest sensitive receptors to the Project site are residences that would be at distances of over 2,000 feet, thus odor impacts associated with diesel combustion during Project construction activities and operations would be less than significant. This impact would be less than significant.<sup>231</sup>

This “analysis” is entirely inadequate and the DEIR’s conclusion regarding the significance of odor impacts is unsupported.

First, Dr. Pless explains that most people consider diesel exhaust odor to be objectionable and EPA found that, at high intensities, diesel exhaust may produce sufficient physiological and psychological effects to warrant concern for public health.<sup>232</sup> Here, four locomotives per day would pass through numerous densely populated residential neighborhoods, in many areas traveling at low speed. In Dr. Pless’ opinion, the locomotives could cause major odor nuisances for receptors located within these neighborhoods.<sup>233</sup> Further, clouds of soot from the diesel-powered locomotives, when idling at the Project site, can travel downwind for miles and drift into heavily populated areas.<sup>234</sup>

Second, diesel exhaust is not the only source of odiferous emissions associated with the Project. Other sources include fugitive emissions of odiferous hydrocarbons and hydrogen sulfide from equipment leaks and evaporation from the crude oil rail cars in transit to the refinery.<sup>235</sup> The DEIR for the Phillips 66 Santa Maria Rail Terminal in San Louis Obispo County provided a quantitative odor

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<sup>231</sup> DEIR, p. 4.1-26.

<sup>232</sup> Pless Comments, p. 52.

<sup>233</sup> *Id.* at pp. 52-53.

<sup>234</sup> *Id.* at p. 53.

<sup>235</sup> *Id.*

analysis and found that fugitive emissions could cause odor potentially significant odor impacts.<sup>236</sup>

Third, crude oils also contain other odiferous sulfur compounds, including mercaptans, which have very strong, unpleasant odors.<sup>237</sup> Mercaptans may be present at very high concentrations in the crude oils that would be delivered to the refinery. Diluents can contain more than 100 ppm of volatile mercaptans.<sup>238</sup> The odor threshold for most mercaptans is considerably less than 0.5 ppb; some mercaptans can be detected at concentrations as low as 0.029 ppb.<sup>239</sup>

Fourth, the Project's change of crude oils may also result in higher emissions of odiferous compounds from existing refinery operations. In the past, these included a wastewater tank odor release and "slop oil."<sup>240</sup> In 2009, these odors sent two Union Pacific workers to the hospital and caused a widespread "rotten egg" smell emanating from the refinery, which was detected in Vallejo, Benicia, Crockett and Marin County.<sup>241</sup>

The DEIR fails to adequately analyze the Project's odor impacts and the conclusion that the Project would not result in significant odor impacts is unsupported. Substantial evidence shows that the Project may result in significant impacts from a number of odiferous emissions. Dr. Pless recommends that the City prepare a revised DEIR that includes modeling of all odorous compounds from the Project, including diesel exhaust, hydrocarbons and sulfurous compounds.<sup>242</sup> Further, the revised DEIR should evaluate potential odor impacts for the full range of crude oils that could be delivered to the refinery, including heavy Canadian sour crude oil, DilBits and Bakken crude oil.<sup>243</sup> The revised DEIR must also include mitigation measures for significant odor impacts. Dr. Pless recommends that the measures include, for example, the use of leakless equipment components (*e.g.*, welded connectors, bellows valves, double mechanical seals with high pressure fluids on pumps, enclosed distance pieces on compressors with venting to a control

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<sup>236</sup> *Id.*, citing Draft EIR for Santa Maria Rail Terminal Phillips 66, *op. cit.*, p. 4.3-51.

<sup>237</sup> *Id.*

<sup>238</sup> *Id.*

<sup>239</sup> *Id.*

<sup>240</sup> *Id.*

<sup>241</sup> *Id.* at pp. 53-54.

<sup>242</sup> *Id.* at p. 54.

<sup>243</sup> *Id.*

device, etc.).<sup>244</sup> Dr. Pless also recommends that the City investigate how to best reduce fugitive emissions from rail cars, whether it is tank design and/or requiring the Applicant to only accept stabilized crude oils that have a lower potential for fugitive emissions.<sup>245</sup>

In short, the DEIR's analysis of the Project's potentially significant odor impacts is inadequate. The DEIR's conclusion that the Project would not cause significant odor impacts is unsupported. Substantial evidence shows that the Project may cause significant odor impacts. The DEIR must be revised to adequately disclose, analyze and mitigate the Project's potentially significant odor impacts.

**K. The DEIR Fails to Address Potentially Significant Hazards Impacts from Earthquakes, Vandalism and Terrorism**

The DEIR's hazards analysis completely fails to address risks associated with earthquakes and potential vandalism or terrorist attacks. Earthquakes, vandalism and terrorist attacks on trains carrying crude oil could have disastrous consequences for sensitive habitat, California's water supply and densely populated areas, which must be considered in a revised DEIR.

Dr. Pless explains that freight trains are an easy target for vandalism and/or terrorism. Freight trains are operated by a very small crew and are frequently left unattended.<sup>246</sup> For example, the recent crude oil rail accident in Lake Mégantic in Canada, which resulted in 47 fatalities, occurred while the train operator left the train unattended.<sup>247</sup> In Dr. Pless' opinion, "[g]iven the worldwide awareness raised by the recent slate of catastrophic train derailments and accidents, it may be only a matter of time for trains in transit carrying crude oil to become the target for a terrorist attack or vandalism with disastrous consequences."<sup>248</sup>

Dr. Pless goes on to explain that earthquakes could also have disastrous consequences. Benicia is located between two known earthquake faults, the West Napa Fault, which rattled the Bay Area in August of this year, and the Concord/Green Valley Fault, which is one of the six major slip-strike faults in the

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<sup>244</sup> *Id.*

<sup>245</sup> *Id.*

<sup>246</sup> *Id.* at p. 55.

<sup>247</sup> *Id.*

<sup>248</sup> *Id.*

Bay Area.<sup>249</sup> The area is characterized as a “very high risk area” for earthquakes.<sup>250</sup> In Dr. Pless’ opinion, with “two daily deliveries of crude oil and the increasing probability of a major earthquake (a greater than 63% percent for one or more magnitude 6.7 or greater earthquakes from 2007 to 2036), the likelihood of an earthquake derailing a train is probable.”<sup>251</sup> Despite this evidence, the DEIR completely fails to disclose or analyze potentially significant hazards impacts from earthquakes.

The DEIR completely fails to address the Project’s potentially significant impacts from earthquakes and vandalism and/or terrorism. The City must prepare a revised DEIR that discloses, analyzes and mitigates these impacts.

### III. CONCLUSION

We thank the City for this opportunity to comment on the DEIR and urge the City to prepare and circulate a revised DEIR which includes a complete Project description, accurately describes the environmental setting, identifies the Project’s potentially significant impacts and requires the Applicant to incorporate all feasible mitigation measures into the Project to reduce impacts to a less than significant level.

Sincerely,



Rachael E. Koss

REK:clv  
Attachments

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<sup>249</sup> *Id.*

<sup>250</sup> *Id.*

<sup>251</sup> *Id.*